

City of



DEPARTMENT OF PUBLIC WORKS

STANDARD DRAWINGS

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**ADDENDUM No. 7**  
**Published March 5, 2021**

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ADDENDUM NO. 1  
TO  
CITY OF FRESNO 2010 STANDARD DRAWINGS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED AUGUST 2010

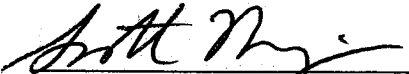
This addendum is attached to and made a part of the above-entitled standard specifications.

The following City Standard Drawings have been amended as indicated below:

Replace:           Table of Contents

W-1                 Revised material specifications and notes  
W-2                 Revised material specifications and notes

Reviewed and Approved:

  
\_\_\_\_\_  
Scott Mozier, P.E.  
Assistant Director / City Engineer

6-10-11  
Date

  
\_\_\_\_\_  
Patrick N. Wiemiller  
Public Works Director

6/10/11  
Date

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ADDENDUM NO. 2  
TO  
CITY OF FRESNO  
PUBLIC WORKS STANDARD SPECIFICATIONS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED AUGUST 2010

This addendum is attached to and made a part of the above-entitled standard specifications.

The following City Standard Drawings have been amended as indicated below:

- P-9: Updated median island stamped concrete color from Davis Colors Brick Red to Davis Colors San Diego Buff.
- P-48: Revised compaction for backfill soil directly above buried pipe from 95% to 90%.
- P-58: Added note requiring compliance with Chapter 1000 of the Caltrans Highway Design Manual.
- P-59: Added note requiring compliance with Chapter 1000 of the Caltrans Highway Design Manual.
- P-60: Added standard drawing "Trail Details" as P-60. Existing drawing P-60 was combined with P-61.
- P-61: Added the existing standard drawing P-60 details into P-61.
- P-63: Removed unused "See Note 4" annotation.
- P-72: Updated Standard Drawing reference from E-36 to E-35. Removed unnecessary language.
- P-93: Clarified steel reinforcement bars on the wall diagrams.
- P-94: Clarified steel reinforcement bars on the wall diagrams.
- P-95: Clarified steel reinforcement bars on the wall diagrams.
- P-96: Removed "Zone 3" references.
- P-100: Added detail for installation of Type N-1 (CA) and N-2 (CA) object markers onto barricade.
- E-4: Changed 2" cap in pullbox from mortar to concrete.
- E-5: Changed splice location from pullbox to hand hole.
- E-21: Revised Electrical Sealing Compound language and pull box lid requirements.
- E-23: Revised to specify that underground in-line splices are NOT permitted.
- E-26: Changed pole number numeral size from 2" to 1 ½"
- E-34A: Removed "24V" callout from lower input panel diagram.
- E-35: Corrected spelling error.
- ITS-1: Updated Standard Drawing references. Added No. 6 pull box

	requirement.
ITS-2:	Clarified ITS controller location diagram. Revised Note 3 for conduit size and reference.
ITS-3:	Revised notes, references, and added Note 9.
ITS-3A:	Added dimension from hub to back of walk. Added notes 9, 10, and 11. Revised note references.
ITS-11:	Revised fiber optic cable coil length.
ITS-13:	Revised fiber optic cable coil length.
ITS-18:	Revised camera mounting height. Added Note 5 and reference to note 5.
ITS-18A:	Changed coil length requirement in Note 2.
ITS-20:	Revised number of conduits going into communications cabinet and added minimum pipe height callout.
ITS-20A:	Revised number of conduits going into communications cabinet and added minimum pipe height callout.
ITS-21:	Changed cabinet callout in Note 1 from Rittal to Communications cabinet.
ITS-23:	Changed callout from Communications cabinet to Hub cabinet.
ITS-27A:	Removed ethernet extender option.
ITS-27B:	Changed "mesh node" callouts to "access point". Fixed Astro-Brac elbow inconsistency. Added Note 4.

In addition to the standard drawings, changes that have been made to the Standard Specifications are as follows:

Section 7-10.3	Revised language regarding traffic control and road closures. Added language addressing special events and grinding and slurry sealing of existing striping.
Section 13-3	Revised AC type from "Type B" to "Type A".
Section 23-1.11	Revised language, conduit type callout, and Standard Drawing reference.
Section 23-1.12	Revised language regarding lid inscriptions, pull box sizes, and added reference to Section 32 for ITS pull boxes.
Section 23-1.13	Revised language, conductor wire type, and spade terminal type.
Section 23-1.18	Added reference to Std. Drawing E-17.
Section 23-1.19	Revised language regarding signal heads, LED's, and signal faces.
Section 23-1.20	Deleted Section 23-1.20
Section 23-1.24	Revised language regarding Accessible Pedestrian Signal

Section 23-1.25	unit. Revised language regarding Emergency Vehicle Priority Control System component requirements.
Section 23-1.28	Revised language regarding signal turn on requirements.
Section 23-2	Added Specification for 2070L controller assembly and 332L controller cabinet. Revised conflict monitor to 2010ECL. Revised Detector Loop Test Page.
Section 23-3.4	Revised telephone number for Electrical Superintendent.
Section 23-3.13	Revised language regarding splice insulation.
Section 30-11	Revised language regarding pull box drainage.
Section 30-12	Revised language regarding conductor types and splice types.
Section 30-13	Added "or Equivalent" annotation to callout of fuse holder specific type.
Section 30-14	Revised language regarding conductor type, splice type, and location of electrical grounding.

Reviewed and Approved:



Scott Mozier, P.E.  
Assistant Director / City Engineer

11/3/11  
Date



Patrick N. Wiemiller  
Public Works Director

11/3/2011  
Date

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ADDENDUM NO. 3  
TO  
CITY OF FRESNO  
PUBLIC WORKS STANDARD SPECIFICATIONS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED JANUARY, 2013

This addendum is attached to and made a part of the above-entitled standard specifications.

The following City Standard Drawings have been amended as indicated below:

- P-31:           Width of Detectable Warning Devices changed to 4' Min.  
Note No. 10 revised.
- P-32:           Removed offset pattern. Revised bump spacing. Revised note No. 1.
- S-1             House branch material changed to SDR35.  
P-trap removed, replaced with two way cleanout.  
On note 6 "AND SECTION 17-5 OF CITY STANDARD SPECIFICATIONS" was added.  
Threaded solid cap was added.  
Note 7 added regarding connection direction.
- S-2             Dimensions of manhole concrete collar and asphalt cover revised.  
Overall dimensions revised to 42" and 30".  
Pipe opening revised from 24"x39" to 24"x44".  
Changed "Lateral" to "Lateral for 8" and larger".  
Added 8" dimension of base via "A" dimension.  
General Note 4 added.  
"See Drawing S-5B" reference added.  
Replaced "AR4000 or AR8000" with "PG 64-10 asphalt".  
Replaced "Class A" with "6 sack".  
Added "In Street Installation" and "Non-street Installation".
- S-3             Dimensions of manhole concrete collar and asphalt cover revised.  
Overall height dimensions revised to 42" and 30".  
"See Drawing S-5" replaced by "See Drawing S-5A"  
Note 1 "Pipe" was replaced by "Riser Sections" and "Class II R.C.P." was deleted.  
Note 3 added.  
Note 4 added.  
Replaced "AR4000 or AR8000" with "PG 64-10 asphalt".  
Replaced "Class A" with "6 sack".

Added "In Street Installation" and "Non-street Installation".  
Replaced "Slope from above spring line to 2/3 diameter of pipe to side of manhole" with "Slope to start from the spring line of the sewer pipe and slope up to manhole barrel".  
Remove base design flow configuration.  
Replaced "Enlarged base to top of pipe surface to provide solid footing for precast manhole components" by "Enlarged base to pipe crown to provide solid footing for precast manhole components"  
Clearance between pipe and base of manhole was replaced from 4" to 8"  
MPR's was changed to MFR's

- S-4 Dimensions of manhole concrete collar and asphalt cover revised.  
Note 4 added – Manhole coverings note.  
Note 5 added.  
Replaced "AR4000 or AR8000" with "PG 64-10 asphalt".  
Replaced "Class A" with "6 sack".  
Added "In Street Installation" and "Non-street Installation".  
Replaced "See Drawing S-5" with "See Drawing S-5B".  
Replaced "Slope from above spring line to 2/3 diameter of pipe to side of manhole" with "Construct bench as shown- Trowel Finish".  
Clearance between pipe and base of manhole was replaced from 4" to 8"  
Pitch "1:12 MIN." was replaced with "1:12"  
Replaced "Enlarged base to top of pipe surface to provide solid footing for precast manhole components" by "Enlarged base to pipe crown to provide solid footing for precast manhole components"  
Note 1 "Pipe" was replaced by "Riser Sections" and "Class II R.C.P." was deleted.  
Remove base design flow configuration.  
Old Note 2 "All reinforcing steel to be No.4 bars grade 60 steel, spaced 12" O.C. both ways in top, bottom & walls" was deleted.
- S-5A Replaced Drawing "S-5" with "S-5A".  
Replaced frame weight "191 lbs" with "180 lbs".  
Scale 1"=1'-0" was deleted
- S-5B Added drawing S-5B "Pamrex Ductile Iron Frame and Cover for Sewer Pipe 27" or Larger".
- S-7 Added "Minimum Thickness 5/8"" for steel casing.  
Added spacing formula for steel casing.  
Replaced "In Jacked Steel Casing" in drawing title with "In Jacked Steel Casing and Non Jacked Steel Casing".  
On Note 6 P.C. was replaced by P.C.C.

S-8 Replaced "Elastomeric sleeve coupling with stainless steel bands" with "FERNCO stainless steel shield repair coupling bands or equal"

The following City Standard Drawings are new as indicated below:

S-11 Replaced "S-11" with "S-11A and S-11B".

S-12 New sheet added – "Manhole Base Design Flow Configuration Supplement to S-3 and S-4".

In addition to the standard drawings, changes that have been made to the Standard Specifications are as follows:

Section 17-2.2.1 Revise pipe size "18-30" to "18-48".  
Revise Min. Wall Thickness "T-1 only" to "PS-46"  
Add row in table to include pipe size "21-54", ASTM "F1803" and min. wall thickness "PS-46".

Section 17-2.2.4 "T-1 only" was replaced by "PS-46".

Section 17-3.2.8 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.

Section 17-4 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.

Section 17-5.1 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.

Section 17-5.2 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.

Section 17-5.3 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.  
Revise last sentence of paragraph 5 to "Jetting and Flooding of trenches from the top is not permitted".  
Deleted paragraph 6 "Jetted backfill".

Section 17-5.4 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.

Section 17-6 Revise last sentence of paragraph 2 "45%" to "45°".  
Add "Y branches must join the sewer main with flow in the same direction" at end of last paragraph.

- Section 17-7      Revise second sentence of first paragraph.  
 Add "New connections must comply with drawing S-1, S-8 & S-9" to end of second paragraph.  
 Delete paragraph eight (8) completely.  
 Fifth paragraph "for use with his/her product" was deleted.  
 Dimensions have been switched, giving priority to the English measurement standard instead of the metric.
- Section 17-8.2      Dimensions have been switched, giving priority to the English measurement standard instead of the metric.  
 Delete paragraph three (3) completely.
- Section 17-8.3      Replace "C-76" with "C-478" at end of 1<sup>st</sup> paragraph.
- Section 17-8.4      Dimensions have been switched, giving priority to the English measurement standard instead of the metric.  
 Replace "2/3 the diameter" with "half" in 1<sup>st</sup> paragraph.  
 Add new sentence at end of 2<sup>nd</sup> paragraph.  
 Replace entire 3<sup>rd</sup> paragraph.
- Section 17-8.5      Dimensions have been switched, giving priority to the English measurement standard instead of the metric.
- Section 17-8.6      "Jiffy Rings" definition was added.
- Section 17-8.7      S-11 was replaced with S-11A and S-11B.
- Section 17-11      Dimensions on PVC Gravity Sewer Pipe table have been switched, giving priority to the English measurement standard instead of the metric.
- Section 17-12      Replace "A tape cassette" with "An electronic copy" in 2<sup>nd</sup> paragraph.  
 Replace "VHS format" with "DVD or in Mpeg file format", in 2<sup>nd</sup> paragraph.  
 On requirement 1, "Testing" was replaced by "Video Inspection"  
 On requirement 2, "testing" was replaced by "Inspection" and "test" by "Inspection".  
 Replace "video tape" with "DVD" in Item 4 under Requirements for Sewer Video Inspections".  
 On requirement 5, "Testing" was replaced by "Inspection" and "test" by "Inspected".  
 Requirement 6, was changes to "In order to facilitate review a log of

the Inspections performed shall correlate from manholes, stationing, etc., between the Sewer Plans and the DVD produced” Add items 7 through 13 under Requirements for Sewer Video Inspections”.  
Section with “INSPECTION OF NEW CONSTRUCTION-SEWER INFRASTRUCTURE MAIN SEWER LINES AND MANHOLES” (Including fees) was added.

Reviewed and Approved:



Robert N. Andersen, P.E.  
Assistant Director

5/29/14

Date



Scott Mozier, P.E.  
Public Works Director

6/9/14

Date

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ADDENDUM NO. 4  
TO  
CITY OF FRESNO  
PUBLIC WORKS STANDARD SPECIFICATIONS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED JANUARY, 2013

This addendum is attached to and made a part of the above-entitled standard specifications.

The following City Standard Drawings have been amended as indicated below:

- P-41 Added location in right-of-way for Recycled Water Main.
- P-42 Added location in right-of-way for Recycled Water Main.

The following City Standard Drawings are new as indicated below:

- RW-1 Recycled Water Main Identification
- RW-2 Recycled water Valve and Valve Box
- RW-3 Recycled Water Valve Extension
- RW-4 1" Service Connection & Meter Box Installation
- RW-5 1-1/2" & 2" Service Connection & Meter Box Installation
- RW-6 4" Recycled Water Service
- RW-7 Temporary 2" Recycled Water Blow-Off
- RW-8 Recycled Water Blow-Off Assembly
- RW-9 Recycled Water 1" or 2" Air Release/Vacuum Breaker Station
- RW-10 Recycled Water 4" Air Release/Vacuum Breaker Station
- RW-11 1" or 2" Air Release/Vacuum Breaker Valve Enclosure
- RW-12 Recycled Water Main Separation Requirements
- RW-13 Recycled Water Irrigation Information Sign
- RW-14 Recycled Water Remote Control Irrigation valve Identification
- RW-15 Recycled Water Backflow Preventer Identification
- RW-16 Recycled Water Irrigation Box Cover Markings
- RW-17 Recycled Water Irrigation System Clock Marking
- RW-18 General Recycled Water Identification Tag
- RW-19 Recycled Water Landscape Irrigation Head Identification
- RW-20 Quick Coupling Valve
- RW-21 Cross Connection Control Test Station
- RW-22 Temporary Potable Water Supply To On-Site Recycled Water System
- RW-23 Temporary Potable Water Supply To Recycled Water System

In addition to the standard drawings, Section 34 and Section 35 are new to the Standard Specifications as indicated below:

### **SECTION 33 – RECYCLED WATER FACILITIES DESIGN CRITERIA**

#### **PART I**

Section 33.1

Section 33.2

#### **PART II**

Section 33.3

Section 33.4

#### **PART III**

Section 33.5

Section 33.6

Section 33.7

Section 33.8

Section 33.9

Section 33.10

Section 33.11

Section 33.12

Section 33.13

Section 33.14

Section 33.15

#### **PART IV**

Section 33.16

Section 33.17

Section 33.18

Section 33.19

#### **DEFINITIONS**

Definitions

Other Requirements

#### **GENERAL PROVISIONS**

Other Requirements

Enforcements

#### **DESIGN CRITERIA**

Recycled Water Main Pressures, Capacities and Sizes

Location of Air release Valve Assemblies

Location of Blow-Off Assemblies

Recycled Water Main Locations

Criteria for the Separation

Alternate Criteria for Construction

Procedure for Water, Recycled Water and Sewer System Installations in Subdivisions

Easements

Depth of Recycled Water Mains

Structural Requirements

Design Criteria for Recycled Water Meters

#### **MATERIALS**

Requirements

Pipe Materials

Valves

Appurtenances

### **SECTION 34 – RECYCLED WATER FACILITIES**

Section 34.1

Section 34.2

Section 34.3

Section 34.4

Section 34.5

Section 34.6

Section 34.7

Section 34.8

Scope

General

Polyvinyl Chloride (PVC) Pressure Pipe and Fittings Installation

Ductile Iron Pressure Pipe and Fittings Installation

Valve Casing and Lid Installation

Earthwork for Ductile Iron and PVC Pipe Installation


Backfilling and Tamping

Testing and Sterilization




Section 34.9      Signage  
Section 34.10    Abandonment

Reviewed and Approved:

  
Andrew Benelli, P.E.  
City Engineer

Oct. 15, 2014  
Date

  
Scott Mozier, P.E.  
Public Works Director

Oct. 15, 2014  
Date

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ADDENDUM NO. 5  
TO  
CITY OF FRESNO  
PUBLIC WORKS STANDARD SPECIFICATIONS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED October 15, 2014

This addendum is attached to and made a part of the above-entitled standard specifications.

**The following City Standard Drawings have been amended as indicated below:**

- P-1 Adjusted minimum driveway lengths and pedestrian requirements.
- P-2 Adjusted minimum driveway lengths and pedestrian requirements.
- P-3 Added notes regarding compaction.
- P-4 Added notes regarding compaction.
- P-5 Added notes regarding compaction.
- P-6 Revised and corrected notes.
- P-7 Revised notes and implemented a minimum radius.
- P-9 Provided soil compaction requirements.
- P-10 Corrected notes and added notes regarding compaction.
- P-18 Provided clarity.
- P-28 Corrected dimensions and wheelchair ramp, corrected notes.
- P-29 Corrected dimensions and wheelchair ramp, corrected notes.
- P-30 Corrected dimensions and wheelchair ramp, corrected notes.
- P-41 Added RW (Recycled Water) to this utility location guideline.
- P-42 Added RW (Recycled Water) to this utility location guideline.
- P-50 Added R-value testing requirements. Added notes 9 and 10.

- P-51        Showed expressway barrier fences at expressways.
- P-52        Corrected drawing to accurately reflect dimensions, corrected lane width dimensions.
- P-54        Corrected drawing to accurately reflect dimensions, corrected lane width dimensions.
- P-55        Removed former note #3.
- P-56        Corrected drawing to accurately reflect dimensions. Added notes 5, 6 and 7.
- P-58        Revised notes, decreased shoulder width and slope, and added shoulder material.
- P-59        Increased soil compaction requirement, decreased shoulder width and slope, and added shoulder material.
- P-69        Adjusted curve radii and provided a varied left turn lanes.
- P-70        Adjusted curve radii and provided a varied left turn lanes.
- P-75        Relocated the location of the expressway barrier fence and adjusted curve radii.
- P-85        Removed bump outs and added soil compaction requirements.
- P-97        Changed dimensions of temporary ponding basins.
- E-1         Added drawing references to notes in lieu of former text, clarified text and drawing details.
- E-2         Added drawing references to notes, clarified text, changed PVC conduit to NM.
- E-3         Added drawing references to notes, clarified text.
- E-4         Deleted, replaced with new drawings E-4A, E-4B & E-4C.
- E-5         Added note regarding “no splices in pull boxes”.
- E-13        Deleted PVC loop drawing, replaced with bike loop detector drawing.
- E-14        Add note and symbol for Bike Loop Detector.

- E-15            Changed 2-pole branch circuit breakers to 1-pole.
- E-17            Added "Note 2", corrected service conduit size.
- E-18            Changed 2-pole branch circuit breakers to 1-pole.
- E-19            Changed "Note 2".
- E-20            Changed "Note 2", added Ped PB Post reference.
- E-21            Changed "Note 3" to "Lock Jaw Locking Lid".
- E-24A          Modified drawing for clarity.
- E-26            Updated part numbers.
- E-27            Modified conduit drawing for clarity.
- E-28            Deleted, replaced with E-4C.
- E-34A          Corrected text errors in "Caution" note, changed "752" discriminator to "762".
- E-34B          Deleted "Curve 3 or Delay 22" requirement, added detector number labels.
- E-34C          Removed jumpers from diagram, added lower input panel diagram.
- E-35            Changed "Note 3".
- E-36            Changed 2-pole branch circuit breakers to 1-pole.
- ITS-18A        Added (Gooseneck) to Title Block  
                   Added, Camera Cat 5 – "Red Taped"  
                   Updated, access hole see note 1, replaced with text, "access hole see note 2"  
                   Deleted reference, "See note 1"  
                   Callout beginning with, Cat 5e, deleted, "and power cables". And inserted text after RED, "electrical waterproof."  
                   Deleted, "See Note 2", replaced with text, "See Note 1"

Deleted "Note 1", text.  
(Numbered Notes re-numbered accordingly.)

Note 1, inserted text after RED, "electrical waterproof", the word RED shall be made bold.

Note 2, Replaced second sentence with, "Use rubber grommet to seal."

Note 3, Removed period and Added, "or as directed by City engineer."

Note 4, Added.

Note 5, Added.

Note 6, Added.

ITS-20A Added, Note 4, 5 & 6.

Side View & Front view, deleted 1" and replaced text with ¾".

Side View & Front view, Added, "Grounding Clamp (Acorn) ½" x 8' copper clad."

Updated callout, to, \*Pipe height shall be 2"-3" above foundation.

Updated callout, deleted text Communication and replaced with," HDPE"

Side view and Front view drawing, added, grounding rod.

ITS-21 Note 5, deleted "with approved lug", and added, "per current NEC Standards."

Drawing: deleted "120v to Transformer", text, and transformer depiction.

ITS-21A Sheet deleted – "Model 336 Communication Cabinet Wiring Diagram".

ITS-21B Add Callout, "Fiber Optic Jumper"

Delete, callout, "Camera Power Assembly ... Cable"

Add callout, 4' Cat5e Patch Cable"

Remove, Camera Power Assembly line drawing in its entirety.

- ITS-22 Drawing: Added various callouts and expanded concrete foundation area. Added note 5, regarding foundation grounding.
- ITS-23 Drawing: Added various callout notes and expanded concrete foundation area.
- 12" Concrete apron expanded to 48" around hub pedestal," 18" thick concrete foundation, 4"x4" #2 wire reinforced".
- Placement of round hand holes is 8.5" from hub pedestal within 48" concrete apron area.
- Added five numbered notes, regarding foundation construction.

**The following City Standard Drawings are new as indicated below:**

- E-4A Traffic Signals concrete pull boxes.
- E-4B Streetlights concrete pull boxes.
- E-4C Streetlights point of service concrete pull boxes.
- E-37 332L Cabinet foundation.
- ITS-18B Traffic Signal Mounted IP Camera.
- ITS-21C 336 Communication Cabinet Wiring Diagram, 1 of 2.
- ITS-21D Model 336 Communication Cabinet Power Distribution, 2 of 2.
- ITS-28A ITS Wireless Pole Repeater Installation (Powered through street light)
- ITS-28B ITS Wireless Pole Repeater Installation (Powered through service pedestal).
- ITS-28C Repeater Circuit Breaker
- ITS-29A ITS Hub Cabinet, 1 of 2
- ITS-29B ITS Hub Cabinet, Plate Anchor, 2 of 2

**In addition to the standard drawings, changes that have been made to the Standard Specifications are as follows:**

- 13-5 Changed "Seal Coat" to "Slurry Seal" and aggregate type and asphalt emulsion gradation.
- 16-6 New Section added, "Pave Back Requirements for City Streets".  
16-7 Revised Section number for old Section 16-6
- 17-2.2.1 Changing Pipe Size from 18-48 to 18-60. ASTM F 679 now goes up to 60-inch.  
Changing Pipe Size from 21-54 to 18-60. ASTM F1803 has changed.
- 17-2.2.2 Added text "or pipe stiffness" to #3 regarding identification marks.
- 17-2.2.3 B In paragraph 3 added the word "of" to make the sentence grammatically correct.  
In Property chart, row 5, replaced "o" with degree symbol. Typo error.  
In Property chart, row 7, replaced 70 with 72. Updated to match F477 ASTM Standard.  
In Property chart, row 7, replaced "o" with degree symbol. Typo error.
- 17-2.2.4 In paragraph A, removed D 3033. This standard no longer exists.  
In paragraph A, added F 1803. New ASTM standard  
In paragraph A, revised the word "manufacture" to "manufacturer" to correct a spelling error.  
In paragraph B, replaced "E" the degrees symbol for all temperature references. Typo error.
- 17-2.3.1 In paragraph 2, added degree symbol to 360. Was left out.
- 17-2.3.2 Added "or C-655" as an option for ASTM reinforced concrete pipe.
- 17-2.4 Removed the word "State" from State Standard. This is not a state standard.



- 17-7 In paragraph 2, changed the word “providing” to “provided”. Fixing grammatical error.
- In paragraph 2, deleted the last sentence “New connections must comply with drawing S-1, S-8, and 2-9.” This sentence is covered in paragraph 1 of this section.
- 17-8.1 Change “Standard Drawings S-2 through S-5” to “Standard Drawings S-2 through S-4”. S-5 doesn’t apply.  
Change “slope 1:12” to “slope minimum 1:12”. Makes it consistent with call out in the sewer drawing.
- 17-8.2 Changed paragraph 4 to read “Manholes shall not be installed in flow channels of gutters, or in depressions subject to storm waters or other infiltration, sidewalks, roundabouts, brick crosswalks or have any brick surrounding the manhole cover.” To avoid damage to existing structures.
- 17-8.3 In paragraph 1, remove “Class II” from sentence. No longer referenced in the City Standard.
- In paragraph 4, change “Class II” to “6 sack” to better define concrete requirements.
- Add paragraph 5, which reads: “Unless specified otherwise, manholes on sewer mains 12 inches in diameter or larger, or on any size sewer mains within 600 feet of and connected to sewer mains 30 inches in diameter or larger shall be lined with T-lock or coated with one of the following: Raven 400 or Raven 405, products of RLS Solutions; Neopoxy 5300 series, products of Neopoxy International; or Quadex Structure Guard, a product of Quadex.” The coating will aid in protecting the manhole from corrosion. Add paragraph 6, which reads: “Approved products shall be applied per manufacturer’s specifications. No substitutions are acceptable.” To ensure proper installation.
- 17-8.4 In paragraph 2, removed “size and” from sentence 2, to make it consistent with Standard Drawing S-12.
- In paragraph 4, added sentence “When connecting to the existing stub-outs and the plug is removed, a new square cut shall be done to the existing stub-out prior to connection on the new sewer main.” To ensure a smooth transition and eliminate build-up.

- 17-8.5 Changed section title from “Removal” to “Abandon and Removal”. This section now covers manholes being abandoned and removed.
- 17-9 Revised thimble to stub. Added sentence, “When connecting to the existing stubs and the plug is removed, a new square circumferentially cut shall be done to the existing stub prior to connection on the new sewer main.” To ensure a smooth transition and eliminate build-up.
- 17-12 Added 2 new requirements, numbered 3 and 4. To ensure adequate video inspection and assure proper installation.
- Requirements 3 through 13 changed to 5 through 15.
- Requirement 7 (now 9), added “to identify any rolled gasket in” to the sentence for clarification.
- In paragraph 1, changed “is” to “will be” to correct grammatical error.
- Change hourly pricing from \$135.39 to \$134.39
- 23-1.1 Paragraph 2: Delete “latest edition” reference.
- 23-1.5 Paragraph 1 added, requiring the continued operation of existing systems.
- 23-1.7 Paragraph 2: Remove first sentence regarding use of Portland Cement Concrete
- Paragraph 5: Add text “in pole foundations”.
- Paragraph 6: added 3<sup>rd</sup> sentence restricting cabinet modification.
- Paragraph 11: added “as shown in Dwg. E-37”
- 23-1.9 Paragraph 2: Clarified use of PVC conduit.
- Paragraph 6: Clarified bonding bushings shall have integral lay-in lugs
- Paragraph 8: Added sentence regarding conduits not placed under sidewalk and that they will be encase in slurry.
- Paragraph 10: Add note, “No 90° elbows shall be installed unless specified or approved.

- 23-1.10 Paragraph 4: Clarify PG&E lid requirement.  
Deleted Fyberlite pull box lids.  
Paragraph 6: Clarify concrete collar depth.
- 23-1.11 Paragraph 8: Detailed pushbutton conductor installation .  
Paragraph 10: Clarified “stranded” wire and tinning of loose strands.  
Paragraph 11: Clarified AMP/TYCO 320359 terminals for load bay only.  
Paragraph 12: Deleted AMP/TYCO terminal usage on input terminal blocks.  
Deleted coaxial cable references.
- 23-1.12 Moved fuses from hand hole to luminaire.
- 23-1.13 Paragraph 3: Clarified use of proper ring terminal for stranded ground wire.
- 23-1.15 Paragraph 2: Added “when allowed”.
- 23-1.18 Paragraph 9: “When allowed” reused pedestrian signals shall have an LED ...  
Deleted obsolete reference to medium base lamp socket.  
Deleted obsolete LED power consumption and arrangement references.
- 23-1.19 Paragraph 1: Noted; Detectors shall “be supplied by an approved manufacturer and” ...  
Deleted obsolete reference to encased loop wire.  
Paragraph 3: Clarified DLC “IMSA spec. 50-2” requirement.  
Paragraph 4: Detailed DLC drain wire termination.
- 23-1.20 Paragraph 2: Updated; Pedestrian pushbuttons shall meet or exceed “the 2010” ADA req.  
Paragraph 6: DLC connection to pushbutton.
- 23-1.21 Updated audible Pedestrian Signal specs, deleted obsolete text.

- 23-1.22 Paragraph 3: Deleted green monitor requirement.
- Paragraph 8: Detailed detector mounting requirements.
- 23-1.23 Paragraph 9: Changed phase selector type from 752 to 762 or equiv.  
Paragraph 1,2,3: Changed luminaire from HPS to LED. Moved fuse location from the hand hole to the luminaire, added luminaire internal fuse requirement.
- Paragraph 6: Added reference to DWG. E-25, noted adhesive backed numbers shall be Almetek PS-2.5 or equivalent, pole numbers shall be shown on "as-built" plans.
- 23-1.25 Added Note "2", requiring pre-inspection one day prior to turn-on.
- 23-1.26 added Manual of Traffic Control "Caltrans adopted" notations.
- 23-2 Deleted references to Model 170E controllers and 332A controller cabinets. Listed required modifications per Dwgs. E-34A, E-34B and required equipment and quantities. Changed approved controller manufacturer to Naztec 2070L.
- 23-3.5 Add paragraph 1 requiring existing systems to remain operational.
- 23-3.7 Paragraph 3: Noted all dirt and debris to be cleaned before pouring concrete.
- 23-3.8 Paragraph 2: Specified all hand hole covers must be steel.
- Paragraph 6: Added reference to DWG. E-25, noted adhesive backed numbers shall be Almetek PS-2.5 or equivalent, pole numbers shall be shown on "as-built" plans.
- 23-3.9 Paragraph 6: Clarified bonding bushings shall have integral lay-in lugs.
- Paragraph 13: Added note pertaining to conduit entry in bottom of pull boxes in non-concrete areas.
- Deleted PVC bushing requirement.
- 23-3.10 Paragraph 3: Updated locking lid specifications.
- Paragraph 6: Changed conduit bottom entry specifications for pull boxes in non-concrete areas.

- 23-3.12 Relocated fuse from hand hole to luminaire, specified fuse holder.
- 23-3.16 Changed luminaire from HPS to LED, specified internal fuse. Added reference to DWG. E-25, noted adhesive backed numbers shall be Almetek PS-2.5 or equivalent, pole numbers shall be shown on "as-built" plans.
- 23-3.17 Paragraph 2: Added "long life" to PEC spec.
- 23-4 Added Ornamental Street Lighting specifications.
- 28-3 Specified minimum application of a slurry seal application when removing pavement markings.
- 30 Deleted section, incorporated into section 23.
- 31-9 Added, 18 fiber optic holding racks
- Deleted, "steps to climb down into the vault for maintenance"
- Added, conduits shall extend minimum 6", 8" maximum, beyond the inner wall of any vault or structure
- Deleted, "pull box" added vault
- 31-10 Added, 18 fiber optic holding racks
- Deleted, "steps to climb down into the vault for maintenance"
- Added, conduits shall extend minimum 6", 8" maximum, beyond the inner wall of any vault or structure
- Deleted, "pull box" added "vault"
- 31-11 Added, conduit shall be certified by the manufacturer with a Letter of Certification documenting that the conduit meets the performance requirements and material requirements of ASTM F2160. Communication conduit shall be marked with the ASTM F2160 designation. In the event of a discrepancy between these specifications and ASTM F2160, the requirements of ASTM F2160 shall govern.
- Added, one conduit shall be installed with a tonable pull tape.

**The following City Standard Specifications are new as indicated below:**

- 35-1        General
- 35-2        Sewer Crossings
- 35-3        Recycled Water Crossings

ADDENDUM NO. 6  
TO  
CITY OF FRESNO  
PUBLIC WORKS STANDARD SPECIFICATIONS  
ADOPTED MARCH 4, 1970  
RESOLUTION NO. 70-36  
UPDATED VERSION APPROVED June, 2015

This addendum is attached to and made a part of the above-entitled standard specifications.

**The following City Standard Drawings have been amended as indicated below:**

- E-1** Added reference to Standard Specifications Section 23-3.16 for Luminaire and 23-3.1 for Photoelectric Cell.
- E-2** Added reference to Standard Specifications Section 23-3.16 for Luminaire and 23-3.1 for Photoelectric Cell.
- E-3** Added reference to Standard Specifications Section 23-3.16 for Luminaire and 23-3.1 for Photoelectric Cell.
- E-7** Changed light wattage reference to Local or Safety as defined in Standard Specifications Section 23-3.16; also changed luminaire symbol to filled circle for Local and open circle for Safety.
- E-8** Changed light wattage reference to Local or Safety as defined in Standard Specifications Section 23-3.16.
- E-9** Changed light wattage reference to Local or Safety as defined in Standard Specifications Section 23-3.16; also changed luminaire symbol to filled circle for Local and open circle for Safety.
- E-10** Changed light wattage reference to Local or Safety as defined in Standard Specifications Section 23-3.16
- P-76** Added Note to increase vehicle stacking.
- P-77** Added Note to increase vehicle stacking.
- RW-2** Added tracer wire  
Added minimum concrete pad thickness of 6" (typ)  
Added butterfly valve option
- RW-6** Changed meter box lid type

Added tracer wire  
Removed transition coupler  
Removed Note 5  
Removed Note 6  
Added note to drawing stating elbow can be 45° (typ.)  
Clarified note to drawing regarding stamp in curb face  
Clarified Note 4 regarding thickness of concrete slab

**RW-7** Added tracer wire  
Raised finish grade on drawing  
Revised note on drawing regarding end cap  
Revised Note 1  
Revised note on drawing regarding pipe material from copper to galvanized  
Added note to drawing regarding elbow  
Removed petcock note on drawing  
Added gate valve call out on drawing

**RW-8** Added tracer wire

**RW-9** Added minimum clearances to concrete pad  
Added tracer wire  
Revised copper pipe callout from soft to "K" Rigid  
Revised meter stop callout to corp stop  
Clarified type of solder joints  
Clarified type of saddle  
Revised galvanized pipe callout between air valve and the adjacent below grade elbow to Type "K" Rigid Copper  
Removed water valve and valve box from drawing  
Revised galvanized adapter callout to copper

**RW-10** Added tracer wire  
Added gate valve requirement for 4" and above to drawing  
Added minimum concrete pad thickness of 6" (typ)

**S-2** Added minimum collar width of 12" (Typ.)  
Revised General Note 2 regarding lining and coating material.

**S-3** Added minimum collar width of 12" (Typ.)  
Added note to drawing on manhole frame and cover regarding 27" diameter pipes.  
Revised Note 4 regarding lining and coating material.

**S-4** Added minimum collar width of 12" (Typ.)



Revised Note 3 regarding lining and coating material.

- S-5B** Added Note 8 regarding placement of manhole cover opening.
- S-7** Replace "S-7" with "S-7A and S-7B"
- S-8** Changed house branch Tee Fitting material to SDR35 to match uniform plumbing code  
Changed compression fitting to Gasket PVC Hub  
Added "Total gap not to exceed 1/2'" note to ensure proper connection is made.
- S-9** Clarified Note 4 regarding maximum extension of the saddle into the sewer main.
- S-10** Replace "Ref. Std. Dwg. P-40" with "Ref. Std. Dwg. P-48"
- S-11A** Added note to "Min. Model Height" to address heights less than minimum.
- S-12** Correction to Note 2.


**The following City Standard Drawings are new as indicated below:**

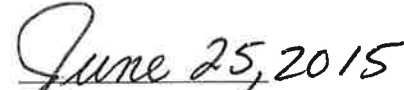
- P-87** NEWSRACKS IN SPECIAL DISTRICTS – Created new Public Works Standard Drawing for Newsracks in Special Districts as required by proposed City Ordinance to add Article 7 to Chapter 13 of the Fresno Municipal Code.
- RW-24** Tracer Wire Splice Connection Detail


**In addition to the standard drawings, changes that have been made to the Standard Specifications are as follows:**

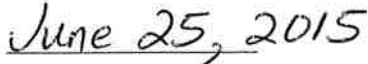
- 7-3** Revised to substitute most current City of Fresno insurance requirements
- 23-16** Changed luminaire from HPS to LED light source (complete replacement of listed section)
- 23-17** Paragraph 2: Added "long life" to PEC spec.

Reviewed and Approved:

  
Andrew Benelli, P.E.  
City Engineer

  
Date

  
Scott Mozier, P.E.  
Public Works Director

  
Date

**ADDENDUM No. 7**  
 TO THE  
 CITY OF FRESNO  
 PUBLIC WORKS STANDARD DRAWINGS AND SPECIFICATIONS  
 ADOPTED MARCH 4, 1970 BY RESOLUTION NO. 70-36

THIS UPDATED VERSION IS APPROVED: MARCH 5, 2021

This addendum is attached to, and made a part of, the above-entitled standard specifications.

**The following City Standard Drawings have been amended as indicated below:**

1. Most drawings received minor drafting and typographical edits to detail and callouts for clarity, any such changes that result in practical differences are annotated below.

DPW – PUBLIC WORKS (P Series)	
<b>P-4</b>	<ol style="list-style-type: none"> <li>1. Multiple options for Dimension “B” removed; Dimension B now refers to Standard Drawing P-6 for driveway widths.</li> <li>2. Clarified “STREET FURNITURE” locations shown on diagram.</li> <li>3. Comments previously marked with a single asterisk “*” incorporated into new dimension “C”.</li> <li>4. Comments previously marked with two asterisks “**” converted to Note 1.</li> <li>5. <b>Added Note 2:</b> “SEE API-7, API-8, AND API-9 FOR S. MINNEWAWA AVE. BETWEEN FANCHER CREEK AND CALIFORNIA AVE, BETWEEN CALIFORNIA AVE. AND BUTLER AVE., AND FROM BUTLER TO TULARE AVE.”</li> <li>6. <b>Added Note 3:</b> “SEE API-6 FOR VAN NESS EXTENSION BETWEEN HERNDON AVE. AND SAN JOAQUIN RIVER BLUFF.”</li> <li>7. <b>Added Note 4:</b> “SEE API-3, API-4 FOR DETAILS RELATING TO MODIFIED STREET TYPES.”</li> <li>8. Prior “REF. &amp; REV.” date erroneously shown as June 2015, date corrected to reflect its prior revision with the issuance of Addendum 5 in Oct. 2014.</li> </ol>
<b>P-5</b>	<ol style="list-style-type: none"> <li>1. Existing <b>callout:</b> “WHEN WALK POURED SEPARATE, INSTALL <i>BOUND</i> BREAKER BEHIND CURB.” <b>Revised to read:</b> “WHEN WALK POURED SEPARATE, INSTALL <i>BOND</i> BREAKER BEHIND CURB.”</li> <li>2. Expansion joint dimension Revised from: 90’ to 45’</li> <li>3. Dimension: “5.5’ MIN.” added to residential side of pattern and to “CROSS-SECTION OF SIDEWALK, CURB &amp; GUTTER”</li> <li>4. <b>Sidewalk thickness dimension:</b> “3.5” <b>Revised to read:</b> “3.5”, 5” WITH WEDGE CURBING”</li> <li>5. <b>Added callouts</b> for “COMMERICAL PATTERNS” and “RESIDENTIAL PATTERNS”</li> <li>6. <b>Revised callout</b> for return radius to reference standard drawings.</li> <li>7. Existing <b>NOTE renamed:</b> “NOTE A”</li> <li>8. Existing <b>NOTE renamed:</b> “NOTE B”</li> <li>9. Prior “REF. &amp; REV.” date erroneously shown as June 2015, date corrected to reflect its prior revision with the issuance of Addendum 5 in Oct. 2014.</li> </ol>
<b>P-6</b>	<ol style="list-style-type: none"> <li>1. <b>Note 2:</b> “ ”d” = 6’ MINIMUM AND LESS THAN 12’ OR GREATER THAN 20” <b>Revised to read:</b> “DRIVEWAY SPACING, ”d”, SHALL BE 6’ MIN.”</li> <li>2. <b>Note 3:</b> “THE TRAFFIC ENGINEER MAY APPROVE &gt;35’, &lt;40””, <b>Revised to read:</b> “DRIVEWAY OPENINGS GREATER THAN 40” REQUIRE APPROVAL FROM THE CITY ENGINEER”</li> <li>3. <b>Note 4,</b> “IN COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY DEVELOPMENTS, CITY ENGINEER MAY APPROVE ≥ 40”” <b>Revised to read:</b> “IN COMMERCIAL, INDUSTRIAL AND MULTI-FAMILY DEVELOPMENTS, CITY ENGINEER MAY APPROVE LARGER APPROACHES IF WARRANTED”</li> <li>4. <b>Note 6:</b> “FOR COMMERCIAL, INDUSTRIAL OR MULTI-FAMILY: 16’ MIN.” <b>Revised to read:</b> “IF ONLY ONE ENTRANCE LOCAL STREET MIN. SHALL BE 16’, NOT 15’. EXCEPTION: SINGLE FAMILY RESIDENTIAL.”</li> </ol>

	<ol style="list-style-type: none"> <li>5. <b>Added Note 8:</b> "16' MIN WHEN TRASH ENCLOSURE ON-SITE (REVIEWED ON A CASE-BY-CASE BASIS)."</li> <li>6. <b>Added Note 9:</b> "RESIDENTIAL DRIVEWAY APPROACHES MUST MATCH THE WIDTH OF THE DRIVEWAY PAVEMENT AND THE WIDTH OF THE GARAGE. THE DRIVEWAY OPENING SHALL EQUAL THE WIDTH OF THE GARAGE DOOR (OR DOORS) PLUS 4' BUT SHALL NOT EXCEED THE MAXIMUM ALLOWABLE WIDTHS AS SHOWN ON THE TABLE, BELOW. THE DRIVEWAY OPENING SHALL BE CENTERED ON THE GARAGE DOOR(S)."</li> </ol>
<b>P-9</b>	<ol style="list-style-type: none"> <li>1. <b>Added Detail,</b> "RESIDENTIAL STREET WITH WEDGE CURBS AND ADJACENT SIDEWALKS"</li> <li>2. <b>Updated</b> expansion joint <b>detail</b> callout to reference current Caltrans specification: "SEE STATE SPEC. 51-1.12C..." Revised to read: "SEE STATE SPEC. 51-2.01C(1)..."</li> </ol>
<b>P-12</b>	<ol style="list-style-type: none"> <li>1. <b>Updated</b> expansion joint <b>detail callout</b> to reference current Caltrans specification: "SEE STATE SPEC. 51-1.12C..." Revised to read: "SEE STATE SPEC. 51-2.01C(1)..."</li> <li>2. <b>Callout:</b> "2X6 REDWOOD HEADER (TYP) Revised to read: "WHERE REQUIRED PROVIDE 2"x6" REDWOOD HEADER (TYP.)"</li> <li>3. <b>Revised</b> expansion joint <b>spacing</b> to 45' (from 90') for 4' valley gutter.</li> </ol>
<b>P-17</b>	<ol style="list-style-type: none"> <li>1. Revised Title Block to include area for revision annotation.</li> </ol>
<b>P-28</b>	<ol style="list-style-type: none"> <li>1. Drawing revised to include 12" <b>grooved border</b> as an "<b>optional</b>" feature to assist with working the concrete. Also included "Grooved Border" detail.</li> <li>2. <b>Note 3</b> was <b>amended</b> to incorporate Note 10.</li> <li>3. <b>Note 11</b> is now <b>Note 10</b>.</li> <li>4. <b>Note 12</b> was <b>removed</b> from the standard.</li> <li>5. <b>Added reference</b> to P-32 for the Detectable Warning Device.</li> <li>6. <b>Removed callout</b> for 4' min. sidewalk width.</li> </ol>
<b>P-29</b>	<ol style="list-style-type: none"> <li>1. Created alternate detail (Detail B) for condition when landing at bottom of ramp exceeds 5'-0".</li> <li>2. <b>Added Note 1,</b> updated numbering for Notes 2 through 5.</li> <li>3. <b>Note 3</b> (was note 2) <b>revised</b> to comply with MUTCD and accommodate new Detail B.</li> <li>4. <b>Added Note 10</b> regarding optional 12" grooved border.</li> <li>5. <b>Added</b> (optional) <b>grooved border</b> to details.</li> <li>6. <b>Modified</b> the following <b>callouts</b>: <ol style="list-style-type: none"> <li>a. "TAPER CURB FROM 6" TO ½" BEVEL" Revised to read: "TAPER CURB FROM 6" TO FLUSH".</li> <li>b. "2% MAX. SLOPE DETECTABLE WARNING DEVICES REQUIRED SEE P-32" Revised to read: "DETECTABLE WARNING DEVICES PER CITY STD. DWG. P-32".</li> <li>c. "NOTE: SLOPE 5% MAX ON GUTTER IN RAMP AREA" Revised to: "SLOPE 5% MAX IN GUTTER AND ADJACENT PAVING IN RAMP AREA"</li> <li>d. "6" WIDE RETAINING CURB WITH VARIABLE HEIGHT" Revised to: "RETAINING CURB: 0"-6"</li> </ol> </li> <li>7. <b>Deleted</b> the following <b>callouts and dimensions</b>: <ol style="list-style-type: none"> <li>a. "6" STANDARD CURB"</li> <li>b. "4' WALK MIN."</li> <li>c. "8' MIN."</li> <li>d. "10% MAX CROSS SLOPE"</li> <li>e. "8.33% MAX SLOPE"</li> <li>f. "MEET TOP OF CURB"</li> </ol> </li> <li>8. <b>Added</b> depiction of <b>level-landing</b> at top of ramp as required by Note 6.</li> </ol>
<b>P-31</b>	<ol style="list-style-type: none"> <li>1. <b>Note 5 revised</b> to denote it as an optional feature.</li> <li>2. <b>Note 8 revised</b> to reflect a minimum width of 5'.</li> <li>3. <b>Note 11 removed</b> and <b>Note 12 renumbered</b> to 11.</li> <li>4. <b>Note 13 renumbered</b> to 12 and text has been revised to match current MUTCD language.</li> <li>5. <b>Added Note 13:</b> "PUSHBUTTONS FOR ACCESSIBLE PEDESTRIAN SIGNALS SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO THE CROSSWALK LINE FURTHEST FROM THE CENTER OF THE INTERSECTION AND AS CLOSE AS POSSIBLE TO THE CURB RAMP. IF TWO ACCESSIBLE PEDESTRIAN PUSHBUTTONS ARE PLACED LESS THAN 10 FEET APART OR ON THE SAME POLE, EACH ACCESSIBLE</li> </ol>

	<p>PEDESTRIAN PUSHBUTTON SHALL BE PROVIDED WITH A PUSHBUTTON LOCATOR TONE, TACTILE ARROW, SPEECH WALK MESSAGE FOR THE WALK INDICATION, AND A SPEECH PUSHBUTTON INFORMATION MESSAGE. REFER TO CA-MUTCD FOR SPECIFIC GUIDANCE.”</p> <p>6. <b>Ramp width increased</b> to 5’ minimum for ADA turning compliance.</p>
<b>P-32</b>	<ol style="list-style-type: none"> <li>1. <b>Revised dome dimensions</b> to reflect current CBC.</li> <li>2. <b>Revised Note 1</b> to reflect 2016 revision of CBC.</li> <li>3. <b>Added detail</b> for tapering edge of surface-mounted panels.</li> </ol>
<b>P-33</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing renumbered</b> “P-33A”. See P-33A for description of technical changes.</li> </ol>
<b>P-33A</b>	<ol style="list-style-type: none"> <li>1. Slab thickness changed from 4” to 6”</li> </ol>
<b>P-33B</b>	<ol style="list-style-type: none"> <li>1. <b>New Standard Drawing:</b> “MULTI-FAMILY TYPICAL REFUSE CONTAINER ENCLOSURE DETAILS” for enclosure Exhibits A and B.</li> </ol>
<b>P-33C</b>	<ol style="list-style-type: none"> <li>1. <b>New Standard Drawing:</b> “MULTI-FAMILY TYPICAL REFUSE CONTAINER ENCLOSURE DETAILS” for enclosure Exhibit C.</li> </ol>
<b>P-41</b>	<ol style="list-style-type: none"> <li>1. <b>Revised relative location</b> of reclaimed water main and setback to face of curbs.</li> </ol>
<b>P-42</b>	<ol style="list-style-type: none"> <li>1. <b>Revised relative location</b> of reclaimed water main and setback to face of curbs.</li> </ol>
<b>P-52</b>	<ol style="list-style-type: none"> <li>1. <b>Removed</b> requirement for <b>2’ pedestrian easement</b>.</li> <li>2. <b>Sidewalk width reduced</b> to 4’ for Cases 1, 2, and 3 on side with planter.</li> </ol>
<b>P-53</b>	<ol style="list-style-type: none"> <li>1. <b>Removed</b> optional 12’ sidewalk pattern with <b>2’ pedestrian easement</b> requirement.</li> <li>2. <b>Sidewalk width</b> reduced to 4’ for both street classifications.</li> </ol>
<b>P-56</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing renumbered</b> P-56A. See P-56A for description of technical changes.</li> </ol>
<b>P-56A</b>	<ol style="list-style-type: none"> <li>1. <b>Added:</b> “SEE API-4 THRU API-9 FOR S. MINNEWAWA AVE. BETWEEN BUTLER AVE. AND FANCHER CREEK AND FOR VAN NESS EXTENSION BETWEEN HERNDON AVE. AND SAN JOAQUIN RIVER BLUFF.” to title block.</li> <li>2. Where <b>asterisks “*”</b> were <b>previously</b> used to <b>referenced notes</b>, numbering has been added to the cross-sections.</li> <li>3. <b>Note 3</b>, “( ) INDICATE AN ALTERNATIVE CROSS-SECTION LAYOUT” was <b>removed</b>.</li> <li>4. <b>Note 2 (existing) renumbered</b> to Note 3.</li> <li>5. <b>Added (new) Note 2:</b> “FOR DRIVEWAY DETAIL SEE STREET SECTIONS THAT MAY BE USED, SEE P.W. STD. DWGS. P-1, P-2, P-3, AND P-6.”</li> </ol>
<b>P-56B</b>	<ol style="list-style-type: none"> <li>1. <b>New Standard Drawing:</b> “LOCAL STREET CROSS-SECTIONS WITH WEDGE CURBS”</li> </ol>
<b>P-58</b>	<ol style="list-style-type: none"> <li>1. <b>Corrected</b> the trail <b>width</b> shown on the plan view.</li> <li>2. <b>Revised Note 3</b> to remove: “MINIMUM RADIUS AT CENTERLINE OF TRAIL SHALL BE 160’.”</li> <li>3. <b>Revised Note 5</b> to include reference to Detail 27B for edge line.</li> </ol>
<b>P-61</b>	<ol style="list-style-type: none"> <li>1. Added requirement for three (3) rows of 4” reflective tape to be installed at the top of the bollards for enhanced nighttime visibility by trail users.</li> <li>2. Added dimension: “20’ FROM TOP OF RAMP” to indicate minimum separation between ramp and location of bollards.</li> <li>3. Revised dimension for separation between posts to reflect the clear space between adjacent posts.</li> </ol>
<b>P-67</b>	<ol style="list-style-type: none"> <li>1. <b>Driveway depth reduced</b> from 7.5’ to 2.0’, graphical edits made to drawing accordingly.</li> <li>2. <b>Note 2:</b> “A 36” MINIMUM SIDEWALK AREA BEHIND RAMP SHALL BE MAINTAINED WITH 10’ PATTERN OR LESS” <b>Revised to read:</b> “A 4.0’ MIN. SIDEWALK AREA BEHIND RAMP SHALL BE MAINTAINED. A PEDESTRIAN EASEMENT IS REQUIRED WHEN PATTERN IS LESS THAN 6’.”</li> <li>3. <b>Note 3:</b> “CURB TOP AND FACE SHALL BE PAINTED RED” <b>Revised to read:</b> “CURB TOP AND FACE SHALL BE PAINTED RED WITH TRAFFIC-RATED PAINT, TWO (2) COATS MIN.”</li> </ol>

	<ol style="list-style-type: none"> <li>4. <b>Added Note 4:</b> "6' MIN. SIDEWALK REQUIRED ON MAJOR STREETS, 4' MIN. REQUIRED ON LOCAL STREETS."</li> <li>5. Graphical changes made for clarity and conformance with related standard drawings.</li> </ol>
<b>P-69</b>	<ol style="list-style-type: none"> <li>1. <b>Added "Conflict-zone" striping</b> to drawing.</li> <li>2. <b>Added callout:</b> "INSTALL "CONFLICT-ZONE" STRIPING AS REQ'D PER STD. DWG. P-81A (TYP.)"</li> <li>3. <b>Note 3:</b> "WHEN INSTALLING A NEW SIGNAL, BIKE LANE LOOPS SHALL BE INSTALLED AT INTERSECTION FOR DETECTION" <b>Revised to read:</b> "WHEN INSTALLING A NEW SIGNAL, VEHICLE AND BICYCLE DETECTION LOOPS SHALL BE INSTALLED AT INTERSECTION PER STD. DWG. E-13 AND E-14."</li> </ol>
<b>P-70</b>	<ol style="list-style-type: none"> <li>1. <b>Added "Conflict-zone" striping</b> to drawing.</li> <li>2. <b>Added callout:</b> "INSTALL "CONFLICT-ZONE" STRIPING AS REQ'D PER STD. DWG. P-81A (TYP.)"</li> <li>3. <b>Note 3:</b> "WHEN INSTALLING A NEW SIGNAL, BIKE LANE LOOPS SHALL BE INSTALLED AT INTERSECTION FOR DETECTION" <b>Revised to read:</b> "WHEN INSTALLING A NEW SIGNAL, VEHICLE AND BICYCLE DETECTION LOOPS SHALL BE INSTALLED AT INTERSECTION PER STD. DWG. E-13 AND E-14."</li> <li>4. <b>Added Note 6:</b> "OPPOSING DUAL-LEFT TURNS SHALL BE ANALYZED FOR CONFLICTS USING AUTO-TURN OR EQUIVALENT SOFTWARE. RESULTS SHALL BE PROVIDED TO, AND APPROVED BY, TRAFFIC ENGINEERING STAFF."</li> </ol>
<b>P-72</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title:</b> "BUS SHELTER ELECTRICAL LAYOUT" <b>Revised to read:</b> "BUS STOP WITH SHELTER LAYOUT"</li> <li>2. All references to electrical conduits and related equipment have been removed.</li> <li>3. A number of new bus stop appurtenances and furniture have been added to the detail including significant dimensional changes</li> </ol>
<b>P-73</b>	<ol style="list-style-type: none"> <li>1. <b>Dimension:</b> "FAR SIDE INTERSECTION" (8") <b>Revised to read:</b> " 8' " .</li> </ol>
<b>P-79</b>	<ol style="list-style-type: none"> <li>1. Existing NOTES have been numbered.</li> <li>2. References to <b>minimum bike lane widths changed</b> to 6' when adjacent to on-street parking.</li> <li>3. <b>Note 1:</b> "TO THE GREATEST EXTENT POSSIBLE, CASE I BIKE LANES WILL BE INSTALLED. CONSIDERATION WILL BE GIVEN TO 5-FOOT BIKE LANES (MEASURED FROM FACE OF CURB), REDUCED LANE WIDTH, AND/OR ELIMINATION OF TRAFFIC LANES. A TRAFFIC STUDY TO INVESTIGATE, BUT NOT LIMITED TO, TRAFFIC SPEED, SPEED LIMITS, TYPE OF CORRIDOR, AND VOLUMES FOR CARS AND TRUCKS, MAY BE DEVELOPED BEFORE TRAVEL LANES ARE ELIMINATED AND/OR REDUCED IN WIDTH." <b>Revised to read:</b> "TO THE GREATEST EXTENT POSSIBLE, CASE I BIKE LANES WILL BE INSTALLED WITH ALL NEW INDUSTRIAL, COLLECTOR OR ARTERIAL STREET DEVELOPMENTS OR RECONSTRUCTION. WHEN AVAILABLE SPACE IN THE ROADWAY DOES NOT ALLOW FOR THE MINIMUM STANDARD WIDTHS, CONSIDERATION WILL BE GIVEN TO NARROWED TRAVEL LANES OR ELIMINATION OF TRAVEL LANES BEFORE CONSIDERING NARROWING OR ELIMINATING BIKE LANES. A TRAFFIC STUDY TO INVESTIGATE TRAFFIC SPEED, SPEED LIMITS, TYPE OF CORRIDOR, VOLUMES FOR CARS AND TRUCKS (OR OTHER DATA AS REQUESTED BY THE CITY TRAFFIC ENGINEER) MAY BE REQUIRED BEFORE ANY PROPOSED TRAVEL OR BIKE LANE REDUCTIONS ARE ALLOWED."</li> <li>4. <b>Note 2:</b> "NO STOPPING AT ANY TIME" SIGNS WILL BE INSTALLED AT 200 FOOT INTERVALS. (OR AT INTERVALS DETERMINED BY EXISTING STREETLIGHT POLES) WHEN STRIPING A CASE I BIKE LANE." <b>Revised to read:</b> "WHEN STRIPING A CASE I BIKE LANE, R-28(S) "NO STOPPING AT ANY TIME" SIGNS WILL BE INSTALLED AT 200' MAXIMUM INTERVALS (OR AT INTERVALS DETERMINED BY EXISTING STREETLIGHT POLES)."</li> <li>5. <b>Added Note 3:</b> "ALL STRIPING SHALL BE THERMOPLASTIC, BIKE LANE MARKINGS SHALL BE TRAFFIC PAINT PER CALTRANS SPECIFICATIONS OR METHYL METHACRYLATE (MMA). REFERENCE DETAIL P-80 FOR PROPER PLACEMENT AND INSTALLATION OF BIKE LANE SYMBOLS AND P-81A/B FOR "CONFLICT-ZONE" MARKINGS AND MMA REQUIREMENTS."</li> </ol>

	<p>6. <b>Callout(s):</b> "CENTER SYMBOL WITHIN 5' BIKE LANE" <b>Revised to read:</b> "CENTER CALTRANS A24C, "BIKE LANE SYMBOL WITH PERSON" AND CALTRANS A24A, "BIKE LANE ARROW" WITHIN 5' BIKE LANE".</p> <p>7. <b>Callout(s)</b> for "4" (and) 6" SOLID WHITE STRIPE" <b>Revised to read:</b> "4" WHITE STRIPE PER DETAIL 27B" and "6" WHITE STRIPE PER DETAIL 39 OR 39A, AS APPROPRIATE".</p> <p>8. <b>Dimension:</b> "8' MIN. PARKING" <b>Revised to read:</b> "8' PARKING".</p>
<b>P-80</b>	<p>1. <b>Added detail</b> for Class III bike lanes (shared travel lane) with symbol and signage required when using a "SHARROW" within the roadway.</p> <p>2. <b>Added detail</b> for Class III bike lanes (shared travel lane) with symbol and signage required when using a "SHARROW" within a right-turn lane.</p> <p>3. <b>Added callout:</b> "SHARED ROADWAY SYMBOL "SHARROW" PER MUTCD (CA) FIGURE 9C-9, SEE NOTE 4".</p> <p>4. <b>Added callout:</b> "R4-11 PER MUTCD (CA), SEE NOTE 4."</p> <p>5. <b>Added callout:</b> "R81 PER MUTCD (CA), SEE NOTE 3."</p> <p>6. <b>Added callout:</b> "R3-7 with R118(CA) per MUTCD (CA)"</p> <p>7. <b>Added dimension:</b> "5' MINIMUM, REF. P-79"</p> <p>8. <b>Added dimension:</b> "SHARED TRAVEL LANE"</p> <p>9. <b>Added references</b> to Detail 39/39A where "6" WHITE STRIPE" was used.</p> <p>10. <b>Callout:</b> "MARKINGS (SEE NOTE 1)" <b>Revised to read:</b> ""BIKE LANE ARROW" PER CALTRANS A24A &amp; "BIKE LANE SYMBOL WITH PERSON" PER A24C, SEE NOTE 1"</p> <p>11. <b>Note 1:</b> "THE BICYCLE SYMBOL PAVEMENT MARKINGS SHALL BE PLACED ON THE FAR SIDE OF EACH INTERSECTION, 25' FROM THE RETURN. 800' MAXIMUM SPACING. THEY MAY BE PLACED AT OTHER LOCATIONS AS DESIRED." <b>Revised to read:</b> "BICYCLE LANE PAVEMENT MARKING SYMBOLS SHALL BE PLACED ON THE FAR SIDE OF EACH INTERSECTION, 25' FROM THE RETURN, AT 800' MAXIMUM SPACING. THEY MAY ALSO BE PLACED AT OTHER LOCATIONS AS DESIRED AND APPROVED BY THE CITY TRAFFIC ENGINEER."</p> <p>12. <b>Note 2:</b> "WHERE MOTORIST RIGHT TURNS ARE PERMITTED, THE SOLID BIKE LANE LINE SHALL BE DASHED UP TO THE INTERSECTION, AS SHOWN, BEGINNING AT A POINT 100' IN ADVANCE OF THE INTERSECTION. A DISTANCE OF 200' SHALL BE USED ON ARTERIALS AND SUPER ARTERIALS WITH A POSTED SPEED LIMIT OF 45 MPH OR GREATER. WHEN RIGHT TURNS ARE PROHIBITED, THE BIKE LANE LINE SHALL BE SOLID TO THE INTERSECTION." <b>Revised to read:</b> "WHERE MOTORIST RIGHT TURNS ARE PERMITTED, THE SOLID BIKE LANE LINE (DETAIL 39) SHALL BECOME DASHED UP TO THE INTERSECTION (DETAIL 39A), BEGINNING AT A POINT 100' IN ADVANCE OF THE INTERSECTION. A DISTANCE OF 200' SHALL BE USED ON ARTERIALS AND SUPER-ARTERIALS WITH A POSTED SPEED LIMIT OF 45 MPH OR GREATER. WHEN RIGHT TURNS ARE PROHIBITED, THE BIKE LANE LINE SHALL BE SOLID (DETAIL 39) TO THE INTERSECTION."</p> <p>13. <b>Note 4</b> (existing) <b>renumbered</b> to Note 6.</p> <p>14. <b>Note 4</b> (new) <b>added:</b> "FOR CLASS III BIKE LANES, AN R4-11 SIGN SHALL BE INSTALLED ON THE FAR SIDE OF EACH INTERSECTION AND AT 800' MAXIMUM SPACING. WITH APPROVAL FROM THE CITY TRAFFIC ENGINEER, THIS SIGNAGE MAY BE SUPPLEMENTED WITH PAINTED "SHARROWS" PER MUTCD (CA) FIG. 9C-9."</p> <p>15. <b>Note 5</b> (new) <b>added:</b> "FOR SHARROW PLACEMENT IN RIGHT TURN LANES REFER TO MUTCD (CA) FIG. 9C-111. R3-7 WITH R118 SIGNAGE MUST ALSO BE PROVIDED."</p>
<b>P-81A</b>	<p>1. New Standard Drawing: GREEN BIKE LANE: RIGHT-TURN AND DRIVEWAY CONFLICT ZONES.</p>
<b>P-81B</b>	<p>1. New Standard Drawing: GREEN BIKE LANE: TRAP-RIGHT CONFLICT ZONE</p>
<b>P-82</b>	<p>1. Minor drafting edits to highlight the requirement to remove existing longitudinal crosswalk stripes when installing the high-visibility crosswalk.</p>
<b>P-90</b>	<p>1. <b>Detail revised</b> to reflect new letter heights: (12" vs. 10" and 9" vs. 8")</p> <p>2. <b>Note 2:</b> "1" WHITE <i>BOARDER</i>" <b>Revised to read:</b> "1" WHITE <i>BORDER</i>"</p>

	<p>3. <b>Note 3:</b> "10" SERIES 'E' MODIFIED UPPER CASE LETTER – 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS A NARROWER SERIES IS PERMITTED." <b>Revised to read:</b> 12" SERIES 'E' MODIFIED UPPER CASE LETTER – 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS A NARROWER SERIES IS PERMITTED."</p> <p>4. <b>Note 4:</b> "8" SERIES 'E' MODIFIED LOWER CASE LETTER – 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS A NARROWER SERIES IS PERMITTED." <b>Revised to read:</b> "9" SERIES 'E' MODIFIED LOWER CASE LETTER – 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS A NARROWER SERIES IS PERMITTED."</p> <p>5. <b>Notes</b> were <b>renumbered</b> 1-7 (previously there were two #4's).</p> <p>6. <b>Callout:</b> "3/8" HOLE (SEE NOTE "G") <b>Revised to read:</b> "3/8" HOLE, SEE NOTE 7"</p> <p>7. <b>Callout:</b> "1"" <b>Revised to read:</b> "1" (TYP.)"</p>
<b>P-92</b>	<p>1. <b>Detail revised</b> to reflect new street name letter heights: (6" vs. 5") and to show mixed-case lettering for the street name instead of all caps.</p> <p>2. <b>Detail revised</b> to reflect larger street heading, road type and block number heights: (3" vs. 2")</p> <p>3. <b>Note 3:</b> "LETTERS ON STREET NAME SHALL BE A SERIES B, 5" UPPER CASE. THE SECONDARY DIRECTIONAL INDICATOR, STREET TYPE (AVE., BLVD. ETC) AND BLOCK NUMBERS SHALL BE 2" UPPER CASE. SIGN SHALL HAVE A 1/2" RADIUS CORNER WITH A ¼" OUTSIDE GREEN BORDER AND A 3/8" INSIDE BORDER." <b>Revised to read:</b> "LETTERS ON STREET NAME SHALL BE SERIES B, 6" UPPER CASE AND 4.5" LOWER CASE. THE SECONDARY DIRECTIONAL INDICATOR, STREET TYPE (AVE., BLVD. ETC) AND BLOCK NUMBERS SHALL BE 3" UPPER CASE. SIGN SHALL HAVE 1/2" RADIUS CORNERS WITH A 1/4" OUTSIDE GREEN BORDER AND A 3/8" INSIDE WHITE BORDER."</p>
<b>P-93 P-94 P-95</b>	<p>1. <b>Note 7:</b> "FOOTING CONCRETE SHALL BE A MINIMUM 2,000 PSI AT 28 DAYS" <b>Revised to read:</b> "FOOTING CONCRETE SHALL BE A MINIMUM 2,500 PSI AT 28 DAYS"</p>
<b>P-97</b>	<p>1. <b>Added Note 9:</b> "HYDROSEED BASIN SIDE SLOPES AND TOP AREAS IN ACCORDANCE WITH CALTRANS SPECIFICATION SECTION 21-1.03E AND MAINTAIN EROSION CONTROL MEASURES UNTIL SEEDING IS ESTABLISHED."</p>
<b>P-101</b>	<p>1. New Standard Drawing: "INTERSECTION SIGHT TRIANGLES: LOCAL/COLLECTOR/ARTERIAL"</p>
<b>DPU – WATER (W Series)</b>	
<b>W-1</b>	<p>1. Material Specification, <b>Note "A": 1-1/2"</b> meter lid specification: "ARMORCAST A6001969-COF" <b>Revised to read:</b> "OLDCASTLE FL30TP AMR MARKED "WATER"</p> <p>2. Material Specification, <b>Note "A": 2"</b> meter lid specification: "ARMORCAST A6001947T-COF" <b>Revised to read:</b> "OLDCASTLE FL36TP AMR MARKED "WATER"</p> <p>3. Material Specifications, <b>Note "E": "1 ½" OR 2"</b> CAST IRON FLANGE" <b>Revised to read:</b> "1-1/2" OR 2" METER FLANGE W/5/8"x3" HH PLATED BOLTS &amp; NUTS".</p> <p>4. Material Specifications, <b>Note "F": "FLANGED METER SPOOL (SCH 80)..."</b> <b>Revised to read:</b> "1-1/2" METER: BADGER M120 W/R120 REGISTER OR APPROVED EQUAL OR 2" METER, BADGER M170 W/R170 REGISTER OR APPROVED EQUAL.</p> <p>5. <b>Added:</b> Material Specifications, <b>Note "O": "TRANSMITTER: GALAXY TR3 OR APPROVED EQUAL."</b></p>
<b>W-2</b>	<p>1. Material Specification, <b>Note "A": 1-1/2"</b> meter lid specification: "ARMORCAST A6001947T-COF" <b>Revised to read:</b> "OLDCASTLE FL16 TP MARKED "WATER"</p> <p>2. Material Specifications, <b>Note "D": "1 ½" SLIP X 1" MALE ADAPTER (SCH. 80)"</b> <b>Revised to read:</b> "1-½" SLIP X 1" BRASS MALE NPT ADAPTER (SCH. 80)"</p> <p>3. Material Specifications, <b>Note "G": "1 ¼" X 10 ¾" PVC METER SPOOL (SCH 80)"</b> <b>Revised to read:</b> "1" METER: BADGER M55 W/R55 REGISTER OR APPROVED EQUAL"</p> <p>4. <b>Added:</b> Material Specifications, <b>Note "P": "TRANSMITTER: GALAXY TR3 OR APPROVED EQUAL."</b></p>
<b>W-3</b>	<p>1. <b>Removed</b> the depiction of rock bedding from drawing.</p> <p>2. <b>Removed callout:</b> "SURROUND BASE WITH 6" OF ¾" CRUSHE GRAVEL".</p>



	<ol style="list-style-type: none"> <li>3. <b>Callout:</b> "WEEP HOLE FOR DRAINAGE" <b>Revised to read,</b> "PLUG WEEP HOLE".</li> <li>4. <b>Added callout:</b> "MAINTAIN 36" CLEAR, MIN."</li> <li>5. Consolidated various notes into "NOTES" list.</li> </ol>
<b>W-4</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>W-6</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>W-7</b>	<ol style="list-style-type: none"> <li>1. <b>Added</b> Tracer Wire and associated callouts.</li> </ol>
<b>W-11</b> <b>W-12</b>	<ol style="list-style-type: none"> <li>1. Removed reference to W-6.</li> <li>2. <b>Added callout:</b> "PROVIDE THRUST RESTRAINT JOINTS PER STD. DWGS. W-31 TO W-32"</li> </ol>
<b>W-13</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing reflects <b>significant changes</b> from previous version, including requirement to install water meter box and above-grade enclosure and various material changes.</li> <li>2. <b>Added callout:</b> "INSTALL METER BOX AND ANGLE STOP. REF. STD. DWG. W-1 FOR REQUIREMENTS"</li> <li>3. <b>Added callout:</b> "COMP x COMP 90° ELL, A.Y. McDONALD "NO LEAD" 74761-22 OR APPROVED EQUAL"</li> <li>4. <b>Callout:</b> "1" CORPORATON STOP" <b>Revised to read:</b> "1" – 2" BRONZE CORPORATION STOP".</li> <li>5. <b>Callout:</b> "3/4" BALL VALVE" <b>Revised to read:</b> "BRASS BALL VALVE".</li> <li>6. <b>Callout:</b> "POLYETHYLENE SERVICE TUBING" <b>Revised to read:</b> "TYPE "K" COPPER"</li> <li>7. <b>Added callout:</b> "TYPE "K" COPPER (SWEEP)"</li> <li>8. <b>Added callout:</b> "OPTIONAL SWEEP"</li> <li>9. <b>Added callout:</b> "GALV. STEEL VENT W/DOWN-TURN AIR STRAINER"</li> <li>10. <b>Modified detail</b> for concrete pad to include steel reinforcement.</li> <li>11. <b>Note 2:</b> "VALVE ASSEMBLY AND METAL HOUSING SHALL BE LOCATED IN MEDIAN ISLANDS, LANDSCAPE AREAS OR OUTSIDE OF SIDEWALK AREA WHERE POSSIBLE" <b>Revised to read:</b> "VAL-MATIC (MODEL 3/4-25VC) VALVE ASSEMBLY AND METAL HOUSING SHALL BE LOCATED IN MEDIAN ISLANDS, LANDSCAPE AREAS OR OUTSIDE OF SIDEWALK AREA WHERE POSSIBLE."</li> <li>12. <b>Added Note 3:</b> "GALVANIZED PIPES SHALL BE WRAPPED IN TWO LAYERS OF 10 MIL TAPE."</li> <li>13. <b>Added Note 4:</b> "PROVIDE 4' MIN. SIDEWALK CLEARANCE ADJACENT TO AIR-VAC DEVICE FOR ADA"</li> </ol>
<b>W-14</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>W-16</b>	<ol style="list-style-type: none"> <li>1. <b>Note 2:</b> "CHECK VALVE TO BE TAPPED AND PLUGGED (FOR INSTALLATION OF BYPASS METER PIPING BY CITY FORCES)." <b>Revised to read:</b> "CHECK VALVE TO BE TAPPED TO ACCOMMODATE INSTALLATION OF BYPASS METER PIPING BY CONTRACTOR."</li> <li>2. <b>Added inset detail:</b> "TYPICAL HINGED LID"</li> </ol>
<b>W-17</b>	<ol style="list-style-type: none"> <li>1. Material List: <ol style="list-style-type: none"> <li>a. <b>Item #5,</b> "3/4" BRASS TEE", <b>Removed</b></li> <li>b. <b>Item #6,</b> "3/4" BENT NOSE HOSE BIBB", <b>Removed</b></li> <li>c. <b>Item #11,</b> "3/4" BRASS 90° ELL", <b>Quantity changed from one (1) to two (2)</b></li> <li>d. <b>Item #13</b> components <b>renumbered</b> to 13.1 and 13.2</li> </ol> </li> <li>2. Bent Hose Bibb removed from drawing, piping Revised accordingly.</li> </ol>
<b>W-22</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>W-23</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title:</b> "FIRE HYDRANT INSTALLATION WITH GUARD POSTS" <b>Revised to read,</b> "FIRE HYDRANT INSTALLATION WITH FLEXIBLE POSTS"</li> <li>2. <b>Steel guard posts</b> and references to steel guard posts have been <b>removed and replaced</b> with flexible posts.</li> </ol>

	<p>3. <b>Added callout:</b> “MAINTAIN 36” CLEAR SPACE AROUND PERIMETER OF HYDRANT FOR OPERATION (POSTS AS SHOWN ARE AN ALLOWED EXCEPTION)”</p> <p>4. <b>Note 1,</b> “THE MAINTENANCE OF THE FIRE HYDRANT PROTECTOR POST SHALL BE THE RESPONSIBILITY OF THE HOMEOWNERS’ ASSOCIATION, WITHIN PRIVATE STREETS” <b>Revised to read:</b> “THIS STANDARD DRAWING IS APPLICABLE ONLY TO CITY OF FRESNO OWNED AND MAINTAINED FIRE HYDRANTS; PRIVATE HYDRANTS SHALL ADHERE TO PROTECTION CONDITIONS AND RELATED REQUIREMENTS AS SET FORTH BY THE FIRE DEPARTMENT.”</p>
<b>W-24</b>	<p>1. Drawing has been Revised in its entirety, as follows:</p> <ul style="list-style-type: none"> <li>a. Supporting block quantity and materials have been updated.</li> <li>b. Additional requirements for stainless steel casing added.</li> <li>c. Steel casing schedule added to standard drawing.</li> <li>d. Notes have been completely rewritten.</li> </ul>
<b>W-29</b>	<p>1. <b>Drawing title:</b> “WATER MAIN BEDDING DETAILS” <b>Revised to read:</b> “WATER MAIN TRENCH, BEDDING, AND BACKFILL DETAIL”</p> <p>2. <b>Drawing has been revised in its entirety</b> to reflect current installation standards.</p>
<b>W-37</b>	<p>1. The following changes have been made to the drawing:</p> <ul style="list-style-type: none"> <li>a. <b>Plan view:</b> of Fire Hydrant <b>Revised</b> to reflect current Fire Hydrant style.</li> <li>b. <b>Moved:</b> “CONTROL VALVE” to Tee.</li> <li>c. <b>Changed:</b> “CONTROL VALVE” to “GATE VALVE”</li> <li>d. <b>Added:</b> “FLANGE X FLANGE” between Control Valve and Tee.</li> <li>e. <b>Changed:</b> “FLANGE X FLANGE” to “FLANGE X MECHANICAL”</li> <li>f. <b>Added:</b> Tracer Wire.</li> <li>g. <b>Added callout:</b> “PLUG WEEP HOLE”</li> <li>h. <b>Added depiction:</b> Retainer Glands shown throughout drawing to reflect full restraints.</li> <li>i. <b>Added callout:</b> “MAXIMUM BURY LENGTH NOT TO EXCEED 54” (EXTENSIONS INCLUDED)”.</li> </ul>
<b>W-40</b>	<p>1. <b>Added Note 5:</b> “BY-PASS MATERIAL, 2 INCHES AND GREATER, SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.”</p> <p>2. <b>Added callout:</b> “MIN. METER BOX/VAULT SIZE PER TABLE BELOW”.</p> <p>3. <b>Table title:</b> “MINIMUM VAULT SIZE” <b>Revised to read:</b> “MINIMUM METER BOX/VAULT SIZE”.</p> <p>4. Changed dimension text to all capital letters for consistency.</p>
<b>W-41</b>	<p>1. <b>Added Note 7:</b> “BY-PASS MATERIAL, 2 INCHES AND GREATER, SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.”</p> <p>2. <b>Added callout:</b> “MIN. METER BOX/VAULT SIZE PER TABLE BELOW”.</p> <p>3. <b>Table title:</b> “MINIMUM VAULT SIZE” <b>Revised to read:</b> “MINIMUM METER BOX/VAULT SIZE”.</p>
<b>W-42</b>	<p>1. <b>Drawing title:</b> “FIRE SERVICE METER SETTING WITH BY-PASS” <b>Revised to read:</b> “COMPOUND FM METER SETTING WITH BY-PASS”</p> <p>2. <b>Added Note 5:</b> “BY-PASS MATERIAL, 2 INCHES AND GREATER, SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.”</p> <p>3. <b>Added callout:</b> “MIN. METER BOX/VAULT SIZE PER TABLE BELOW”.</p> <p>4. <b>Table title:</b> “MINIMUM VAULT SIZE” <b>Revised to read:</b> “MINIMUM METER BOX/VAULT SIZE”.</p>
<b>W-43</b>	<p>1. <b>Modified detail</b> to reflect the use of flanged connections at the TEE’s and risers.</p> <p>2. <b>Added callout:</b> “TO BE RETURNED TO CONTRACTOR AFTER WATER SYSTEM ACCEPTANCE AND FINAL WET-TIE BY CITY”.</p> <p>3. <b>General Notes</b> bullet list <b>changed</b> to numbered. <i>No technical changes made to Notes.</i></p>
<b>W-44</b>	<p>1. <b>Revised</b> standard drawing <b>to reflect</b> an installation that complies with the requirements of standard drawing W-2.</p>

	<ol style="list-style-type: none"> <li><b>Note 2:</b> "SAMPLING STATIONS SHALL BE 18" BURY, WITH A 1" MIP INLET AND A 1" FIP DISCHARGE. A ¼" BENT-NOSE SAMPLING BIBB SHALL BE LOCATED BEFORE THE DISCHARGE." <b>Revised to read:</b> "SAMPLING STATIONS SHALL BE 18" BURY, WITH A 1" FIP DISCHARGE. A ¼" BENT-NOSE SAMPLING BIBB SHALL BE LOCATED BEFORE THE DISCHARGE."</li> <li><b>Callout,</b> "¾" COPPER X 1" FIP ELBOW", <b>Revised to read:</b> "¾" BRASS X 1" FIP ELBOW"</li> <li><b>Callout,</b> "TYPE "K" SOFT DRAWN COPPER TUBING", <b>Revised to read:</b> "¾" TYPE "K" SOFT DRAWN COPPER TUBING"</li> <li>Drawing Revised as follows: "METER BOX EQUIPMENT VALVE RISER SET" has been replaced.</li> </ol>
<b>W-45</b>	<ol style="list-style-type: none"> <li><b>Legend Note 3:</b> "THE STATIC WATER LEVEL IS MORE THAN 5'" <b>Revised to read:</b> "THE STATIC WATER LEVEL IS MORE THAN 10'"</li> <li>BATCH TABLE <b>row 3:</b> "BENTONITE CEMENT GROUT" <b>removed.</b></li> <li>BATCH TABLE "cement" <b>unit measurement,</b> "sack" <b>Revised to read:</b> "sack lbs"</li> <li>BATCH TABLE "cement" <b>quantity changed</b> from "1" (sack) to "94" (sack lbs); applies to rows 1 &amp; 2.</li> <li>BATCH TABLE "sand" <b>quantity changed</b> from "85" to "188" (lbs); applies to row 1.</li> </ol>
<b>DPU – SEWER (S Series)</b>	
<b>S-1</b>	<ol style="list-style-type: none"> <li><b>Revised</b> drawing to <b>indicate</b> centerline of riser angle, angle dimension <b>moved</b> to centerline.</li> <li><b>Added</b> property line symbols (PL).</li> <li><b>Dimension,</b> "5' SEE TABLE DIST. "A", <b>Revised to read:</b> "4.5' MIN. 5.5' MAX. SEE TABLE DIST. "A"</li> <li><b>Dimension,</b> "3.9' MAX" <b>Revised to read:</b> "3.9' MIN."</li> <li><b>Dimension,</b> "6.3' MIN" <b>Revised to read:</b> "6.3' MAX."</li> <li><b>Callout,</b> "STREET GEN. LINE" <b>Revised to read:</b> "STREET CEN. LINE" (spelling error corrected)</li> </ol>
<b>S-2</b>	<ol style="list-style-type: none"> <li><b>General Note 2,</b> "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5300 SERIES, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE." <b>Revised to read:</b> "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURERS SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE."</li> <li><b>Dimension</b> on cross-section, "O.D. OF PIPE + 16" <b>Revised to read:</b> "O.D. OF PIPE + 16" OR 8" MIN. O.D."</li> </ol>
<b>S-3</b>	<ol style="list-style-type: none"> <li><b>Callout:</b> "SEE DRAWING S-5B OR *S-5B" <b>Revised to read:</b> "SEE DRAWING S-5A OR *S-5B"</li> <li><b>*NOTE:</b> "S-5B FOR 27" DIAMETER PIPES" <b>Revised to read:</b> "S-5B FOR 27" OR LARGER DIAMETER PIPES"</li> <li><b>General Note 1,</b> "PRECAST RISER SECTIONS, ADJUSTMENT RINGS AND TAPERED SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED" <b>Revised to read:</b> "PRECAST RISER SECTIONS, ADJUSTMENT RINGS &amp; TAPERED SECTIONS SHALL BE CLASS 2 R.C.P. IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED.</li> <li><b>General Note 2,</b> "THIS STANDARD DRAWING SHALL BE USED FOR SEWER PIPES WITH DIAMETERS OF UP TO 27'" <b>Revised to read:</b> "THIS STANDARD DRAWING SHALL BE USED FOR SEWER PIPES WITH DIAMETERS OF UP TO AND INCLUDING 27'"</li> <li><b>General Note 4,</b> "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5300 SERIES, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE." <b>Revised to read:</b> "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400, 405 OR 405FS, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX</li> </ol>

	<p>STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE."</p> <p>6. <b>Added Note 5:</b> "FOR SEWER LINES 12" TO 18", AND NOT WITHIN 600' OF A 30" OR LARGER SEWER MAIN, MAY USE SEWPERCOAT OR APPROVED EQUAL."</p>
<b>S-4</b>	<p>1. General <b>Note 1</b>, "PRECAST RISER SECTIONS, ADJUSTMENT RINGS AND TAPERED SECTIONS SHALL BE IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED" <b>Revised to read:</b> "PRECAST RISER SECTIONS, ADJUSTMENT RINGS &amp; TAPERED SECTIONS SHALL BE CLASS 2 R.C.P. IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED.</p> <p>2. General <b>Note 3</b>, "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5300 SERIES, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE." <b>Revised to read:</b> "MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE."</p>
<b>S-5B</b>	<p>1. <b>Note 7</b>, "ALL COMPONENTS SHALL BE BLACK COATED", <b>Revised to read:</b> "ALL COMPONENTS SHALL BE BLACK BITUMINOUS PAINT COATED IN ACCORDANCE WITH ISO 2531"</p> <p>2. <b>Added detail:</b> "LOCKING MECHANISM"</p> <p>3. <b>Added</b> locking mechanism installation <b>instructions</b></p> <p>4. <b>Added</b> inset <b>detail</b> for hinge debris hole</p>
<b>S-8</b>	<p>1. <b>Method 2</b>, "EPOXY BONDED SADDLE TEE" <b>Revised to read:</b> "SADDLE WYE OR TEE"; detail and notes changed accordingly.</p> <p>2. <b>Added Note:</b> "IF MACHINE CORE IS NOT CLEAN CUT (WITHOUT DAMAGE TO THE HOST PIPE) MUST USE METHOD 1 TO INSTALL HOUSE BRANCH"</p> <p>3. <b>Added callout:</b> "TEE BRANCHES NOT ALLOWED ON SEWER MAINS 6"-8" IN DIAMETER"</p>
<b>S-9</b>	<p>1. <b>Page title:</b> "HOUSE BRANCH SIZE-APPROVED CONNECTION METHOD" <b>Revised to read:</b> "HOUSE BRANCH SIZE-APPROVED CONNECTION METHOD (METHODS SHOWN ON S-8)"</p> <p>2. <b>Allowed methods table Revised</b> to include Method 2 for 4" H.B. going to 6" and 8" sewer mains.</p> <p>3. <b>Note 3:</b> "HOUSE BRANCH CONNECTIONS WITH AN APPROVED SADDLE TO EXISTING SEWER MAINS 10 INCHES AND LARGER BY OTHER THAN A MACHINE CORE SHALL NOT BE ALLOWED" <b>Revised to read:</b> "HOUSE BRANCH CONNECTIONS WITH AN APPROVED SADDLE TO EXISTING SEWER MAINS INSTALLED BY ANY OTHER METHOD THAN A MACHINE CORE SHALL NOT BE ALLOWED."</p> <p>4. <b>Added Note 6:</b> "ALL NEW HOUSE BRANCHES AND SERVICE LATERALS MUST BE INSTALLED GREATER THAN 5'-0" FROM OUTSIDE EDGE OF MANHOLE AND MUST BE BETWEEN TWO ACCESS STRUCTURES (I.E. MANHOLE, LAMPHOLE)."</p>
<b>S-10</b>	<p>1. <b>Added callouts and updated hatching</b> for "Paved" and "Unpaved" surface conditions.</p> <p>2. Minor edits to detail and callouts for clarity.</p>
<b>S-13A</b>	<p>1. <b>New Standard Drawing:</b> "PIPE/CONDUIT CROSSING UNDER EXISTING SEWER - CASE 1"</p>
<b>S-13B</b>	<p>1. <b>New Standard Drawing:</b> "PIPE/CONDUIT CROSSING UNDER EXISTING SEWER - CASE 2"</p>

**DPW – ELECTRICAL (E Series)**

<b>E-1</b>	<ol style="list-style-type: none"> <li>1. <b>Note #1 revised</b> to include year of issuance for Caltrans Specifications applicable to detail (1997).</li> <li>2. <b>Updated pull box</b> to include crushed rock sump base material. Pull box revised to match STD. DWG. E-4A.</li> <li>3. <b>Callout:</b> "ORIENTATE PEC TO THE NORTH", <b>Revised to read:</b> "ORIENT PEC TO THE NORTH"</li> <li>4. <b>Callout:</b> "WELD HAND HOLE COVER AFTER INSPECTION" <b>Revised to read:</b> "WELD STEEL HAND-HOLE COVER AROUND FULL PERIMETER AFTER INSPECTION".</li> <li>5. <b>Callout:</b> "TYPE "NM" CONDUIT, REFER TO TABLE ON STD. DWG. E-27 FOR MORE INFORMATION" <b>Revised to read:</b> "TYPE "NM" CONDUIT, REFER TO TABLE ON STD. DWG. E-27 FOR DETAIL AND MORE INFORMATION".</li> <li>6. <b>Callout:</b> "CONDUIT PER 23-3.11 AND STD. DWG. E-6" <b>Revised to read:</b> "CONDUIT PER SPEC. SECTION 23-3.11".</li> <li>7. <b>Callout:</b> "FUSE INSTALLED IN LUMINAIRE PER SPEC. SECTION 3.12" <b>Revised to read:</b> "FUSE INSTALLED IN LUMINAIRE PER SPEC. SECTION 1.23".</li> <li>8. <b>Callout:</b> "TWO (2) #10 STRANDED COPPER CONDUCTORS (THHN) TO FIXTURE." <b>Revised to read:</b> "TWO (2) #10 STRANDED COPPER CONDUCTORS (THHN) TO FIXTURE. REF. STD. DET. E-5".</li> <li>9. <b>Dimension</b> for luminaire arm length: "12" <b>Revised to read:</b> "SEE LMA CHART"</li> <li>10. <b>Added LMA chart</b> for required luminaire arm lengths.</li> <li>11. Numbered existing notes, no changes made to existing requirements.</li> </ol>
<b>E-2</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing sub-title:</b> "DIRECT BURY WITH NO BASE", <b>Revised to read:</b> "EMBEDDED POLE WITH NO FOUNDATION".</li> <li>2. <b>Callout:</b> "ORIENTATE PEC TO THE NORTH", <b>Revised to read:</b> "ORIENT PEC TO THE NORTH"</li> <li>3. <b>Callout:</b> "WELD HAND HOLE COVER AFTER INSPECTION", <b>Revised to read:</b> "WELD HAND HOLE COVER AROUND FULL PERIMETER AFTER INSPECTION".</li> <li>4. <b>Added</b> pull box to drawing detail inset</li> <li>5. Numbered existing notes with no technical changes made.</li> <li>6. <b>Note 6:</b> "A PULL BOX WILL BE REQUIRED WHEREVER CONDUIT CHANGES DIRECTION AND WHERE MULTIPLE LIGHTS ARE INSTALLED ON A SINGLE SERVICE. PULLBOX SPACING SHALL NOT EXCEED 200'. (SEE P.W. STD. E-4)", <b>Revised to read:</b> "A PULL BOX WILL BE REQUIRED WHEREVER CONDUIT CHANGES DIRECTION AND WHERE MULTIPLE LIGHTS ARE INSTALLED ON A SINGLE SERVICE. PULLBOX SPACING SHALL NOT EXCEED 200'. SEE STD. DWG'S E-4A THROUGH E-4C."</li> <li>7. <b>Added Note 7:</b> "THREE #6 COPPER CONDUCTORS (THHN) #8 WIRE MAY BE USED ON SINGLE POLE INSTALLATIONS"</li> <li>8. <b>Callout:</b> "TWO (2) #10 STRANDED COPPER CONDUCTORS (THHN) TO FIXTURE." <b>Revised to read:</b> "TWO (2) #10 STRANDED COPPER CONDUCTORS (THHN) TO FIXTURE. REF. STD. DET. E-5."</li> </ol>
<b>E-3</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title modified</b> to include: "TEMPORARY USE ONLY".</li> <li>2. GENERAL NOTES renamed: "NOTES". Individual notes were numbered but with no technical changes made.</li> <li>3. <b>Callout for Item 5:</b> "CONNECTOR SINGLE LIGHT "A" MULTIPLE LIGHTS "B", <b>Revised to read:</b> "CONNECTOR SINGLE LIGHT "A""</li> </ol>
<b>E-4A</b>	<ol style="list-style-type: none"> <li>1. <b>Updated pull box</b> and hatch for crushed rock sump.</li> <li>2. <b>Added</b> required thickness to pull box grout.</li> <li>3. <b>Added</b> grouted conduit cutouts.</li> </ol>
<b>E-4B</b>	<ol style="list-style-type: none"> <li>1. <b>Added</b> required thickness to pull box grout.</li> <li>2. Changed "DIRT" to "NON-CONCRETE" to identify a pull box which is not located in concrete sidewalk.</li> <li>3. <b>Added</b> grouted conduit cutouts.</li> <li>4. <b>Added</b> footnote to General Notes: "SPICES MUST BE APPROVED BY TSSL"</li> </ol>
<b>E-4C</b>	<ol style="list-style-type: none"> <li>1. Drawing title revised to specify: "LOCAL STREETS ONLY (RESIDENTIAL)"</li> </ol>

	<ol style="list-style-type: none"> <li>Added required thickness to pull box grout.</li> <li>Added Approved Locking Lid per Section 23-1.10 of City Specifications.</li> <li><b>Note 6:</b> "FUUSE AT POINT OF SERVICE SHALL BE 60A IF #6 CONDUCTOR AND 40A IF #8 CONDUCTOR AND SHALL HAVE A TRON HEJ TYPE FUSE HOLDER (SINGLE POLE). INSULATE WIRE CONNECTION SAME AS SPLICES (23-3.12)." <b>Revised to read:</b> "FUUSE AT POINT OF SERVICE SHALL BE 60A FOR #6 CONDUCTOR AND SHALL HAVE A TRON HEJ TYPE FUSE HOLDER (SINGLE POLE). INSULATE WIRE CONNECTION SAME AS SPLICES (23-3.12)."</li> </ol>
<b>E-5</b>	<ol style="list-style-type: none"> <li>Edits made to wiring diagram to show splices at hand hole.</li> <li>Note was numbered.</li> <li><b>Note 1:</b> "WITH EXCEPTION OF BONDING JUMPERS, NO SPLICES WILL BE ALLOWED IN PULL BOXES" <b>Revised to read:</b> "WITH EXCEPTION OF BONDING JUMPERS, NO SPLICES WILL BE ALLOWED IN PULL BOXES WITHOUT PRIOR APPROVAL AND THE INSTALLATION OF AN APPROVED LOCKING LID PER SECTION 23-1.10 OF CITY SPECIFICATIONS".</li> </ol>
<b>E-6</b>	<ol style="list-style-type: none"> <li><b>Amended Note 1</b> to include: "CONDUIT NOT PLACED UNDERNEATH CONCRETE SIDEWALK OR UNDERNEATH ROADWAYS SHALL BE GRC ENCASED IN A MINIMUM 4" WIDE TWO SACK CONCRETE SLURRY MIX."</li> <li><b>Added Note 5:</b> "STREETS LIGHTS ON MAJOR STREETS SHALL BE FED FROM A SERVICE PEDESTAL WITH A MASTER PHOTO CONTROL AS DETAIL SECTION 3-3.17 OF THE CITY SPECIFICATIONS AND STD. DWG'S. E-15, E-18, OR AS APPROVED BY CITY ENGINEER."</li> </ol>
<b>E-7</b>	<ol style="list-style-type: none"> <li>Drawing renumbered to E-7A. See E-7A for description of technical changes.</li> </ol>
<b>E-7A</b>	<ol style="list-style-type: none"> <li><b>Drawing title:</b> "STREETLIGHT-PLACEMENT DIVIDED ARTERIAL STREETS" <b>Revised to read:</b> "STREETLIGHT-PLACEMENT MAJOR STREETS"</li> <li>Updated web address for City of Fresno standard drawings.</li> <li>Updated to show independent street light systems on each side with 165' spacing on major streets.</li> </ol>
<b>E-7B</b>	<ol style="list-style-type: none"> <li><b>New Standard Drawing:</b> "STREETLIGHT-PLACEMENT MAJOR/LOCAL INTERSECTION".</li> </ol>
<b>E-8</b>	<ol style="list-style-type: none"> <li><b>Drawing title:</b> "STREETLIGHT – PLACEMENT COLLECTOR STREETS" <b>Revised to read:</b> "STREETLIGHT-PLACEMENT SIGNALIZED INTERSECTIONS".</li> </ol>
<b>E-9</b>	<ol style="list-style-type: none"> <li><b>Drawing renumbered</b> to E-9A. See E-9A for description of technical changes.</li> </ol>
<b>E-9A</b>	<ol style="list-style-type: none"> <li>Updated web address for City of Fresno standard drawings.</li> <li>Updated streetlight spacing on Local/Major streets.</li> <li>Updated streetlight spacing on Local streets.</li> </ol>
<b>E-9B</b>	<ol style="list-style-type: none"> <li><b>New Standard Drawing:</b> "STREETLIGHT-PLACEMENT LOCAL INTERSECTIONS"</li> </ol>
<b>E-10</b>	<ol style="list-style-type: none"> <li><b>Updated</b> Expressway/Arterial luminaire <b>spacing</b> for LED streetlight design.</li> </ol>
<b>E-11</b>	<ol style="list-style-type: none"> <li><b>Changed</b> certain <b>dimensions</b>, added notes and designations for LED streetlight design.</li> </ol>
<b>E-12</b>	<ol style="list-style-type: none"> <li>Standard Drawing no longer used.</li> </ol>
<b>E-13</b>	<ol style="list-style-type: none"> <li>Updated bike loop symbol.</li> <li><b>Note 2:</b> "ALL NEW LOOPS SHALL BE TESTED AND DOCUMENTED ON SHEET PROVIDED IN THE SECTION 23-2, TESTING SHALL BE TO CALTRANS STATE STANDARD PLANS." <b>Revised to read:</b> "ALL NEW LOOPS SHALL BE TESTED AND DOCUMENTED ON SHEET PROVIDED IN SECTION 23-2; TESTING SHALL BE PER CALTRANS STANDARD SPECIFICATIONS."</li> </ol>
<b>E-14</b>	<ol style="list-style-type: none"> <li><b>Note 1:</b> "CIRCULAR DETECTION SHALL BE DETERMINED BY THE CONDITION OF EXISTING PAVEMENT AND SHALL HAVE THE APPROVAL OF THE CITY TRAFFIC ENGINEER. CIRCULAR LOOP SAWCUTS SHALL BE PER CALTRANS ES-5B, LOOP SEALANT SHALL BE CALTRANS APPROVED ELASTOMERIC SEALANT OR HOT MELT RUBBERIZED ASPHALT SEALANT." <b>Revised to read:</b> "PAVEMENT SHALL BE DEEMED SUITABLE FOR INSTALLATION OF LOOP(S) BY CITY TRAFFIC</li> </ol>

	ENGINEER. IF DEEMED NO SUITABLE, PROJECT SHALL GRIND AND OVERLAY AND/OR RECONSTRUCT PAVEMENT AS DETERMINED BY CITY TRAFFIC ENGINEER.” 2. Added detector loop winding detail, revised legend to include references to detail.
<b>E-15</b>	1. Wiring schematic revised to reflect design of current manufacturer. 2. Switch amperage requirements updated
<b>E-21</b>	1. Clarified lock jaw lid note #32
<b>E-22</b>	1. Removed hand hole from pole.
<b>E-24</b>	1. Added pull box in front of service pedestal.
<b>E-24A</b>	1. Added pull box in front of service pedestal.
<b>E-24B</b>	1. <b>New Standard Drawing:</b> “SIGNAL LIGHT EQUIPMENT PLACEMENT DETAIL”.
<b>E-24C</b>	1. <b>NEW Standard Drawing:</b> “High-intensity Activated crossWalk (HAWK) Layout and Equipment Placement Guideline”
<b>E-28</b>	1. Standard Drawing no longer used.
<b>E-30</b>	1. <b>Added Note 4:</b> “MATCHING BASE BOLT COVERS SHALL BE INSTALLED”.
<b>E-31</b>	1. <b>Removed Note 2.</b> 2. <b>Existing Notes 3 and 4 renumbered</b> to 2 and 3. 3. <b>Added Note 4:</b> “MATCHING BASE BOLT COVERS SHALL BE INSTALLED”.
<b>E-32</b>	1. <b>Removed Note 2.</b> 2. <b>Existing Notes 3 and 4 renumbered</b> to 2 and 3. 3. <b>Added Note 4:</b> “MATCHING BASE BOLT COVERS SHALL BE INSTALLED”.
<b>E-33</b>	1. <b>Removed Note 2.</b> 2. <b>Existing Notes 3 and 4 renumbered</b> to 2 and 3. 3. <b>Added Note 4:</b> “MATCHING BASE BOLT COVERS SHALL BE INSTALLED”.
<b>E-34A</b>	1. Minor revisions to lower input panel diagram and Opticom <i>Field Wire</i> detail.
<b>E-34C</b>	1. Minor revisions to input lower panel diagram.
<b>E-34D</b>	1. <b>NEW Standard Drawing:</b> “HAWK Cabinet Wiring Diagram – NORTH/SOUTH”
<b>E-34E</b>	1. <b>NEW Standard Drawing:</b> “HAWK Cabinet Wiring Diagram – EAST/WEST”
<b>E-37</b>	1. Added Anchor Bolt detail and notes, updated dimensions.
<b>DPW – INTELLIGENT TRANSPORTATION SYTEM (ITS Series)</b>	
<b>ITS-1</b>	1. <b>Removed:</b> “RADAR DETECTOR” <b>from drawing and legend.</b> 2. <b>Removed:</b> “NO. 6 PULL BOX (FIBERLYTE LID)” <b>from drawing and legend.</b> 3. <b>Removed callout:</b> “4-1-½” HDPE ITS CONDUIT” <b>from drawing.</b> 4. <b>Removed linework</b> for 1-½” conduit related to #3, above.
<b>ITS-3</b>	1. <b>Added callout:</b> “SEE NOTE 11” 2. <b>Added conduit and callout</b> for 1-1/2” RGC between Traffic Signal Service Cabinet and PG&E No. 2 Service box. 3. <b>Legend:</b> "ITS CONDUIT" <b>Revised to read:</b> "ITS CONDUIT, HDPE CONDUIT" 4. <b>Legend:</b> “TRAFFIC SIGNAL CONDUITS” <b>Revised to read:</b> “TRAFFIC SIGNAL CONDUITS, RIGID GALVANIZED CONDUIT (RGC)” 5. <b>Note 2:</b> “ITS INTERSECTION COMMUNICATION CABINET PER CURRENT CITY OF FRESNO QUALIFIED PRODUCT LIST. (QPL)” <b>Revised to read:</b> “ITS INTERSECTON COMMUNICATIONS CABINET, SEE STD PLAN ITS-20A”

	6. <b>Added Note 11:</b> "INSTALL 1-1/2" RIGID CONDUIT"
<b>ITS-3A</b>	<ol style="list-style-type: none"> <li>1. <b>Added callout:</b> "SEE NOTE 12"</li> <li>2. <b>Added callout:</b> "2" RGC"</li> <li>3. <b>Removed:</b> Communications Cabinet <b>from drawing.</b></li> <li>4. <b>Removed:</b> ITS <b>conduit</b> from between 6(E) pullbox and Communication Cabinet.</li> <li>5. <b>Rerouted:</b> ITS <b>conduits</b> connecting 4'x7' ITS Vault to Communications Cabinet now connect the ITS Vault to the HUB.</li> <li>6. HUB is now dimensioned relative to Traffic Signal Service Cabinet, not Communications Cabinet.</li> <li>7. <b>Added conduit</b> and callout for 1-1/2" RGC between Traffic Signal Service Cabinet and PG&amp;E No. 2 Service box.</li> <li>8. <b>Legend:</b> "TRAFFIC SIGNAL CONDUITS" <b>Revised to read:</b> "TRAFFIC SIGNAL CONDUITS, RIGID GALVANIZED CONDUIT (RGC)"</li> <li>9. <b>Note 2:</b> "ITS INTERSECTION COMMUNICATION CABINET PER CURRENT CITY OF FRESNO QUALIFIED PRODUCT LIST. (QPL)" <b>Revised to read:</b> "ALL REQUIRED COMMUNICATION EQUIPMENT ASSEMBLIES SPECIFIED ON ITS-21B SHALL BE INSTALLED INSIDE HUB CABINET AS DIRECTED BY ENGINEER."</li> <li>10. <b>Added Note 12:</b> "INSTALL 1-1/2" RIGID CONDUIT"</li> </ol>
<b>ITS-4</b>	<ol style="list-style-type: none"> <li>1. <b>Conduit Color Codes:</b> "4. YELLOW" <b>Revised to read:</b> "4. ORANGE W/YELLOW STRIPE"</li> <li>2. Minor drafting edits and text changes for clarity.</li> </ol>
<b>ITS-5</b>	<ol style="list-style-type: none"> <li>1. <b>Conduit Color Codes:</b> "4. YELLOW" <b>Revised to read:</b> "4. ORANGE W/YELLOW STRIPE"</li> </ol>
<b>ITS-12</b>	<ol style="list-style-type: none"> <li>1. <b>Added Note 3:</b> "ALL CONDUITS INSTALLED SHALL BE LABELED WITH DIRECTION BRASS TAG DIRECTLY ABOVE CONDUITS. EXAMPLE: N (DIRECTION) TO IXXX (NEXT VAULT ID NUMBER)"</li> <li>2. <b>Callout:</b> "VAULT LID SHALL BE FLUSH WITH SIDEWALK OR BE SET TO FUTURE SIDEWALK GRADE @ 1/4" PER FOOT ABOVE TOP OF CURB" <b>Revised to read:</b> "VAULT LID SHALL BE FLUSH WITH SIDEWALK OR SET TO FUTURE SIDEWALK GRADE, SLOPE NOT TO EXCEED 1/4" PER FOOT, AND ABOVE TOP OF CURB".</li> <li>3. <b>Added callout:</b> "BRASS TAG, VAULT I.D. NUMBER, IXXX"</li> <li>4. <b>Added callout:</b> "NAMEPLATE MARKED "ITS COMMUNICATION""</li> </ol>
<b>ITS-14</b>	<ol style="list-style-type: none"> <li>1. <b>Added Note 3:</b> "ALL CONDUITS INSTALLED SHALL BE LABELED WITH DIRECTION BRASS TAG DIRECTLY ABOVE CONDUITS. EXAMPLE: N (DIRECTION) TO IXXX (NEXT VAULT ID NUMBER)"</li> <li>2. <b>Callout:</b> "VAULT LID SHALL BE FLUSH WITH SIDEWALK OR BE SET TO FUTURE SIDEWALK GRADE @ 1/4" PER FOOT ABOVE TOP OF CURB" <b>Revised to read:</b> "VAULT LID SHALL BE FLUSH WITH SIDEWALK OR SET TO FUTURE SIDEWALK GRADE, SLOPE NOT TO EXCEED 1/4" PER FOOT, AND ABOVE TOP OF CURB".</li> <li>3. <b>Added callout:</b> "BRASS TAG, VAULT I.D. NUMBER, IXXX"</li> <li>4. <b>Added callout:</b> "NAMEPLATE MARKED "ITS COMMUNICATION""</li> </ol>
<b>ITS-15</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>ITS-16</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>ITS-17</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>ITS-20</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>ITS-21</b>	<ol style="list-style-type: none"> <li>1. Standard Drawing no longer used.</li> </ol>
<b>ITS-21B</b>	<ol style="list-style-type: none"> <li>1. <b>Callout:</b> "12 COUNT SC PANEL" <b>Revised to read:</b> "12 COUNT LC SMFO SPLICE CASSETTE"</li> <li>2. <b>Added Callout:</b> "CAMERA POE INJECTOR"</li> <li>3. <b>Added Callout:</b> "WIRELESS ACCESS POINT POE INJECTOR"</li> <li>4. <b>Callout:</b> "IP POWER STRIP CORD" <b>Revised to read:</b> "POWER STRIP POWER CORD"</li> <li>5. <b>Drawing Revised</b> to include depiction of 2 DIN rail mounted switch power supplies</li> <li>6. <b>Removed callout:</b> "BACK OF IP POWER STRIP"</li> <li>7. <b>Added Callout:</b> "RACK MOUNT DIN RAIL ASSEMBLY"</li> </ol>



	<ol style="list-style-type: none"> <li>8. <b>Callout:</b> "12-COUNT FIBER OPTIC CABLE, -10' SLACK" <b>Revised to read:</b> "12-COUNT FIBER OPTIC CABLE TERMINATED TO SPLICE CASSETTE -10' SLACK"</li> <li>9. <b>Callout:</b> "POWER RECEPTACLE FOR IP POWER STRIP ONLY" <b>Revised to read:</b> "POWER RECEPTACLE FOR POWER STRIP ONLY"</li> <li>10. <b>Added Callout:</b> "VELCRO WRAP ALL EQUIPMENT TO SHELVES"</li> <li>11. <b>Callout:</b> "19" SHELF, 10" DEEP" <b>Revised to read:</b> "19" VENTILATED SHELVES, 10" DEEP"</li> <li>12. <b>Callout:</b> "IP POWER STRIP" <b>Revised to read:</b> "SURGE PROTECTED POWER STRIP"</li> <li>13. <b>Callout:</b> "FIBER OPTIC JUMPER" <b>Revised to read:</b> "3 METER LC TO LC FIBER OPTIC JUMPER"</li> <li>14. <b>Drawing Revised</b> to include depiction of DIN rail mounted network switch</li> <li>15. <b>Callout:</b> "SFP WITH LC TO SC FIBER PATCH" <b>Revised to read:</b> "HARDENED 1 GIG SFP"</li> <li>16. <b>Callout:</b> "DUCT PLUGS AND BELL ENDS TO CITY REQUIREMENTS" <b>Revised to read:</b> "BELL ENDS AND DUCT PLUGS ON ALL HDPE CONDUIT TO CITY REQUIREMENT"</li> <li>17. <b>Note:</b> "MINIMUM 4" VERTICAL SPACING BETWEEN EQUIPMENT." <b>Revised to read:</b> "MINIMUM 4" VERTICAL SPACING ABOVE 19" SHELF"</li> </ol>
<p><b>ITS-27A</b></p>	<ol style="list-style-type: none"> <li>1. <b>Added Note 5:</b> "CONTRACTOR MAY UTILIZE YELLOW WIRE AS A PULL TAPE TO BRING CAT 5e CABLE INTO PROPOSED WIRELESS EQUIPMENT (NOTE: YELLOW WIRE TO RE-INSTALL BACK IN GOOD CONDITION). CONTRACTOR SHALL COORDINATE HIS SCHEDULE WITH CITY TSSL TO PLACE SIGNAL IN TEMPORARY FLASHING PRIOR TO INSTALLATION."</li> <li>2. <b>Added Note 6:</b> "POLE HANDHOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK IS COMPLETED AND INSPECTED ON SIGNAL POLE. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING."</li> <li>3. <b>Added callout:</b> "SEE NOTE 6"</li> <li>4. <b>Callout:</b> "OUTDOOR SHIELDED CAT 5e CABLE, MAX RUN LENGTH = 300'." <b>Revised to read:</b> "OUTDOOR SHIELDED CAT 5e CABLE, MAX RUN LENGTH = 300'. SEE NOTE 5."</li> <li>5. <b>Removed callout:</b> "CONTRACTOR MAY DRILL MAX 7/8" ACCESS HOLDS. FILL WITH WEATHERPROOF KNOCKOUT SEAL."</li> </ol>
<p><b>ITS-27B</b></p>	<ol style="list-style-type: none"> <li>1. <b>Added callout:</b> "2' TYP"</li> <li>2. <b>Callout:</b> "16"-LONG, 1.5" DIAMETER ALUMINUM PIPE" <b>Revised to read:</b> "8"-LONG, 1.5" DIAMETER ALUMINUM PIPE"</li> <li>3. <b>Callout:</b> "4' ANTENNA CABLE (TYP)" <b>Revised to read:</b> "2-4' ANTENNA CABLES, SEE NOTE 5"</li> <li>4. <b>Callout:</b> "8"-LONG, 1.5" DIAMETER ALUMINUM PIPE" <b>Revised to read:</b> "16"-LONG, 1.5" DIAMETER ALUMINUM PIPE"</li> <li>5. <b>Added callout:</b> "DRIP LOOP"</li> <li>6. Antenna 1 <b>drawing revised</b> to depict integrated antenna with wireless access point</li> <li>7. <b>Removed callout:</b> "ANTENNA 1 (BACK)"</li> <li>8. <b>Callout:</b> "WIRELESS ACCESS POINT" <b>Revised to read:</b> "WIRELESS ACCESS POINT ANTENNA 1 BACK"</li> <li>9. <b>Callout:</b> "MINI ASTRO-BRAC OR APPROVED EQUAL WITH ELBOW" <b>Revised to read:</b> "MINI ASTRO-BRAC OR APPROVED EQUAL WITH NO ELBOW"</li> <li>10. <b>Added callout:</b> "CAT5e DRIP LOOP"</li> <li>11. <b>Added callout:</b> "ANTENNA 2"</li> <li>12. <b>Added callout:</b> "8"-LONG, 1.5" DIAMETER ALUMINUM PIPE"</li> <li>13. <b>Callout:</b> "2' ANTENNA CABLE (TYP)" <b>Revised to read:</b> "2-4' ANTENNA CABLES (TYP)"</li> <li>14. <b>Callout:</b> "WIRELESS ACCESS POINT" <b>Revised to read:</b> "WIRELESS ACCESS POINT ANTENNA 1"</li> <li>15. <b>Callout:</b> "MINI ASTRO-BRAC OR APPROVED EQUAL WITH ELBOW" <b>Revised to read:</b> "MINI ASTRO-BRAC OR APPROVED EQUAL"</li> <li>16. <b>Note 2:</b> "ANTENNA 2 MOUNTING IS SIMILAR TO THAT SHOWN IN THE CROSS SECTION ABOVE, BUT NO HOLES ARE DRILLED IN THE MAST ARM, AN 8'-LONG ALUMINUM PIPE IS USED, AND ACCESS POINT IS NOT INSTALLED, AND THE MINI ASTRO-BRAC IS INSTALLED ON TOP OF THE MAST ARM WITH NO ELBOW." <b>Revised to read:</b> "ANTENNA 2 MOUNTING IS SIMILAR TO THAT SHOWN IN THE CROSS SECTION ABOVE, BUT NO HOLES ARE DRILLED IN THE MAST ARM, A 16"-LONG ALUMINUM PIPE IS USED, AN ACCESS POINT IS NOT INSTALLED."</li> </ol>

	<p>17. <b>Note 4:</b> "ANTENNA 2 WILL BE MOUNTED IN THE SAME DIRECTION AS ANTENNA 1 WHEN IT IS THE LAST ACCESS POINT IN RUN." <b>Revised to read:</b> "ANTENNA 1 AND ANTENNA 2 SHALL HAVE A MINIMUM 2' OF SEPERATION."</p> <p>18. <b>Added Note 5:</b> "SECURELY STRAP ANTENNA CABLE TO MAST ARM WITH STAINLESS STEEL NYLON COATED STRAPS (FOLLOW NEC STANDARD FOR SPACING."</p> <p>19. <b>Added Note 6:</b> "ALL ELECTRICAL CONNECTIONS SHALL CONFORM TO MANUFACTURER REQUIREMENTS TO ENSURE WEATHER PROOF CONNECTIONS."</p>
<b>ITS-28B</b>	<p>1. <b>Callout:</b> "WIRELESS RADIO PER SPECIFICATION" <b>Revised to read:</b> "WIRELESS RADIO ANTENNA 1 PER SPECIFICATION (SEE NOTE 1)"</p> <p>2. Antenna 1 <b>drawing revised</b> to depict integrated antenna with wireless access point</p> <p>3. <b>Removed callout:</b> "ANTENNA 1 PER SPECIFICATION (SEE NOTE 1)"</p> <p>4. <b>Added callout:</b> "OUTDOOR RATED SHIELDED CAT5E CABLE"</p> <p>5. <b>Callout:</b> "12 AWG POWER TO TESCO" <b>Revised to read:</b> "12 AWG POWER TO TESCO SEE NOTE 5"</p> <p>6. <b>Removed callout:</b> "SEE NOTE 5"</p> <p>7. <b>Added Note 7:</b> "POLE HANDHOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK IS COMPLETED AND INSPECTED ON STREET LIGHT POLE. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING."</p>
<b>DPW – ASSOCIATED PLANS INDEX (API Series)</b>	
<b>API-5</b>	<p>1. <b>Callout:</b> "HANDICAP RAMP (TYPICAL)" <b>Revised to read:</b> "ACCESSIBLE RAMP (TYPICAL)"</p> <p>2. <b>Changed the phrase:</b> "ST'D" to "STD.", multiple occurrences.</p>
<b>API-6</b>	<p>1. <b>Note 2:</b> "...STANDARD DRAWING P-4" <b>Revised to read:</b> "...STANDARD DRAWING API-4"</p>
<b>API-7</b>	<p>1. <b>Note 2:</b> "...STANDARD DRAWING P-4" <b>Revised to read:</b> "...STANDARD DRAWING API-4"</p> <p>2. Added callout: "GRADED DIRT SHOULDER (SEE DETAIL API-4) MATERIAL OTHER THAN ORIGINAL SOIL SHALL BE APPROVED BY THE PUBLIC WORKS DIRECTOR."</p>
<b>API-8</b>	<p>1. <b>Notes 1 &amp; 3:</b> "...STANDARD DRAWING P-48" <b>Revised to read:</b> "...STANDARD DRAWING API-4"</p> <p>2. <b>Callout:</b> "GRADED DIRT SHOULDER (SEE DETAIL P-48..." <b>Revised to read:</b> "GRADED DIRT SHOULDER (SEE DETAIL API-4..."</p>
<b>API-9</b>	<p>1. <b>Note 3:</b> "...STANDARD DRAWING P-48" <b>Revised to read:</b> "...STANDARD DRAWING API-4"</p> <p>2. <b>Callout:</b> "GRADED DIRT SHOULDER (SEE DETAIL P-48..." <b>Revised to read:</b> "GRADED DIRT SHOULDER (SEE DETAIL API-4..."</p>
<b>API-10</b>	<p>1. <b>New Standard Drawing:</b> "DOWNTOWN CONCRETE SIDEWALK AESTHETIC TREATMENT - SIDEWALK PATTERN"</p>
<b>API-11</b>	<p>1. <b>New Standard Drawing:</b> "DOWNTOWN CONCRETE SIDEWALK AESTHETIC TREATMENT"</p>
<b>DPU – RECYCLED WATER (RW Series)</b>	
<b>RW-1</b>	<p>1. <b>Note 1:</b> "RECYCLED WATER PIPELINES SHALL BE COLORED PURPLE (PANTONE 512) AND INTEGRALLY STAMPED "RECYCLED WATER - DO NOT DRINK" ON OPPOSITE SIDES OF THE PIPE. ALTERNATIVELY, NON-PVC RECYCLED WATER PIPELINES MAY BE MARKED WITH LETTERING ON PURPLE MARKING TAPE BEARING THE CONTINUOUS WORDING "RECYCLED WATER-DO NOT DRINK". THE MARKING TAPE SHALL BE A MINIMUM OF SIX INCHES WIDE AND SHALL BE SECURELY ATTACHED DIRECTLY TO THE TOP OF THE PIPELINE EVERY FIVE FEET." <b>Revised to read:</b> "RECYCLED WATER PIPELINES SHALL BE COLORED PURPLE (PANTONE 512) AND INTEGRALLY STAMPED "RECYCLED WATER - DO NOT DRINK" ON OPPOSITE SIDES OF THE PIPE. ALTERNATIVELY, NON-PVC RECYCLED WATER PIPELINES SHALL BE MARKED WITH LETTERING ON PURPLE MARKING TAPE BEARING THE CONTINUOUS WORDING "RECYCLED WATER-DO NOT DRINK". THE MARKING TAPE SHALL BE A MINIMUM OF SIX INCHES WIDE AND SHALL BE SECURELY ATTACHED 12" ABOVE THE TOP OF THE PIPELINE."</p>

	<ol style="list-style-type: none"> <li>2. <b>Callout</b>, "RECYCLED WATER MARKING TAPE, PURPLE (PANTONE 512) WITH TRACE WIRE" <b>Revised to read</b>: "RECYCLED WATER MARKING TAPE, PURPLE (PANTONE 512)"</li> <li>3. <b>Callout added</b>: "TRACER WIRE: #10AWG TAPED AT 5'-0" INTERVALS"</li> </ol>
<b>RW-6</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing name</b>: "4" RECYCLED WATER SERVICE" <b>Revised to read</b>: "4", 6", 8" RECYCLED WATER SERVICE".</li> <li>2. <b>Callout</b>: "METER BOX WITH ARMORCAST LID WITH CAST IRON READING DOOR; LID SHALL BE PURPLE (PANTONE 512) AND MARKED WITH THE WORDS "RECYCLED WATER" <b>Revised to read</b>: "ARMORCAST POLYMER CONCRETE BOX, A6001460PCX36 AND ARMORCAST LID, A6001456TA-PUR-COF; LID SHALL BE PURPLE (PANTONE 512) AND MARKED WITH THE WORDS "RECYCLED WATER"</li> <li>3. <b>Drawing Revised</b>: layout of pipes and fittings altered to remove elevation changes and elbows and associated dimensions removed.</li> <li>4. <b>Drawing Revised</b>: gate valve relocated to behind the meter.</li> <li>5. <b>Removed callout</b>, "4" PURPLE PVC PIPE".</li> <li>6. <b>Callout</b>, "PVC OR DUCTILE PIPE CONTINUOUSLY WRAPPED WITH PURPLE TAPE" <b>Revised to read</b>: "4"-6"-8" PVC OR DUCTILE PIPE CONTINUOUSLY WRAPPED WITH PURPLE TAPE"</li> <li>7. <b>Added callout</b>: "RECYCLED WATER METER. SEE NOTES 7-9 FOR METER SPOOL LENGTH"</li> <li>8. <b>Callout</b>: "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 22-3.3" <b>Revised to read</b>: "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 34-3.3"</li> <li>9. <b>Added dimension</b>, "30"" from top of meter box lid to top of pipe</li> <li>10. <b>Added Note</b> 7, "FOR 4" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 13 ¾"</li> <li>11. <b>Added Note</b> 8, "FOR 6" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 17 ¾"</li> <li>12. <b>Added Note</b> 9, "FOR 8" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 24".</li> <li>13. <b>Added Note</b> 10, "METERS DEEPER THAN 30 INCHES TO TOP OF PIPE MUST BE RAISED TO 30 INCHES"</li> <li>14. <b>Added Note</b> 11, "WHEN CURB EXISTS, SET METER BOX 2" TO 6" FROM BACK OF CURB"</li> </ol>
<b>RW-7</b>	<ol style="list-style-type: none"> <li>1. <b>Callout</b>: "PURPLE (PANTONE 512) CHRISTY METER BOX WITH LID (17" X 30") AND MARKED WITH THE WORDS "RECYCLED WATER"" <b>Revised to read</b>: "PURPLE (PANTONE 512) CHRISTY B-36 OR APPROVED EQUAL CONCRETE BOX, STEEL LID AND RECYCLED WATER NAME PLATE PER STANDARD DRAWING RW-16"</li> <li>2. <b>Callout</b>: "2" x REQUIRED LENGTH GALVANIZED STEEL PIPE TYPE "K" RIGID OR SOFT, CONTINUOUSLY WRAPPED WITH APPROVED PURPLE RECYCLED WATER MARKING TAPE" <b>Revised to read</b>: "2" x REQUIRED LENGTH GALVANIZED STEEL PIPE, CONTINUOUSLY WRAPPED WITH APPROVED PURPLE RECYCLED WATER MARKING TAPE"</li> <li>3. <b>Callout</b>: "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 22-3.3" <b>Revised to read</b>: "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 34-3.3"</li> <li>4. <b>Note 3</b>: "RESTRAIN ALL JOINTS PER SITY STANDARD SPECIFICATIONS SECTION 21-15.5" <b>Revised to read</b>, "RESTRAIN ALL JOINTS PER SITY STANDARD SPECIFICATIONS SECTION 33-14.5"</li> </ol>
<b>RW-8</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing split and renamed</b>, "RW-8A" and "RW-8B". Technical changes shown for RW-8A, below, apply to both.</li> </ol>
<b>RW-8A</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title</b>, "RECYCLED WATER BLOW-OFF ASSEMBLY" <b>Revised to read</b>: "RECYCLED WATER BLOW-OFF ASSEMBLY (PVC OR DUCTILE IRON MAIN)"</li> <li>2. <b>Callout</b>, "2-1/2" STANDARD MALE FIRE HOSE THREADED CONNECTION WITH CAP &amp; RECYCLED WATER IDENTIFICATION TAG PER STANDARD DRAWING RW-18" <b>Revised to read</b>: "4" STANDARD IRON PIPE THREAD W/PLUG".</li> <li>3. <b>Drawing Revised</b>: Blow-off connection to main changed from 45° ELL to 90° ELL at bottom of pipe.</li> <li>4. <b>Note 4</b>: "RESTRAIN ALL JOINTS PER SITY STANDARD SPECIFICATIONS SECTION 21-15.5" <b>Revised to read</b>, "RESTRAIN ALL JOINTS PER SITY STANDARD SPECIFICATIONS SECTION 33-14.5"</li> <li>5. <b>Callout</b>: "TRACER WIRE CONNECTION TO BE SOLDERED PER STD. SPEC. 34-3.3" <b>Revised to read</b>, "TRACER WIRE CONNECTION TO BE PROTECTED AND SOLDERED PER STD. SPEC. 34-3.3"</li> </ol>

	6. Tracer wire relocated to inside the riser barrel.
<b>RW-8B</b>	1. <b>New Standard Drawing:</b> "RECYCLED WATER BLOW-OFF ASSEMBLY (STEEL MAIN)"
<b>RW-9</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title:</b> "RECYCLED WATER 1" OR 2" AIR RELEASE/VACUUM BREAKER STATION" <b>Revised to read,</b> "RECYCLED WATER 1" OR 2" AIR RELEASE/VACUUM BREAKER ASSEMBLY"</li> <li>2. <b>Callout(s),</b> "1" OR 2" COPPER 90° ELBOW, LONG RADIUS, 95-5 SOLDER JOINTS, 0-300 PSI" <b>Revised to read:</b> "1" OR 2" COPPER 90° ELBOW, LONG RADIUS, 95-5 PACK JOINT CONNECTIONS FOR (CTS) TUBING, 0-300 PSI"</li> <li>3. <b>Callout,</b> "1" OR 2" COPPER COUPLING WITH STOPS, 95-5 COPPER SOLDER JOINTS, 0-300 PSI" <b>Revised to read:</b> "1" OR 2" COPPER COUPLING WITH STOPS, 95-5 PACK JOINT CONNECTIONS FOR (CTS) TUBING, 0-300 PSI"</li> <li>4. <b>Callout,</b> "1" OR 2" COPPER ADAPTER, SOLDER JOINT BY MALE IPT, 0-300 PSI" <b>Revised to read:</b> "1" OR 2" COPPER ADAPTER, PACK JOINT CONNECTIONS FOR (CTS) TUBING, 0-300 PSI"</li> <li>5. <b>Callout,</b> "TRACER WIRE WITH 1' COIL, PER STANDARD SPEC. 22-3.3" <b>Revised to read:</b> "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 34-3.3"</li> <li>6. <b>Callout,</b> "AIR/VAC ENCLOSURE PER STANDARD DRAWING RW-11" <b>Revised to read:</b> "AIR/VAC ENCLOSURE PER STANDARD DRAWING RW-26"</li> <li>7. <b>Callout added:</b> "RECYCLED WATER BOX, LID, &amp; RISER PER STANDARD DRAWING RW-2"</li> <li>8. <b>Drawing Revised:</b> limits of concrete pad expanded to incorporate water valve.</li> <li>9. <b>Drawing Revised:</b> water valve added to drawing.</li> <li>10. <b>Removed dimension:</b> "2' MIN" (located between saddle tap and copper coupling)</li> <li>11. <b>Added dimension:</b> "2' MAX" (located between water valve and air/vac valve)</li> <li>12. <b>Note 3:</b> "RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 21-15.5" <b>Revised to read,</b> "RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5"</li> <li>13. Tracer wire relocated to inside the riser barrel.</li> </ol>
<b>RW-10</b>	<ol style="list-style-type: none"> <li>1. <b>Drawing title:</b> "RECYCLED WATER 4" AIR RELEASE/VACUUM BREAKER STATION" <b>Revised to read,</b> "RECYCLED WATER 4" AIR RELEASE/VACUUM BREAKER ASSEMBLY"</li> <li>2. <b>Callout:</b> "AIR/VAC ENCLOSURE (To be specified)" <b>Revised to read,</b> "AIR/VAC ENCLOSURE PER STANDARD DRAWING RW-26"</li> <li>3. <b>Callout,</b> "TRACER WIRE WITH 1' COIL, PER STANDARD SPEC. 22-3.3" <b>Revised to read:</b> "TRACER WIRE WITH 1' COIL PER STANDARD SPEC. 34-3.3"</li> <li>4. Tracer wire relocated to inside the riser barrel.</li> </ol>
<b>RW-11</b>	1. Standard is no longer used.
<b>RW-12</b>	1. <b>Revised dimensions</b> on "RECYCLED WATER CROSSING SEWER MAINS" detail.
<b>RW-24</b>	<ol style="list-style-type: none"> <li>1. Note 6 <b>renumbered</b> to Note 7</li> <li>2. Note 5 <b>renumbered</b> to Note 6</li> <li>3. <b>Added new Note 5:</b> "SOLDERING PASTE MUST BE APPLIED TO THE LOOPS BEFORE HEAT IS APPLIED IF ROSIN CORE SOLDER IS NOT USED."</li> <li>4. <b>Note 6:</b> "COVER ALL BARE COPPER WIRE WITH A WATERPROOF WRAP THAT IS APPROVED FOR UNDERGROUND CONNECTIONS. THE WRAP MUST EXTEND A MINIMUM OF TWO INCHES (2") BEYOND THE END OF THE STRIPPED WIRE." <b>Revised to read,</b> "COVER ALL BARE COPPER WIRE WITH A WATERPROOF WRAP THAT IS APPROVED FOR UNDERGROUND CONNECTIONS (3M DBR/Y-6 OR APPROVED EQUAL). THE WRAP MUST EXTEND A MINIMUM OF TWO INCHES (2") BEYOND THE END OF THE STRIPPED WIRE."</li> <li>5. <b>Note 7:</b> "ALL WIRE MUST BE 12 GAUGE COPPER WIRE." <b>Revised to read,</b> "ALL WIRE MUST BE 10 GAUGE COPPER WIRE."</li> </ol>
<b>RW-25</b>	1. <b>New Standard Drawing:</b> "RECYCLED WATER COMMERCIAL TRUCK FILL STATION"
<b>RW-26</b>	1. <b>New Standard Drawing:</b> "AIR RELEASE/VACUUM BREAKER VALVE ENCLOSURE"

**The following City Standard Specifications have been amended as indicated below:**

1. Updated formatting and page numbering throughout specification document.
2. Update Caltrans standard specification references throughout document.

<b>1-2</b>	<ol style="list-style-type: none"> <li>1. Added and updated definitions</li> </ol>
<b>7-10.4</b>	<ol style="list-style-type: none"> <li>1. Updated Traffic Control Systems to include "And devices" and "Retro reflectivity".</li> <li>2. Added "Signs mounted on a barricade (Type I, II, or III) or any other portable support, shall be at least one foot above the traveled way.</li> <li>3. Added to the in addition items (b), "During non-peak hour times. All lanes shall be open during peak hours."</li> <li>4. Added to the in addition items (b) "Collectors" to additional lanes may be required to be open.</li> <li>5. Added to the in addition items (b), "All changes or modifications shall be approved by the Engineer and the City Traffic Operations &amp; Planning Division." to the end of this item.</li> <li>6. Updated Intersections to require a detour and barricading plan must be submitted at least "Five business days in advance." to match Public Works Policy</li> <li>7. Updated Public Notification to include "Seven" days notification prior to street closure.</li> <li>8. Updated lane closures on "Arterial, collector, and expressway classified" streets instead to "Major". Also, Full closures on "Arterial, collector and expressway classified" streets shall not start until 9am on the first day and shall be pre-notified on-site at least "Seven" days.</li> <li>9. Updated "Arterial, collector, and expressway classified" streets instead of "high-volume". In addition, CMS are "Shall be required" instead of "may require".</li> <li>10. Added Long Term lane closures or road closures shall have all advance warning signs installed on post(s) per City or State Standards.</li> <li>11. Defined Long Term.</li> <li>12. Added lane closures and road closures shall maintain existing pavement markings unless approved by Engineer or his/her designee. Long Term operations that require removal shall comply with section 67.77-04 of the MUTCD.</li> <li>13. Added use of Channelizers and when they are required.</li> <li>14. Added Positive Protection Devices to this subsection and requirements for use.</li> <li>15. Added Storage of Traffic Devices shall not be stored in the City Right-of-Way.</li> <li>16. Updated removal of traffic markings to reference 6F.77-04 of the MUTCD.</li> </ol>
<b>7-10.5</b>	<ol style="list-style-type: none"> <li>1. Updated this subsection to reference Traffic Operations &amp; Planning Division instead of Traffic Engineering.</li> </ol>
<b>14-2</b>	<ol style="list-style-type: none"> <li>1. Removed reference to Class A concrete.</li> <li>2. Added requirement for minimum compressive strength of 3,500 lbs. at 28 days</li> <li>3. Removed reference to 5 sack Class B concrete</li> </ol>
<b>17-3</b>	<ol style="list-style-type: none"> <li>1. Add Section 17-3.2.2 Bell Holes.</li> <li>2. Delete Section 17-3.2.4 Overexcavation.</li> <li>3. Add Sections 17-3.2.6 Barricades and Safety to 17-3.2.11 Open Trench.</li> </ol>
<b>17-5</b>	<ol style="list-style-type: none"> <li>1. Delete second paragraph of section 17-5.1 Foundation and Bedding.</li> <li>2. Revise Section 17-5.2 Pipe Embedment Zone.</li> <li>3. Add sentence to first paragraph of Section 17-5.4 Final Backfill.</li> <li>4. Revise numbering of all Sections as may be necessary.</li> </ol>
<b>17-6</b>	<ol style="list-style-type: none"> <li>1. Revise second paragraph to read, "The Contractor shall place as many "Y" or "T" branches of the size designated as directed. The "Y" or "T" branches, unless otherwise specified, shall be inclined at an angle of 45° from the horizontal.</li> <li>2. Revise "ten inches (10")" reference in paragraph 3 to "eight inches (8)".</li> </ol>

<b>17-7</b>	<ol style="list-style-type: none"> <li>1. Add as last paragraph "All new house branches and service laterals must be installed greater than 5'-0" from outside edge of manhole and must be between two access structures (i.e. manhole, lamphole)."</li> </ol>
<b>17-8.3</b>	<ol style="list-style-type: none"> <li>1. Revise "5300 Series" reference in paragraph 5 with "5304 or 5305".</li> <li>2. Delete "...lined with T-Lock or..."</li> </ol>
<b>19-1</b>	<ol style="list-style-type: none"> <li>1. Revise section for installation method for casing pipe.</li> </ol>
<b>19-2</b>	<ol style="list-style-type: none"> <li>1. Revise subsection for specific details for casing materials.</li> </ol>
<b>19-3</b>	<ol style="list-style-type: none"> <li>1. Revise subsection for jacking and receiving pit size requirements.</li> </ol>
<b>21-5.8</b>	<ol style="list-style-type: none"> <li>1. Added section for water main replacement project requirements.</li> </ol>
<b>21-20.3</b>	<ol style="list-style-type: none"> <li>1. Fix text overlapping the left side of table in section (b), subsection (1).</li> <li>2. Revise "3408" reference in section (b), subsection (2) with "4710".</li> </ol>
<b>21-11</b>	<ol style="list-style-type: none"> <li>1. Revise "C-302-74" reference in Case 1, Zones C and D, section 3 to "C302-16".</li> </ol>
<b>21-18.1</b>	<ol style="list-style-type: none"> <li>1. Revise "Section 4.3" reference in section (e) to "Section 4.4".</li> </ol>
<b>21-18.1.2</b>	<ol style="list-style-type: none"> <li>1. Revise section (a) in part to read "...conform to AWWA C900-16 latest edition for 4" to 60..."</li> <li>2. Revise pressure class from "150" to "235".</li> <li>3. Revise "Section 4.3" reference in section (f) to "Section 4.4".</li> </ol>
<b>21-19.2</b>	<ol style="list-style-type: none"> <li>1. Added reference for "C-515 Ductile Iron" for coating requirements in subsection (b), Materials and Workmanship.</li> </ol>
<b>22-3.2</b>	<ol style="list-style-type: none"> <li>1. Delete "Chapter 7, Installation, of".</li> </ol>
<b>22-3.3</b>	<ol style="list-style-type: none"> <li>1. Revised tracer wire from "under" to "over" PVC water main.</li> </ol>
<b>22-6</b>	<ol style="list-style-type: none"> <li>1. Revise section name to Trench and Structure Excavation, and Backfill.</li> <li>2. Add Section 22-6.1, "General."</li> <li>3. Add Section 22-6.2, "Trench and Structure Excavation."</li> <li>4. Delete Section 22-6.2, "Trench Bottom."</li> <li>5. Add Section 22-6.5, "Trench Grade."</li> <li>6. Add Section 22-6.6, "Fine Grading"</li> <li>7. Add Section 22-6.10, "Pavement and Concrete Cutting and Removal"</li> <li>8. Add Section 22-6.11, "Grading and Stockpiling"</li> <li>9. Add Section 22-6.12, "Open Trench"</li> <li>10. Revise numbering of all Sections as may be necessary.</li> </ol>
<b>22-7</b>	<ol style="list-style-type: none"> <li>1. Delete Section 22-7, "Using Earth Mounds"</li> </ol>
<b>22-8</b>	<ol style="list-style-type: none"> <li>1. Revise Section name to Foundation, Bedding, Backfilling and Compaction of Trenches.</li> <li>2. Add Section 22-8.1 Foundation and Bedding to Section 22-8.4 Final Backfill.</li> </ol>
<b>22-9.2</b>	<ol style="list-style-type: none"> <li>1. Revise "Sec. 7.3" reference in section (c) to "Sec 10.3".</li> </ol>
<b>23-1.1</b>	<ol style="list-style-type: none"> <li>1. Reference Section 86 and 87 of State Standard.</li> <li>2. All work shall be completed in a neat and workmanlike manner.</li> </ol>
<b>23-1.2</b>	<ol style="list-style-type: none"> <li>1. Added, "After receiving approved submittals from City of Fresno TSSL" for materials.</li> </ol>
<b>23-1.6</b>	<ol style="list-style-type: none"> <li>1. Contractor to notify CM Engineer two working days instead of one.</li> </ol>
<b>23-1.8</b>	<ol style="list-style-type: none"> <li>1. Added Signal Mast arms shall not have mid-arm tendons. Signal heads shall be installed with Astro-Bracket, or approved equal at the end of this subsection.</li> </ol>

<b>23-1.9</b>	<ol style="list-style-type: none"> <li>1. Updated the fourth paragraph, to include "All conduit ends shall be threaded and joined with City TSSL Division approved fittings."</li> <li>2. Updated the fourth paragraph, to include "Three piece, Erickson type, couplings shall not be used without prior authorization from City TSSL Division and will only be allowed under special circumstances necessitating their use." at the end of this paragraph.</li> <li>3. Updated paragraph five to include "Cut in the field" to conduit threads.</li> <li>4. Updated paragraph seven to include "Than indicated on the plans."</li> <li>5. Updated paragraph eight to include, "Unless approved by the City CM Engineer. Conduits not able to be placed under concrete sidewalk, or roadway, shall be encased in a at least 6" of two-sack slurry.</li> <li>6. Updated paragraph nine to remove" Conduits not able to be placed under sidewalk shall be encased in at least 6" of slurry."</li> </ol>
<b>23-1.10</b>	<ol style="list-style-type: none"> <li>1. Added "Nonconcrete pull boxes shall not be used" at the end of paragraph one.</li> <li>2. Removed Caltrans callout and reference City standards for pull boxes in paragraph two.</li> <li>3. Update pull box wrapping to "15lb. Roofing" paper.</li> <li>4. Added paragraph, "Existing pull boxes accessed during the course..."</li> <li>5. Added "Locking lids shall be torqued to 25ft pounds (lbs.) prior to installing buttons.</li> </ol>
<b>23-1.11</b>	<ol style="list-style-type: none"> <li>1. Removed "Signal or lighting standard and in each" in paragraph three.</li> <li>2. Added "Reference to City standard E-20" in paragraph eight.</li> <li>3. Added, "The terminal shall be installed using the proper tooling and tinned with solder."</li> <li>4. Added, "Optical detector cable shall be..." to the end of this subsection.</li> <li>5. Added specification for controller terminal assembly end at the end of this subsection</li> </ol>
<b>23-1.12</b>	<ol style="list-style-type: none"> <li>1. Updated wording for this subsection</li> </ol>
<b>23-1.16</b>	<ol style="list-style-type: none"> <li>1. Added "Service feeders shall be sized to accommodate the full load amperage rating of the electrical service pedestal. Voltage drop shall be taken into consideration when sizing conductors.</li> </ol>
<b>23-1.17</b>	<ol style="list-style-type: none"> <li>1. Updated Visors to, "Shall be black."</li> </ol>
<b>23-1.18</b>	<ol style="list-style-type: none"> <li>1. Updated note for when reused pedestrian signals are used, they shall have an LED "Countdown" retrofit kit installed.</li> </ol>
<b>23-1.20</b>	<ol style="list-style-type: none"> <li>1. Added "Latest edition of the California MUTCD." for buttons to conform.</li> <li>2. Updated the mounting height to 40".</li> <li>3. Added, "Push buttons mounted on 2 1/2" diameter posts shall..."</li> <li>4. Updated paragraph five to have housing "Adjusted" to conform "tightly" to curvature of pole.</li> <li>5. Removed paragraph six.</li> </ol>
<b>23-1.21</b>	<ol style="list-style-type: none"> <li>1. Updated the 2 wire Polara to the latest iNavigator2.</li> <li>2. Added, "Digital copies of the 'custom messages'" to paragraph two.</li> </ol>
<b>23-1.22</b>	<ol style="list-style-type: none"> <li>1. Removed paragraph that read, "All EVP system equipment submitted to the City must include a certificate of product liability insurance protection of at least \$5,000,000.00"</li> </ol>
<b>23-1.23</b>	<ol style="list-style-type: none"> <li>1. Entire subsection was revised to LED spacing and specifications.</li> <li>2. Small, Medium, Large &amp; Expressway Traffic Signal LED luminaires added per diagonal spacing of poles. In addition, if diagonal spacing exceeds 220 feet, a lighting design is required for City Engineer to review and approve.</li> <li>3. Updated Tables No. 23-1.23 A &amp; B per new LED requirements.</li> </ol>
<b>23-1.24</b>	<ol style="list-style-type: none"> <li>1. Subsection updated, as Barrier Posts were removed front the specification.</li> <li>2. Added "Photoelectric Controls and Shorting Caps shall be listed..."</li> </ol>
<b>23-1.25</b>	<ol style="list-style-type: none"> <li>1. Update references to TSSL &amp; TOC Supervisor.</li> </ol>

<b>23-1.26</b>	<ol style="list-style-type: none"> <li>1. Added references to the CA MUTCD and to subsections 7-10.4 and 7-10.5.</li> </ol>
<b>23-2.1</b>	<ol style="list-style-type: none"> <li>1. Updated all references to 2070 L controller to be 2070 LX.</li> <li>2. Added, "The controller shall accompany manufacture written..." to Model 2070L Controller Assemblies.</li> <li>3. Modified paragraph two under Model 2070L Controller Assemblies.</li> <li>4. Updated the controller modules to "2070-1C CPU with 64 MB DRAM, 128 MB Flash, Linux Operating System, 3 each - 10/100 Ethernet Ports, USB 2.0 Full-speed port for memory, Non-volatile SRAM, C13S connector, 3.3v/5v data key, TEES 2009 compatible, Freescale PowerQuick Processor and ATC 5.2b compliant.</li> <li>5. Updated the controller modules to "Patriot V76.13P Firmware installed in Controller".</li> <li>6. Updated the controller modules to include, "2070 LX shall be 100% compatible with the City's existing Trafficware/Naztec Advanced Transportation Management System (ATMS.NOW) without any hardware or software additions and/or modifications.</li> <li>7. Added "A sample Detection Loop Test sheet is provided below" to Testing under this subsection.</li> <li>8. Removed sole source of Naztec 2070L.</li> </ol>
<b>23-3.1</b>	<ol style="list-style-type: none"> <li>1. Removed reference to E-1 through E-36, and left City Std. Drawings as applicable.</li> <li>2. Added, "All work shall be completed in a neat and workmanlike manner."</li> </ol>
<b>23-3.2</b>	<ol style="list-style-type: none"> <li>1. Added, "After receiving approved submittals form City of Fresno TSSL Division." to All materials required to complete work shall be furnished by contractor.</li> </ol>
<b>23-3.7</b>	<ol style="list-style-type: none"> <li>1. Added "1997" to State Standards.</li> <li>2. Removed "and shall contain not less than 470 pounds of cement per cubic yard."</li> </ol>
<b>23-3.9</b>	<ol style="list-style-type: none"> <li>1. Added, "All couplings shall be tightened to provide a good electrical and mechanical connection throughout the entire length of conduit run." and "No running threads are permitted. Three piece..." to paragraph four.</li> <li>2. Removed paragraph five to the end of paragraph four.</li> <li>3. Added, "Conduits not able to be placed under concrete sidewalk..." to end of paragraph eight.</li> <li>4. Updated callout to Standard E-27 instead of E-1 for conduit within the foundation.</li> </ol>
<b>23-3.10</b>	<ol style="list-style-type: none"> <li>1. Added "Nonconcrete pull boxes shall not be used" at the end of paragraph one.</li> <li>2. Added "See City Std. Drawings E-4A through E-4C, regarding requirements for grouting, drain hole, etc." to end of paragraph two.</li> <li>3. Added new paragraphs three, four and five with modifications to four and five.</li> <li>4. Added "Locking lids shall be torqued to 25 ft. pounds prior to installing buttons."</li> </ol>
<b>23-3.11</b>	<ol style="list-style-type: none"> <li>1. Moved paragraph three ahead of paragraphs four and five to emphasize.</li> <li>2. Removed "streetlight standard and in each" in paragraph four.</li> <li>3. Removed "number 5 in" and added "E&amp;F" to paragraph five.</li> <li>4. Added, "With the exception of "Point of Service" pull boxes,..." to the end of paragraph six.</li> </ol>
<b>23-3.12</b>	<ol style="list-style-type: none"> <li>1. Added paragraph one.</li> <li>2. Added, "underground" to paragraph two.</li> </ol>
<b>23-3.13</b>	<ol style="list-style-type: none"> <li>1. Added paragraph four.</li> <li>2. Added paragraph five.</li> </ol>
<b>23-3.15</b>	<ol style="list-style-type: none"> <li>1. Added, "Service feeders shall be sized to accommodate the full load amperage rating of the electrical..." to the end of paragraph two.</li> <li>2. Updated E-4 callout to E-4C.</li> </ol>
<b>23-3.16</b>	<ol style="list-style-type: none"> <li>1. Entire subsection was revised to LED spacing and specifications.</li> <li>2. Mid-Block/Local Roadway (MBLR), Local Cul-De-Sac (LCDS) and Major/Local Intersection (ML) luminaires added. Reference to 23-1.23 for traffic signal luminaires. Also, if diagonal spacing exceeds 220 feet, a lighting design is required for City Engineer to review and approve.</li> </ol>



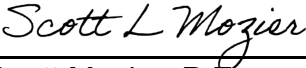
	<ol style="list-style-type: none"> <li>3. Updated luminaire specifications to wattage maximums, and performance criteria.</li> <li>4. Eliminated lux as measurement and now only using footcandle (fc).</li> <li>5. Added "Average horizontal at pavement along Minor Street &amp; Average to minimum uniformity ratio along Minor Street" Criteria to Crosswalk Illumination.</li> <li>6. Updated to only allow 3000K and 4000K Correlated Color Temperature luminaires.</li> <li>7. Updated submittal requirements for luminaires not on City's Approved Product List.</li> </ol>
<b>23-3.17</b>	<ol style="list-style-type: none"> <li>1. Updated subsection to new PEC &amp; Shorting Cap requirements. (Must be listed product)</li> </ol>
<b>23-3.18</b>	<ol style="list-style-type: none"> <li>1. Added references to the CA MUTCD and to subsections 7-10.4 and 7-10.5.</li> </ol>
<b>23-4</b>	<ol style="list-style-type: none"> <li>1. Moved section from Section 30 of Specifications to be incorporated into Section 23.</li> </ol>
<b>23-4.1</b>	<ol style="list-style-type: none"> <li>1. Added paragraph three, to require a photometric design for ornamental streetlights.</li> </ol>
<b>23-4.2</b>	<ol style="list-style-type: none"> <li>1. Updated "Pole" to be, "16 feet minimum for major streets and 12 feet minimum for residential streets.</li> <li>2. Updated luminaire wattage to "LED 30 to 40 Watt Maximum (See Ornamental Design Luminaire Criteria Table) and per approved design by City Engineer."</li> </ol>
<b>23-4.3</b>	<ol style="list-style-type: none"> <li>1. Updated subsection remove reference to Section 86 of the State Specifications and to comply with all requirements of Section 23-3 of City Specifications.</li> </ol>
<b>23-4.4</b>	<ol style="list-style-type: none"> <li>1. Added paragraph two to this subsection. Discusses when a streetlight plan is submitted, it shall include a photometric analysis to be reviewed and approved by the City.</li> </ol>
<b>23-4.5</b>	<ol style="list-style-type: none"> <li>1. Added, "After receiving approved submittals from City of Fresno TSSL" for materials.</li> </ol>
<b>23-4.8</b>	<ol style="list-style-type: none"> <li>1. Removed paragraphs one and two of the subsection.</li> <li>2. Updated foundation concrete shall not contain less that "590" pounds of cement per cubic yard.</li> </ol>
<b>23-4.9</b>	<ol style="list-style-type: none"> <li>1. Added poles to be approved by City TSSL prior to installation.</li> <li>2. Updated wind speed to withstand to 110 miles per hour.</li> <li>3. Added pole height for residential areas (12 feet) or 16 feet for non-residential areas.</li> </ol>
<b>23-4.17</b>	<ol style="list-style-type: none"> <li>1. Entire subsection was revised to LED spacing and specifications.</li> <li>2. Updated Local and Major Mid-Block Single Luminaire to 30 Watt maximum and Dual Luminaires to 40 Watt (each) maximum and removed Major/Local intersection luminaire.</li> <li>3. Updated BUG Ratings and Correlated Color Temperature to remain at 3000K only.</li> <li>4. Removed lux for measurement and only using footcandle (fc).</li> </ol>
<b>23-4.18</b>	<ol style="list-style-type: none"> <li>1. Added the PEC shall meet the requirements listed in section 23-3.17 for standard luminaries and shall be OSHA NRTL "listed".</li> </ol>
<b>23-4.19</b>	<ol style="list-style-type: none"> <li>1. Eliminated from specifications.</li> </ol>
<b>25-2.2</b>	<ol style="list-style-type: none"> <li>1. Deleted subsection "D" and "E", Galvanized Pipe and Fittings, respectively.</li> <li>2. Under subsection K.2, deleted "galvanized" and replaced with "PVC schedule 80 or Brass" for backflow preventer pipe and fittings.</li> </ol>
<b>25-3.2</b>	<ol style="list-style-type: none"> <li>1. Under subsection F.3, deleted reference to "galvanized steel threaded pipe".</li> <li>2. Under subsection I, deleted reference to "galvanized steel pipe".</li> </ol>
<b>27-2</b>	<ol style="list-style-type: none"> <li>1. Updated to reference submittal checklists for various types of plan submittals</li> </ol>
<b>31-13</b>	<ol style="list-style-type: none"> <li>1. Remove entire section 31-13, "Qualified Product List (QPL)" from Standard Specifications.</li> </ol>
<b>33-17.1</b>	<ol style="list-style-type: none"> <li>1. Revise "Section 4.3" reference in section (l) to "Section 4.4".</li> </ol>
<b>33-17.2</b>	<ol style="list-style-type: none"> <li>1. Revise section (h) in part to read "...conform to AWWA C900-16 latest edition for 4" to 60..."</li> <li>2. Revise "C900 and C905" references in section (j) to "C605 and C900".</li> <li>3. Revise "Section 4.3" reference in section (m) to "Section 4.4".</li> </ol>

<b>33-18.1</b>	1. Revise "AWWA A21.11-1972" reference in section (i) to "AWWA A21.11".
<b>34-6</b>	1. Revise section name to, "Trench and Structure Excavation, and Backfill." 2. Add Section 34-6.1 General. 3. Add Section 34-6.2 Trench and Structure Excavation. 4. Delete Section 34-6.2 Trench Bottom.
<b>34-7</b>	1. Revise Section name to, "Foundation, Bedding, Backfilling and Compaction of Trenches." 2. Add Section 34-8.1, "Foundation and Bedding to Section 34-8.4 Final Backfill."

Reviewed and Approved:

  
 \_\_\_\_\_  
 Andrew Benelli, P.E.  
 City Engineer

March 5, 2021  
 \_\_\_\_\_  
 Date

  
 \_\_\_\_\_  
 Scott Mozier, P.E.  
 Public Works Director

March 12, 2021  
 \_\_\_\_\_  
 Date

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(Drawings in **BOLD** have been revised with Addendum 7)

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P-49	No Longer Used
P-50	Street Construction Requirements and Traffic Indices
P-51	Expressway and Super Arterial Cross-Section
<b>P-52</b>	<b>Arterial Street Cross-Section</b>
<b>P-53</b>	<b>Collector Street Cross-Section (4 travel lanes)</b>
P-54	Collector Street Cross-Section (2 travel lanes)
P-55	Industrial Street Cross-Sections
<b>P-56</b>	<b>No Longer Used – Renumbered to P-56A</b>
<b>P-56A</b>	<b>Local Street Cross-Sections</b>
<b>P-56B</b>	<b>Local Street Cross-Sections with Wedge Curbs</b>
P-57	82' Row Local Boulevard
<b>P-58</b>	<b>Asphalt Class I Trail</b>
P-59	Concrete Multi-Purpose Trail
P-60	Trail Details
<b>P-61</b>	<b>Trail-Street Intersection Typical Plan</b>
P-62	Median Island Left Turn Pockets (1 of 2)
P-63	Median Island Left Turn Pockets (2 of 2)
P-64	Median Island Parabolic Nose
P-65	Bulb Design Frontage Road Terminations
P-66	U-Turn Minimum Clearance
<b>P-67</b>	<b>Fire Access Lane Across Parkway</b>
P-68	Median Opening for Emergency Vehicles
<b>P-69</b>	<b>Street Intersection Detail</b>
<b>P-70</b>	<b>Street Intersection Detail with Dual Left Turn Lanes</b>
P-71	No Longer Used
<b>P-72</b>	<b>Bus Stop with Shelter Layout</b>
<b>P-73</b>	<b>Bus Bays</b>
P-74	Expressway Barrier Fencing
P-75	Expressway Barrier Fence Location
P-76	Street Type Approach for Undivided Driveway
P-77	Street Type Approach for Divided Driveway
P-78	Major Street Connections for Local Streets and Street Type Approaches
<b>P-79</b>	<b>Class II Bike Lanes Typical Layout and Cross-Sections</b>

<b>P-80</b>	<b>Class II &amp; III Bike Facilities Signage and Markings</b>
P-81	No Longer Used
<b>P-81A</b>	<b>Green Bike Lane Treatment Right-Turn and Driveway Conflict Zone</b>
<b>P-81B</b>	<b>Green Bike Lane Trap-Right Conflict Zone</b>
<b>P-82</b>	<b>High Visibility Crosswalk</b>
P-83	Residential Traffic Circle for Four-Way Intersection
P-84	Residential Traffic Circle (Case No.1)
P-85	Residential Traffic Circle (Case No.2)
P-86	Residential Entry Treatment
P-87	News Racks In Special Districts
P-88	Sign Post Detail
P-89	Street Name Sign Placement
<b>P-90</b>	<b>Oversized Street Name Sign</b>
P-91	No Stopping Any Time Sign
<b>P-92</b>	<b>Local Street Name Sign</b>
<b>P-93</b>	<b>6" Concrete Masonry Wall with or Without 8" Soil Retention</b>
<b>P-94</b>	<b>6" Concrete Masonry Wall without Soil Retention</b>
<b>P-95</b>	<b>6" Concrete Masonry Wall with 8" Max Soil Retention</b>
P-96	6" Concrete Masonry Wall Standard Details
<b>P-97</b>	<b>Temporary Ponding Basin</b>
P-98	Chain Link Fence Construction Details
P-99	Access Ramp Gate
P-100	Temporary Timber Barricade
<b>P-101</b>	<b>Intersection Sight Triangles Local/Collector/Arterial</b>

## WATER STANDARD DRAWINGS

NO.	TITLE OF DRAWING
<b>W-1</b>	<b>1 1/2" &amp; 2" Service Connection &amp; Meter Box Installation</b>
<b>W-2</b>	<b>1" Service Connection &amp; Meter Box Installation</b>
<b>W-3</b>	<b>Fire Hydrant Installation</b>
<b>W-4</b>	<b>No Longer Used</b>
W-5	Typical Fire Hydrant Marker Locations
<b>W-6</b>	<b>No Longer Used</b>
<b>W-7</b>	<b>Valve Lid &amp; Paving Ring with Galvanized Casing</b>
W-8	Installation Procedure for Paving Ring & Lid
W-9	Blow-Off Assembly Type A
W-10	Blow-Off Assembly Type B
<b>W-11</b>	<b>Reduced Pressure Principle Backflow Assembly Installation</b>
<b>W-12</b>	<b>Double Check Valve Installation</b>
<b>W-13</b>	<b>Automatic Air Release and Vacuum Valve</b>
<b>W-14</b>	<b>No Longer Used</b>
W-15	Typical Enclosure for Backflow Prevention Devices
<b>W-16</b>	<b>Fire Service Detector Check Installation</b>
<b>W-17</b>	<b>Detector Bypass Meter Details</b>

W-18	Detector Check Requirements Related to Fire Service Improvements Greater Than 2"
W-19	Installation Requirements for an Approved Air Gap Separation
W-20	Approved Alternative Installation Requirements for an Air Gap System
W-21	Approved Portable Water Transport Backflow Protection
<b>W-22</b>	<b>No Longer Used</b>
<b>W-23</b>	<b>Fire Hydrant Installation with Flexible Delineators</b>
<b>W-24</b>	<b>Installation of Water Pipe in Jacked Steel Casing</b>
W-25	Valve Anchor for Line Valve
W-26	Alternative to Full Concrete Encasement
W-27	Typical Intersection Connection
W-28	Service Casing
<b>W-29</b>	<b>Water Main Trench, Bedding, and Backfill Detail</b>
W-30	Monitoring Well Manhole Construction Detail
W-31	PVC Tee Restraints
W-32	PVC Bend Restraints
W-33	PVC Pipe Restraints
W-34	Ductile Iron Tee Restraints
W-35	Ductile Iron Bend Restraints
W-36	Ductile Iron Pipe Restraints
<b>W-37</b>	<b>Hydrant Run Tee Restraints for PVC or Ductile Iron Pipe</b>
W-38	Concrete Vault and Cover Details
W-39	Concrete Vault Knockout Details
<b>W-40</b>	<b>Compound Meter Setting with By-Pass</b>
<b>W-41</b>	<b>Turbine Meter Setting with By-Pass</b>
<b>W-42</b>	<b>Compound FM Meter Setting with By-Pass</b>
<b>W-43</b>	<b>Temporary RP Principle Backflow Assembly Installation</b>
<b>W-44</b>	<b>Sample Station Installation</b>
<b>W-45</b>	<b>City of Fresno – Water Division Well Destruction Requirements</b>

## SEWER STANDARD DRAWINGS

NO.	TITLE OF DRAWING
<b>S-1</b>	<b>House Branch &amp; Utilities Locations in Street</b>
<b>S-2</b>	<b>Special Sewer Manhole for Sewer Pipes with Diameter Greater than 42'</b>
<b>S-3</b>	<b>48" Sewer Manhole</b>
<b>S-4</b>	<b>60" Sewer Manhole</b>
S-5A	Cast Iron Manhole Frame and Cover
<b>S-5B</b>	<b>Pamrex Ductile Iron Frame and Cover for Sewer Pipe 27" or Larger</b>
S-6	Sloping Lamphole with C.I. Cleanout & Cover
S-7A	Installation of Sewer Pipe in Jacked and Non-jacked Steel Casing
S-7B	Minimum Wall Thickness for Steel Casing Pipe
<b>S-8</b>	<b>House Branch Connections</b>
<b>S-9</b>	<b>Additional Limitations on House Branch Connections</b>
<b>S-10</b>	<b>Sewer Main Trench, Bedding, and Backfill Detail</b>

S-11A	Drop Connections
S-11B	Stainless Steel Adjustable Clamping Brackets
S-12	Manhole Base Design Flow Configurations
<b>S-13A</b>	<b>Pipe/Conduit Crossing Under Existing Sewer – Case 1</b>
<b>S-13B</b>	<b>Pipe/Conduit Crossing Under Existing Sewer – Case 2</b>

## **ELECTRICAL STANDARD DRAWINGS**

<b>NO.</b>	<b>TITLE OF DRAWING</b>
<b>E-1</b>	<b>Streetlight - With Base Includes Pull Box &amp; PVC Conduit</b>
<b>E-2</b>	<b>Streetlight - Embedded Pole with No Foundation</b>
<b>E-3</b>	<b>Streetlight - Local Street Overhead Service – Wood Pole</b>
<b>E-4A</b>	<b>Traffic Signals Concrete Pull Boxes</b>
<b>E-4B</b>	<b>Streetlights Concrete Pull Boxes Deterrent Detail</b>
<b>E-4C</b>	<b>Streetlight Point of Service Concrete Pull Boxes – Local Street Only (Residential)</b>
<b>E-5</b>	<b>Streetlight-Connection Diagram</b>
<b>E-6</b>	<b>Local Streetlight Layout</b>
<b>E-7</b>	<b>No Longer Used – See E-7A</b>
<b>E-7A</b>	<b>Streetlight - Placement Major Streets</b>
<b>E-7B</b>	<b>Streetlight - Placement Major/Local Intersection</b>
<b>E-8</b>	<b>Streetlight - Placement Signalized Intersections</b>
<b>E-9</b>	<b>No Longer Used – See E-9A</b>
<b>E-9A</b>	<b>Streetlight - Placement Local Streets</b>
<b>E-9B</b>	<b>Streetlight - Placement Local Intersections</b>
<b>E-10</b>	<b>Streetlight - Placement Expressway</b>
<b>E-11</b>	<b>Streetlight-Placement Cul-De-Sac &amp; Knuckle Streets</b>
<b>E-12</b>	<b>No Longer Used</b>
<b>E-13</b>	<b>Signal Lights Bike Loop Detector Detail (3'X3')</b>
<b>E-14</b>	<b>Signal Lights Loop Detector Placement</b>
<b>E-15</b>	<b>Signal Light Wiring New Installations 26-100 Cabinets</b>
<b>E-16</b>	<b>Signal Light Wiring Retrofit of Existing 21-100 Cabinets</b>
<b>E-17</b>	<b>Signal Light Service Foundation Detail</b>
<b>E-18</b>	<b>Streetlight Wiring</b>
<b>E-19</b>	<b>Vehicle Signal Terminal Location</b>
<b>E-20</b>	<b>Pedestrian Signal, &amp; PPB Terminal Locations</b>
<b>E-21</b>	<b>Streetlight Irrigation Service Installation</b>
<b>E-22</b>	<b>Service Riser Detail from Existing Streetlight</b>
<b>E-23</b>	<b>Signal Light Coordination Cable Termination</b>
<b>E-24</b>	<b>Signal Light Equipment Placement Guideline</b>
<b>E-24A</b>	<b>Signal Lights/Dual Ramps Equipment Placement Guideline</b>
<b>E-24B</b>	<b>Signal Light Equipment Placement Detail</b>
<b>E-24C</b>	<b>High-Intensity Activated Crosswalk [HAWK] – Layout and Equipment Placement Guideline</b>
<b>E-25</b>	<b>Streetlight/Safety Light Pole Numbering</b>

E-26	Streetlight Ornamental Pole Numbering
E-27	Signal Light Foundation Wire-Way Detail
<b>E-28</b>	<b>No Longer Used</b>
E-29	Downtown Signal & Streetlight Poles Decorative Pole Boundary
<b>E-30</b>	<b>Downtown Streetlight Decorative Pole Details</b>
<b>E-31</b>	<b>Downtown Signal Poles Decorative Pole Details Type - 1-A, 16, 17B</b>
<b>E-32</b>	<b>Downtown Signal Poles Decorative Pole Details Type - 19, 24</b>
<b>E-33</b>	<b>Downtown Signal Poles Decorative Pole Details Type - 26, 29</b>
<b>E-34A</b>	<b>Emergency Vehicle Preemption Opticom Connections 721 Detector and Terminal Block Connections</b>
E-34B	332L Cabinet / 2070L Detection C11S Cable Connections and Master/Signal CB
<b>E-34C</b>	<b>332 Cabinet C11 Retro – Fit C11S Cable Connections</b>
<b>E-34D</b>	<b>Hawk Cabinet Wiring Diagram North/South</b>
<b>E-34E</b>	<b>Hawk Cabinet Wiring Diagram East/West</b>
E-35	Bus Shelter Lighting Connection Detail
E-36	Flashing Beacon Wiring New Installations 26-100 Cabinets
<b>E-37</b>	<b>332L Cabinet Foundation</b>

## INTELLIGENT TRANSPORTATION SYSTEM (ITS) STANDARD DRAWINGS

NO.	TITLE OF DRAWING
<b>ITS-1</b>	<b>Typical ITS Corridor Layout</b>
ITS-2	Typical ITS Intersection Layout
<b>ITS-3</b>	<b>Typical ITS Intersection Conduit Run Layout</b>
<b>ITS-3A</b>	<b>Typical ITS Intersection Conduit Run Layout with Hub</b>
<b>ITS-4</b>	<b>ITS Conduit Trench Detail No. 1</b>
<b>ITS-5</b>	<b>ITS Conduit Trench Detail No. 2</b>
ITS-6	ITS Conduit Trench Layout No. 1
ITS-7	ITS Conduit Trench Layout No. 2
ITS-8	ITS Conduit Trench Layout No. 3
ITS-9	ITS Conduit Trench Layout No. 4
ITS-10	ITS Conduit Trench Layout No. 5
ITS-11	ITS 3' X 5' Vault Details No. 1
<b>ITS-12</b>	<b>ITS 3' X 5' Vault Details No. 2</b>
ITS-13	ITS 4' X 7' Vault Details No. 1
<b>ITS-14</b>	<b>ITS 4' X 7' Vault Details No. 2</b>
<b>ITS-15</b>	<b>No Longer Used</b>
<b>ITS-16</b>	<b>No Longer Used</b>
<b>ITS-17</b>	<b>No Longer Used</b>
ITS-18	IP Camera
ITS-18A	Traffic Signal Mounted IP Camera (Gooseneck)
ITS-18B	Traffic Signal Mounted IP Camera
ITS-19	Toneable T-LOC Coupling



<b>ITS-20</b>	<b>No Longer Used</b>
ITS-20A	Model 336 Communication Cabinet Details
<b>ITS-21</b>	<b>No Longer Used</b>
ITS-21A	No Longer Used
<b>ITS-21B</b>	<b>Model 336 Communication Cabinet Equipment Assemblies</b>
ITS-21C	336 Communication Cabinet Wiring Diagram, 1 of 2
ITS-21D	Model 336 Communication Cabinet Power Distribution, 2 of 2
ITS-22	Hub Foundation Grounding Details
ITS-23	Hub Cabinet Foundation Detail
ITS-24	Hub Cabinet Wiring Diagram
ITS-25	ITS Hub Cabinet Details No. 2
ITS-26	ITS Hub Cabinet Service Pedestal Schematic
<b>ITS-27A</b>	<b>Wireless ITS Installation</b>
<b>ITS-27B</b>	<b>Wireless ITS Installation Details</b>
ITS-28A	ITS Wireless Pole Repeater Installation (Powered through street light)
<b>ITS-28B</b>	<b>ITS Wireless Pole Repeater Installation (Powered through service pedestal).</b>
ITS-28C	Repeater Circuit Breaker
ITS-29A	ITS Hub Cabinet, 1 of 2
ITS-29B	ITS Hub Cabinet, Plate Anchor, 2 of 2

## ALTERNATE PUBLIC IMPROVEMENT STANDARD DRAWINGS

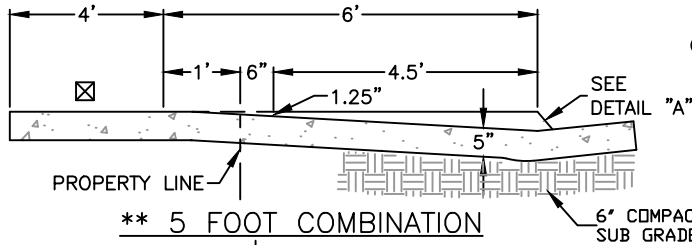
NO.	TITLE OF DRAWING
API-1	Modified Streets
API-2	Modified Street Improvement Standards
API-3	Modified Street Improvement Standards
API-4	Details for Modified Streets
<b>API-5</b>	<b>Intersection Details for Modified Streets (Local and ½ mile Local)</b>
<b>API-6</b>	<b>Van Ness Extension – Herndon Avenue to San Joaquin River Bluff</b>
<b>API-7</b>	<b>Minnewawa Avenue – Fancher Creek to California Avenue</b>
<b>API-8</b>	<b>Minnewawa Avenue – California Avenue to Butler Avenue</b>
<b>API-9</b>	<b>Minnewawa Avenue – Butler Avenue to Tulare Avenue</b>
<b>API-10</b>	<b>Downtown Concrete Sidewalk Aesthetic Treatment – Sidewalk Aesthetic Boundary</b>
<b>API-11</b>	<b>Downtown Concrete Sidewalk Aesthetic Treatment – Sidewalk Pattern</b>

## RECYCLED WATER MAINS STANDARD DRAWINGS

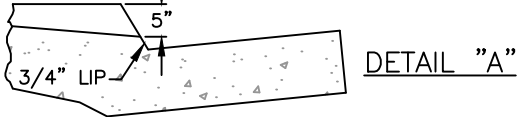
NO.	TITLE OF DRAWING
<b>RW-1</b>	<b>Recycled Water Main Identification</b>
RW-2	Recycled Water Valve and Valve Box
RW-3	Recycled Water Valve Stem Extension

RW-4	1" Service Connection & Meter Box Installation
RW-5	1-1/2" & 2" Service Connection & Meter Box Installation
<b>RW-6</b>	<b>4", 6", 8" Recycled Water Service</b>
<b>RW-7</b>	<b>Temporary 2" Recycled Water Blow-Off</b>
<b>RW-8</b>	<b>No Longer Used – See RW-8A and RW-8B</b>
<b>RW-8A</b>	<b>Recycled Water Blow-Off Assembly (PVC or Ductile Iron Main)</b>
<b>RW-8B</b>	<b>Recycled Water Blow-Off Assembly (Steel Main)</b>
<b>RW-9</b>	<b>Recycled Water 1" or 2" Air Release/Vacuum Breaker Station</b>
<b>RW-10</b>	<b>Recycled Water 4" Air Release/Vacuum Breaker Station</b>
<b>RW-11</b>	<b>No Longer Used</b>
<b>RW-12</b>	<b>Recycled Water Main Separation Requirements</b>
RW-13	Recycled Water Irrigation Information Sign
RW-14	Recycled Water Remote Control Irrigation Valve Identification
RW-15	Recycled Water Backflow Preventer Identification
RW-16	Recycled Water Irrigation Box Cover Markings
RW-17	Recycled Water Irrigation System Clock Marking
RW-18	General Recycled Water Identification Tag
RW-19	Recycled Water Landscape Irrigation Head Identification
RW-20	Quick Coupling Valve
RW-21	Cross Connection Control Test Station
RW-22	Temporary Potable Water Supply To On-Site Recycled Water System
RW-23	Temporary Potable Water Supply To Recycled Water System
<b>RW-24</b>	<b>Tracer Wire Splice Connection Detail</b>
<b>RW-25</b>	<b>Recycled Water Commercial Truck Fill Station</b>
<b>RW-26</b>	<b>Air Release/Vacuum Breaker Valve Enclosure</b>

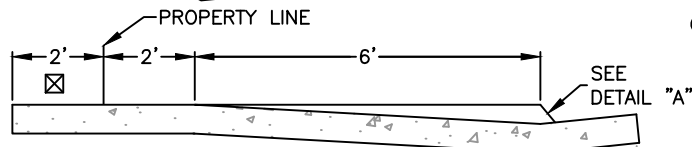
DENOTES UNOBSTRUCTED ONSITE PEDESTRIAN  
 ☒ LANDING AREA PER A.D.A. REQUIREMENTS  
 PEDESTRIAN EASEMENT REQUIRED



**\*\* 5 FOOT COMBINATION**

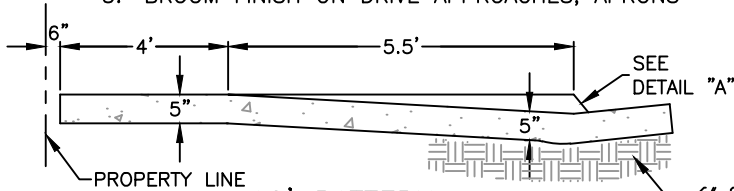


**DETAIL "A"**



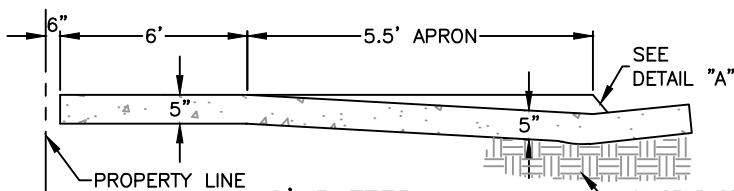
**\*\* 8' PATTERN**

1. FOR CURB AND GUTTER DETAILS SEE DWG. P-5
2. \*\* 5' AND 8' PATTERNS ARE FOR USE ON RETROFITS AND/OR WITH APPROVAL OF THE CITY ENGINEER.
3. BROOM FINISH ON DRIVE APPROACHES, APRONS

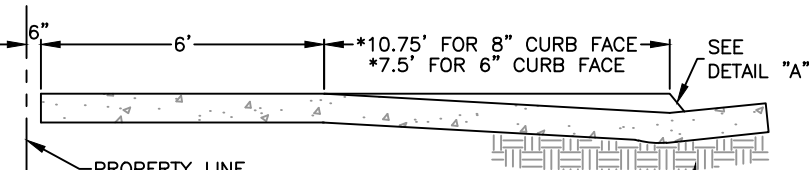


**10' PATTERN**

NOTE: CONSTRUCT WEAKENED PLANE JOINT ON CENTERLINE WHEN WIDTH IS 10 FEET OR GREATER.



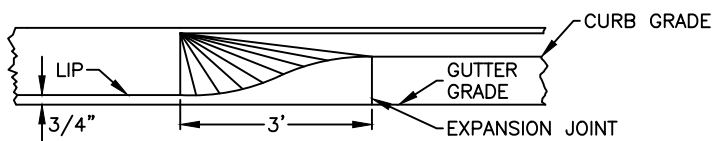
**12' PATTERN**



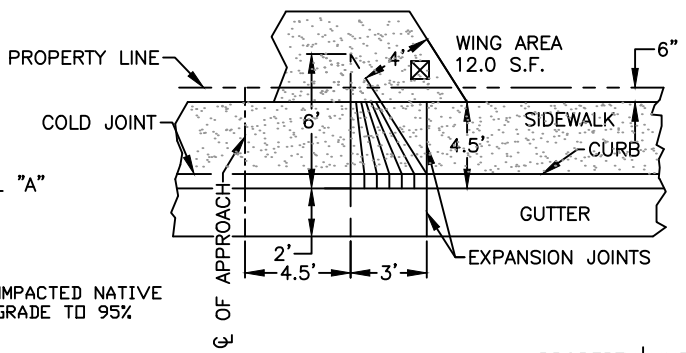
**14' PATTERN**

NOTE: DRIVEWAY APPROACH THICKNESS SHALL BE 6" WHEN USAGE IS OTHER THAN WITH NORMAL PASSENGER VEHICLES.

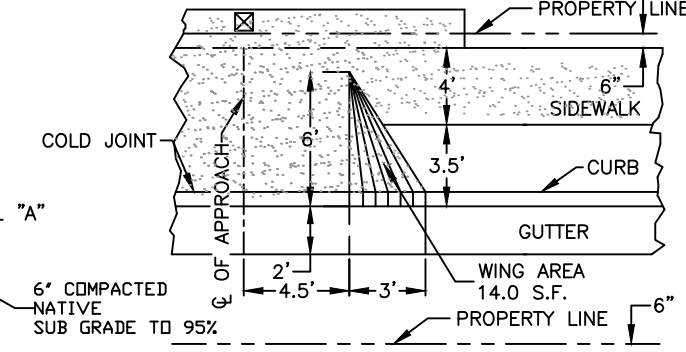
\* MINIMUM LENGTH OF APRON



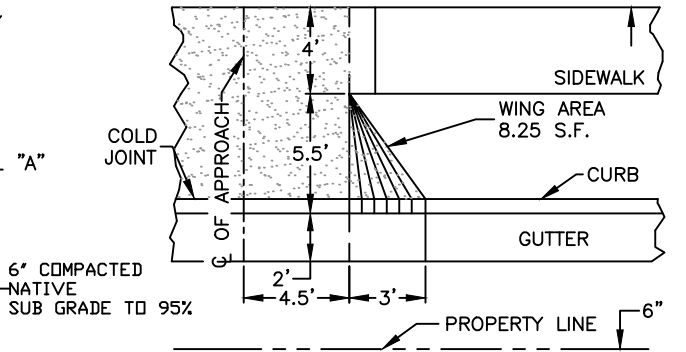
**ELEVATION**



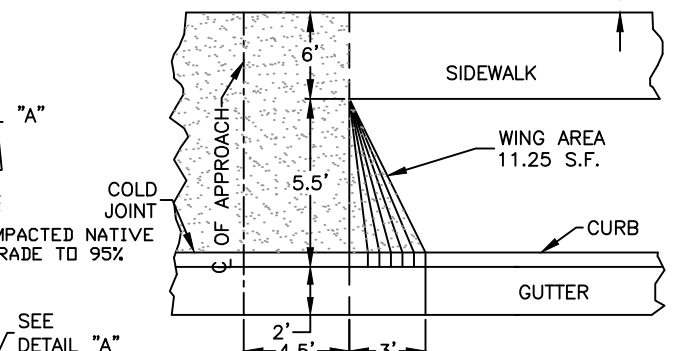
**WING AREA  
12.0 S.F.**



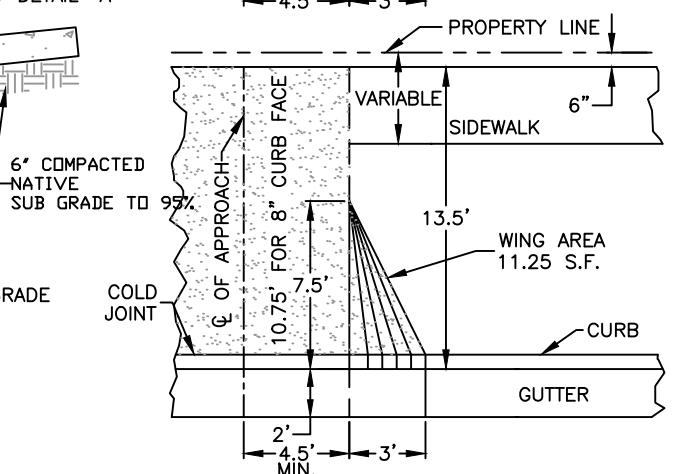
**WING AREA  
14.0 S.F.**



**WING AREA  
8.25 S.F.**



**WING AREA  
11.25 S.F.**



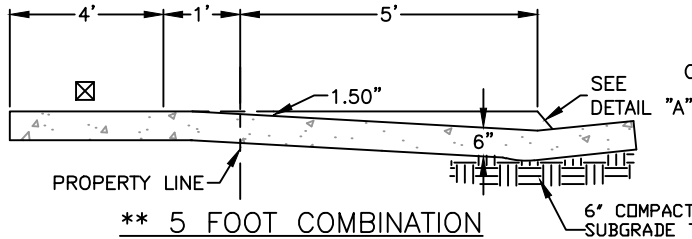
**WING AREA  
11.25 S.F.**

**RESIDENTIAL DRIVEWAY APPROACHES  
FOR 14' - 12' - 10' - 8' PATTERN AND FOR 5'  
COMBINATION**

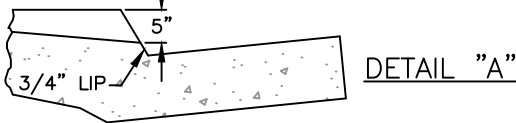
REF. & REV.  
JUNE 2015

CITY OF FRESNO

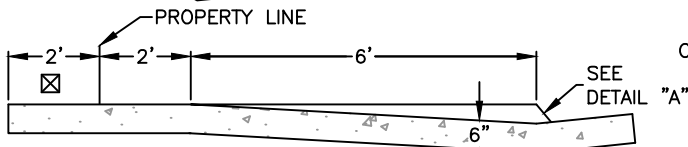
DENOTES UNOBSTRUCTED ONSITE PEDESTRIAN  
 ☒ LANDING AREA PER A.D.A. REQUIREMENTS  
 PEDESTRIAN EASEMENT REQUIRED



**\*\* 5 FOOT COMBINATION**

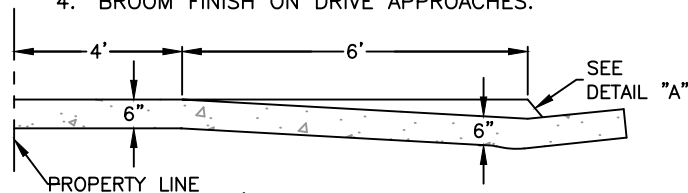


**DETAIL "A"**



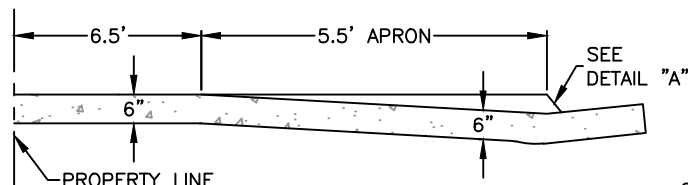
**\*\* 8' PATTERN**

1. FOR CURB AND GUTTER DETAILS SEE DWG. P-5
2. CONCRETE SHALL BE 6 SACK MIX.
3. \*\* 5' AND 8' PATTERNS ARE FOR USE ON RETROFITS AND/OR WITH APPROVAL OF THE CITY ENGINEER.
4. BROOM FINISH ON DRIVE APPROACHES.

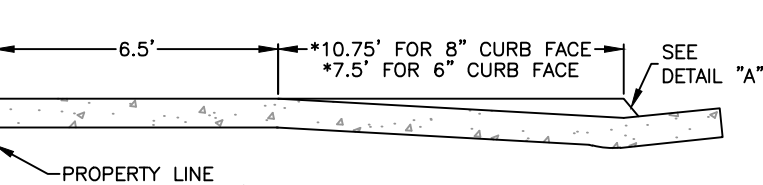


**10' PATTERN**

NOTE: CONSTRUCT WEAKENED PLANE JOINT ON CENTERLINE WHEN WIDTH IS 10 FEET OR GREATER.



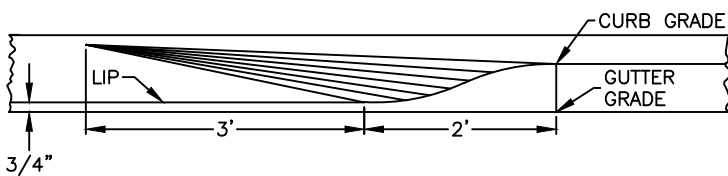
**12' PATTERN**



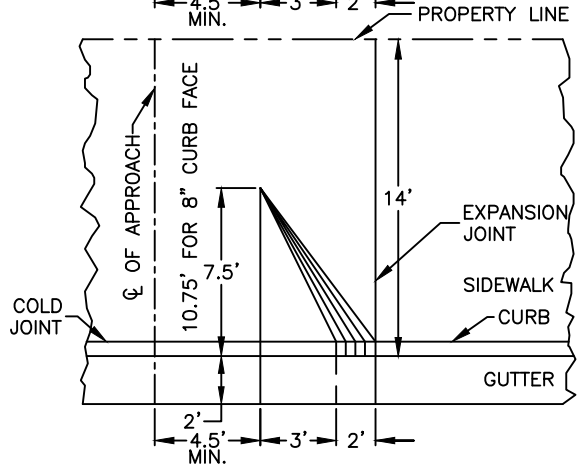
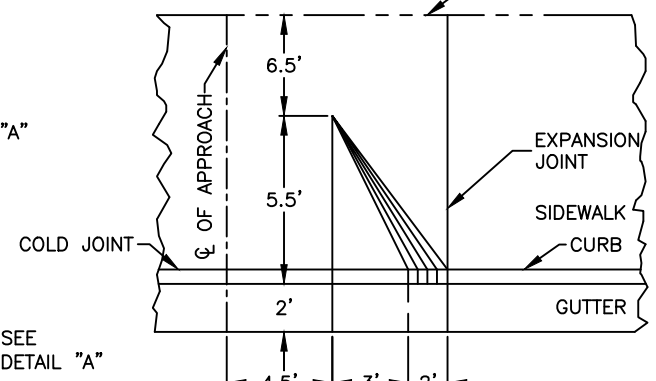
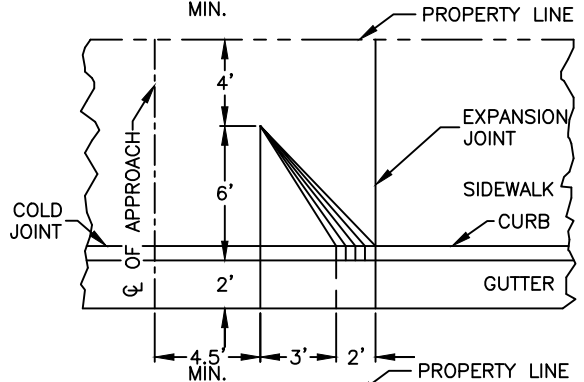
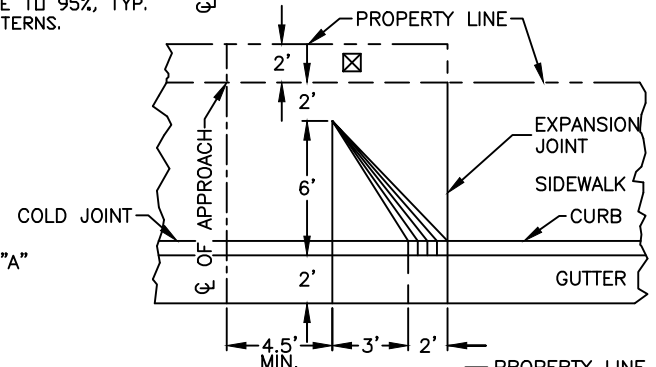
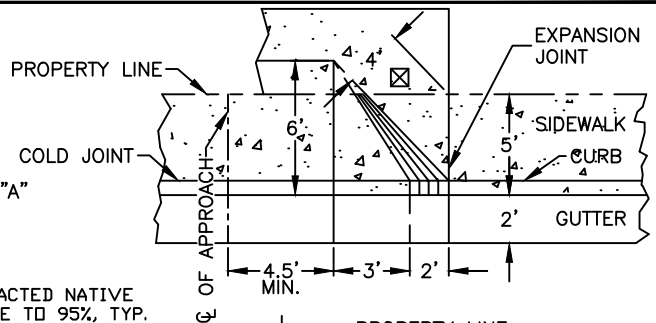
**14' PATTERN**

NOTE: APRON MAY BE EXTENDED TO THE NEAREST SCORE LINE GREATER THAN THE MINIMUM DISTANCE FROM THE CURB. MAXIMUM APRON SLOPE IS 7.5%.

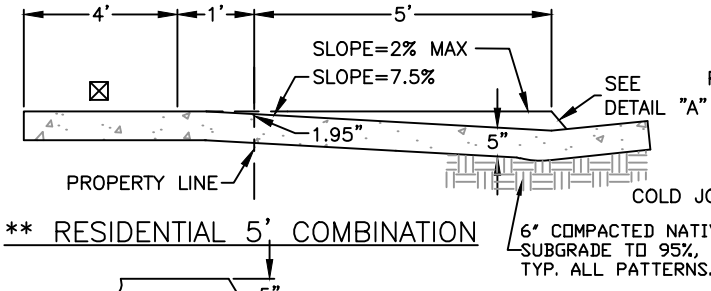
\* MINIMUM LENGTH OF APRON



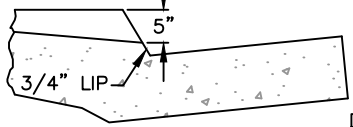
**ELEVATION**



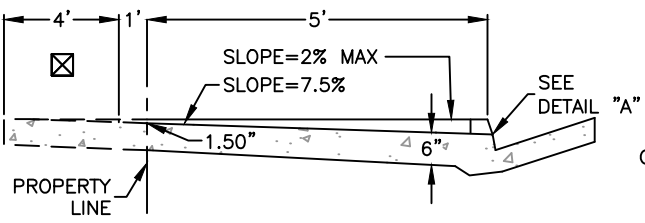
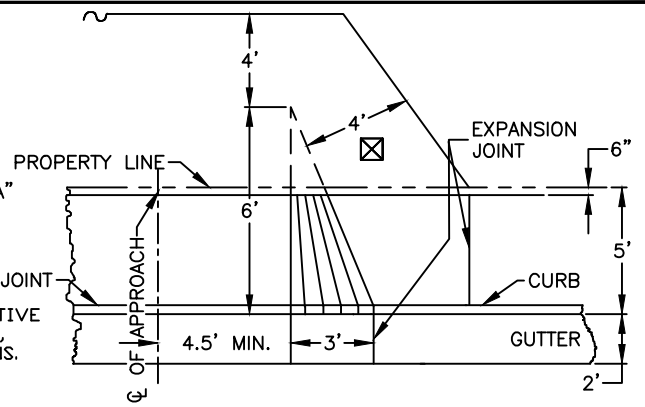
DENOTES UNOBSTRUCTED ONSITE PEDESTRIAN  
 ☒ LANDING AREA PER A.D.A. REQUIREMENTS  
 PEDESTRIAN EASEMENT REQUIRED



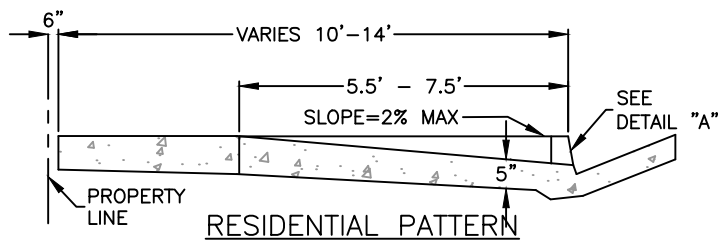
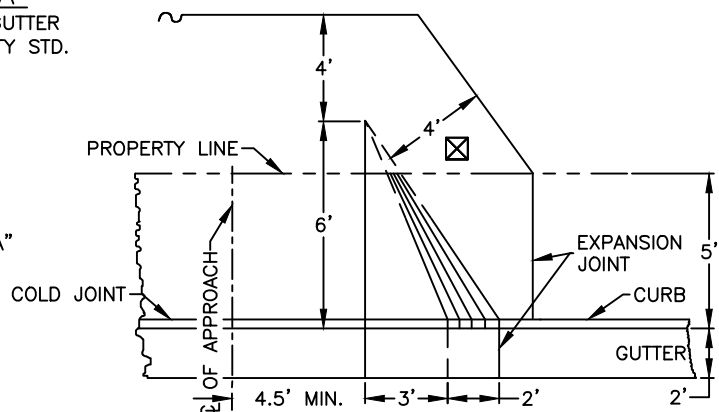
**\*\* RESIDENTIAL 5' COMBINATION**



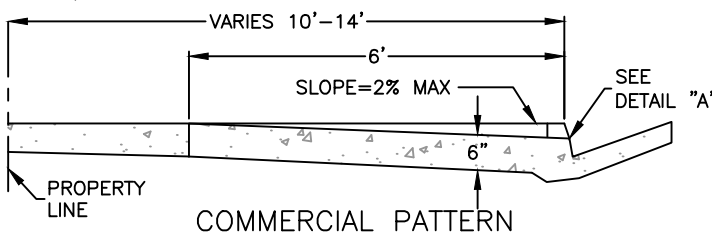
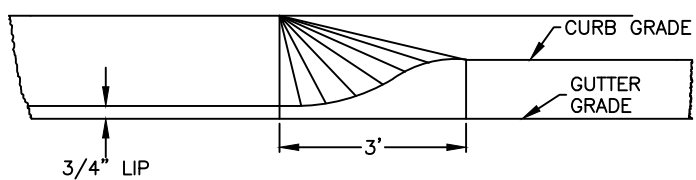
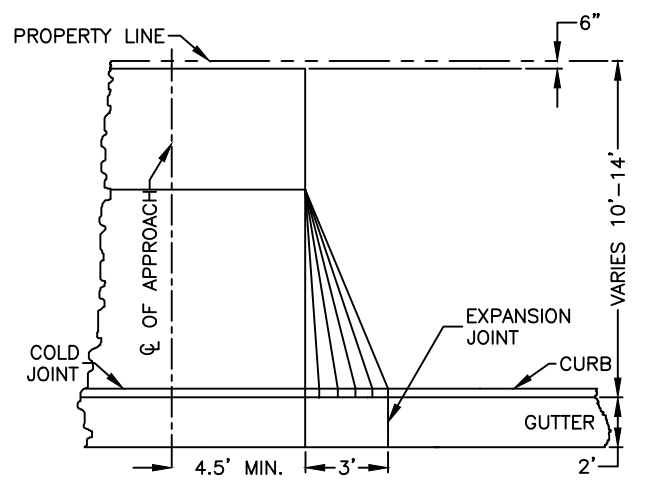
**DETAIL "A"**  
 FOR CURB & GUTTER  
 DETAILS, SEE CITY STD.  
 P-5



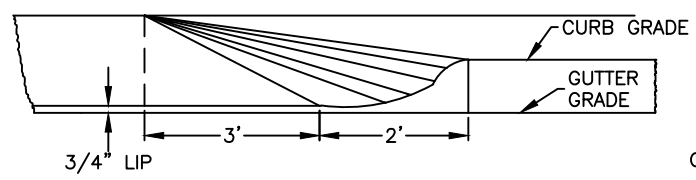
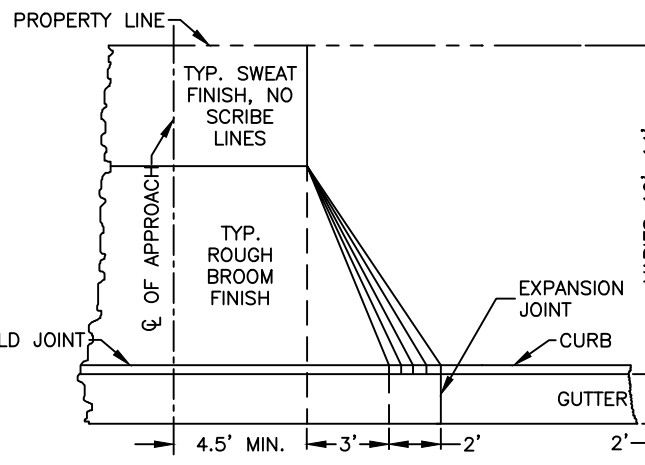
**\*\* COMMERCIAL 5' COMBINATION**



**RESIDENTIAL PATTERN**

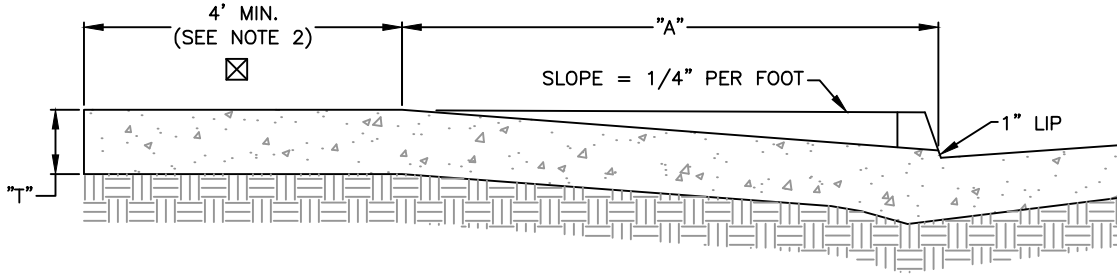


**COMMERCIAL PATTERN**



NOTE: WHERE STANDARD WALK IS NOT REQUIRED BY  
 ORDINANCE OR WHERE WALK HAS BEEN WAIVED.  
 \*\* 5' PATTERNS ARE FOR USE ON RETROFITS AND/OR  
 WITH APPROVAL OF THE CITY ENGINEER.

☒ = DENOTES UNOBSTRUCTED ONSITE PEDESTRIAN LANDING AREA REQUIRED IN ACCORDANCE WITH A.D.A. A PUBLIC PEDESTRIAN EASEMENT SHALL BE DEDICATED IF 4' SIDEWALK EXTENDS INTO PRIVATE PROPERTY.



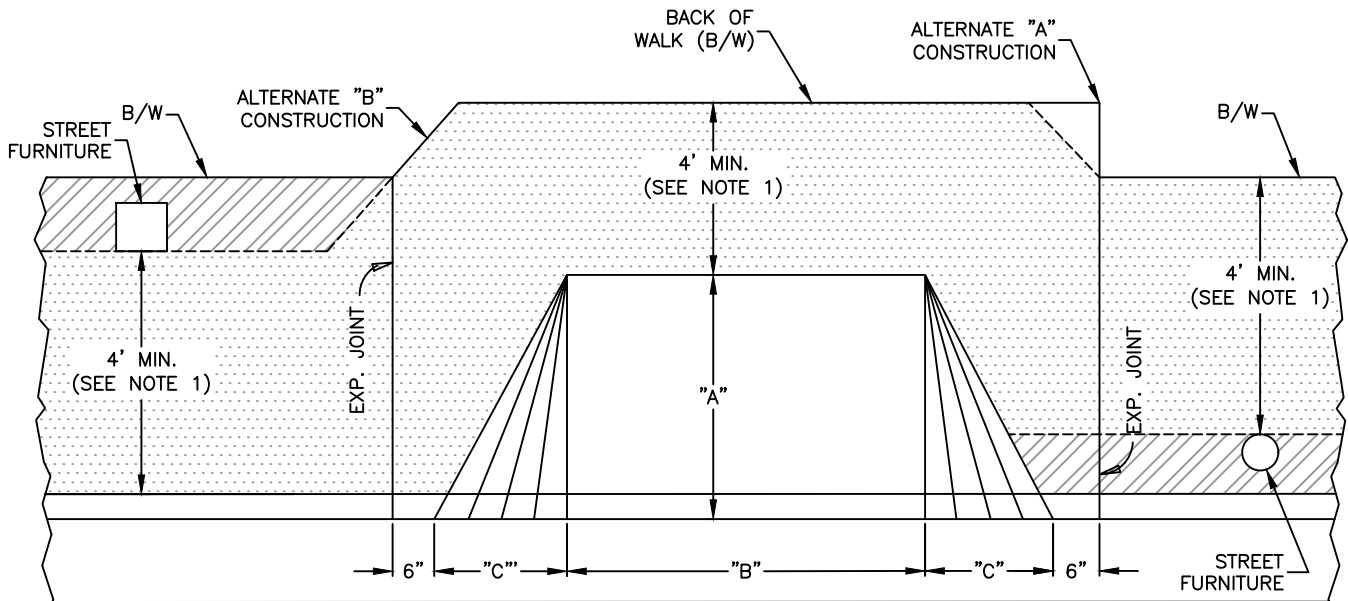
"A" = 3.75' FOR 1 OR 2 DWELLING UNITS  
 "A" = 4.75' FOR MULTIFAMILY, OFFICE, AND COMMERCIAL WITH UP TO 10 PARKING SPACES.  
 "A" = 5.75' FOR MULTIFAMILY, OFFICE, AND COMMERCIAL WITH MORE THAN 10 PARKING SPACES.  
 "T" = 5" FOR RESIDENTIAL USE, 6" FOR COMMERCIAL.

"B" = REFER TO STANDARD DRAWING P-6

"C" = 3' TYP., 5' WHEN ON-STREET PARKING IS PROHIBITED



6" COMPACTED NATIVE SUBGRADE (CNS) AT 95% RELATIVE COMPACTION (R.C.)



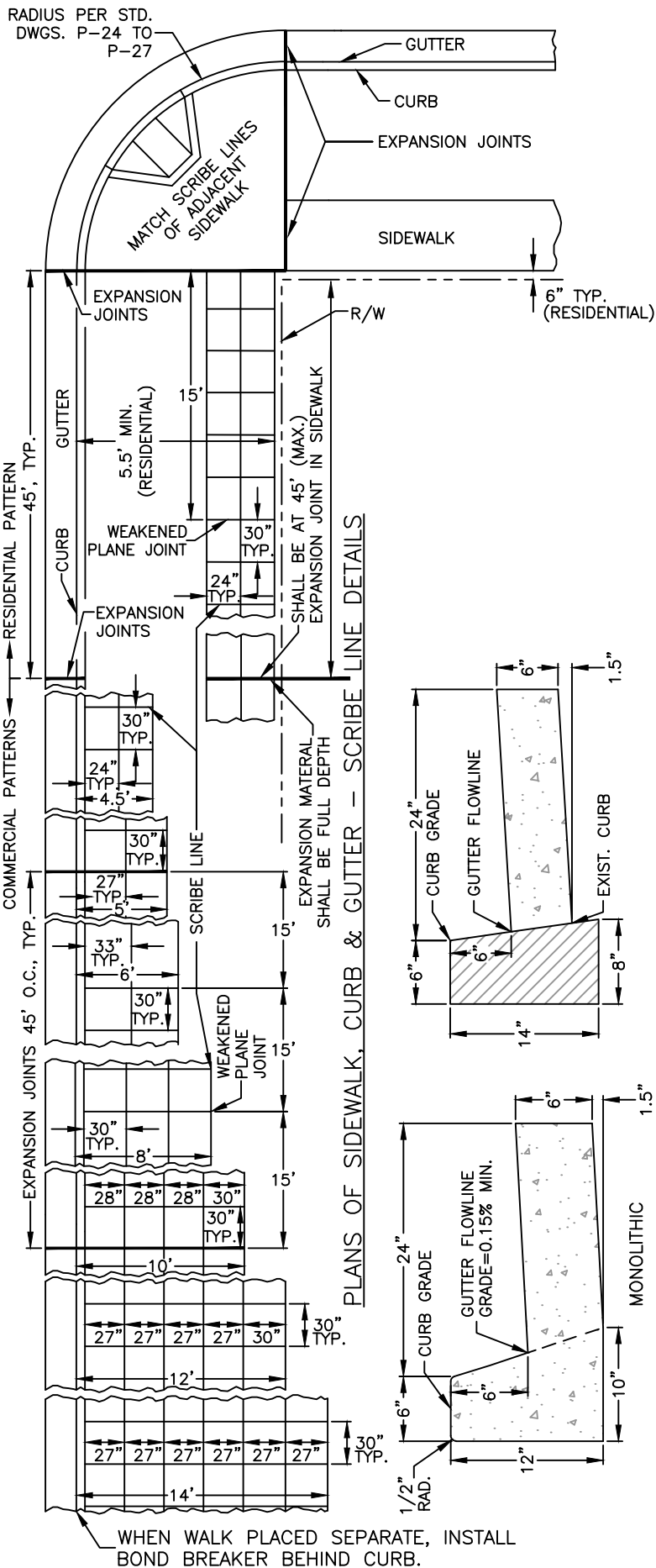
CLEAR PEDESTRIAN AREA. ALSO SEE NOTE 1.



STREET FURNITURE SHALL BE INSTALLED IN ITS TYPICAL LOCATION AND 4' MIN. ADA PATH OF TRAVEL SHALL BE PROVIDED AROUND.

**NOTES:**

1. SIDEWALK WIDTH SHALL BE 4.0' MIN. FOR ADA REQUIREMENTS, CROSS SLOPE NOT TO EXCEED 2%. SIDEWALK CAN BE CONSTRUCTED IN ACCORDANCE WITH ALTERNATES (A) OR (B) ABOVE OR AS APPROVED BY THE CITY.
2. SEE API-7, API-8, AND API-9 FOR S. MINNEWAWA AVE. BETWEEN FANCHER CREEK AND CALIFORNIA AVE., BETWEEN CALIFORNIA AVE. AND BUTLER AVE., AND FROM BUTLER TO TULARE AVE.
3. SEE API-6 FOR VAN NESS EXTENSION BETWEEN HERNDON AVE. AND SAN JOAQUIN RIVER BLUFF.
4. SEE API-3, API-4 FOR DETAILS RELATING TO MODIFIED STREET TYPES.

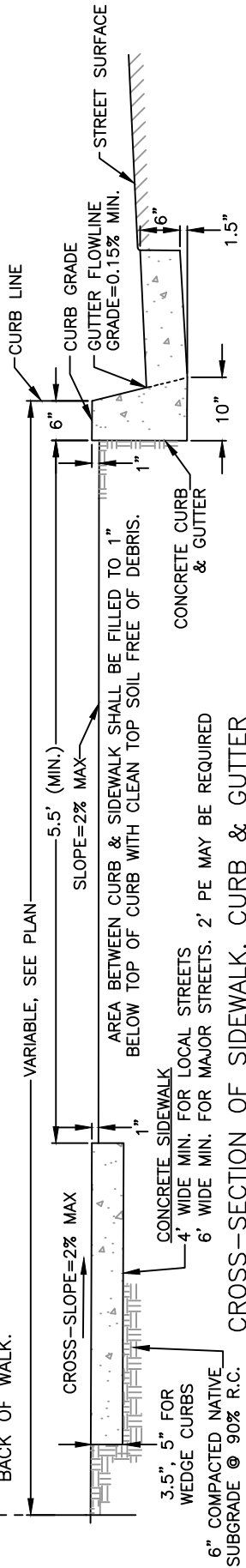


PLANS OF SIDEWALK, CURB & GUTTER - SCRIBE LINE DETAILS

SECTIONS OF CURB & GUTTER

NOTE A: WHERE SIDEWALK IS NOT CONSTRUCTED, CUT OR FILL FROM 1" BELOW TOP OF CURB TO PROPERTY LINE AT A SLOPE OF 1/4" PER FOOT. A STEEPER SLOPE OF UP TO 10% MAY BE USED IN EXISTING RESIDENTIAL NEIGHBORHOODS WHERE (1) THE CONSTRUCTION OF SIDEWALK IS NOT EXPECTED IN THE FUTURE, (2) THE STEEPER SLOPE IS COMPATIBLE WITH THE ADJACENT PROPERTY, AND (3) THE STEEPER SLOPE WILL ELIMINATE THE NEED FOR A RETAINING WALL. SLOPES IN EXCESS OF 10% MAY BE APPROVED BY THE PUBLIC WORKS DIRECTOR ON A CASE-BY-CASE BASIS. 4' MINIMUM SIDEWALK FOR LOCAL STREETS AND 6' MINIMUM SIDEWALK FOR MAJOR STREETS. FOR MONOLITHIC SIDEWALKS THE WIDTH IS MEASURED FROM THE BACK OF CURB TO THE BACK OF WALK.

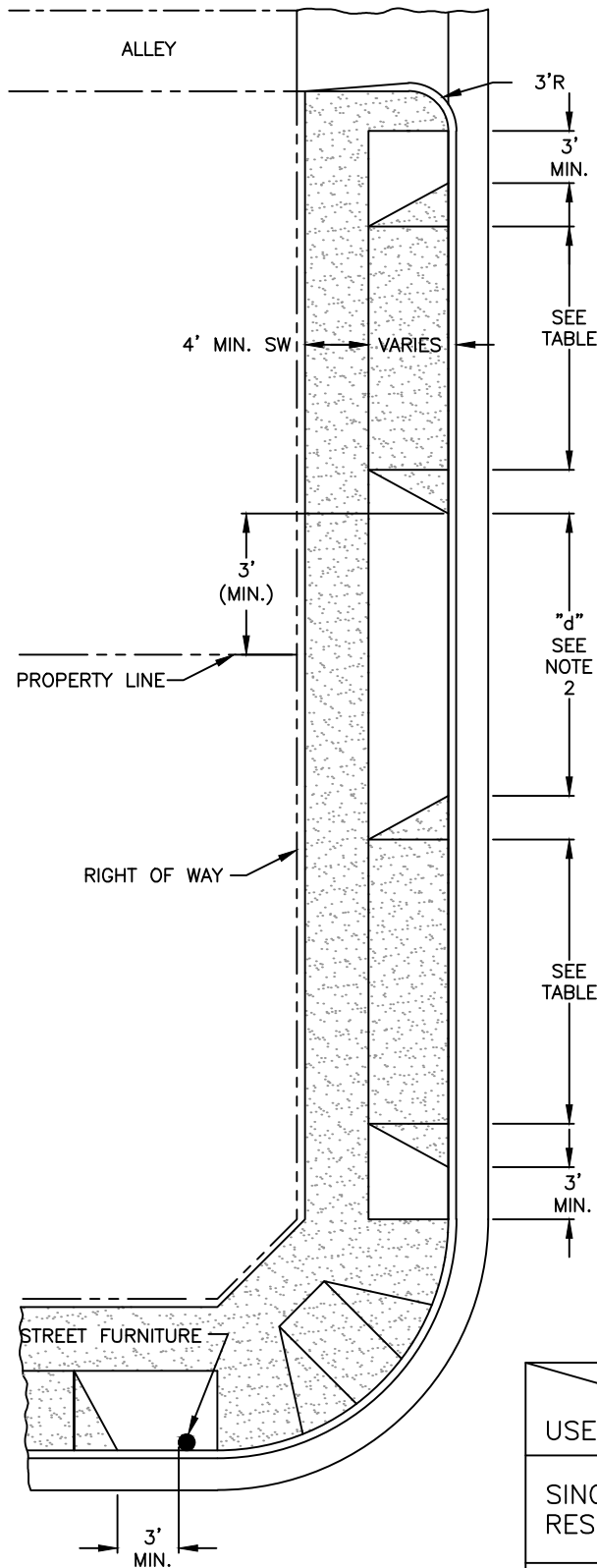
NOTE B: WHEN REQUIRED BY THE ENGINEER, THE CONTRACTOR SHALL FILL AND/OR GRADE AREA BETWEEN NEW GUTTER AND EXISTING STREET SURFACE WITH A.C. SURFACING TO A MIN. DEPTH OF 4" TO MEET EXISTING STREET SURFACING. COMPACTION SHALL BE MADE TO THE SATISFACTION OF THE ENGINEER. CLEAN FACE OF EXIST CURB BEFORE POURING CONCRETE GUTTER. 5.5' (MIN.) REQUIRED FOR STREET TREES.



CROSS-SECTION OF SIDEWALK, CURB & GUTTER

**NOTES:**

1. NO MORE THAN 60% OF STREET FRONTAGE SHALL BE CONSTRUCTED AS DRIVEWAY OPENINGS.
2. DRIVEWAY SPACING, "d", SHALL BE 6' MIN.
3. DRIVEWAY OPENINGS GREATER THAN 40' REQUIRE APPROVAL FROM THE CITY ENGINEER.
4. IN COMMERCIAL, INDUSTRIAL, AND MULTI-FAMILY DEVELOPMENTS, CITY ENGINEER MAY APPROVE LARGER APPROACHES IF WARRANTED.
5. MAJOR STREETS: PROVIDE 10' OF RED CURBING (3 COATS) ON BOTH SIDES OF DRIVEWAY APPROACHES.
6. IF ONLY ONE ENTRANCE LOCAL STREET MIN. SHALL BE 16', NOT 15'. EXCEPTION: SINGLE FAMILY RESIDENTIAL.
7. ANY DRIVEWAY APPROACHES ON MAJOR STREET WITHIN 300' OF MAJOR INTERSECTIONS REQUIRE THE APPROVAL OF THE TRAFFIC ENGINEER. THE TRAFFIC ENGINEER MAY APPROVE ONE DRIVEWAY APPROACH WITHIN THAT ENTIRE LENGTH. ADDITIONAL DRIVEWAY APPROACHES REQUIRE THE REVIEW AND APPROVAL OF THE CITY ENGINEER.
8. 16' MIN WHEN TRASH ENCLOSURE ON-SITE (REVIEWED ON A CASE BY CASE BASIS).
9. RESIDENTIAL DRIVEWAY APPROACHES MUST MATCH THE WIDTH OF THE DRIVEWAY PAVEMENT AND THE WIDTH OF THE GARAGE. THE DRIVEWAY OPENING SHALL EQUAL THE WIDTH OF THE GARAGE DOOR (OR DOORS) PLUS 4' BUT SHALL NOT EXCEED THE MAXIMUM ALLOWABLE WIDTHS AS SHOWN ON THE CHART, BELOW. THE DRIVEWAY OPENING SHALL BE CENTERED ON THE GARAGE DOOR(S).

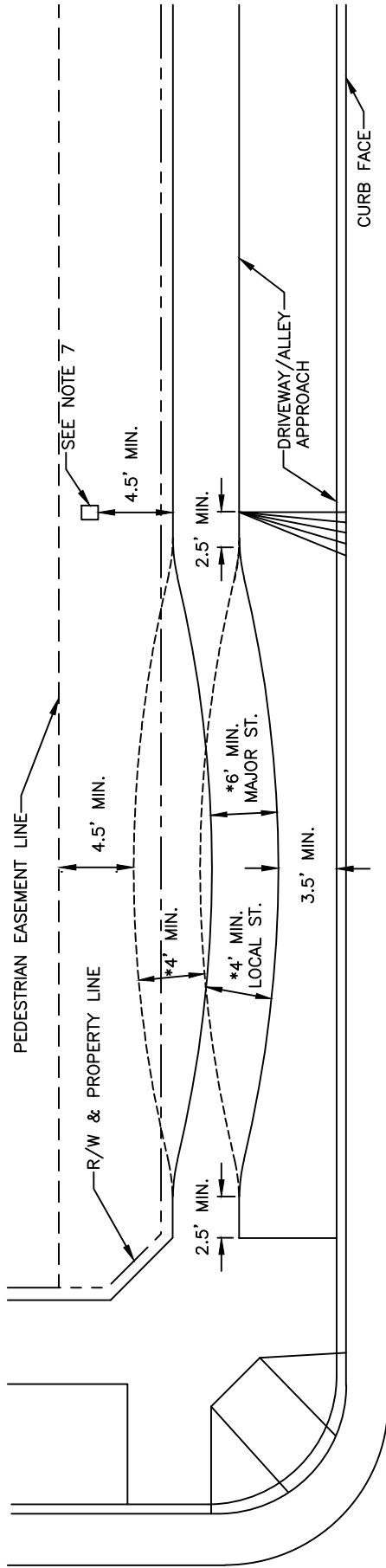


**DRIVEWAY OPENING CHART**

USE TYPE	STREET TYPE		STREET TYPE	
	MAJOR STREET	LOCAL STREET	MAJOR STREET	LOCAL STREET
	MINIMUM		MAXIMUM	
SINGLE-FAMILY RESIDENTIAL DRIVE ⑨	18'	12'	24' ③	35'
ALL OTHER TWO-WAY	30'	24'	35' ④	35'
ONE-WAY ENTRANCE	18'	⑧ 15' ⑥	24'	24'
ONE-WAY EXIT	12' ⑧	12' ⑧	24'	24'

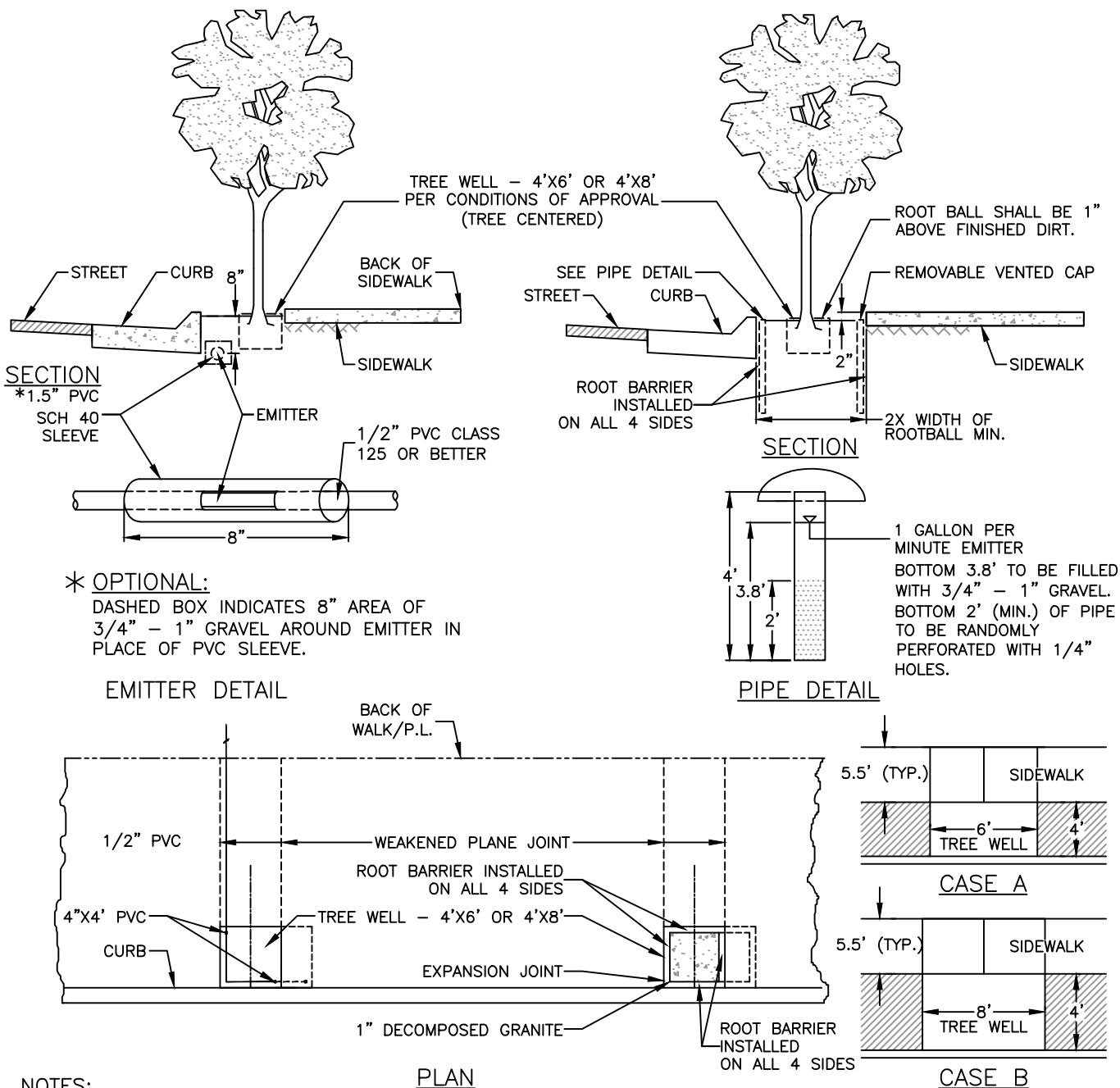
⑨ NOTE APPLIES TO CONDITION





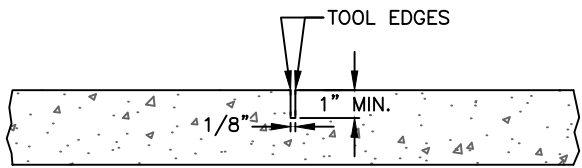
NOTES:

1. PRECISE DATA SHALL BE PROVIDED TO STAKE THE ALIGNMENT AND SET APPROPRIATE GRADES.
2. SIDEWALK CONSTRUCTION SHALL CONFORM TO CITY STANDARD SPECIFICATIONS.
3. SIDEWALK WIDTH SHALL NOT VARY, EXCEPT WHERE APPROVED BY THE CITY ENGINEER; MINIMUM WIDTH SHALL BE 4' (6' ON MAJOR STREETS).
4. LANDINGS AND DIRECT ACCESS TO THE CURVILINEAR SIDEWALK SHALL BE PROVIDED TO EXISTING AND PROPOSED BUS STOP ZONES (INCLUDING SHELTERS AND BENCHES).
5. SIDEWALK LOCATION AT DRIVEWAY AND ALLEY APPROACHES AND AT LANDINGS AT STREET INTERSECTIONS SHALL BE ADJACENT TO THE PROPERTY LINE (STANDARD LOCATION, IN STREET R/W).
6. AT STREET INTERSECTION LANDINGS THE CURVILINEAR PATTERN SHALL COMMENCE AFTER A MINIMUM 2.5' LONG STANDARD SECTION OF SIDEWALK (ALIGNED PERPENDICULAR TO THE STANDARD LANDING AREA); THE WIDTH OF THE 2.5' LONG SECTION SHALL COINCIDE WITH THE ESTABLISHED CURVILINEAR SIDEWALK WIDTH.
7. SIDEWALK SHALL NOT BE CLOSER THAN 3.5' TO THE CURB FACE AND 4.5' TO ON-SITE PARKING LOT, STRUCTURES AND OTHER ITEMS WHICH MAY BE DETRIMENTAL TO PUBLIC SAFETY AND AESTHETIC VALUE.
8. ALL SIDEWALKS OUTSIDE THE PUBLIC RIGHT-OF-WAY SHALL BE IN RECORDED PEDESTRIAN EASEMENTS.
9. AT STREET INTERSECTIONS, SIDEWALK LOCATION SHALL BE INCORPORATED INTO THE DESIGN FOR PROPOSED HANDICAP RAMPS.
10. MINIMUM RADIUS 150'.

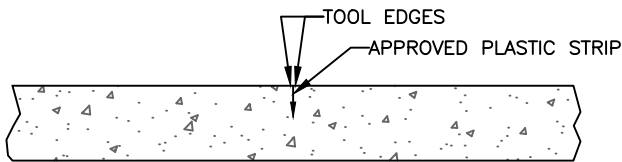


**NOTES:**

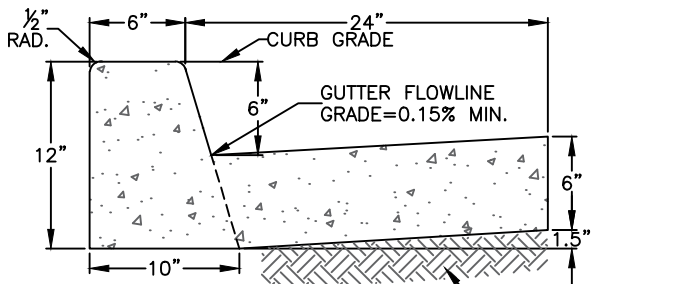
1. FORM LUMBER FOR TREE WELL SHALL BE 2" X 4".
2. NO TREE WILL BE PLANTED UNLESS WATER IS PROVIDED TO PLANTER AREA.
3. 1" DECOMPOSED GRANITE IS REQUIRED WHEN TREE PLANTING IS NOT IN CONJUNCTION WITH PROJECT.
4. ALL DRIP SYSTEMS SHALL BE EQUIPPED WITH 200 MESH FILTER, PRESSURE REGULATOR, AND A CLEAN OUT TO FLUSH THE SYSTEM ANNUALLY.
5. ALL PLASTIC TUBING UNDER CONCRETE SHALL BE 1/2" PVC CLASS 125 OR BETTER AND SLEEVED AT 2.5 TIMES THE DIAMETER OF THE PIPE.
6. TIMECLOCK SHALL HAVE THE CAPACITY TO BE SET TO 40 MINUTES PER IRRIGATION STATION DURING THE MONTHS OF JULY AND AUGUST AND PROPORTIONAL TO CLIMATIC CONDITIONS FOR THE REMAINDER OF THE YEAR.
7. MAINTAIN 4' CLEAR SIDEWALK WIDTH BETWEEN TREE WELL AND BACK OF SIDEWALK.
8. TREE WELL SIZE CAN BE INCREASED DEPENDING ON SIDEWALK WIDTH.



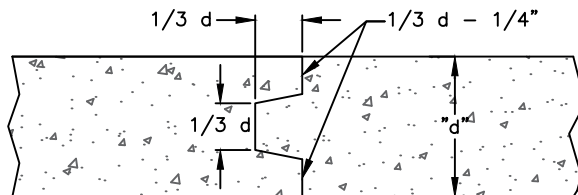
WEAKENED-PLANE JOINT DETAIL



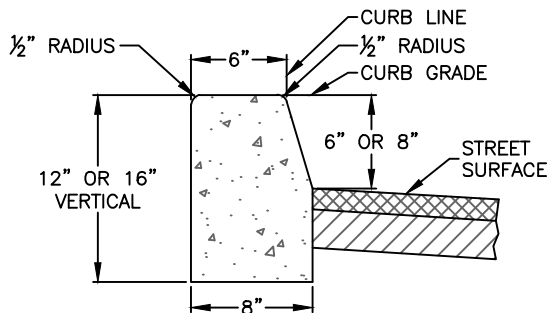
WEAKENED-PLANE JOINT DETAIL ALTERNATE DESIGN



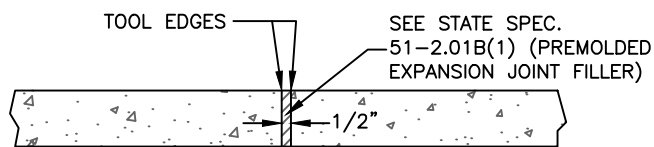
CROSS-SECTION OF MONOLITHIC CURB & GUTTER  
6" COMPACTED NATIVE SUBGRADE TO 95%



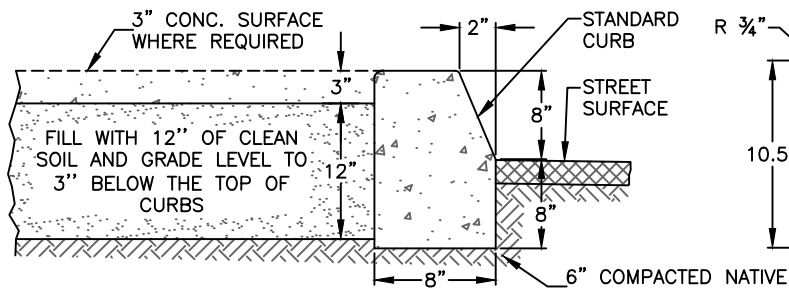
CONSTRUCTION JOINT DETAILS



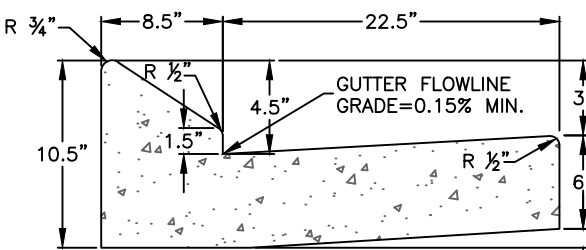
CROSS-SECTION OF CURB



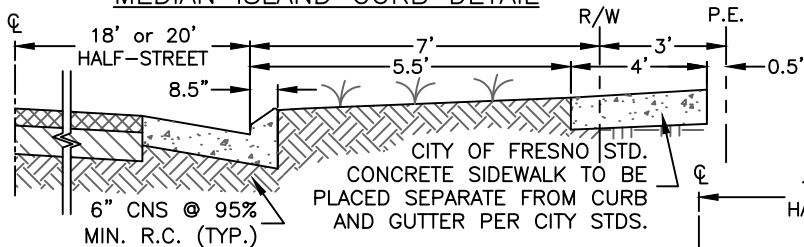
EXPANSION JOINT DETAIL



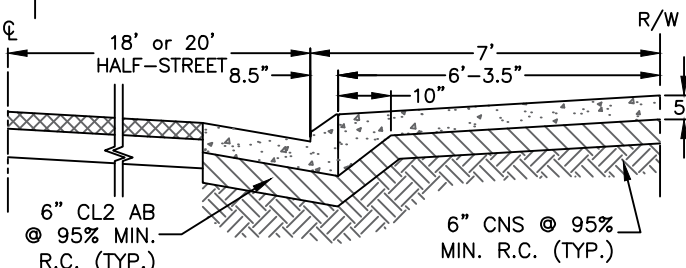
MEDIAN ISLAND CURB DETAIL



WEDGE CURB & GUTTER DETAIL

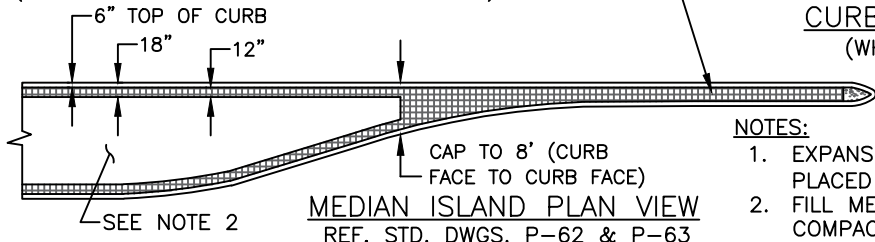


RESIDENTIAL STREET WITH WEDGE CURBS



RESIDENTIAL STREET WITH WEDGE CURBS AND ADJACENT SIDEWALKS  
(WHEN APPROVED BY CITY ENGINEER)

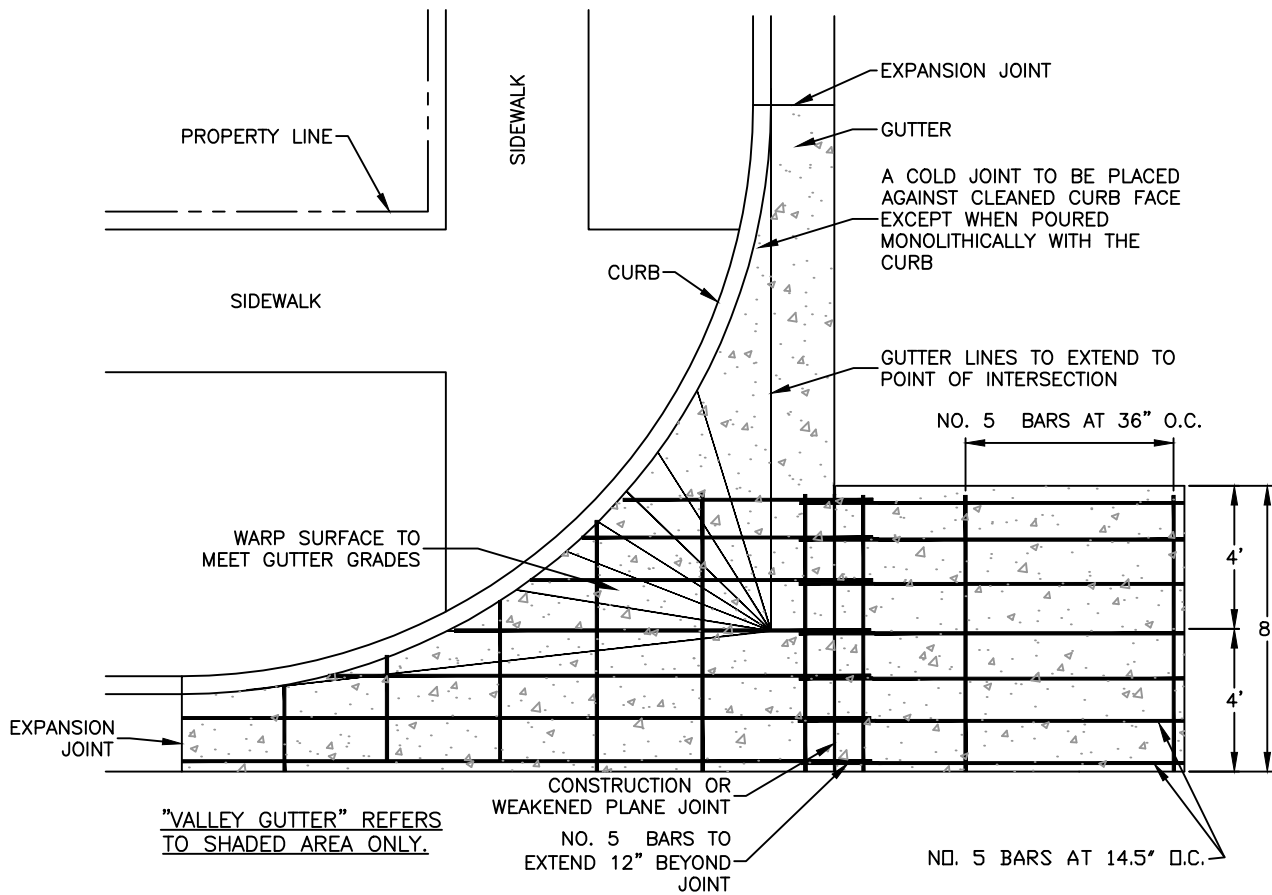
MEDIAN ISLAND CAP AND 12" MAINTENANCE BAND SHALL BE 3" THICK CONCRETE STAMPED IN A 12" SLATE PATTERN & COLORED WITH DAVIS COLORS SAN DIEGO BUFF (DOWNTOWN FRESNO SHALL BE MESA BUFF); SEE NOTE 1



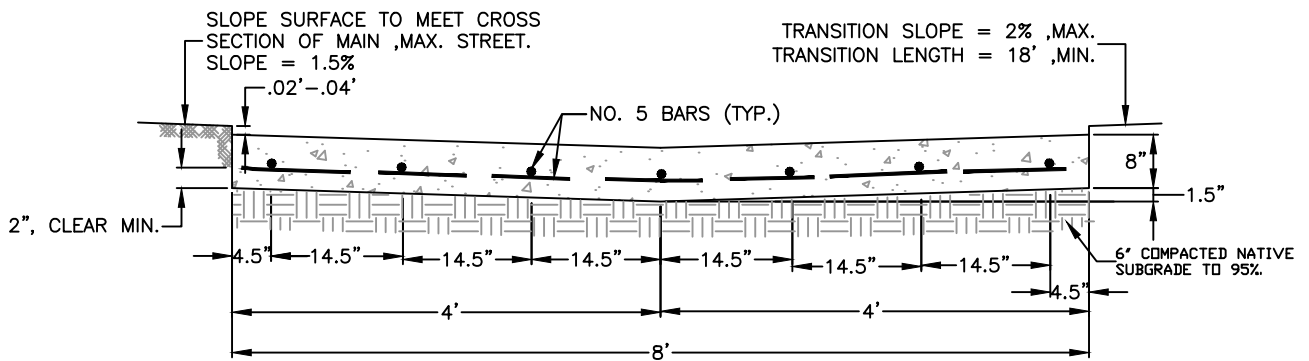
MEDIAN ISLAND PLAN VIEW  
REF. STD. DWGS. P-62 & P-63

**NOTES:**

1. EXPANSION JOINTS (NOT SHOWN) SHALL BE PLACED EVERY 45' PER STD. DWG. P-5
2. FILL MEDIAN BEFORE PLACING BASE MATERIAL OR COMPACTING IN THE TRAVELED WAY



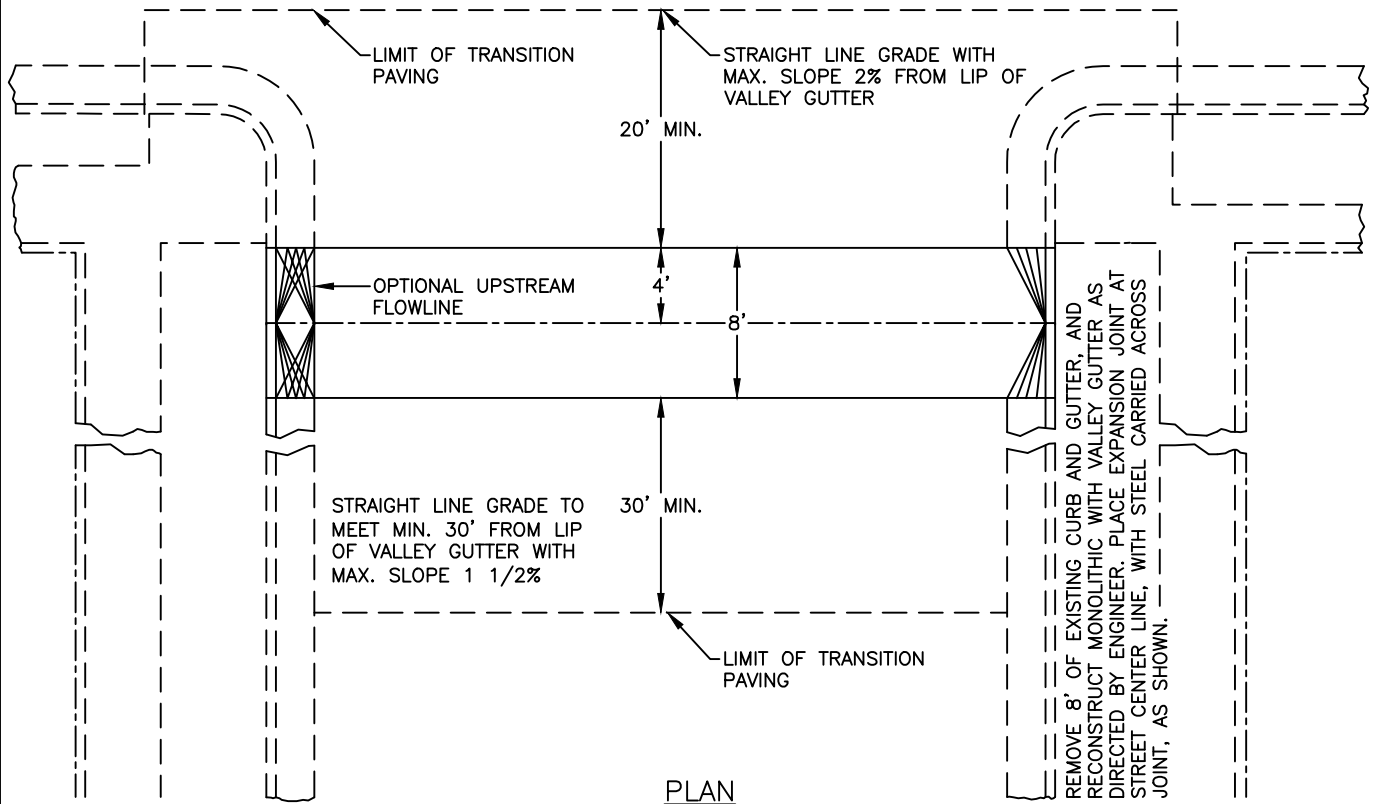
PLAN



NOTES:

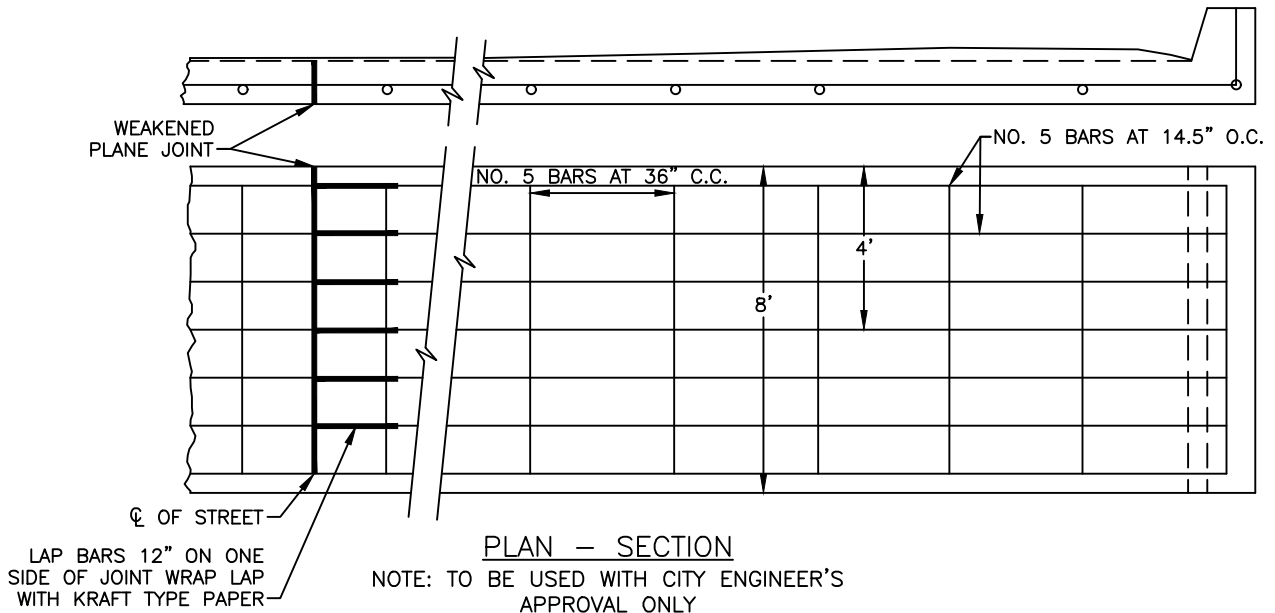
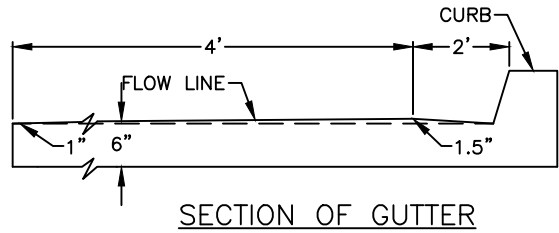
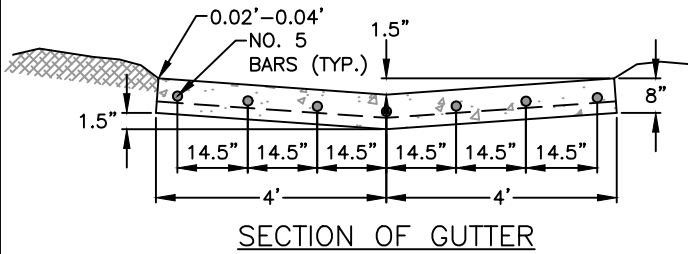
1. IN NEW CONSTRUCTION AREAS, VALLEY GUTTERS SHALL BE DESIGNED TO PROVIDE A MINIMUM DIFFERENCE OF THIRTY-FIVE HUNDREDTHS OF A FOOT (.35') FROM END OF RETURN TO END OF RETURN.
2. ALL VALLEY GUTTERS SHALL BE CONSTRUCTED USING 6 SACK CLASS A CONCRETE PER STD. SPECIFICATIONS 14-2

SECTION OF GUTTER



**PLAN**

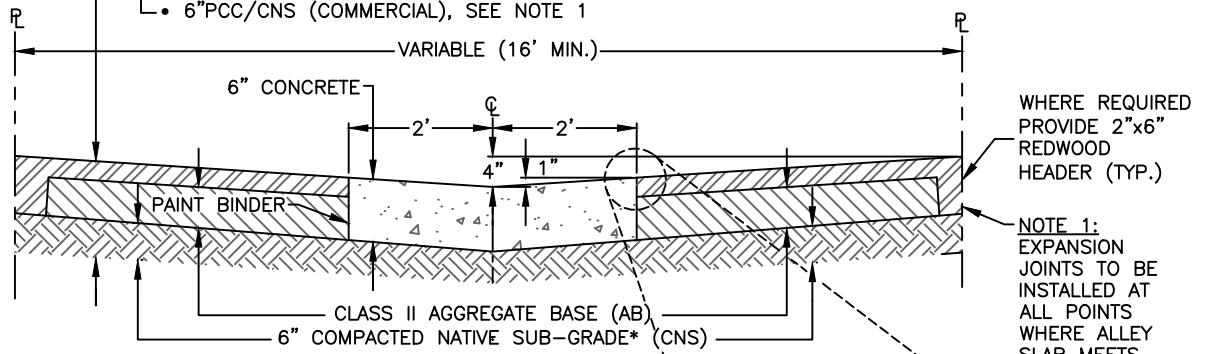
NOTE: CONCRETE SHALL BE 6 SACK MIX. CLASS A PER STANDARD 14-2 SPECIFICATIONS



**ALTERNATE SECTIONS:**

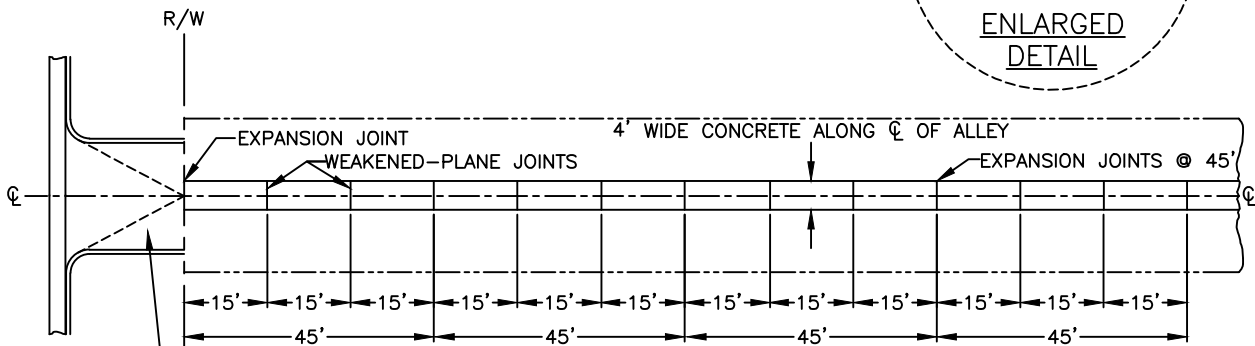
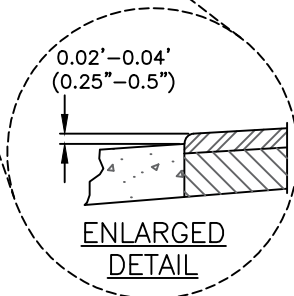
(BUILD TO THE REQUIREMENTS OF THE HIGHEST ADJACENT USE)

- 2"AC/4"AB/CNS WITH CONCRETE GUTTER (RESIDENTIAL)
- 3"AC/CNS W/O CONCRETE GUTTER (RESIDENTIAL, LONG. SLOPE ≥ 0.20%)
- 4"AC/CNS WITH CONCRETE GUTTER (COMMERCIAL)
- 6"AC/CNS W/O CONCRETE GUTTER (COMMERCIAL, LONG. SLOPE ≥ 0.20%)
- 6"PCC/CNS (COMMERCIAL), SEE NOTE 1

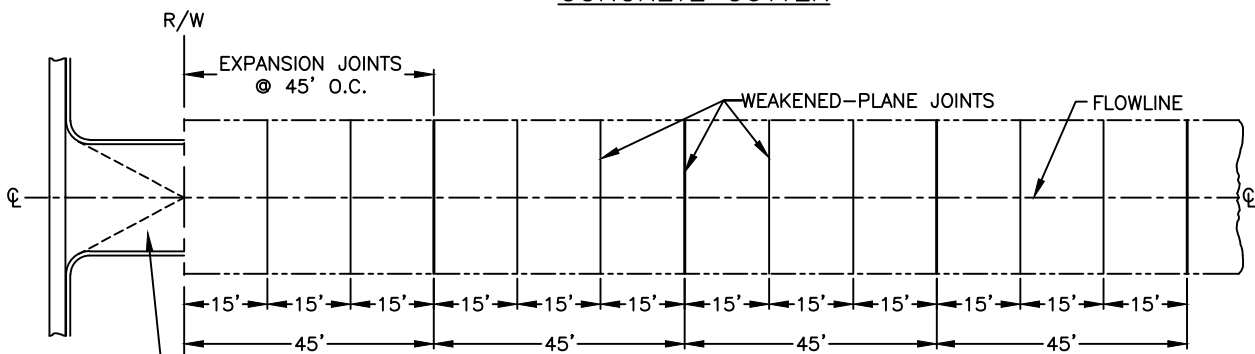


\*95% COMPACTION REQUIRED PER CITY STANDARD SPECS.

**TYPICAL ALLEY CROSS-SECTION**



**EXPANSION JOINT PLAN CONCRETE GUTTER**

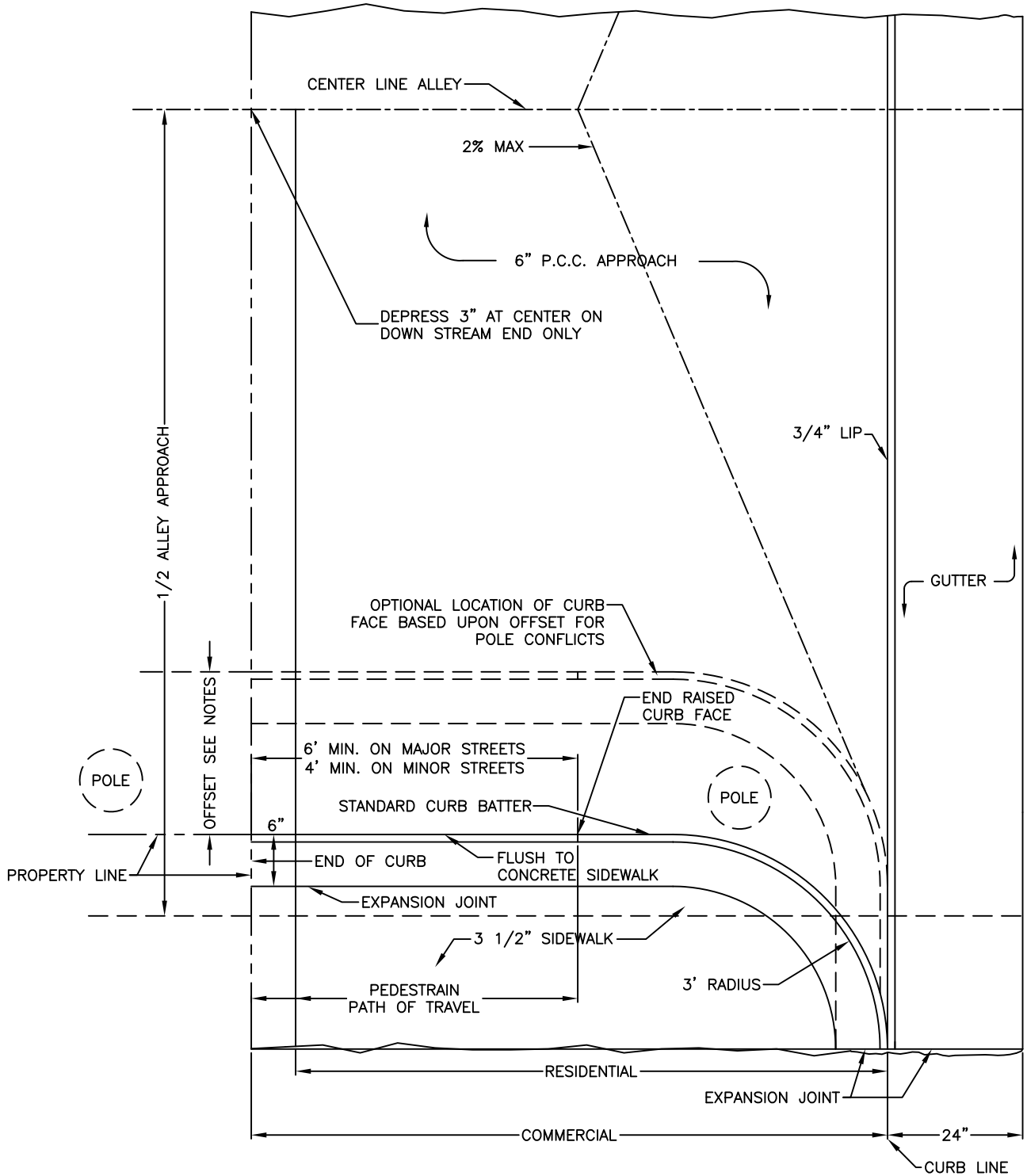


**EXPANSION JOINT PLAN FOR 6" P.C.C. PAVING**



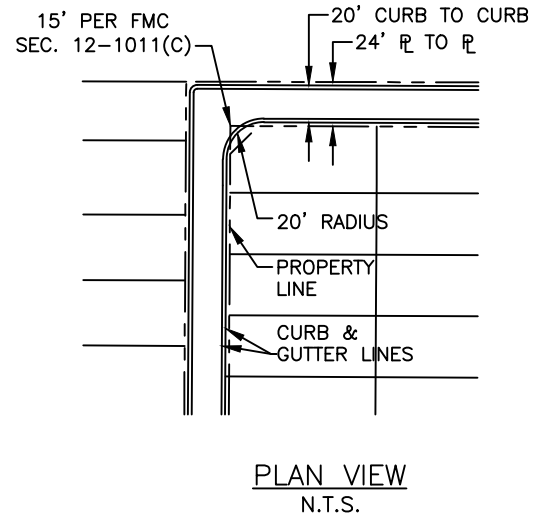
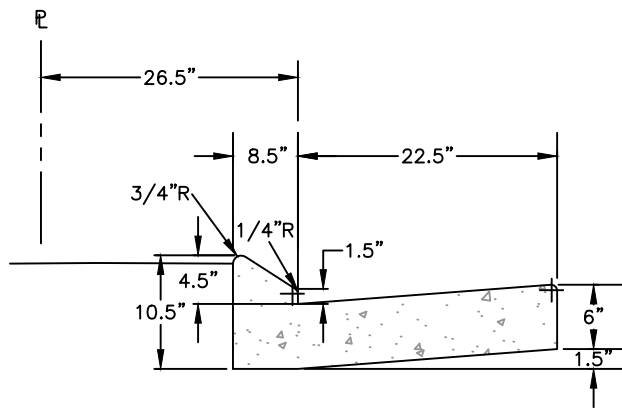
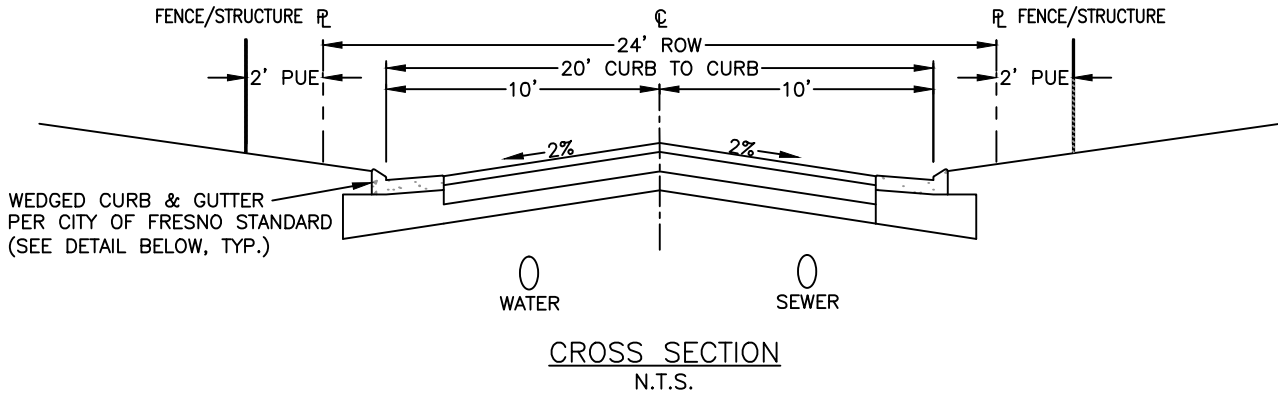
**EXPANSION JOINT DETAIL**  
SEE STATE SPEC. 51-2.01B(1)  
(PREMOLDED EXPANSION JOINT FILLER)

**WEAKENED-PLANE JOINT DETAIL**  
SEE CITY STD. DWG. P-9  
FOR ALTERNATE DESIGN



**NOTES:**

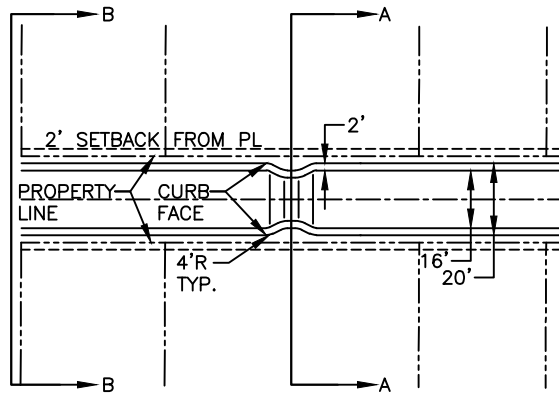
1. A MAXIMUM OFFSET OF 3' SHALL BE ALLOWED ONLY IF POLE EXISTS AT OR NEAR APPROACH IN ALLEY OR CORNER.
2. STANDARD BASED ON 20' ALLEY, ANY OTHER WIDTH TO BE ADJUSTED IN ACCORDANCE WITH ENGINEER.
3. MAXIMUM SLOPE FROM ALLEY TO SIDEWALK SHALL NOT EXCEED 8.33%.
4. THE PEDESTRIAN PATH OF TRAVEL ACROSS THE ALLEY SHALL BE 2% MAXIMUM CROSS SLOPE AND SHALL COMPLY WITH ADA REQUIREMENTS.



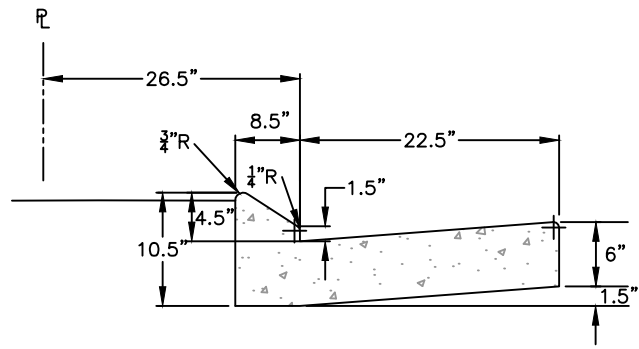
**SPECIFICATIONS**

1. 20' FROM FACE OF CURB TO FACE OF CURB.
2. A MAXIMUM OFFSET OF 3' FROM FACE OF CURB SHALL BE ALLOWED ONLY IF STREETLIGHT POLE EXISTS AT OR NEAR APPROACH IN ALLEY OR CORNER.
3. STANDARD BASED ON 20' CURB TO CURB; ANY OTHER WIDTH TO BE ADJUSTED TO THE SATISFACTION OF THE CITY ENGINEER.
4. NO PARKING ALLOWED ON EITHER SIDE AND SHALL BE POSTED AT THE ENTRANCE TO ALLEY.
5. ALLEY TO BE MAINTAINED BY CFD, HOA, OR OTHER MAINTENANCE AGREEMENT.
6. CONNECTION TO LOCAL STREETS TO BE "STREET TYPE" APPROACHES. APPROACHES TO ACCOMMODATE CITY OF FRESNO STANDARD P-29 RAMPS AT MINIMUM.
7. NO UTILITY POLES, RISERS OR ABOVE GROUND APPURTENANCES ALLOWED IN CITY ROW, EXCEPT FOR FIRE HYDRANTS.
8. FIRE HYDRANTS SHALL BE PROTECTED WITH 6" CURB AND THE BOLLARD STANDARD.
9. FIRE HYDRANTS LOCATIONS SHALL BE APPROVED BY THE FIRE DEPARTMENT AND SHALL BE LOCATED A MINIMUM OF ONE LOT FROM ALLEY INTERSECTION.
10. GUTTER SLOPE SHALL BE 0.0015 MINIMUM.

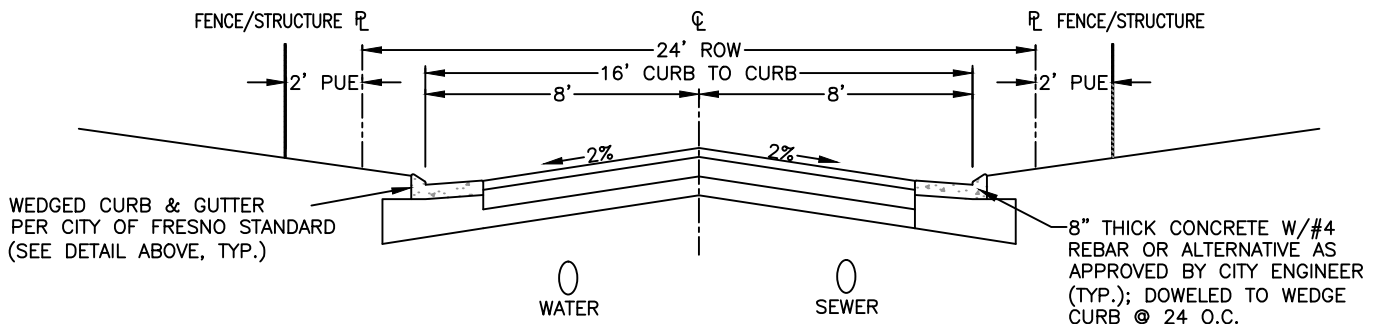




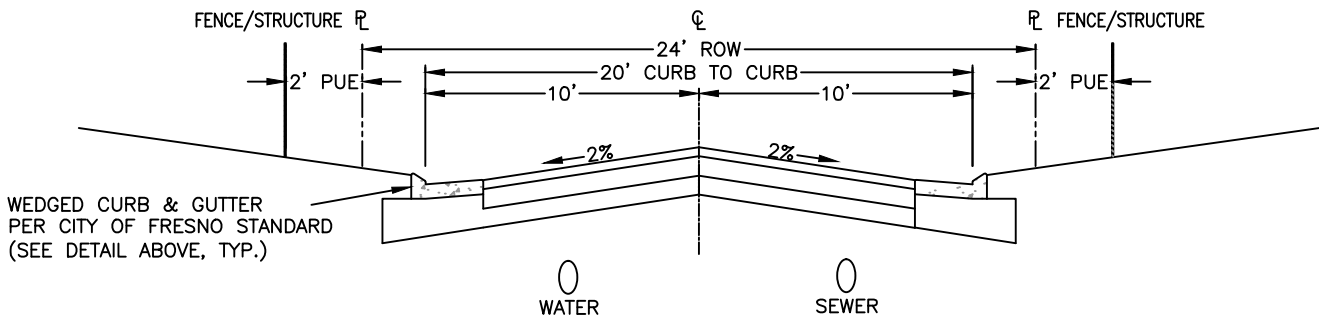
PLAN VIEW  
N.T.S.



WEDGED CURB &  
GUTTER DETAIL  
N.T.S.



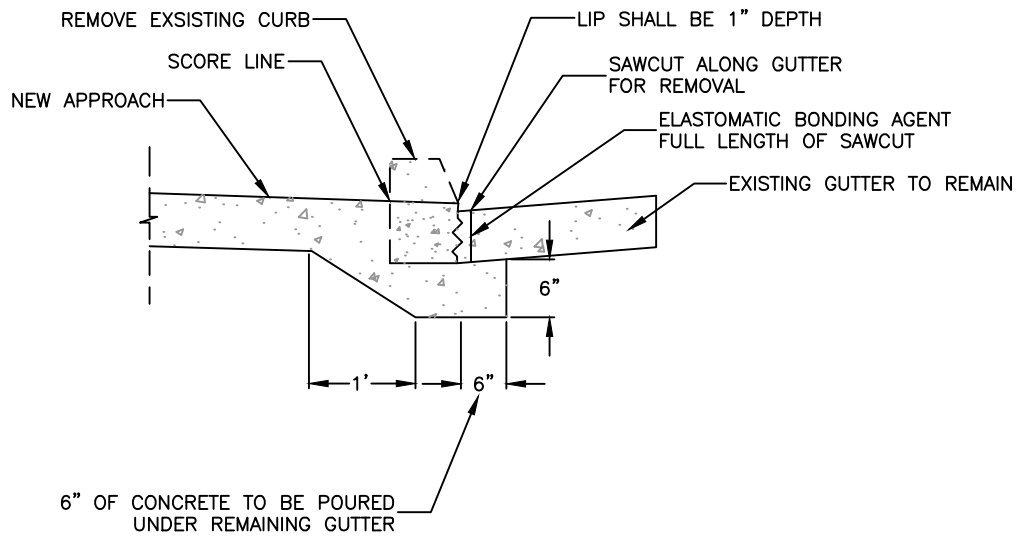
CROSS SECTION A-A  
N.T.S.



CROSS SECTION B-B  
N.T.S.

SPECIFICATIONS

1. 16' FROM FACE OF CURB TO FACE OF CURB AT PINCH POINT; 20' WIDTH IN ALL OTHER LOCATIONS.
2. A MAXIMUM OFFSET OF 3' FROM FACE OF CURB SHALL BE ALLOWED ONLY IF STREETLIGHT POLE EXISTS AT OR NEAR APPROACH IN ALLEY OR CORNER.
3. NO PARKING ALLOWED ON EITHER SIDE AND SHALL BE POSTED AT THE ENTRANCE TO ALLEY.
4. NO UTILITY POLES, RISERS OR ABOVE GROUND APPURTENANCES ALLOWED IN CITY ROW, EXCEPT FOR FIRE HYDRANTS.
5. NO FIRE HYDRANT SHALL BE ALLOWED AT PINCH POINT.
6. GUTTER SLOPE SHALL BE 0.0015 MINIMUM.



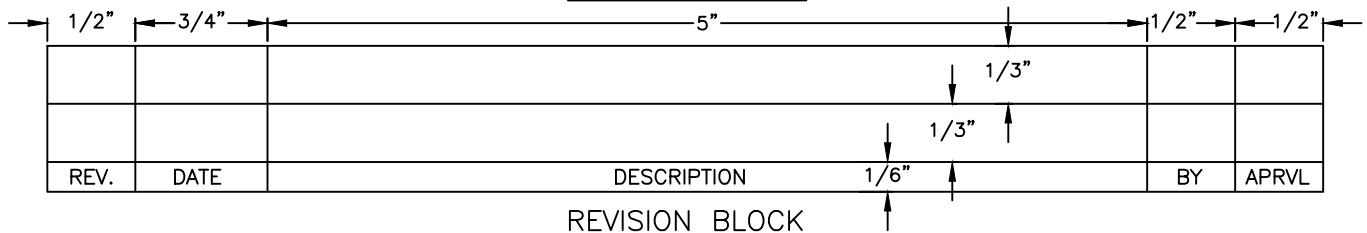
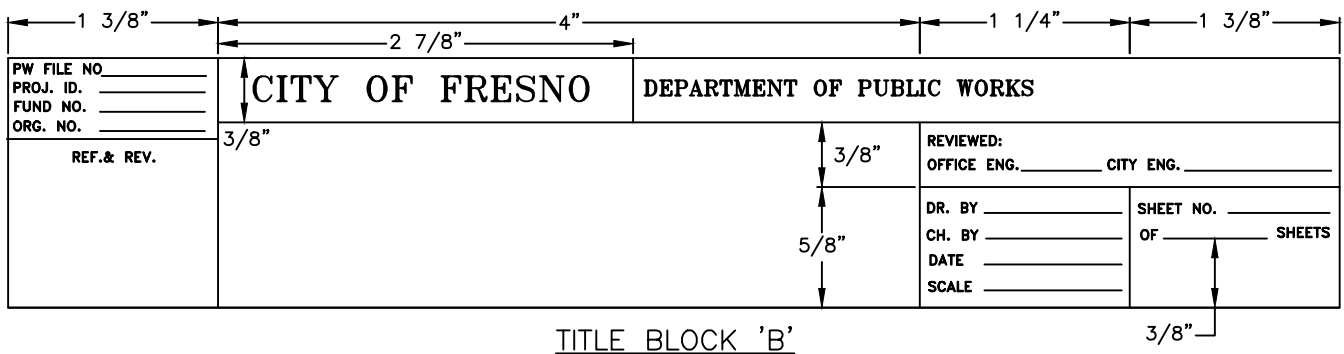
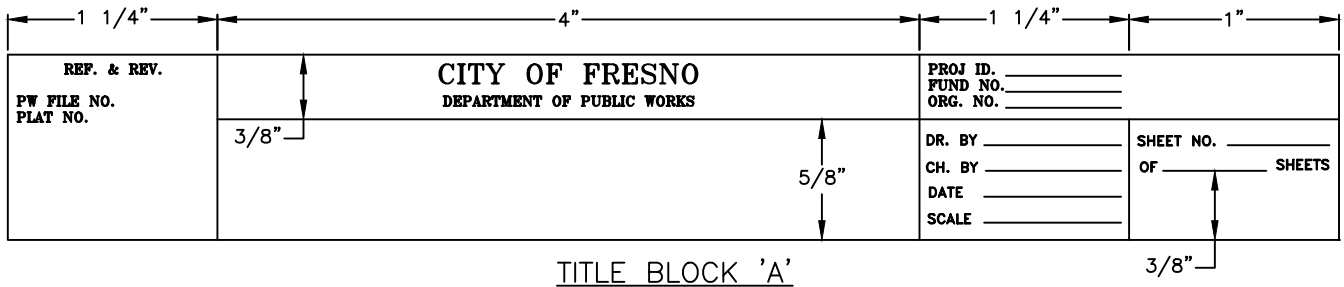
**CURB REMOVAL  
FOR NEW APPROACHES**

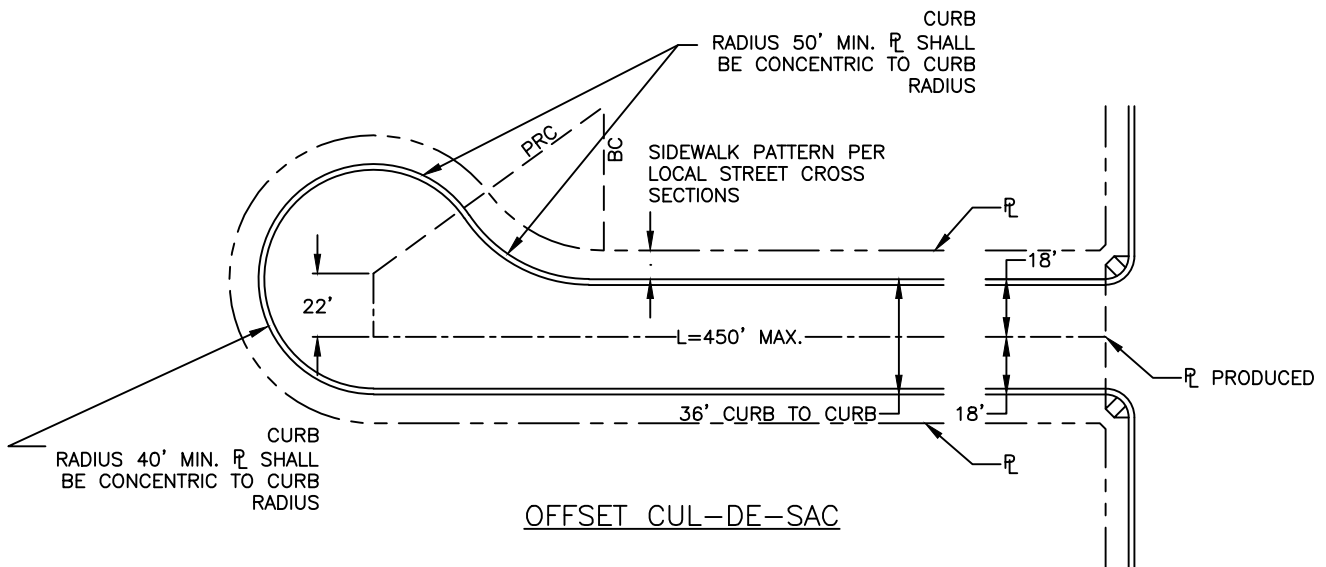
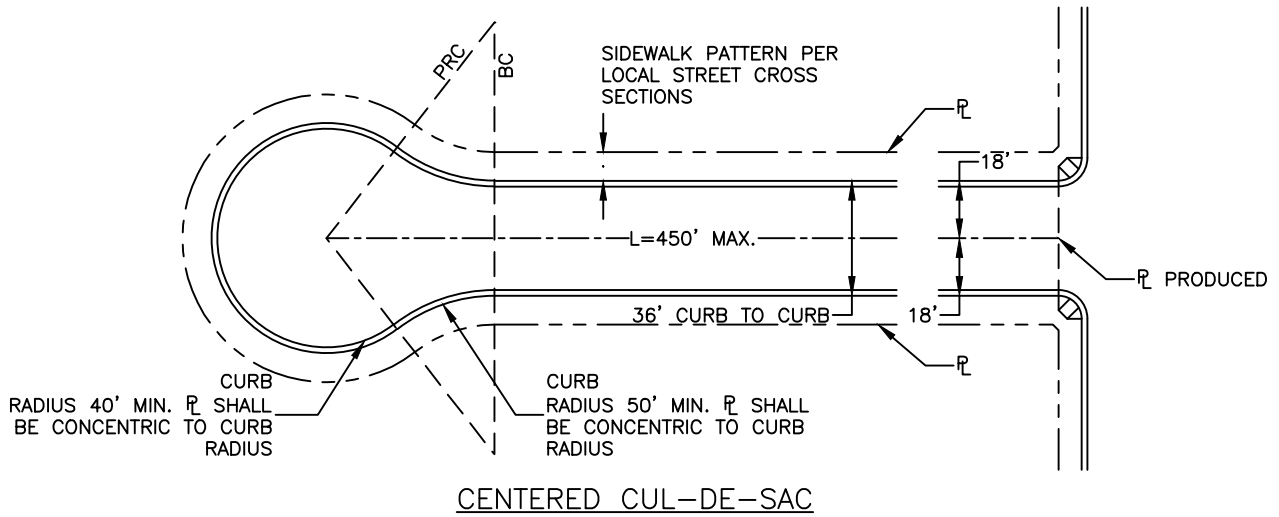
REF. & REV.  
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CITY OF FRESNO

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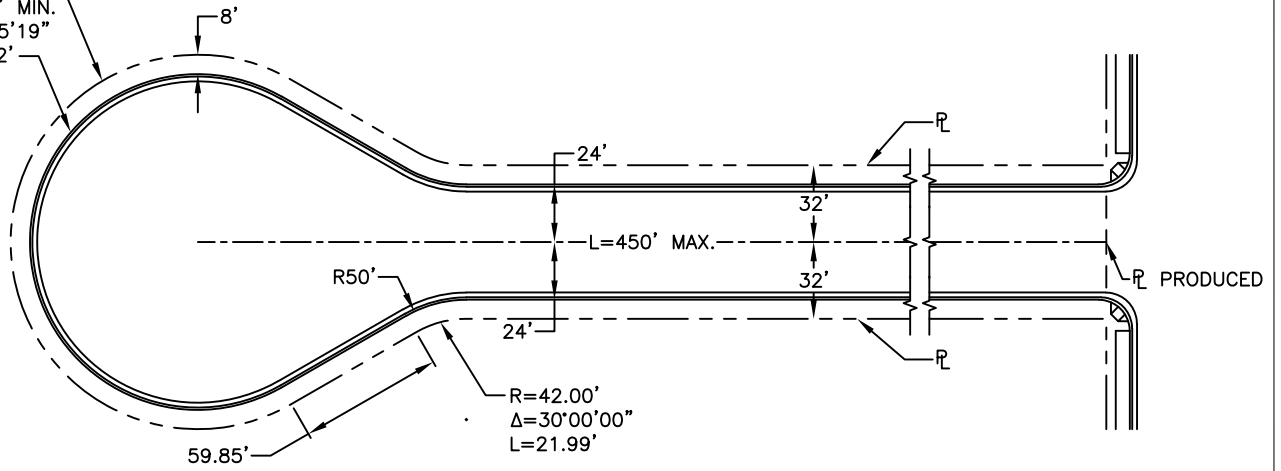
	SHEET SIZE	LEFT BORDER	OTHER BORDERS	TITLE BLOCK
A	11" X 8 1/2"	0.5 "	0.5 "	A
AA	11" X 17"	0.5 "	0.5 "	A
B***	12" X 25 1/4"	0.25 "	0.25 "	B
C***	12" X 36"	1 "	0.25 "	B
D**	24" X 25 1/4"	1 "	0.25 "	B
E***	24" X 36"	1 "	0.25 "	B
F***	31" X 36"	1 "	0.25 "	B
G**	31" X 25 1/4"	1 "	0.25 "	B
*	18" X 26"	1 "	1 "	
*	ASSESSMENT DIAGRAMS, OFFICIAL PLAN LINES, TRACT MAPS, AND PARCEL MAPS			
**	NO LONGER USED BY THE CITY OF FRESNO			
***	REVISION BLOCK TO BE ADDED AT BOTTOM LEFT CORNER OF EACH DRAWING			





R=78.00'  
 $\Delta=240^{\circ}00'00''$   
 L=326.73'

R=70.00' MIN.  
 $\Delta=239^{\circ}55'19''$   
 L=293.22'

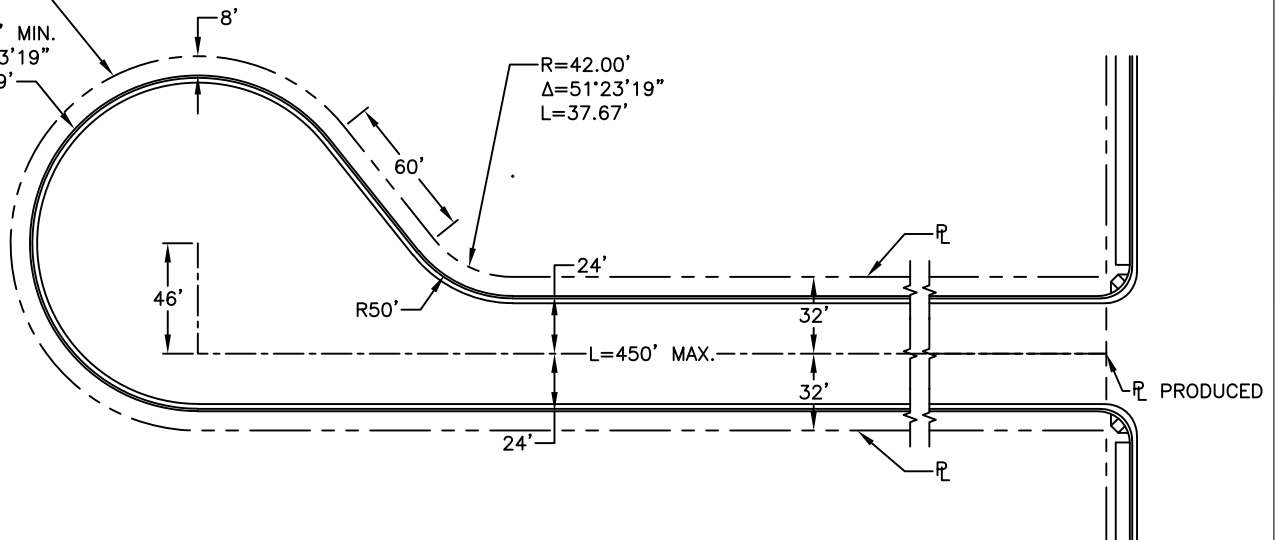


CENTERED CUL-DE-SAC

PAVED AREA=12,578 SQ. FT.  
 CURB & GUTTER=379 L.F.  
 FOR STRUCTURAL SECTION SEE CITY STD. DWG. P-55

R=78.00'  
 $\Delta=231^{\circ}23'19''$   
 L=315.00'

R=70.00' MIN.  
 $\Delta=231^{\circ}23'19''$   
 L=282.69'



OFFSET CUL-DE-SAC

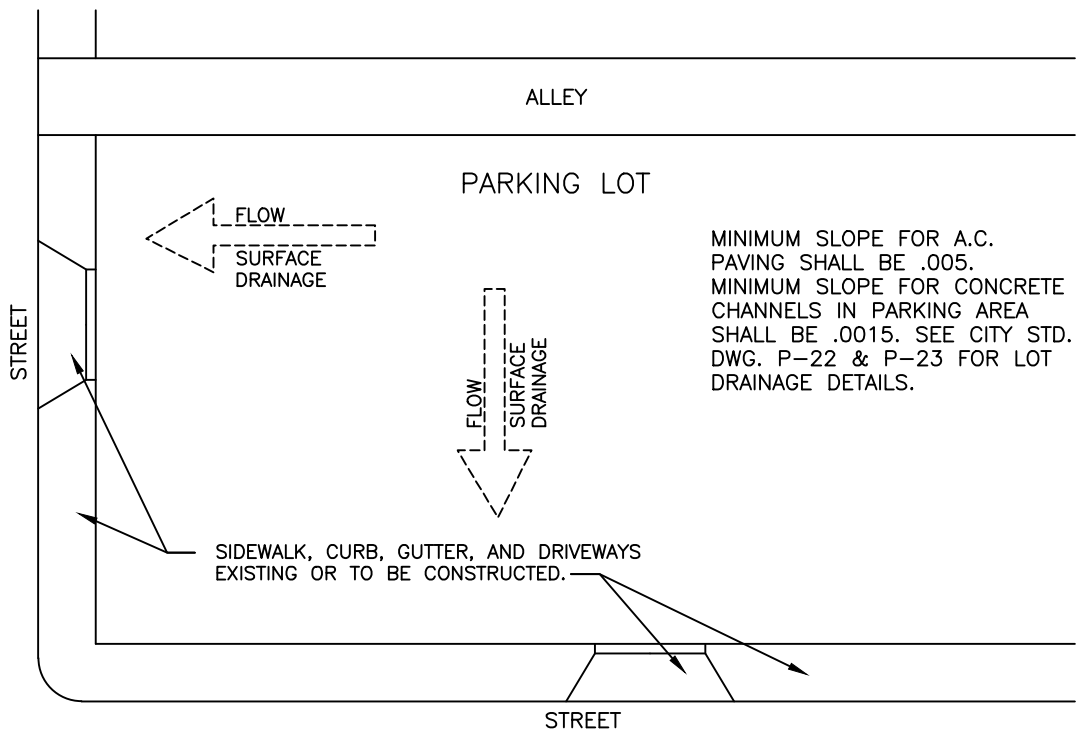
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

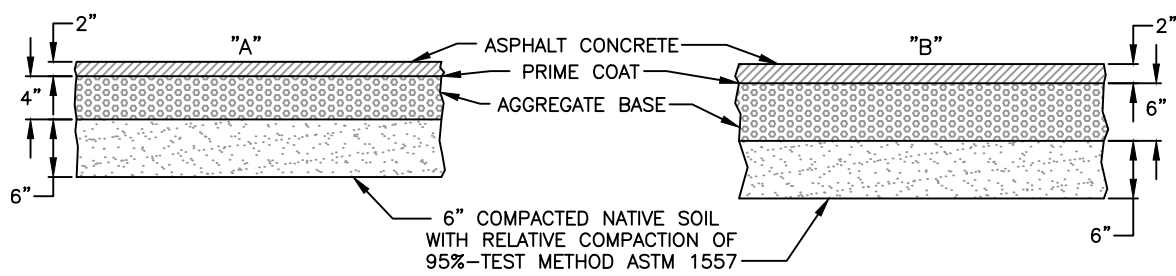
REF. & REV.  
AUG. 2010

CITY OF FRESNO

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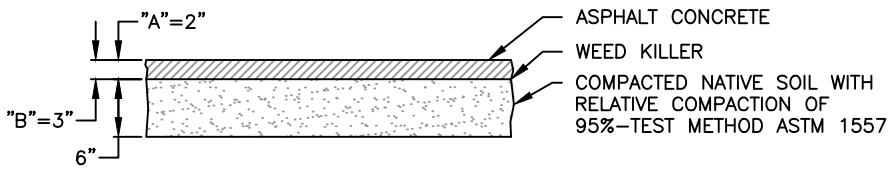


TYPICAL CROSS SECTIONS



PARKING LOTS

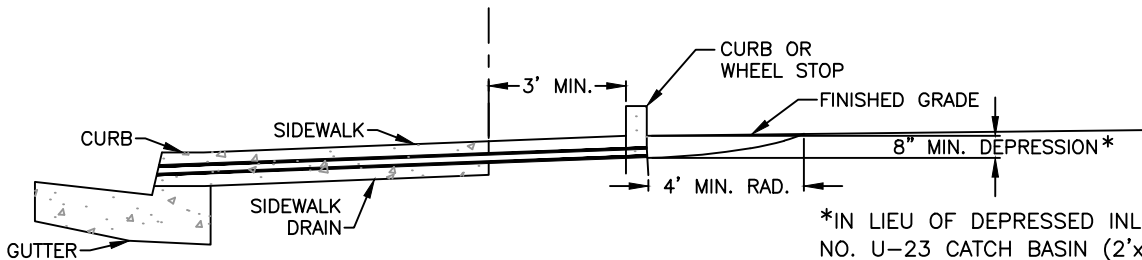
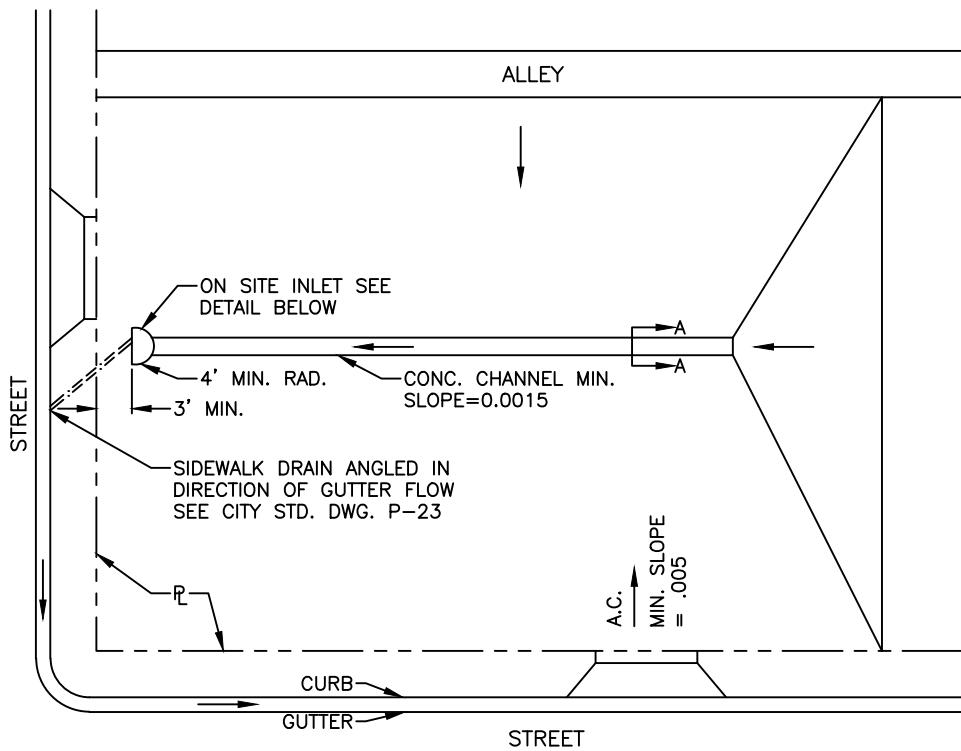
INDUSTRIAL PARKING LOTS AND LOADING ZONES



OPTIONAL-WITH APPROVED TEST

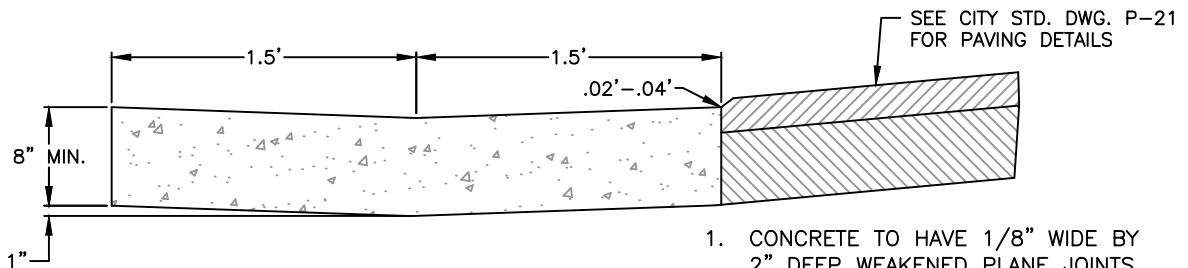
NOTES:

1. SURFACE DRAINAGE SHALL BE TO STREET.
2. PARKING BUMPERS TO BE PLACED SO THAT PARKED CARS WILL NOT OVERHANG ON SIDEWALKS OR STREETS.
3. THE OPTIONAL CROSS-SECTION MAY BE USED UPON SUBMISSION OF "R" VALUE TESTS TAKEN BY AN APPROVED LABORATORY SUBSTANTIATING THE USE OF EXISTING SOIL FOR THE BASE. A MINIMUM VALUE OF 65 WILL BE REQUIRED.
4. WHERE ASPHALT CONCRETE IS APPLIED TO THE NATIVE SOIL, SOIL STERILANT AS PER MANUFACTURES SPECIFICATIONS WILL BE REQUIRED BEFORE THE SURFACE MATERIAL IS PLACED. WEED KILLER TO BE APPLIED IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATION.
5. SURFACE DRAINAGE TO ALLEY ONLY BY WRITTEN APPROVAL OF THE CITY ENGINEER.
6. TEMPORARY PARKING LOTS (USE NOT TO EXCEED 60 DAYS) SHALL BE GRADED AND ROLLED SMOOTH. THE TOP 6" OF NATIVE SOIL SHALL BE COMPACTED TO 85% RELATIVE COMPACTION USING TEST METHOD ASTM 1557. A DUST PALLIATIVE PER STATE STANDARD SPECIFICATIONS AT THE RATE OF 1 GAL./SQ. YD. TO OBTAIN A MINIMUM PENETRATION OF 1". THE MIXING RATIO SHALL BE 4:1 PER STATE STANDARD SPECIFICATIONS. THE DEVELOPER SHALL POST A BOND TO GUARANTEE REMOVAL OF ALL IMPROVEMENTS FOR A TEMPORARY PARKING LOT.



\*IN LIEU OF DEPRESSED INLET A CRISTY NO. U-23 CATCH BASIN (2'x2'x2' MIN. DEPTH) WITH HEAVY DUTY TRAFFIC GRATE TO WITHSTAND MAX. TRAFFIC LOADING OR A BROOKS W-100 SERIES 2'x3' UTILITY BOX NO. 100TG TRAFFIC GRATE OR APPROVED EQUAL MAY BE USED.

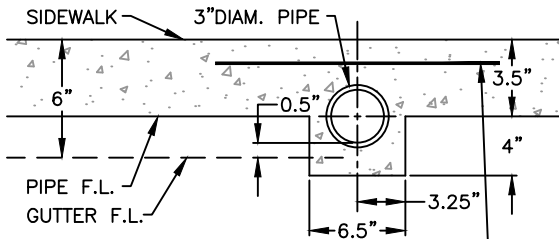
ON SITE INLET DETAIL



SECTION A-A

1. CONCRETE TO HAVE 1/8" WIDE BY 2" DEEP WEAKENED PLANE JOINTS AT 15' O.C. AND 1/2" EXPANSION JOINTS AT 90' O.C.
2. SURFACE DRAINAGE TO ALLEY ONLY BY WRITTEN APPROVAL OF THE CITY ENGINEER.
3. SURFACE DRAINAGE OVER DRIVEWAY APPROACHES AND SIDEWALKS IS NOT PERMITTED WHEN THE AREA TO BE DRAINED EXCEEDS 1/4 ACRE.

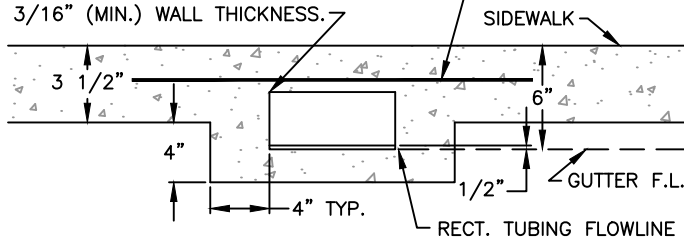




**3" DIAMETER PIPE UNDER WALK**

PROVIDE TWO LAYERS OF 6" X 6" WELDED WIRE MESH GAGE NO. 10, EXTEND 12" (MIN.) ON EACH SIDE OF TUBE.

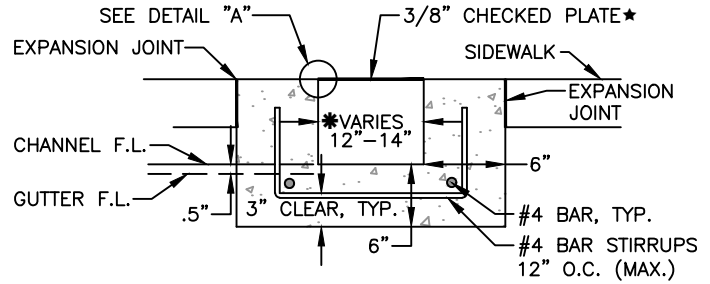
3"X5" OR 3"X6" RECT. TUBING WITH 3/16" (MIN.) WALL THICKNESS.



**RECTANGULAR STEEL TUBING UNDER WALK**

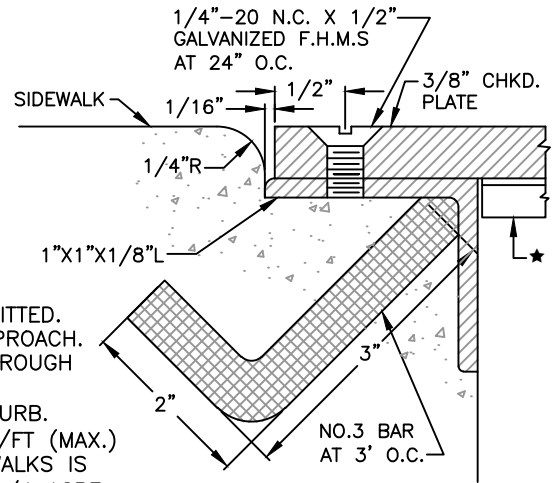
**NOTES:**

- 1. FOR 3" OR SMALLER DIAMETER PIPE, SCH. 40 PVC IS PERMITTED.
- 2. DRAIN SHALL NOT BE CONSTRUCTED UNDER A DRIVEWAY APPROACH.
- 3. SIDEWALK DRAINS, EXCEPT CHANNELS, SHALL BE ANGLED THROUGH SIDEWALK IN DIRECTION OF GUTTER FLOW.
- 4. ALL DRAINS AND CHANNELS SHALL BE FLUSH W/FACE OF CURB.
- 5. DRAIN SLOPES SHALL BE 0.010 FT/FT (MIN.) AND 0.042 FT/FT (MAX.)
- 6. SURFACE DRAINAGE OVER DRIVEWAY APPROACHES AND SIDEWALKS IS NOT PERMITTED WHEN THE AREA TO BE DRAINED EXCEEDS 1/4 ACRE.



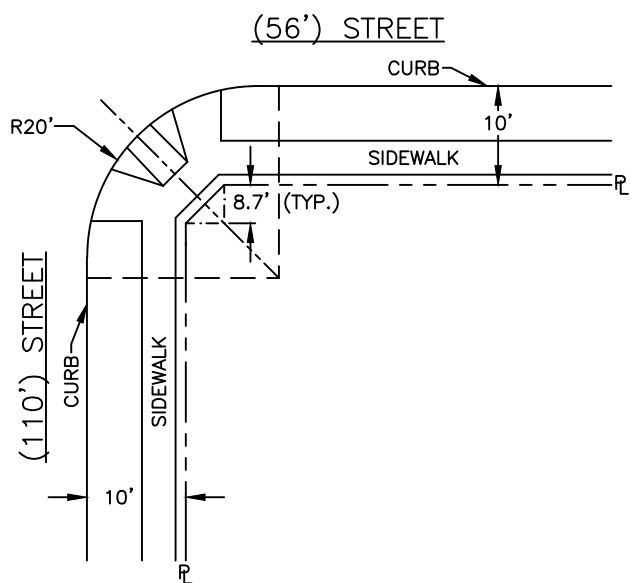
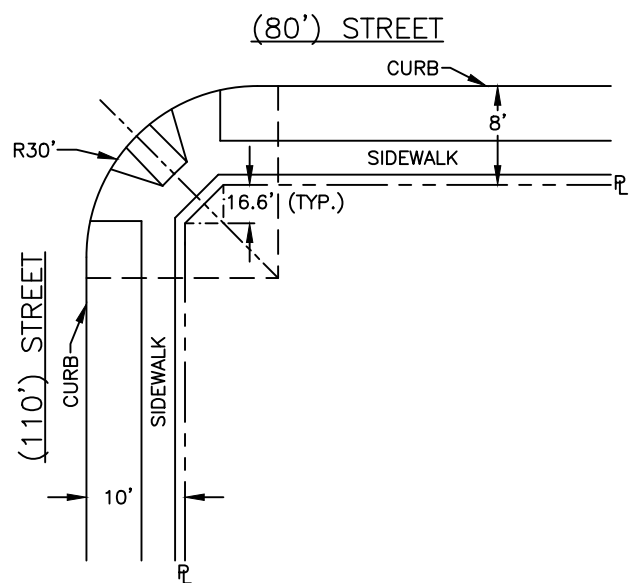
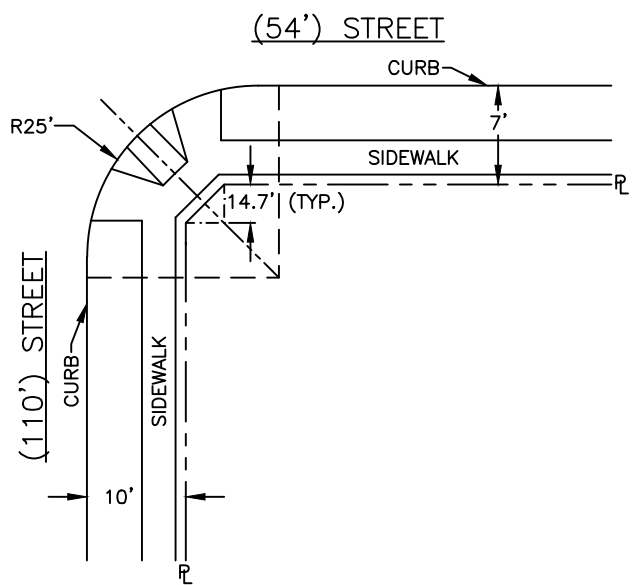
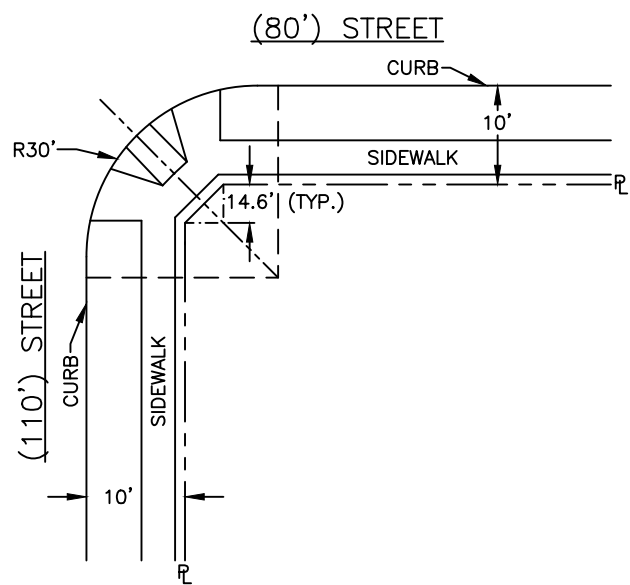
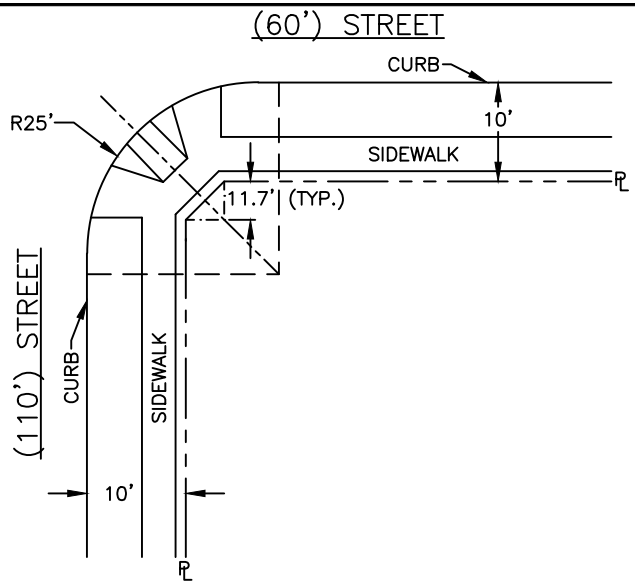
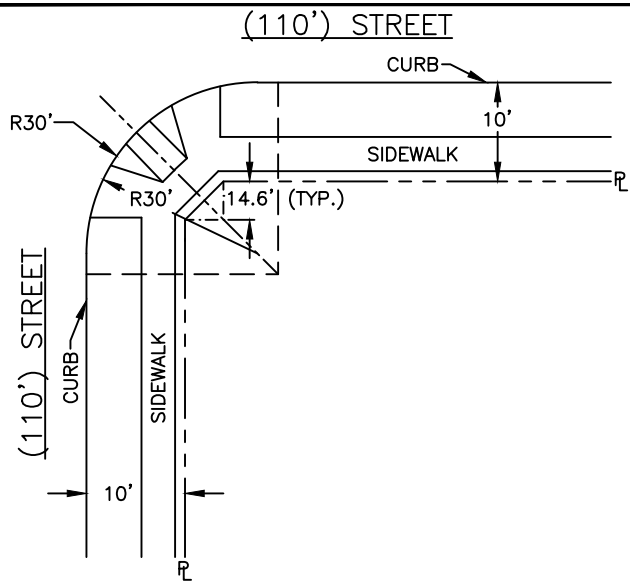
**CHANNEL THROUGH WALK**

\*CHANNELS CAN BE WIDER UPON APPROVAL  
 ★ONE SECTION OF 3/8" CHECKED PLATE SHALL NOT EXCEED 5 FEET IN LENGTH. FOR CHANNELS WIDER THAN 14" AND UP TO 24", PROVIDE 1" X 1" X 3/16" ANGLE IRON AT 12" O.C. WELDED ON THE UNDERSIDE OF THE CHECKED PLATE.



**DETAIL "A"**

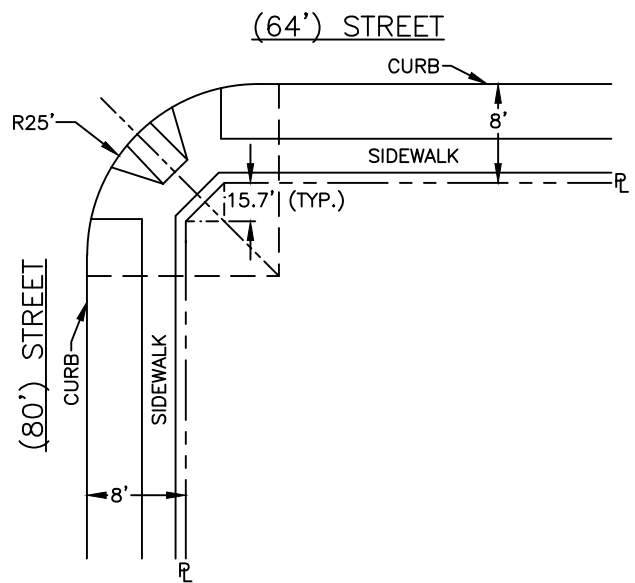
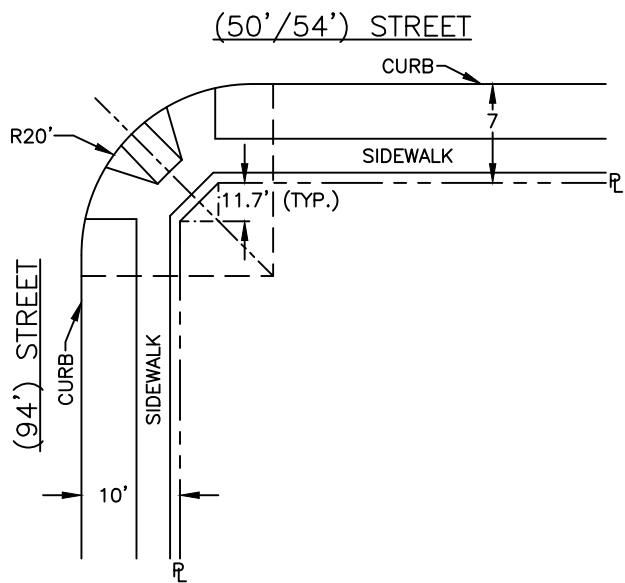
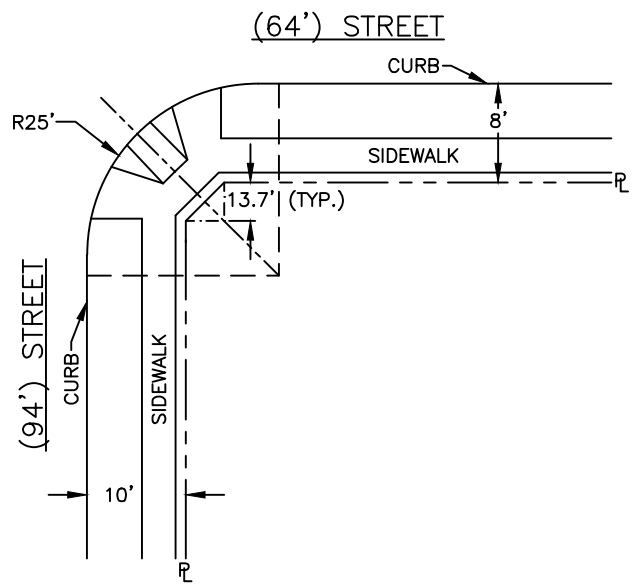
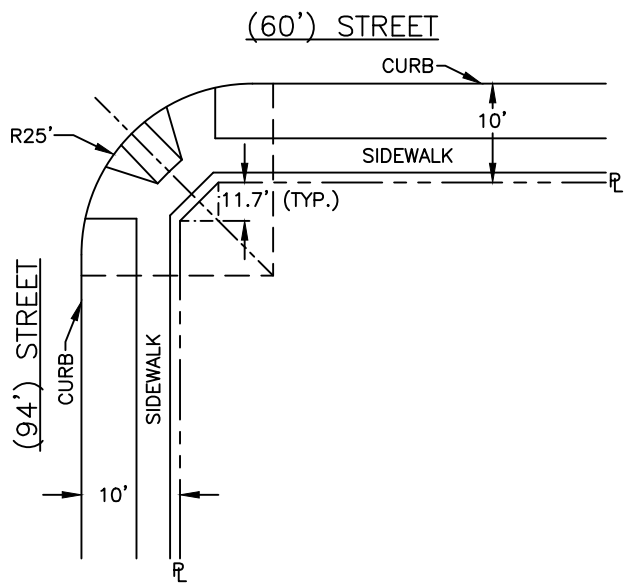
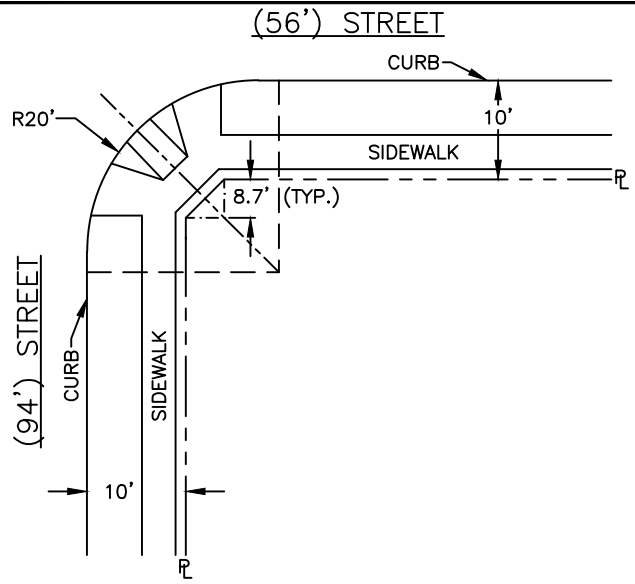
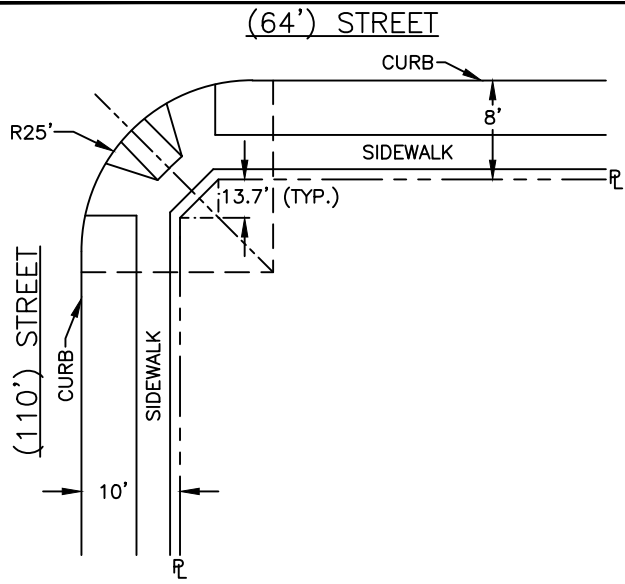
AREAS TO BE DRAINED FROM PRIVATE PROPERTY TO PUBLIC STREETS				
SURFACE AREA	TYPE OF SURFACE	DRAIN AREA REQUIRED	SIZE & NO. OF PIPES OR RECTANGULAR STEEL TUBE	SIZE & NO. OF CHANNELS
2 ACRES 200'X400'	PAVED GRASS	100 SQ. IN. 25 SQ. IN.	2-3"X6" RECT. TUBES	2-4"X14"
1.5 ACRES 200'X300'	PAVED GRASS	75 SQ. IN. 20 SQ. IN.	1-3"PIPE & 1-3"X6" R.T.	2-3"X12"
1 ACRE 200'X200'	PAVED GRASS	50 SQ. IN. 12 SQ. IN.	1-3"X5" RECT. TUBE	1-4"X14"
0.75 ACRE 150'X200'	PAVED GRASS	40 SQ. IN. 10 SQ. IN.	3-3"X6" RECT. TUBE OR 1-3"X5" RECT. TUBE	1-4"X14"
0.5 ACRE 100'X200'	PAVED GRASS	30 SQ. IN. 6 SQ. IN.	2-3"X6" RECT. TUBE OR 1-3"PIPE	1-3"X12"
0.25 ACRE 100'X100'	PAVED GRASS	16 SQ. IN. 3 SQ. IN.	1-3"PIPE & 1-3"X5" R.T. 1-3" PIPE	
USE 1 ACRE = 200'X200' OR 100'X400'				
AREA 3" DIA. PIPE = 7.1 SQ. IN.		AREA 4" X 14" CHANNEL = 56 SQ. IN.		
AREA 3" X 5" RECT. TUBE = 12.3 SQ. IN.		AREA 3" X 12" CHANNEL = 36 SQ. IN.		
AREA 3" X 6" RECT. TUBE = 14.9 SQ. IN.				



**STREET INTERSECTIONS**  
 TYPICAL CURB RETURNS, LANDINGS, & R/W

REF. & REV.  
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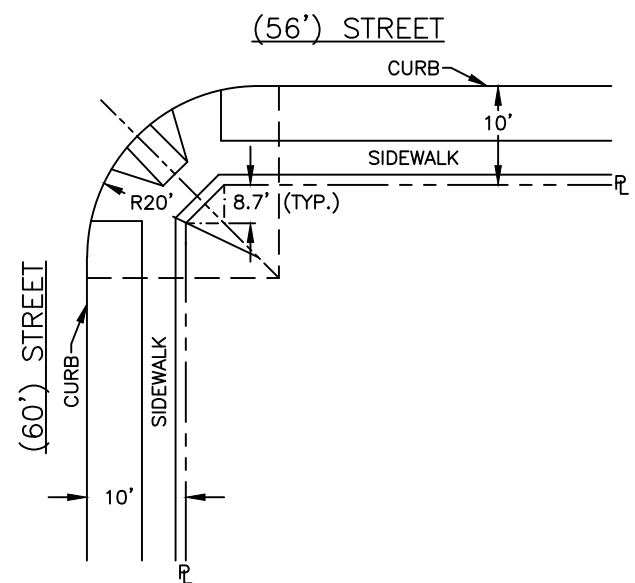
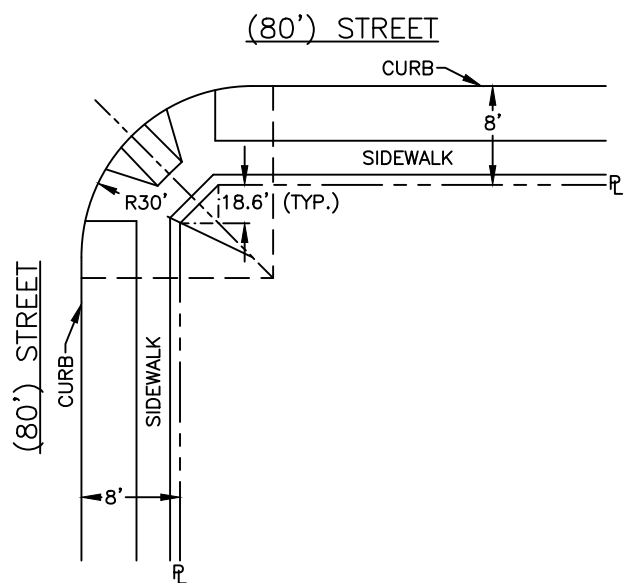
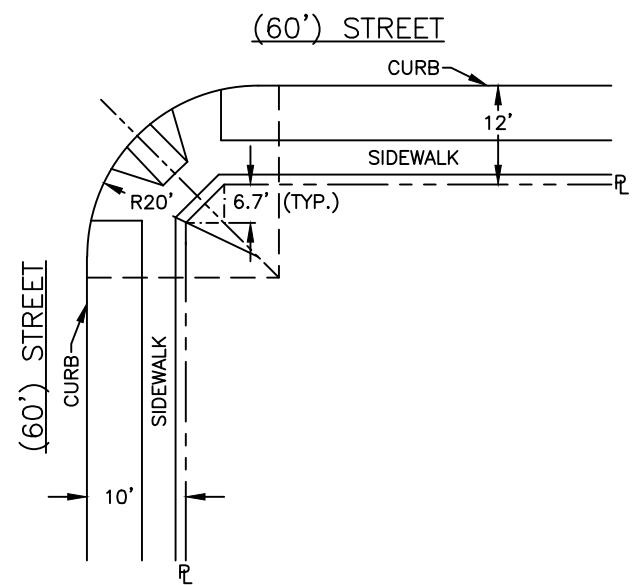
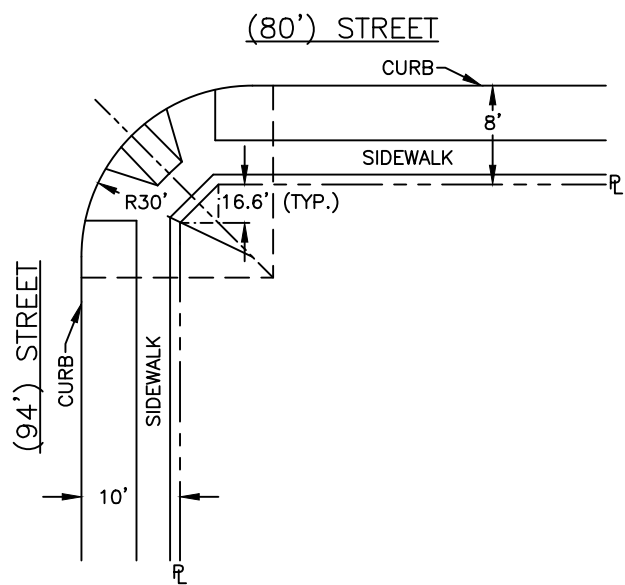
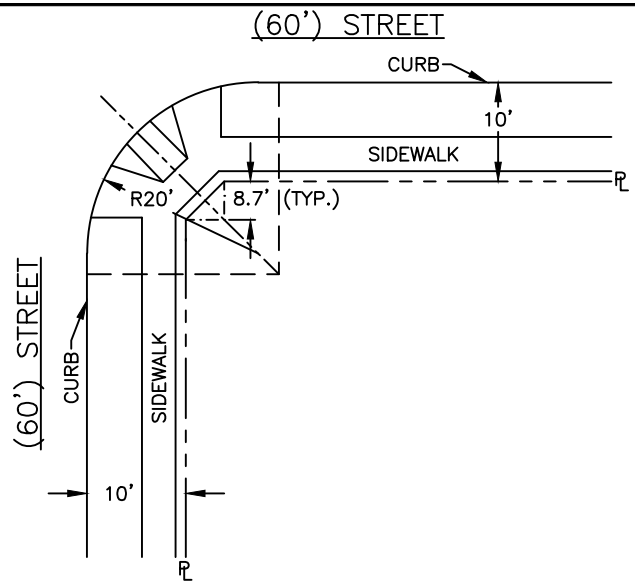
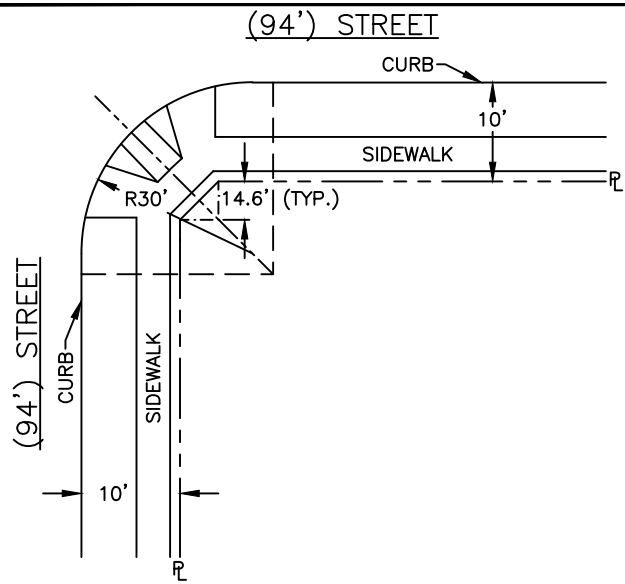
CITY OF FRESNO

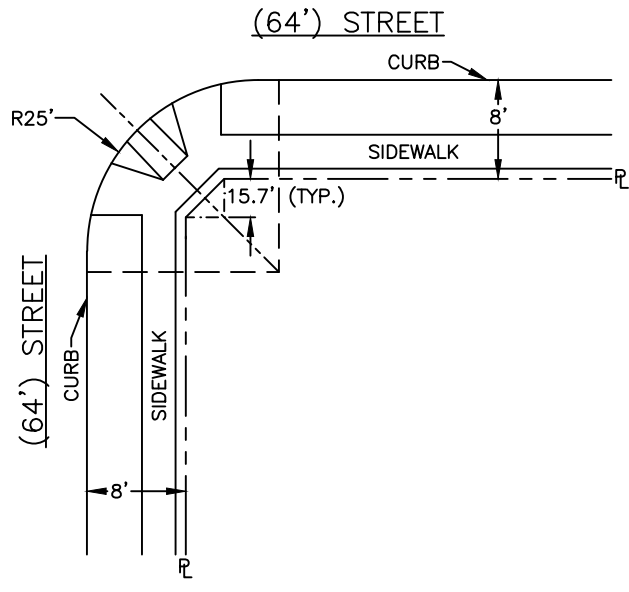
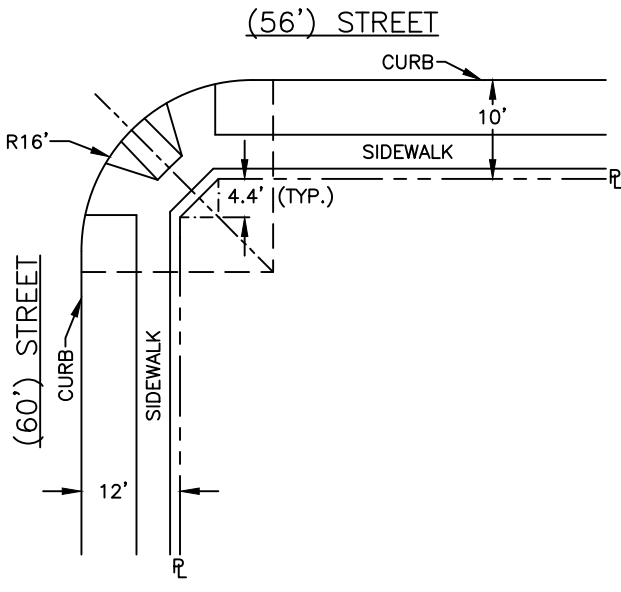
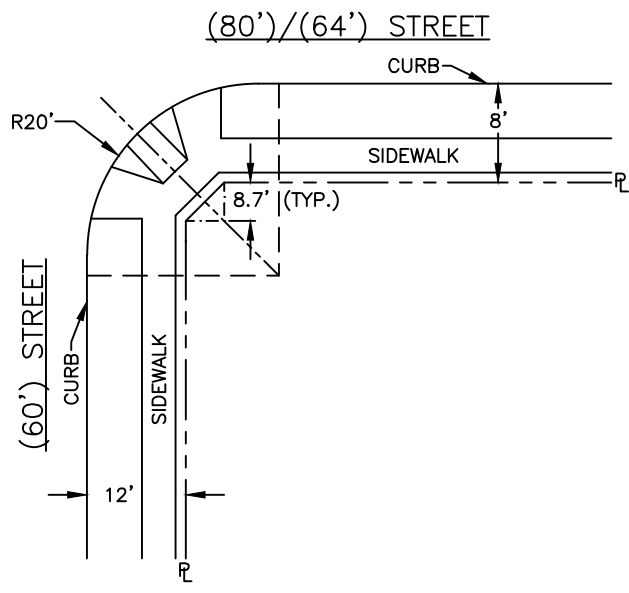
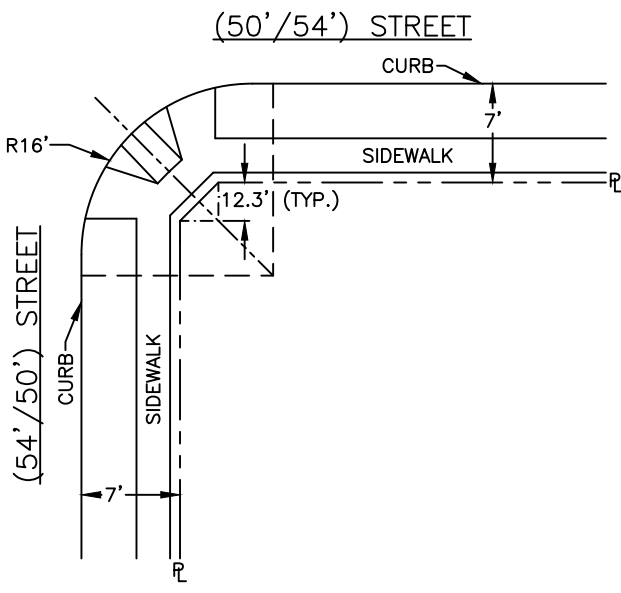
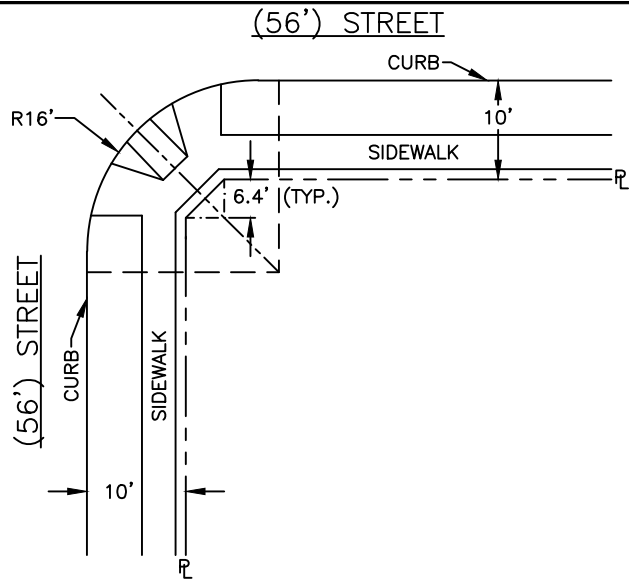
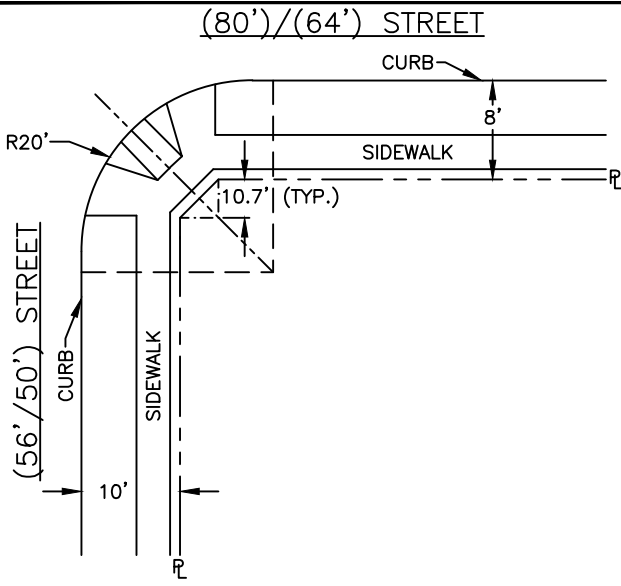


**STREET INTERSECTIONS**  
TYPICAL CURB RETURNS, LANDINGS, & R/W

REF. & REV.  
AUG. 2010

CITY OF FRESNO

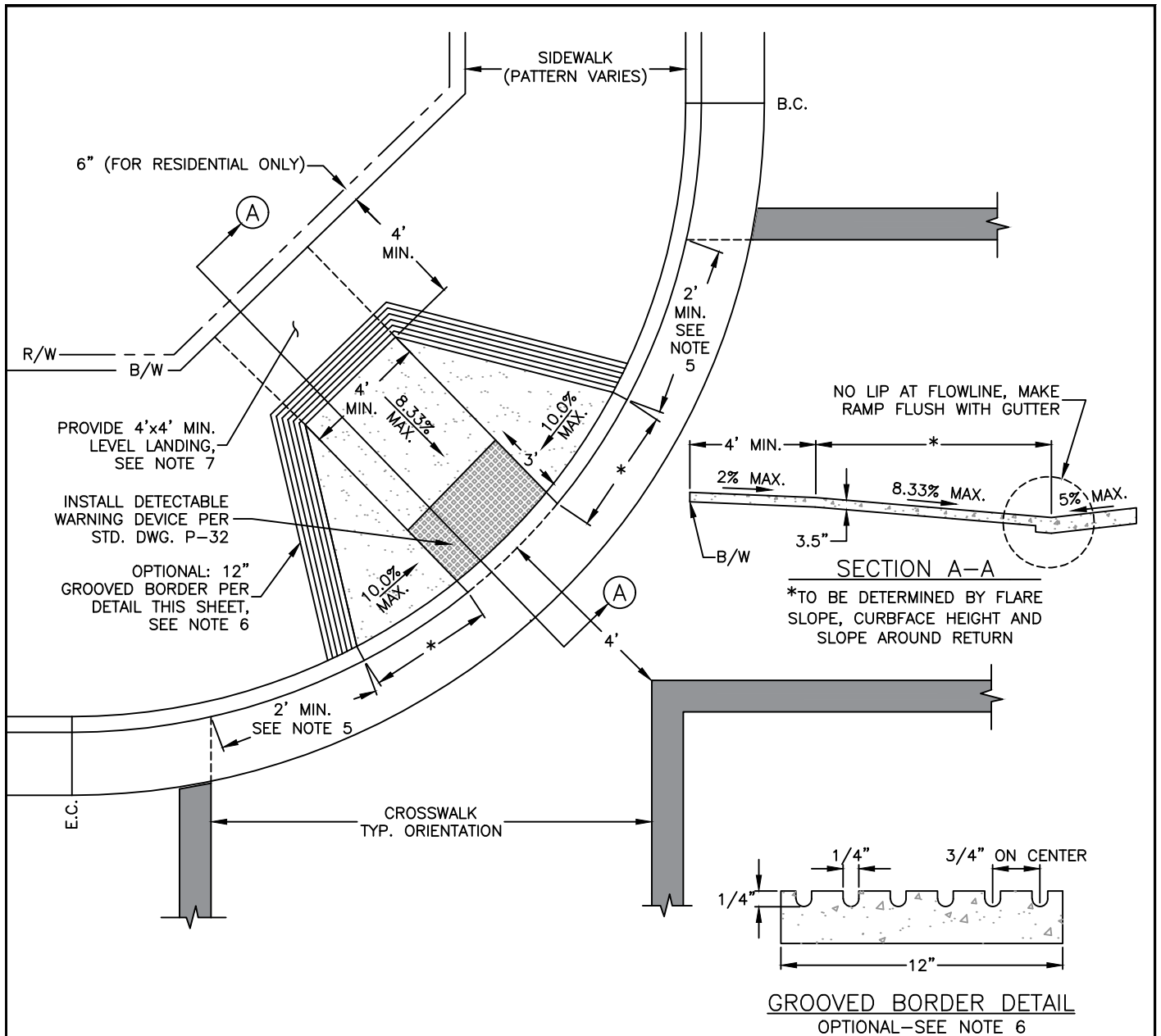




**STREET INTERSECTIONS**  
 TYPICAL CURB RETURNS, LANDINGS, & R/W

REF. & REV.  
 AUG. 2010

CITY OF FRESNO



**NOTES:**

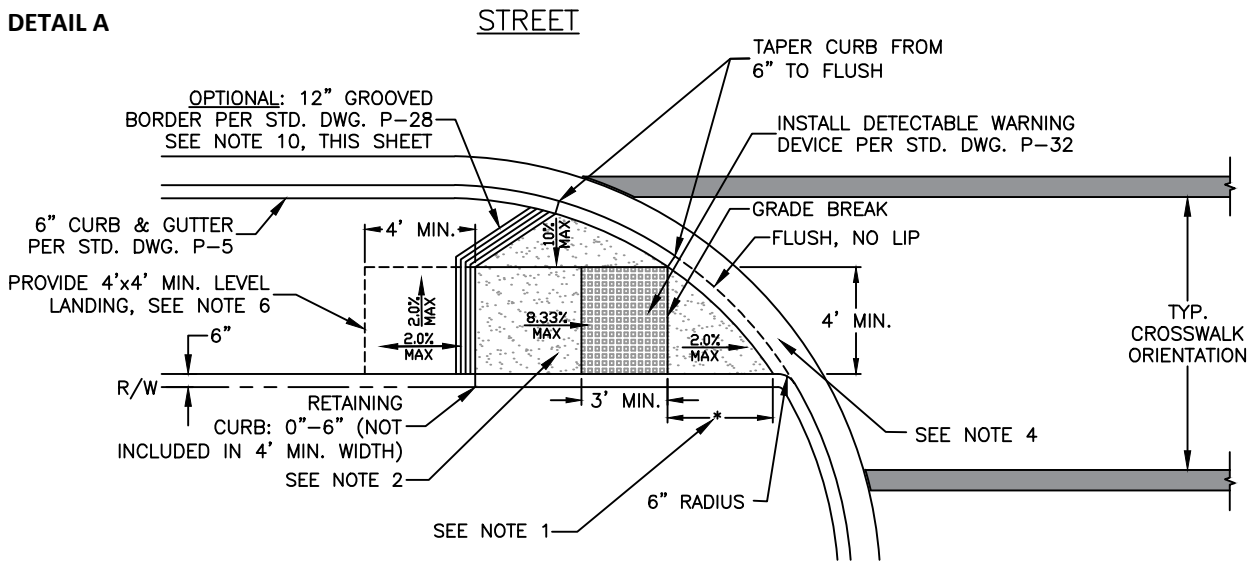
1. TRANSITIONS FROM RAMPS AND LANDING TO WALK, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
2. SURFACE OF CURB RAMP AND FLARED SIDES SHALL HAVE A MEDIUM BROOM FINISH TRANSVERSE TO PATH OF TRAVEL AND SHALL BE OF CONTRASTING FINISH TO THAT OF ADJACENT SIDEWALK.
3. RAMP SLOPE SHALL NEVER EXCEED 8.33% AND THE FLARED SIDES SHALL NOT EXCEED 10%.
4. THE SLOPE OF ADJOINING GUTTERS, ROAD SURFACE OR ACCESSIBLE ROUTE WITHIN 4' OF THE BOTTOM OF THE RAMP SHALL NOT EXCEED 5% SLOPE.
5. THERE SHALL BE A SEGMENT OF STRAIGHT CURB, AT LEAST 2.0' FEET LONG, ON EACH SIDE OF THE CURB RAMP, AS MEASURED FROM WITHIN THE MARKED CROSSWALK.
6. (OPTIONAL) PROVIDE A 12" WIDE, GROOVED, BORDER AT THE LEVEL SURFACE OF THE SIDEWALK ALONG THE TOP OF THE RAMP AND EACH FLARE. GROOVES SHALL BE APPROX. 1/4" DEEP, 1/4" WIDE AND SPACED 3/4" ON CENTER.
7. PROVIDE A MINIMUM 4' DEEP LEVEL LANDING ON UPPER END AND OVER FULL WIDTH OF RAMP. MAINTAIN A 2% MAX. SLOPE, ANY DIRECTION.
8. THE 4' CLEAR SPACE AT BOTTOM OF RAMP SHALL BE WITHIN THE MARKED CROSSINGS.
9. RAMP SHALL BE MINIMUM OF 4' WIDE AND SHALL LIE GENERALLY IN A SINGLE SLOPED PLANE WITH A MINIMUM OF SURFACE WARPING AND CROSS SLOPE.
10. CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED CARS.

**DIAGONAL CURB RAMP**  
(USE ONLY WHEN NECESSARY)

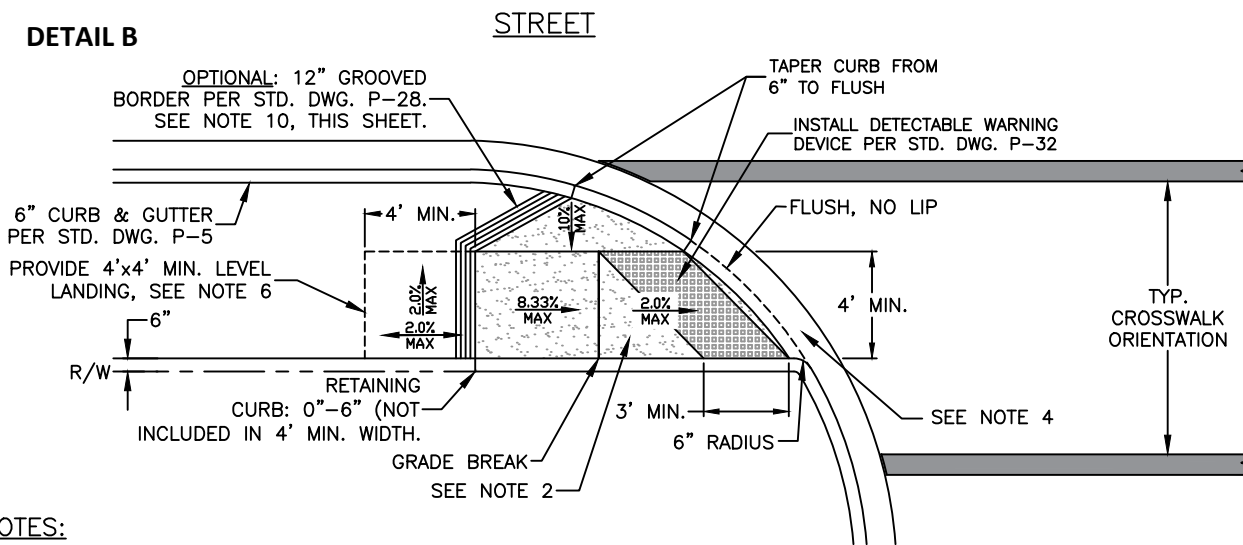
REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
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**DETAIL A**



**DETAIL B**



**NOTES:**

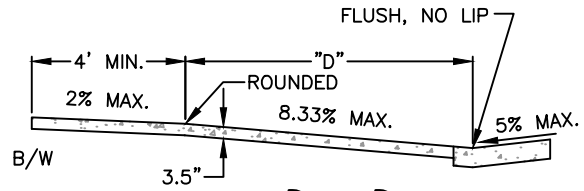
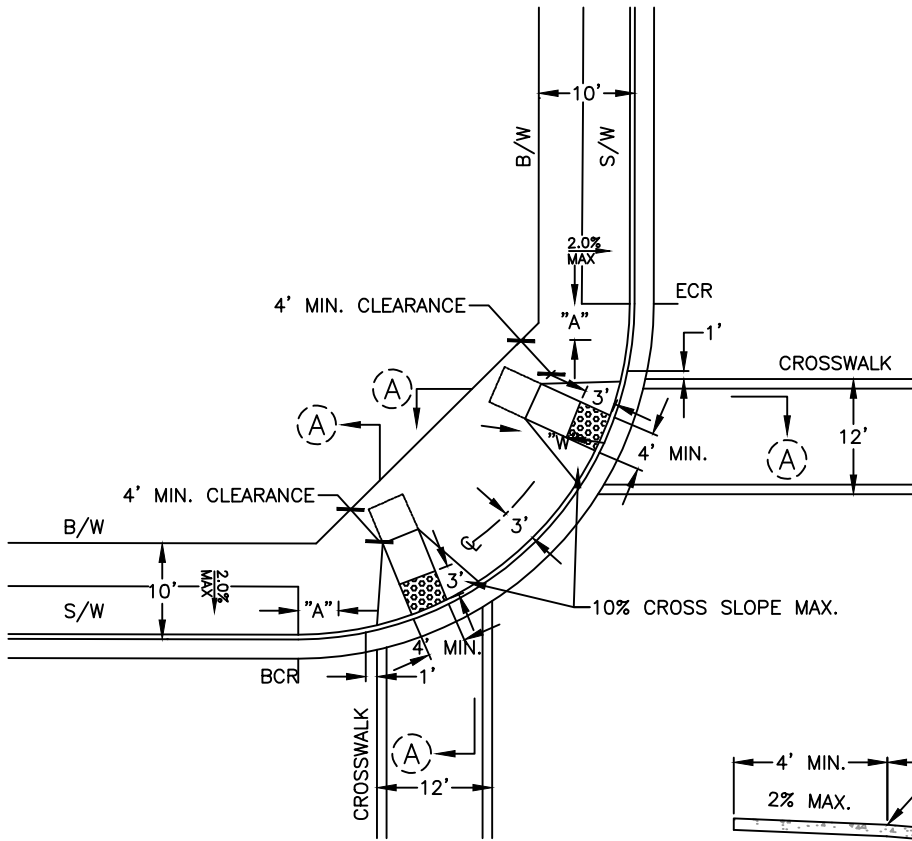
1. USE DETAIL "A" UNLESS DIMENSION "\*" IS GREATER THAN 5'-0", IN WHICH CASE DETAIL "B" SHALL BE USED.
2. SURFACE OF CURB RAMP AND FLARED SIDE SHALL HAVE BROOM FINISH TRANSVERSE WITH THE PATH OF TRAVEL AND SHALL BE OF CONTRASTING FINISH TO THAT OF ADJOINING SIDEWALK.
3. ON THE BOTTOM LANDING WITH A 2% MAX. SLOPE, WHERE WALK ADJOINS A VEHICULAR WAY, USE TRUNCATED DOMES, IN-LINE PATTERN PER P.W. STD. P-32. WHERE BOTH ENDS OF THE BOTTOM GRADE BREAK FOR THE RAMP ARE LESS THAN 5'-0" FROM THE BACK OF THE CURB THE DETECTABLE WARNING SURFACES SHALL BE PLACED ON THE RAMP RUN WITH ONE DOME SPACING OF THE BOTTOM GRADE BREAK.
4. THE SLOPE OF ADJOINING GUTTERS, ROAD SURFACE OR ACCESSIBLE ROUTE WITHIN 4'-0" OF THE BOTTOM OF THE RAMP SHALL NOT EXCEED 5% SLOPE.
5. RAMP SLOPE SHALL NEVER EXCEED 8.33%.
6. PROVIDE A MIN. 4'-0" DEEP LEVEL LANDING ON UPPER END AND OVER FULL WIDTH OF RAMP. MAINTAIN A 2% MAX. SLOPE, ANY DIRECTION.
7. THE LOWER END OF THE CURB RAMP SHALL TERMINATE WITHIN THE MARKED CROSSINGS.
8. RAMP SHALL BE MINIMUM OF 4'-0" WIDE AND SHALL LIE GENERALLY IN A SINGLE SLOPED PLANE WITH A MINIMAL OF SURFACE WARPING AND CROSS SLOPE.
9. CURB RAMPS SHALL BE LOCATED AND/OR PROTECTED TO PREVENT OBSTRUCTION BY PARKED CARS.
10. (OPTIONAL) PROVIDE A 12" WIDE, GROOVED, BORDER AT THE LEVEL SURFACE OF THE SIDEWALK ALONG THE TOP OF THE RAMP AND EACH FLARE. GROOVES SHALL BE APPROX. 1/4" DEEP, 1/4" WIDE AND SPACED 3/4" ON-CENTER.

**MODIFIED CURB RAMP  
AT STREET TYPE DRIVEWAY APPROACH**

REF. & REV.  
JUNE 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
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CURB RADIUS	"A" DISTANCE
30'	5'
35'	7'
40'	11'
45'	15'
50'	18'

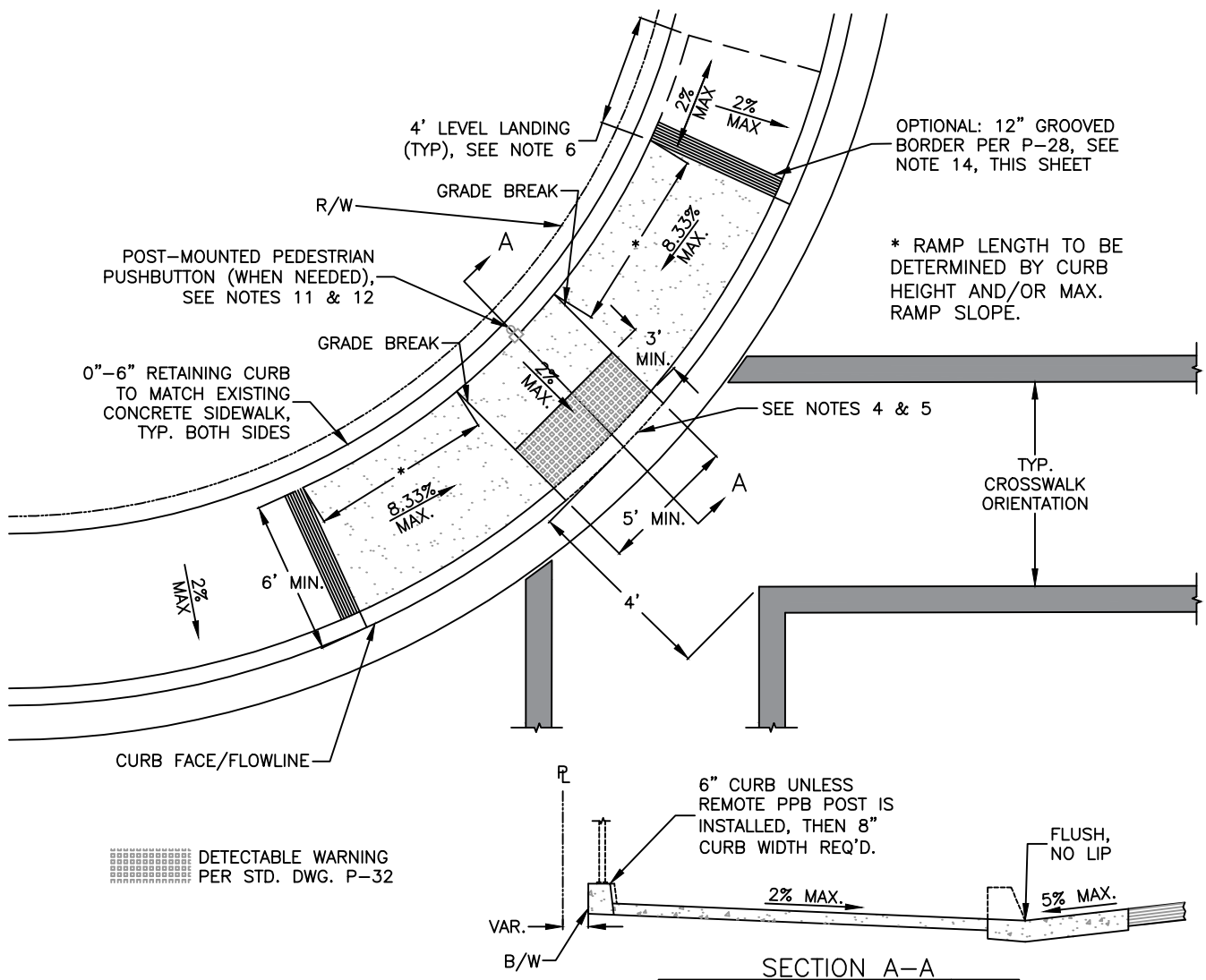


SECTION THROUGH (A) - (A)  
 DIMENSIONS "D" AND "W" TO BE DETERMINED BY  
 FLARE SLOPE, CURBSFACE HEIGHT AND SLOPE  
 AROUND RETURN

**NOTES:**

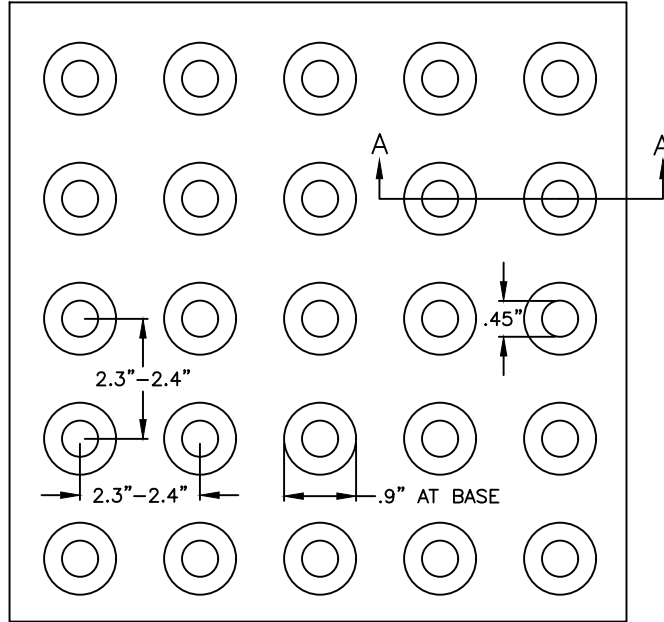
1. TRANSITIONS FROM RAMPS AND LANDING TO WALK, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
2. SURFACE OF CURB RAMP AND FLARED SIDES SHALL HAVE BROOM FINISH TRANSVERSE TO PATH OF TRAVEL AND SHALL BE OF CONTRASTING FINISH TO THAT OF ADJACENT SIDEWALK.
3. RAMP SLOPE SHALL NEVER EXCEED 8.33%.
4. THE SLOPE OF ADJOINING GUTTERS, ROAD SURFACE OR ACCESSIBLE ROUTE WITHIN 4' OF THE BOTTOM OF THE RAMP SHALL NOT EXCEED 5% SLOPE.
5. NOT USED.
6. PROVIDE LEVEL LANDING OF AT LEAST 48" ON UPPER END AND OVER FULL WIDTH OF RAMP, 2% MAX LEVEL LANDING.
7. THE CLEAR SPACE AT BOTTOM OF RAMP SHALL BE WITHIN THE MARKED CROSSINGS.
8. RAMP SHALL BE MINIMUM OF 4' WIDE AND SHALL LIE GENERALLY IN A SINGLE SLOPED PLANE WITH A MINIMUM OF SURFACE WARPING AND CROSS SLOPE.
9. THE FLARED SIDE SHALL NOT EXCEED 10% SLOPE.
10. CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED CARS.
11. THE DETECTABLE WARNING SHALL CONTRAST VISUALLY WITH ADJOINING SURFACES, EITHER LIGHT-ON-DARK OR DARK-ON-LIGHT. THE MATERIAL USED SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE.



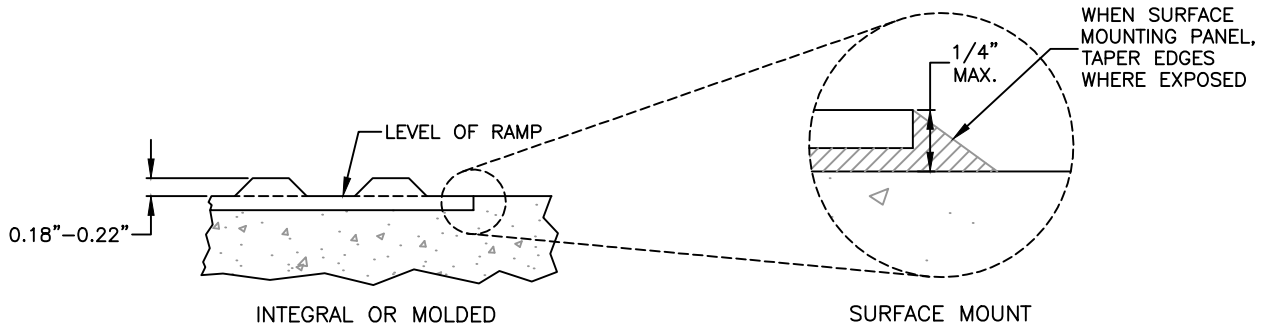


**NOTES:**

1. TRANSITIONS FROM RAMPS AND LANDING TO WALK, GUTTERS OR STREETS SHALL BE FLUSH AND FREE OF ABRUPT CHANGES.
2. SURFACE OF CURB RAMP AND FLARED SIDES SHALL HAVE BROOM FINISH TRANSVERSE TO PATH OF TRAVEL AND SHALL BE OF CONTRASTING FINISH TO THAT OF ADJACENT SIDEWALK.
3. RAMP SLOPE SHALL NEVER EXCEED 8.33%.
4. THE SLOPE OF ADJOINING GUTTERS, ROAD SURFACE OR ACCESSIBLE ROUTE WITHIN 4' OF THE BOTTOM OF THE RAMP SHALL NOT EXCEED 5% SLOPE.
5. (OPTIONAL) PROVIDE A 12" WIDE GROOVED BORDER AT THE LEVEL SURFACE OF THE SIDEWALK ALONG THE TOP OF THE RAMP. GROOVES SHALL BE APPROX. 1/4" DEEP, 1/4" WIDE AND SPACED 3/4" ON CENTER.
6. THE LOWER LANDING AREA LEADING INTO VEHICULAR WAY SHALL TERMINATE WITHIN THE MARKED CROSSING.
7. PROVIDE A MIN. 4' DEEP LEVEL LANDING ON UPPER ENDS AND OVER FULL-WIDTH OF RAMP. MAINTAIN A 2% MAX. SLOPE, ANY DIRECTION.
8. RAMP AND LOWER LANDING SHALL BE MINIMUM OF 5' WIDE AND SHALL LIE GENERALLY IN A SINGLE SLOPED PLANE WITH A MINIMUM OF SURFACE WARPING AND CROSS SLOPE.
9. CURB RAMPS SHALL BE LOCATED OR PROTECTED TO PREVENT THEIR OBSTRUCTION BY PARKED CARS.
10. ON THE BOTTOM LANDING WITH A 2% MAX. SLOPE, WHERE WALK ADJOINS A VEHICULAR WAY, INSTALL A 36" BAND OF TRUNCATED DOMES, IN-LINE PATTERN PER P.W. STD. P-32, THE FULL WIDTH OF THE LANDING.
11. THIS RAMP TYPE SHALL ONLY BE USED WHEN NECESSARY DUE TO R/W OR PHYSICAL CONSTRAINTS. IT MAY BE UTILIZED FOR DIAGONAL OR DUAL RAMP APPLICATIONS.
12. MODIFIED RAMPS PLACED ON SIGNALIZED INTERSECTIONS SHALL HAVE A PEDESTRIAN PUSH BUTTON ON THE ADJACENT SIGNAL POLE PER CA-MUTCD 4E.08. IN INSTANCES WHERE THIS IS NOT FEASIBLE THE PEDESTRIAN PUSHBUTTON SHALL BE INSTALLED ON A REMOTE POST LOCATED AT THE LOWER LANDING AREA, THE CURB WIDTH SHALL BE INCREASED ACCORDINGLY TO ACCOMMODATE THE POST INSTALLATION.
13. PUSHBUTTONS FOR ACCESSIBLE PEDESTRIAN SIGNALS SHOULD BE LOCATED AS CLOSE AS POSSIBLE TO THE CROSSWALK LINE FURTHEST FROM THE CENTER OF THE INTERSECTION AND AS CLOSE AS POSSIBLE TO THE CURB RAMP. IF TWO ACCESSIBLE PEDESTRIAN PUSHBUTTONS ARE PLACED LESS THAN 10 FEET APART OR ON THE SAME POLE, EACH ACCESSIBLE PEDESTRIAN PUSHBUTTON SHALL BE PROVIDED WITH A PUSHBUTTON LOCATOR TONE, TACTILE ARROW, SPEECH WALK MESSAGE FOR THE WALK INDICATION, AND A SPEECH PUSHBUTTON INFORMATION MESSAGE. REFER TO CA-MUTCD FOR SPECIFIC GUIDANCE.



DOME PATTERN



TYPICAL SECTION A-A

NOTES:

1. THE DETECTABLE WARNING SHALL VISUALLY CONTRAST PER THE CALIFORNIA BUILDING CODE, LATEST REVISION. THE MATERIAL USED SHALL BE AN INTEGRAL PART OF THE WALKING SURFACE. THE COLOR SHALL BE YELLOW UNLESS DIRECTED OTHERWISE BY CONSTRUCTION MANAGEMENT.
2. THE DOMES MAY BE CONSTRUCTED IN A VARIETY OF METHODS INCLUDING CAST-IN-PLACE OR STAMPED. IT MAY ALSO BE PART OF A PREFABRICATED SURFACE TREATMENT, SEE SURFACE MOUNT DETAIL.
3. ONLY APPROVED DSA/AC DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES SHALL BE INSTALLED AS PROVIDED IN THE CALIFORNIA CODE OF REGULATIONS (CCR), TITLE 24, PART 1, ARTICLES 2, 3 AND 4. REFER TO CCR TITLE 24, PART 12, CHAPTER 12-11A AND B FOR BUILDING FACILITY ACCESS SPECIFICATIONS FOR PRODUCT APPROVAL FOR DETECTABLE WARNING PRODUCTS AND DIRECTIONAL SURFACES.
4. DETECTABLE WARNING PRODUCTS AND DETECTABLE SURFACES SHALL BE EVALUATED BY AN INDEPENDENT ENTITY, SELECTED BY THE DEPARTMENT OF GENERAL SERVICES, DIVISION OF THE STATE ARCHITECT-ACCESS COMPLIANCE FOR ALL OCCUPANCIES, INCLUDING TRANSPORTATION AND OTHER OUTDOOR ENVIRONMENTS. SEE GOVERNMENT CODE SECTION 4460.

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED  
SEE P-33A, P-33B & P-33C

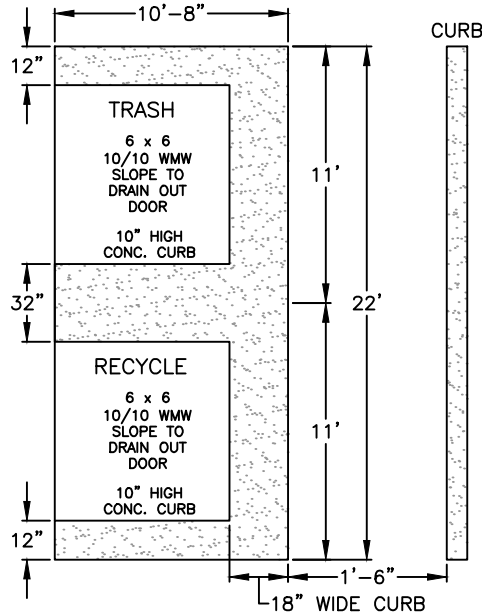
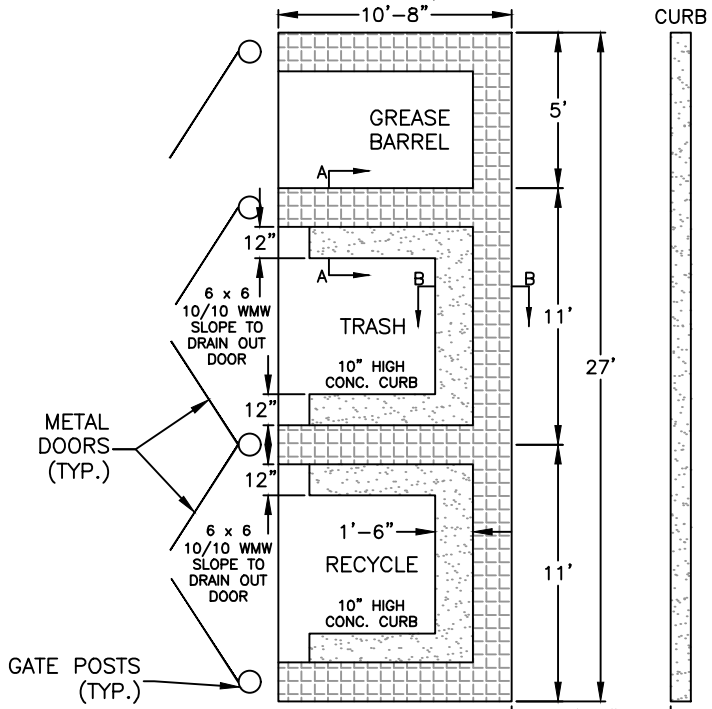
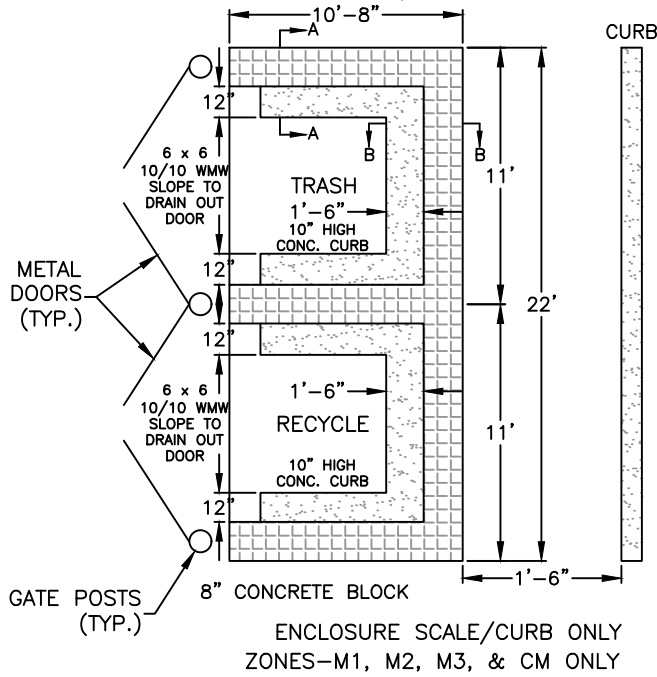
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MAR. 2021 (A.7)

CITY OF FRESNO

P-33

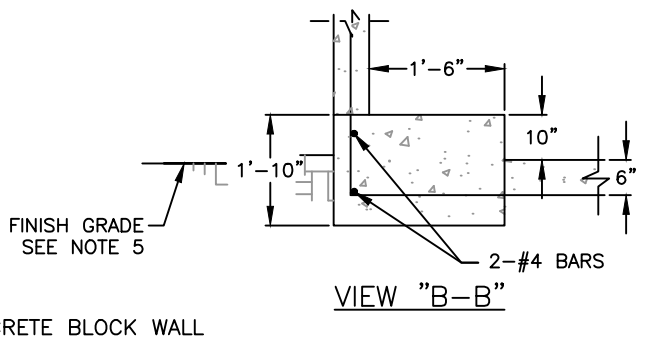
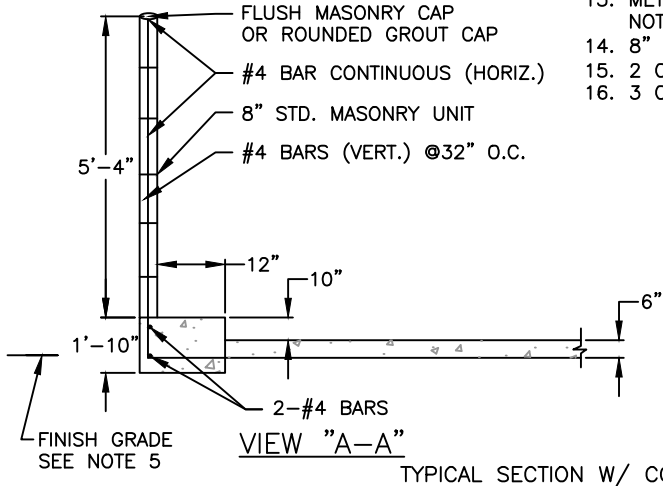
ENCLOSURE SCALE / STANDARD

ENCLOSURE SCALE / RESTAURANT



NOTES:

1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE AND U.B.C. STANDARD 24-4 GRADE N.
4. ALL MASONRY WALLS SHALL BE INSPECTED BY THE CITY OF FRESNO DEVELOPMENT DEPARTMENT.
5. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
6. ALL MASONRY UNITS SHALL BE MINIMUM F'M=1500 PSI.
7. REINFORCING STEEL SHALL BE DEFORMED BAR, MIN. GRADE 40.
8. FOOTING CONCRETE SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.
9. MORTAR SHALL BE TYPE-S (MINIMUM 1800 PSI AT 28 DAYS).
  - ONE (1) PART CEMENT, TYPE-1
  - ONE-HALF (1/2) PART LIME PUTTY OR HYDRATED LIME.
  - FOUR AND ONE-HALF (4 1/2) PARTS SAND (MAXIMUM).
10. GROUT SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.
  - ONE (1) PART CEMENT.
  - THREE (3) PARTS SAND.
  - TWO (2) PARTS PEA GRAVEL.
11. FINISH PAD ELEVATION TO BE FLUSH WITH GRADE AT ACCESS PAVEMENT.
12. ANY GATE HINGES SHOULD BE LOCATED ON THE OUTSIDE.
13. METAL DOORS ARE REQUIRED ON ALL ENCLOSURES, CHAIN LINK IS NOT ACCEPTABLE.
14. 8" CONCRETE BLOCK TO BE USED FOR WALLS.
15. 2 CELLS ARE REQUIRED FOR COMMERCIAL/INDUSTRIAL BUILDINGS.
16. 3 CELLS ARE REQUIRED FOR RESTAURANTS.

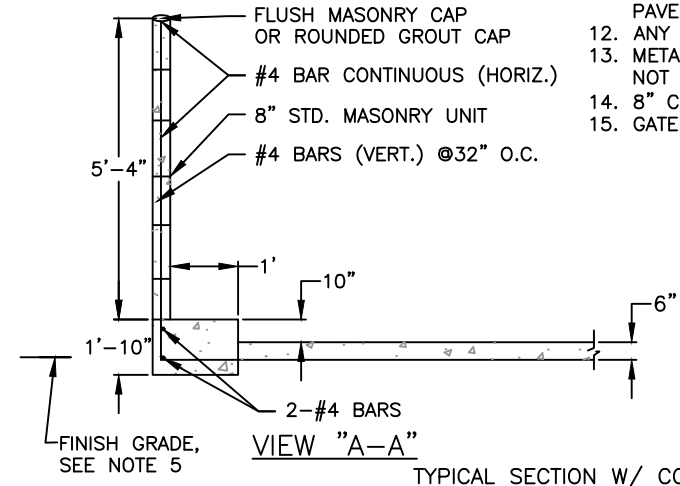
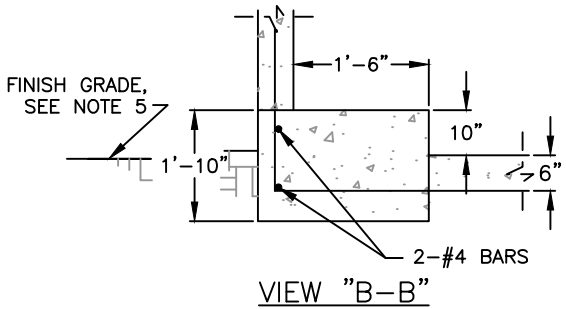
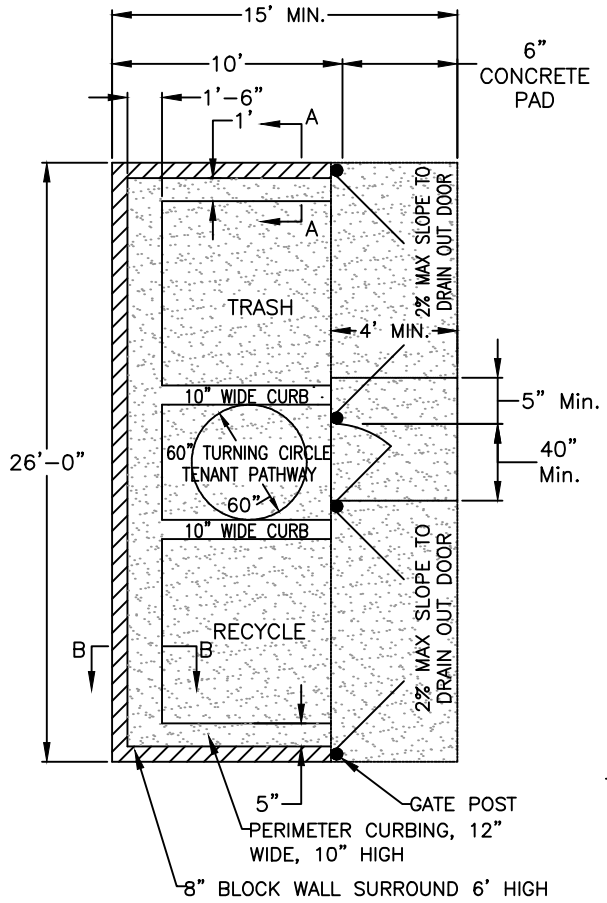


**TYPICAL REFUSE CONTAINER ENCLOSURE DETAILS**

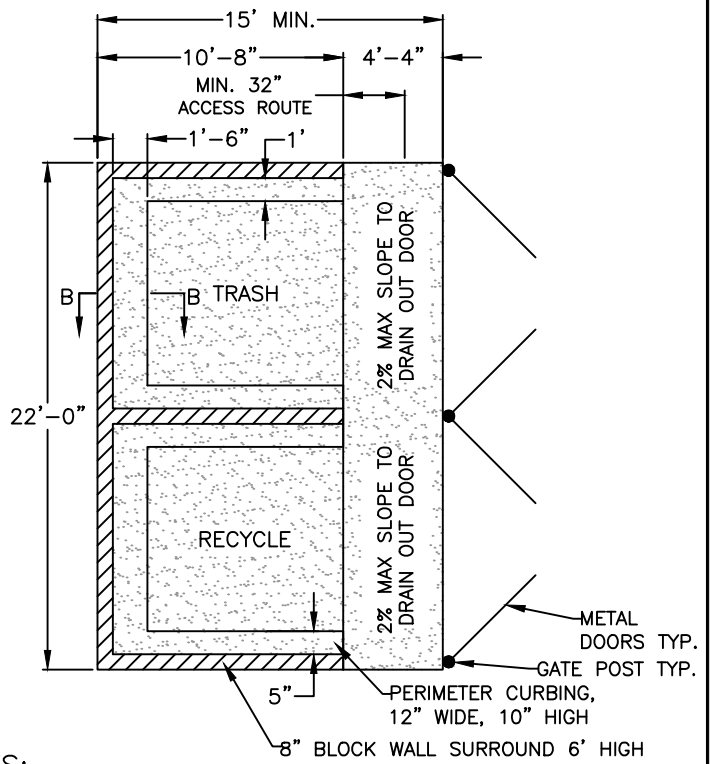
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AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
**P-33A**

**EXHIBIT "B"**  
**MODIFIED TRASH/RECYCLING ENCLOSURE**



**EXHIBIT "A"**  
**MODIFIED TRASH/RECYCLING ENCLOSURE**



**NOTES:**

1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE AND U.B.C. STANDARD 24-4 GRADE N.
4. ALL MASONRY WALLS SHALL BE INSPECTED BY THE CITY OF FRESNO DEVELOPMENT DEPARTMENT.
5. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
6. ALL MASONRY UNITS SHALL BE MINIMUM F'M=1500 PSI.
7. REINFORCING STEEL SHALL BE DEFORMED BAR, MIN. GRADE 40.
8. FOOTING CONCRETE SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.
9. MORTAR SHALL BE TYPE-S (MINIMUM 1800 PSI AT 28 DAYS).  
 ONE (1) PART CEMENT, TYPE-1  
 ONE-HALF (1/2) PART LIME PUTTY OR HYDRATED LIME.  
 FOUR AND ONE-HALF (4 1/2) PARTS SAND (MAXIMUM).
10. GROUT SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.  
 ONE (1) PART CEMENT.  
 THREE (3) PARTS SAND.  
 TWO (2) PARTS PEA GRAVEL.
11. FINISH PAD ELEVATION TO BE FLUSH WITH GRADE AT ACCESS PAVEMENT.
12. ANY GATE HINGES SHOULD BE LOCATED ON THE OUTSIDE.
13. METAL DOORS ARE REQUIRED ON ALL ENCLOSURES, CHAIN LINK IS NOT ACCEPTABLE.
14. 8" CONCRETE BLOCK TO BE USED FOR WALLS.
15. GATE HARDWARE SHALL COMPLY WITH 11-13 404.2.7 OF CBC 2016

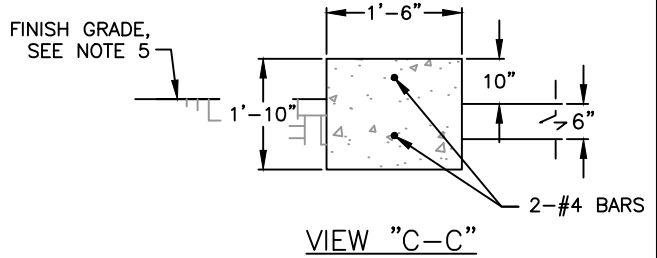
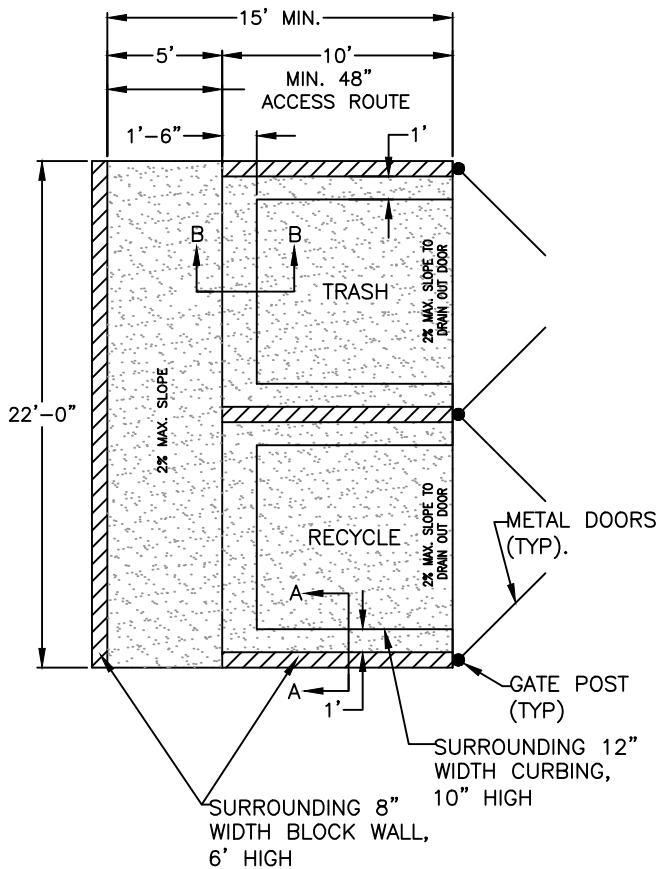
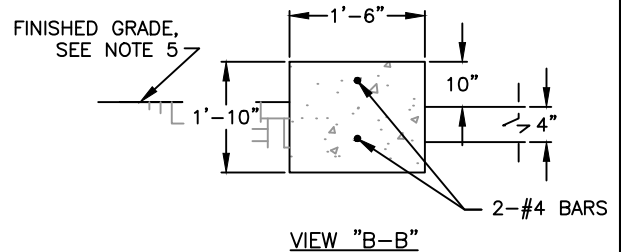
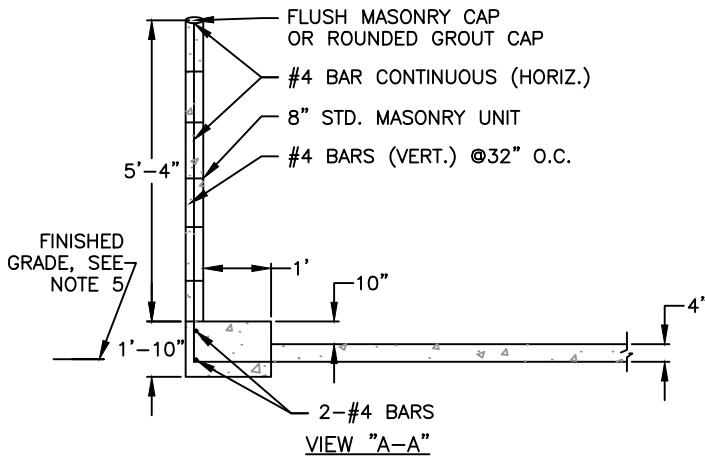


EXHIBIT "C"  
MULTI-FAMILY TRASH/RECYCLING ENCLOSURE



NOTES:

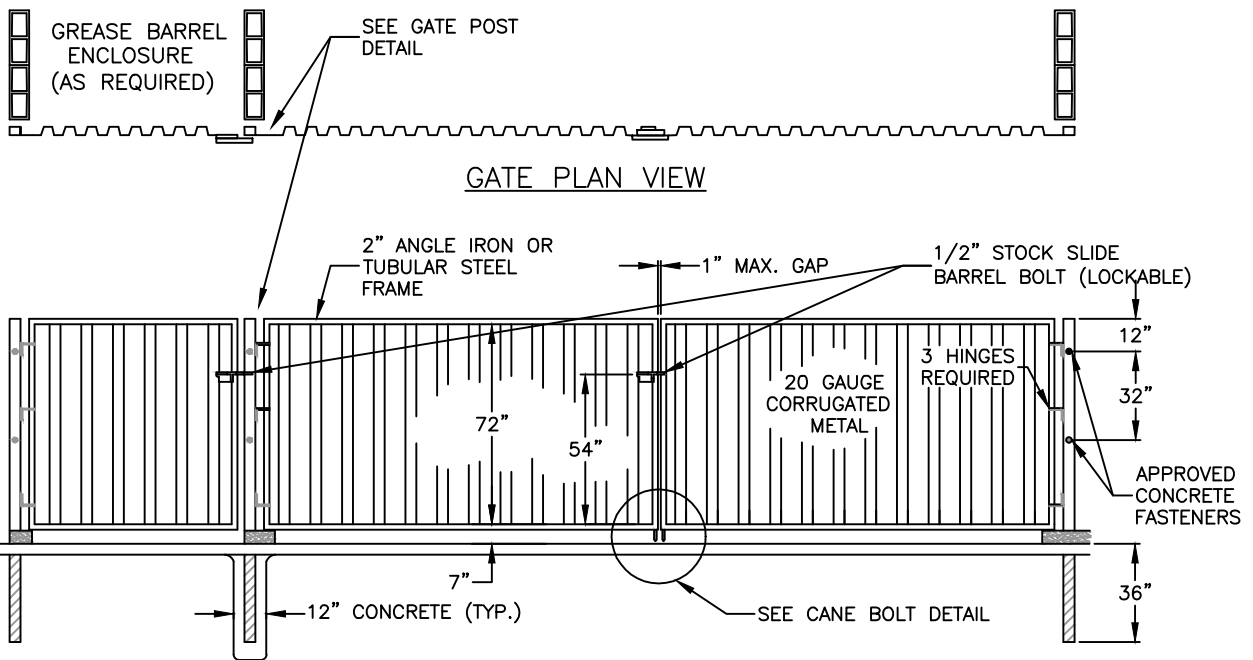
1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE AND U.B.C. STANDARD 24-4 GRADE N.
4. ALL MASONRY WALLS SHALL BE INSPECTED BY THE CITY OF FRESNO DEVELOPMENT DEPARTMENT.
5. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
6. ALL MASONRY UNITS SHALL BE MINIMUM F'M=1500 PSI.
7. REINFORCING STEEL SHALL BE DEFORMED BAR, MIN. GRADE 40.
8. FOOTING CONCRETE SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.
9. MORTAR SHALL BE TYPE-S (MINIMUM 1800 PSI AT 28 DAYS).  
ONE (1) PART CEMENT, TYPE-1  
ONE-HALF (1/2) PART LIME PUTTY OR HYDRATED LIME.  
FOUR AND ONE-HALF (4 1/2) PARTS SAND (MAXIMUM).
10. GROUT SHALL BE A MINIMUM 2000 PSI AT 28 DAYS.  
ONE (1) PART CEMENT.  
THREE (3) PARTS SAND.  
TWO (2) PARTS PEA GRAVEL.
11. FINISH PAD ELEVATION TO BE FLUSH WITH GRADE AT ACCESS PAVEMENT.
12. ANY GATE HINGES SHOULD BE LOCATED ON THE OUTSIDE.
13. METAL DOORS ARE REQUIRED ON ALL ENCLOSURES, CHAIN LINK IS NOT ACCEPTABLE.
14. 8" CONCRETE BLOCK TO BE USED FOR WALLS.
15. GATE HARDWARE SHALL COMPLY WITH 11-13 404.2.7 OF CBC 2016



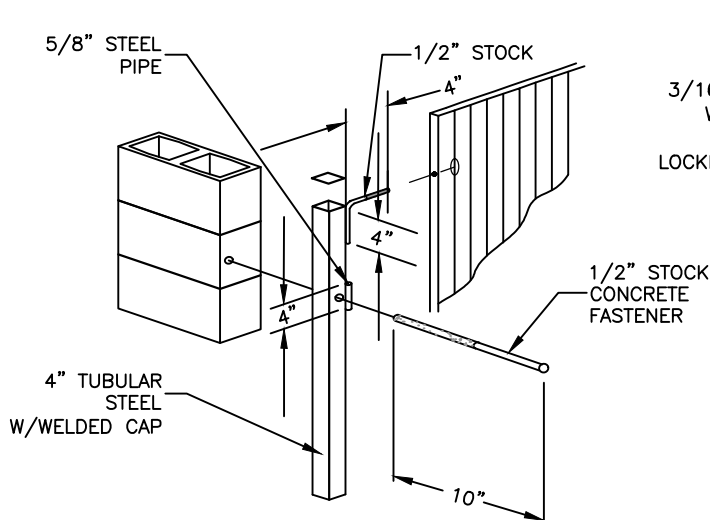
TYPICAL SECTION W/ CONCRETE BLOCK WALL

GENERAL NOTES:

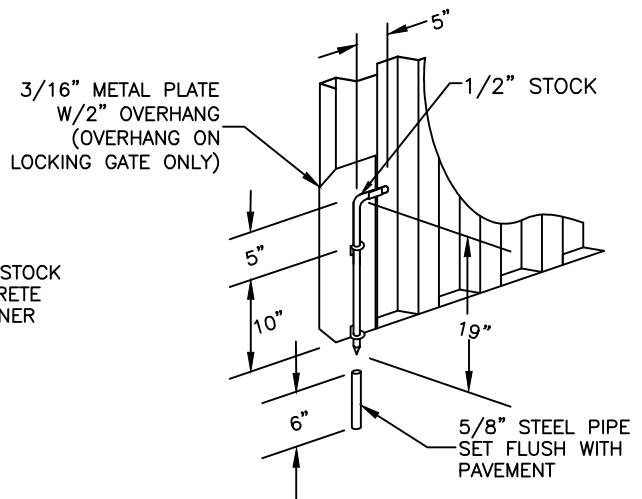
1. ALL SITE PLANS SHALL HAVE THE SIGNATURE APPROVAL OF A SOLID WASTE MANAGEMENT DIVISION REPRESENTATIVE.
2. CONTAINERS USED AT ALL PLACES SHALL BE PLACED FOR COLLECTION AT SERVICE LOCATIONS APPROVED BY THE PUBLIC UTILITIES DIRECTOR, OR HIS/HER DESIGNEE, BUT SHALL NOT BE STORED IN THE PUBLIC RIGHT-OF-WAY.
3. THE DESIGN OF ANY NEW, SUBSTANTIALLY REMODELED, OR EXPANDED BUILDING OR OTHER FACILITY SHALL PROVIDE FOR PROPER STORAGE OR HANDLING WHICH WILL ACCOMMODATE THE SOLID WASTE LOADING ANTICIPATED AND WHICH WILL ALLOW FOR SAFE AND EFFICIENT WASTE REMOVAL.
4. THE PUBLIC UTILITIES DIRECTOR, OR HIS/HER DESIGNEE, SHALL PLAN WITH THE PROPERTY OWNER AND/OR THEIR REPRESENTATIVE AS TO PLACEMENT OF STORAGE CONTAINERS TO MINIMIZE TRAFFIC, AESTHETIC AND OTHER PROBLEMS BOTH ON THE PROPERTY, AND FOR THE GENERAL PUBLIC.
5. BELOW IS A CHECKLIST OF REQUIREMENTS REVIEWED FOR A SITE PLAN:
  - a. REFUSE, RECYCLABLES, AND GREASE BARRELS SHALL BE STORED FOR LATER REMOVAL FROM THE PREMISES IN AN AREA THAT IS SCREENED FROM VIEW OF THE PUBLIC STREETS BY A CITY OF FRESNO, PUBLIC UTILITIES APPROVED STANDARD ENCLOSURE (REFER TO P-33, P-34, AND P-95 FOR DETAILS). APPROVED STANDARD ENCLOSURES ARE TO BE BUILT USING EIGHT INCH (8") CONCRETE BLOCK AT A HEIGHT OF SIX FEET (6').
  - b. ENCLOSURES BUILT IN (INDUSTRIAL ZONES) M-1, M-2, M-3, AND CM ZONES REQUIRING DIRECTOR APPROVAL, OR HIS/HER DESIGNEE, MAY ELIMINATE WALLS AS LONG AS IT IS NOT VISIBLE FROM A MAIN STREET. FOR THIS DESIGN, THE CURBING WILL BE TWELVE INCHES (12") WIDE ON BOTH SIDES, EIGHTEEN INCHES (18") DEEP ALONG THE REAR WITH A THIRTY-TWO INCH (32") WIDE CURB SEPARATING THE TWO CELLS. CURBING MUST BE REINFORCED WITH REBAR AT A HEIGHT OF TEN INCHES (10"). ALL ENCLOSURES SHALL BE A MINIMUM OF EIGHTEEN INCHES (18") FROM THE NEAREST CURB. ALL OTHER PUBLIC WORKS DESIGN REQUIREMENTS SHALL BE MET DURING REVIEW.
  - c. THE APPROVED STANDARD ENCLOSURE HAS BEEN DESIGNED TO ACCOMMODATE ALL SIZES OF CONTAINERS TO HANDLE THE ACCUMULATION OF WASTE AND RECYCLABLES GENERATE BETWEEN COLLECTIONS. A STORAGE AREA WITH INNER DIMENSIONS TEN FEET (10') BY TEN FEET (10') IS THE MINIMUM. THERE SHALL BE CURBING TWELVE INCHES (12") FROM SIDE WALLS AND EIGHTEEN INCHES (18") FROM REAR WALL AND AT A HEIGHT OF TEN INCHES (10"). THESE FEATURES ARE INCLUDED IN ORDER TO REDUCE THE POSSIBILITY OF DAMAGE TO THE ENCLOSURE ITSELF.
  - d. SERVICE ACCESS TO ENCLOSURE SHALL BE A MINIMUM UNENCUMBERED OPENING OF EIGHT FEET (8'). THE GATE TO BE USED SHALL BE BUILT OF METAL, CHAIN LINK IS NOT ACCEPTABLE, SO THAT BINS CANNOT BE SEEN WHEN GATES ARE CLOSED AND SHALL BE MOUNTED ON THE OUTER SURFACE OF ENCLOSURE AS TO NOT PROTRUDE INTO SERVICE ACCESS OPENING. HARDWARE LATCHES SHOULD BE A HEAVY GAUGE LOCKING GATE LATCH. TWO GATES ARE REQUIRED ON EACH CELL WITH THE EXCEPTION OF THE GREASE BARREL CELL.
  - e. THE FLOOR OR BOTTOM SURFACE OF THE COLLECTION AREA SHALL BE MADE OF CONCRETE, (SLOPED) ONE PERCENT (1%) TO THE FRONT, AND THERE SHALL NOT BE ANY DRAINAGE GUTTER IN FRONT OF ENTRANCE. THE UNENCUMBERED OPENING OF EIGHT FEET (8') REFERENCED IN D. ABOVE SHALL BE A LEVEL SURFACE. THE FLOOR SHALL NOT SLOPE TO THE BACK OR SIDES OF THE ENCLOSURE TO ALLOW DRAINAGE TO THE REAR OF THE AREA OR CAUSE ANY STANDING WATER WITHIN THE ENCLOSURE. IT SHALL BE CONSTRUCTED SO THE COLLECTION VEHICLE CAN DRIVE DIRECTLY INTO THE POCKETS OF THE CONTAINERS WITHOUT ANY OBSTRUCTIONS.
  - f. INGRESS AND EGRESS SHALL HAVE AN UNOBSTRUCTED OVERHEAD CLEARANCE OF SIXTEEN FEET (16') AND SHALL NOT BE LESS THAN EIGHTEEN FEET (18') WIDE AND CAPABLE OF ACCOMMODATING A TRUCK WITH A TWO HUNDRED FIFTY INCH (250") WHEELBASE, A FORTY-FOUR FOOT (44') (CENTER LINE) TURNING RADIUS AND A SUPPORT WEIGHT OF THIRTY-FIVE (35) TONS. AREA SHALL BE UNOBSTRUCTED AND SO CONFIGURED THAT A TRUCK WILL BE ABLE TO MAKE A ROUND TRIP FROM THE PUBLIC RIGHT-OF-WAY TO THE COLLECTION AREA AND RETURN WITHOUT EXCESSIVE BACKING INTO A TRAFFIC LANE OR A PUBLIC THOROUGHFARE. BACKING AROUND A BUILDING IS NOT ALLOWED. AT NO TIME SHALL A TRUCK BE REQUIRED TO BACK IN EXCESS OF FORTY-FIVE FEET (45').
  - g. BIN ENCLOSURE GATES AND SERVICE AREA SHALL NOT OPEN INTO OR BE A PART OF A PARKING STALL OR LOADING ZONE.
  - h. GATED ENTRANCE/EXIT SERVICE SITES SHALL BE AT LEAST FORTY FEET (40') AWAY FROM ENTRANCES AND EXITS TO PREVENT TRUCKS FROM STICKING OUT INTO THE ROADWAY WHILE WAITING TO ACCESS ENCLOSURE AND ALLOW TRUCKS ENOUGH SPACE TO CLEAR GATE ON EXITING WHILE WAITING TO MERGE WITH TRAFFIC.
  - i. THE ENCLOSURE(S) SHALL ACCOMMODATE REFUSE BINS, RECYCLE BINS, AND GREASE BARRELS WHEN APPLICABLE. NEITHER THE WASTE NOR RECYCLING CONTAINER SHALL BE REQUIRED TO BE MOVED IN ORDER TO SERVICE THE OTHER. GREASE BARRELS SHALL NOT BE PLACED IN THE SAME AREA OF THE ENCLOSURE WITH REFUSE OR RECYCLABLES.
  - j. OWNER/OCCUPANTS SHALL NOT USE ENCLOSURES FOR STORAGE OR PLACE ANY MATERIALS AROUND THE TRASH, RECYCLE, OR GREASE CONTAINERS.
  - k. SIGNAGE IS REQUIRED TO CLEARLY IDENTIFY ALL RECYCLING, SOLID WASTE COLLECTION, AND LOADING AREAS AND THE MATERIALS ACCEPTED THEREIN. THIS SIGNAGE SHALL BE PLACED AT ALL POINTS OF DIRECT ACCESS TO RECYCLING, SOLID WASTE, AND LOADING AREAS ON, OR ADJACENT TO, THE RECYCLABLE AND SOLID WASTE MATERIAL CONTAINERS.
  - l. SITES UTILIZING COMPACTORS AND/OR ROLL-OFFS REQUIRE SIXTY FEET (60') OF CLEARANCE IN FRONT OF THE UNIT, AND A MINIMUM OF THREE FEET (3') ON EACH SIDE, FOR LOADING AND UNLOADING.



GATE LAYOUT



GATE POST DETAIL

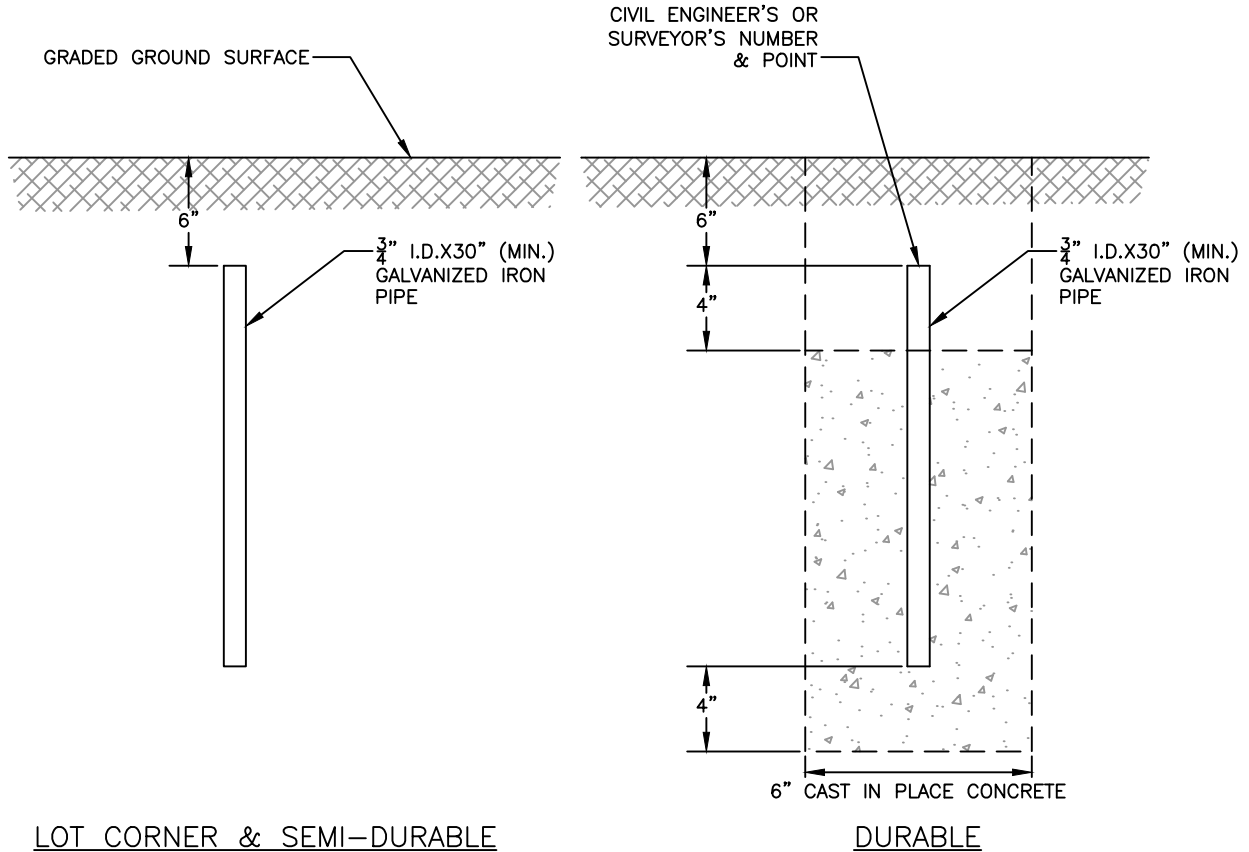


CANE BOLT DETAIL  
(BOTH SIDES OF GATE)

NOTES:

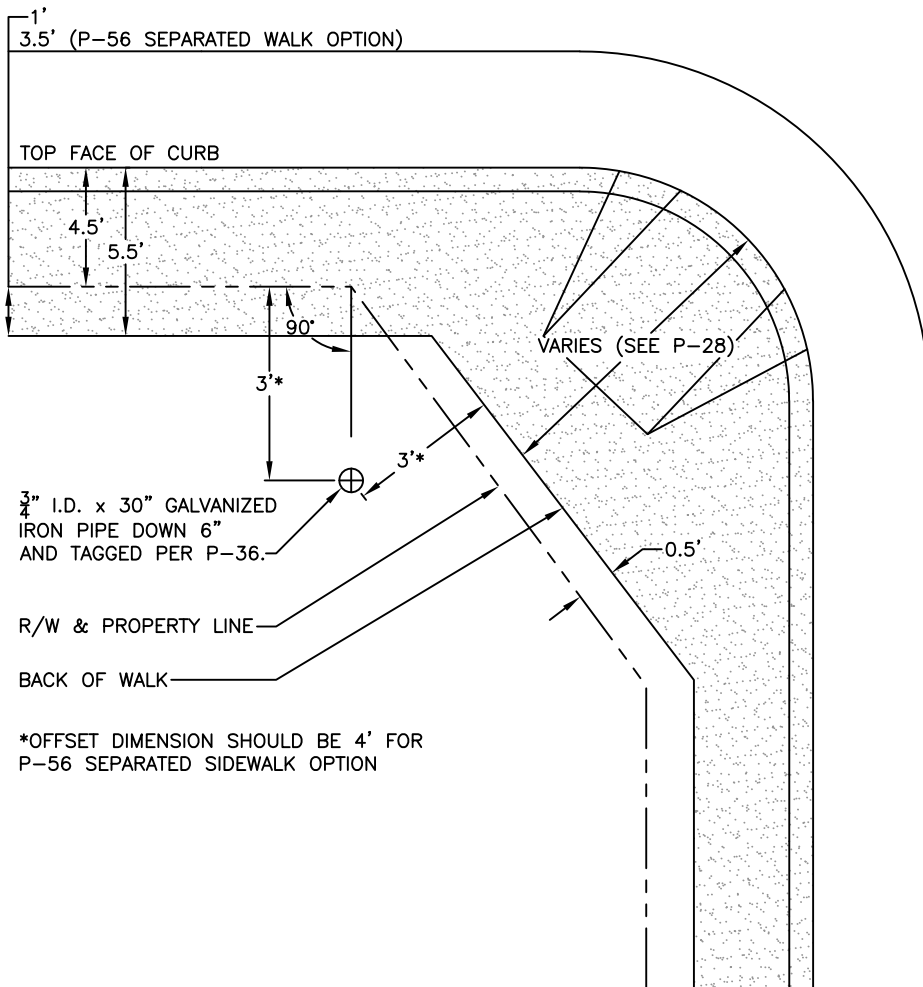
1. GATES TO BE PAINTED TO MATCH BUILDING ACCENT FEATURES.
2. DESIGN, ENGINEERING AND CONSTRUCTION NOT SPECIFICALLY NOTED SHALL BE IN ACCORDANCE WITH ACCEPTED INDUSTRY STANDARDS AND OF FIRST QUALITY.
3. SECONDARY CANE BOLT RETAINER TO BE PLACED FOR EACH GATE SUCH THAT GATE IS HELD IN A POSITION 90° TO THE CLOSED POSITION.
4. TWO GATES ARE REQUIRED ON EACH CELL WITH THE EXCEPTION OF THE GREASE BARREL CELL.





NOTES:

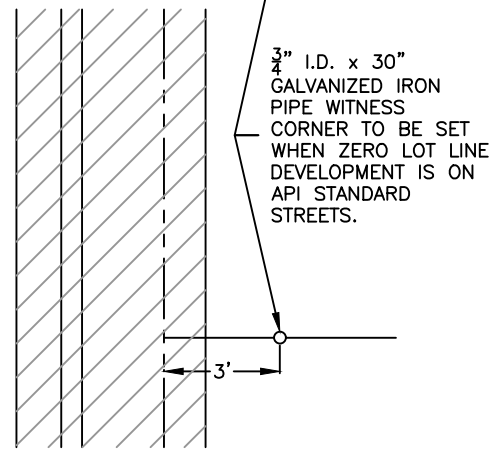
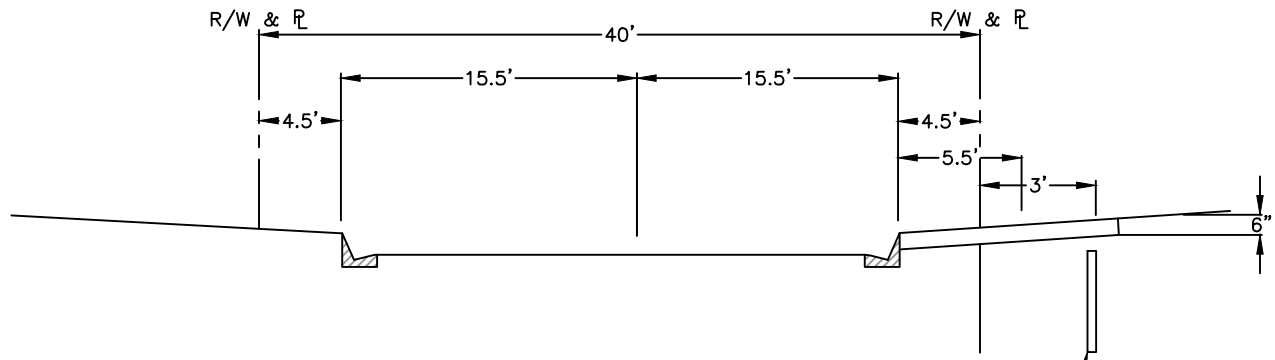
1. STATE LAW REQUIRES ALL CORNERS TO BE TAGGED WITH A REGISTERED SURVEYOR'S OR REGISTERED CIVIL ENGINEER'S NUMBER.
2. REGULAR SHAPED SUBDIVISIONS SHALL HAVE EXTERIOR CORNERS MARKED WITH DURABLE MONUMENTS. IRREGULAR SHAPED SUBDIVISIONS SHALL HAVE ALL EXTERIOR ANGLES AND CURVE POINTS MARKED WITH DURABLE MONUMENTS, OR REFERENCED TO AN ADJACENT BLOCK OR LOT CORNER, WHICH IS ALSO MARKED WITH A DURABLE MONUMENT. CONCRETE FOR THE DURABLE MONUMENT SHALL BE CAST IN PLACE.
3. BLOCK CORNERS, UNLESS OTHERWISE MARKED WITH A DURABLE MONUMENT, SHALL BE MARKED WITH A SEMI-DURABLE MONUMENT.
4. ALL LOT CORNERS, ANGLE POINTS, BEGINNING OF CURVES AND THE END OF CURVES SHALL BE MARKED WITH A SEMI-DURABLE MONUMENT.
5. A DEVIATION FROM SETTING STANDARD SEMI-DURABLE AND DURABLE MONUMENTS WILL BE CONSIDERED UPON A WRITTEN REQUEST CITING THE CIRCUMSTANCES FOR THE DEVIATION.



WITNESS CORNER

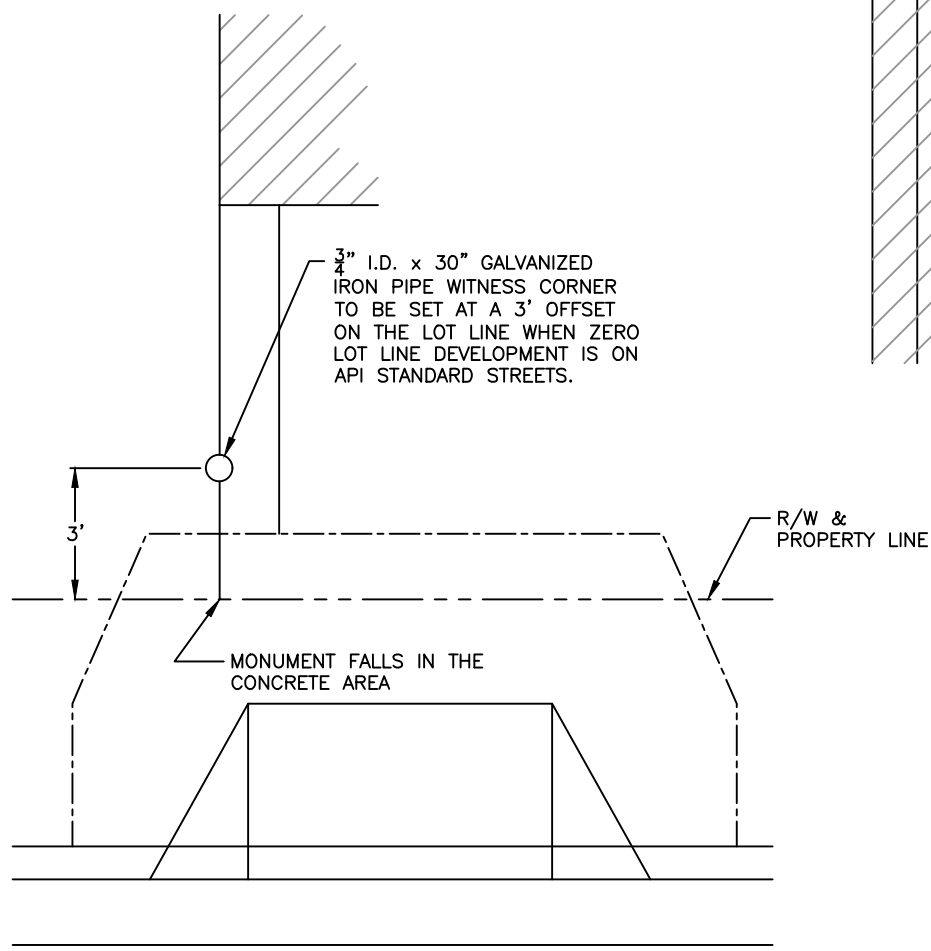
REF. & REV.  
AUG. 2010

CITY OF FRESNO  
P-37



3/4" I.D. x 30" GALVANIZED IRON PIPE WITNESS CORNER TO BE SET AT A 3' OFFSET ON THE LOT LINE WHEN ZERO LOT LINE DEVELOPMENT IS ON API STANDARD STREETS.

3/4" I.D. x 30" GALVANIZED IRON PIPE WITNESS CORNER TO BE SET WHEN ZERO LOT LINE DEVELOPMENT IS ON API STANDARD STREETS.



MONUMENT FALLS IN THE CONCRETE AREA

R/W & PROPERTY LINE

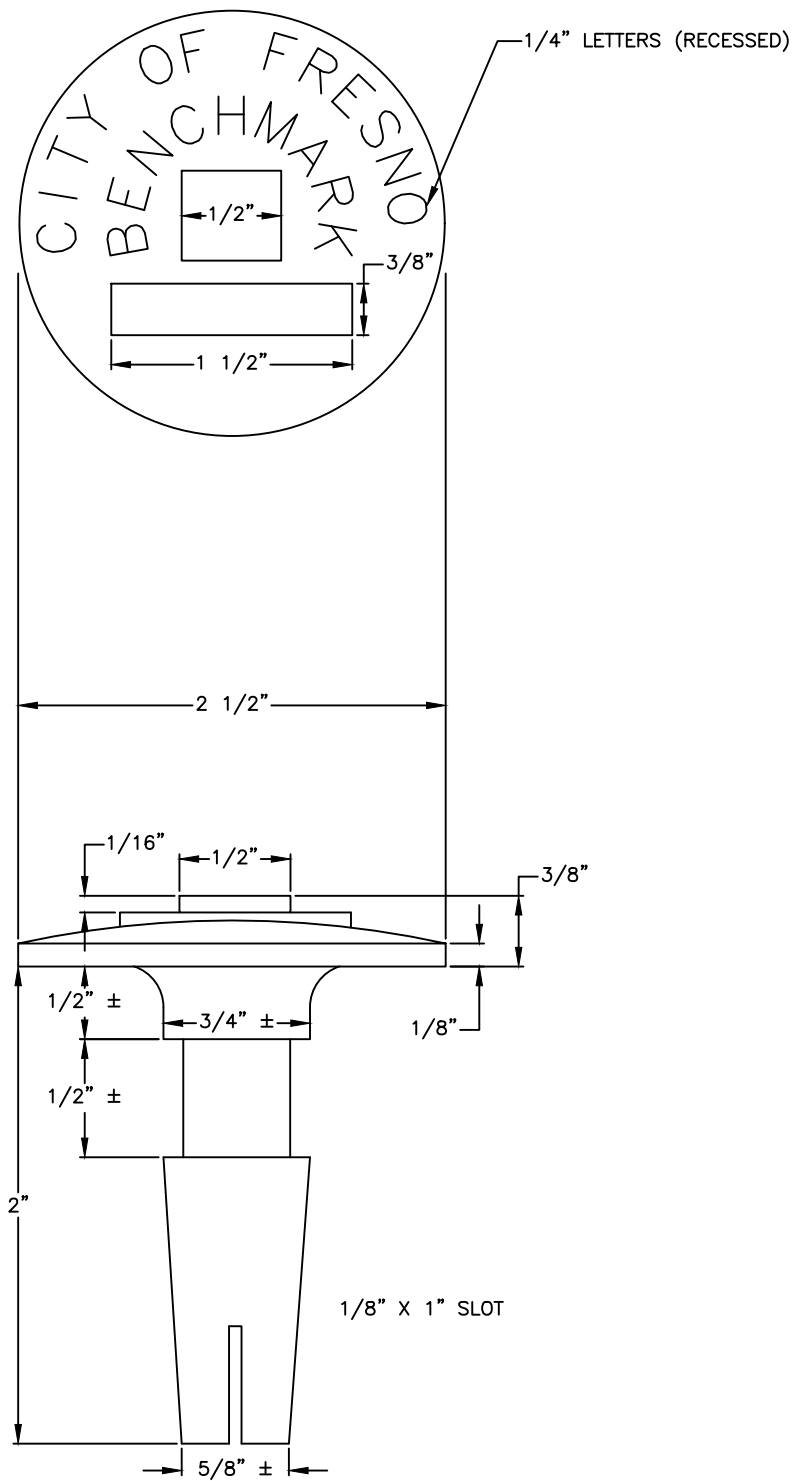
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

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CITY OF FRESNO

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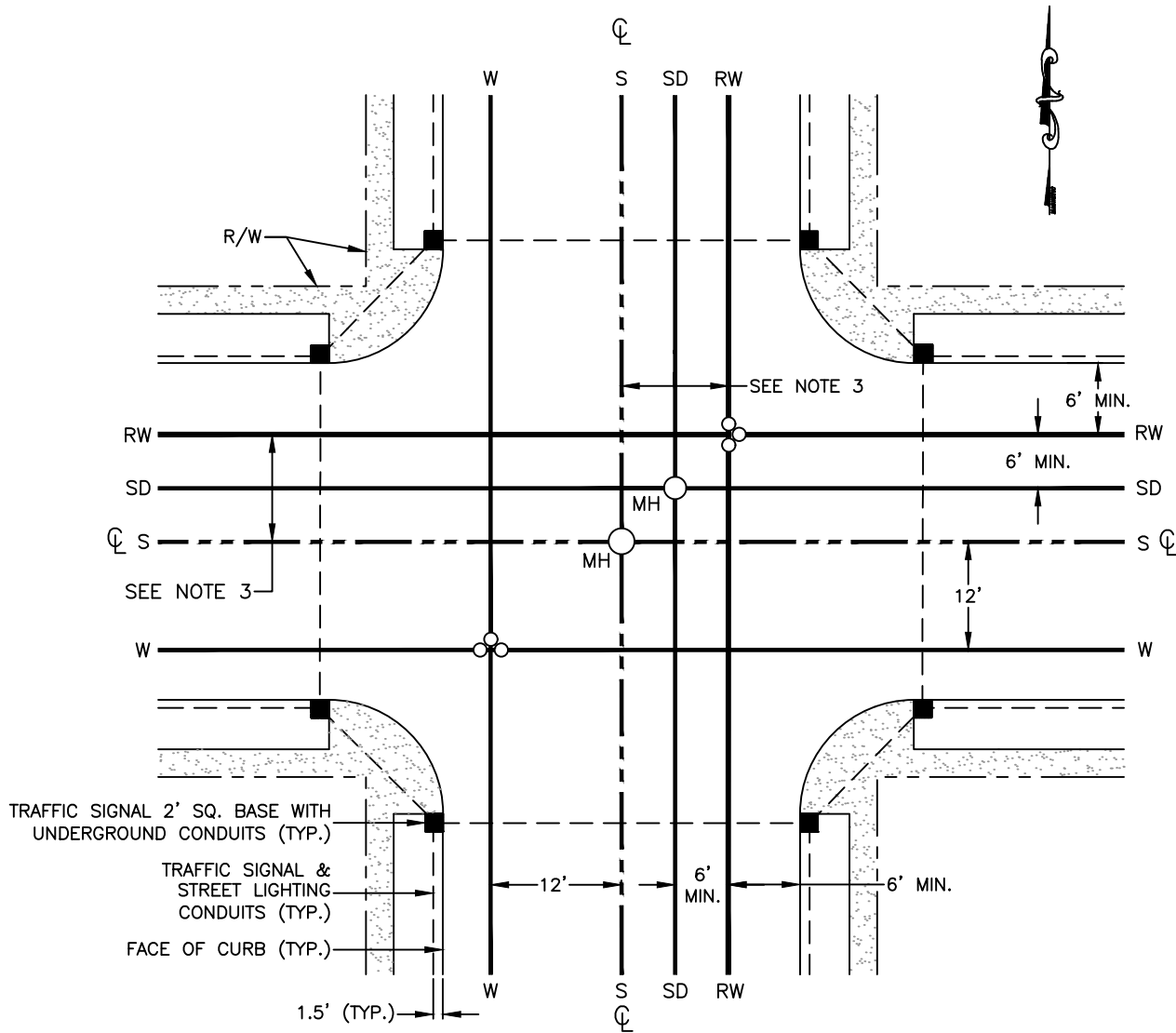


BENCHMARK DETAIL

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AUG. 2002

CITY OF FRESNO

P-40

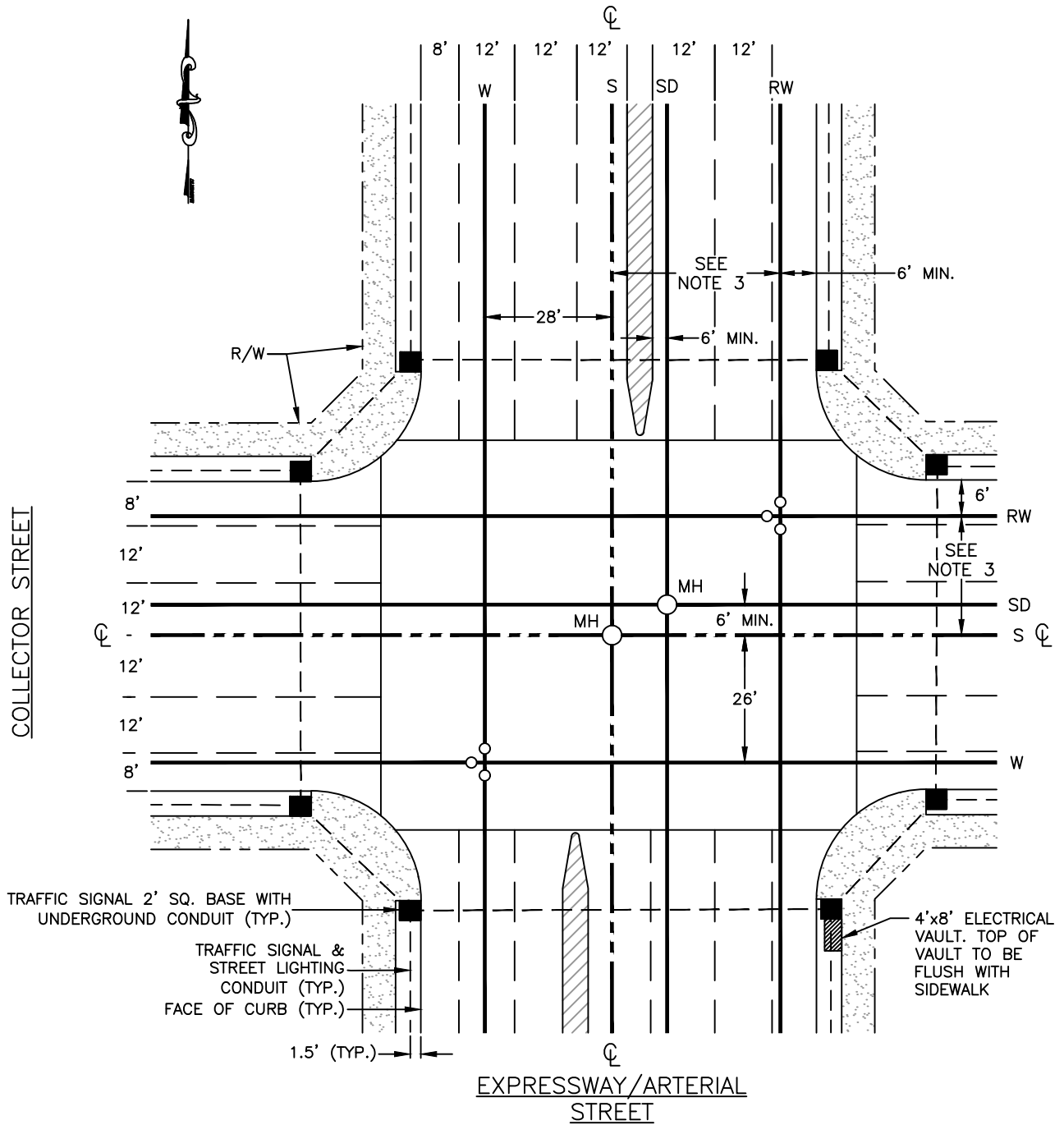


NOTES:

1. THIS "STANDARD" IS A GUIDE ONLY AND DEVIATIONS WILL BE ACCEPTABLE WHERE CONDITIONS DICTATE.
2. DIMENSIONS SHOWN ARE DESIRABLE BUT DO NOT GOVERN. THE INTENTION IS TO SHOW THE RELATIVE POSITION OF ALL UTILITIES.
3. REFERENCE STD. DWG. RW-12 FOR MINIMUM SEPARATION REQUIREMENTS.

LEGEND:

- S - SANITARY SEWER
- SD - STORM SEWER
- W - WATER MAIN
- RW - RECYCLED WATER
- MH - MANHOLE
- CL - CENTERLINE OF PROPOSED STREET
- R/W - RIGHT OF WAY

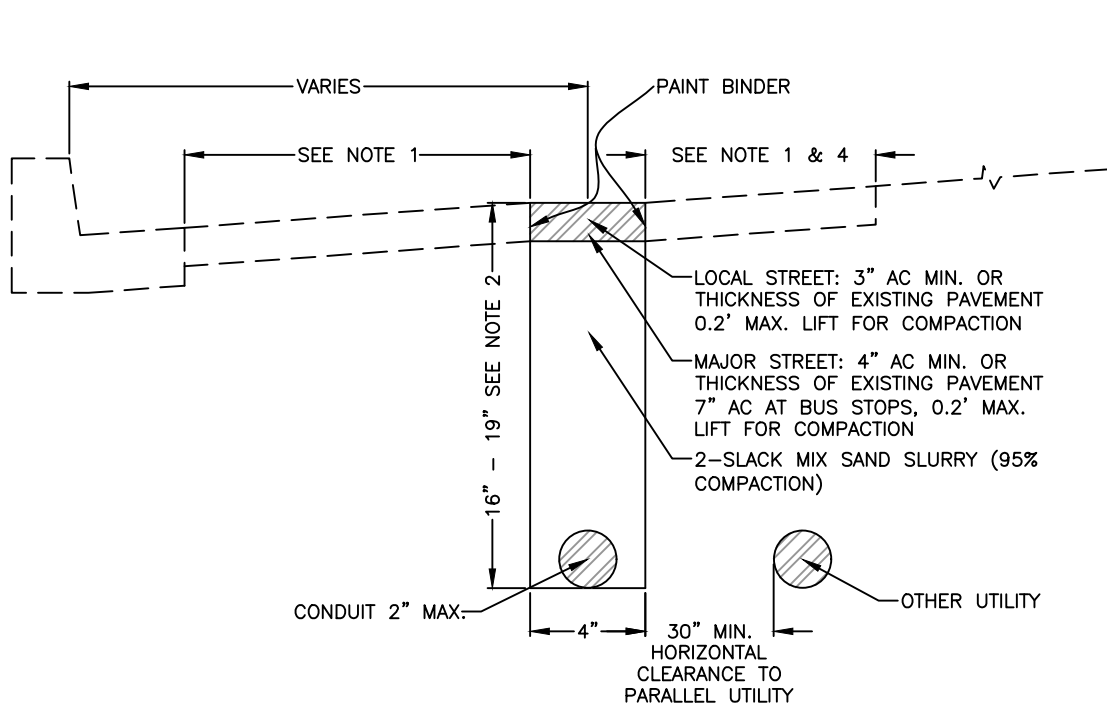


**NOTES:**

1. THIS "STANDARD" IS A GUIDE ONLY AND DEVIATIONS WILL BE ACCEPTABLE WHERE CONDITIONS DICTATE.
2. DIMENSIONS SHOWN ARE DESIRABLE, BUT DO NOT GOVERN. THE INTENTION IS TO SHOW THE RELATIVE POSITION OF ALL UTILITIES.
3. REFERENCE STD. DWG. RW-12 FOR MINIMUM SEPARATION REQUIREMENTS.

**LEGEND**

- S - SANITARY SEWER
- SD - STORM SEWER
- W - WATER MAIN
- RW - RECYCLED WATER
- MH - MANHOLE
- C - CENTERLINE OF PROPOSED OFFICIAL PLAN LINE OR DIRECTOR'S DETERMINATION
- R/W - PROPERTY LINE



**NOTES:**

1. WHEN THE PAVEMENT IS FRACTURED OR SEPARATED, THE CITY ENGINEER MAY DIRECT ITS REPLACEMENT. AJ TO ELIMINATE ANY FLOATING SECTIONS OF AC PAVING.
2. WHERE PERMANENT STREET IMPROVEMENTS ARE NOT COMPLETE, CATV FACILITIES ARE SUBJECT TO RELOCATION DEPENDENT UPON THE DETERMINATION OF FINAL STREET GRADES. INSTALLATION AT A DEPTH GREATER THAN 18" MAY AVOID RELOCATION OF CATV FACILITIES WHEN THE FUTURE STREET GRADE MAY BE LOWER THAN THE EXISTING STREET.
3. STREET CLEANING IS A CONTINUOUS REQUIREMENT OF THE PROJECT.
4. TO PROVIDE A STRAIGHT AND NEAT TRENCH, IN OIL DIRT STREETS, THE ENGINEER MAY REQUIRE ADDITIONAL PAVEMENT REMOVAL AND REPLACEMENT BEYOND THE LIMITS SHOWN IN THIS STANDARD.
5. WHEN STREET PAVING IS LESS THAN ONE YEAR OLD, FOG SEAL IS REQUIRED.
6. STONE GUARDS ARE REQUIRED. GUARDS TO PREVENT FLYING, OR SCATTERING OF DEBRIS BEYOND THE TRENCH SPOIL ARE REQUIRED.
7. CONSTRUCTION MACHINERY IS SUBJECT TO INSPECTION PRIOR TO APPROVAL OF STREET WORK PERMIT.
8. IF FOR ANY REASON THE TRENCH WIDTH EXCEEDS 6 INCHES (E.G. BELL HOLES, BORE PITS, ETC.) THE PAVING SHALL BE REPLACED PER CITY STD. DWG. P-48.

**TRENCH DETAIL CATV  
LOCAL & MAJOR STREETS**

REF. & REV.  
AUG. 2010

CITY OF FRESNO

**P-43**



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AUG. 2010

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AUG. 2010

CITY OF FRESNO

P-45

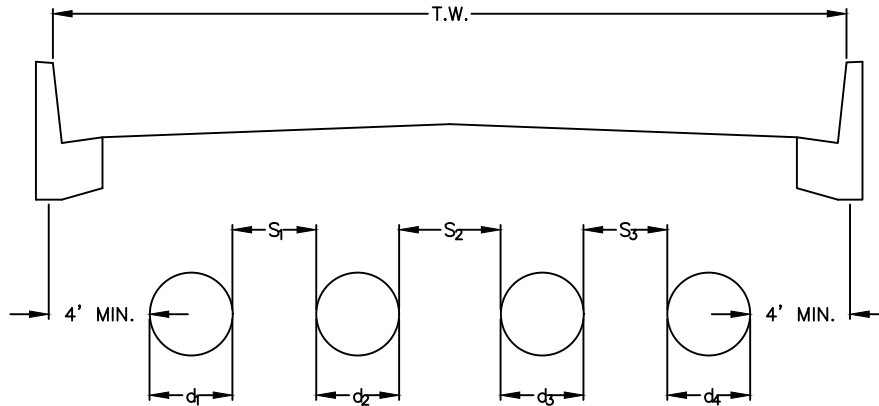
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AUG. 2010

CITY OF FRESNO

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$$T.W. \geq (8) + (S_1 + S_2 + \dots + S_n) + (d_1 + d_2 + \dots + d_n) + (2)(L)$$

(IN FEET)  
 $d_n = \text{O.D. OF PROPOSED PIPE.}$

$S_n = \text{CLEAR HORIZONTAL DISTANCE BETWEEN PROPOSED PIPES.}$

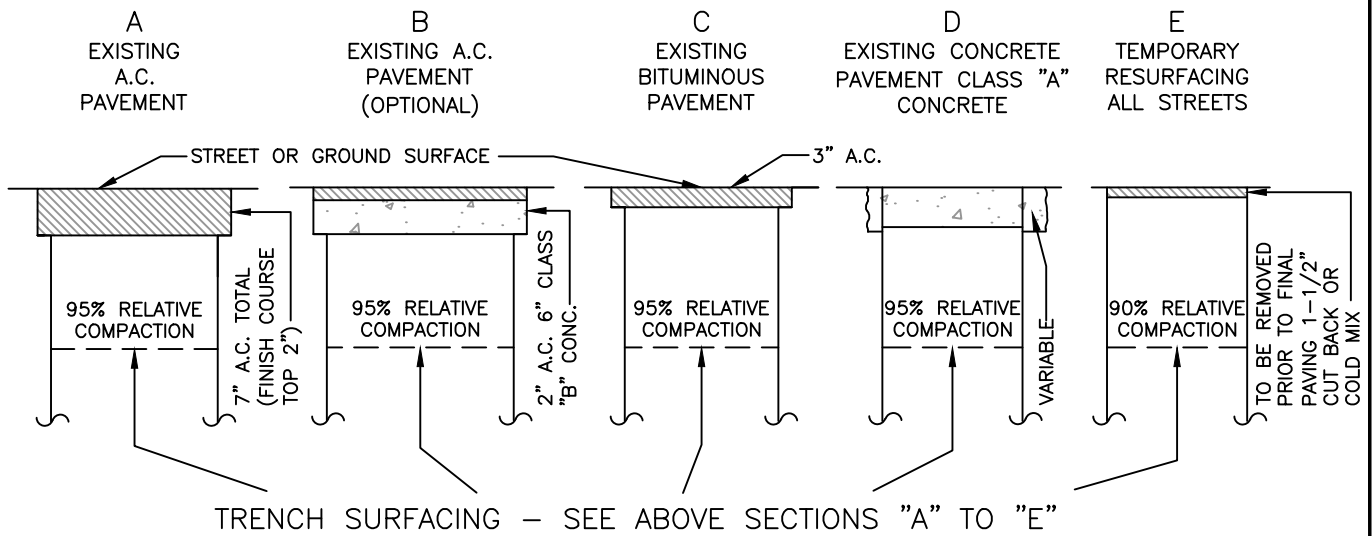
$L = \text{NUMBER OF PIPES IN TRAVELED WAY EXCEEDING 10" NOMINAL I.D.}$

**GENERAL:**

THE MINIMUM ALLOWABLE TRAVELED WAY MUST BE CALCULATED USING THE FORMULA BELOW. TO DETERMINE THE REQUIRED STANDARD STREET WIDTH CALCULATE T.W. IN THE FORMULA AND ROUND UP TO THE NEAREST TRAVELED WAY SHOWN ON THE ARRAY OF STANDARD STREET SECTIONS.

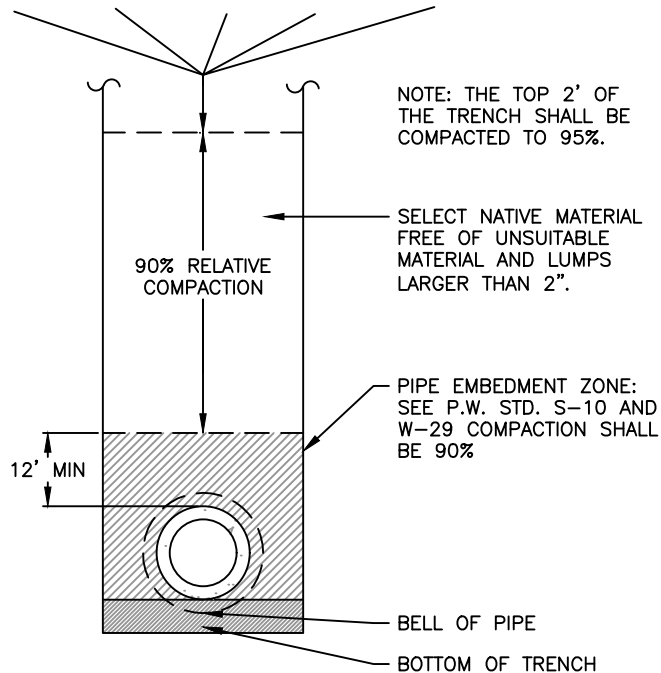
**NOTES:**

1. SEWER TO BE MINIMUM 8' FROM CURB FOR CURVILINEAR STREETS.
2. SEWER TO BE WITHIN 2' OF CENTER OF T.W. FOR TANGENTIAL STREETS.
3. WATER TO BE MINIMUM 6' FROM CURB. SPECIAL PIPE CONSTRUCTION MAY ALLOW A REDUCTION WHEN APPROVED BY THE CITY ENGINEER.
4. WATER AND SEWER TO BE SEPARATED BY MINIMUM 10' CLEAR HORIZONTAL DISTANCE.
5. MINIMUM "S" IS 2' OR AS PROVIDED IN CITY STANDARD SPECIFICATIONS.
6. IF THE DEPTH TO FLOWLINE OF A PIPE EXCEEDS 5', THE MINIMUM "S" OF 2' TO ADJACENT PIPES WILL INCREASE BY 6" FOR EACH 1' OF DEPTH GREATER THAN 5'.
7. IF THE ELEVATION OF THE TOP OF A WATER OR SEWER LINE IS WITHIN 6' IN ELEVATION OF THE TOP OF ANOTHER PIPE, (NOT SEWER OR WATER). THE SEPARATION ("S ") SHALL BE AT LEAST 5'.



TRENCH SURFACING - SEE ABOVE SECTIONS "A" TO "E"

NOTE:  
SAWCUTTING OF TRENCH EDGES TO A STRAIGHT LINE SHALL BE REQUIRED IN ALL PERMANENTLY PAVED AREAS OR AS REQUIRED BY THE ENGINEER PRIOR TO TRENCH RESURFACING.



**NOTES:**

1. TEMPORARY RESURFACING AS SHOWN ON SECTION "E," SHALL BE REQUIRED IN ALL STREET INTERSECTIONS, OR AS DIRECTED BY THE ENGINEER.
2. UTILIZE ASTM D1557 TO DETERMINE THE MAXIMUM DRY DENSITY.
3. A.C. = ASPHALT CONCRETE.
4. THE PAVEMENT SECTIONS SHOWN ABOVE ARE MINIMUM, AND IF THE EXISTING STRUCTURAL SECTION IS GREATER, IT SHALL BE MATCHED UNLESS THE ENGINEER APPROVES OTHERWISE.
5. AT THE OPTION OF THE ENGINEER, SAND SLURRY (MIN. 2 SACK MIX) SHALL BE SUBSTITUTED.
6. IF THERE IS LESS THAN 2 FEET BETWEEN THE EDGE OF A TRENCH CUT AND A CONC. IMPROVEMENT, OR EDGE OF PAVING, THEN REMOVE AND REPLACE THE A.C. PAVEMENT FROM THE EDGE OF THE TRENCH CUT TO THE CONCRETE IMPROVEMENT, OR EDGE OF PAVING.
7. MATCH EXISTING STRUCTURAL SECTION WHEN TRENCH WIDTH IS GREATER THAN OR EQUAL TO 4' UNLESS THE ENGINEER APPROVES OTHERWISE.
8. RESURFACING SHALL BE 7 INCHES MINIMUM OF A.C. WHEN TRENCH WIDTH IS LESS THAN 4' UNLESS THE CITY ENGINEER APPROVES OTHERWISE. TRENCHES WIDER THAN 4' SHALL BE CONSTRUCTED WITH BASEROCK STRUCTURAL SECTIONS.

THIS STANDARD IS  
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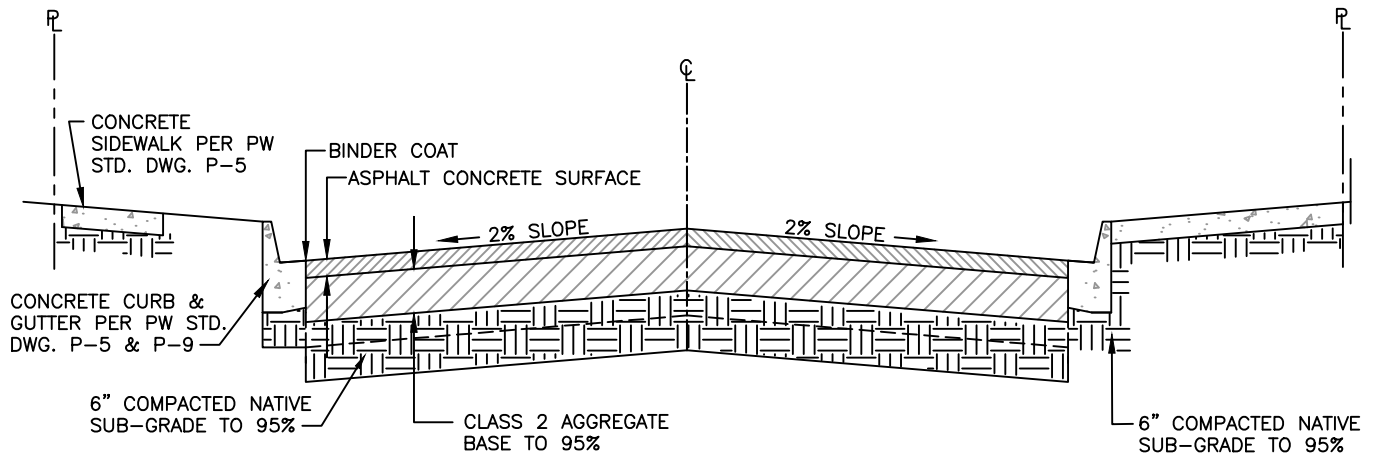
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AUG. 2010

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FOR STREET WIDTHS AND RIGHT-OF-WAY REQUIREMENTS,  
REFER TO PW STANDARDS FOR MAJOR AND LOCAL STREETS



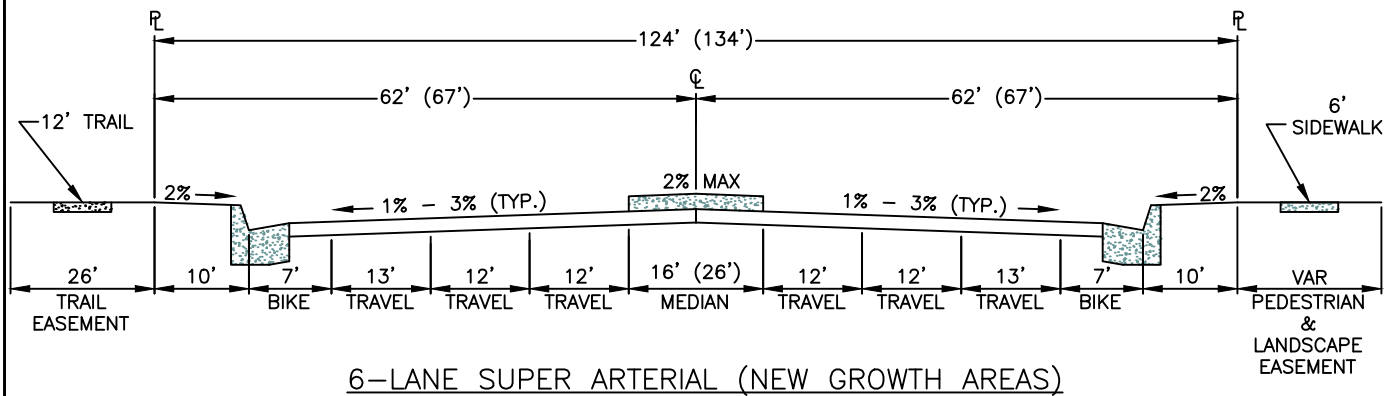
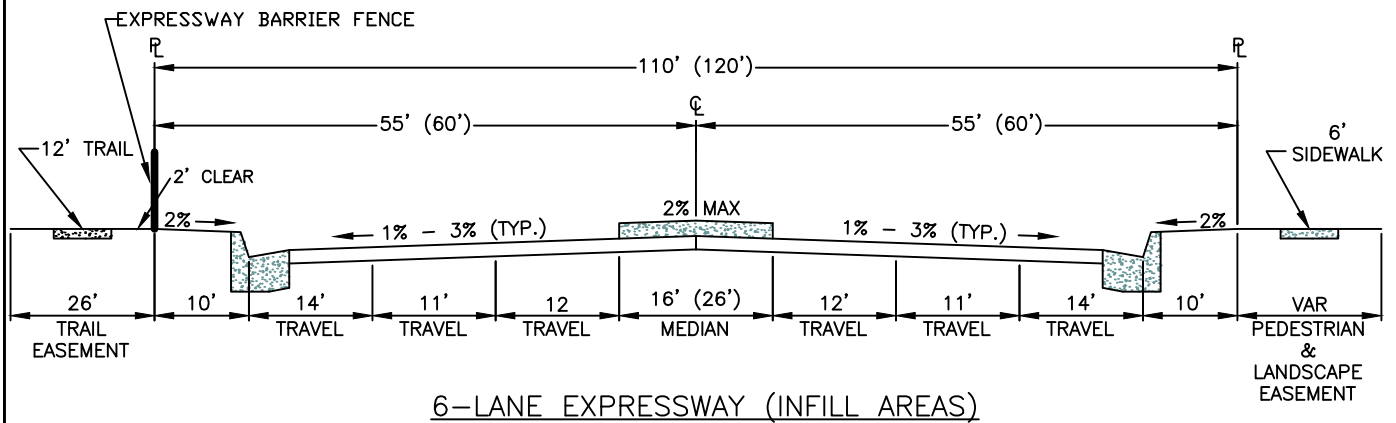
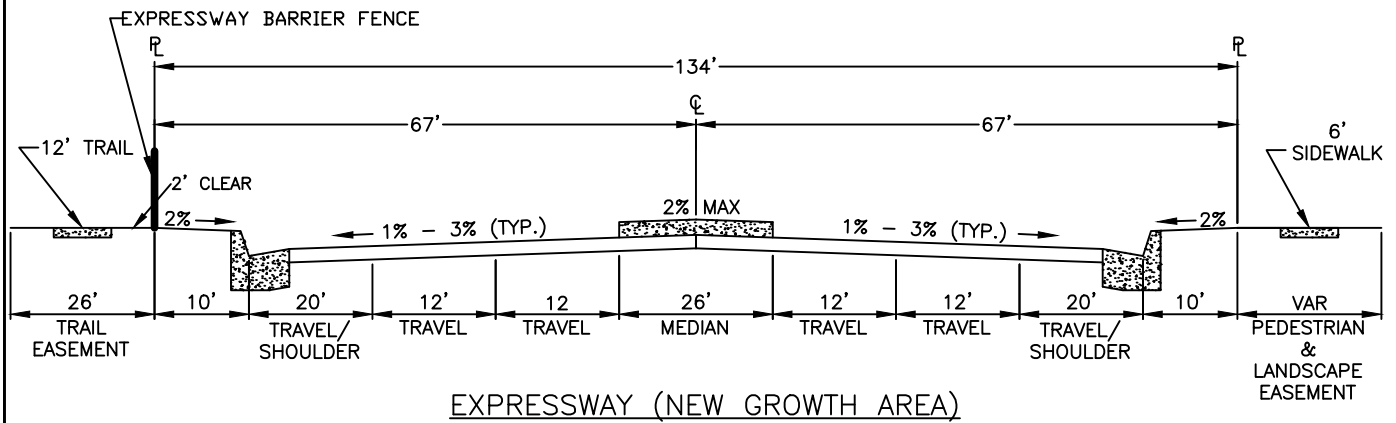
CROSS SECTION OF PUBLIC STREET

TRAFFIC INDICES AND MINIMUM  
PAVEMENT SECTIONS

<u>CLASS OF STREET</u>	<u>TRAFFIC INDEX</u>	<u>MIN. AC</u>	<u>MIN. AB</u>
EXPRESSWAY	10.0	6.0"	6"MIN
SUPERARTERIAL	10.0	6.0	6"MIN
INDUSTRIAL ARTERIAL	9.00	5.5"	6"MIN
ARTERIAL	9.00	5.5"	6"MIN
INDUSTRIAL COLLECTOR	8.00	5.0"	6"MIN
COLLECTOR	7.50	4.5"	6"MIN
LOCAL INDUSTRIAL OR COMMERCIAL	6.50	3.0"	6"MIN
LOCAL COLLECTOR/BOULEVARD	6.00	2.5"	6"MIN
LOCAL	5.00	2.5"	4"MIN

NOTES:

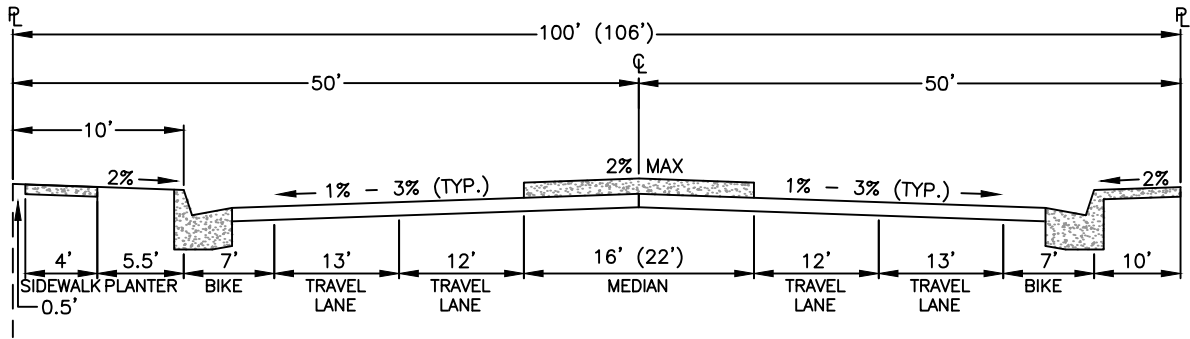
1. TRANSITIONS SHALL BE APPROPRIATE TO THE DESIGN SPEED OF THE STREET BOTH VERTICALLY AND HORIZONTALLY.
2. TRANSITION SLOPE ALONG THE STREET SHALL BE A MAX. 2% GRADE DIFFERENCE. (TEMPORARY)
3. TRANSITION SLOPE ACROSS THE STREET SHALL BE A MAX. SLOPE OF 5%. (TEMPORARY)
4. WHEN SIDEWALK IS NOT REQUIRED, FINISHED GRADE SHALL BE 2% FROM BACK OF CURB TO PROPERTY LINE.
5. THE ASPHALT PAVEMENT SECTION SHALL BE DESIGNED BASED UPON THE CALTRANS METHODOLOGY IN CHAPTER 600 OF THE HIGHWAY DESIGN MANUAL.
6. THE CITY ENGINEER MAY APPROVE A FULL DEPTH A.C. SECTION OR AN A.C./A.B./A.S.B. SECTION WHERE APPROPRIATE.
7. LOCAL INDUSTRIAL STREETS SERVING LAND USES WITH HIGH VOLUMES OF TRUCK TRAFFIC SHALL BE DESIGNED FOR A T.I. OF 7.0 OR 7.5, AS DETERMINED BY THE CITY ENGINEER.
8. "R" VALUE TESTS SHALL BE PROVIDED AT A RATE OF 1 PER 500 FT OF STREET CONSTRUCTION. THE "R" VALUE OF THE SOIL SHALL BE WITHIN 12" BELOW OF THE APPROXIMATE SUBGRADE.
9. STREET FURNITURE SHALL BE LOCATED IN ACCORDANCE WITH STREET FURNITURE LOCATION DIAGRAM.
10. ON CORNER LOTS, THE PLANTING AND UTILITY EASEMENT ALONG THE SIDE YARD MAY BE REDUCED TO EIGHT FEET AND IS MAINTAINED BY PROPERTY OWNER IF NOT IN A CFD.



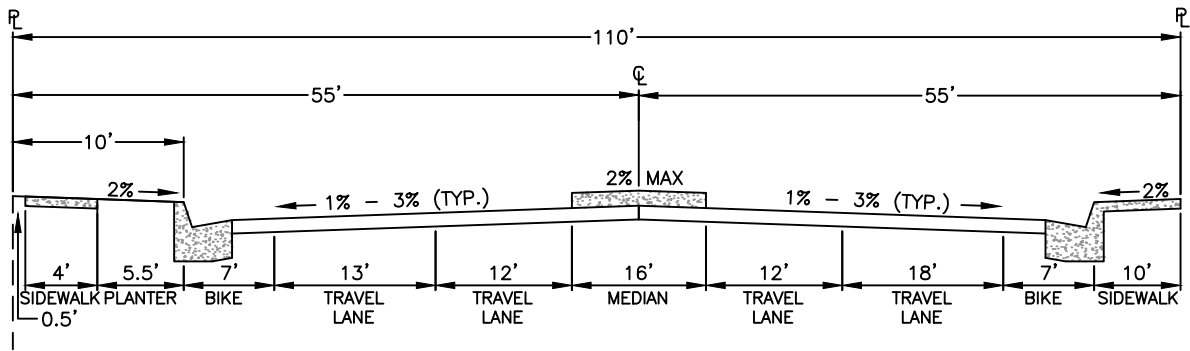
**NOTES:**

1. FOR DUAL LEFT TURN LANES USE 26' MEDIAN.
2. SEE P-69 AND P-70 FOR ADDITIONAL WIDTH AT MAJOR STREET INTERSECTIONS.
3. OFFSET CROWN REQUIRES APPROVAL OF THE CITY ENGINEER.
4. DEVIATIONS FROM THE STANDARDS REQUIRE APPROVAL OF THE CITY ENGINEER.
5. ( ) PERTAINS TO DIFFERENCE WITH 26' MEDIAN WIDTH WHERE NECESSARY TO ACCOMMODATE DUAL LEFT TURN LANES.
6. SEE P-74 AND P-75 FOR EXPRESSWAY BARRIER FENCE LOCATION AND DETAILS.

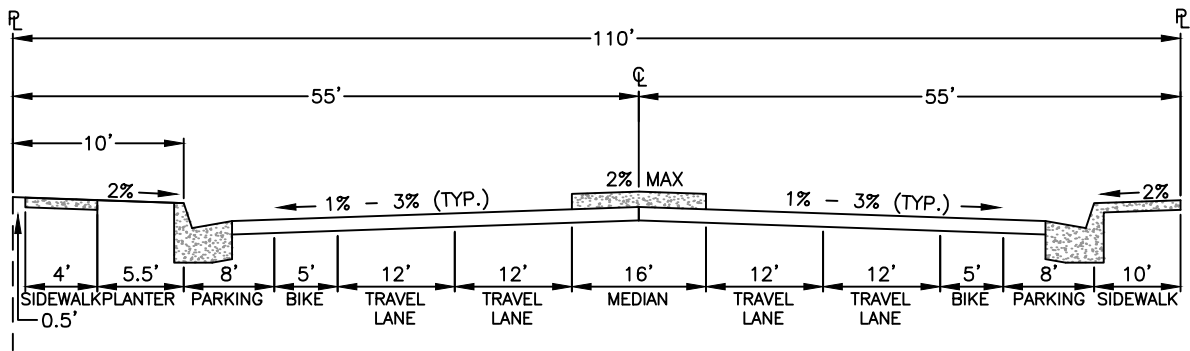




CASE 1: DIVIDED ARTERIAL – NO PARKING



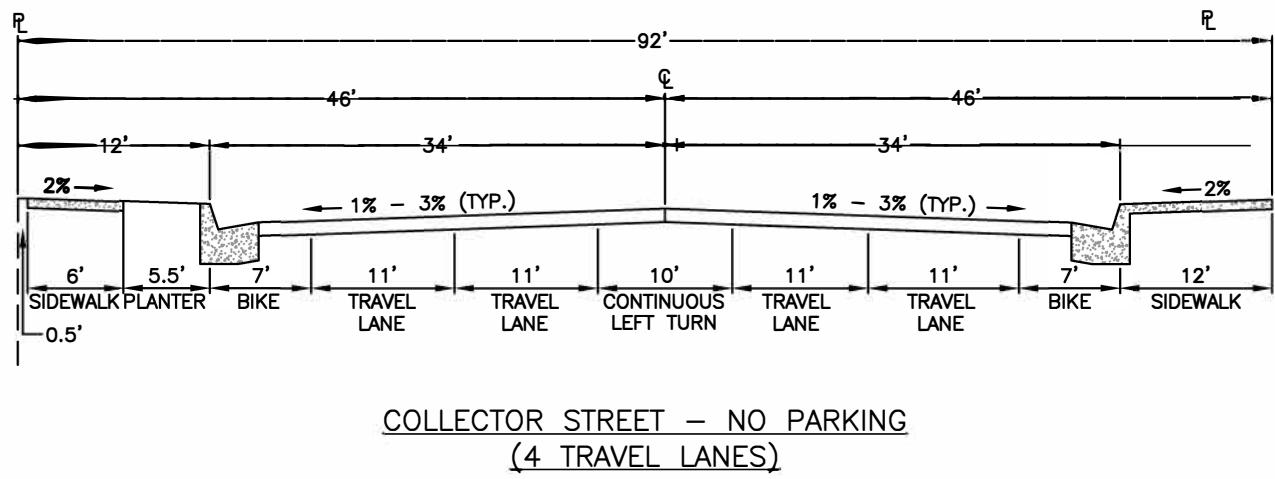
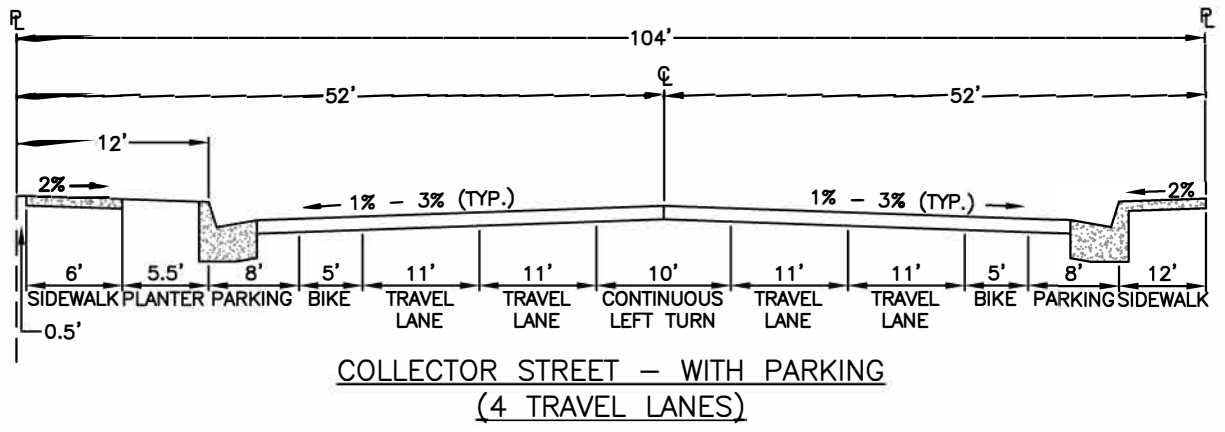
CASE 2: DIVIDED ARTERIAL – NO PARKING AND WIDER OUTSIDE TRAVEL LANE



CASE 3: DIVIDED ARTERIAL – WITH PARKING OR SCHOOL DROP OFF ZONES

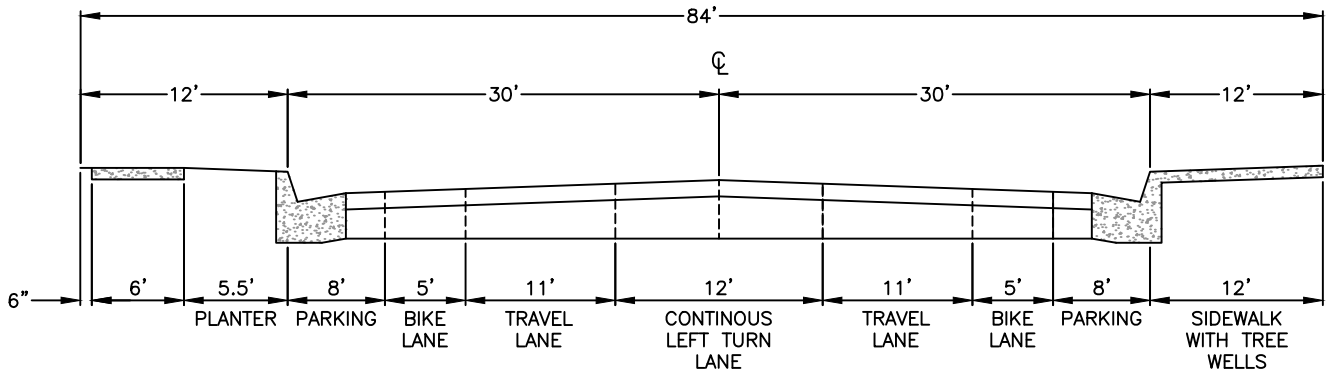
NOTES:

1. USE 26' MEDIAN WHEN DUAL LEFT TURNS ARE REQUIRED.
2. OFFSET CROWN REQUIRES APPROVAL OF THE ENGINEER DEVIATIONS FROM STANDARDS REQUIRE APPROVAL OF THE ENGINEER.
3. ( ) INDICATE A 22' MEDIAN WIDTH ONLY WHERE A SPECIFIC ARTERIAL HAS BEEN PLANNED FOR A 22' MEDIAN ISLAND.
4. CASE 2 SHALL ONLY BE USED FOR SHORT GAP FILLING BETWEEN EXISTING CASE 2 ARTERIALS.
5. CASE 3 SHALL NOT BE USED UNLESS APPROVED BY THE CITY TRAFFIC ENGINEER.

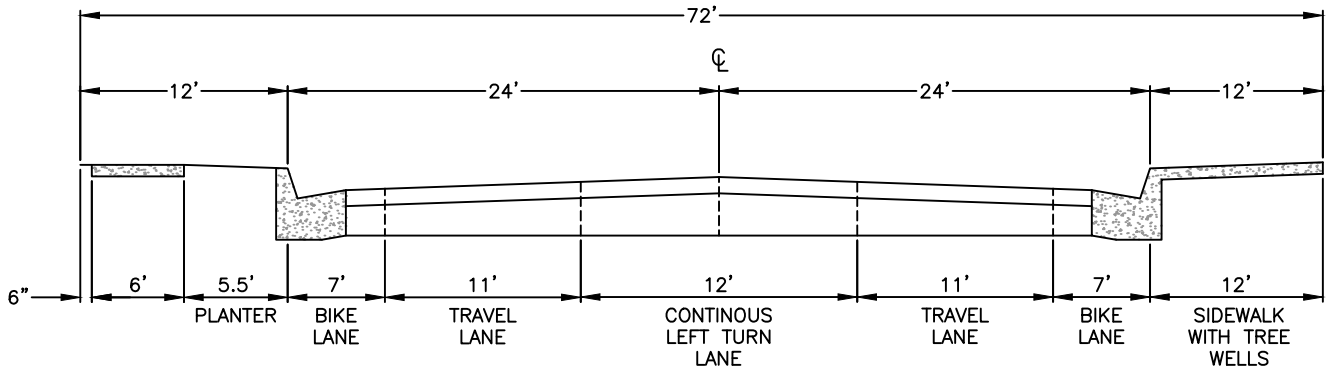


**NOTES:**

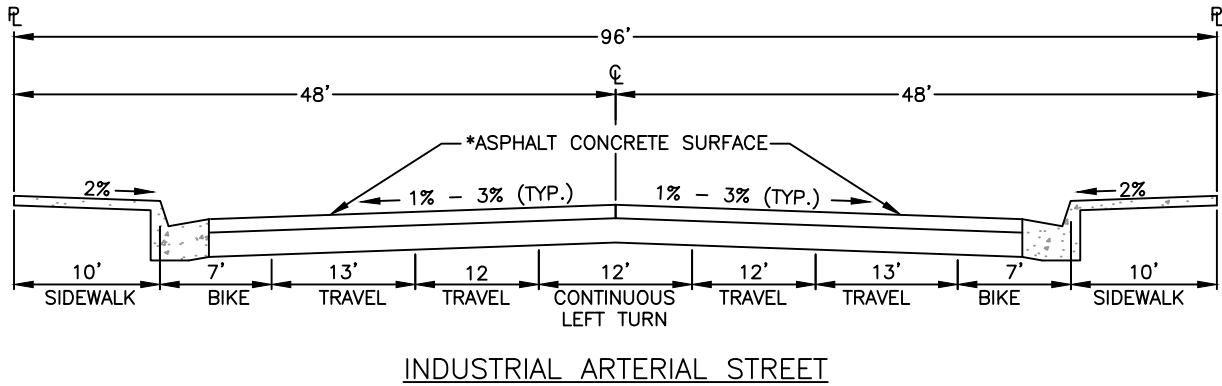
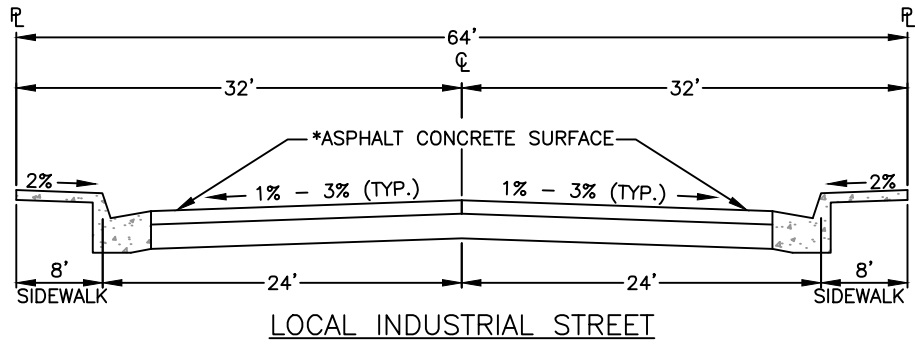
1. OFFSET CROWN REQUIRES APPROVAL OF THE ENGINEER DEVIATIONS FROM STANDARDS REQUIRE APPROVAL OF THE ENGINEER.



COLLECTOR STREET WITH PARKING  
(2 TRAVEL LANES) 84' ROW



COLLECTOR STREET - NO PARKING  
(2 TRAVEL LANES) 72' ROW



\* THICKNESS BASED UPON TRAFFIC INDEX FOR SPECIFIC STREET  
 BASED UPON CALTRANS METHOD FOR FLEXIBLE PAVEMENT DESIGN, SEE P-50.

NOTES:

1. ACTUAL SECTION DEPENDS ON TRAFFIC INDEX AND SOIL TESTS.
2. WHERE NO SIDEWALK IS CONSTRUCTED, FINISH GRADE SHALL BE 2% FROM BACK OF CURB TO PROPERTY LINE.

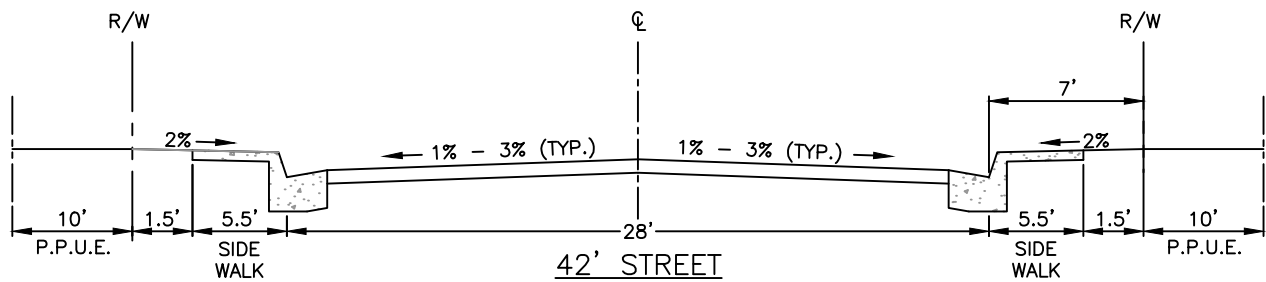
THIS STANDARD IS  
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NO LONGER USED  
SEE P-56A

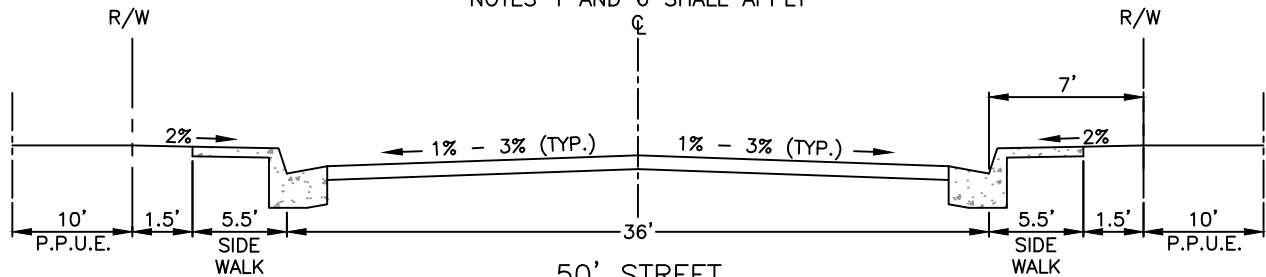
REF. & REV.  
~~JUNE 2015~~  
MAR. 2021 (A.7)

CITY OF FRESNO

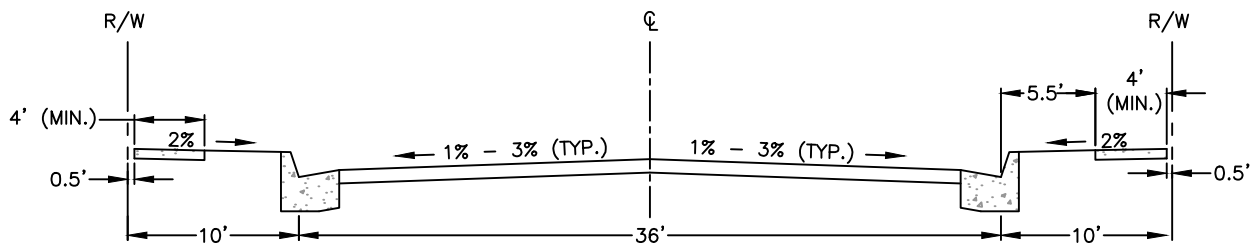
P-56



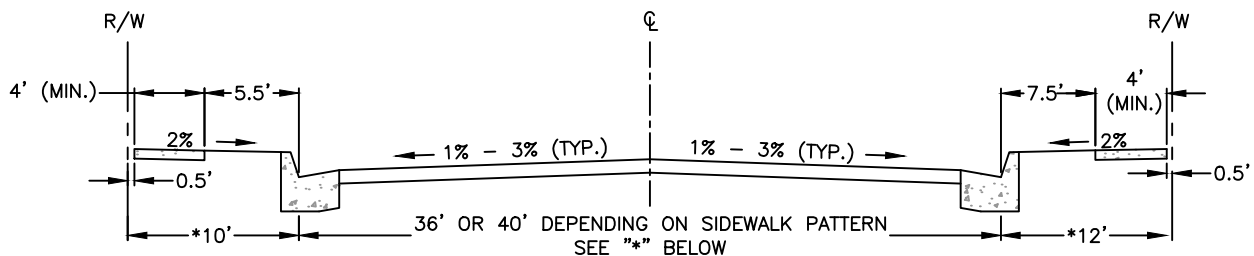
**42' STREET**  
 ONLY ALLOWED ON STREETS WITH HOMES ON ONE SIDE  
 OF THE ROADWAY & PARKING ON ONE SIDE ONLY  
 NOTES 1 AND 6 SHALL APPLY



**50' STREET**  
 NOTES 1, 5 AND 6 SHALL APPLY



**56' STREET**  
 NOTE 2 SHALL APPLY



**60' STREET**  
 \*60' STREETS MAY HAVE 10' OR 12' SIDEWALK PATTERNS  
 NOTE 2 SHALL APPLY

**NOTES:**

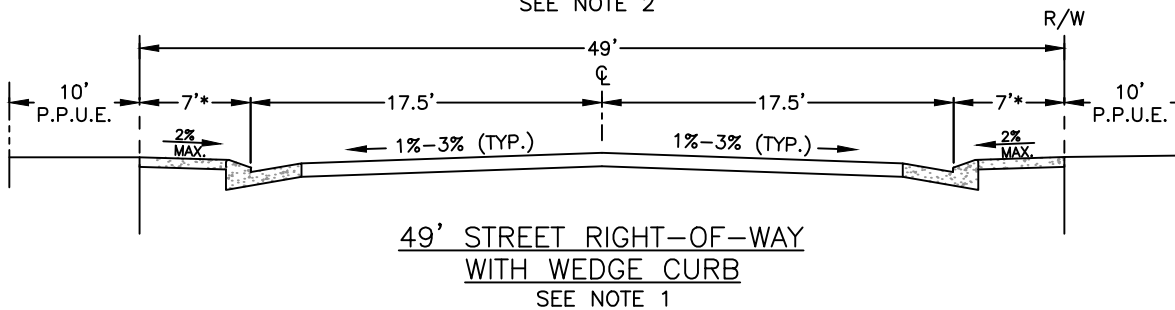
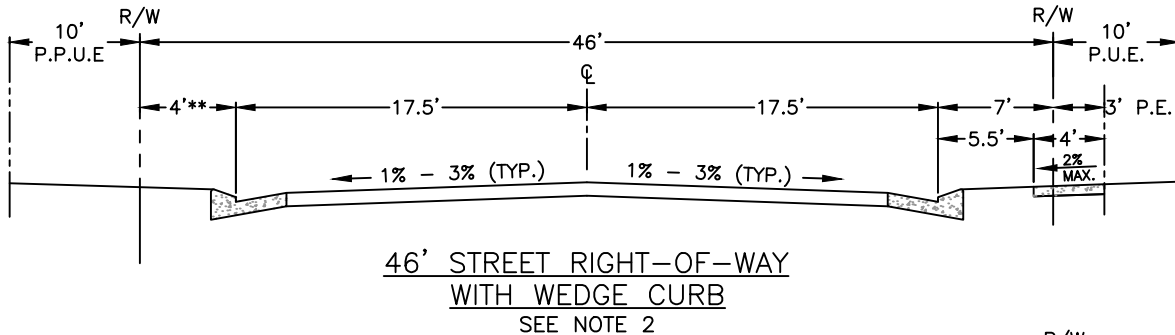
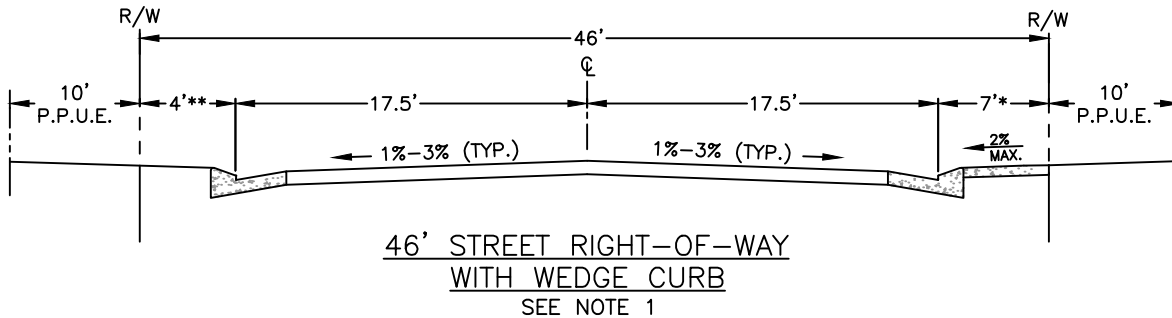
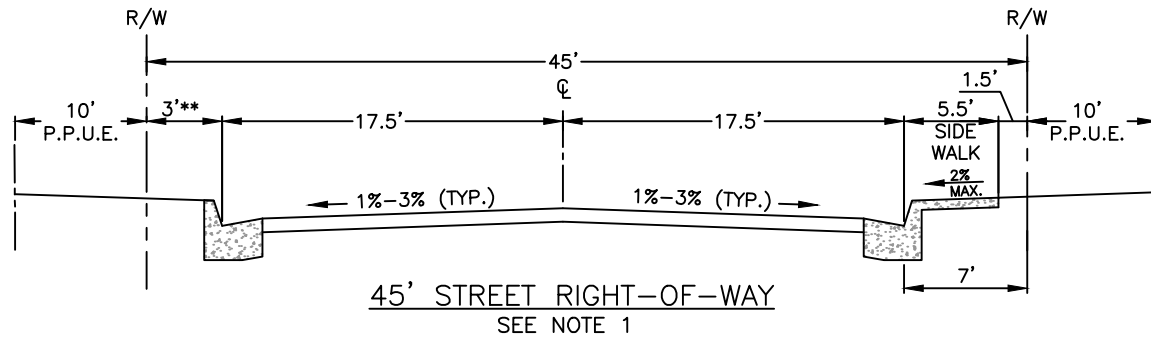
1. FOR DRIVEWAY DETAIL SEE STREET SECTIONS THAT MAY BE USED, SEE P.W. DWGS. P-4 AND P-6.
2. FOR DRIVEWAY DETAIL SEE STREET SECTIONS THAT MAY BE USED, SEE P.W. STD. DWGS. P-1, P-2, P-3, AND P-6.
3. OFFSET CROWN REQUIRES APPROVAL OF THE ENGINEER; DEVIATIONS FROM STANDARDS REQUIRE APPROVAL OF THE ENGINEER.
4. SIDEWALKS MAY BE LOCATED PARTIALLY OR FULLY OUTSIDE THE STREET RIGHT-OF-WAY WITH THE DEDICATION OF A PEDESTRIAN EASEMENT, WHEN APPROVED BY THE CITY ENGINEER.
5. 1,500 FOOT MAXIMUM BLOCK LENGTH
6. IN OTHER THAN SINGLE FAMILY AREAS, THIS STREET SECTION CAN ONLY BE USED ON CUL-DE-SACS AND ON BLOCK STREETS NOT TO EXCEED 800 FEET IN LENGTH.
7. FRESNO IRRIGATION DISTRICT FACILITIES SHALL BE LOCATED IN A SEPARATE EASEMENT OUT OF THE STREET AREA.

**LOCAL STREET CROSS-SECTION**

SEE API-4 THRU API-9 FOR S. MINNEWAWA AVE. BETWEEN BUTLER AVE. AND FANCHER CREEK AND FOR VAN NESS EXTENSION BETWEEN HERNDON AVE. AND SAN JOAQUIN RIVER BLUFF.

REF. & REV.  
 AUG. 2010  
 JUNE 2015  
 MAR. 2021 (A.7)

CITY OF FRESNO  
**P-56A**



**NOTES:**

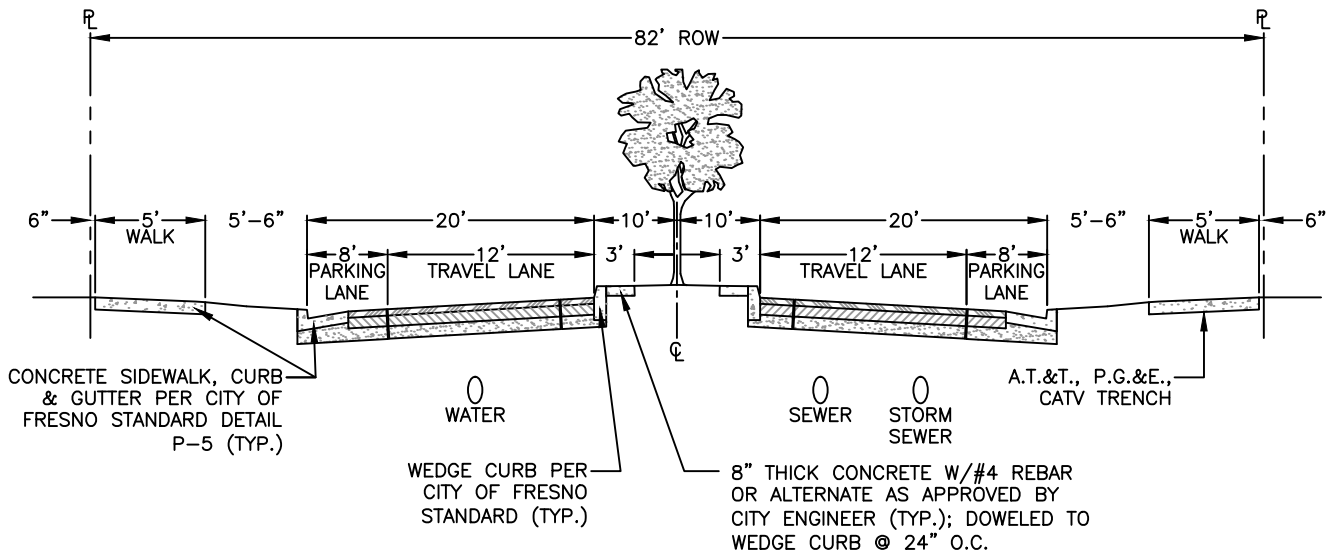
1. FOR DRIVEWAY DETAIL SEE STREET SECTIONS THAT MAY BE USED, SEE P.W. STD. DWGS. P-4 AND P-6.
  2. FOR DRIVEWAY DETAIL SEE STREET SECTIONS THAT MAY BE USED, SEE P.W. STD. DWGS. P-1, P-2, P-3 AND P-6.
  3. OFFSET CROWN DESIGN OR OTHER DEVIATIONS FROM STANDARDS REQUIRE THE APPROVAL OF THE CITY ENGINEER.
  4. SIDEWALKS MAY BE LOCATED PARTIALLY OR FULLY OUTSIDE THE STREET RIGHT-OF-WAY WITH THE DEDICATION OF A PEDESTRIAN EASEMENT.
  5. FRESNO IRRIGATION DISTRICT FACILITIES SHALL BE LOCATED OUTSIDE OF STREET AND PEDESTRIAN EASEMENT AREA.
  6. WEDGE CURB IS NOT ALLOWED IN FRONT OF FIRE HYDRANTS.
  7. SMALLER P.U.E. IS ACCEPTABLE WITH ALL PERTINENT UTILITY COMPANIES' APPROVAL.
- \* MONOLITHIC SIDEWALK PATTERN WITH WEDGE CURB REQUIRES A NON-STANDARD SIDEWALK THICKNESS. SEE STD. DWG. P-5.
- \*\* NO STREET LIGHTS ARE ALLOWED ON SIDE OF STREET WITHOUT SIDEWALK.

**LOCAL STREET CROSS-SECTION**  
**(WITH WEDGE CURBS)**

SEE API-4 THRU API-9 FOR S. MINNEWAWA AVE. BETWEEN BUTLER AVE. AND FANCHER CREEK AND FOR VAN NESS EXTENSION BETWEEN HERNDON AVE. AND SAN JOAQUIN RIVER BLUFF.

REF. & REV.  
MAR. 2021 (A7)

CITY OF FRESNO  
**P-56B**

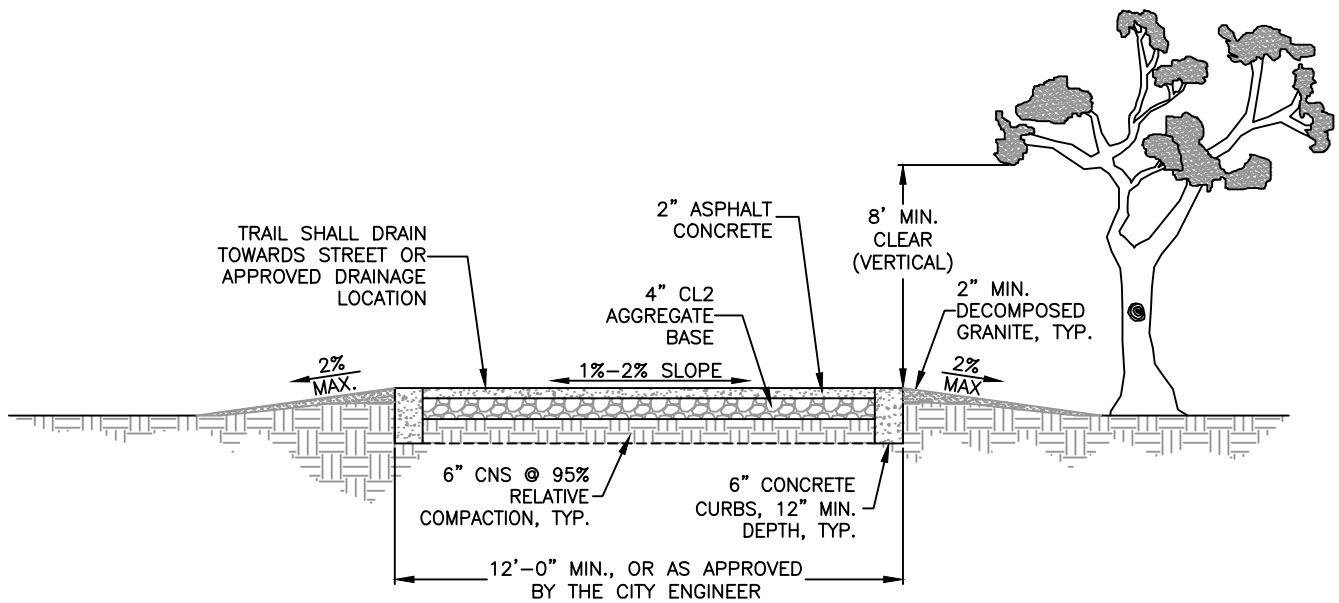


CROSS SECTION  
NOT TO SCALE

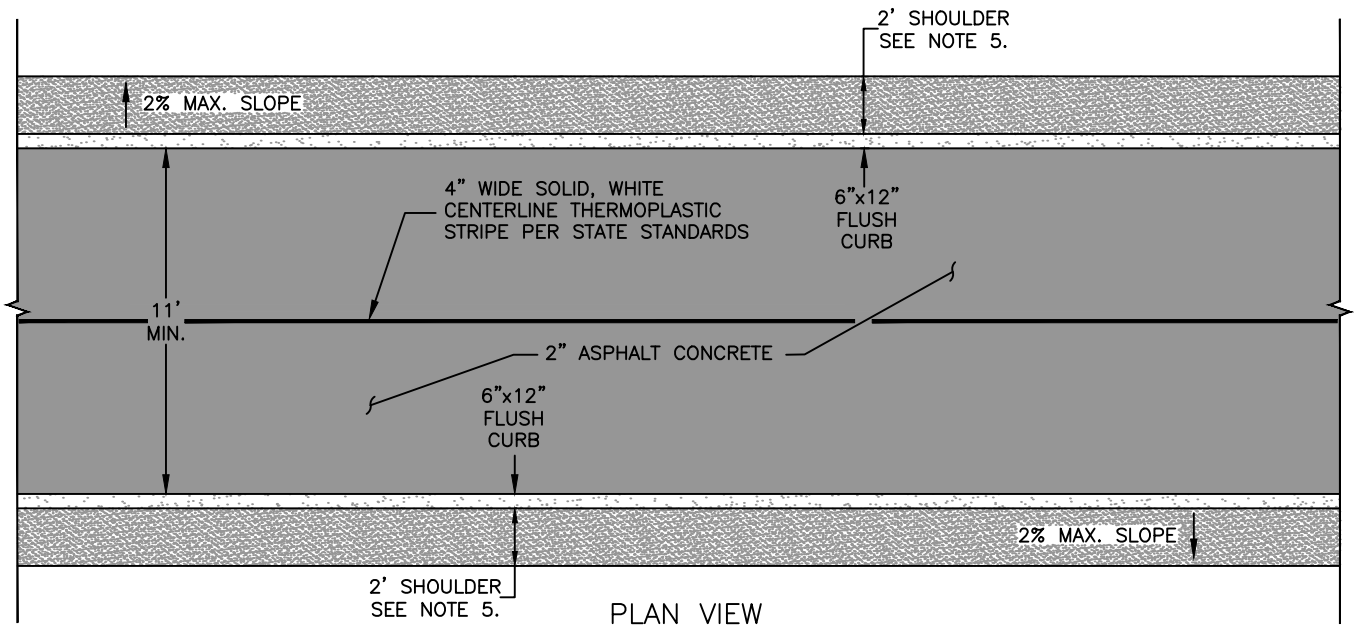
SPECIFICATIONS

1. SIDEWALK SHALL BE INSTALLED ON BOTH SIDES.
2. GREATER RIGHT-OF-WAY MAY BE APPROVED. IN SUCH CASES, 5' SIDEWALK SHALL BE INSTALLED 6" FROM PROPERTY LINE (EXCEPTION MAY BE APPROVED FOR A MEANDERING SIDEWALK).
3. 600' MAXIMUM BLOCK LENGTH BETWEEN OPENINGS IN MEDIAN.
4. AN 18' MINIMUM SETBACK IS REQUIRED FROM BACK OF WALK TO GARAGE WHEN THE GARAGE DOOR FRONTS ON STREET WITH A ROLL-UP DOOR; LIVING SPACE SETBACK TO BE DETERMINED BY CONDITIONAL USE PERMIT OR PLANNING AND DEVELOPMENT DEPARTMENT. THE SETBACK SHALL NOT BE LESS THAN REQUIRED BY THE ZONING ORDINANCE.
5. THIS STANDARD IS SUBJECT TO THE PIPELINE INSTALLATION REQUIREMENTS FORMULA.
6. F.I.D. FACILITIES SHALL BE LOCATED IN A SEPARATE EASEMENT OUT OF THE RIGHT OF WAY.
7. THIS STANDARD CAN BE USED IN CONVENTIONAL DEVELOPMENT, PLANNED UNIT DEVELOPMENTS, OR OTHER RESIDENTIAL DEVELOPMENTS.
8. ON CORNER LOTS, THE PLANTING AND UTILITY EASEMENT ALONG THE SIDE YARD MAY BE REDUCED TO 8'.
9. CROSS SECTIONS SHALL REMAIN CONSISTENT FOR ENTIRE BLOCK.
10. FIRE HYDRANTS SHALL BE PLACED IN MEDIAN AT 600' INTERVALS MAXIMUM. LOCATION APPROVAL REQUIRED BY CITY FIRE DEPARTMENT.





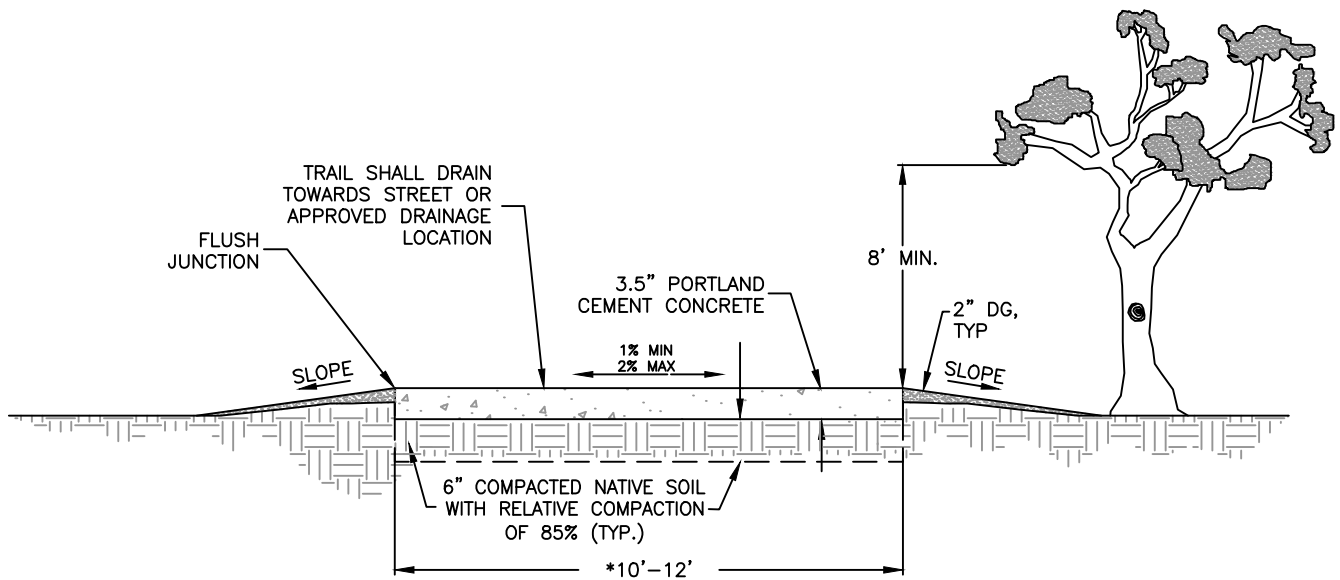
ELEVATION VIEW



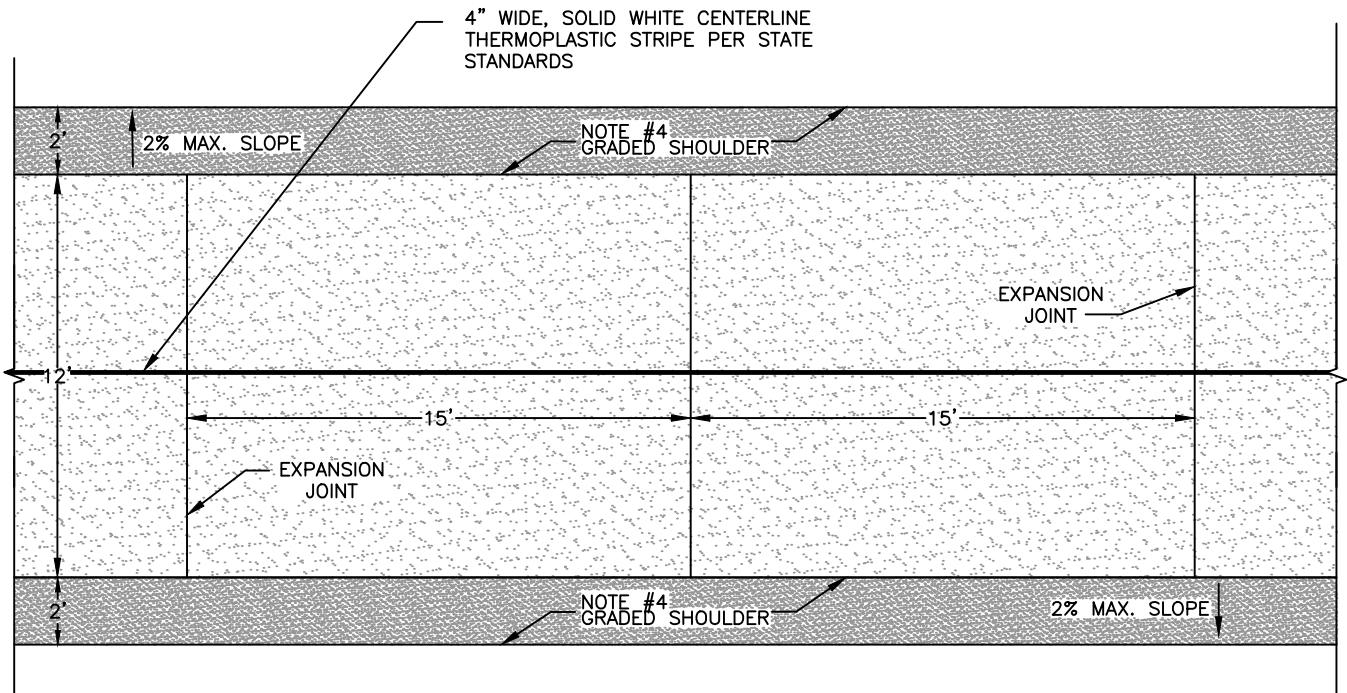
PLAN VIEW

NOTES:

1. DEVIATIONS FROM THIS STANDARD SHALL BE ALLOWED ONLY UPON APPROVAL OF CITY ENGINEER.
2. THIS STANDARD SHALL NOT BE USED IN AREAS OF INUNDATION.
3. CITY ENGINEER MAY PERMIT A CURVILINEAR DESIGN. PRECISE DATA SHALL BE PROVIDED TO STAKE THE ALIGNMENT AND SET APPROPRIATE GRADES.
4. TRAIL DESIGN SHALL COMPLY WITH CHAPTER 1000 OF THE CALTRANS HIGHWAY DESIGN MANUAL AND THE PROWAG FOR SHARED USE PATHS.
5. IF ALL OR PART OF THE SHOULDER IS PAVED WITH THE SAME MATERIAL AS THE PATH, IT IS TO BE DELINEATED FROM THE TRAVELED WAY OF THE PATH WITH A DETAIL 27B EDGE LINE PER CALTRANS STD. PLAN A20B.



ELEVATION VIEW



PLAN VIEW

NOTES:

1. \*TO BE SPECIFIED BY THE CITY ENGINEER.
2. CITY ENGINEER MAY PERMIT A CURVILINEAR DESIGN. PRECISE DATA SHALL BE PROVIDED TO STAKE THE ALIGNMENT AND SET APPROPRIATE GRADES. R=160'.
3. TRAIL DESIGN SHALL COMPLY WITH THE LATEST VERSION OF CHAPTER 1000 OF THE CALTRANS HIGHWAY DESIGN MANUAL AND THE PROWAG FOR SHARED USE PATHS.
4. IF ALL OR PART OF THE SHOULDER IS PAVED WITH THE SAME MATERIAL AS THE PATH, IT IS TO BE DELINEATED FROM THE TRAVELED WAY OF THE PATH WITH AN EDGE LINE.

GENERAL NOTES:

R=155' MIN (25 mph)  
REFERENCE P-60

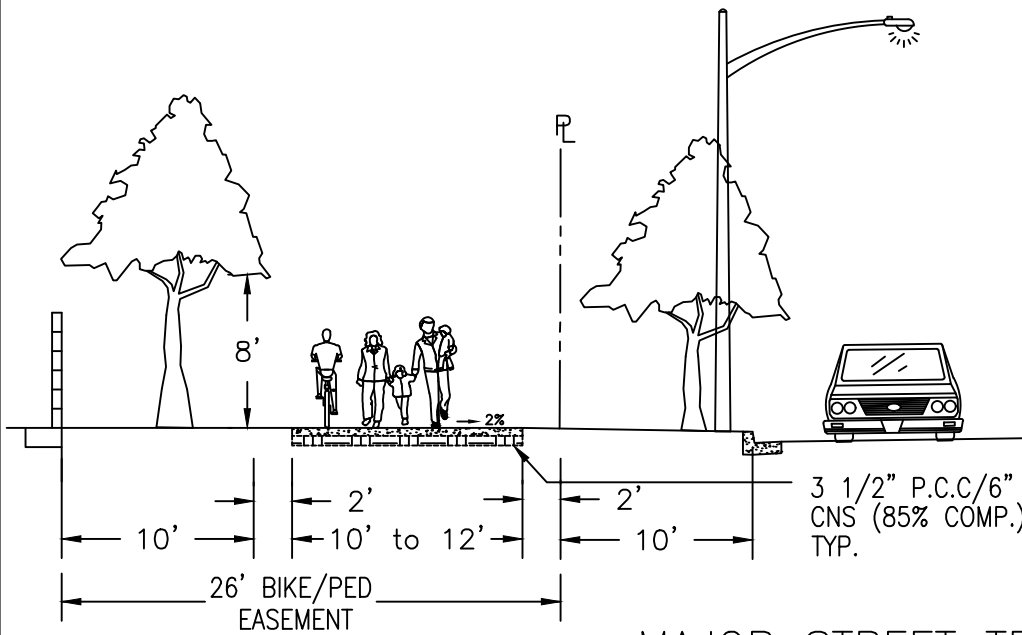
EASEMENTS SHOWN ARE MINIMUMS.  
ADDITIONAL WIDTHS MAY BE NEEDED  
FOR GRADING AND DRAINAGE PURPOSES.

CROSS SLOPES=2% FOR TRAIL  
2' SHOULDER

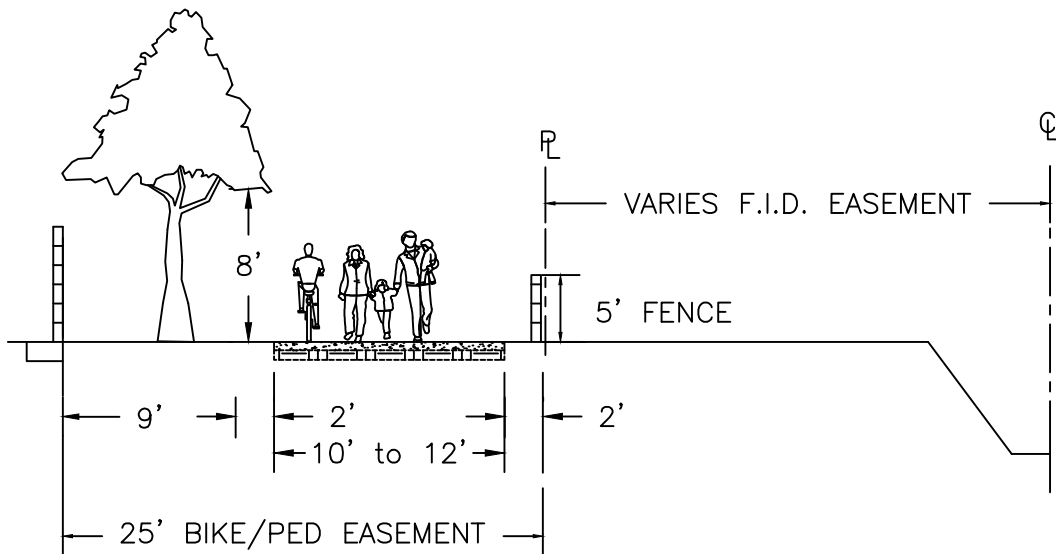
4' FENCE REQUIRED ON EXPRESSWAYS.  
SEE STANDARD DRAWINGS P-74 AND  
P-75 FOR REFERENCE.

TRAIL DESIGN SHALL COMPLY WITH  
CHAPTER 1000 OF THE CALTRANS  
HIGHWAY DESIGN MANUAL.

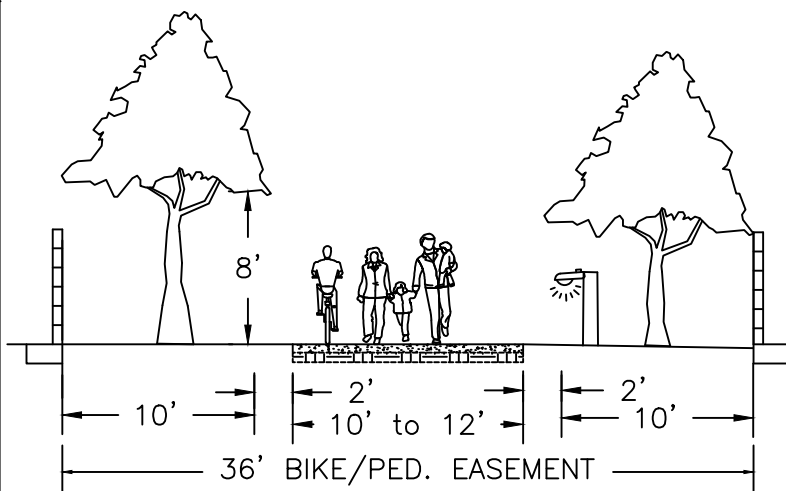
AN ADDITIONAL 12' EASEMENT REQUIRED  
FOR EQUESTRIAN PURPOSES.



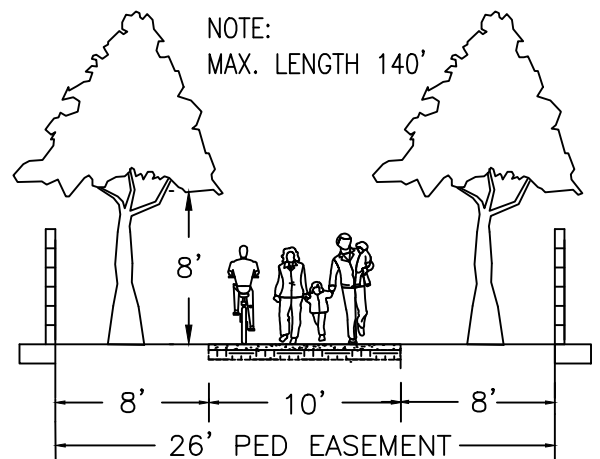
MAJOR STREET TRAIL



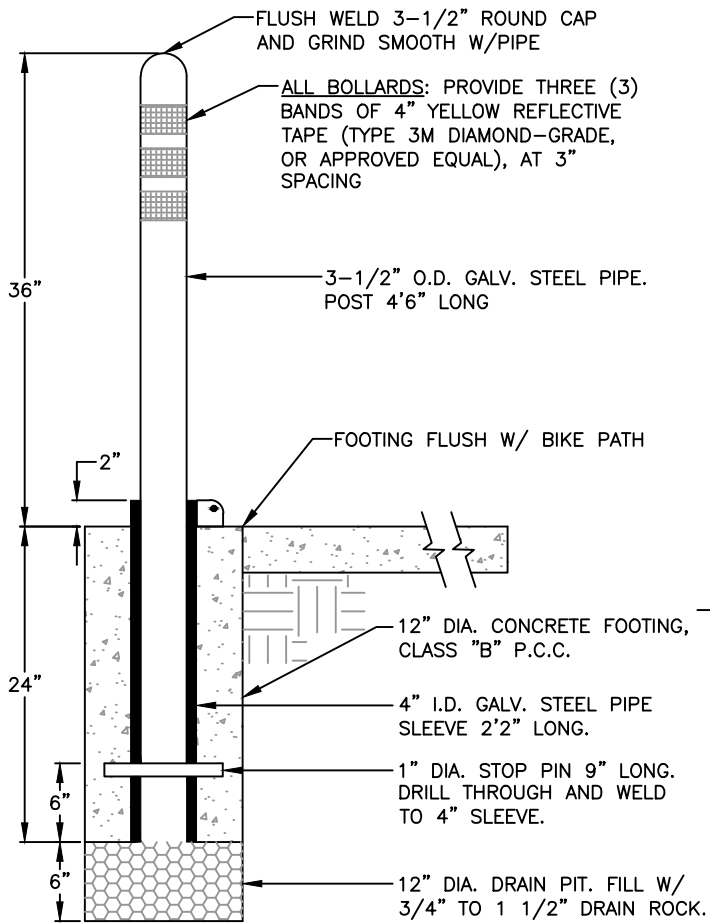
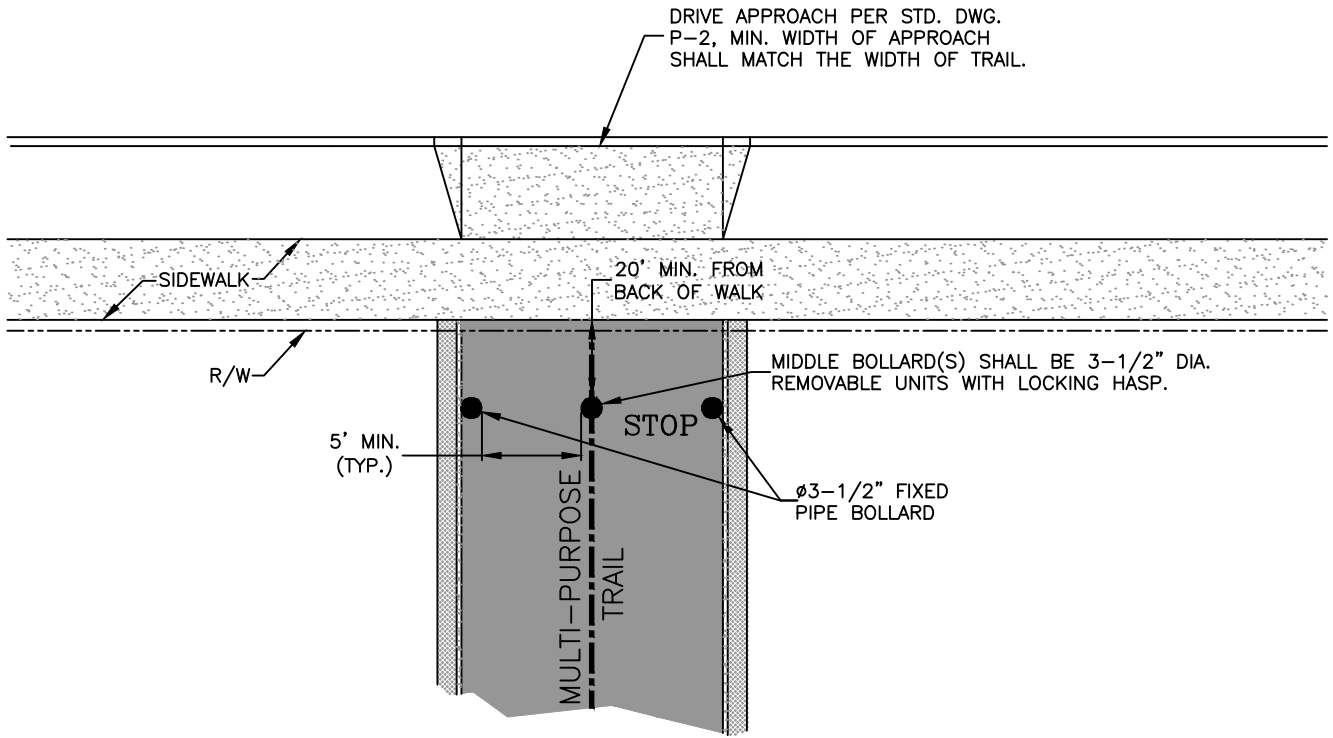
CANAL-SIDE TRAIL



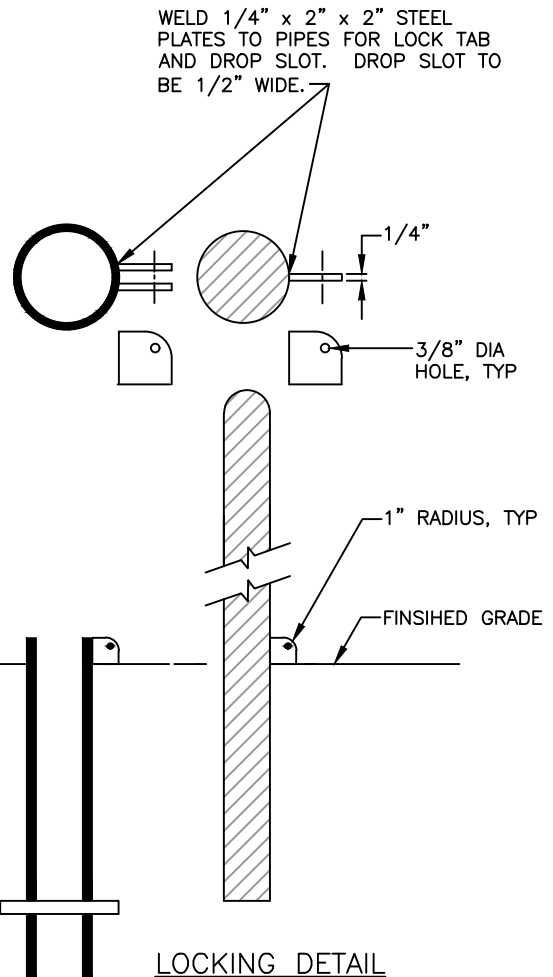
OFF-STREET TRAIL



CONNECTOR TRAIL



BOLLARD DETAIL

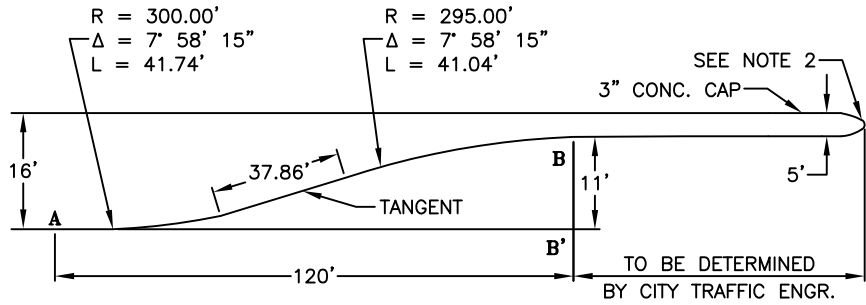


TRAIL-STREET INTERSECTION  
TYPICAL PLAN

REF. & REV.  
NOV. 2011  
MAR. 2021 (A.7)

CITY OF FRESNO

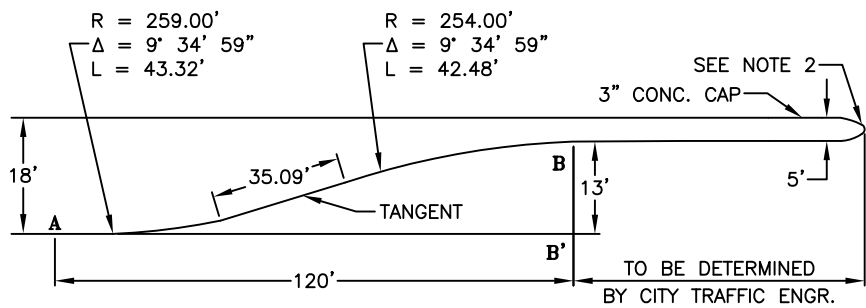
P-61



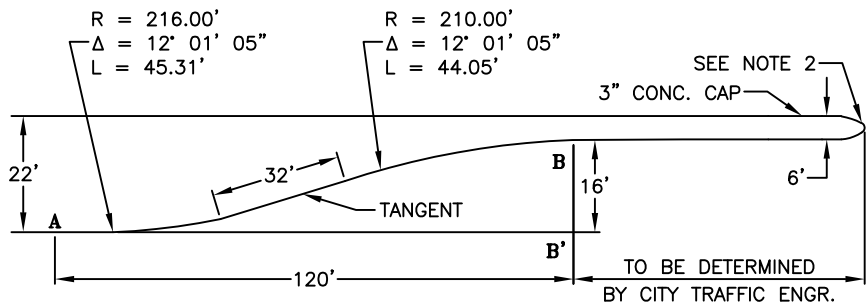
CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 11'
0'	0.00'
10'	0.17'
20'	0.67'
30'	1.50'
40'	2.68'
41.60'	2.90'
50'	4.08'
60'	5.48'
70'	6.88'
79.09'	8.15'
80'	8.28'
90'	9.47'
100'	10.32'
110'	10.83'
120'	11.00'

**NOTES:**

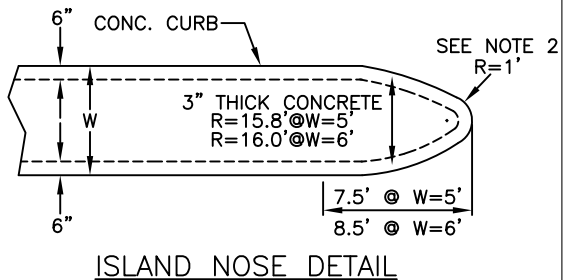
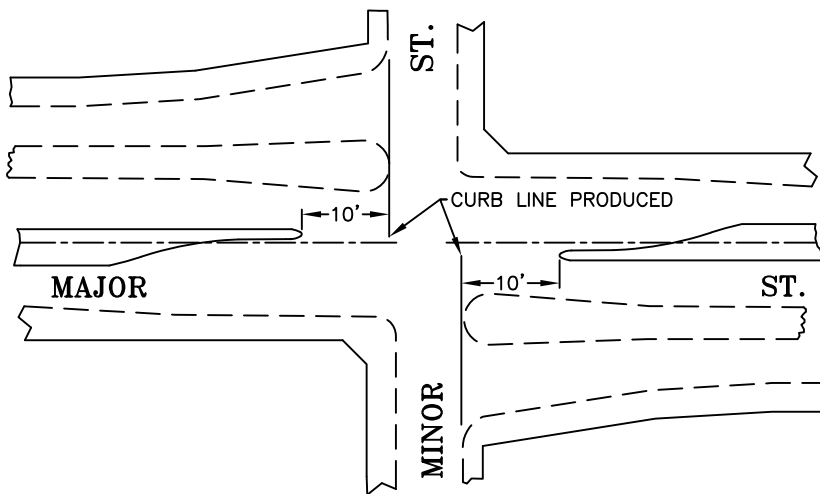
1. END CONCRETE CAP WHERE CURB FACES ARE GREATER THAN 8' APART.
2. NOSE SHALL BE A MINIMUM OF 10' FROM PRODUCTION OF CROSS STREET EXTREME CURB LINE.
3. CONCRETE GUTTER TO BE USED WHERE REQUIRED.

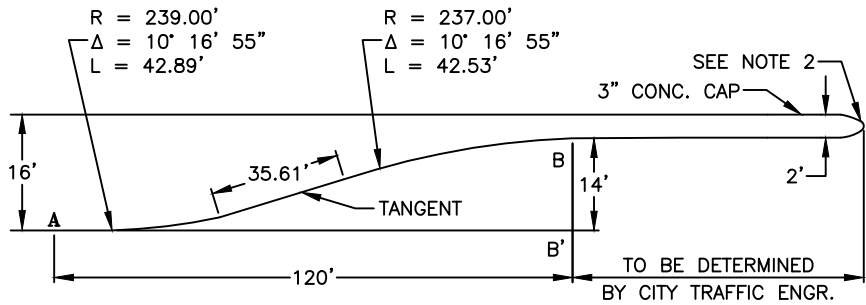


CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 13'
0'	0.00'
10'	0.19'
20'	0.77'
30'	1.74'
40'	3.08'
43.12'	3.61'
50'	4.77'
60'	6.46'
70'	8.16'
77.71'	9.46'
80'	9.96'
90'	11.23'
100'	12.21'
110'	12.80'
120'	13.00'



CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 16'
0'	0.00'
10'	0.23'
20'	0.93'
30'	2.09'
40'	3.74'
44.97'	4.73'
50'	5.80'
60'	7.93'
70'	10.06'
76.27'	11.40'
80'	12.16'
90'	13.85'
100'	15.05'
110'	15.76'
120'	16.00'

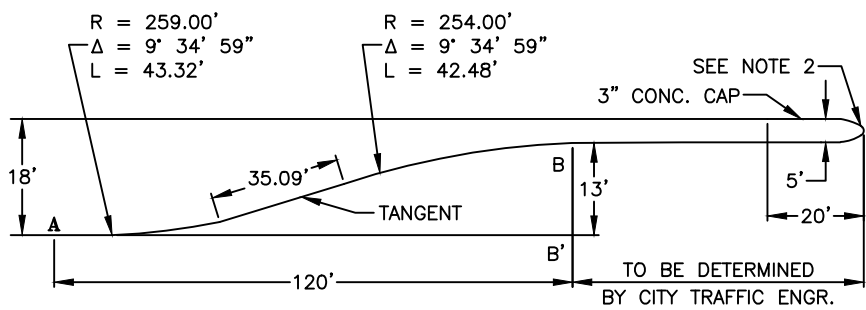




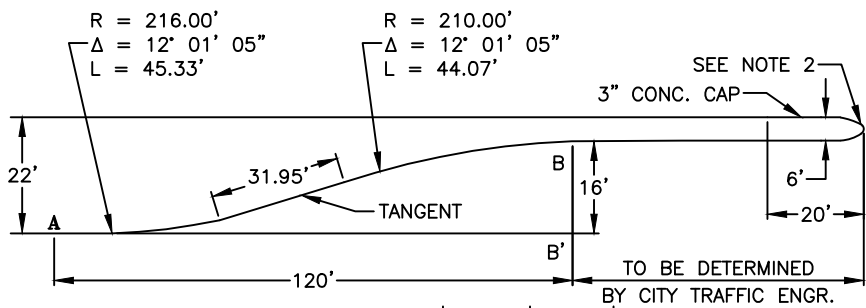
CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 14'
0'	0.00'
10'	0.21'
20'	0.84'
30'	1.89'
40'	3.37'
42.66'	3.84'
50'	5.17'
60'	6.98'
70'	8.80'
77.70'	10.19'
80'	10.60'
90'	12.09'
100'	13.16'
110'	13.79'
120'	14.00'

**NOTES:**

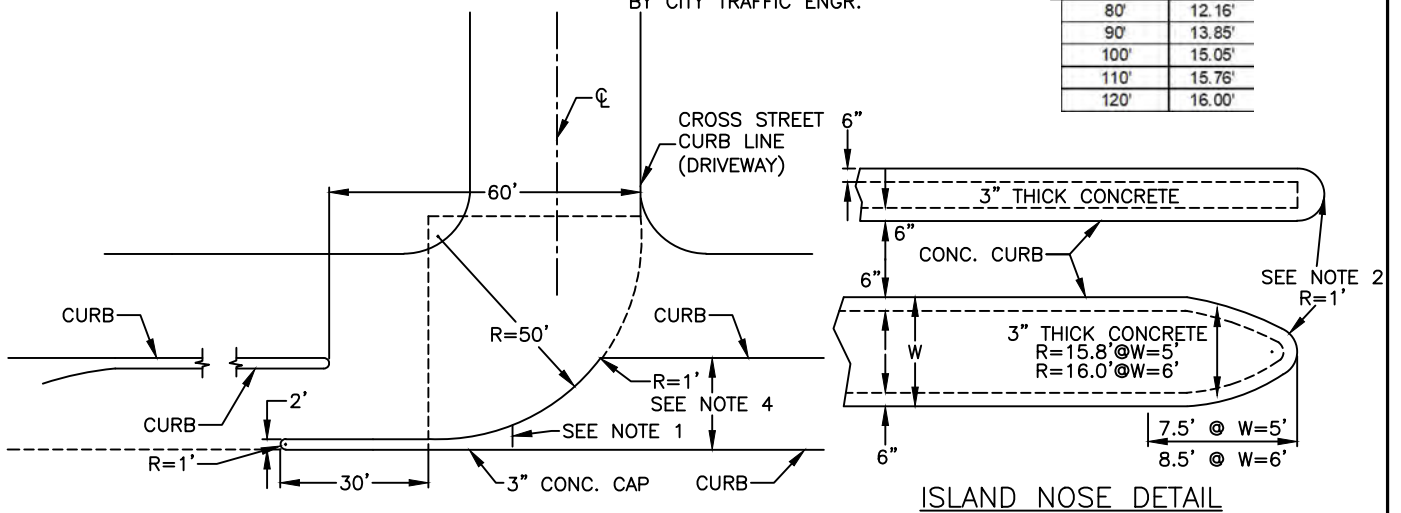
1. END CONCRETE CAP WHERE CURB FACES ARE GREATER THAN 8' APART.
2. NOSE SHALL BE A MINIMUM OF 10' FROM PRODUCTION OF CROSS STREET EXTREME CURB LINE.
3. CONCRETE GUTTER TO BE USED WHERE REQUIRED.



CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 13'
0'	0.00'
10'	0.19'
20'	0.77'
30'	1.74'
40'	3.11'
43.12'	3.61'
50'	4.77'
60'	6.46'
70'	8.16'
77.71'	9.46'
80'	9.83'
90'	11.22'
100'	12.21'
110'	12.80'
120'	13.00'

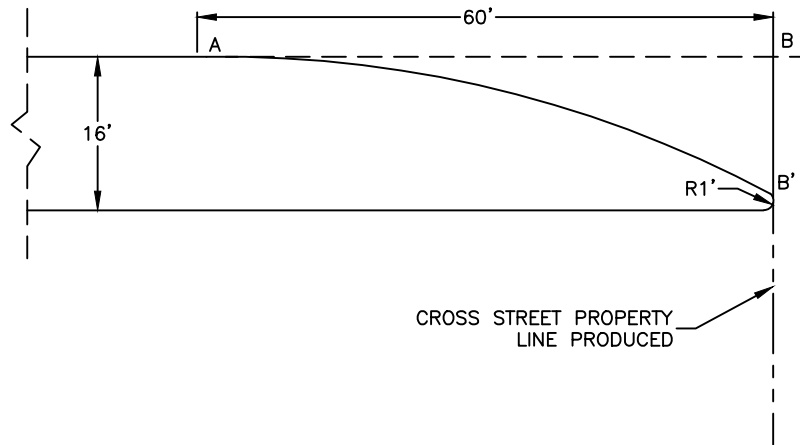


CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B' = 16'
0'	0.00'
10'	0.23'
20'	0.93'
30'	2.09'
40'	3.74'
45.00'	4.74'
50'	5.80'
60'	7.93'
70'	10.06'
76.25'	11.39'
80'	12.16'
90'	13.85'
100'	15.05'
110'	15.76'
120'	16.00'



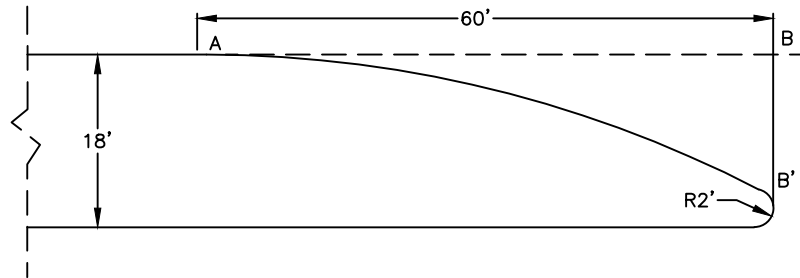
CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B'
10'	0.40'
20'	1.58'
30'	3.56'
40'	6.33'
50'	9.99'
55'	11.97'

MEET 1' RAD. AT 60' ±



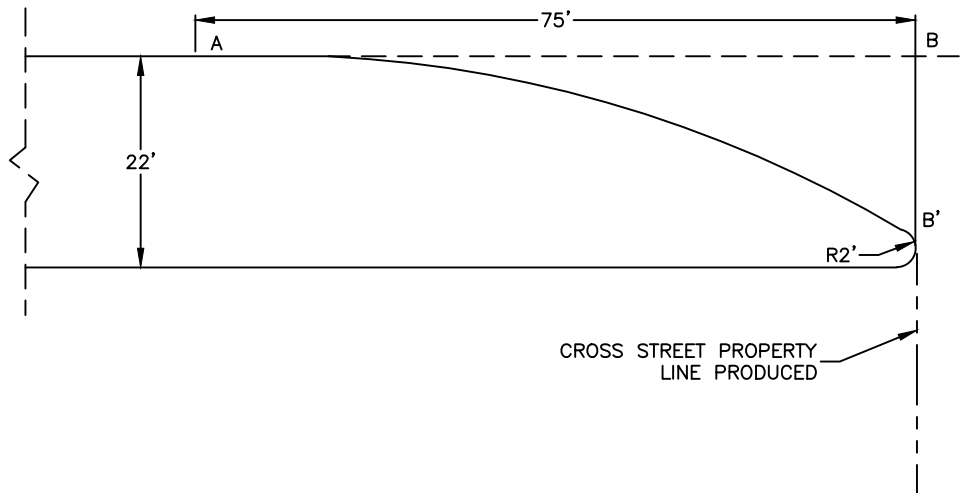
CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B'
10'	0.40'
20'	1.58'
30'	3.56'
40'	6.33'
50'	9.99'
55'	11.97'

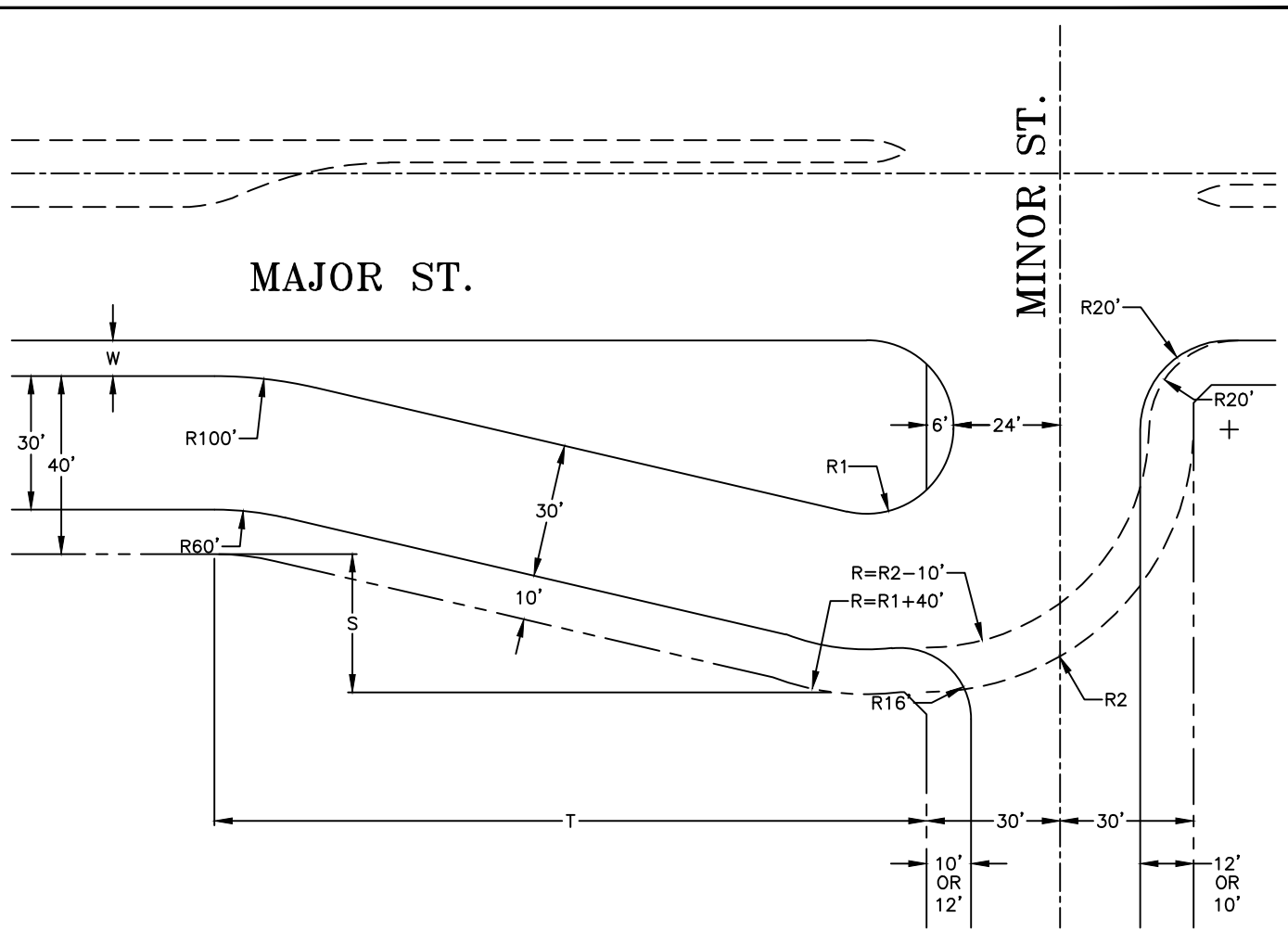
MEET 2' RAD. AT 60' ±



CURVE TABLE	
DIST. FROM POINT "A"	OFFSET B-B'
10'	0.32'
20'	1.30'
30'	2.92'
40'	5.19'
50'	8.11'
60'	11.68'
70'	15.90'

MEET 2' RAD. AT 75' ±



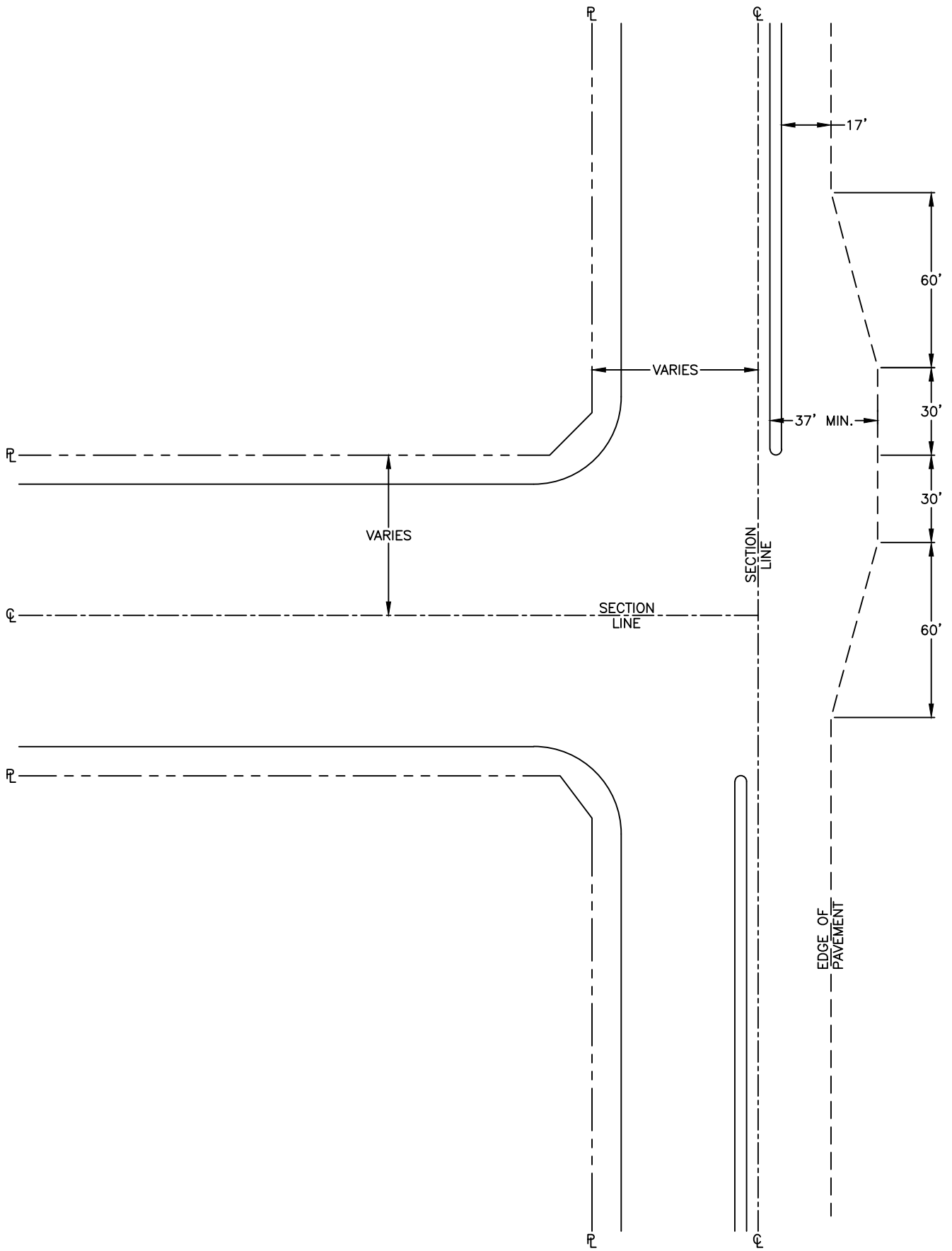


DESIGN TABLE	
R1	(W=8') 19.50'
	(W=10') 20.50'
R2	60.00'
T	160' MIN.
S	31.00'

**NOTES:**

1. SIDEWALK PATTERN SHALL BE IN ACCORDANCE WITH SECTION 14 OF STANDARD SPECIFICATIONS.
2. "W"=8' ON 80' STREETS, 10' ON ALL OTHER MAJOR STREETS.



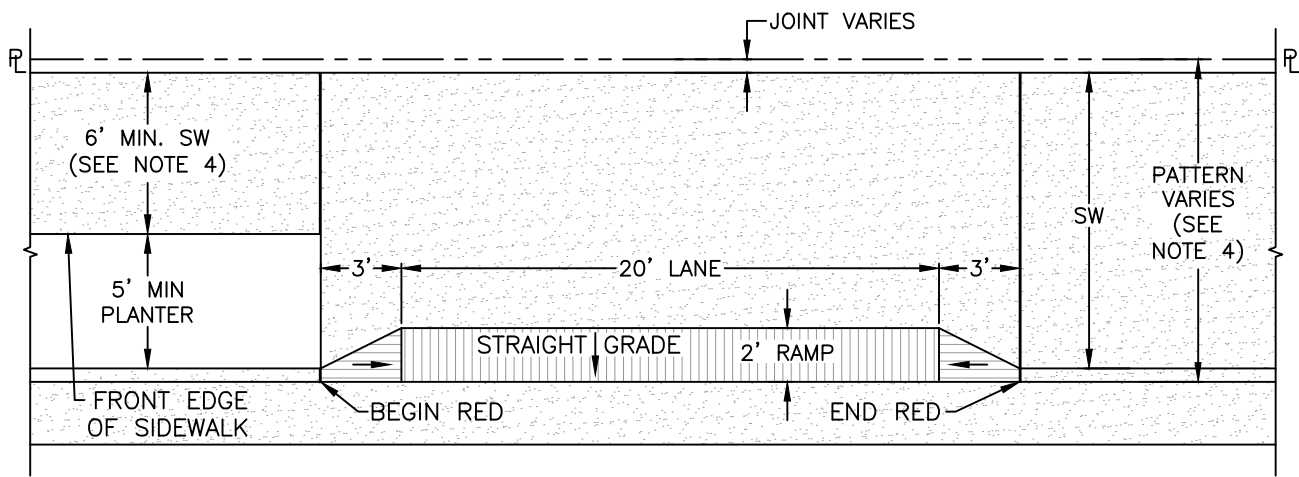


U-TURN MINIMUM CLEARANCE

REF. & REV.  
AUG. 2010

CITY OF FRESNO

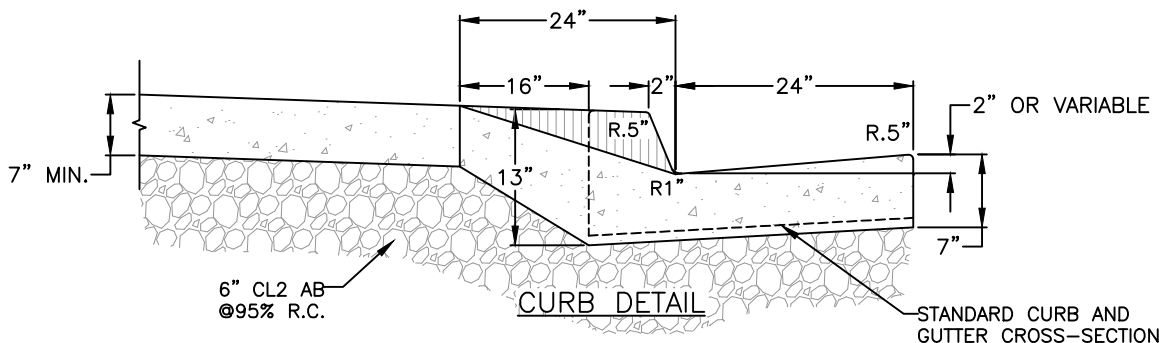
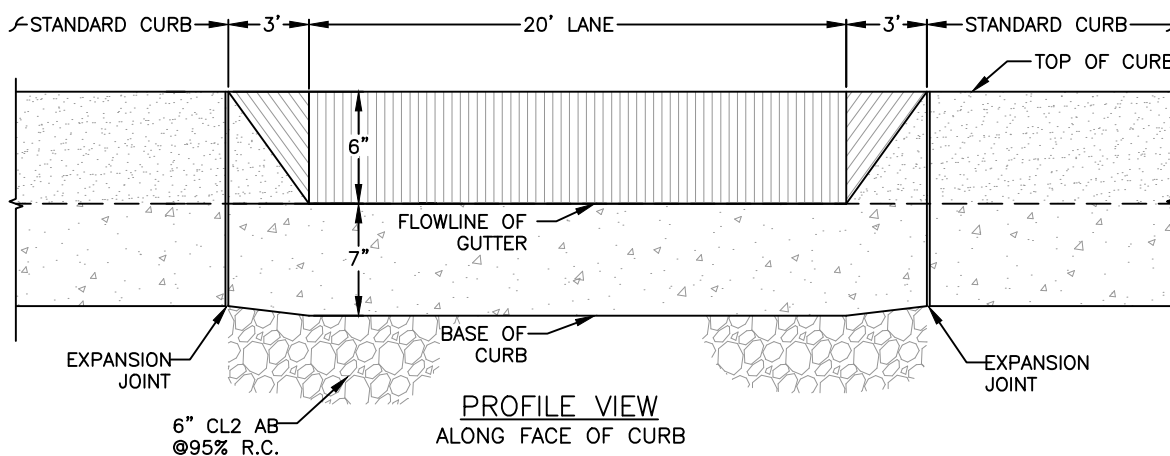
P-66



PLAN VIEW

NOTES:

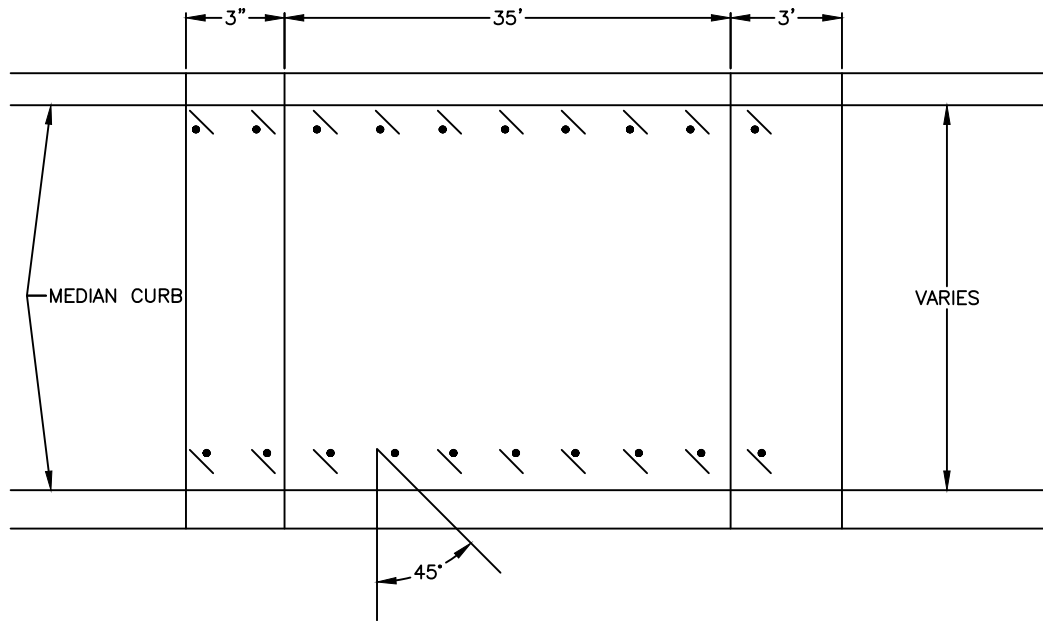
1. RAMP AND SIDEWALK AREAS SHALL BE 7" PCC / 6" CNS.
2. A 4.0' MIN. SIDEWALK AREA BEHIND RAMP SHALL BE MAINTAINED. A PEDESTRIAN EASEMENT IS REQUIRED WHEN PATTERN IS LESS THAN 6'.
3. CURB TOP AND FACE SHALL BE PAINTED RED WITH TRAFFIC-RATED PAINT, TWO (2) COATS MIN.
4. 6' MIN. SIDEWALK REQUIRED ON MAJOR STREETS, 4' MIN. REQUIRED ON LOCAL STREETS.



FIRE ACCESS LANE  
ACROSS PARKWAY

REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

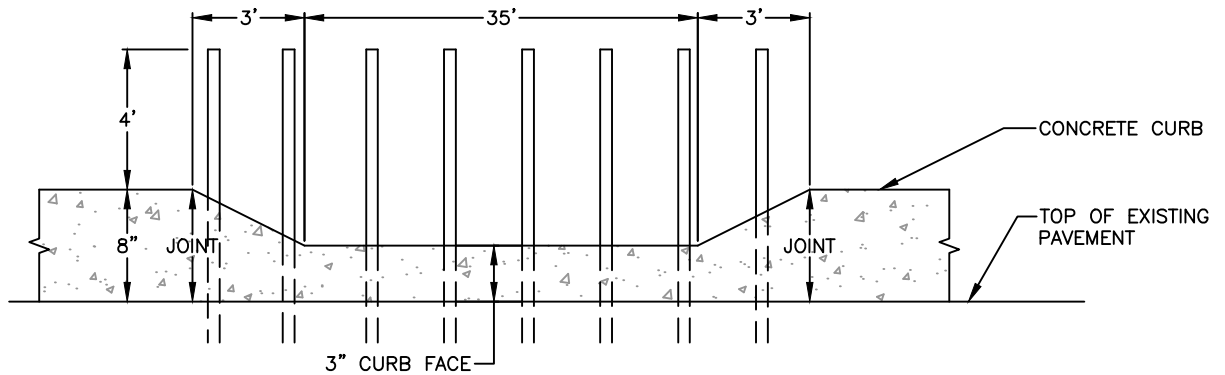
CITY OF FRESNO  
P-67



PLAN VIEW

NOTES:

1. MEDIAN CROSSING SHALL BE 7" PCC/6" CNS.
2. FLEXIBLE WHITE REFLECTORIZED PADDLES SHALL BE INSTALLED ON 5' CENTERS. (STATE STD.).



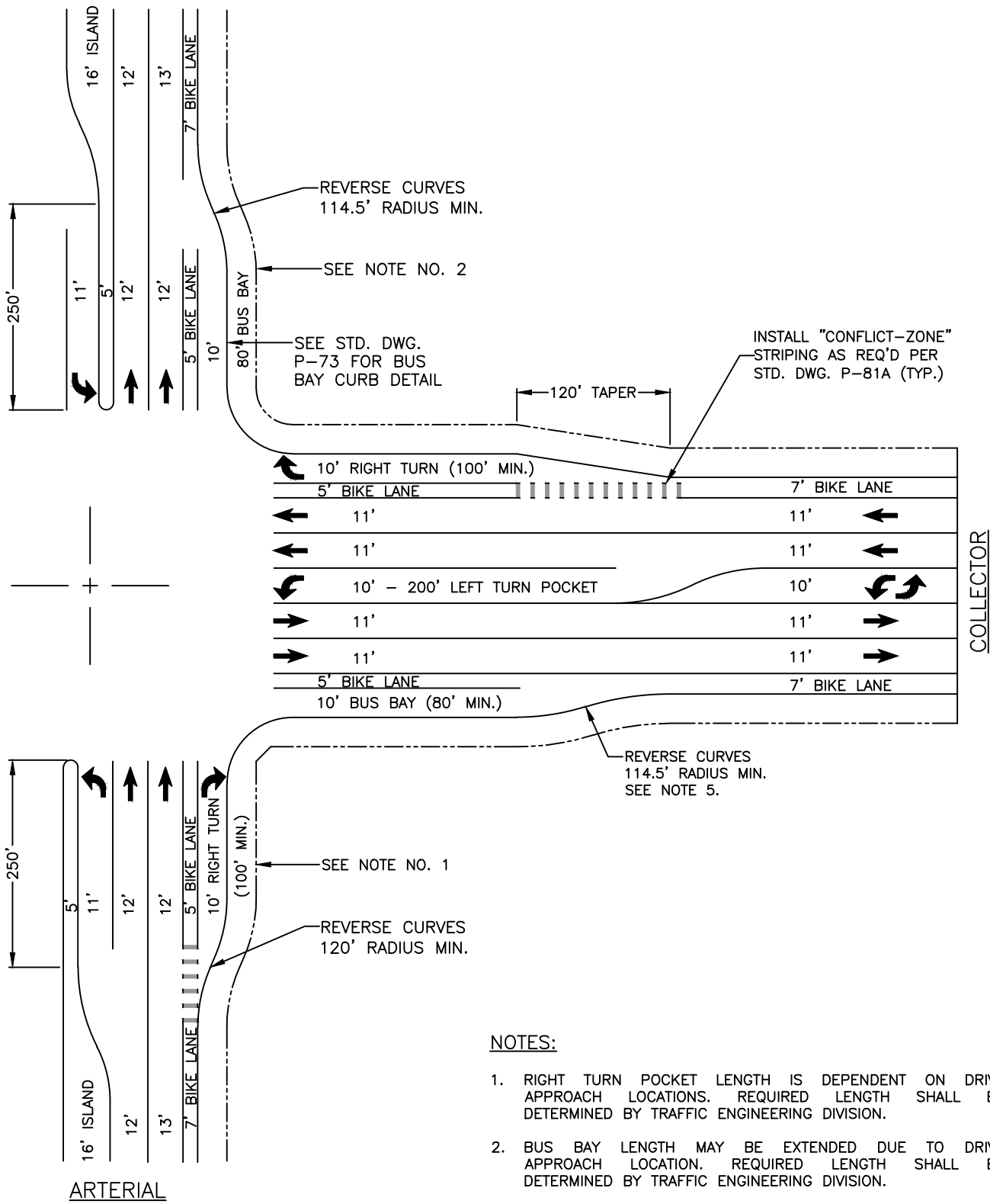
PROFILE VIEW

MEDIAN OPENING  
FOR EMERGENCY VEHICLES

REF. & REV.  
AUG. 2010

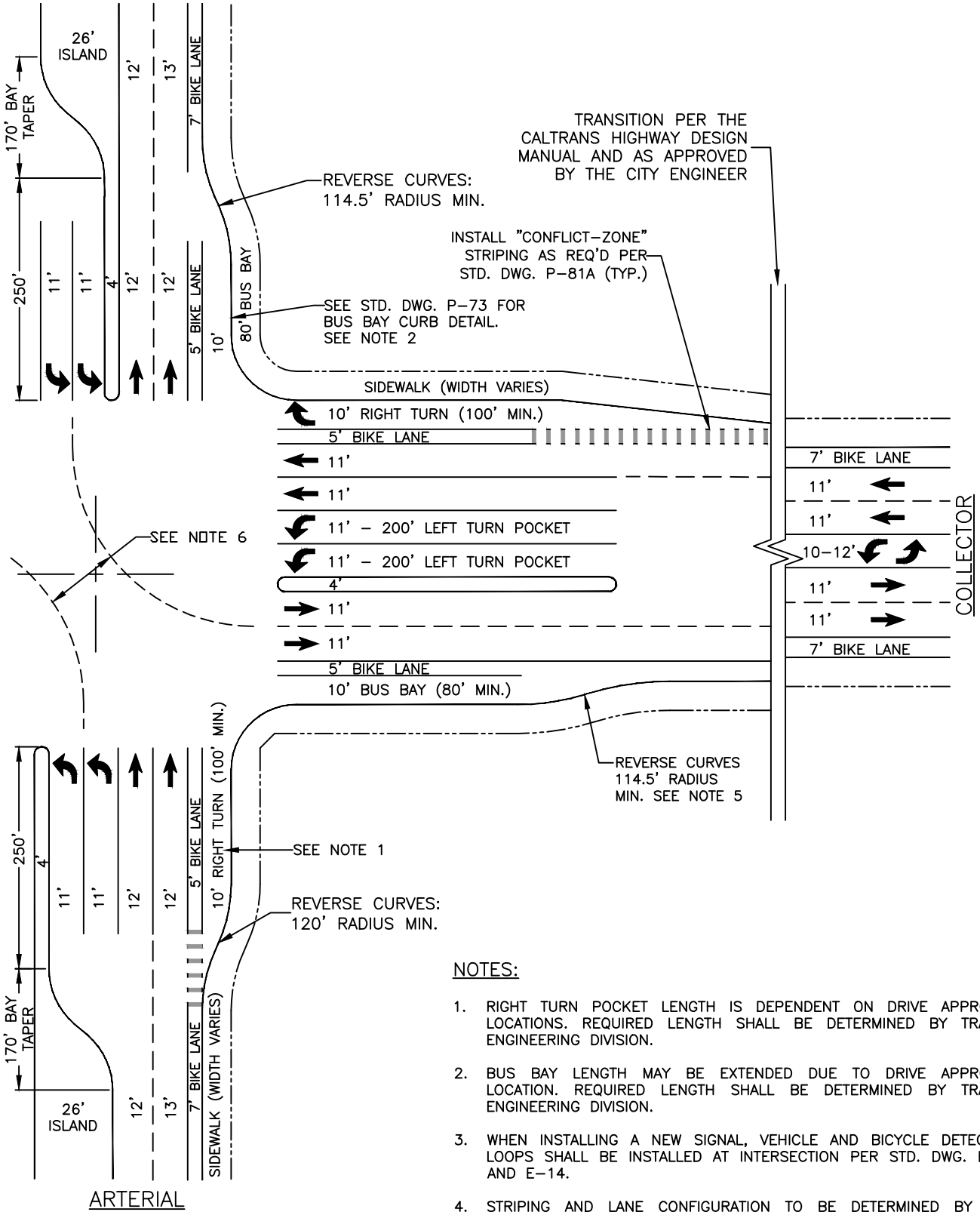
CITY OF FRESNO

P-68



**NOTES:**

1. RIGHT TURN POCKET LENGTH IS DEPENDENT ON DRIVE APPROACH LOCATIONS. REQUIRED LENGTH SHALL BE DETERMINED BY TRAFFIC ENGINEERING DIVISION.
2. BUS BAY LENGTH MAY BE EXTENDED DUE TO DRIVE APPROACH LOCATION. REQUIRED LENGTH SHALL BE DETERMINED BY TRAFFIC ENGINEERING DIVISION.
3. WHEN INSTALLING A NEW SIGNAL, VEHICLE AND BICYCLE DETECTION LOOPS SHALL BE INSTALLED AT INTERSECTION PER STD. DWG. E-13 AND E-14.
4. STRIPING AND LANE CONFIGURATION TO BE DETERMINED BY CITY TRAFFIC ENGINEER.
5. A LONGER TRANSITION AT THE END OF A BUS BAY MAY BE NECESSARY TO ACHIEVE THE REQUIRED PAVMENT CROSS SLOPES AND PROPER DRAINAGE.



TRANSITION PER THE CALTRANS HIGHWAY DESIGN MANUAL AND AS APPROVED BY THE CITY ENGINEER

REVERSE CURVES: 114.5' RADIUS MIN.

INSTALL "CONFLICT-ZONE" STRIPING AS REQ'D PER STD. DWG. P-81A (TYP.)

SEE STD. DWG. P-73 FOR BUS BAY CURB DETAIL. SEE NOTE 2

SIDEWALK (WIDTH VARIES)

10' RIGHT TURN (100' MIN.)

5' BIKE LANE

11'

11'

11' - 200' LEFT TURN POCKET

11' - 200' LEFT TURN POCKET

4'

11'

11'

5' BIKE LANE

10' BUS BAY (80' MIN.)

REVERSE CURVES 114.5' RADIUS MIN. SEE NOTE 5

SEE NOTE 1

REVERSE CURVES: 120' RADIUS MIN.

COLLECTOR

ARTERIAL

NOTES:

1. RIGHT TURN POCKET LENGTH IS DEPENDENT ON DRIVE APPROACH LOCATIONS. REQUIRED LENGTH SHALL BE DETERMINED BY TRAFFIC ENGINEERING DIVISION.
2. BUS BAY LENGTH MAY BE EXTENDED DUE TO DRIVE APPROACH LOCATION. REQUIRED LENGTH SHALL BE DETERMINED BY TRAFFIC ENGINEERING DIVISION.
3. WHEN INSTALLING A NEW SIGNAL, VEHICLE AND BICYCLE DETECTION LOOPS SHALL BE INSTALLED AT INTERSECTION PER STD. DWG. E-13 AND E-14.
4. STRIPING AND LANE CONFIGURATION TO BE DETERMINED BY CITY TRAFFIC ENGINEER.
5. A LONGER TRANSITION AT THE END OF A BUS BAY MAY BE NECESSARY TO ACHIEVE THE REQUIRED PAVEMENT CROSS SLOPES AND PROPER DRAINAGE.
6. OPPOSING DUAL-LEFT TURNS SHALL BE ANALYZED FOR CONFLICTS USING AUTOTURN OR EQUIVALENT SOFTWARE. RESULTS SHALL BE PROVIDED TO, AND APPROVED BY, TRAFFIC ENGINEERING STAFF.

STREET INTERSECTION DETAIL  
WITH DUAL LEFT TURN LANES

REF, & REV.  
JUNE 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
P-70

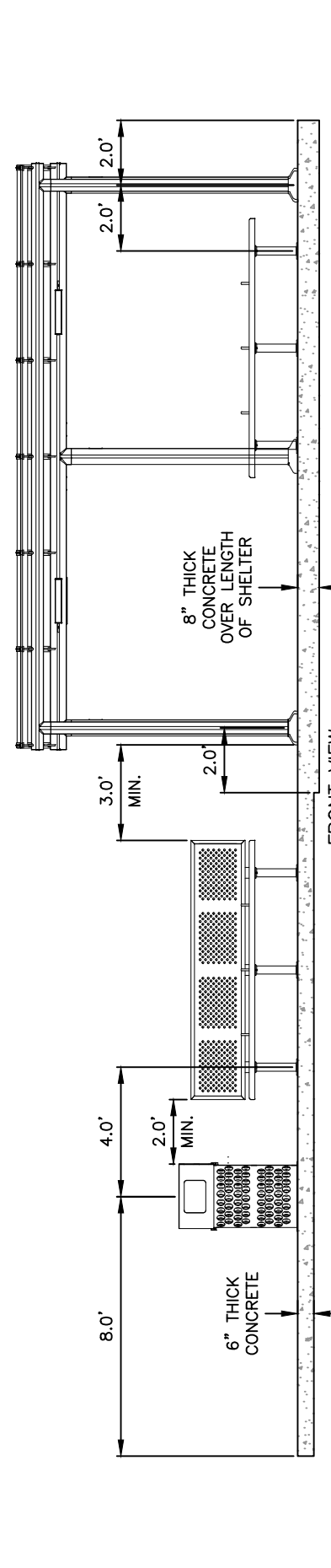
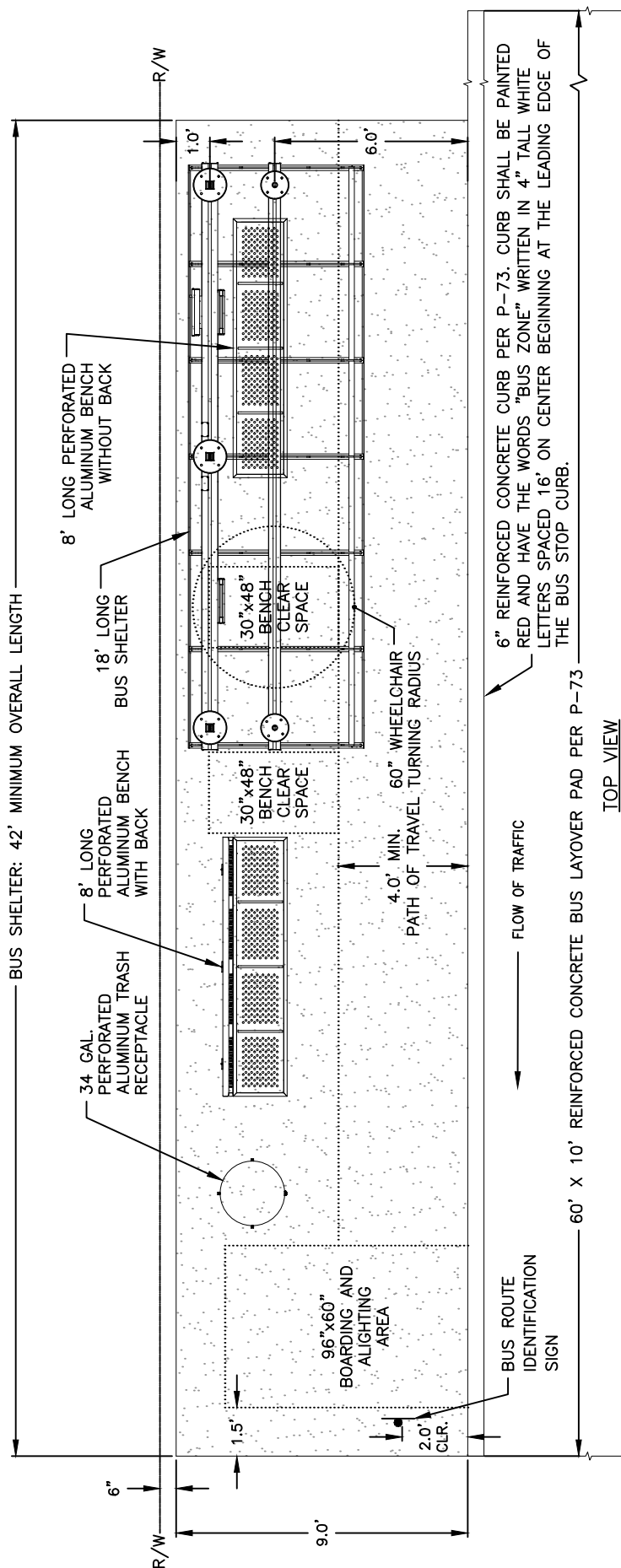
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

REF. & REV.  
AUG. 2010

CITY OF FRESNO

P-71



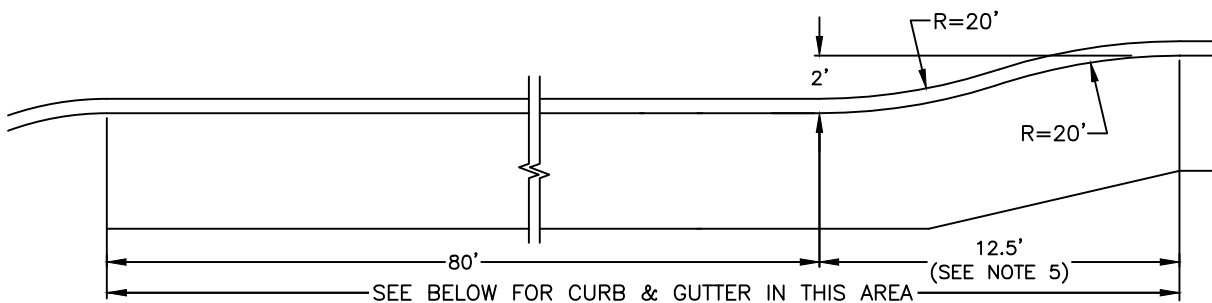
**NOTES:**

1. BUS SHELTERS SHALL BE PLACED IN CITY OF FRESNO RIGHT OF WAY. CONTACT CITY OF FRESNO TRAFFIC ENGINEERING FOR EASEMENT REQUIREMENTS IF ADA CLEARANCE IS NOT MET.
2. A 6" CONCRETE PAD SHALL BE PLACED UNDER SHELTER. LIMITS OF PAD SHALL ALLOW FOR FUTURE ADDITION TO SHELTER. CONTACT TRAFFIC ENGINEERING FOR REQUIREMENTS.
3. BUS STOPS WITH SHELTERS SHALL COMPLY WITH THE CURRENT EDITIONS OF THE CALIFORNIA BUILDING CODE SECTIONS 11B-209, 11B-218 AND 11B-903; AS WELL AS THE U.S. DEPARTMENT OF TRANSPORTATION ADA STANDARDS FOR TRANSPORTATION FACILITIES, SECTIONS 209, 218 AND 903.

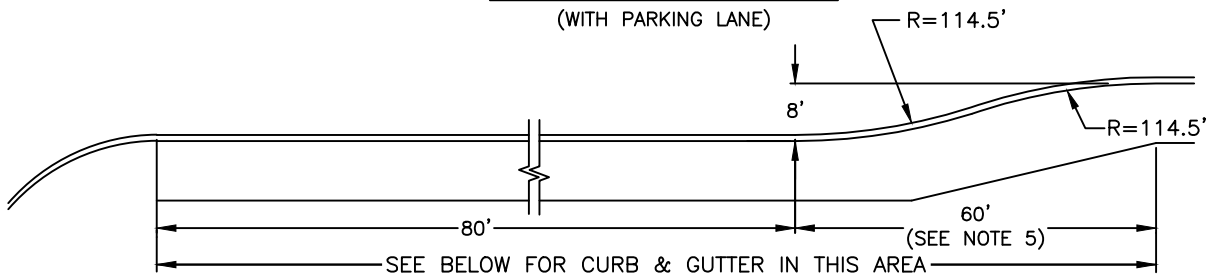
# BUS STOP WITH SHELTER LAYOUT

REF. & REV.  
 JULY 2011  
 MAR. 2021 (A.7)

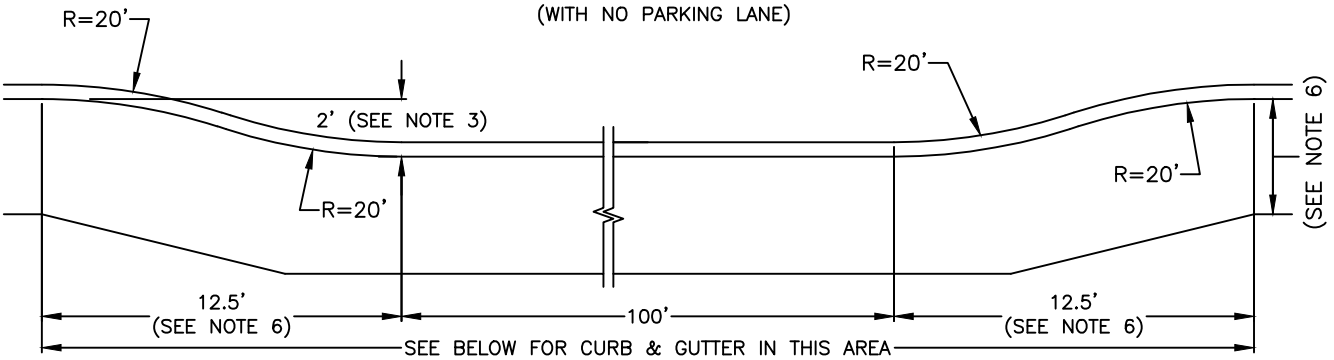
CITY OF FRESNO  
 P-72



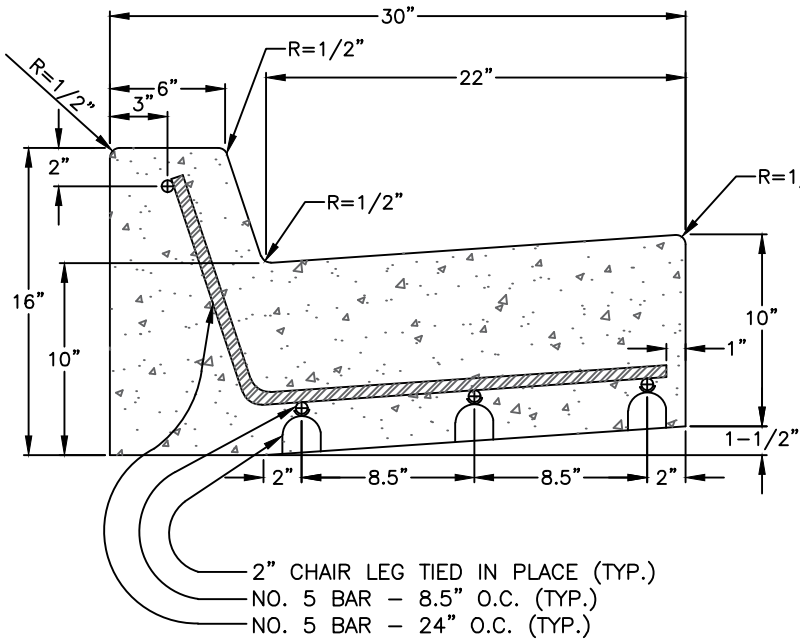
FAR SIDE INTERSECTION  
(WITH PARKING LANE)



FAR SIDE INTERSECTION  
(WITH NO PARKING LANE)



MID BLOCK

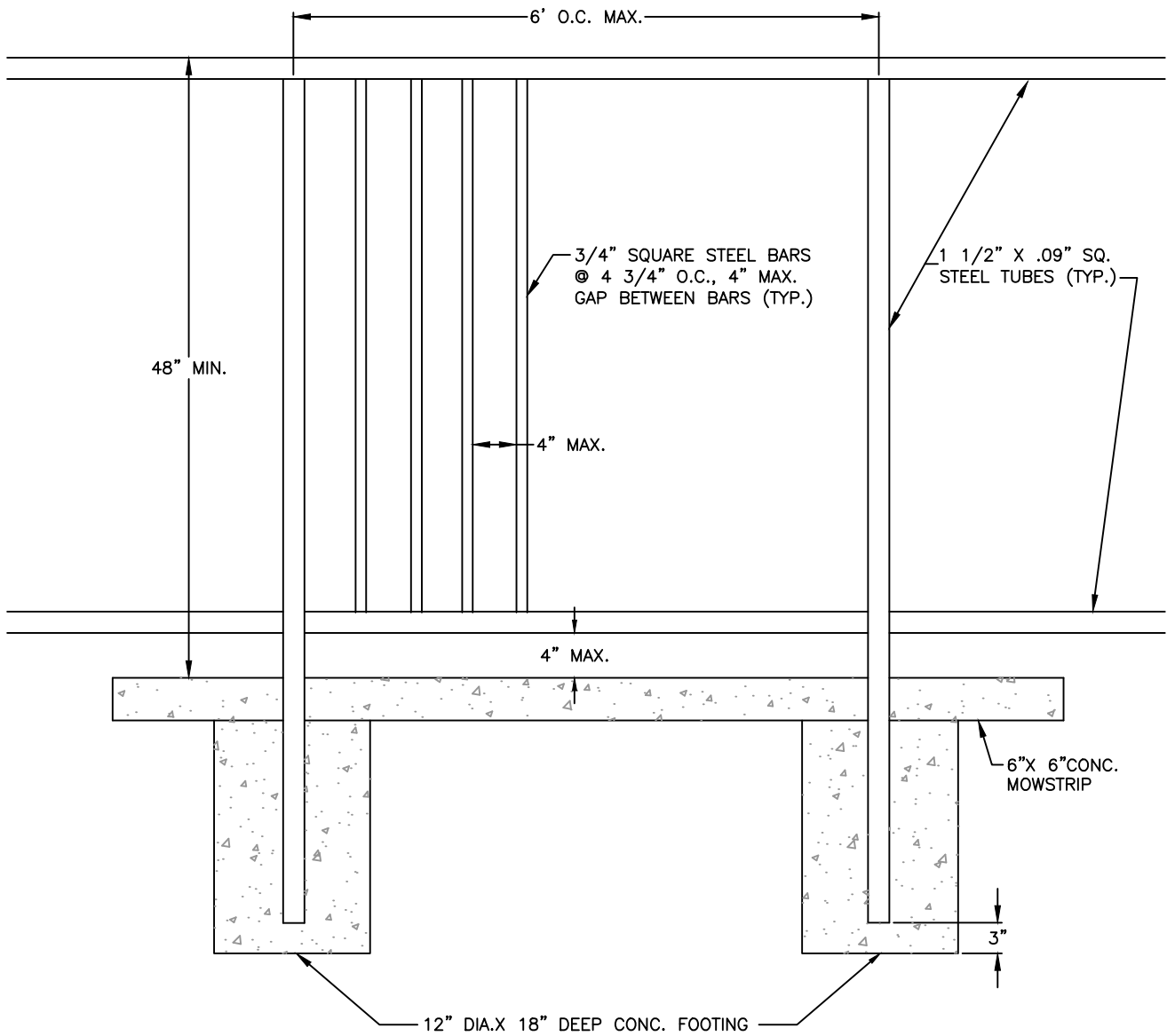


DETAIL

NOTES:

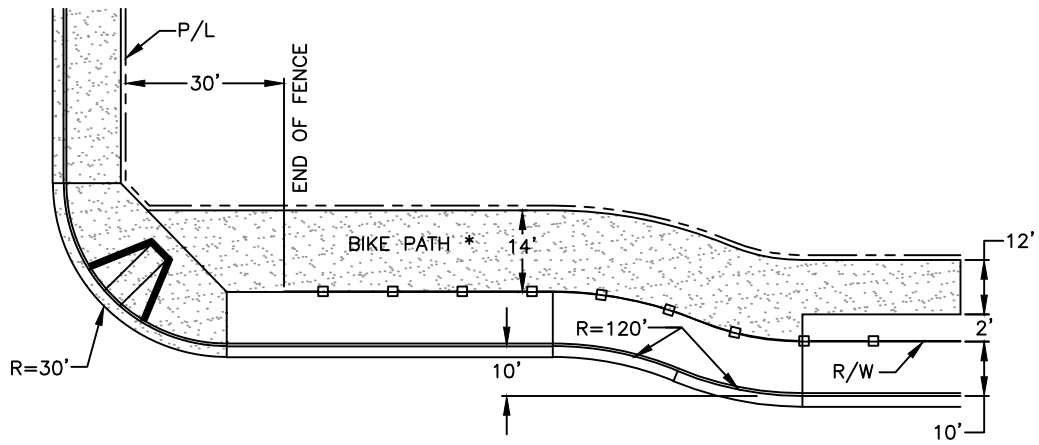
1. 5' MIN. TRANSITION TO STD. CURB & GUTTER.
2. 20" LAP REQ'D ON ALL BAR SPLICES.
3. WHERE PARKING LANE DOES NOT EXIST, 8' BUS BAY WILL BE REQUIRED.
4. USE 6 SACK CONCRETE MIX.
5. ON COLLECTOR STREETS IN NEW GROWTH AREA, USE P-69 CITY STD.
6. IF 8' BUS BAY, USE 114.50' RADIUS AND 60' TRANSITION.



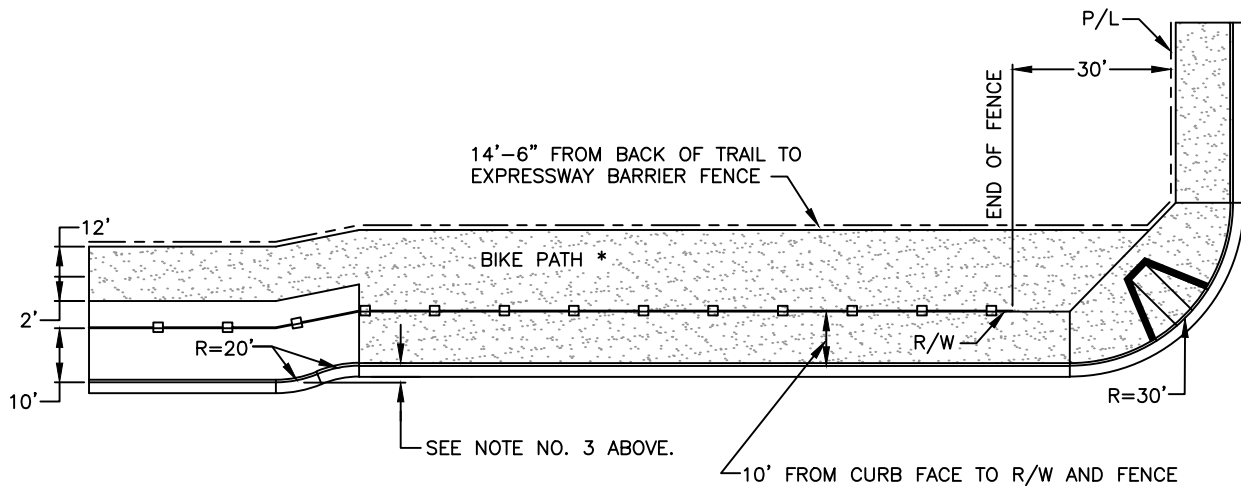


NOTES:

1. FENCE SHALL BE LOCATED 6" OUTSIDE OF STREET RIGHT-OF-WAY.
2. FENCE SHALL HAVE A BLACK POWDER COATING.
3. SEE PUBLIC WORKS STANDARD P-75 FOR REQUIRED LOCATION OF BARRIER FENCING.
4. ALTERNATE DESIGNS MAY BE APPROVED BY THE CITY ENGINEER, PROVIDED THE 4' MINIMUM HEIGHT IS PROVIDED.
5. ALL CONCRETE WORK SHALL BE 5-SACK MIX.



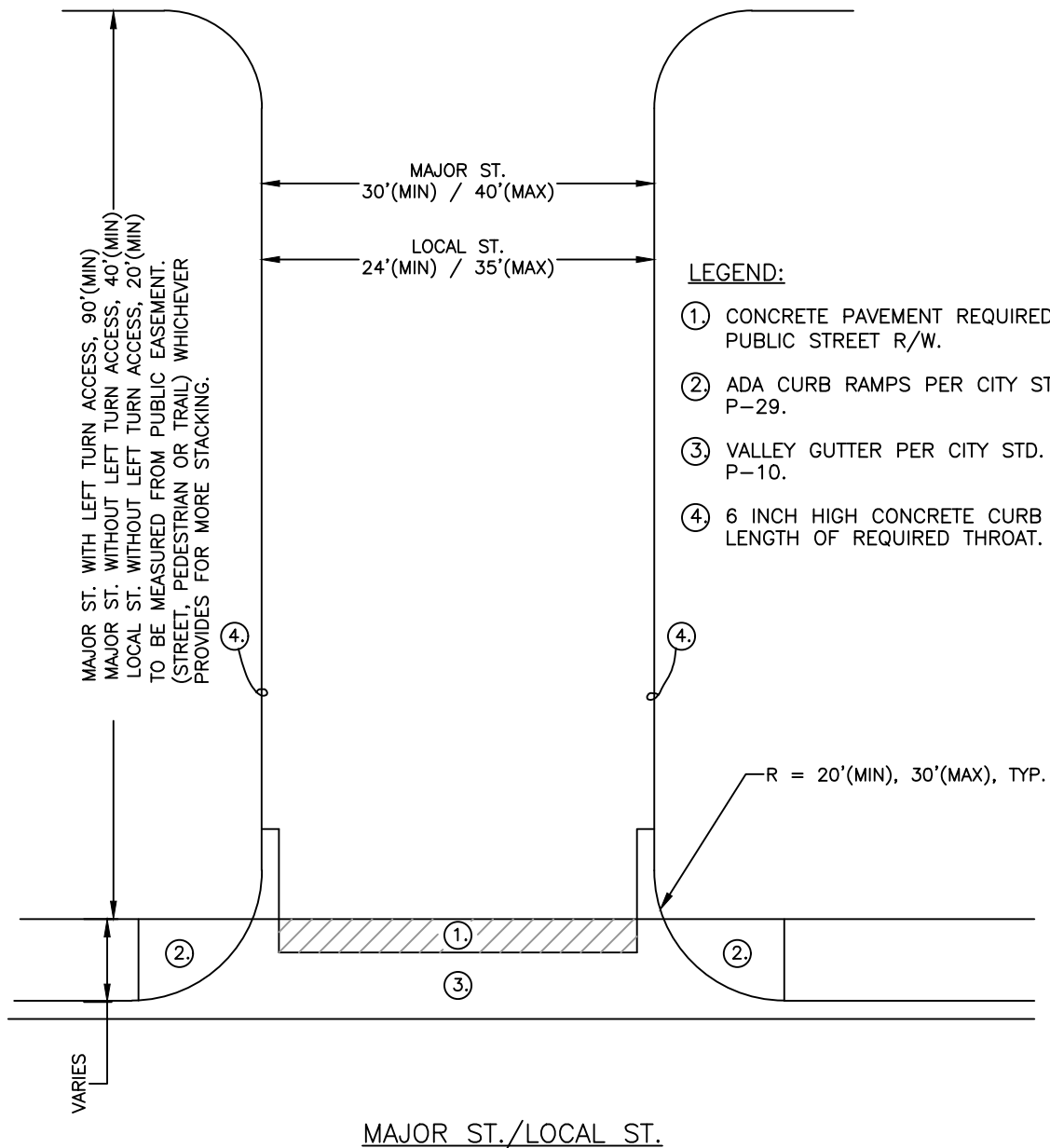
RIGHT TURN LANE LOCATION  
 \*IF BIKE PATH CONSTRUCTION IS REQUIRED



BUS BAY LOCATION  
 \*IF BIKE PATH CONSTRUCTION IS REQUIRED

NOTES:

1. EXPRESSWAY BARRIER FENCE SHALL BE ON STREET RIGHT-OF-WAY.
2. BIKE PATH MAY MEANDER OUTSIDE OF RIGHT TURN AND BUS BAY AREA.
3. REFER TO CITY STD. DWG. P-58, P-59, AND P-60 FOR TRAIL DETAILS.



**NOTES:**

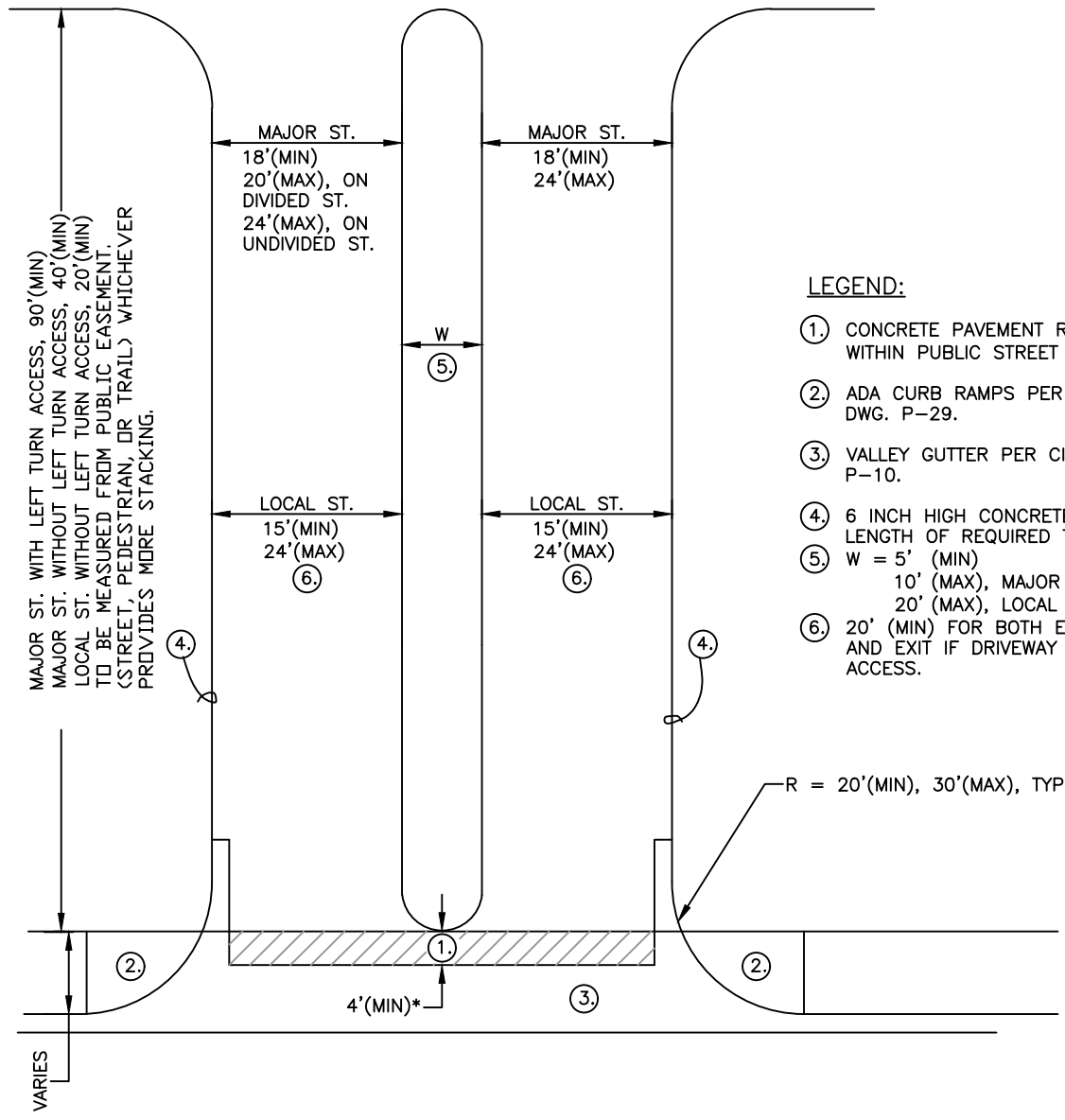
1. ON DIVIDED MAJOR STREET, DESIGN ONE-WAY LEFT TURN POCKET PER CITY STD. DWG. P-63, WHERE APPROVED BY CITY TRAFFIC ENGINEER.

**STREET TYPE APPROACH  
FOR UNDIVIDED DRIVEWAY**

REF. & REV.  
AUG. 2015

CITY OF FRESNO

P-76



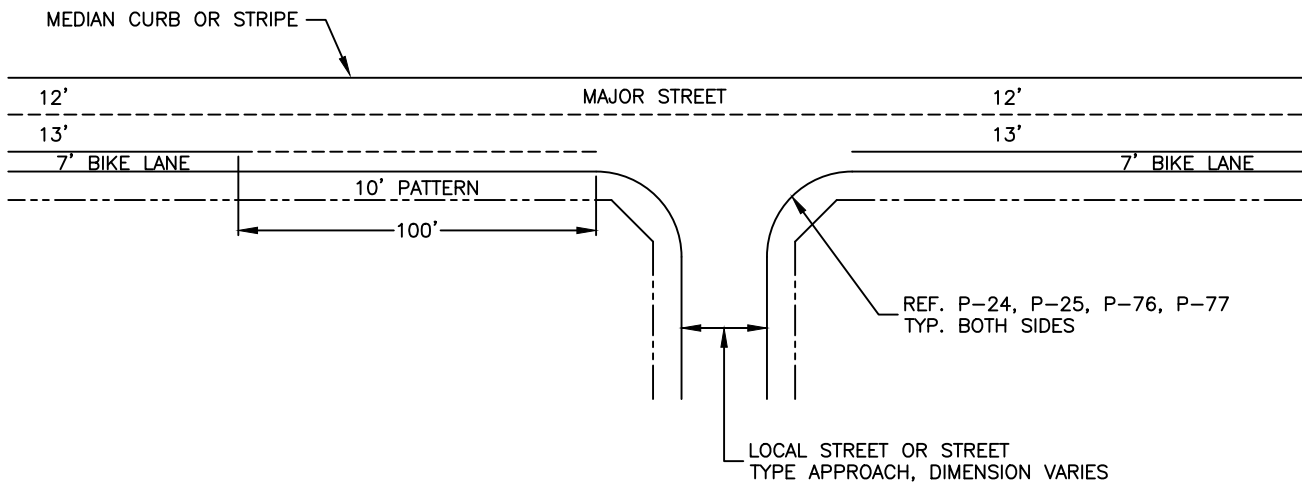
**LEGEND:**

- ① CONCRETE PAVEMENT REQUIRED WITHIN PUBLIC STREET R/W.
- ② ADA CURB RAMP PER CITY STD. DWG. P-29.
- ③ VALLEY GUTTER PER CITY STD. DWG. P-10.
- ④ 6 INCH HIGH CONCRETE CURB FOR LENGTH OF REQUIRED THROAT.
- ⑤ W = 5' (MIN)  
10' (MAX), MAJOR ST.  
20' (MAX), LOCAL ST.
- ⑥ 20' (MIN) FOR BOTH ENTERANCE AND EXIT IF DRIVEWAY IS SOLE ACCESS.

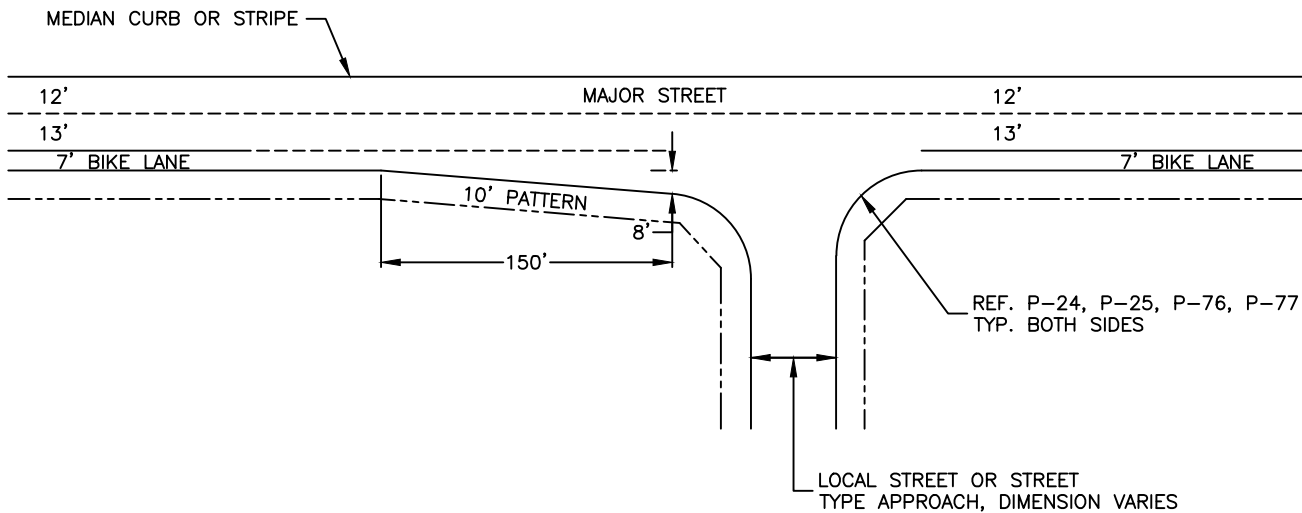
MAJOR ST./LOCAL ST.

**NOTES:**

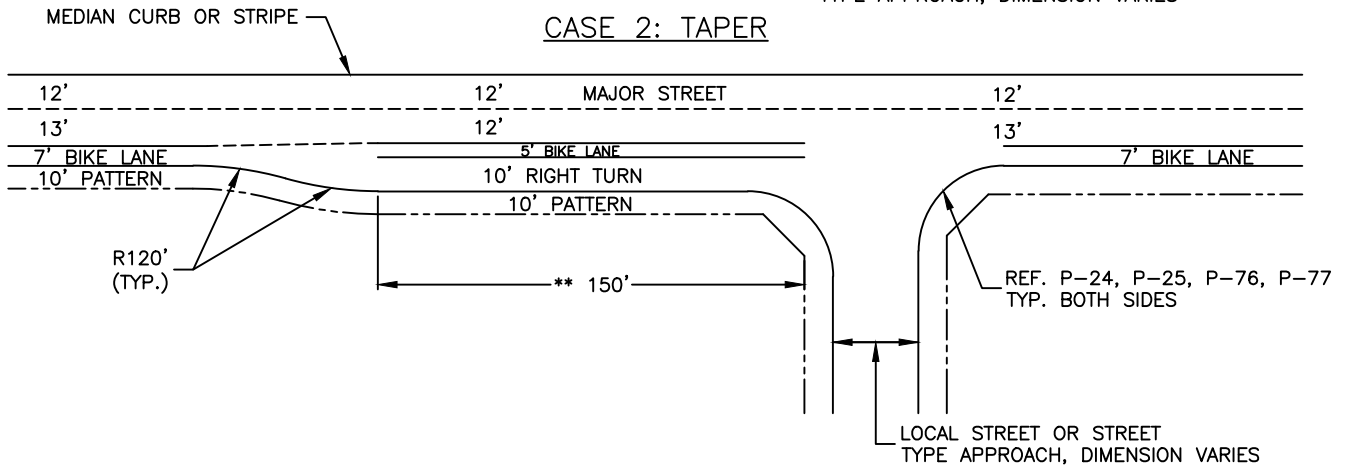
- 1. ON DIVIDED MAJOR STREET, DESIGN ONE-WAY LEFT TURN POCKET PER CITY STD. DWG. P-63, WHERE APPROVED BY CITY TRAFFIC ENGINEER.
- \* FOR ADA ACCESSIBILITY ACROSS DRIVEWAY



**CASE 1: SHARED LANE**



**CASE 2: TAPER**



**CASE 3: RIGHT TURN POCKET**

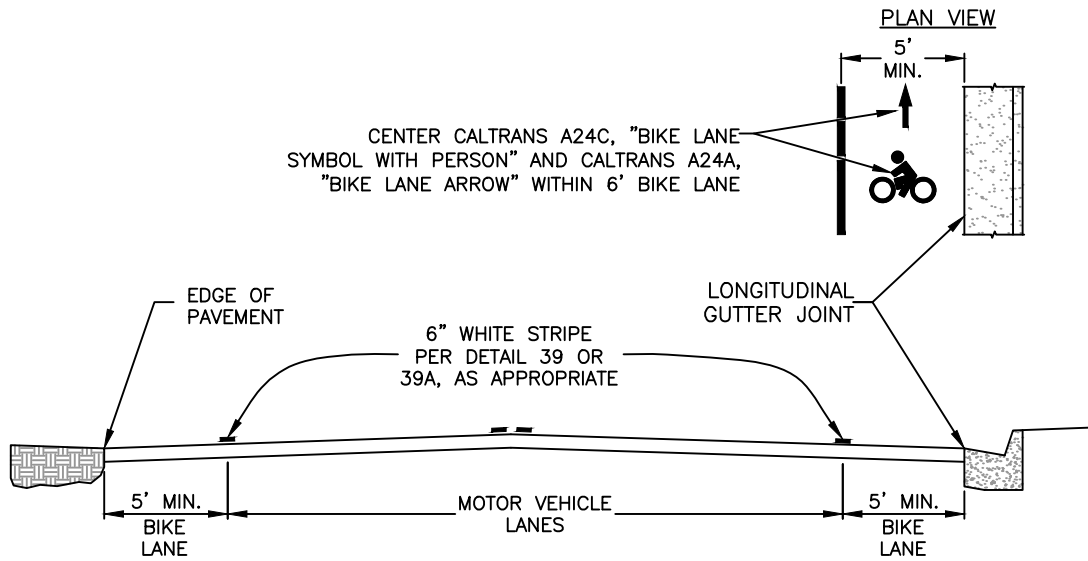
**MAJOR STREET:** # PEAK HOUR RIGHT TURN VEHICLES

	CASE 1	CASE 2	CASE 3
SPEED 35	< 50	≥ 50 - <100	≥ 100
40	< 40	≥ 40 - <90	≥ 90
45	< 30	≥ 30 - <80	≥ 80
> 50	< 20	≥ 20 - <75	≥ 75

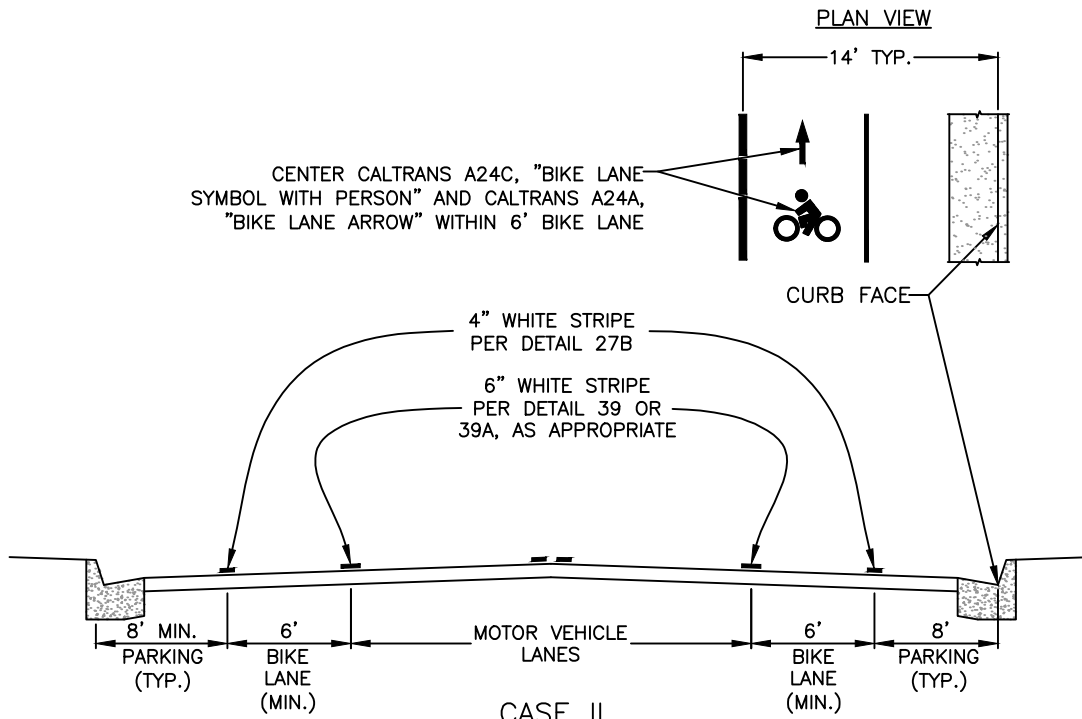
**NOTES:**

CASE 2: NOT ALLOWED WHEN AT A SIGNALIZED INTERSECTION

CASE 3: \*\* EXCEPTIONS NEED TO BE APPROVED BY THE CITY TRAFFIC ENGINEER



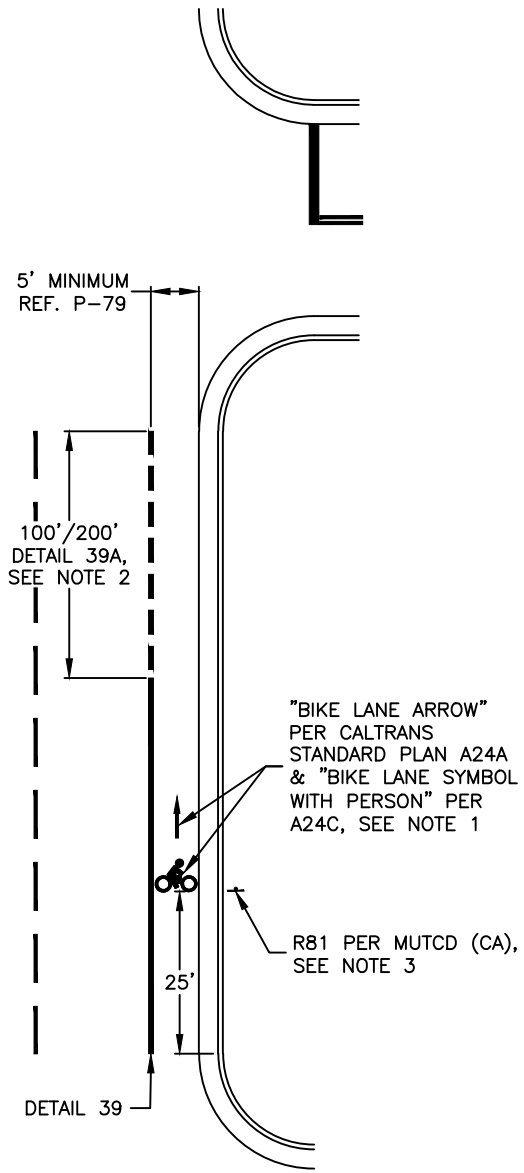
CASE I



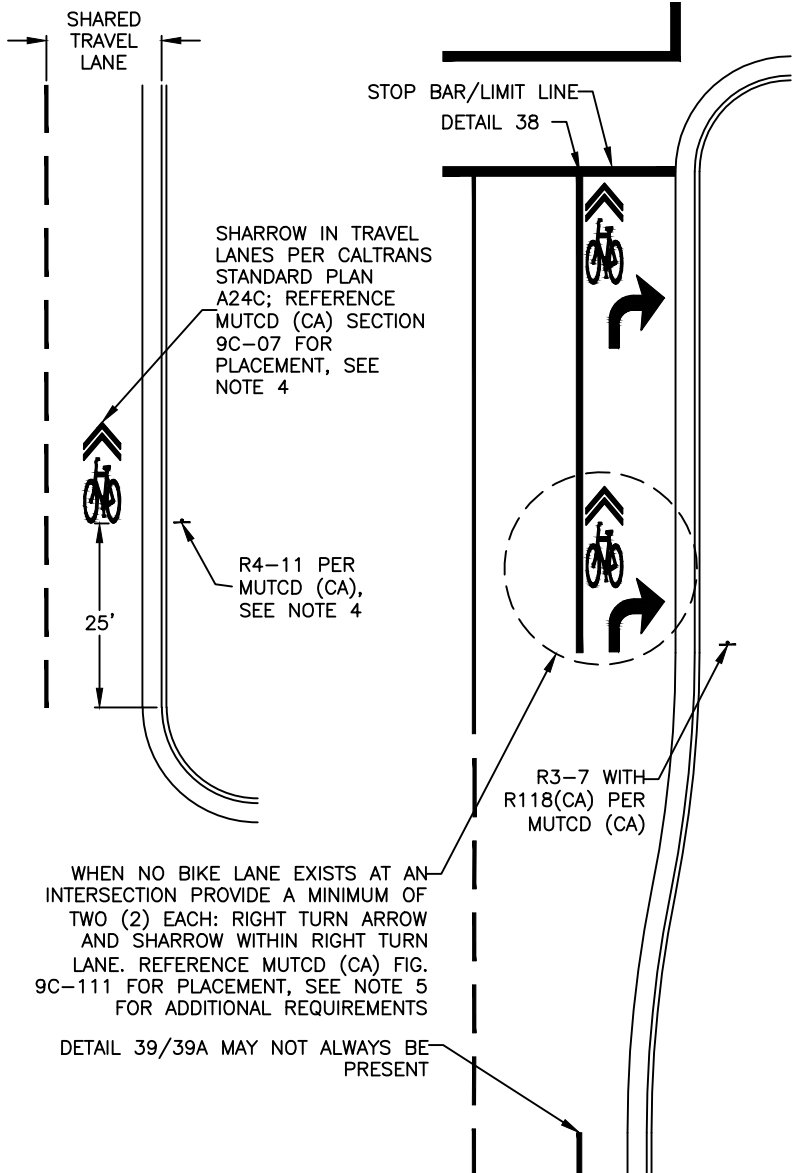
CASE II

NOTES:

1. TO THE GREATEST EXTENT POSSIBLE, CASE I BIKE LANES SHALL BE INSTALLED WITH ALL NEW INDUSTRIAL, COLLECTOR OR ARTERIAL STREET DEVELOPMENTS OR RECONSTRUCTION. WHEN AVAILABLE SPACE IN THE ROADWAY DOES NOT ALLOW FOR THE MINIMUM STANDARD WIDTHS, CONSIDERATION WILL BE GIVEN TO NARROWED TRAVEL LANES OR ELIMINATION OF TRAVEL LANES BEFORE CONSIDERING NARROWING OR ELIMINATING BIKE LANES. A TRAFFIC STUDY TO INVESTIGATE TRAFFIC SPEED, SPEED LIMITS, TYPE OF CORRIDOR, VOLUMES FOR CARS AND TRUCKS (OR OTHER DATA AS REQUESTED BY THE CITY TRAFFIC ENGINEER) MAY BE REQUIRED BEFORE ANY PROPOSED TRAVEL OR BIKE LANE REDUCTIONS ARE ALLOWED.
2. WHEN STRIPING A CASE I BIKE LANE, R-28(S)(CA) "NO STOPPING AT ANY TIME" SIGNS WILL BE INSTALLED AT 200' MAXIMUM INTERVALS, OR AT INTERVALS DETERMINED BY EXISTING STREETLIGHT POLES.
3. ALL STRIPING SHALL BE THERMOPLASTIC, BIKE LANE MARKINGS SHALL BE TRAFFIC PAINT PER CALTRANS SPECIFICATIONS OR METHYL METHACRYLATE (MMA). REFERENCE STD. DWG. P-80 FOR PROPER PLACEMENT AND INSTALLATION OF BIKE LANE SYMBOLS AND STD. DWGS. P-81A/P-81B FOR "CONFLICT-ZONE" MARKINGS AND MMA REQUIREMENTS.
4. ALL REFERENCED STRIPING IS PER CALTRANS STANDARD PLANS: A20A-A20D.



CLASS II BIKE LANE



CLASS III BIKE ROUTE  
IN TRAVEL LANE & RIGHT-TURN POCKET

NOTES:

1. BICYCLE LANE PAVEMENT MARKING SYMBOLS SHALL BE PLACED ON THE FAR SIDE OF EACH INTERSECTION, 25' FROM THE RETURN, AT 800' MAXIMUM SPACING. THEY MAY ALSO BE PLACED AT OTHER LOCATIONS AS DESIRED AND APPROVED BY THE CITY TRAFFIC ENGINEER.
2. WHERE MOTORIST RIGHT TURNS ARE PERMITTED, THE SOLID BIKE LANE LINE (DETAIL 39) SHALL BECOME DASHED UP TO THE INTERSECTION (DETAIL 39A), BEGINNING AT A POINT 100' IN ADVANCE OF THE INTERSECTION. A DISTANCE OF 200' SHALL BE USED ON ARTERIALS AND SUPER-ARTERIALS WITH A POSTED SPEED LIMIT OF 45 MPH OR GREATER. WHEN RIGHT TURNS ARE PROHIBITED, THE BIKE LANE LINE SHALL BE SOLID (DETAIL 39) TO THE INTERSECTION.
3. THE R81 "BIKE LANE" SIGN (18" X 24") SHALL BE PLACED AT THE BEGINNING OF ALL BIKE LANES, ON THE FAR SIDE OF EVERY MAJOR STREET INTERSECTION, AT ALL MAJOR CHANGES IN DIRECTION, AND AT MAXIMUM 1/2 MI. (0.8 km) INTERVALS.
4. FOR CLASS III BICYCLE ROUTES, AN R4-11 SIGN SHALL BE INSTALLED ON THE FAR SIDE OF EACH INTERSECTION AND AT 800' MAXIMUM SPACING. WITH APPROVAL FROM THE CITY TRAFFIC ENGINEER, THIS SIGNAGE MAY BE SUPPLEMENTED WITH PAINTED SHARED ROADWAY BICYCLE MARKINGS (SHARROWS) PER CALTRANS STANDARD PLAN A24C. PLACEMENT WITHIN THE LANE SHALL COMPLY WITH CA-MUTCD SECTION 9C-07.
5. FOR SHARROW PLACEMENT IN RIGHT TURN LANES REFER TO MUTCD (CA) FIG. 9C-111. R3-7 WITH R118 SIGNAGE SHALL BE PROVIDED.
6. THE ACTUAL LOCATION OF ALL SIGNS WILL BE DETERMINED BY THE CITY TRAFFIC ENGINEER.
7. ALL REFERENCED STRIPING IS PER CALTRANS STANDARD PLANS: A20A-A20D.

THIS STANDARD IS  
NO LONGER USED

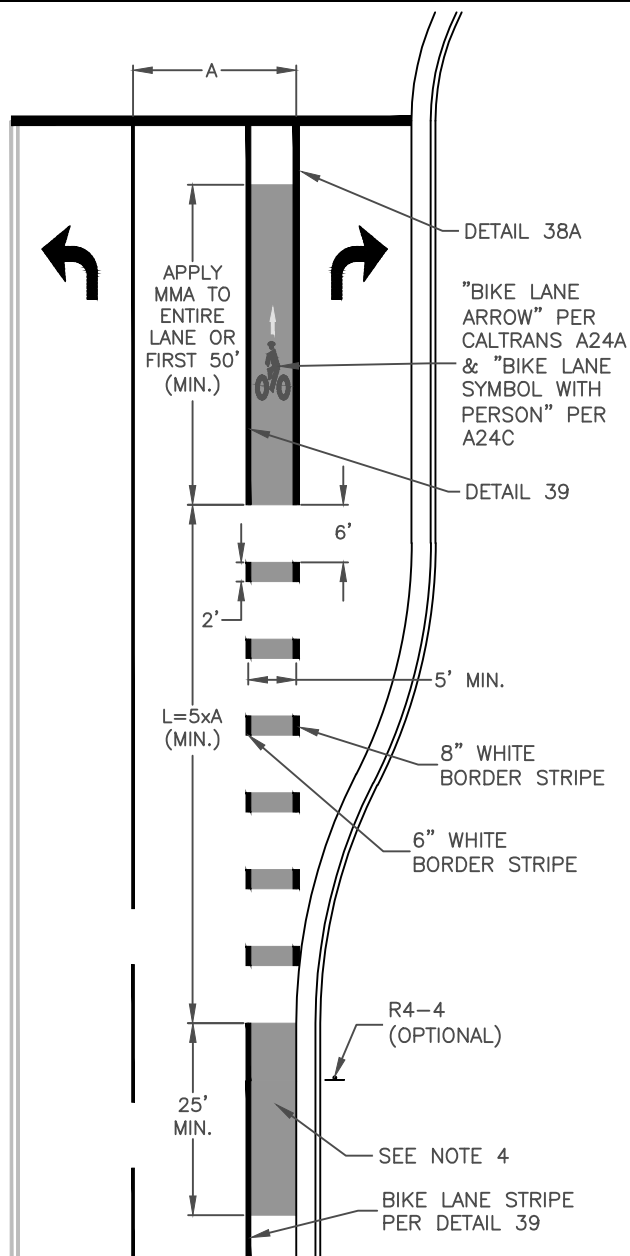
NO LONGER USED

REF. & REV.  
AUG. 2010

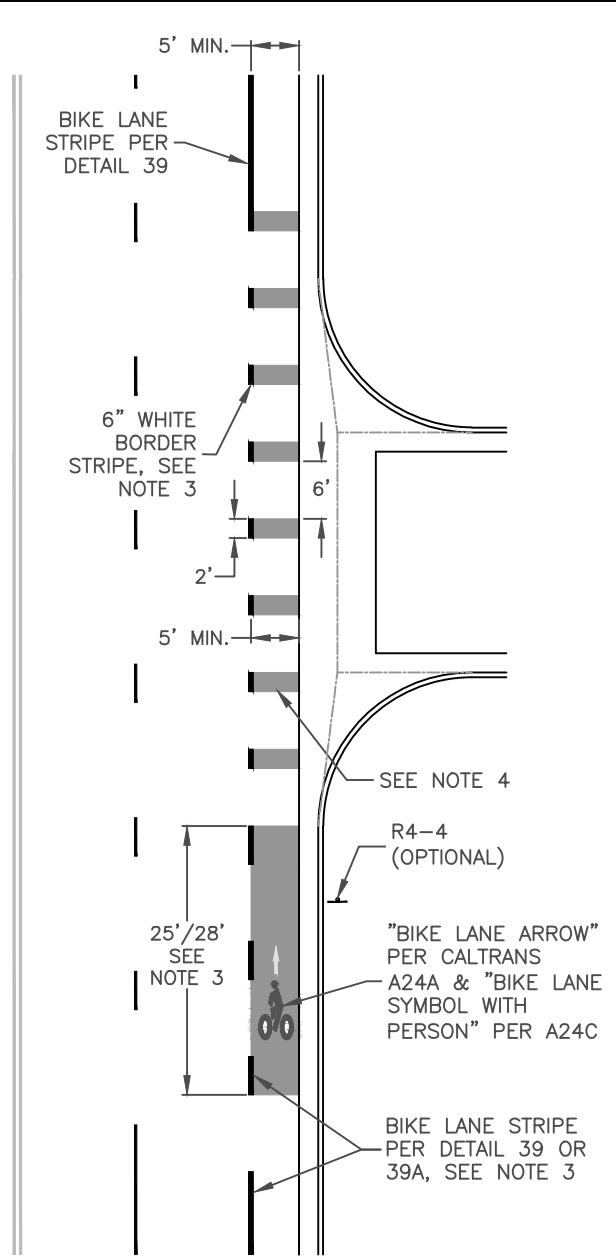
CITY OF FRESNO

P-81





RIGHT-TURN LANE  
CONFLICT ZONE



HIGH VOLUME DRIVEWAY, STREET-TYPE  
APPROACH OR INTERSECTION CONFLICT  
ZONE

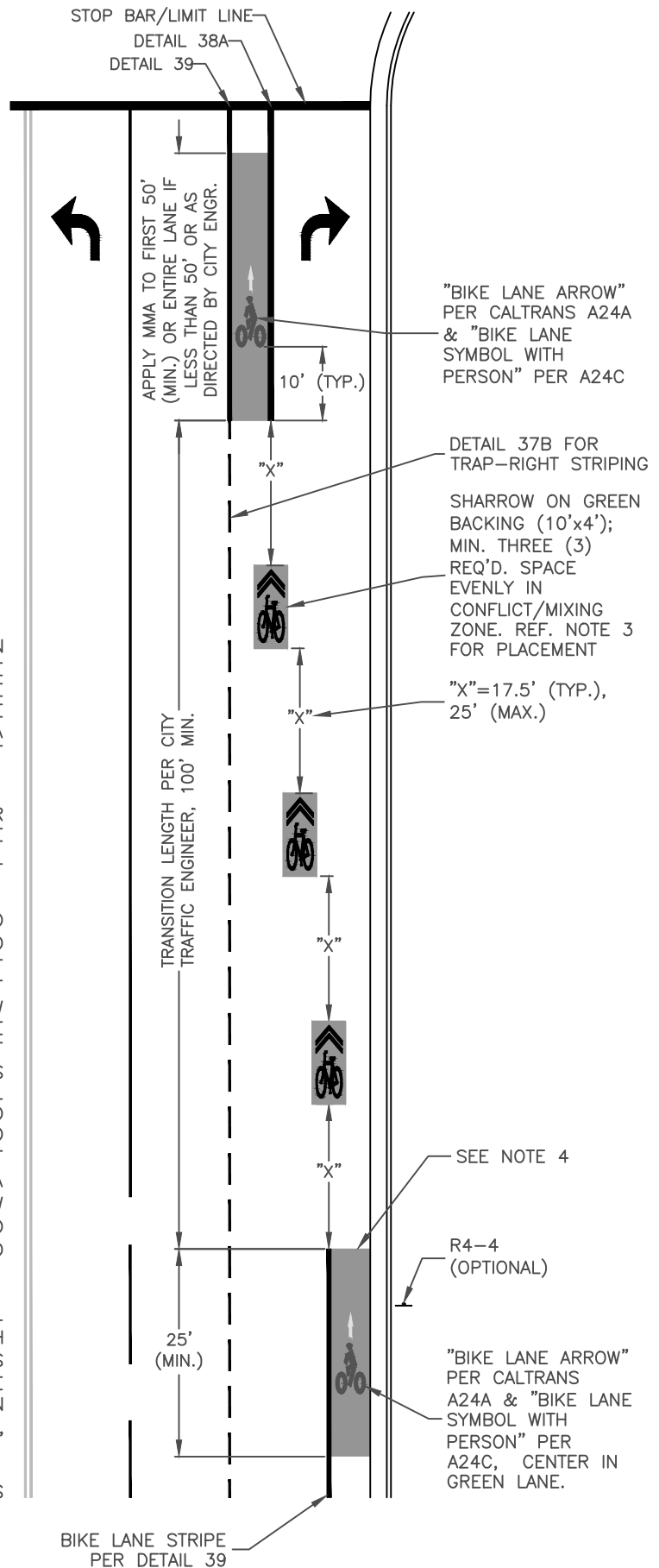
NOTES:

- PLEASE REFERENCE THE CITY OF FRESNO'S "POLICY ON GREEN BIKE LANES" FOR THE APPROPRIATE LOCATIONS AND USE OF THIS STRIPING. THE CITY TRAFFIC ENGINEER MAY ALSO REQUIRE THE INSTALLATION OF THESE FEATURES ON A CASE-BY-CASE BASIS.
- ALL STRIPING SHALL BE THERMOPLASTIC, PER CITY SPECIFICATIONS. WHERE REQUIRED, THE RIGHT-HAND STRIPE SHALL BE 6" PER DETAIL 39 OR 39A.
- WHEN USED AT A PUBLIC STREET INTERSECTION THE BIKE LANE STRIPING SHALL BE PER STD. DWG. P-80 WITH THE LAST 28' BEFORE THE RETURN PAINTED GREEN. IF INSTALLED AT A DRIVEWAY OR STREET-TYPE APPROACH, THE BIKE LANE STRIPE SHALL BE CONTINUOUS ACROSS THE INTERSECTION WITH A 25' GREEN LANE PLACED IN ADVANCE OF THE RETURN. BIKE LANE SYMBOL AND ARROW MAY BE REQUIRED.
- GREEN PAINT SHALL BE 98/2 METHYL METHACRYLATE (MMA) INTERMIXED WITH HARD-WEARING AGGREGATE (MOHS HARDNESS >7). THE FINISHED APPLICATION SHALL BE 90-MILS THICK, COLOR STABLE WITH >60 BPN SLIP RESISTANCE. TYPE ENNIS-FLINT "MMAX", TRANSP0 "COLOR-SAFE", OR APPROVED EQUAL.
- ALL REFERENCED STRIPING IS PER CALTRANS STANDARD PLANS: A20A-A20D.

**GREEN BIKE LANE TREATMENT  
RIGHT-TURN AND DRIVEWAY  
CONFLICT ZONES**

REF. & REV.  
MAR. 2021 (A.7)

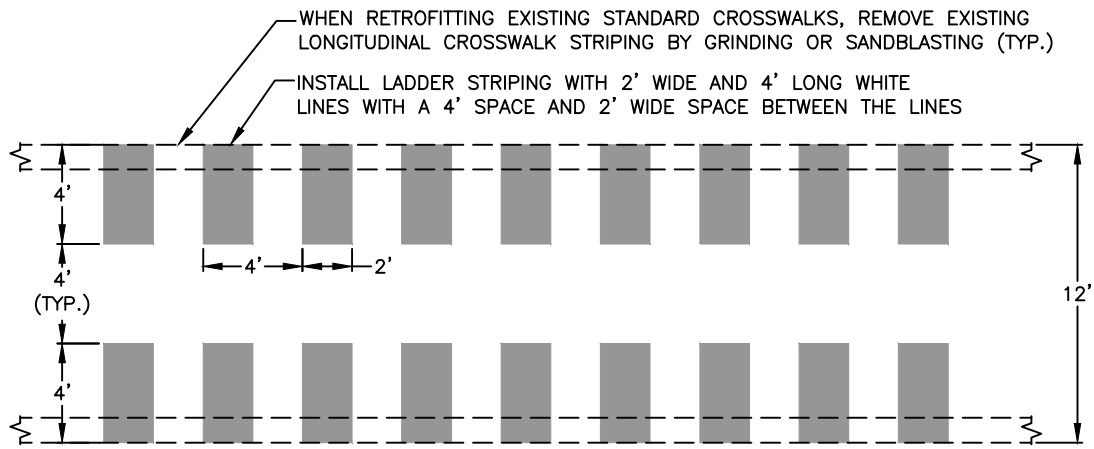
**CITY OF FRESNO  
P-81A**



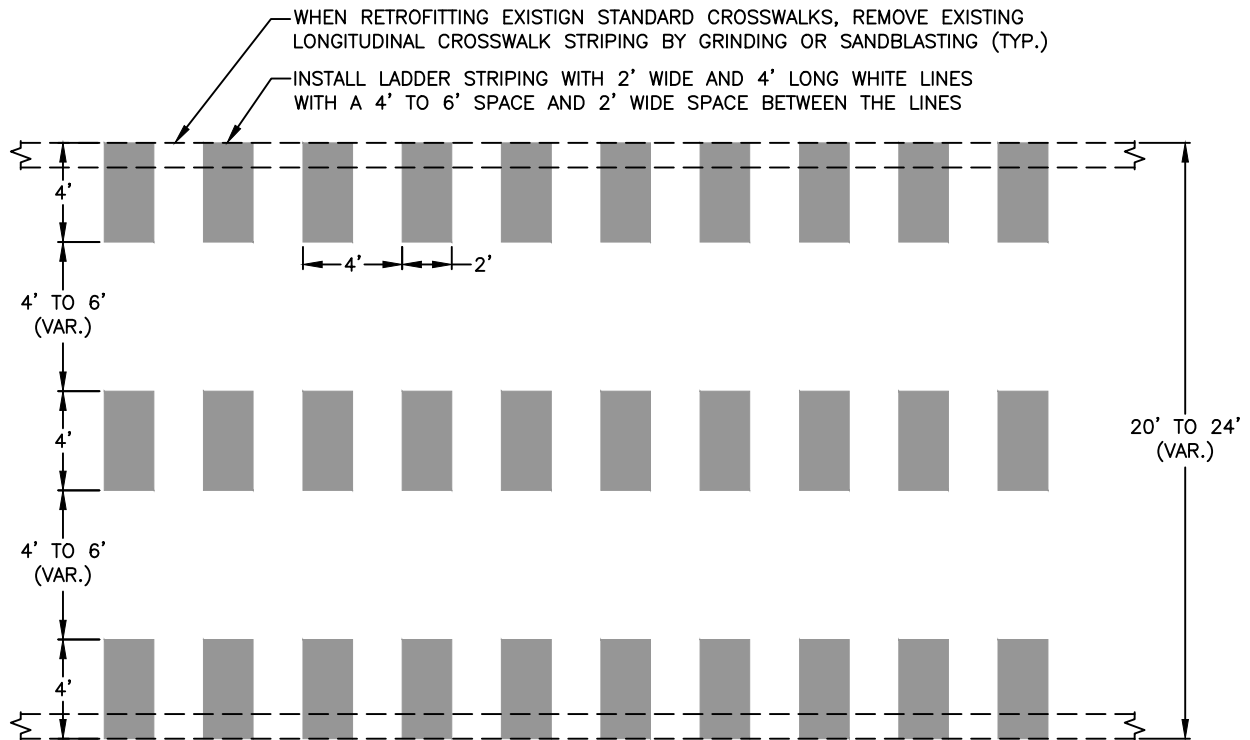
**NOTES:**

1. REFERENCE THE CITY OF FRESNO'S "POLICY ON GREEN BIKE LANES" FOR THE APPROPRIATE LOCATIONS AND USE OF THIS STRIPING. THE CITY TRAFFIC ENGINEER MAY ALSO REQUIRE THE INSTALLATION OF THESE FEATURES ON A CASE-BY-CASE BASIS FOR LOCATIONS NOT EXPLICITLY LISTED IN THE POLICY.
2. ALL STRIPING SHALL BE THERMOPLASTIC, PER CITY SPECIFICATIONS. WHERE REQUIRED, THE RIGHT-HAND STRIPE SHALL BE 6" PER DETAIL 39 OR 39A.
3. THIS TREATMENT USES GREEN-BACKED SHARROWS (SHARED LANE MARKINGS) TO DENOTE THE MIXING/CONFLICT ZONE. THE FIRST SHARROW SHALL BE CENTERED ON THE LEFT EDGE OF THE BIKE LANE AND THE SHARROW CLOSEST TO THE INTERSECTION SHALL BE CENTERED ON THE LEFT EDGE OF THE RIGHT TURN LANE (DETAIL 38A) STRIPING. SHARROWS LOCATED BETWEEN THE TWO BIKE LANES SHALL BE PLACED SUCH THAT THEY SHIFT EVENLY TO THE LEFT. SHARROWS MAY PREFORMED THERMOPLASTIC PANELS (TYPE ENNIS-FLINT "PRE-MARK" OR APPROVED EQUAL), OR MMA (PER NOTE 4) WITH STENCILED MMA SHARROW SYMBOL CONFORMING TO CALTRANS "SHARED ROADWAY BICYCLE MARKING" PER STANDARD PLAN A24C.
4. GREEN PAINT SHALL BE 98/2 METHYL METHACRYLATE (MMA) INTERMIXED WITH HARD-WEARING AGGREGATE (MOHS HARDNESS >7). THE FINISHED APPLICATION SHALL BE 90-MILS THICK, COLOR STABLE WITH >60 BPN SLIP RESISTANCE. TYPE ENNIS-FLINT "MMAX", TRANSP "COLOR-SAFE", OR APPROVED EQUAL.
5. ALL REFERENCED STRIPING IS PER CALTRANS STANDARD PLANS: A20A-A20D.

<p><b>GREEN BIKE LANE TRAP-RIGHT CONFLICT ZONE</b></p>	<p>REF. &amp; REV. MAR. 2021 (A.7)</p>	<p>CITY OF FRESNO <b>P-81B</b></p>
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HIGH VISIBILITY CROSSWALK (TYPICAL 12' LAYOUT)



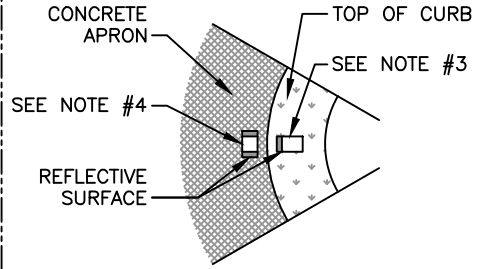
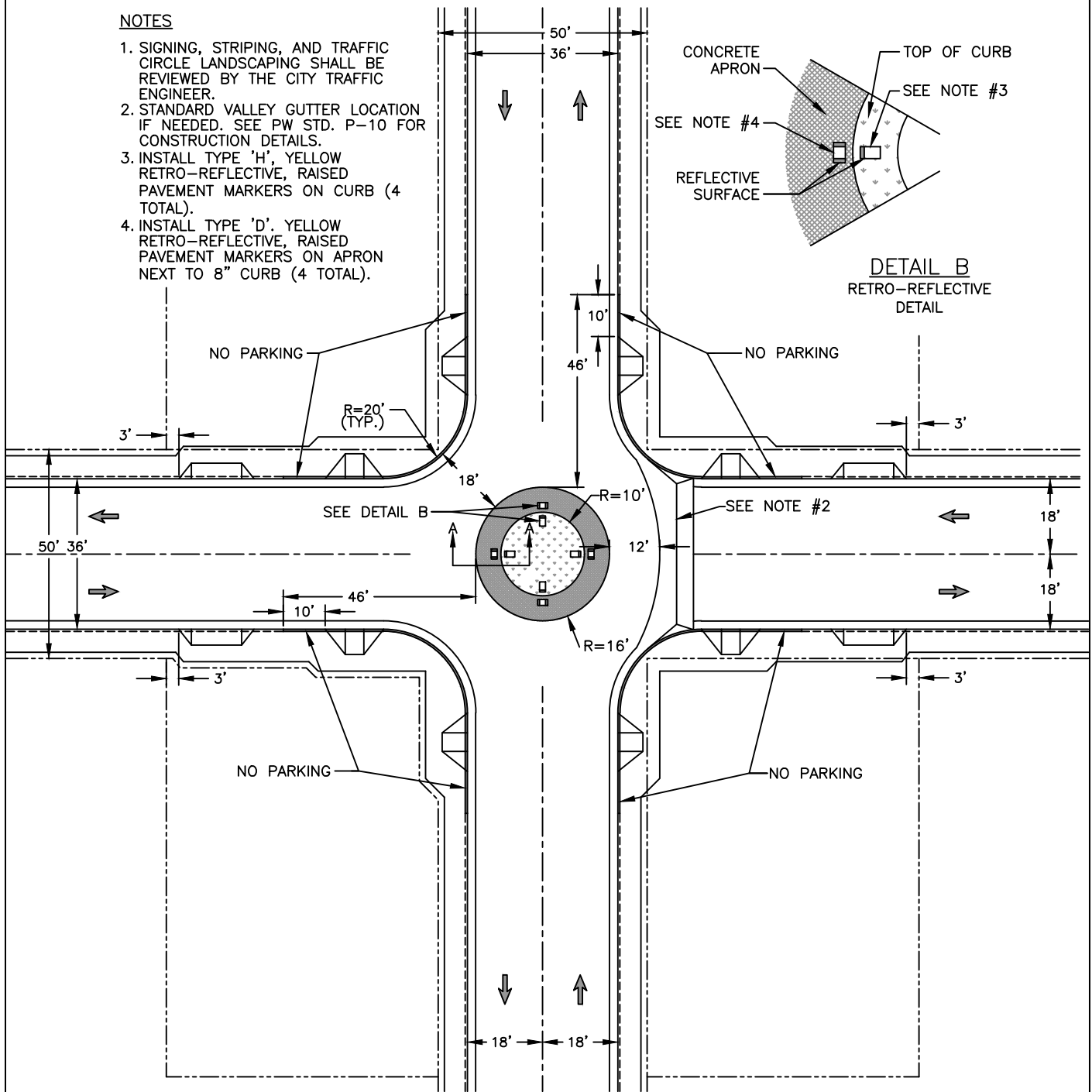
HIGH VISIBILITY CROSSWALK (ENLARGED LAYOUT)

NOTES:

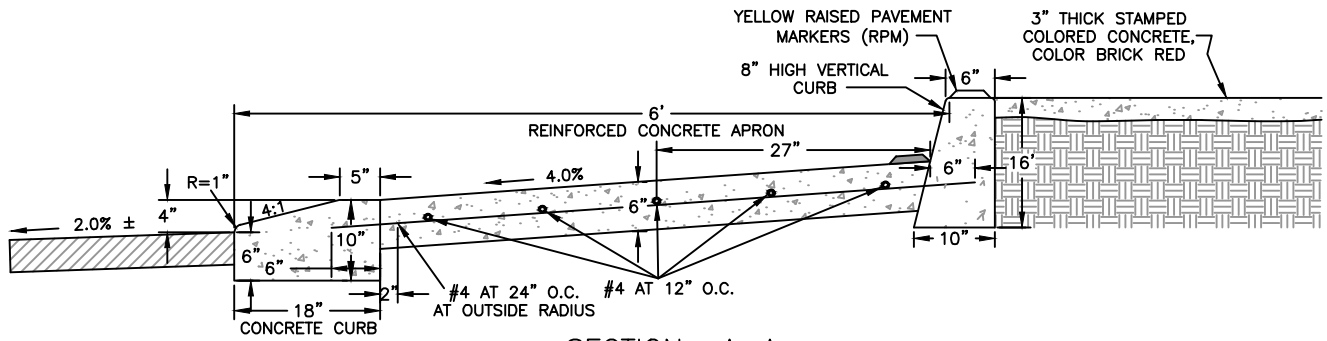
1. INSTALL THREE ROWS OF 2' x 4' LADDER STRIPING WITH VARIABLE SPACING FROM 4' TO 6" ON ENLARGED CROSSWALKS
2. THE VARIABLE SPACING IS TO BE SYMMETRICAL

**NOTES**

1. SIGNING, STRIPING, AND TRAFFIC CIRCLE LANDSCAPING SHALL BE REVIEWED BY THE CITY TRAFFIC ENGINEER.
2. STANDARD VALLEY GUTTER LOCATION IF NEEDED. SEE PW STD. P-10 FOR CONSTRUCTION DETAILS.
3. INSTALL TYPE 'H', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON CURB (4 TOTAL).
4. INSTALL TYPE 'D', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON APRON NEXT TO 8" CURB (4 TOTAL).



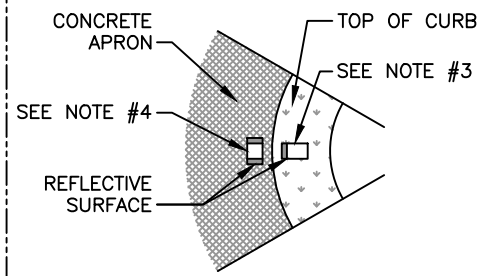
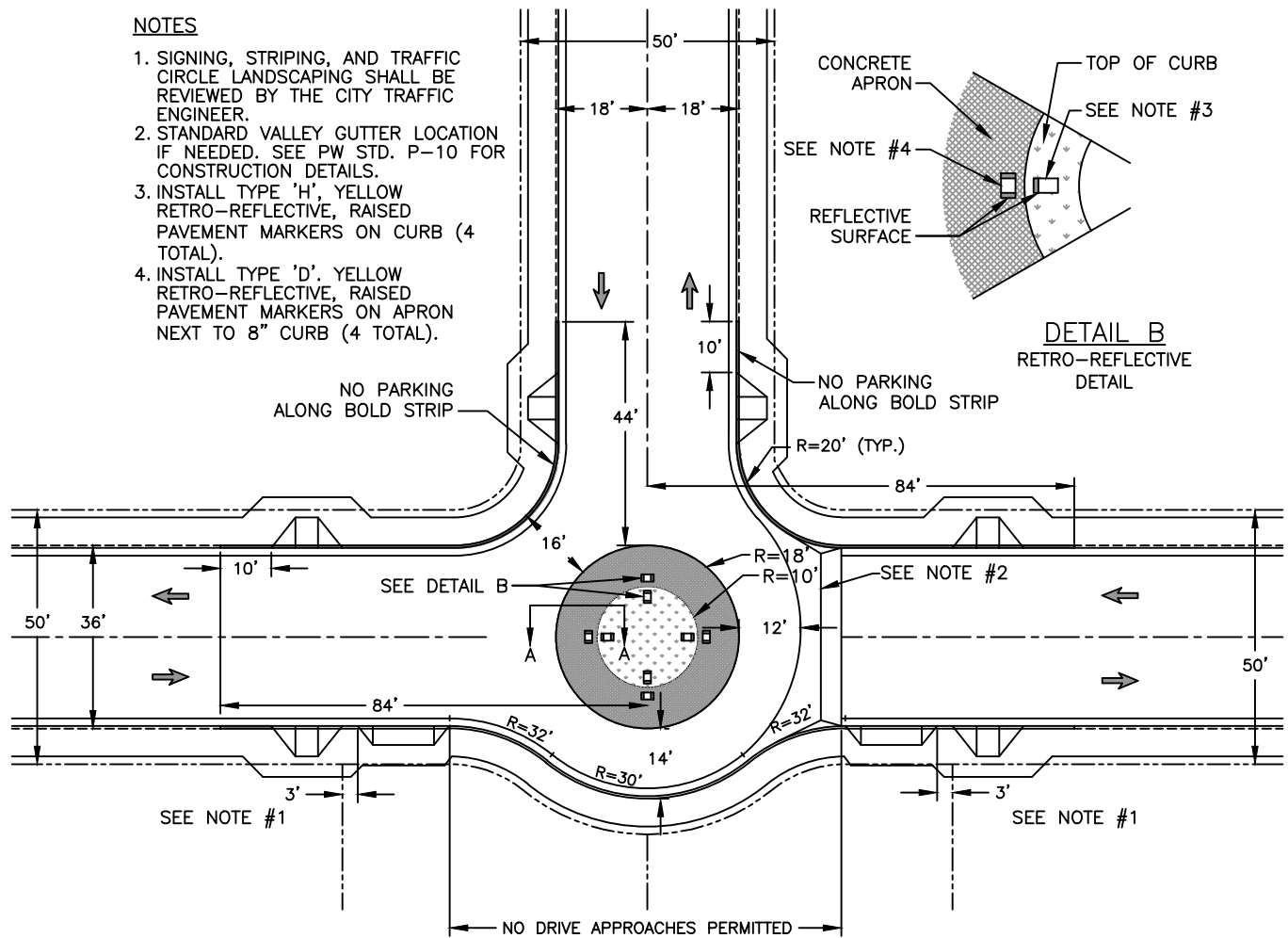
**DETAIL B**  
RETRO-REFLECTIVE  
DETAIL



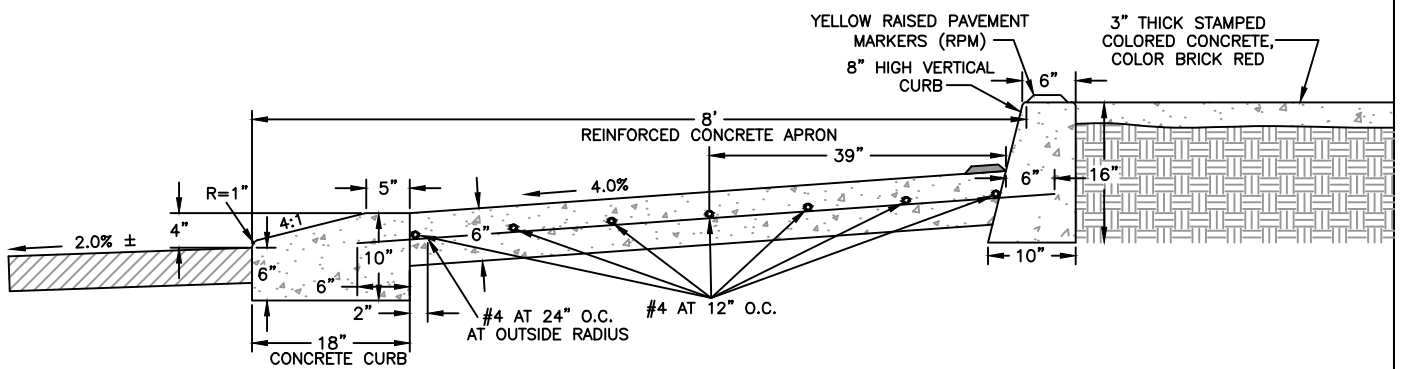
**SECTION A-A**  
CIRCLE CURB DETAIL

**NOTES**

1. SIGNING, STRIPING, AND TRAFFIC CIRCLE LANDSCAPING SHALL BE REVIEWED BY THE CITY TRAFFIC ENGINEER.
2. STANDARD VALLEY GUTTER LOCATION IF NEEDED. SEE PW STD. P-10 FOR CONSTRUCTION DETAILS.
3. INSTALL TYPE 'H', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON CURB (4 TOTAL).
4. INSTALL TYPE 'D', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON APRON NEXT TO 8" CURB (4 TOTAL).



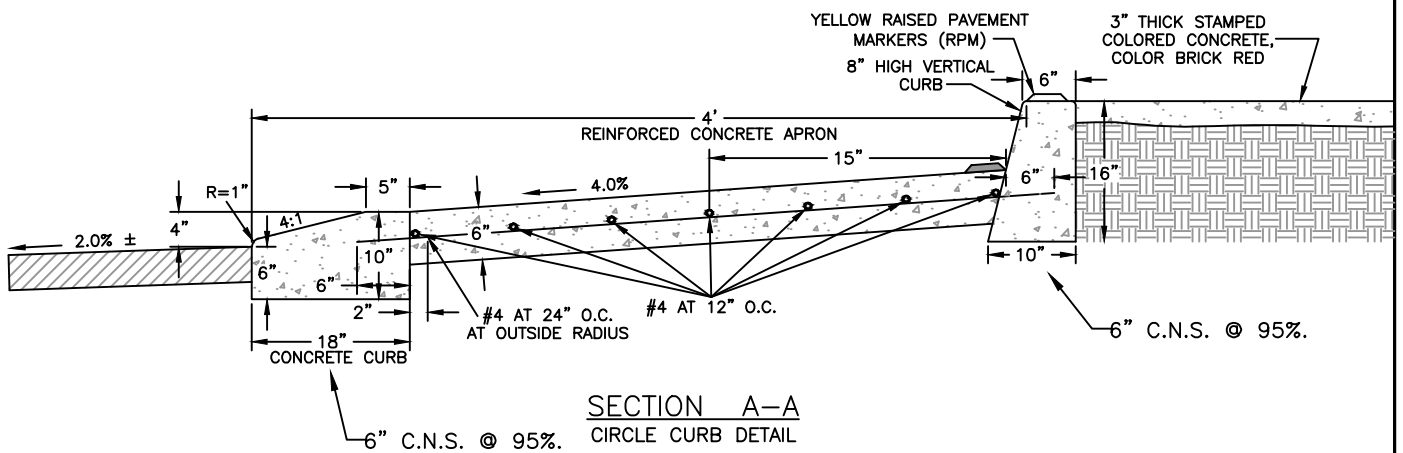
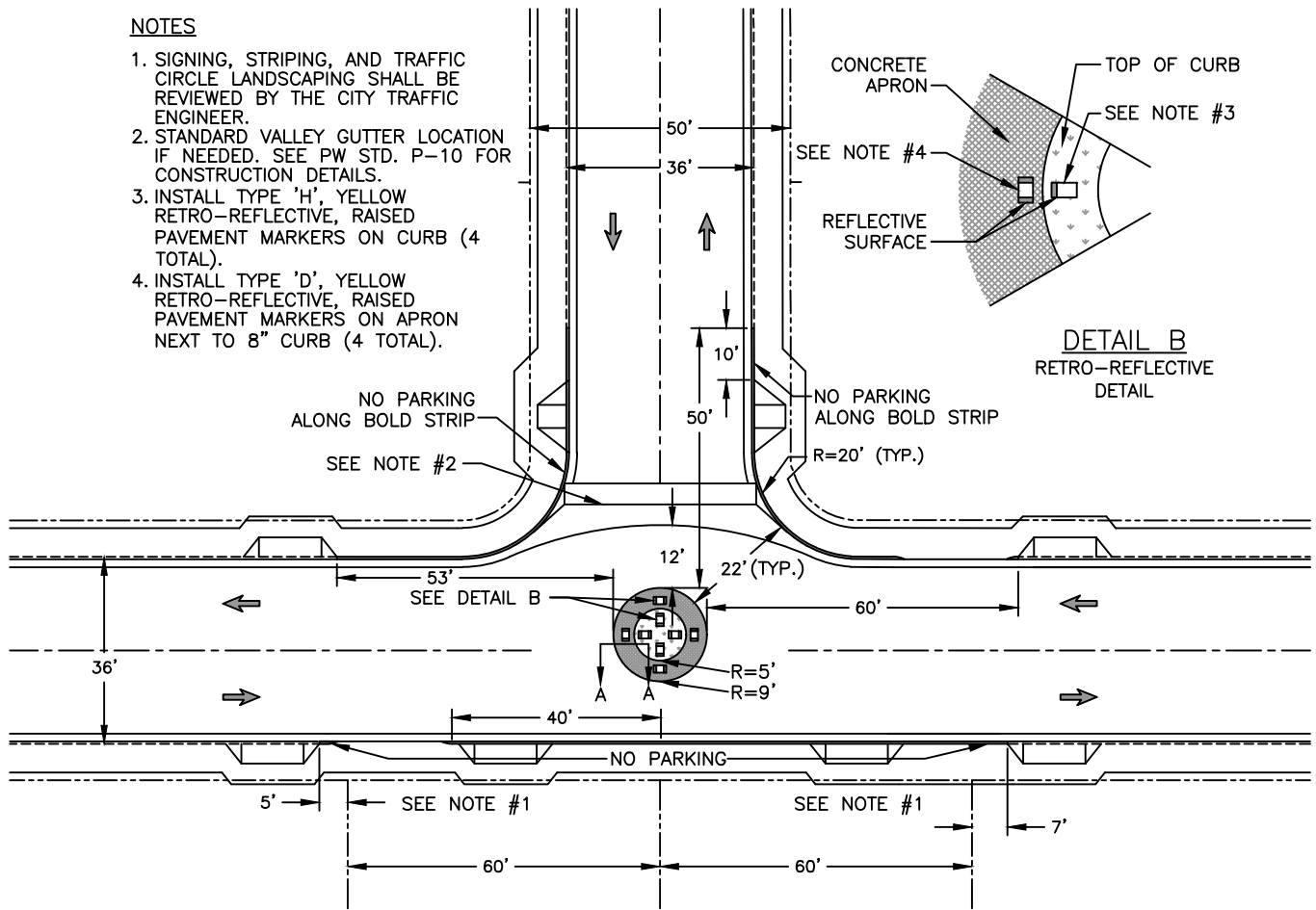
**DETAIL B**  
RETRO-REFLECTIVE  
DETAIL

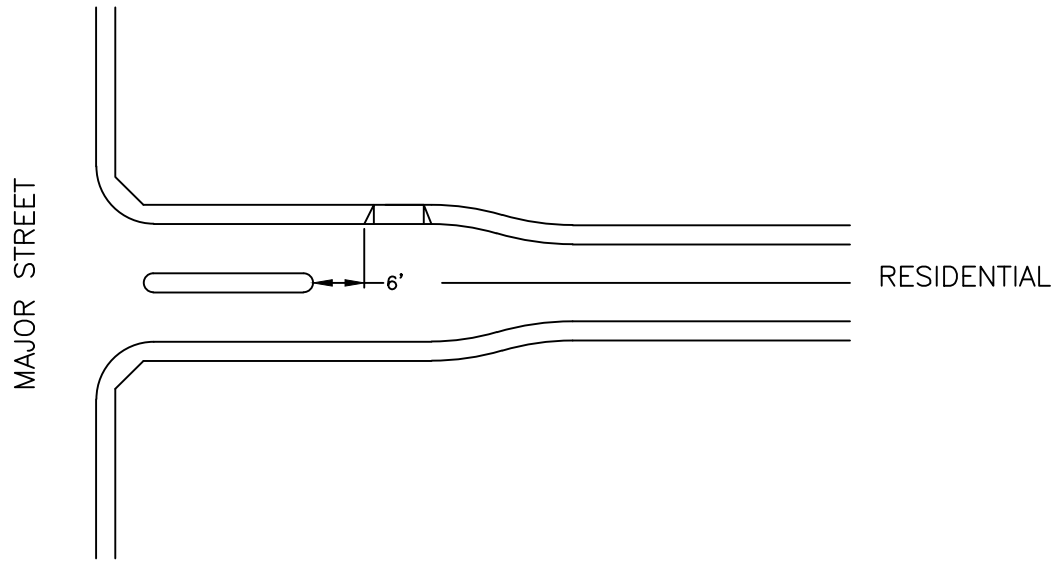
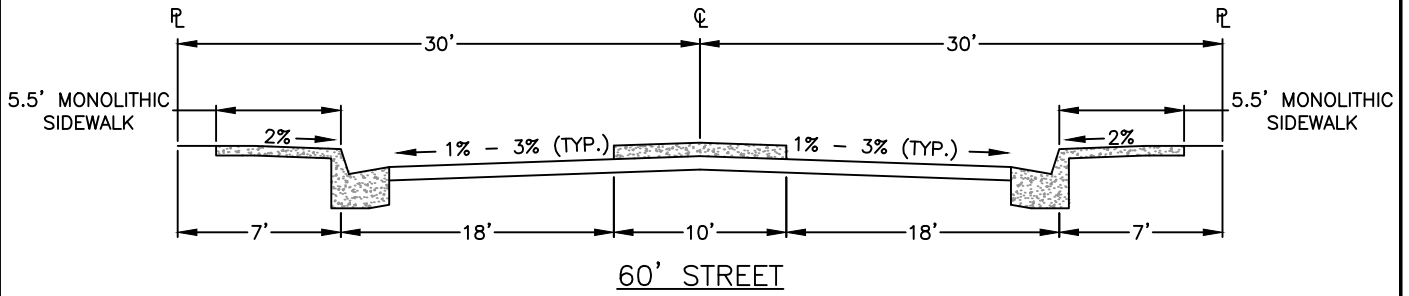


**SECTION A-A**  
CIRCLE CURB DETAIL

**NOTES**

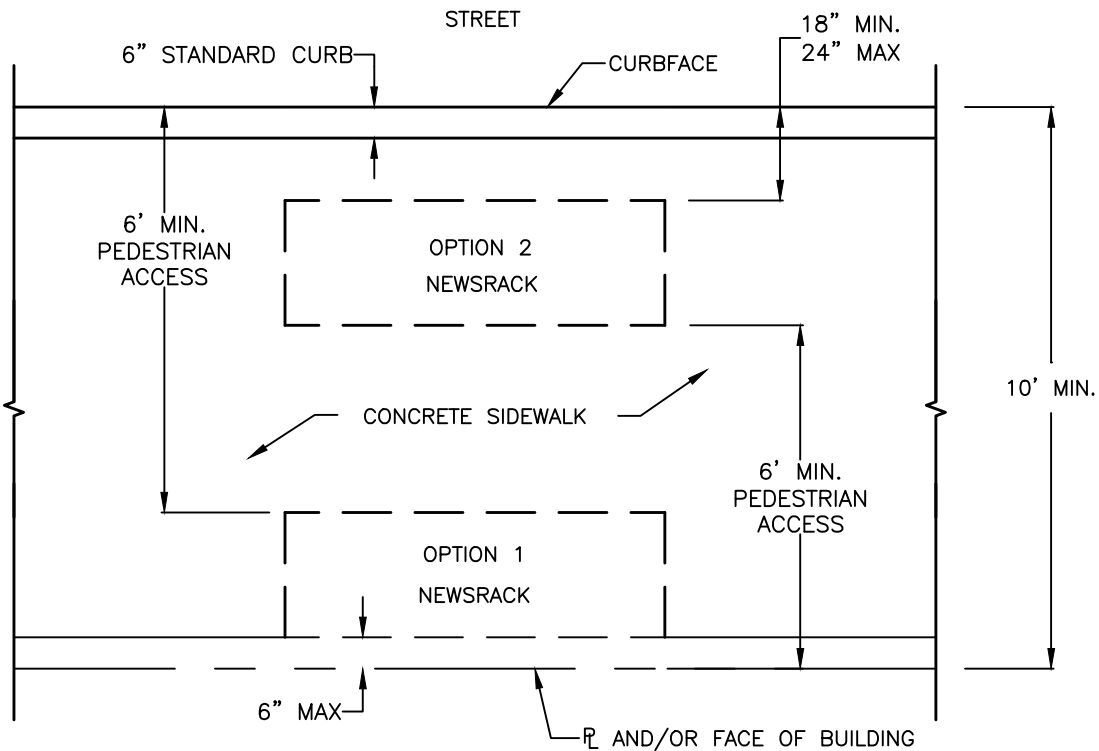
1. SIGNING, STRIPING, AND TRAFFIC CIRCLE LANDSCAPING SHALL BE REVIEWED BY THE CITY TRAFFIC ENGINEER.
2. STANDARD VALLEY GUTTER LOCATION IF NEEDED. SEE PW STD. P-10 FOR CONSTRUCTION DETAILS.
3. INSTALL TYPE 'H', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON CURB (4 TOTAL).
4. INSTALL TYPE 'D', YELLOW RETRO-REFLECTIVE, RAISED PAVEMENT MARKERS ON APRON NEXT TO 8" CURB (4 TOTAL).



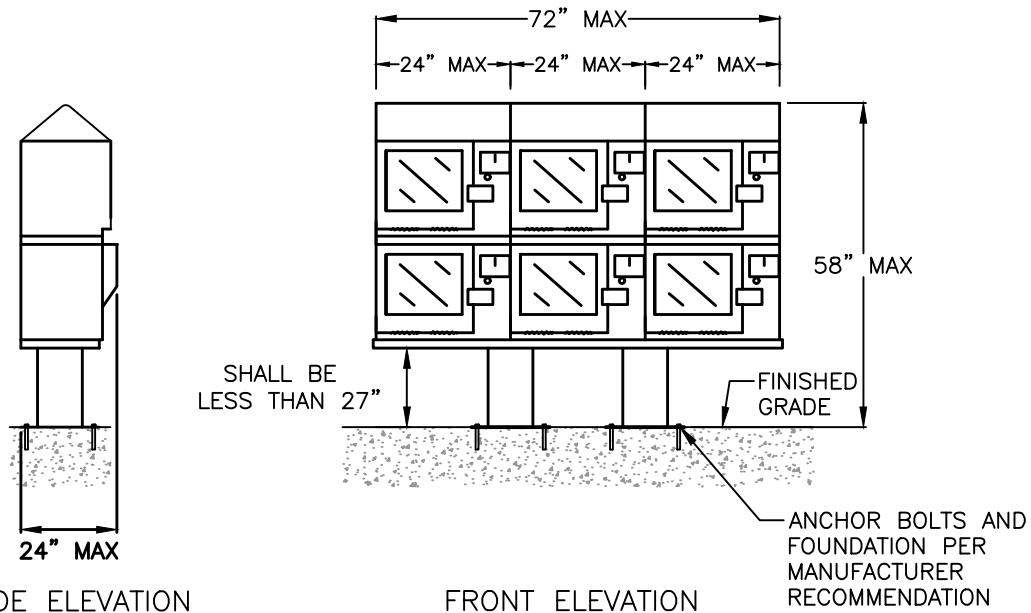


**NOTES:**

1. GREATER RIGHT-OF-WAY MAY BE APPROVED. IN SUCH CASES, 5' SIDEWALK SHALL BE INSTALLED 6 INCHES FROM PROPERTY LINE (EXCEPTION MAY BE APPROVED FOR A MEANDERING SIDEWALK).
2. USE ALL CONTACT POINTS WITH MAJOR STREETS, EXCEPT WHERE STANDARD CUL-DE-SACS CONTACT MAJOR STREETS, A 50' RIGHT-OF-WAY STANDARD IS ACCEPTABLE. THE MEDIAN ISLAND SHALL EXTEND FROM THE MAJOR STREET UNTILL THE CLOSEST SIDE OF THE OF THE FIRST DRIVEWAY. MAY BE MINIMUM STANDARD WHEN NEEDED FOR TRAFFIC SAFETY. GENERALLY REQUIRED FOR MULTIPLE-FAMILY DEVELOPMENT.
3. A 20' MINIMUM SETBACK FROM BACK OF SIDEWALK TO GARAGE WHEN THE GARAGE DOOR FRONTS ON THE STREET SHALL BE REQUIRED. THE ACTUAL SETBACK WILL DEPEND ON THE DRIVEWAY APPROACH REQUIRED BY P-1. THE SETBACK SHALL NOT BE LESS THAN REQUIRED BY THE ZONING ORDINANCE.
4. ON CORNER LOTS, THE PLANTING AND PUBLIC UTILITY EASEMENT ALONG THE SIDE YARD MAY BE REDUCED TO 8'.



PLAN VIEW



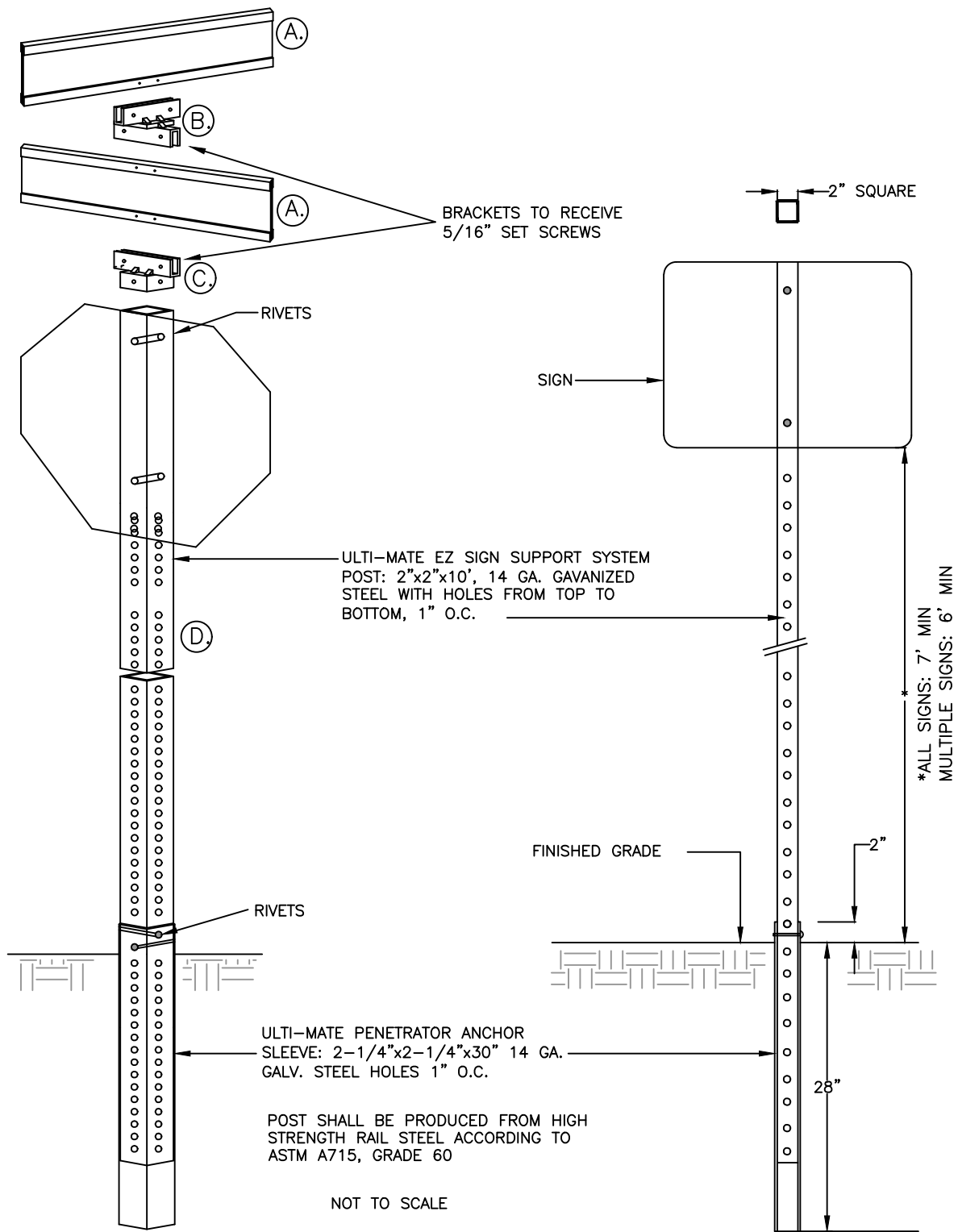
SIDE ELEVATION

FRONT ELEVATION

NOTES:

1. REQUIREMENTS FOR NEWSRACKS IN SPECIAL DISTRICTS CAN BE FOUND IN CHAPTER 13 ARTICLE 7 OF THE FRESNO MUNICIPAL CODE.
2. NEWSRACK DIMENSIONS SHALL BE APPROVED BY CITY ENGINEER.
3. NEWSRACK WINDOWS SHALL OPEN TOWARD CENTER OF SIDEWALK.
4. CORNERS SHALL HAVE A MINIMUM RADIUS OF 1/8" PER PROWAG 11B-307.3.1
5. MODULAR NEWSRACK SHALL BE MODEL 100 BY MECHANISM EXCHANGE & REPAIR INC., OR APPROVED EQUAL.
6. NEWSRACK SHALL BE BLACK UNLESS OTHERWISE APPROVED BY CITY ENGINEER.



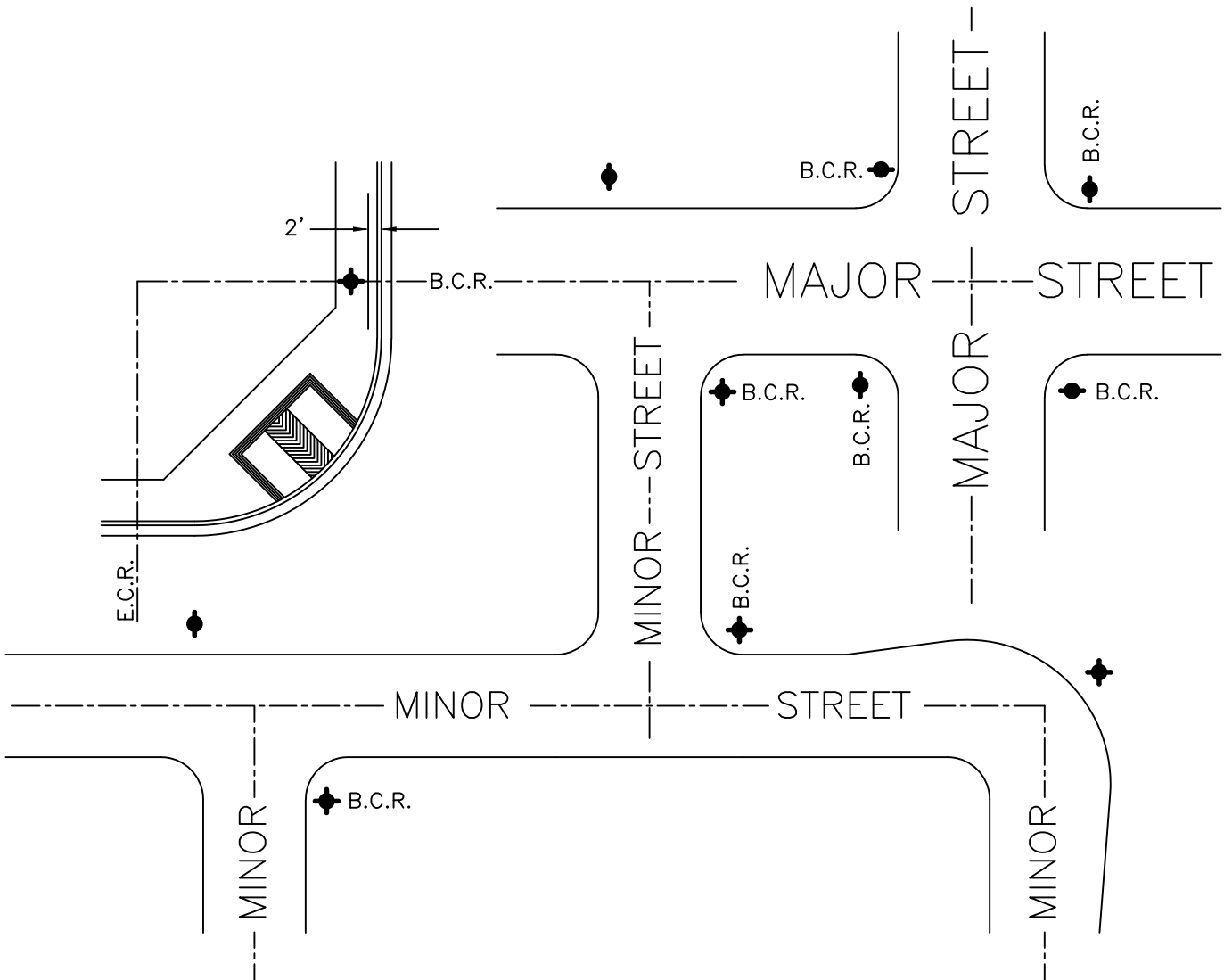


- (A.) 9"x 30" OR 9"x 36" x 0.100 GAUGE FLAT NON-EXTRUDED SIGN BLADE MADE OF ALUMINUM ALLOY. THEY ARE TO BE SINGLE BLADE DOUBLE FACED FINISH WITH WHITE LETTERS AND BORDER ON A GREEN BACKGROUND USING AVERY DENNISON T6500 HIGH INTENSITY GRADE REFLECTIVE SHEETING. SIGNS TO BE COVERED WITH AVERY DENNISON OL 1000 PREMIUM ANTI-GRAFFITI FILM.
- (B.) SIGN-TO-SIGN BRACKET, 850F-90 CROSS PIECE THAT WILL ACCOMODATE THE 0.100 GAUGE SIGN BLADE. BRACKETS TO RECEIVE 5/16" SET SCREWS.
- (C.) POST-TO-SIGN BRACKET, 850F- 2"x 2" SQUARE SIGN CAP SLOT TO BE 3-3/4" LONG TO ACCOMODATE THE 0.100 GAUGE SIGN BLADE. BRACKETS TO RECEIVE 5/16" SET SCREWS.
- (D.) SIGN POST SYSTEM TO BE THE ULTI-MATE EZ INSTALLATION SIGN POST SYSTEM. USING THE ULTI-MATE 2"x 2"x 10' 14 GA. GALVANIZED STEEL POSTS WITH HOLES DRILLED FROM TOP TO BOTTOM, 1" ON CENTER. ANCHOR THE POLE TO THE GROUND USING A 2-1/4"x 2-1/4"x 24" GALVANIZED STEEL ULTI-MATE PENETRATOR ANCHOR. 5/16" DRIVE RIVETS ARE TO BE USED TO ATTACH THE SIGN POST TO THE ANCHOR.

SIGN POST DETAIL

REF. & REV.  
AUG. 2010

CITY OF FRESNO  
P-88



"T" INTERSECTION

"+" INTERSECTION

"L" INTERSECTION

LEGEND:

- ◆ DOUBLE SIGNS WITH OR WITHOUT R-1
- ◈ SINGLE SIGN WITH OR WITHOUT R-1

NOTES:

LOCATION OF STREET NAME SIGNS ARE SHOWN IN THEIR APPROXIMATE LOCATIONS. ALTERNATE LOCATIONS TO BE APPROVED BY THE ENGINEER. TYPICAL LOCATIONS: ON B.C.R OF N.E. & S.W. CORNER OF INTERSECTIONS. FOR UNNAMED PRIVATE STREETS, THE WORDS "PRIVATE STREET" SHALL BE 4 1/2" HIGH AND CENTERED WITHIN THE SIGN.

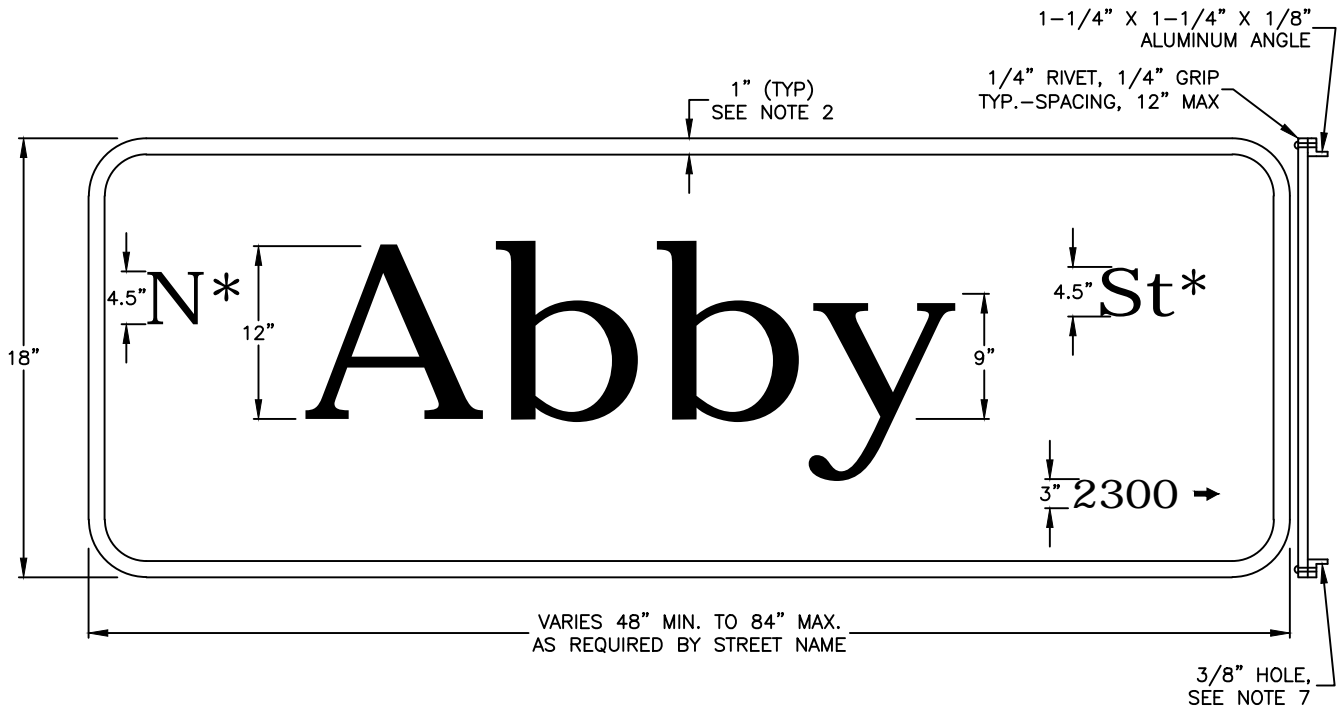
MAJOR STREET = ARTERIALS & COLLECTORS

MINOR STREET = LOCALS

STREET NAME  
SIGN PLACEMENT

REF. & REV.  
DEC. 2004

CITY OF FRESNO  
P-89



NOTES:

1. 0.080 ALUMINUM PLATE
2. 1" WHITE BORDER
3. 12" SERIES 'E' MODIFIED UPPER CASE LETTER - 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS A NARROWER SERIES IS PERMITTED.
4. 9" SERIES 'E' MODIFIED LOWER CASE LETTERS, - 2" STROKE MINIMUM. ON LONGER STREET NAME SIGNS, A NARROWER SERIES IS PERMITTED.
5. ALL LETTERS, NUMBERS, BORDERS AND SHEETING SHALL BE MADE OF 3M-3930HIP TYPE III & IV SERIES REFLECTIVE SHEETING AND BE COVERED WITH 1160A PREMIUM OVERLAY ANTI-GRAFFITI FILM OR AVERY DENNISON T6500 SERIES REFLECTIVE SHEETING AND SHALL BE COVERED WITH AVERY DENNISON OL1000 ANTI-GRAFFITI OVERLAY FILM.
6. ENTIRE SIGN SHALL BE SILK SCREENED - DIE CUT LETTERS AND NUMBERS WILL NOT BE ALLOWED.
7. DRILL TWO 3/8" HOLES @ 4-7/8" O.C., IN THE CENTER OF THE ANGLES STIFFENERS RIVETED TO THE BACK OF THE SIGN, FOR ZUMAR BRACKET.

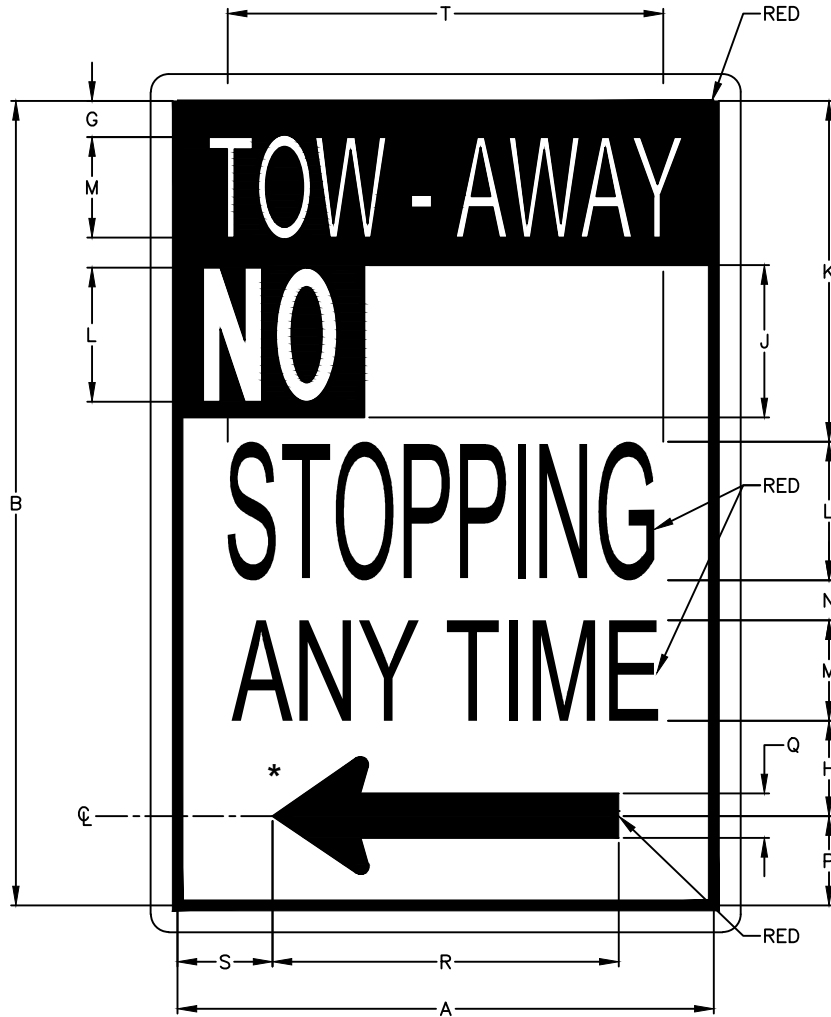
\* STREET DIRECTION AND NAME SUFFIX (EXACT DESIGNATION SUCH AS STREET, AVENUE, BOULEVARD, LANE, CIRCLE, COURT, DRIVE, PARKWAY, PLACE, ROAD, TERRACE, TRAIL, NORTH, SOUTH, EAST, WEST ETC.) SHALL MATCH THE DEVELOPMENT DEPARTMENT'S RECORDS.

OVERSIZED STREET NAME SIGN

REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO

P-90



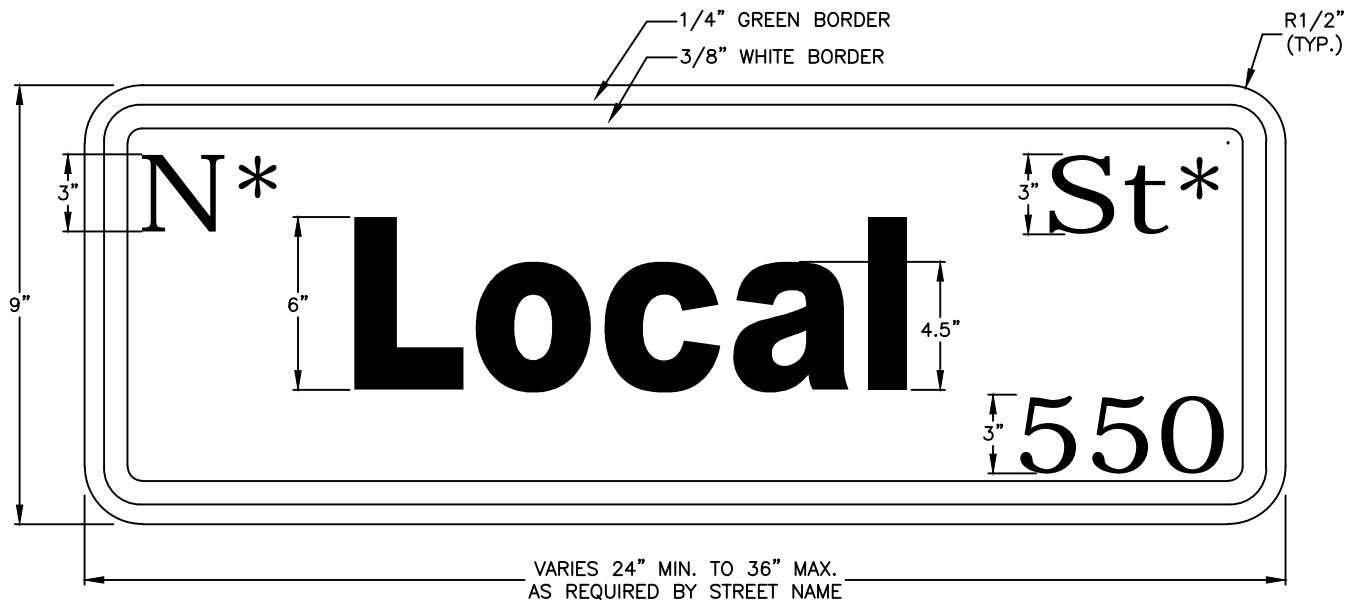
DIMENSIONS (INCHES)

SIGN	A	B	C	D	E	F	G	H	J	K	L	M	N	P	Q	R	S	T
MINIMUM	12	18	1/4	1/4	7/8	3 1/2	4/5	2 5/8	2 1/4	7 5/8	3	2 1/4	2	2	3/4	7 3/4	2 1/8	9 1/2

NOTE:

ALL LETTERS, NUMBERS, BORDERS AND SHEETING SHALL BE MADE OF 3M-3930HIP TYPE III & IV SERIES REFLECTIVE SHEETING AND BE COVERED WITH 1160A PREMIUM OVERLAY ANTI-GRAFFITI FILM OR AVERY DENNISON T6500 SERIES REFLECTIVE SHEETING AND SHALL BE COVERED WITH AVERY DENNISON OL1000 ANTI-GRAFFITI OVERLAY FILM.

\* INDICATES DIRECTION OF STOPPING RESTRICTION CAN BE LEFT (←), RIGHT (→) OR DOUBLE (↔)



**NOTES:**

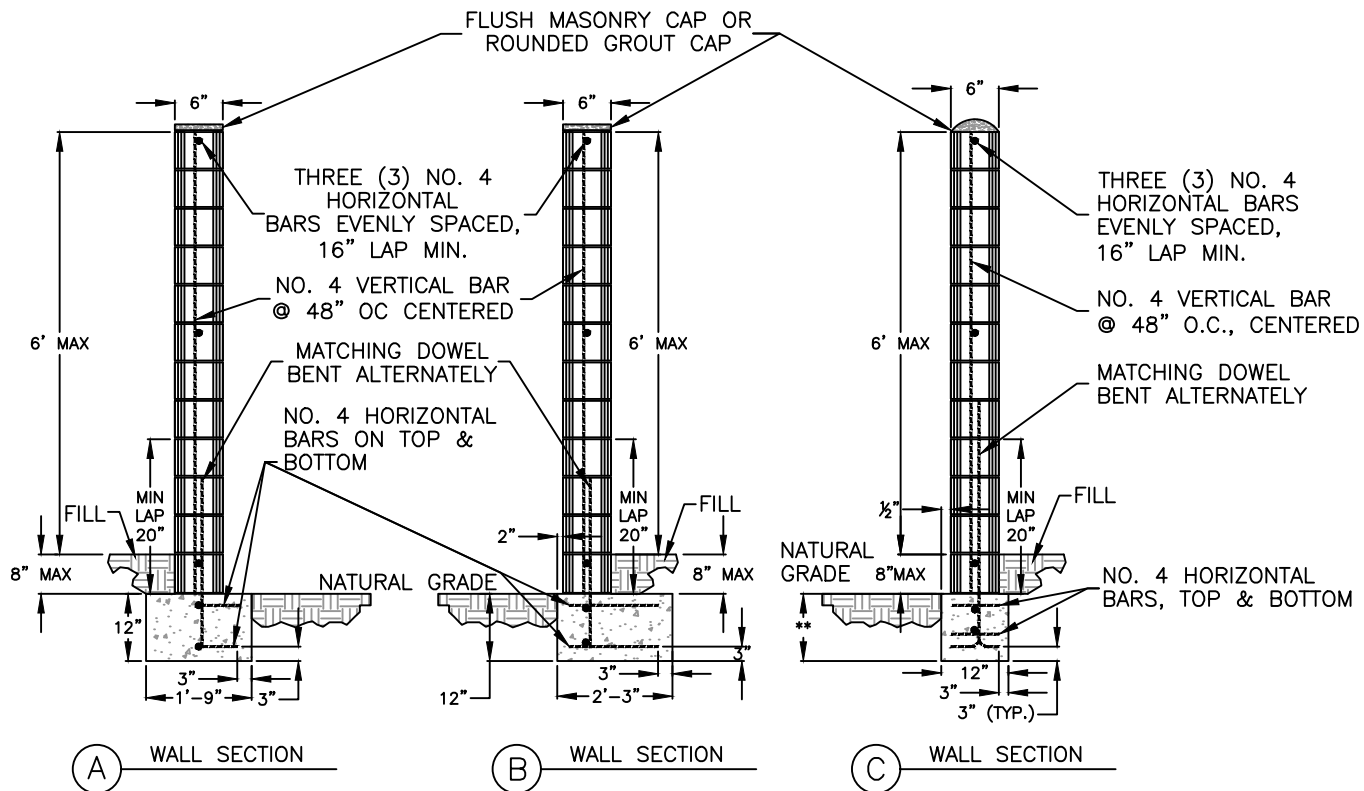
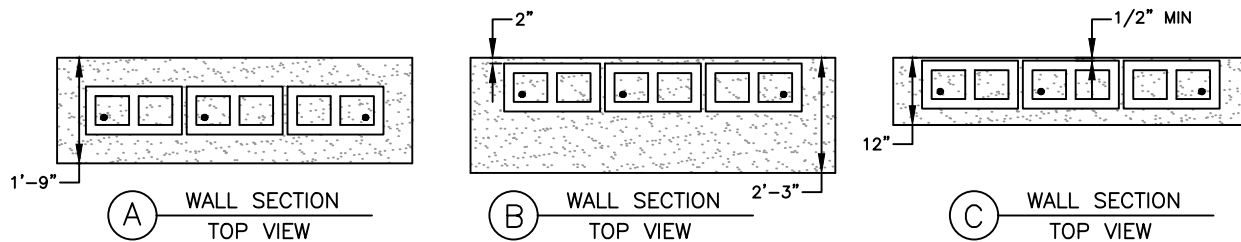
1. ALUMINUM SIGNS SHALL BE SINGLE BLADE DOUBLE SIDED AND SHALL BE MADE OF 0.100 THICKNESS ALUMINUM WITH AN ALLOY HARDNESS OF 5052-H38. THEY SHALL BE 24"x 9", 30"x 9" OR 36"x 9" TO ACCOMMODATE THE STREET NAME.
2. COLORS SHALL BE WHITE LETTERS ON A GREEN BACKGROUND UNLESS OTHERWISE SPECIFIED.
3. LETTERS ON STREET NAME SHALL BE SERIES B, 6" UPPER CASE AND 4.5" LOWER CASE. THE SECONDARY DIRECTIONAL INDICATOR, STREET TYPE (AVE., BLVD. ETC) AND BLOCK NUMBERS SHALL BE 3" UPPER CASE. SIGN SHALL HAVE 1/2" RADIUS CORNERS WITH A 1/4" OUTSIDE GREEN BORDER AND A 3/8" INSIDE WHITE BORDER.
4. ALL LETTERS, NUMBERS, BORDERS AND SHEETING SHALL BE MADE OF 3M-3930HIP TYPE III & IV SERIES REFLECTIVE SHEETING AND BE COVERED WITH 1160A PREMIUM OVERLAY ANTI-GRAFFITI FILM OR AVERY DENNISON T6500 SERIES REFLECTIVE SHEETING AND SHALL BE COVERED WITH AVERY DENNISON OL1000 ANTI-GRAFFITI OVERLAY FILM.
5. SIGNS MAY BE FABRICATED BY MEANS OF SILK SCREENING USING GRAFFITI INKS, BY THE DIE CUT LETTERS OR BY USING AVERY DENNISON TRANSLUCENT OR TRANSPARENT OVERLAY SHEETING ON TOP OF THE T6500 REFLECTIVE SIGN SHEETING.

\* STREET DIRECTION AND NAME SUFFIX (SUCH AS STREET, AVENUE, BOULEVARD, LANE, CIRCLE, COURT, DRIVE, PARKWAY, PLACE, ROAD, TERRACE, TRAIL, NORTH, SOUTH, EAST, WEST ETC.) SHALL MATCH THE DEVELOPMENT DEPARTMENT'S RECORDS.

LOCAL STREET NAME SIGN

REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
P-92



\*\* 3'-2" MIN. AT LANDSCAPED  
AREA OR 2'-2" MIN. AT AREA  
W/PAVEMENT EACH SIDE

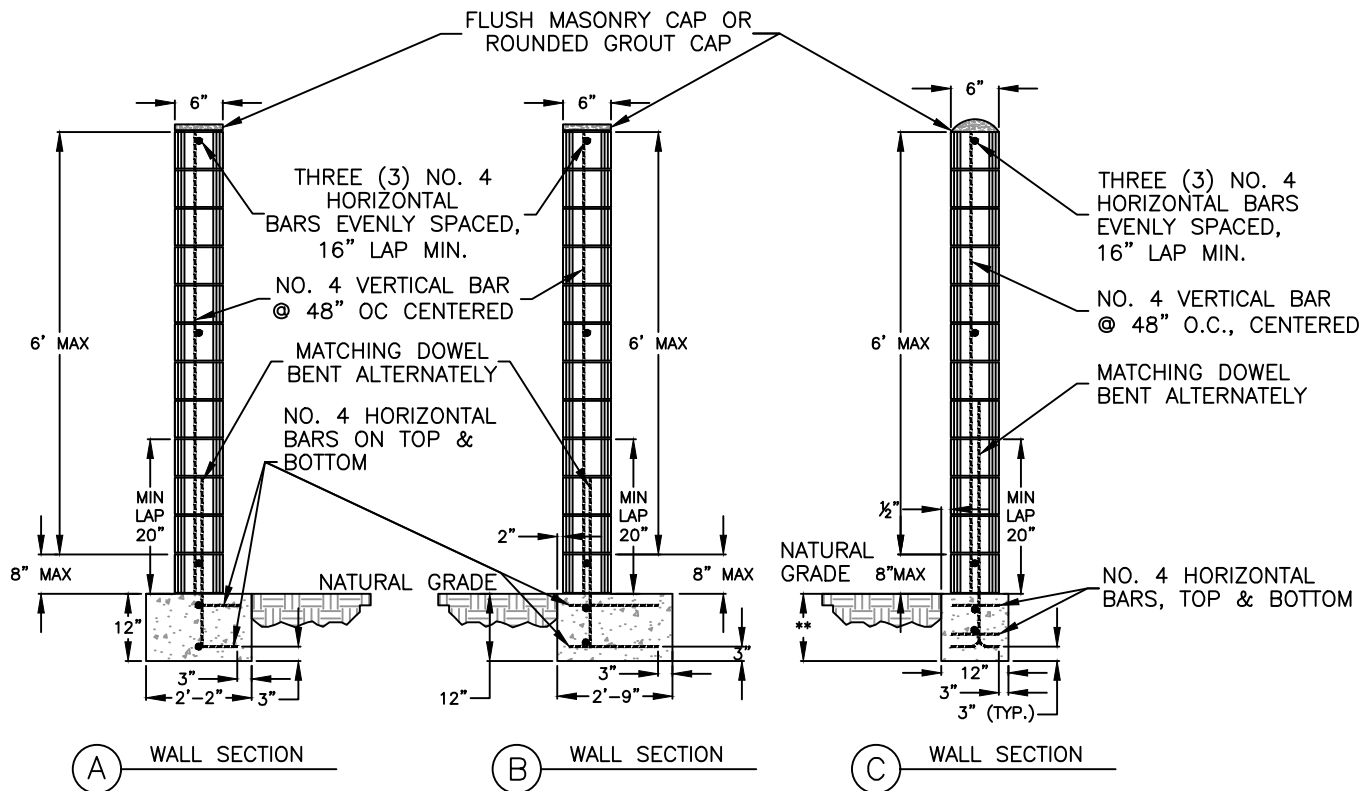
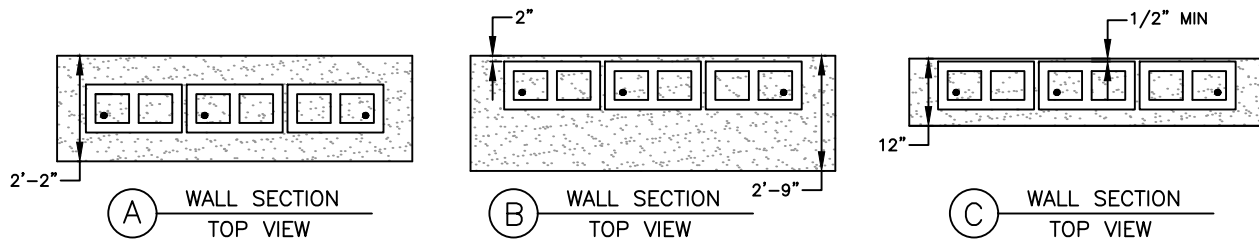
**GENERAL NOTES AND SPECIFICATIONS:**

1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS CONTAINING REINFORCING STEEL.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE.
4. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
5. ALL MASONRY UNITS SHALL BE MINIMUM F'm = 1,500 PSI.
6. REINFORCING BARS SHALL BE DEFORMED BARS MINIMUM GRADE 40.
7. FOOTING CONCRETE SHALL BE A MINIMUM 2,500 PSI AT 28 DAYS.
8. ALL CELLS SHALL BE GROUTED SOLID ON CITY OWNED WALLS.
9. MORTAR SHALL BE TYPE-S (MINIMUM 2,000 PSI AT 28 DAYS):
  - ONE (1) PART CEMENT, TYPE-1
  - ONE-HALF (1/2) PART LIME PUTTY OR HYDRATED LIME
  - FOUR AND ONE-HALF (4 1/2) PARTS SAND (MAXIMUM)
10. GROUT SHALL BE A MINIMUM 2,000 PSI AT 28 DAYS:
  - ONE (1) PART CEMENT
  - THREE (3) PARTS SAND
  - TWO (2) PARTS PEA GRAVEL.
11. PLEASE CONTACT THE DEVELOPMENT DEPARTMENT BUILDING DIVISION REGARDING THE APPLICABILITY AND USE OF THIS STANDARD AND ISSUANCE OF REQUIRED PERMITS.

**6" CONCRETE MASONRY WALL  
WITH OR WITHOUT 8" MAX. SOIL RETENTION**

REF. & REV.  
SEP. 2011  
MAR. 2021 (A.7)

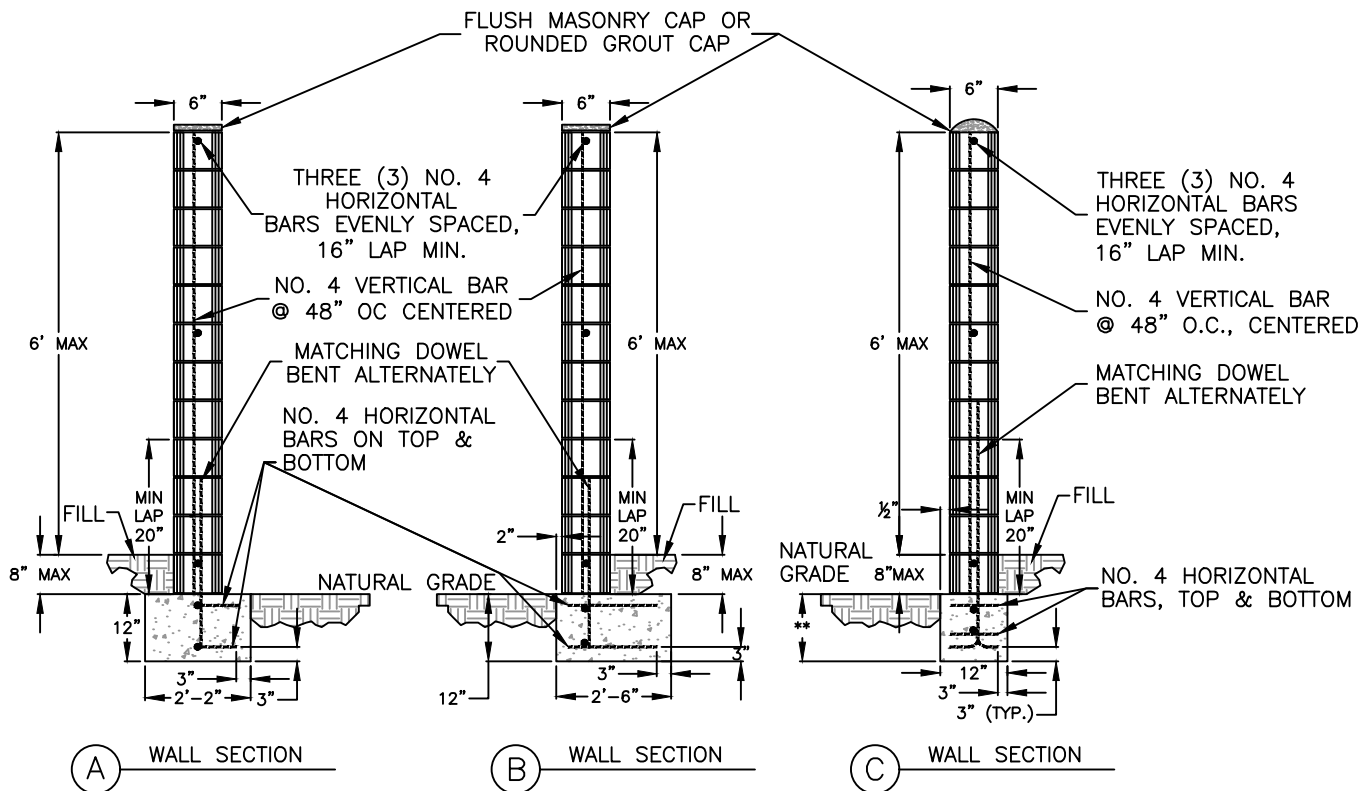
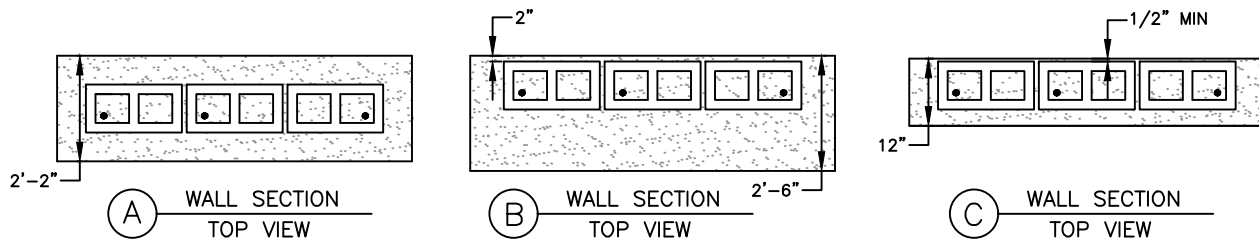
CITY OF FRESNO  
**P-93**



**GENERAL NOTES AND SPECIFICATIONS:**

1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS CONTAINING REINFORCING STEEL.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE.
4. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
5. ALL MASONRY UNITS SHALL BE MINIMUM  $F'm = 1,500$  PSI.
6. REINFORCING BARS SHALL BE DEFORMED BARS MINIMUM GRADE 40.
7. FOOTING CONCRETE SHALL BE A MINIMUM 2,500 PSI AT 28 DAYS.
8. ALL CELLS SHALL BE GROUTED SOLID ON CITY OWNED WALLS.
9. MORTAR SHALL BE TYPE-S (MINIMUM 2,000 PSI AT 28 DAYS):
  - ONE (1) PART CEMENT, TYPE-1
  - ONE-HALF (1/2) PART LIME PUTTY OR HYDRATED LIME
  - FOUR AND ONE-HALF (4 1/2) PARTS SAND (MAXIMUM)
10. GROUT SHALL BE A MINIMUM 2,000 PSI AT 28 DAYS:
  - ONE (1) PART CEMENT
  - THREE (3) PARTS SAND
  - TWO (2) PARTS PEA GRAVEL.
11. PLEASE CONTACT THE DEVELOPMENT DEPARTMENT BUILDING DIVISION REGARDING THE APPLICABILITY AND USE OF THIS STANDARD AND ISSUANCE OF REQUIRED PERMITS.

\*\* 3'-2" MIN. AT LANDSCAPED AREA OR 2'-2" MIN. AT AREA W/PAVEMENT EACH SIDE



**GENERAL NOTES AND SPECIFICATIONS:**

1. ALL CONSTRUCTION SHALL COMPLY WITH THE FRESNO MUNICIPAL CODE.
2. GROUT ALL CELLS CONTAINING REINFORCING STEEL.
3. ALL MASONRY UNITS SHALL COMPLY WITH THE LATEST ADOPTED CALIFORNIA BUILDING CODE.
4. DEPTH OF FOOTINGS ARE INTO NATURAL UNDISTURBED SOIL OR TESTED AND APPROVED COMPACTED FILL.
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11. PLEASE CONTACT THE DEVELOPMENT DEPARTMENT BUILDING DIVISION REGARDING THE APPLICABILITY AND USE OF THIS STANDARD AND ISSUANCE OF REQUIRED PERMITS.

\*\* 3'-2" MIN. AT LANDSCAPED AREA OR 2'-2" MIN. AT AREA W/PAVEMENT EACH SIDE

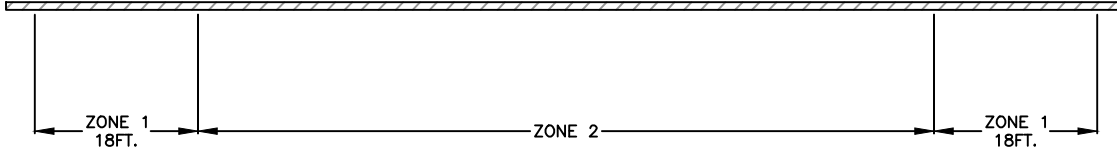


STANDARD DETAILS FOR 6'-0" CONCRETE MASONRY FENCE:  
P-93, P-94, P-95

EXPOSURE B: URBAN AND SUBURBAN AREAS, WOODED AREAS OR OTHER  
TERRAIN WITH NUMEROUS CLOSELY SPACED OBSTRUCTIONS HAVING THE SIZE OF  
SINGLE FAMILY DWELLING OR LARGER WITHIN 1500FT.

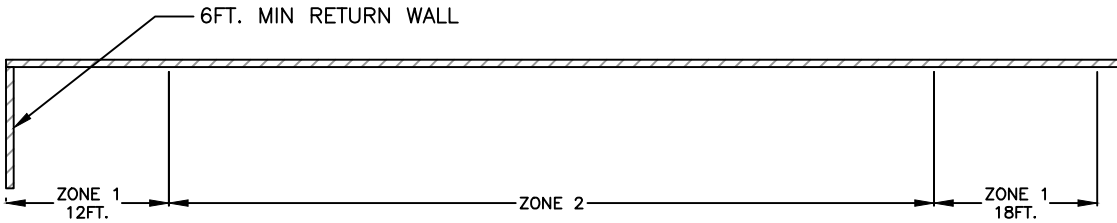
USE WALL TYPE P-93 FOR FULL LENGTH OF WALL

EXPOSURE C: OPEN TERRAIN WITHIN 1500FT.



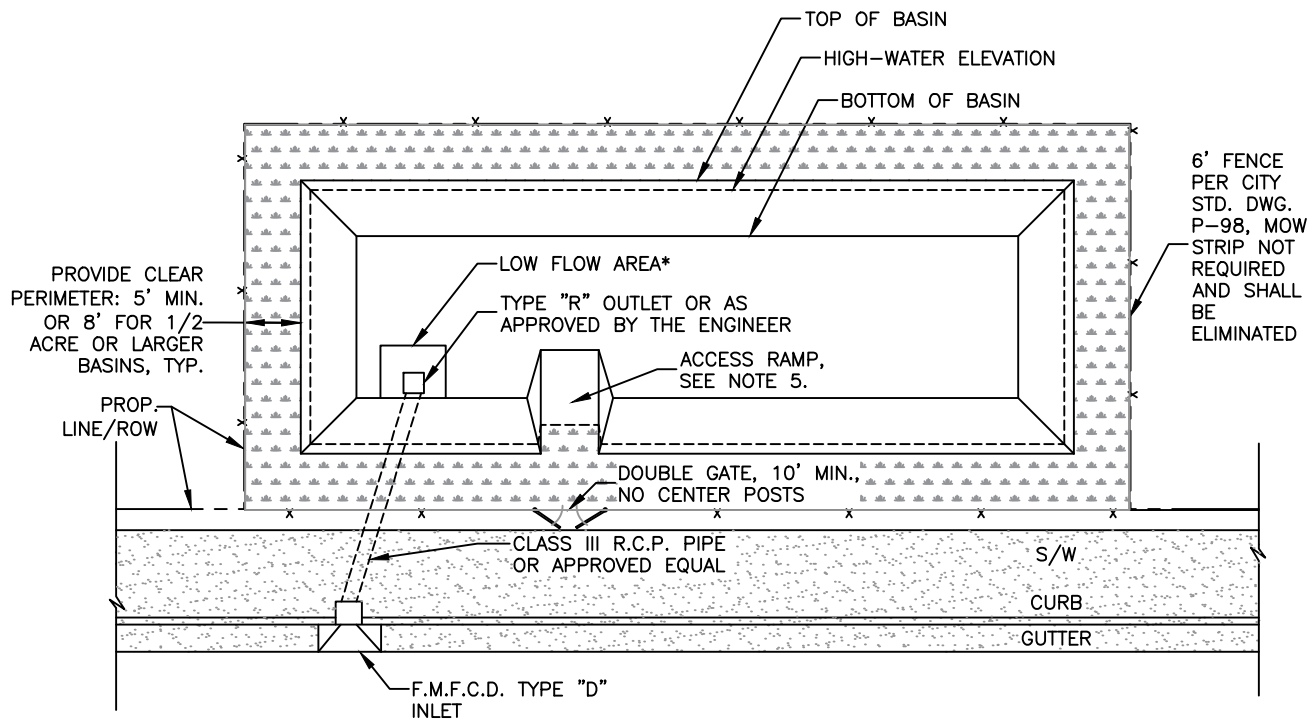
6 INCHES THICK BY 6 FEET HIGH MASONRY FENCE WITHOUT RETURN WALL

WALL LENGTH FEET ZONE	0-20	21-60	OVER 60
	WALL AND FOOTING TYPE		
FULL LENGTH OF FENCE	P-93	P-94,95	
ZONE 1			P-94,95
ZONE 2			P-93

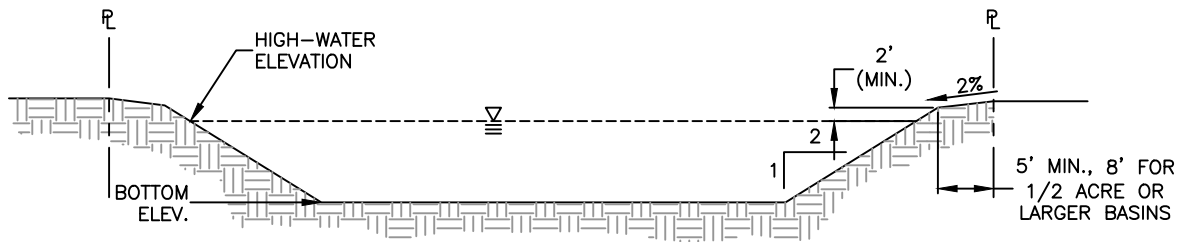


6 INCHES THICK BY 6 FEET HIGH MASONRY FENCE WITH RETURN WALL

WALL LENGTH FEET ZONE	0-20	21-60	OVER 60
	WALL AND FOOTING TYPE		
FULL LENGTH OF FENCE	P-93	P-94,95	
ZONE 1			P-94,95
ZONE 2			P-93



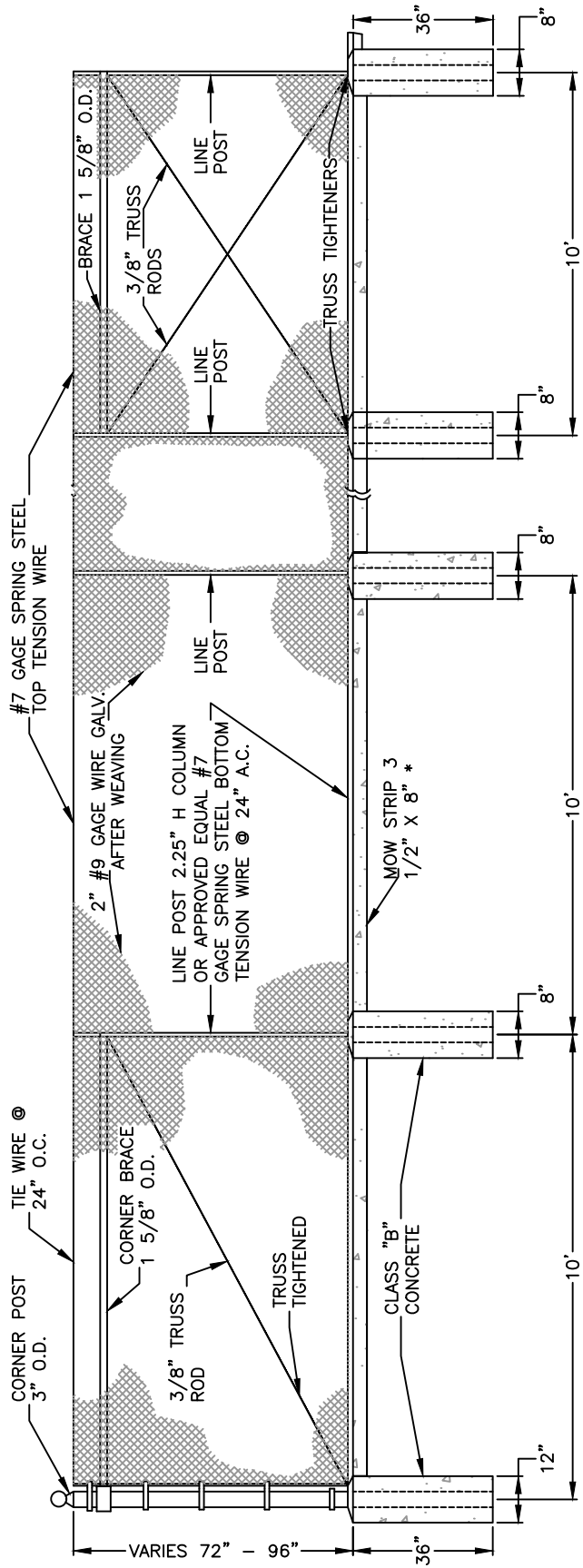
PLAN VIEW OF TYPICAL TEMPORARY PONDING BASIN



SECTION

NOTES, DESIGN REQUIREMENTS AND MINIMUMS:

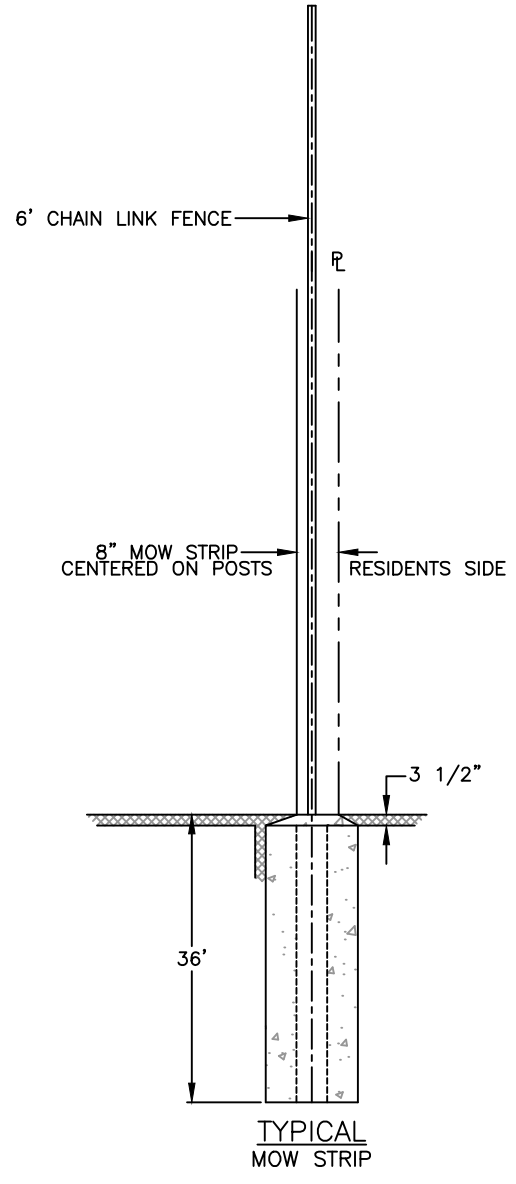
1. OVERFLOW MUST BE TO THE STREET.
  2. DESIGN WATER SURFACE ELEVATION SHALL BE TWO FEET (2') BELOW THE LOWEST INLET FLOW LINE OR POND PERIPHERAL ELEVATION, WHICHEVER IS LOWER.
  3. REQUIRED CAPACITY:  $V=C*I*A$ , WHERE "V"=REQUIRED BASIN CAPACITY IN CUBIC- FEET, "C"=RUNOFF COEFFICIENT, "I"=RAINFALL FROM A DESIGN STORM (0.35 FEET), AND "A"=TRIBUTARY AREA IN SQUARE- FEET.
  4. PROVIDE COMPOSITE "C" CALCULATIONS.
  5. THE ENGINEER MAY REQUIRE AN 8' WIDE VEHICLE RAMP WITH A MAXIMUM SLOPE OF 15% FOR BASINS WITH WITH A FENCED AREA OF ONE HALF-ACRE OR LARGER.
  6. TEMPORARY PONDING BASINS SHALL BE FENCED WITHIN 7 DAYS TIME AFTER THEY BECOME OPERATIONAL OR WHEN REQUIRED BY THE ENGINEER.
  7. THE CITY ENGINEER MAY CONSIDER OTHER BASIN DESIGN ALTERNATIVES, AS A SUBSTITUTE FOR PROVIDING THE 2 FOOT FREEBOARD, WHEN THE BASIN SIZE IMPACTS PROJECT FEASIBILITY.
  8. LOCKS FOR THE GATE TO BE #5 MASTER LOCKS, NO. 1C95, 3203 OR 0855.
  9. HYDROSEED BASIN SIDE SLOPES AND TOP AREAS IN ACCORDANCE WITH CALTRANS SECTION 21-1.03E AND MAINTAIN EROSION CONTROL MEASURES UNTIL SEEDING IS ESTABLISHED.
- \* SIZE AND DEPTH OF LOW-FLOW AREA TO BE DETERMINED BY THE ENGINEER.



NOTE:

REFER TO STATE SPECIFICATIONS EXCEPT FOR GATES WHICH ARE 9 GAUGE. BRACED & TRUSSED IN BOTH DIRECTIONS LINE POSTS @ 1000' MAX. INTERVALS

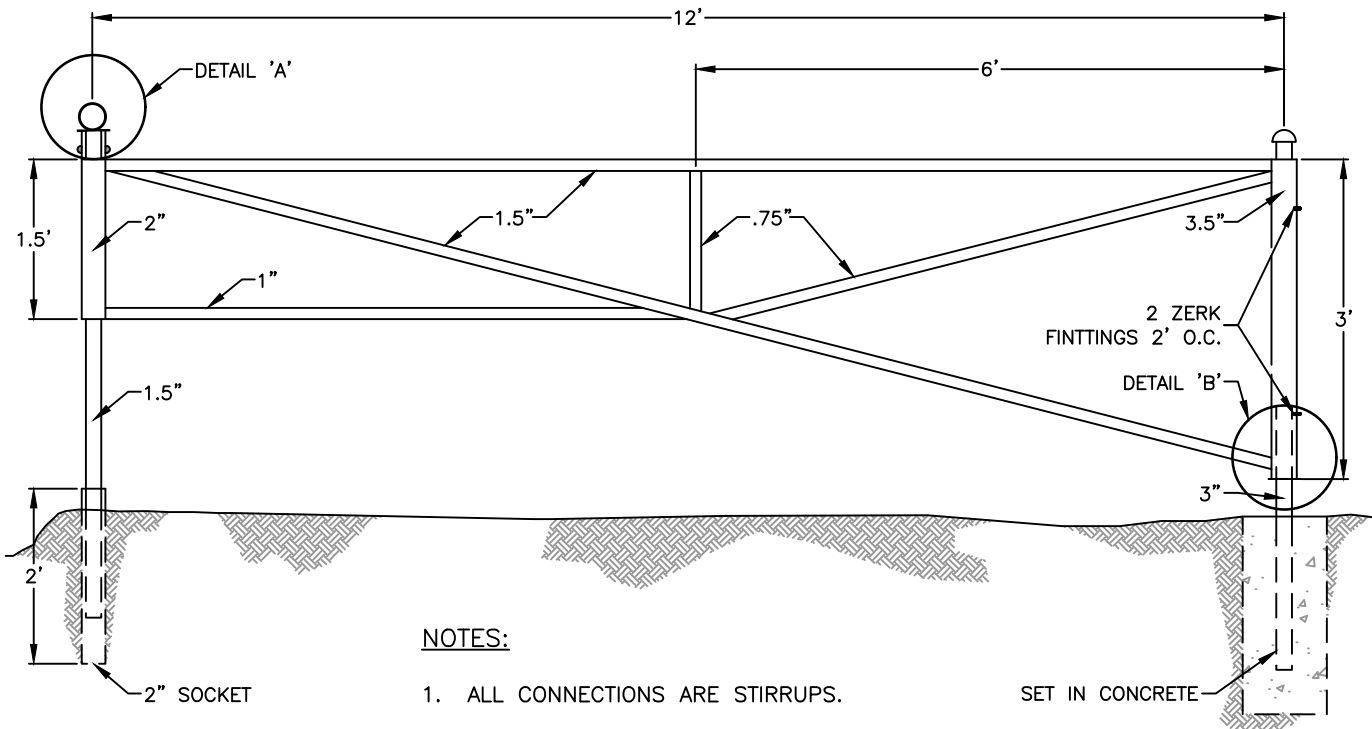
\*MOW STRIP CAN BE OMITTED ON TEMPORARY PONDS



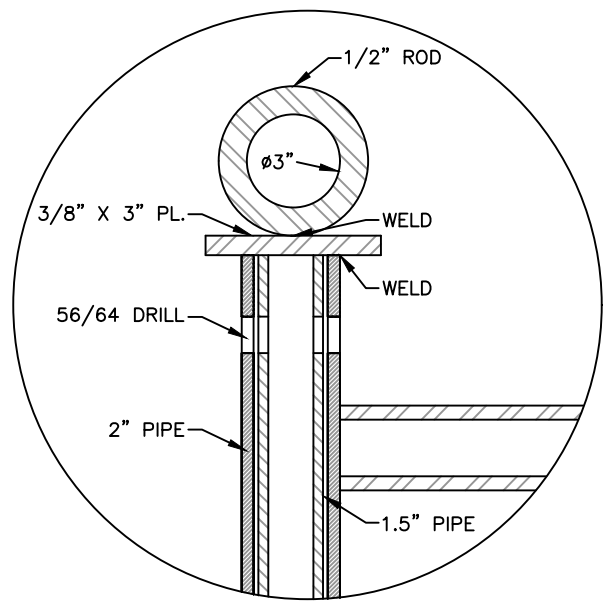
CHAIN LINK FENCE CONSTRUCTION DETAILS

REF. & REV. AUG. 2010

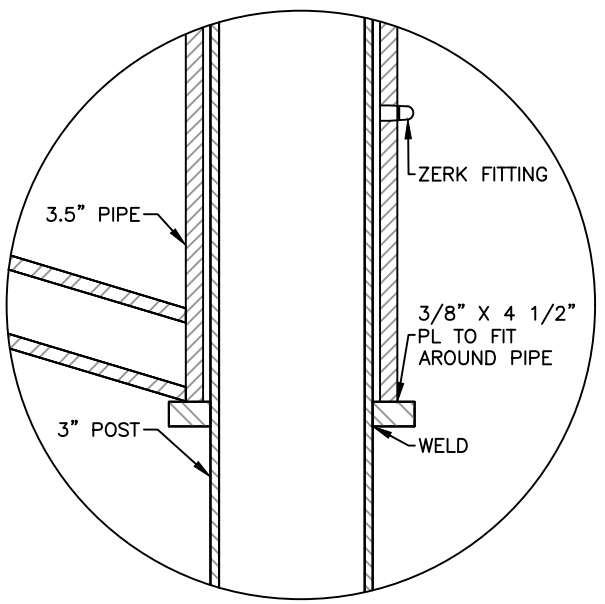
CITY OF FRESNO P-98



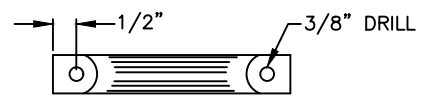
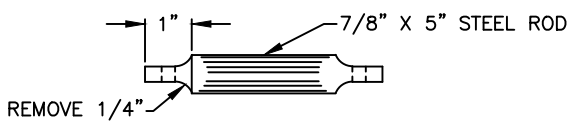
- NOTES:**
1. ALL CONNECTIONS ARE STIRRUPS.
  2. ALL WELD TO BE CONTINUOUS WELD.



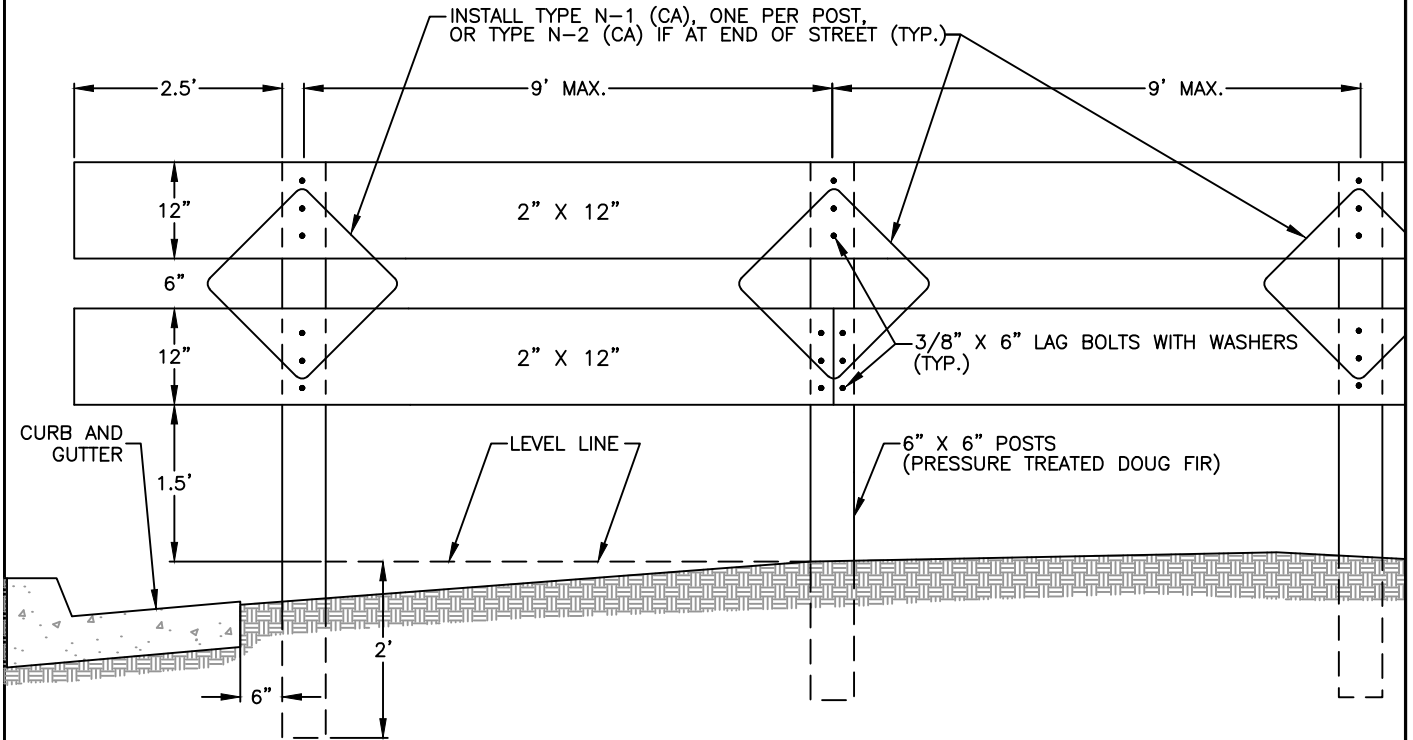
DETAIL 'A'  
NOT TO SCALE



DETAIL 'B'  
NOT TO SCALE



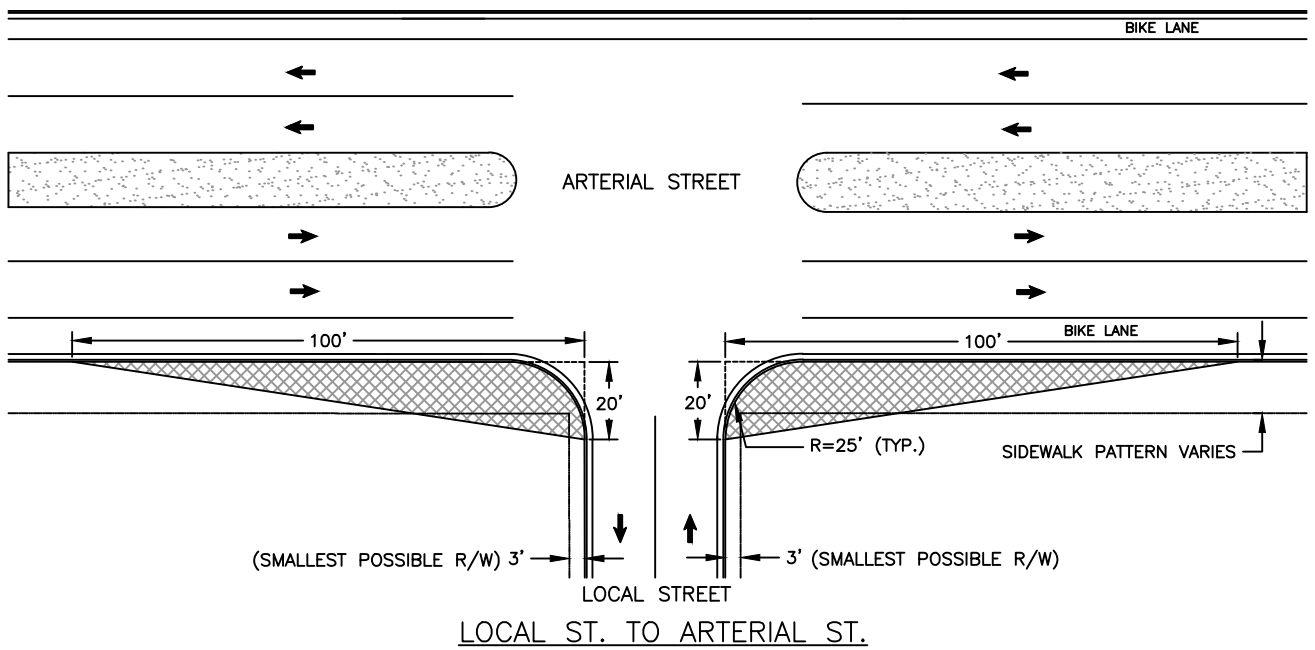
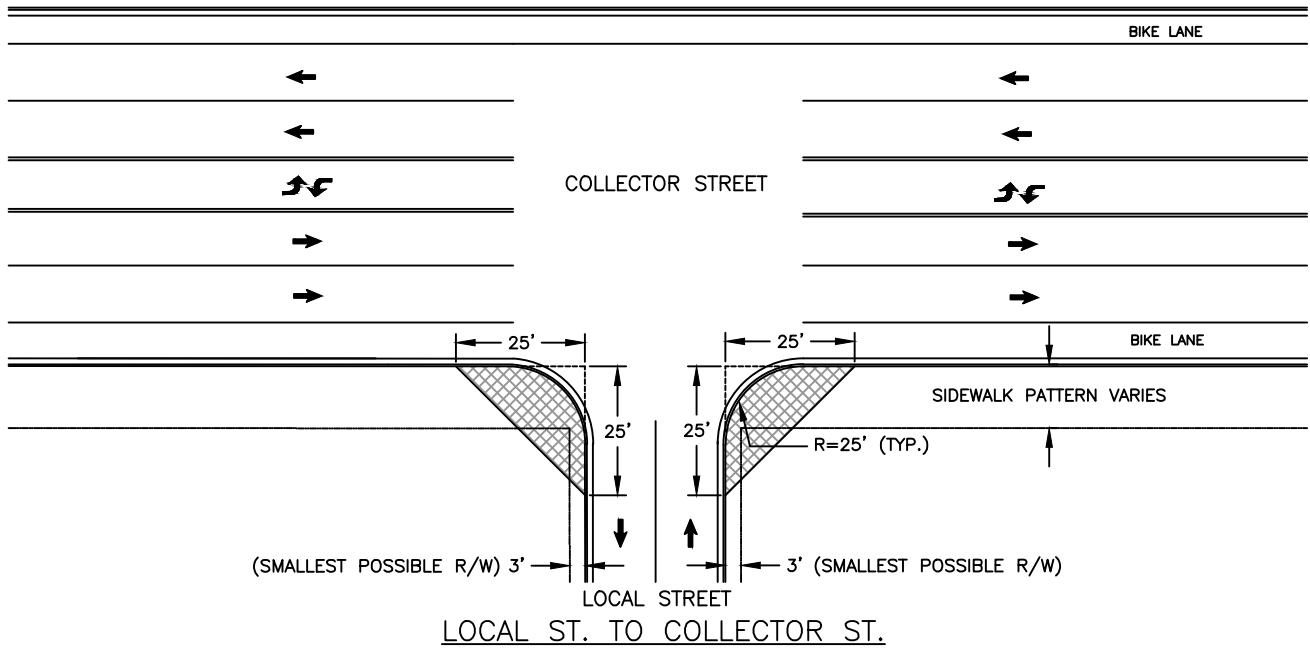
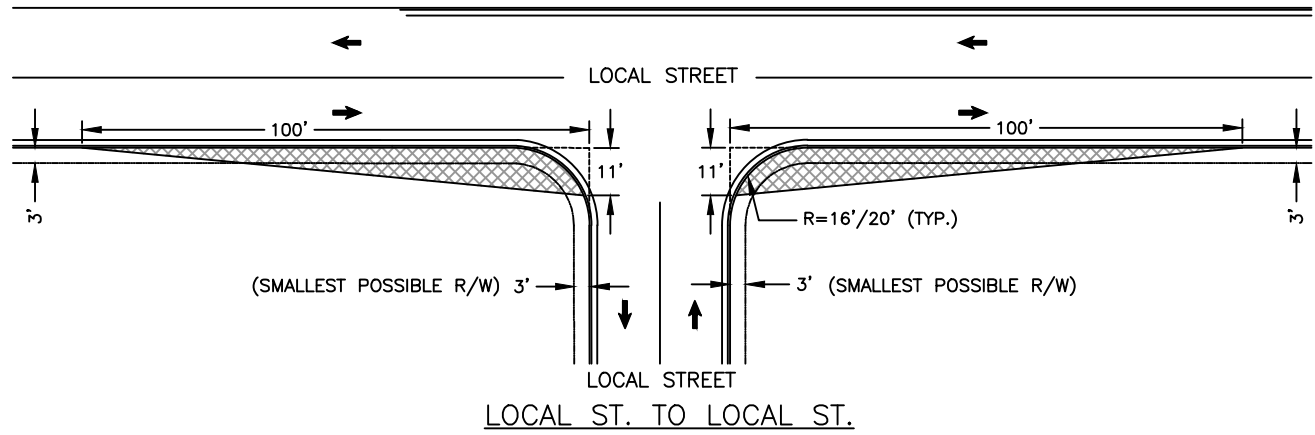
PAINT: TWO COATS OF EXTERIOR GRADE WHITE PAINT SHALL BE APPLIED TO ALL WOOD SURFACES.



TEMPORARY TIMBER BARRICADE

NOTES:

1. BARRICADE MUST BE FULL WIDTH BETWEEN FACES OF CURBS.
2. APPROPRIATE SIGNS AND REFLECTORS TO BE DESIGNATED BY THE DEPT. OF PUBLIC WORKS.
3. BARRICADE TO BE LOCATED INSIDE OF STREET R/W ± 1'.
4. BARRICADE TO BE INSTALLED WITHIN SEVEN DAYS OF COMPLETION OF STREET CONSTRUCTION.



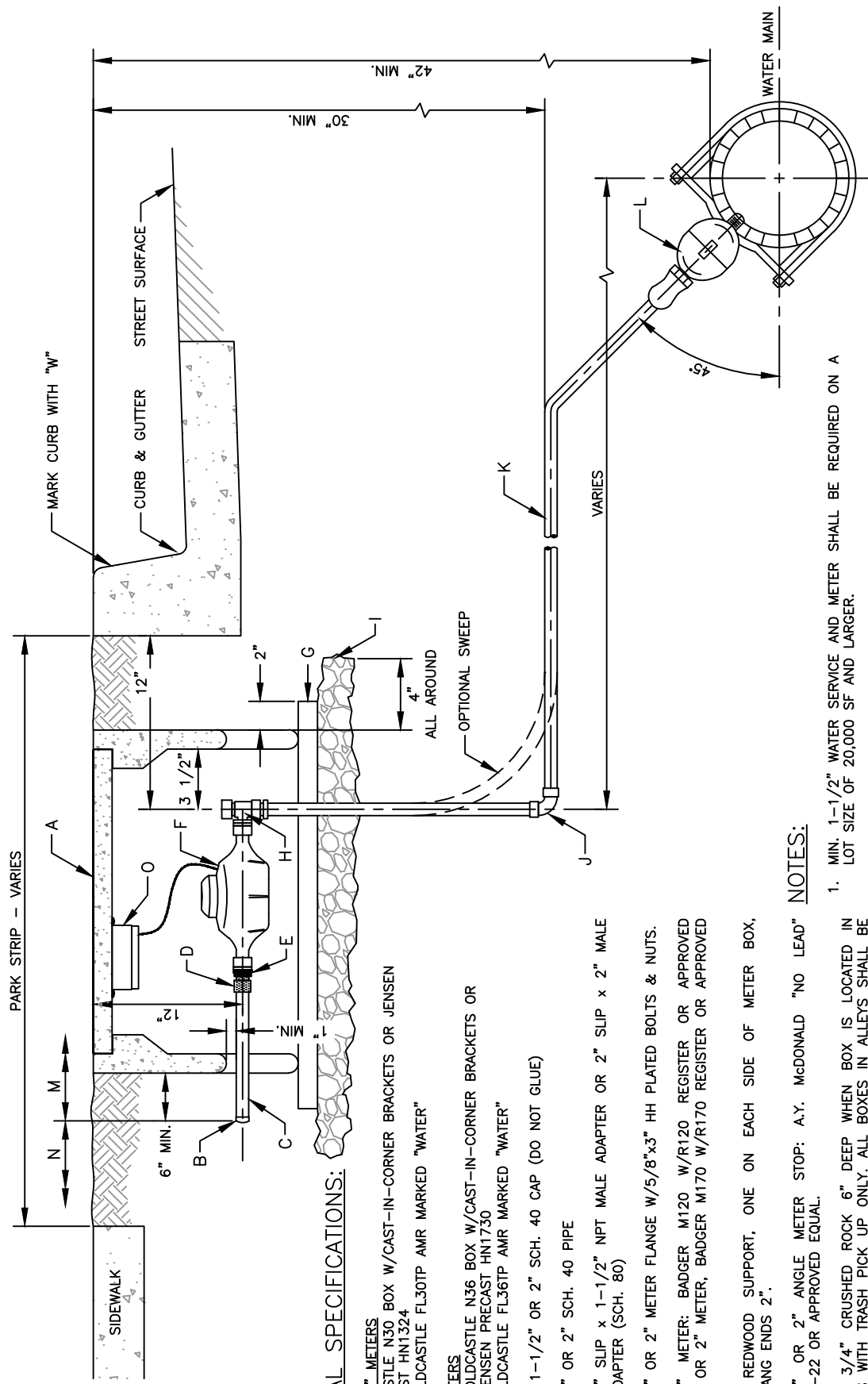
NOTE: ALL MAJOR TO MAJOR STREET SIGHT TRIANGLE SHALL BE 30' X 30', MEASURED FROM CURB ALIGNMENT

INTERSECTION SIGHT TRIANGLES  
LOCAL/COLLECTOR/ARTERIAL

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO

P-101



**MATERIAL SPECIFICATIONS:**

- A. 1-1/2" METERS  
 OLDCASTLE N30 BOX W/CAST-IN-CORNER BRACKETS OR JENSEN PRECAST HN1324  
 LID: OLDCASTLE FL30TP AMR MARKED "WATER"
- 2" METERS  
 BOX: OLDCASTLE N36 BOX W/CAST-IN-CORNER BRACKETS OR JENSEN PRECAST HN1730  
 LID: OLDCASTLE FL36TP AMR MARKED "WATER"
- B. TEMP. 1-1/2" OR 2" SCH. 40 CAP (DO NOT GLUE)
- C. 1-1/2" OR 2" SCH. 40 PIPE
- D. 1-1/2" SLIP x 1-1/2" NPT MALE ADAPTER OR 2" SLIP x 2" MALE NPT ADAPTER (SCH. 80)
- E. 1-1/2" OR 2" METER FLANGE W/5/8"x3" HH PLATED BOLTS & NUTS.
- F. 1-1/2" METER: BADGER M120 W/R120 REGISTER OR APPROVED EQUAL OR 2" METER, BADGER M170 W/R170 REGISTER OR APPROVED EQUAL.
- G. 2"x4" REDWOOD SUPPORT, ONE ON EACH SIDE OF METER BOX, OVERHANG ENDS 2".
- H. 1-1/2" OR 2" ANGLE METER STOP: A.Y. McDONALD "NO LEAD" 74602-22 OR APPROVED EQUAL.
- I. PLACE 3/4" CRUSHED ROCK 6" DEEP WHEN BOX IS LOCATED IN ALLEYS WITH TRASH PICK UP ONLY. ALL BOXES IN ALLEYS SHALL BE ORIENTED PARALLEL TO ALLEY.
- J. COMP X COMP 90° ELL: A.Y. McDONALD "NO LEAD" 74761-22 OR APPROVED EQUAL.
- K. TYPE "K" SOFT DRAWN COPPER TUBING OR POLYETHYLENE CTS SDR-9 PE 4710
- L. 1-1/2" OR 2" CORPORATION STOP: A.Y. McDONALD "NO LEAD" 74701-22 OR APPROVED EQUAL.
- M. WATER DIVISION RESPONSIBILITY
- N. CUSTOMER RESPONSIBILITY
- O. TRANSMITTER: GALAXY TR3 OR APPROVED EQUAL.

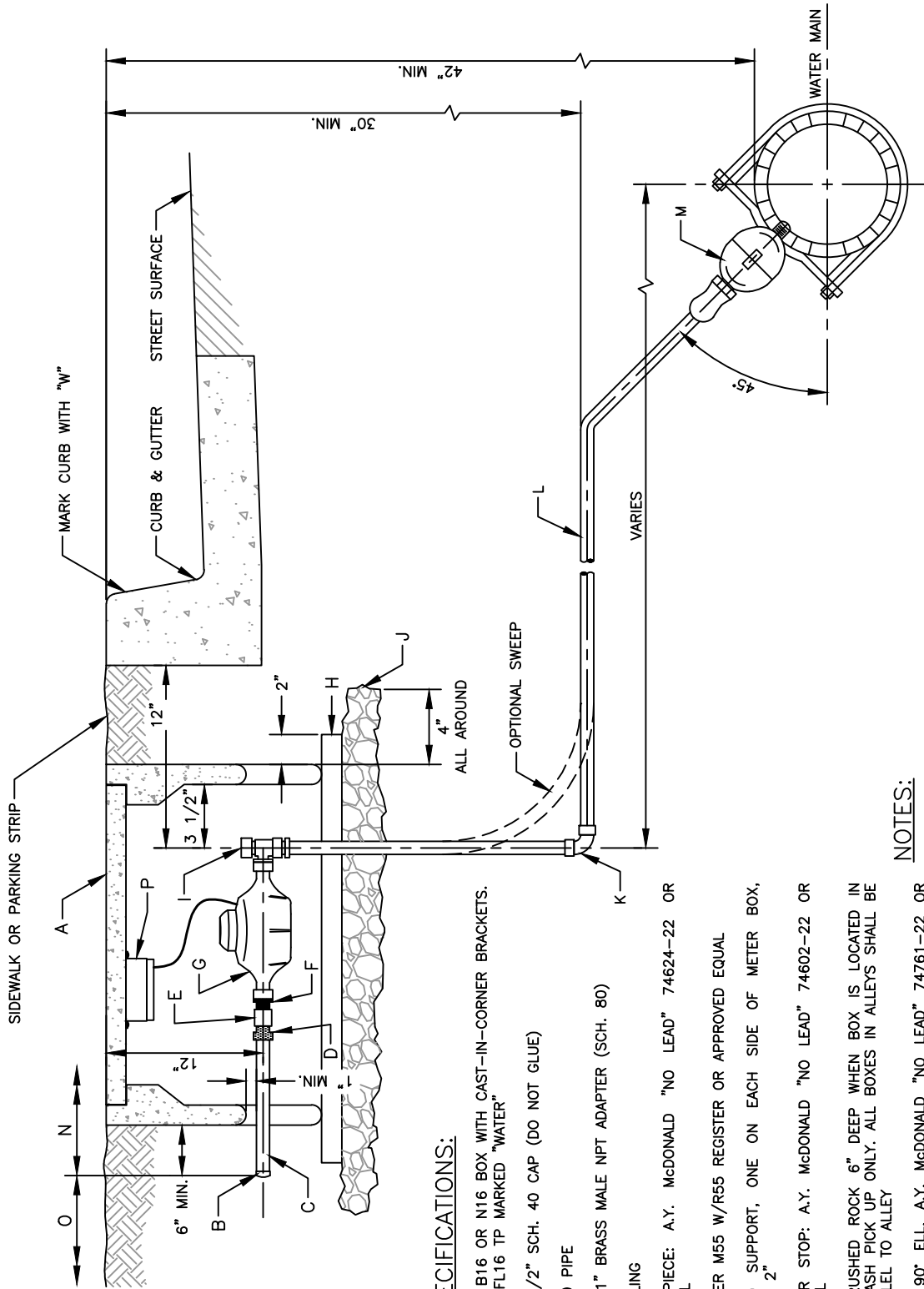
**NOTES:**

1. MIN. 1-1/2" WATER SERVICE AND METER SHALL BE REQUIRED ON A LOT SIZE OF 20,000 SF AND LARGER.
2. WATER SERVICES SHALL NOT BE ALLOWED IN DRIVEWAY APPROACH AREAS AT ANY RESIDENTIAL OR COMMERCIAL LOCATION.
3. ALL COPPER FITTINGS SHALL BE CAMPAK COMPRESSION-TYPE.
4. POLYETHYLENE PIPE SHALL USE CAMPAK COMPRESSION-TYPE JOINTS WITH STAINLESS STEEL INSERT.
5. FOR PVC WATER MAIN TAPS, SERVICE SADDLES W/ CIRCUMFERENTIAL TYPE BANDS SHAPED TO FIT THE ACTUAL O.D. OF THE PIPE, AND HAVING A MINIMUM BEARING WIDTH OF 3" (1-1/2" PER BAND), SHALL BE USED. FOR DUCTILE AND CAST IRON MAINS, USE BRONZE OR DUCTILE IRON SERVICE SADDLES, W/BRONZE OR STAINLESS DOUBLE STRAPS.

1-1/2" & 2" SERVICE CONNECTION  
& METER BOX INSTALLATION

REF & REV  
~~JUNE 2011~~  
 MAR. 2021 (A.7)

CITY OF FRESNO  
 W-1



**MATERIAL SPECIFICATIONS:**

- A. BOX: OLDCASTLE B16 OR N16 BOX WITH CAST-IN-CORNER BRACKETS.  
LID: OLDCASTLE FL16 TP MARKED "WATER"
- B. TEMPORARY 1-1/2" SCH. 40 CAP (DO NOT GLUE)
- C. 1-1/2" SCH. 40 PIPE
- D. 1-1/2" SLIP x 1" BRASS MALE NPT ADAPTER (SCH. 80)
- E. 1" BRASS COUPLING
- F. 1" METER TAILPIECE: A.Y. McDONALD "NO LEAD" 74624-22 OR APPROVED EQUAL
- G. 1" METER: BADGER M55 W/R55 REGISTER OR APPROVED EQUAL
- H. 2"x4" REDWOOD SUPPORT, ONE ON EACH SIDE OF METER BOX, OVERHANG ENDS 2"
- I. 1" ANGLE METER STOP: A.Y. McDONALD "NO LEAD" 74602-22 OR APPROVED EQUAL
- J. PLACE 3/4" CRUSHED ROCK 6" DEEP WHEN BOX IS LOCATED IN ALLEYS WITH TRASH PICK UP ONLY. ALL BOXES IN ALLEYS SHALL BE ORIENTED PARALLEL TO ALLEY
- K. COMP x COMP 90° ELL, A.Y. McDONALD "NO LEAD" 74761-22 OR APPROVED EQUAL
- L. TYPE "K" SOFT DRAWN COPPER TUBING
- M. 1" CORPORATION STOP: A.Y. McDONALD "NO LEAD" 74701-22 OR APPROVED EQUAL
- N. WATER DIVISION RESPONSIBILITY
- O. CUSTOMER RESPONSIBILITY
- P. TRANSMITTER: GALAXY TR3 OR APPROVED EQUAL

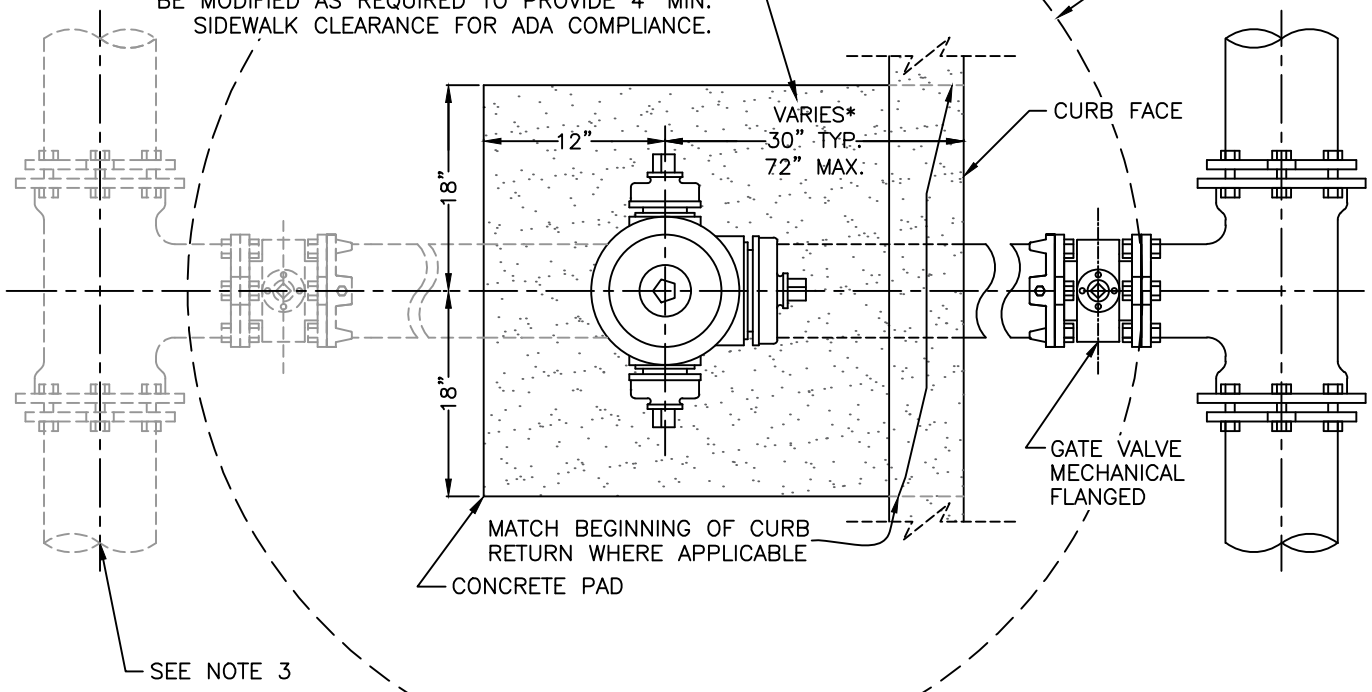
**NOTES:**

- 1. WATER SERVICES SHALL NOT BE ALLOWED IN DRIVEWAY APPROACH AREAS AT ANY RESIDENTIAL OR COMMERCIAL LOCATION.
- 2. ALL COPPER FITTINGS SHALL BE CAMPK COMPRESSION-TYPE.
- 3. FOR PVC WATER MAIN TAPS, SERVICE SADDLES WITH CIRCUMFERENTIAL TYPE BANDS SHAPED TO FIT THE ACTUAL O.D. OF THE PIPE, AND HAVING A MINIMUM BEARING WIDTH OF 3" (1 1/2" PER BAND) SHALL BE USED. FOR DUCTILE AND CAST IRON MAINS, USE BRONZE OR DUCTILE IRON SERVICE SADDLES, WITH BRONZE OR STAINLESS DOUBLE STRAPS.

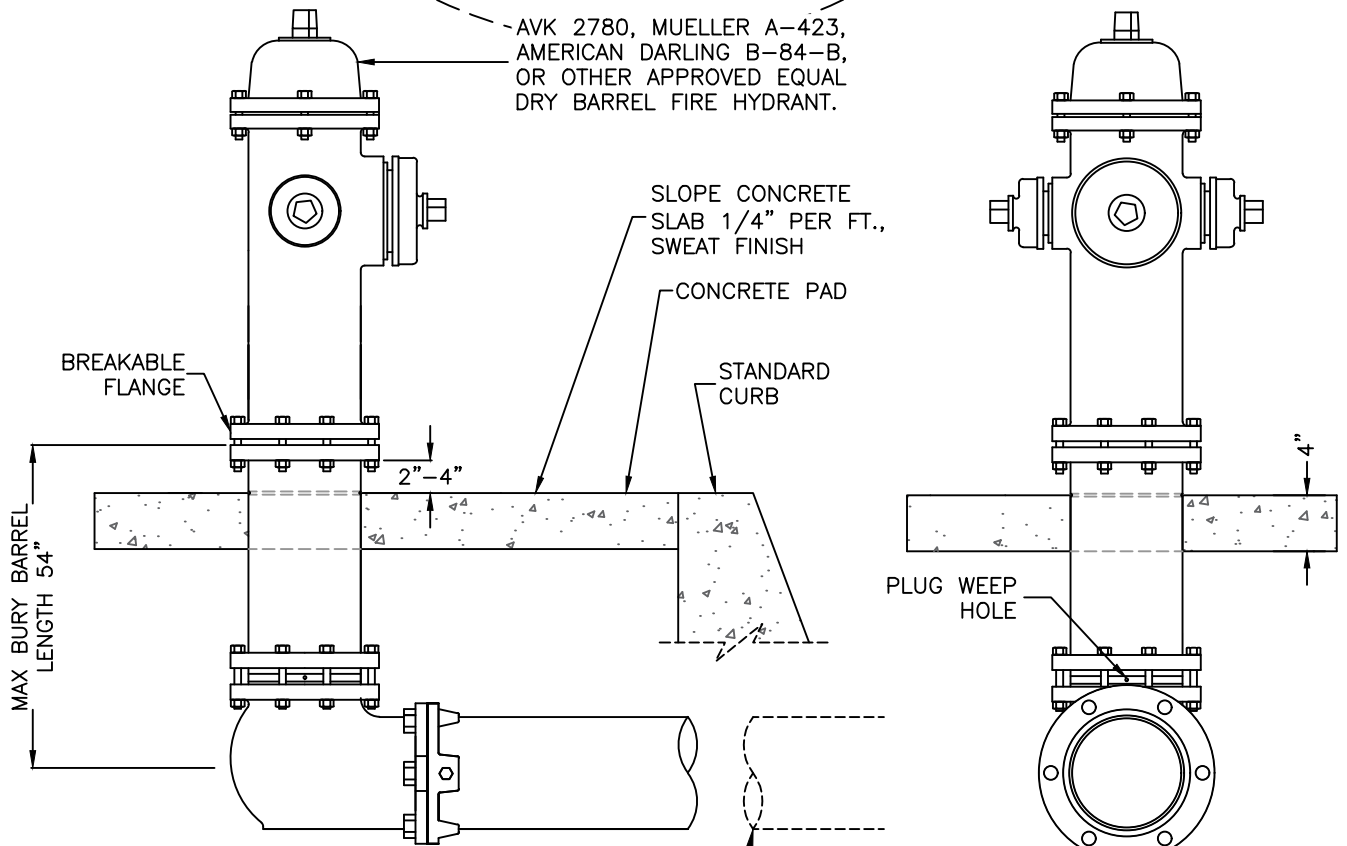


\*FOR ALL FIRE HYDRANTS INSTALLED, THE SETBACK SHALL TYPICALLY BE 30", BUT SHALL BE MODIFIED AS REQUIRED TO PROVIDE 4' MIN. SIDEWALK CLEARANCE FOR ADA COMPLIANCE.

MAINTAIN 36" CLEAR, MIN.



AVK 2780, MUELLER A-423, AMERICAN DARLING B-84-B, OR OTHER APPROVED EQUAL DRY BARREL FIRE HYDRANT.



HYDRANT RUN BETWEEN VALVE & BURY SHALL BE ADJUSTED SO ELEVATION OF HYDRANT BURY FLANGE IS LEVEL & TO GRADE AS SHOWN, OR AS DIRECTED. BURY DEPTH: 54" MAX., USE 45-DEGREE FITTINGS TO MAINTAIN BURY MAX LENGTH.

**NOTES:**

1. GATE VALVE TO BE TIED TO MAIN PER STD DWG W-37
2. CAP AND OPERATING NUTS ARE 1-1/8" PENTAGON
3. WHERE MAIN LIES BEHIND CURB, PIPE & VALVE DETAILS SHALL BE REVERSED

**FIRE HYDRANT INSTALLATION**

REF. & REV.  
 JAN. 1997  
 DEC. 2003  
 DEC. 2013  
 MAR. 2021 (A.7)

CITY OF FRESNO

W-3

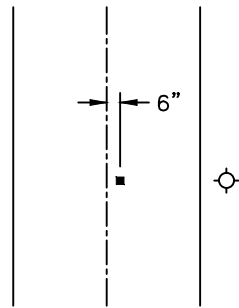
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

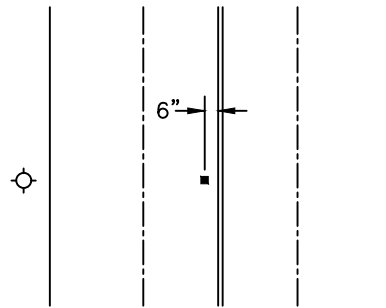
REF. & REV.  
~~AUG. 2002~~  
MAR. 2021 (A.7)

CITY OF FRESNO

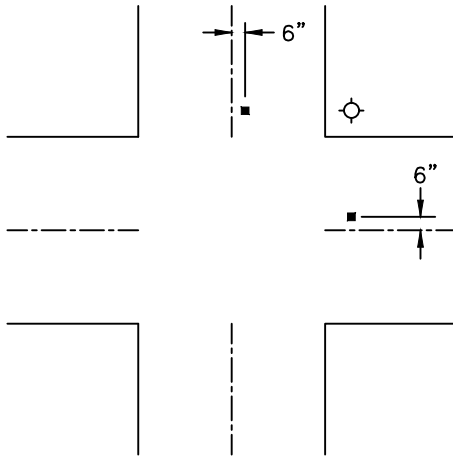
W-4



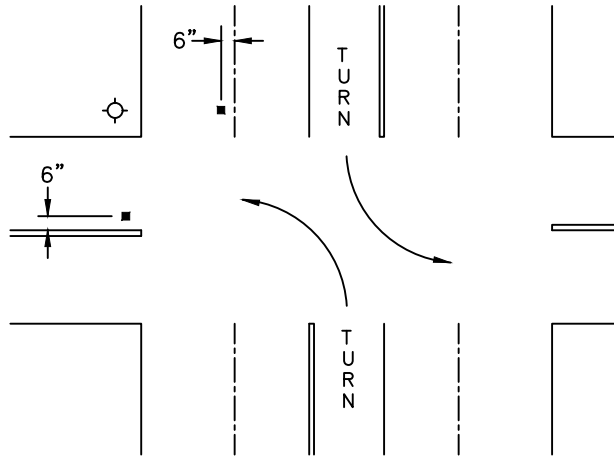
TWO LANE STREET



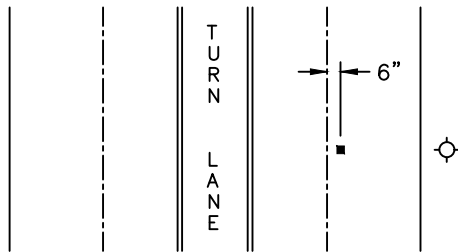
MULTI-LANE STREET



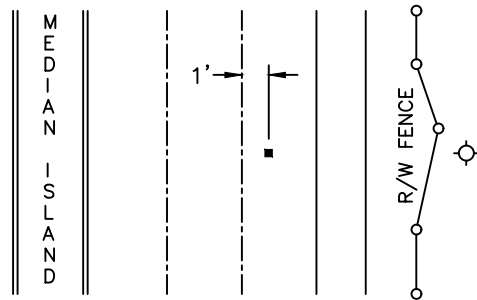
INTERSECTIONS



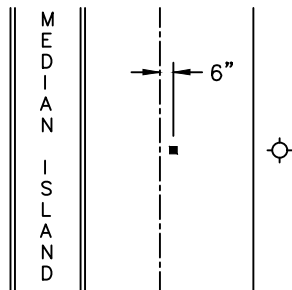
FOUR-LANES W/TURN LANE



FOUR-LANES W/TURN LANE



FREEWAYS AND EXPRESSWAYS



DIVIDED HIGHWAY

- FIRE HYDRANT
- PAVEMENT MARKER EQUAL TO STIMSONITE 810134-88AB "TWO-WAY" BLUE

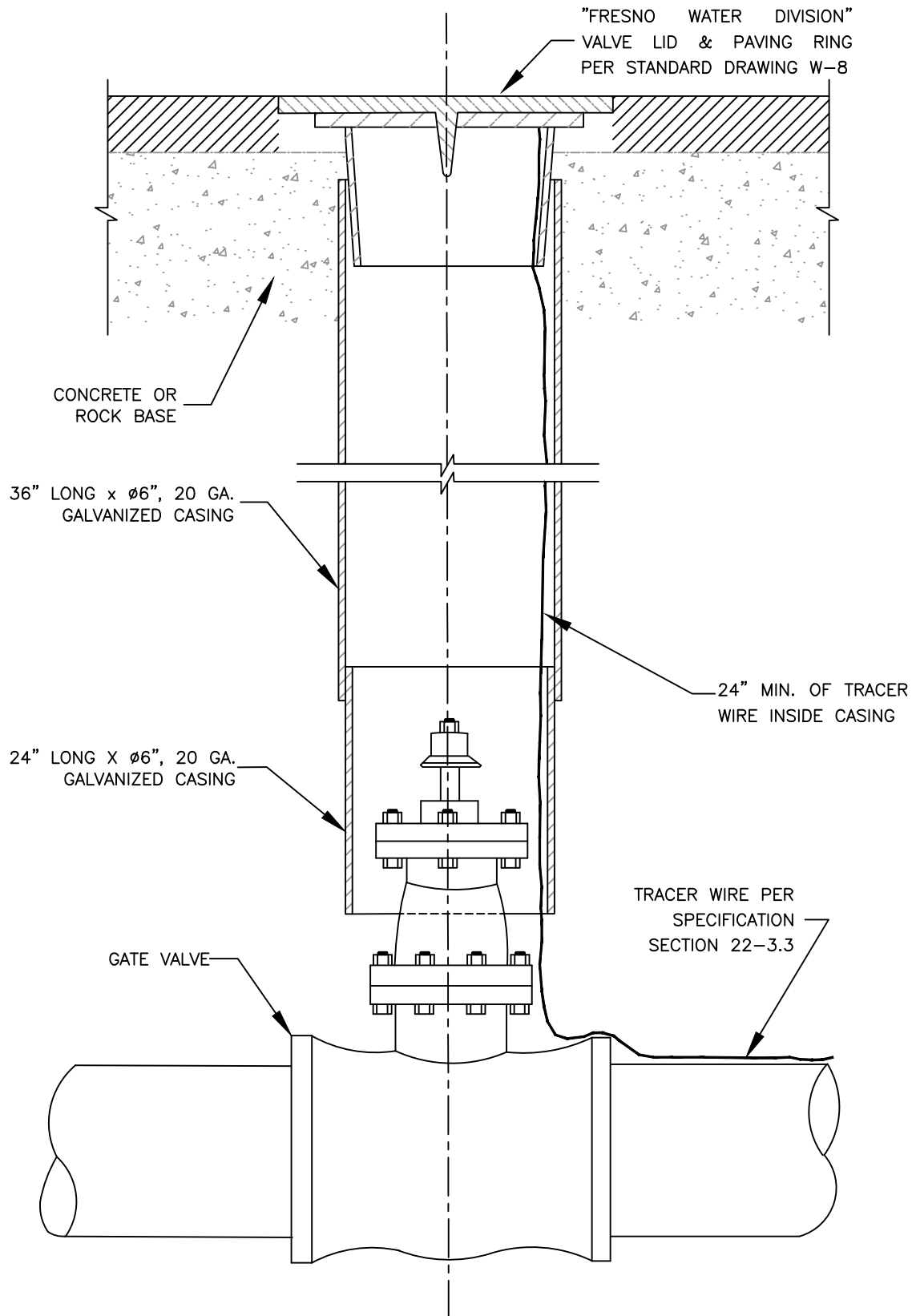
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO

W-6



VALVE LID & PAVING RING  
WITH GALVANIZED CASING

REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO  
W-7

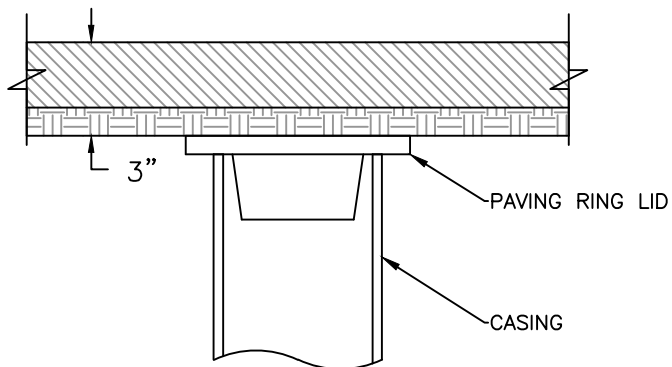


FIG. NO. 1

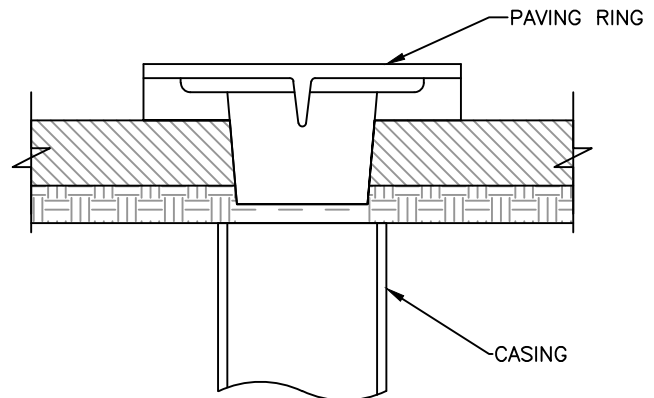


FIG. NO. 2

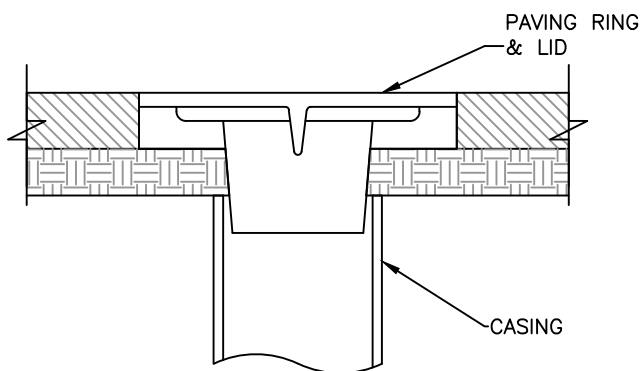


FIG. NO. 3

INSTALLATION PROCEDURE:

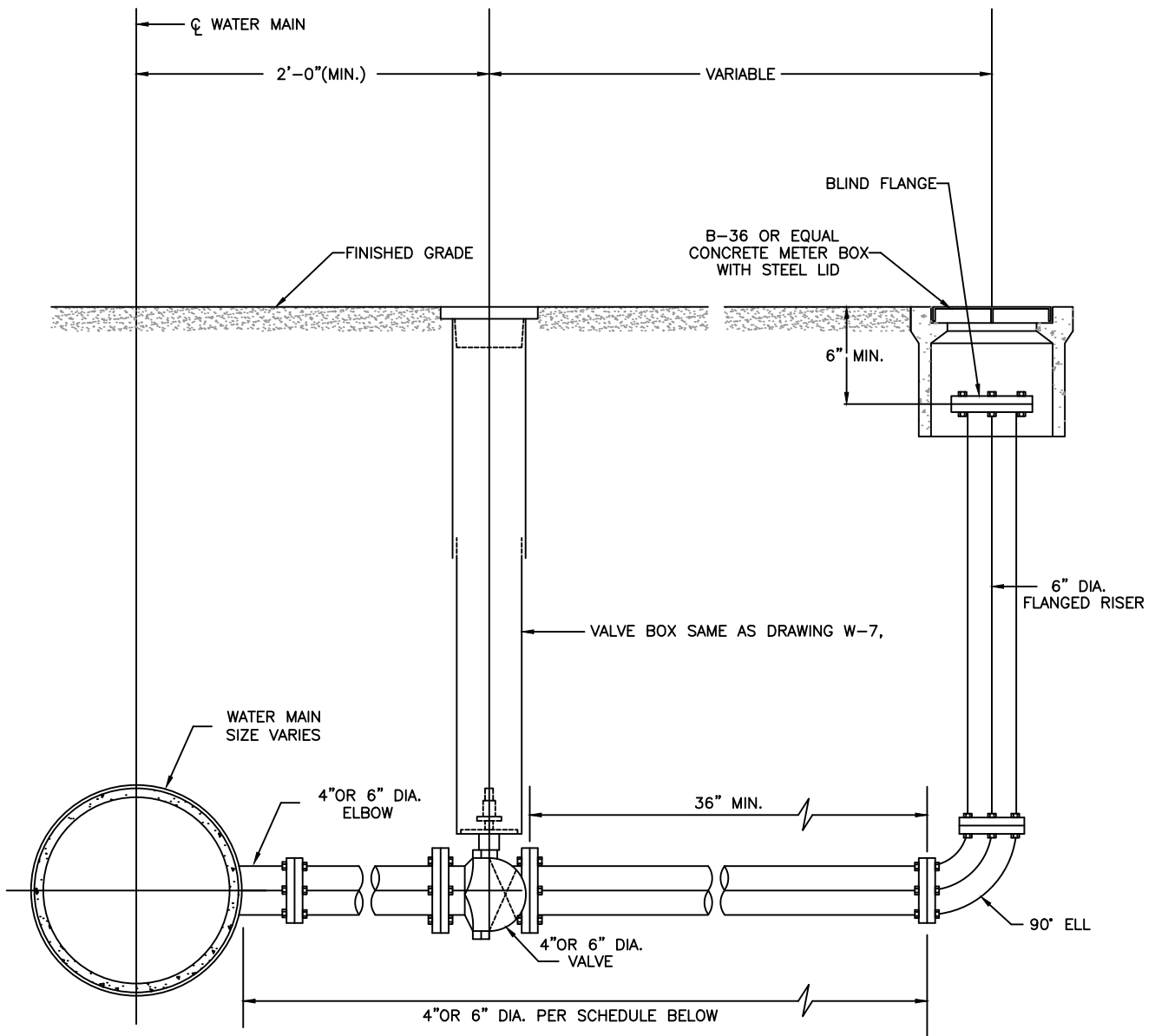
1. CASING SHALL BE CENTERED OVER VALVE STEM.
2. ADJUST CASING TO 3" BELOW FINISHED GRADE.
3. COVER CASING WITH LID OF THE PAVING RING.
4. PAVE OVER CASING (FIG. NO. 1)
5. IMMEDIATELY AFTER MACHINE HAS PAVED OVER CASING, UNCOVER, AND REMOVE LID, THEN INSET PAVING RING INTO CASING AND PUSH EXCESS A.C. UNDER FLANGES OF PAVING RING. (FIG. NO. 2)
6. PRESS PAVING RING DOWN TO LEVEL WITH TOP OF A.C., INSTALL LID INSIDE PAVING RING AND BRUSH OFF EXCESS PAVING MATERIAL ON TOP OF PAVING RING. (FIG. NO. 3)
7. PAVING RING CAN BE ROLLED IN PLACE AT SAME TIME A.C. IS ROLLED.

INSTALLATION PROCEDURE  
FOR PAVING RING & LID

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-8



NOTE:

1. ALL FITTINGS SHALL BE SECURED WITH RETAINING GLANDS, HARNESSES OR TIE-RODS AS APPLICABLE.
2. PLACE VALVES AND BLOW-OFFS OUTSIDE SIDEWALK AND DRIVEWAY AREAS.
3. ALL PUMP DISCHARGES SHALL BE FLANGED STEEL
4. ALL RISERS SHALL BE FLANGED, 6" DIAMETER.

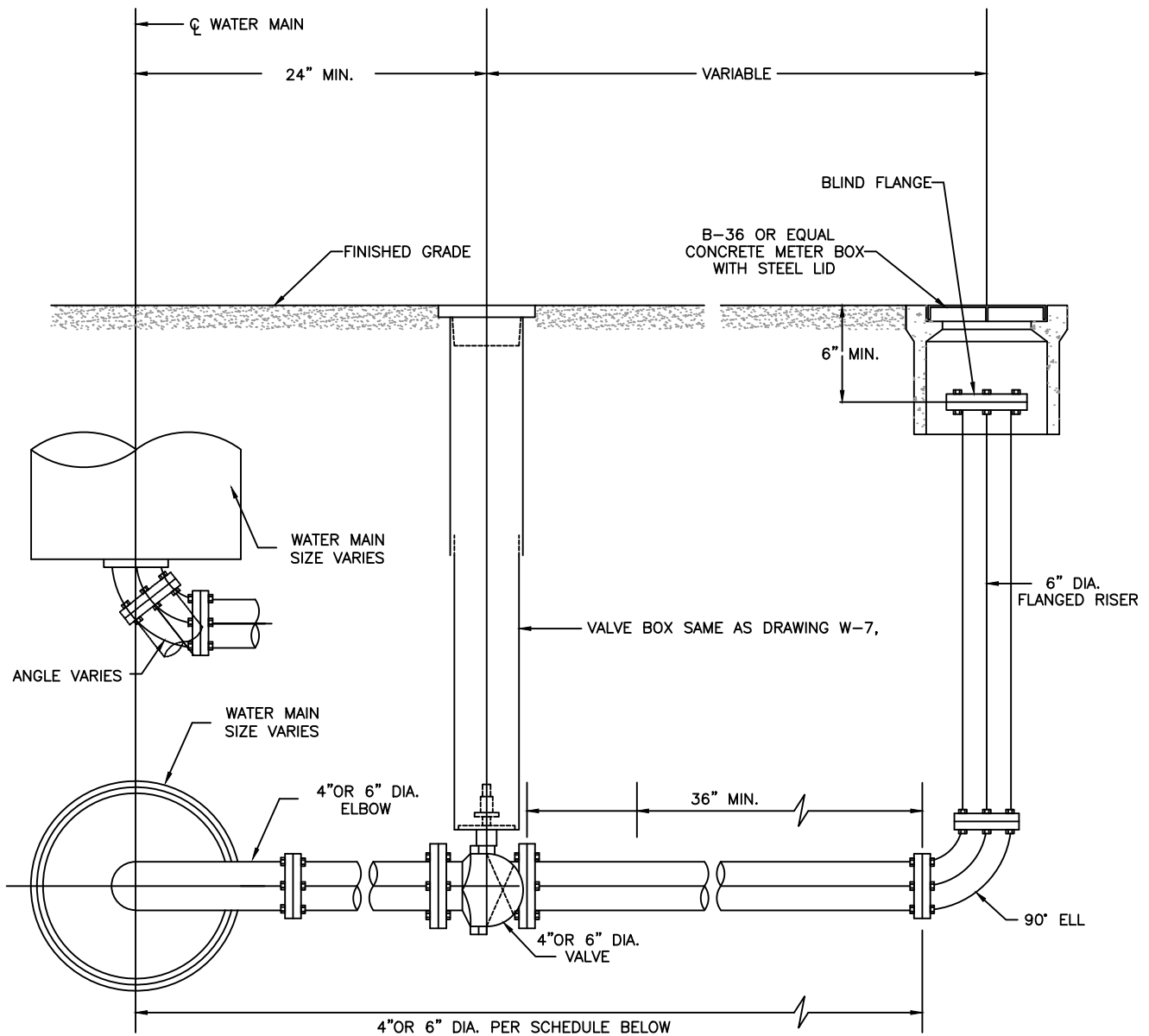
BLOW-OFF SCHEDULE	
PIPE SIZE	
MAIN	BLOW-OFF
6"	4"
8"	4"
10"	4"
12"	6"
14"	6"
16"	6"

**BLOW-OFF ASSEMBLY**  
TYPE A

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-9



**NOTES:**

1. ALL FITTINGS SHALL BE SECURED WITH RETAINING GLANDS, HARNESSES OR TIE-RODS AS APPLICABLE.
2. PLACE VALVES AND BLOW-OFFS OUTSIDE SIDEWALK AND DRIVEWAY AREAS.
3. ALL PUMP DISCHARGES SHALL BE FLANGED STEEL.
4. ALL RISERS SHALL BE FLANGED, 6" DIAMETER.

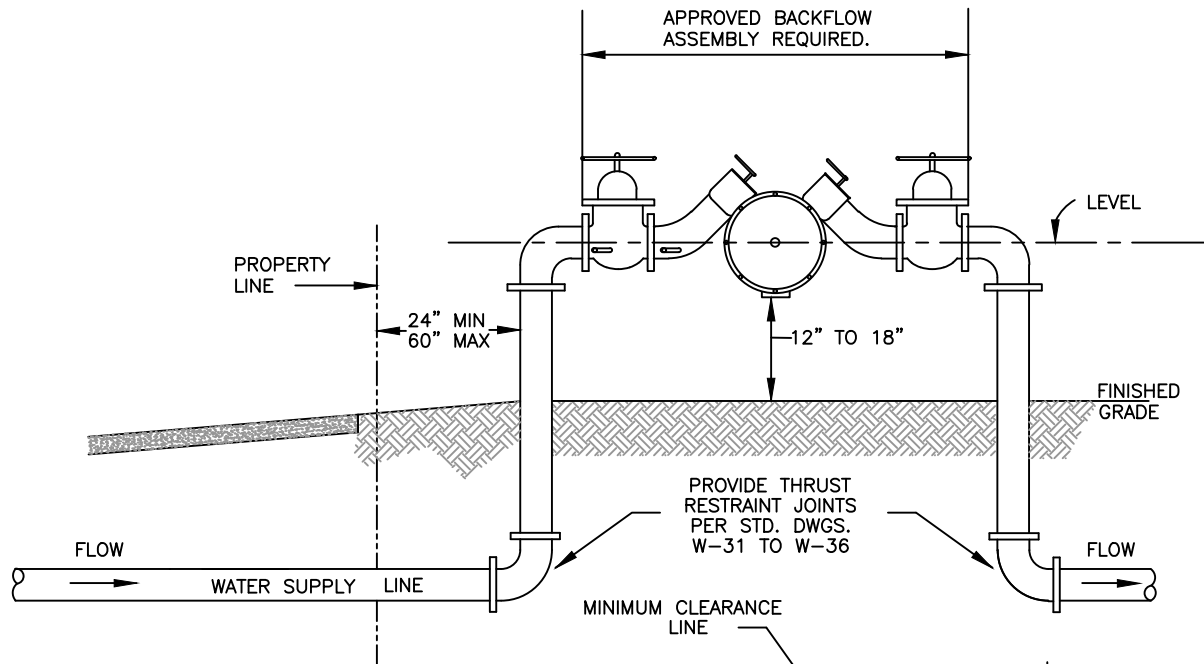
BLOW-OFF SCHEDULE	
PIPE SIZE	
MAIN	BLOW-OFF
6"	4"
8"	4"
10"	4"
12"	6"
14"	6"
16"	6"

**BLOW-OFF ASSEMBLY  
TYPE B**

REF. & REV.  
AUG. 2002

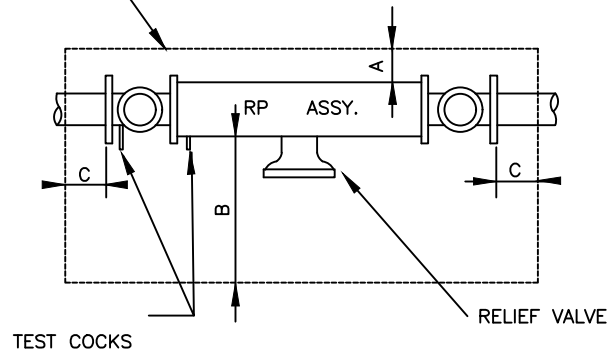
CITY OF FRESNO  
**W-10**





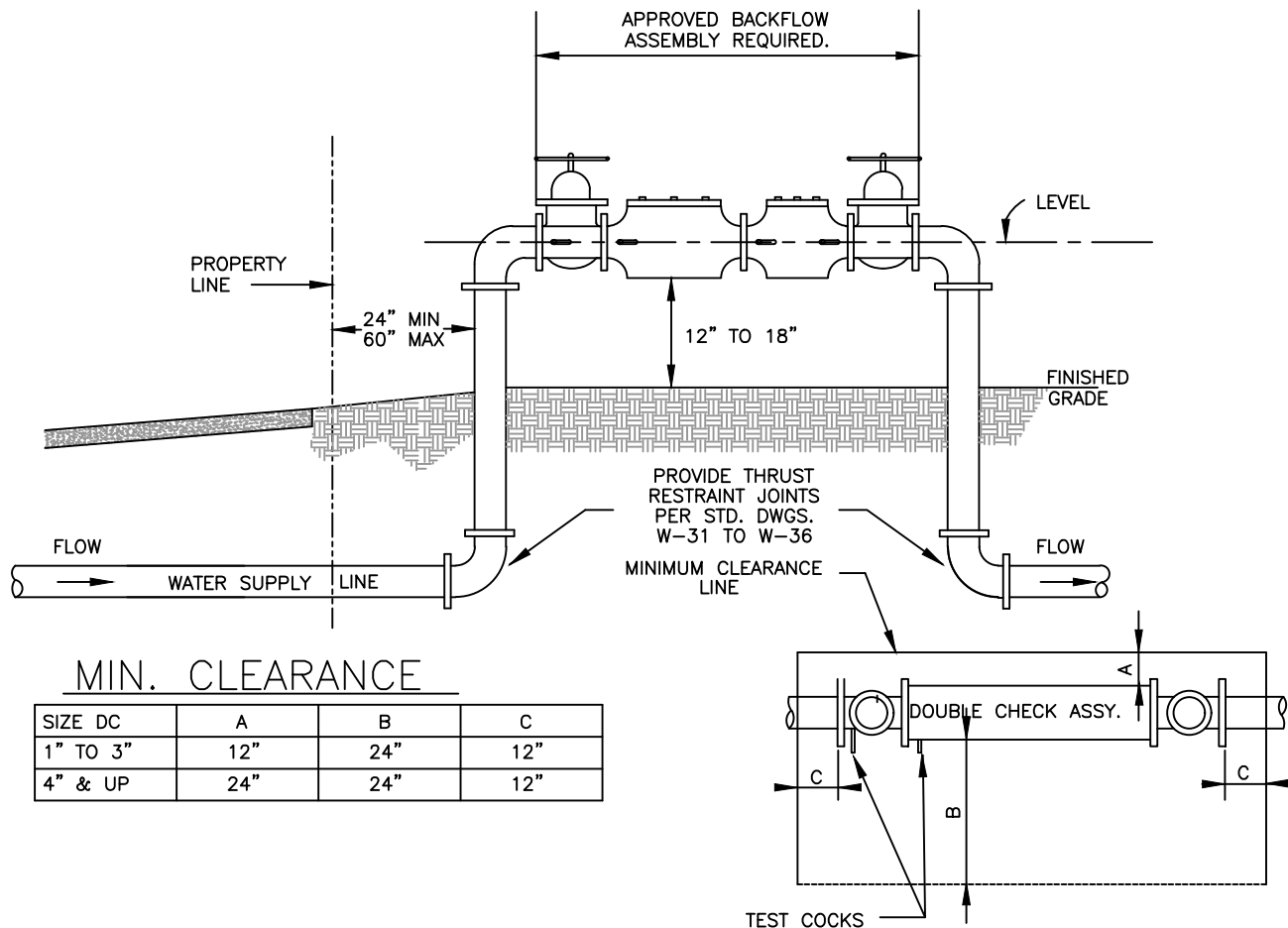
### MIN. CLEARANCE

SIZE RP	A	B	C
1" TO 3"	12"	24"	12"
4" & UP	24"	24"	12"



### GENERAL NOTES:

1. RESILIENT SEATED SHUT OFF VALVES AND TEST COCKS ARE REQUIRED.
2. NO TAPS, TEES OR CONNECTIONS OF ANY KIND ARE PERMITTED BETWEEN THE WATER METER AND THE BACKFLOW ASSEMBLY.
3. PROTECTION FROM FREEZE DAMAGE MAY BE REQUIRED IN EXPOSED AREAS.
4. ASSEMBLY MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE PER FRESNO MUNICIPAL CODE.
5. ASSEMBLY TO BE THE SAME SIZE AS THE WATER SUPPLY LINE PER UNIFORM PLUMBING CODE.
6. PRESSURE LOSS THROUGH RP ASSEMBLY MUST BE INCLUDED IN PRESSURE LOSS CALCULATIONS FOR SIZING OF THE WATER SYSTEM PER UNIFORM PLUMBING CODE.
7. MINIMUM CLEARANCES AROUND ASSEMBLY MUST BE MAINTAINED. REFER TO MINIMUM CLEARANCE CHART ON THIS PAGE.
8. INSTALL A MINIMUM OF ONE UNION IN THE PIPING SYSTEM WITHIN 12 INCHES OF THE ASSEMBLY – 3/4 THRU 2" SIZES.
9. DRAINAGE TO EXTERIOR OF THE BUILDING IS REQUIRED WHEN ASSEMBLY IS INSTALLED INSIDE.
10. ANY DEVIATION FROM THESE REQUIREMENTS SHALL BE APPROVED BY THE WATER SYSTEM MANAGER PRIOR TO INSTALLATION.

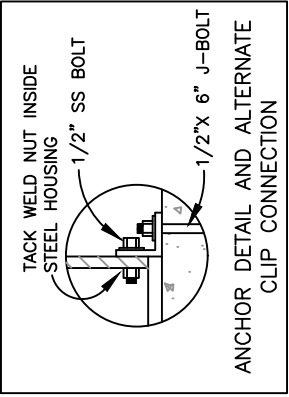
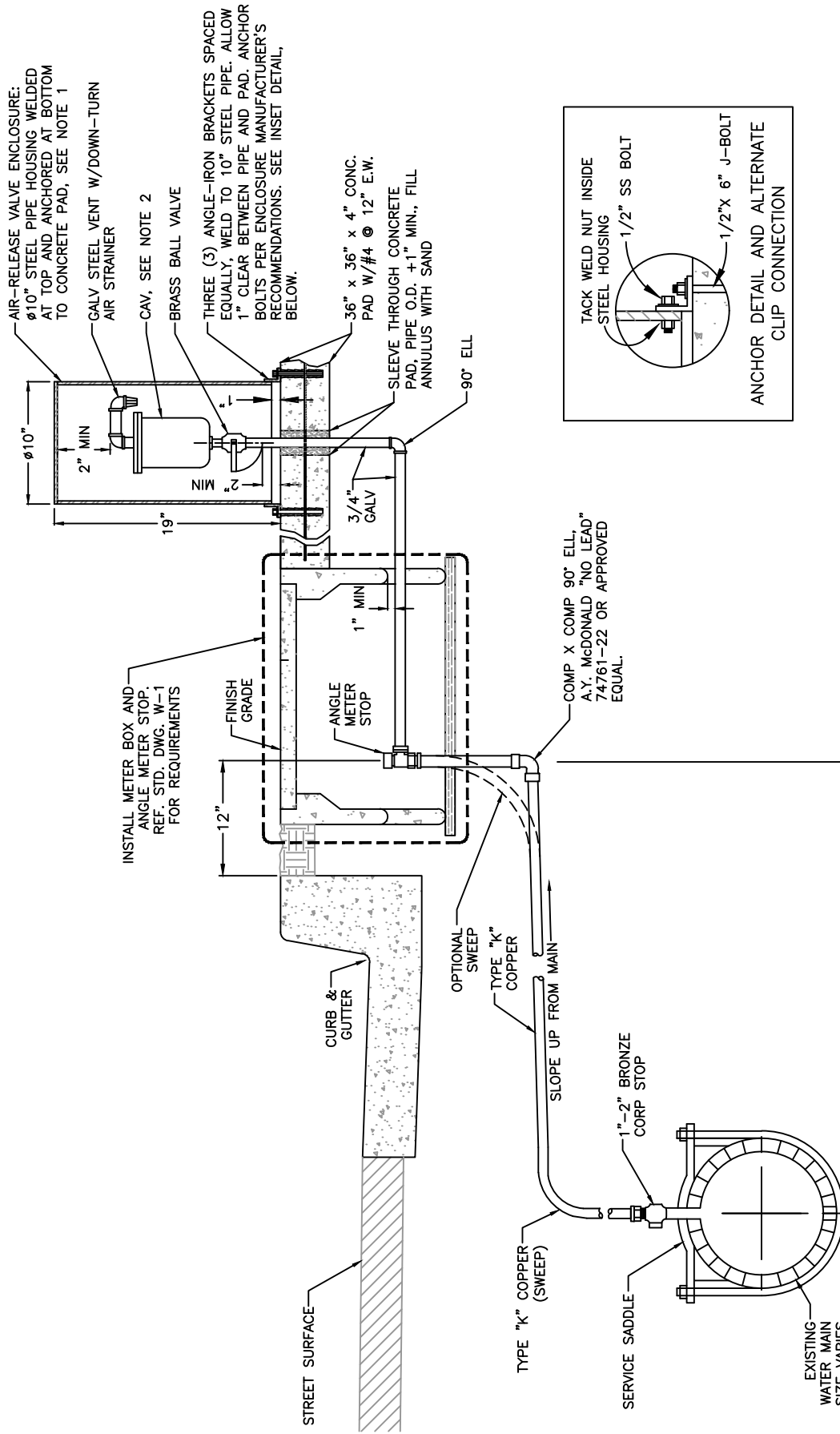


**MIN. CLEARANCE**

SIZE DC	A	B	C
1" TO 3"	12"	24"	12"
4" & UP	24"	24"	12"

**GENERAL NOTES:**

1. RESILIENT SEATED SHUT OFF VALVES AND TEST COCKS ARE REQUIRED.
2. NO TAPS, TEES OR CONNECTIONS OF ANY KIND ARE PERMITTED BETWEEN THE WATER METER AND THE BACKFLOW ASSEMBLY.
3. PROTECTION FROM FREEZE DAMAGE MAY BE REQUIRED IN EXPOSED AREAS.
4. ASSEMBLY MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE PER FRESNO MUNICIPAL CODE.
5. ASSEMBLY TO BE THE SAME SIZE AS THE WATER SUPPLY LINE PER UNIFORM PLUMBING CODE.
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9. DRAINAGE TO EXTERIOR OF THE BUILDING IS REQUIRED WHEN ASSEMBLY IS INSTALLED INSIDE.
10. ANY DEVIATION FROM THESE REQUIREMENTS SHALL BE APPROVED BY THE WATER SYSTEM MANAGER PRIOR TO INSTALLATION.



- NOTES:
1. METAL HOUSING SHALL BE PRIMED AND POWDER COATED A LIGHT GREEN, TAN OR GRAY EXTERIOR ENAMEL FINISH.
  2. VAL-MATIC (MODEL 3/4-25VC) VALVE ASSEMBLY AND METAL HOUSING SHALL BE LOCATED IN MEDIAN ISLANDS, LANDSCAPE AREAS OR OUTSIDE OF SIDEWALK AREA WHERE POSSIBLE.
  3. GALVANIZED PIPES SHALL BE WRAPPED IN TWO LAYERS OF 10 MIL TAPE.
  4. PROVIDE 4' MIN. SIDEWALK CLEARANCE ADJACENT TO AIR-VAC DEVICE FOR ADA ACCESSIBILITY REQUIREMENTS.

# AUTOMATIC AIR RELEASE AND VACUUM VALVE ASSEMBLY

REF. & REV.  
DEC. 2003  
MAR. 2021 (A.7)

CITY OF FRESNO  
W-13

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

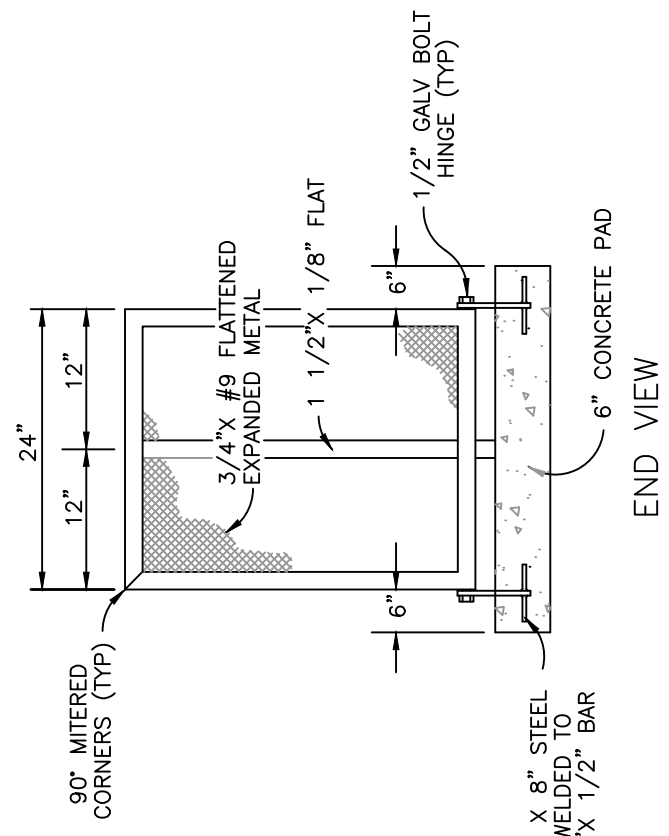
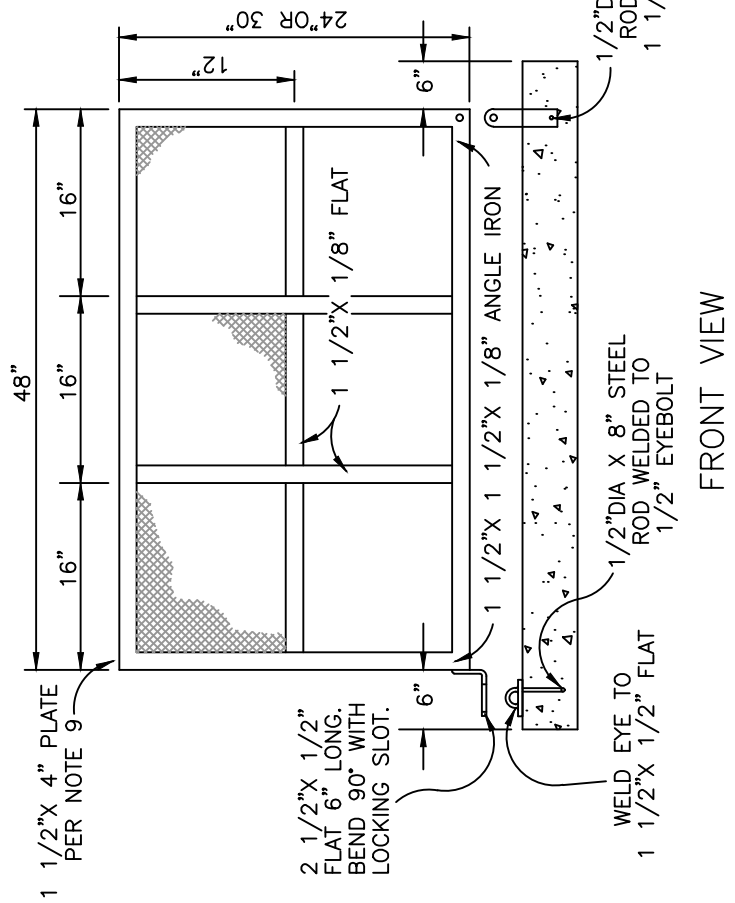
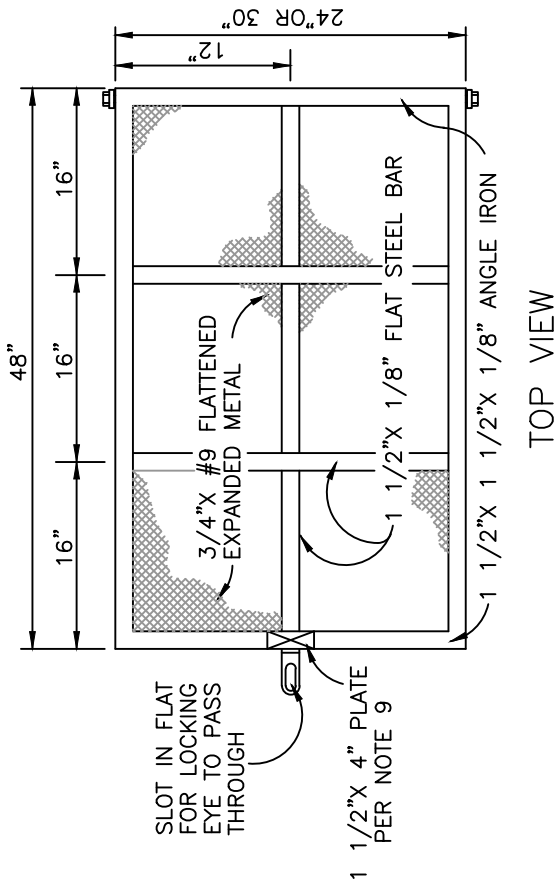
REF. & REV.  
~~AUG., 2002~~  
MAR. 2021 (A.7)

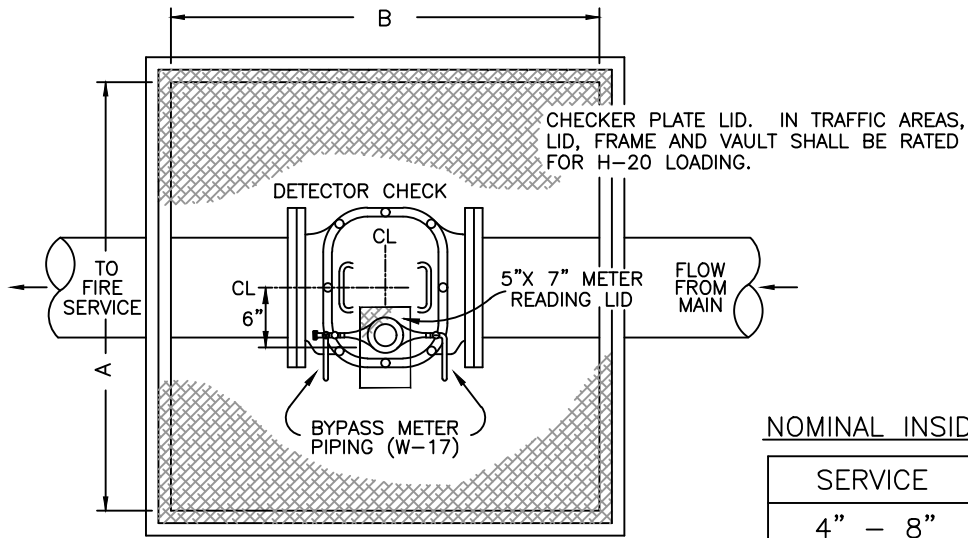
CITY OF FRESNO

W-14

GENERAL NOTES

1. EXPANDED METAL GRATING TO BE WELDED INSIDE STRUCTURAL SUPPORTS EVERY 5" MINIMUM.
2. ALL DIAGONAL OR CIRCULAR CUT EXPOSED EDGES SHALL BE BANDED WITH BAR STOCK WELDED AT ALL CONTACT POINTS.
3. FABRICATE HINGE FROM 1/2" GALV. BOLTS WITH GALV. WASHERS & DOUBLE DOUBLE NUTS. BURR THREADS TO PREVENT REMOVAL.
4. WELD ALL 1/2" THICK BAR INTERSECTIONS WITH 3/8" FILLET WELDS.
5. CONCRETE SLAB TO BE CLASS "A" CONCRETE - 6" THICK.
6. ALL PIPING THROUGH CONCRETE SHALL BE DOUBLE WRAPPED WITH 20 MIL PLUMBER'S TAPE.
7. ALL EXPOSED METAL TO BE PRIMED AND PAINTED WITH RUST PREVENTATIVE PAINT.
8. ENCLOSURE DIMENSIONS MAY VARY TO SUIT EQUIPMENT TYPE.
9. ATTACH 1-1/2" X 4" STEEL PLATE FOR SITE ADDRESS.

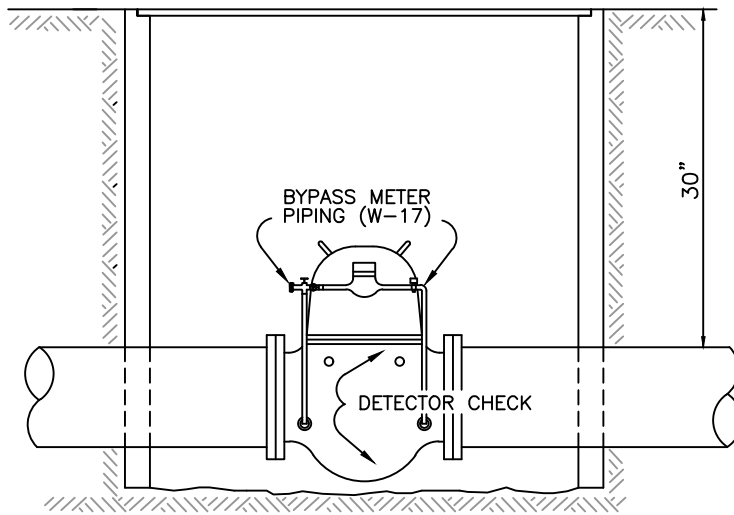




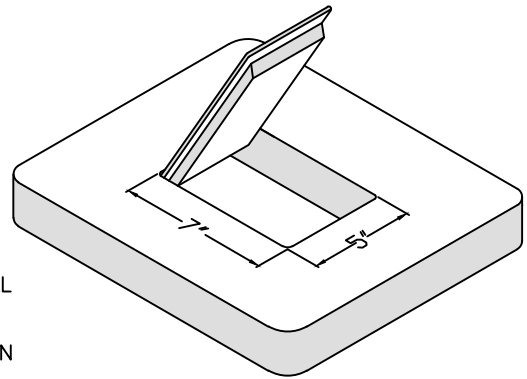
PLAN VIEW

NOMINAL INSIDE DIMENSIONS:

SERVICE	A	B
4" - 8"	30"	48"
10"	48"	48"



ELEVATION

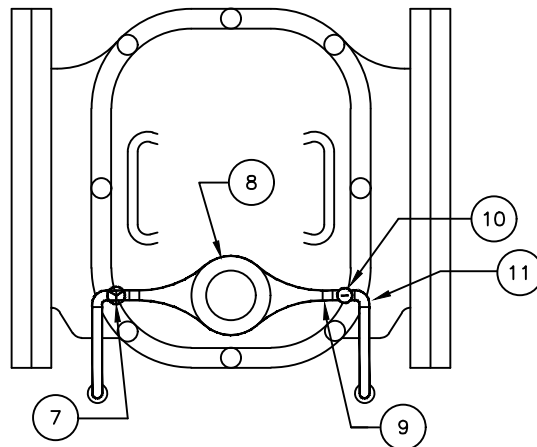


TYPICAL HINGED LID

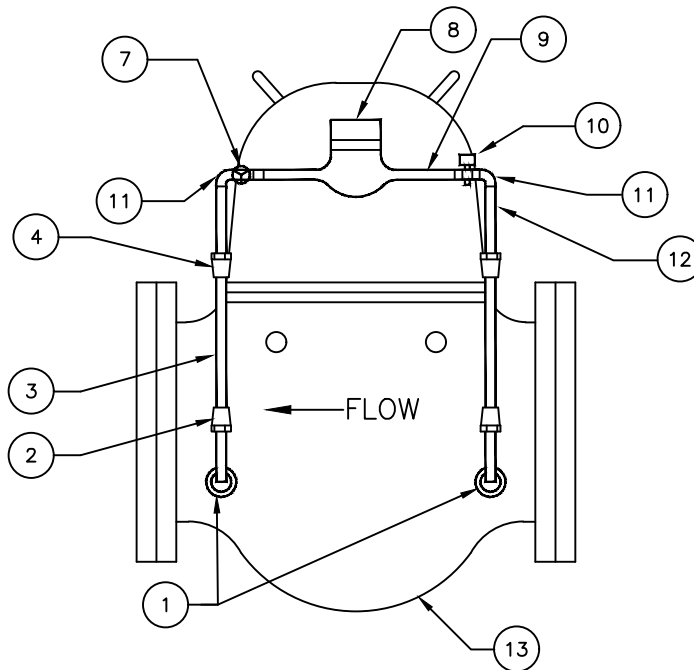
N.T.S.

NOTES:

- CHECK VALVE TO BE HERSEY MODEL E.D.C. OR D.C., GRINNELL MODEL A-2 OR B-2 OR APPROVED EQUAL.
- CHECK VALVE TO BE TAPPED TO ACCOMMODATE INSTALLATION OF BYPASS METER PIPING BY CONTRACTOR.
- VAULT OR BOX TO BE CHRISTY, BROOKS OR APPROVED EQUAL.
- VAULT OR BOX, DETECTOR CHECK VALVE AND COVER TO BE INSTALLED BY DEVELOPER'S CONTRACTOR PER FRESNO MUNICIPAL CODE, SECTION 14, SUBSECTIONS 131-137 INCL. SEE W-17 FOR DETAILS.
- VAULT OR BOX COVER TO HAVE 5" X 7" HINGED METER READ LID.



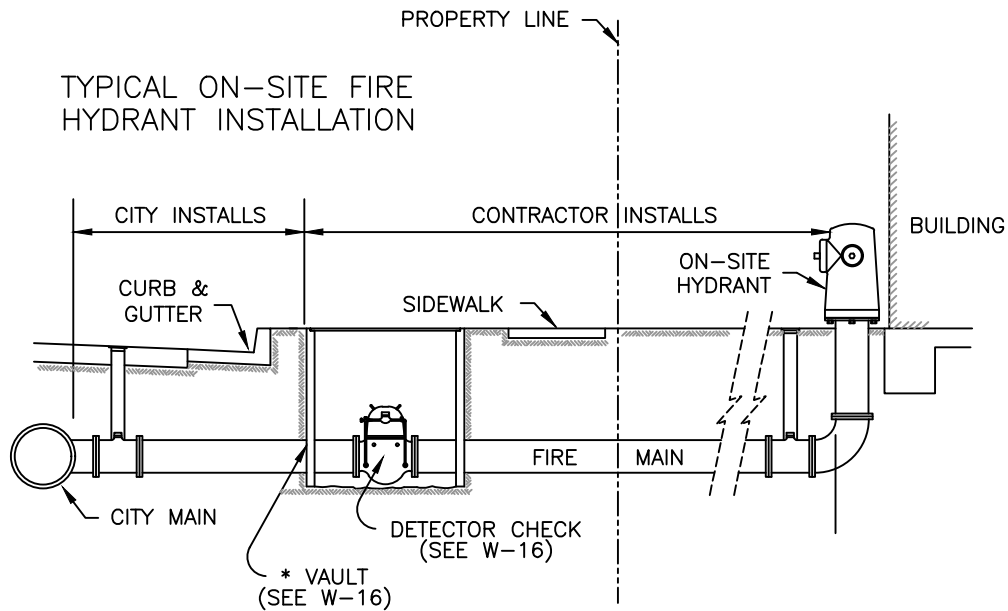
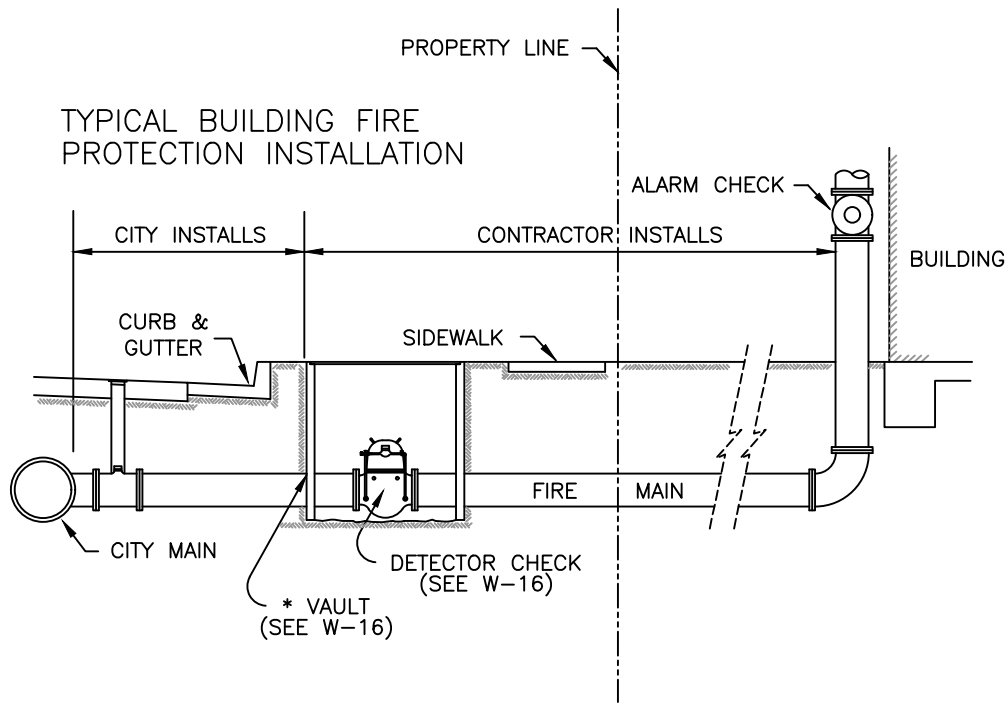
PLAN VIEW



ELEVATION

MATERIALS LIST:

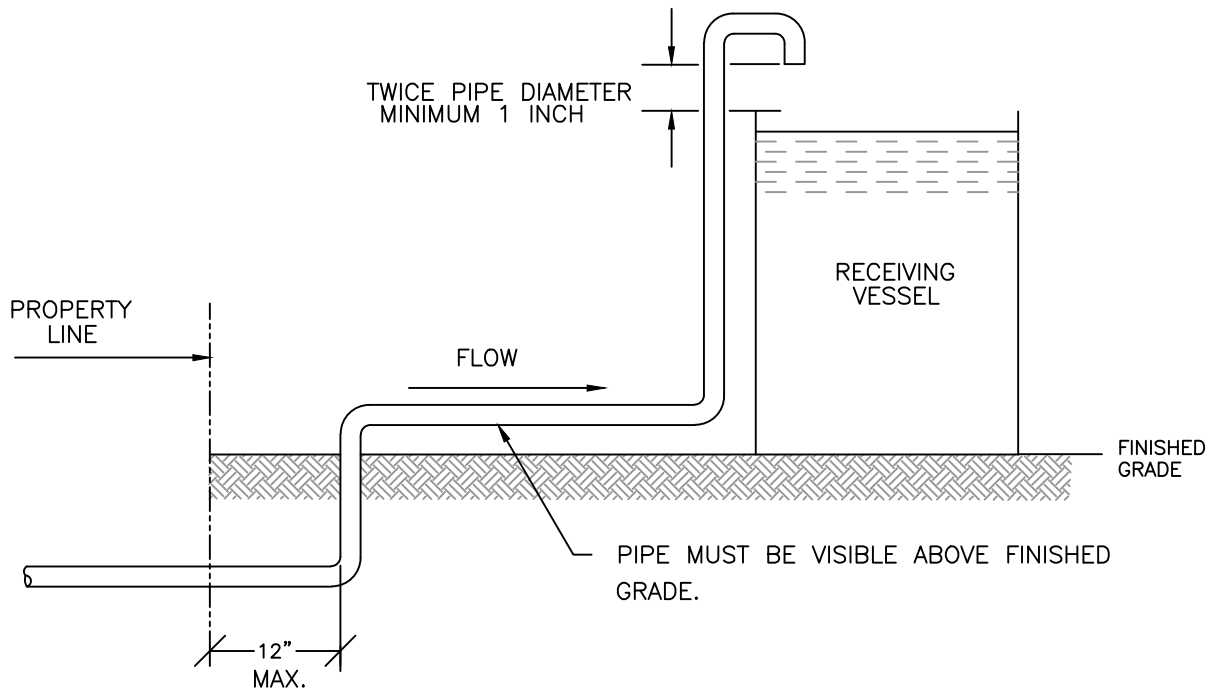
1. 1" x 3/4" BRASS BUSHING - 2 REQ'D
2. 3/4" J-1550 BRASS COUPLING - 2 REQ'D
3. 3/4" COPPER TUBING - 2 REQ'D
4. 3/4" J-1531 BRASS COUPLING - 2 REQ'D
5. NO LONGER USED
6. NO LONGER USED
7. 3/4" CHECK VALVE - 1 REQ'D
8. 3/4" METER - 1 REQ'D
9. 3/4" METER CONNECTION (TAIL PIECE) - 2 REQ'D
10. 3/4" J-200 CURB STOP - 1 REQ'D
11. 3/4" BRASS 90° ELL - 2 REQ'D
12. 3/4" BRASS CLOSE NIPPLE - 4 REQ'D
13. WEIGHTED DETECTOR CHECK VALVE - 1 REQ'D
  - 13.1. TO BE INSTALLED BY DEVELOPER
  - 13.2. TO BE TAPPED AND PLUGGED FOR DETECTOR METER PIPING, SEE W-16



**NOTES:**

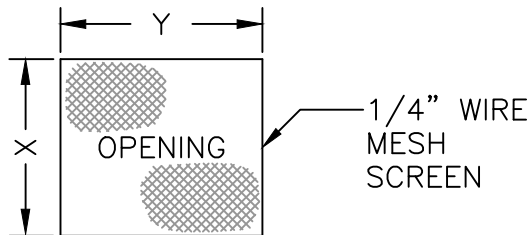
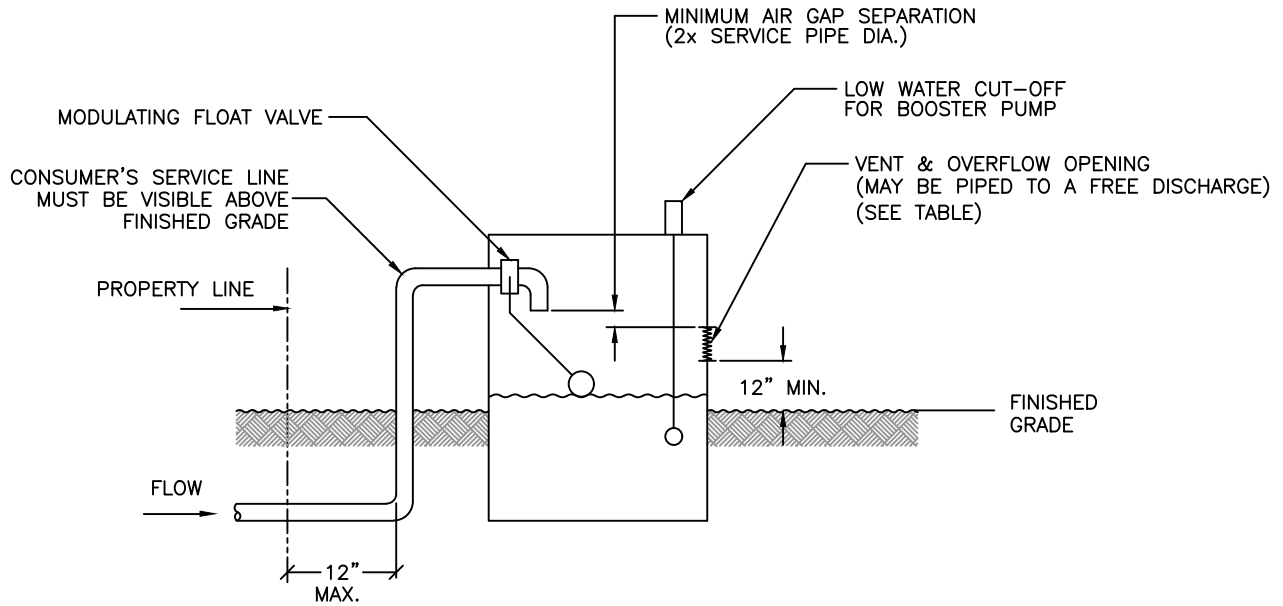
1. THE PERMANENT CONNECTION BETWEEN THE CITY'S INSTALLATION AND THE DEVELOPER'S CONSTRUCTION SHALL BE MADE BY THE DEVELOPER'S CONTRACTOR.
  2. CONTRACTOR SHALL INSTALL VAULT AND VAULT COVER AFTER CITY FORCES COMPLETE THEIR WORK.
- \* VAULT TO BE 1.5' FROM THE CURB FACE OR AS DIRECTED BY THE ENGINEER.





**REQUIREMENTS:**

1. NO TAPS, TEES OR CONNECTIONS OF ANY KIND ARE PERMITTED BETWEEN THE WATER METER AND RECEIVING VESSEL.
2. THE SERVICE PIPE BETWEEN THE WATER METER AND RECEIVING VESSEL MUST BE VISIBLE ABOVE FINISHED GRADE FROM 12 INCHES BEHIND PROPERTY LINE TO THE RECEIVING VESSEL.
3. PROTECTION FROM FREEZE DAMAGE MAY BE NECESSARY IN EXPOSED AREAS.



VENT & OVERFLOW

VENT & OVERFLOW TABLE		
SERVICE PIPE SIZE	DIMENSIONS	
	X	Y
3/4"	4"	3"
1"	4"	4 1/2"
1 1/2"	5"	6"
2"	6"	7"
3"	7"	10"
* 4"	7"	10"
* 6"	7"	15"
* 8"	7"	20"

\* 2 OPENINGS REQUIRED

**REQUIREMENTS**

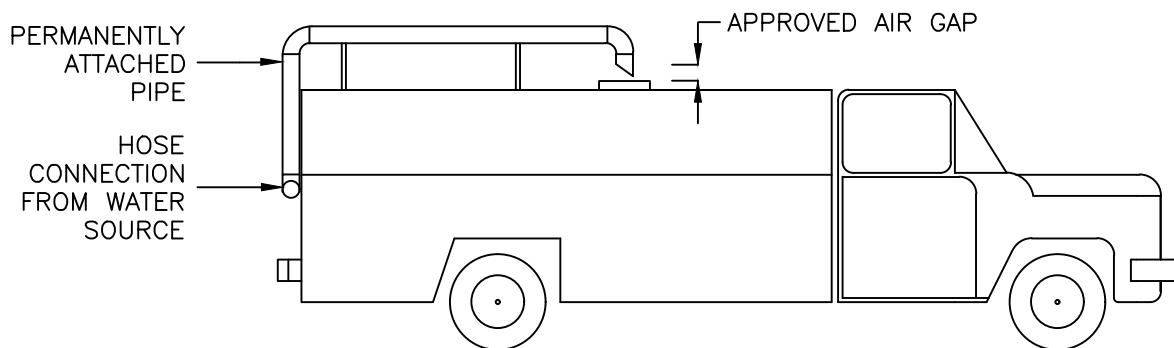
1. NO TAPS, TEES OR OTHER CONNECTIONS OF ANY KIND ARE PERMITTED BETWEEN THE WATER METER AND RECEIVING VESSEL.
2. THE OVERFLOW OPENING AND SCREEN SIZE SHALL BE AS SHOWN ON THE VENT AND OVERFLOW TABLE OR OF GREATER CAPACITY AS REQUIRED TO MAINTAIN THE SPECIFIED AIR GAP SYSTEM.
3. PROTECTION FROM FREEZE DAMAGE MAY BE NECESSARY IN EXPOSED AREAS.

APPROVED ALTERNATIVE  
INSTALLATION  
FOR AN AIR GAP SYSTEM

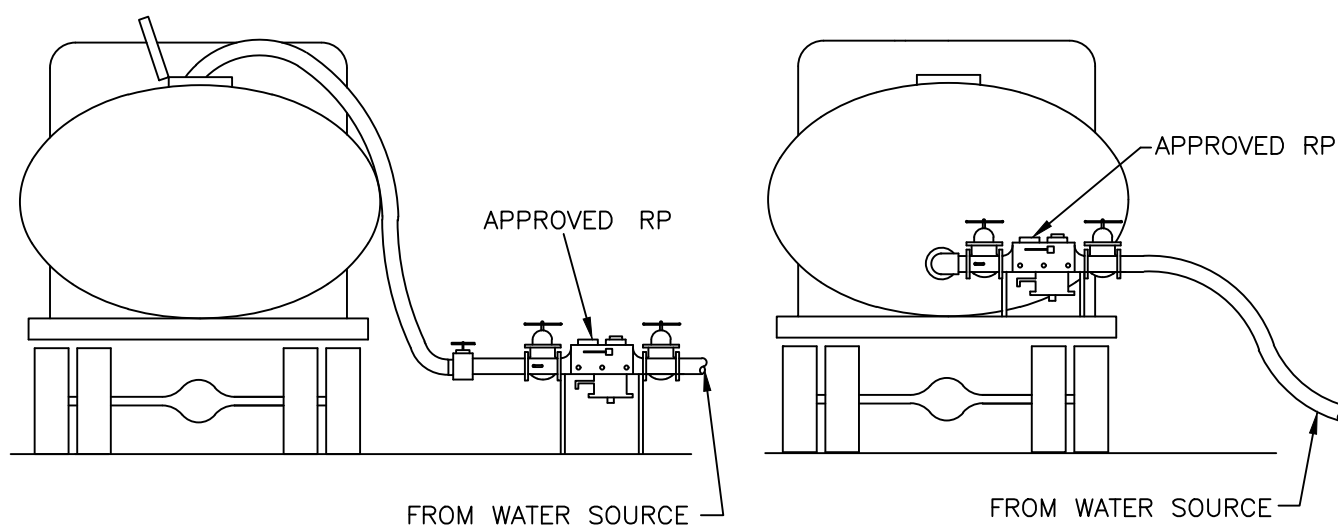
REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-20



AIR-GAP PROTECTION



MECHANICAL ASSEMBLY PROTECTION

REQUIREMENTS

1. AIR-GAP MUST BE APPROVED "AIR-GAP" SYSTEM.
2. MECHANICAL BACKFLOW PREVENTER MUST BE AN APPROVED REDUCED PRESSURE PRINCIPAL ASSEMBLY.
3. BACKFLOW ASSEMBLY MUST BE TESTED BY A CERTIFIED BACKFLOW PREVENTION DEVICE TESTER, WHO IS REGISTERED WITH THE CITY WATER DIVISION. THE TESTS SHALL BE PERFORMED ONCE A YEAR. THE TEST RESULTS MUST BE PROVIDED TO THE CITY WATER DIVISION.
4. TYPICAL EQUIPMENT: WATER TRUCKS, PEST CONTROL TRUCKS, HYDROSEEDING EQUIPMENT, PORTABLE WASHING AND STEAM CLEANING EQUIPMENT.

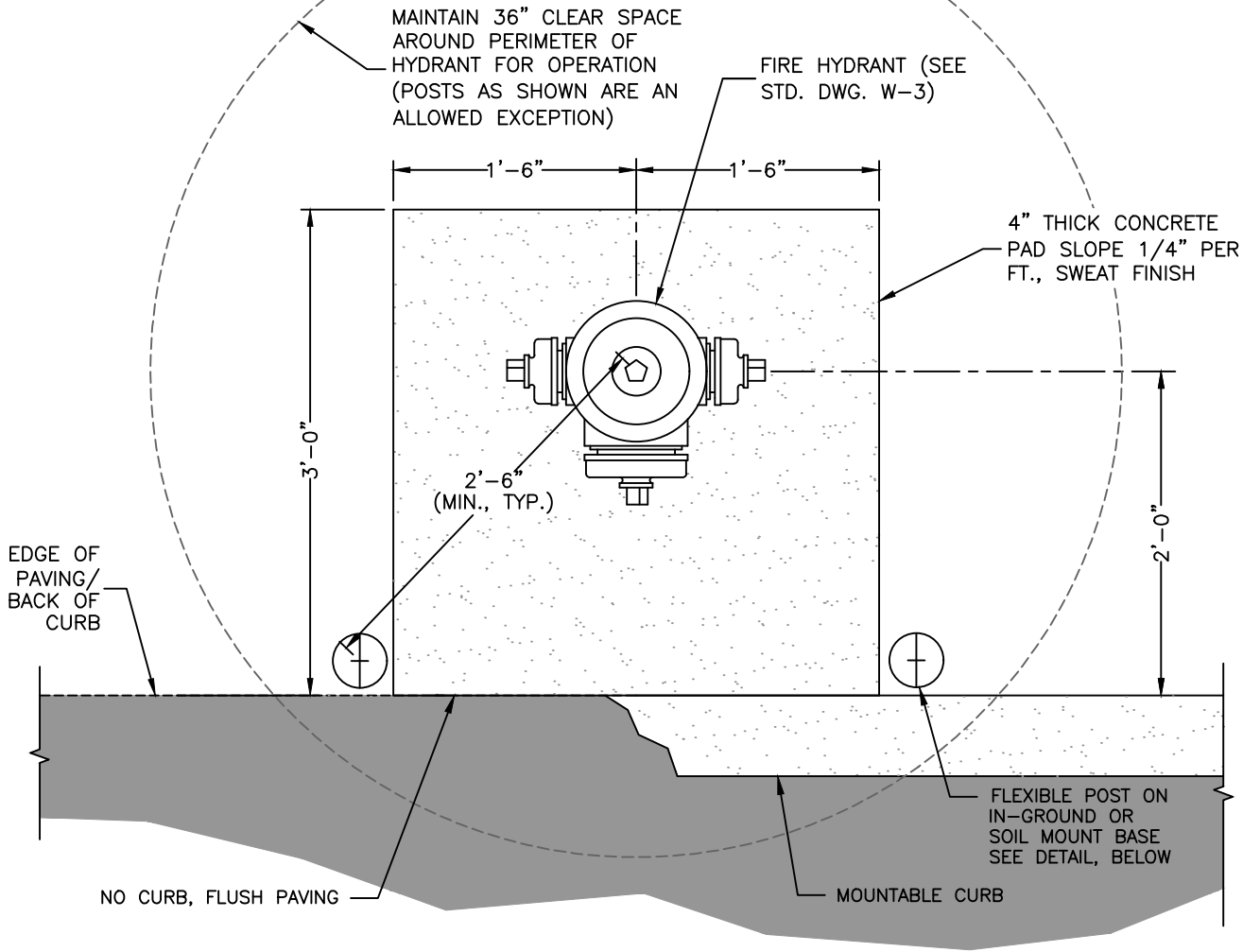
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

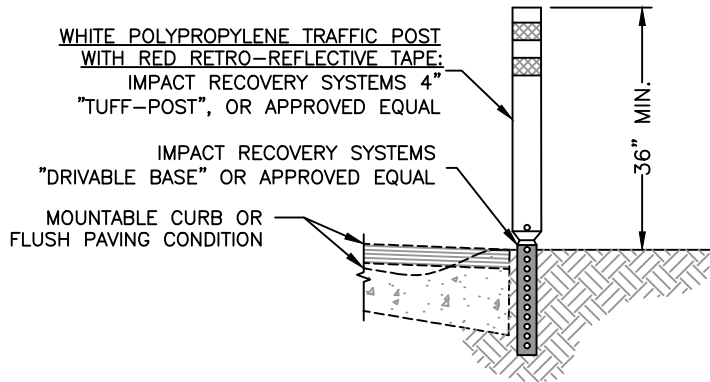
REF. & REV.  
~~DEC. 2003~~  
MAR. 2021 (A.7)

CITY OF FRESNO

W-22



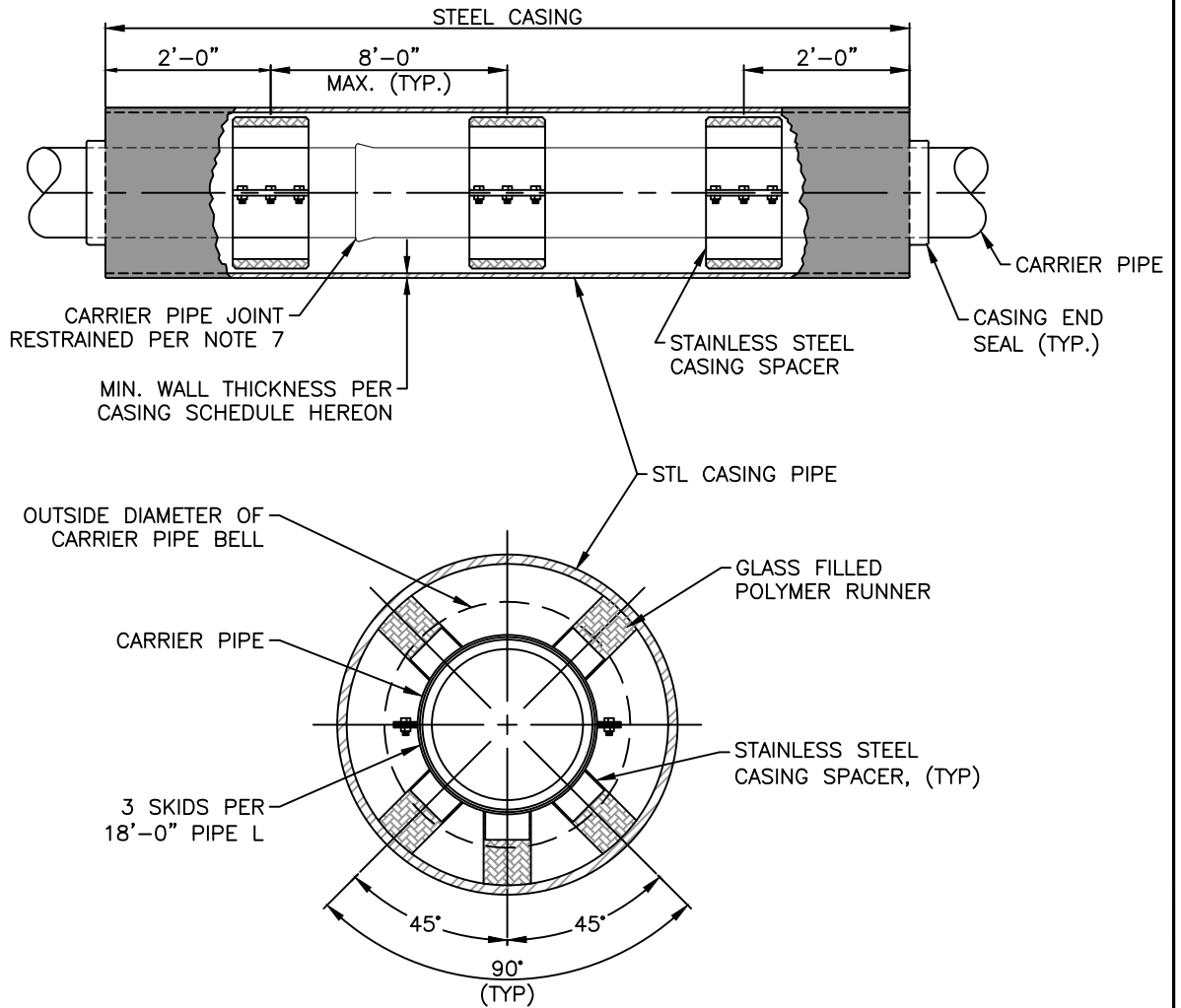
PLAN VIEW



FLEXIBLE POST DETAIL  
IN-GROUND OR SOIL MOUNT BASE  
(PUBLIC STREETS ONLY)

NOTES:

1. THIS STANDARD DRAWING IS APPLICABLE ONLY TO CITY OF FRESNO OWNED AND MAINTAINED FIRE HYDRANTS; PRIVATE HYDRANTS SHALL ADHERE TO PROTECTION CONDITIONS AND RELATED REQUIREMENTS AS SET FORTH BY THE FIRE DEPARTMENT.



STEEL CASING SCHEDULE			
NOMINAL CARRIER PIPE SIZE	NOMINAL MINIMUM CASING SIZE	MINIMUM WALL THICKNESS	
		STREETS & HIGHWAYS	RAILROADS
6"	16"	0.250"	0.281"
8"	18"	0.250"	0.312"
10"	20"	0.250"	0.344"
12"	22"	0.250"	0.344"
14"	26"	0.312"	0.406"
16"	28"	0.312"	0.438"
24"	38"	0.375"	0.562"
30"	44"	0.500"	0.657"

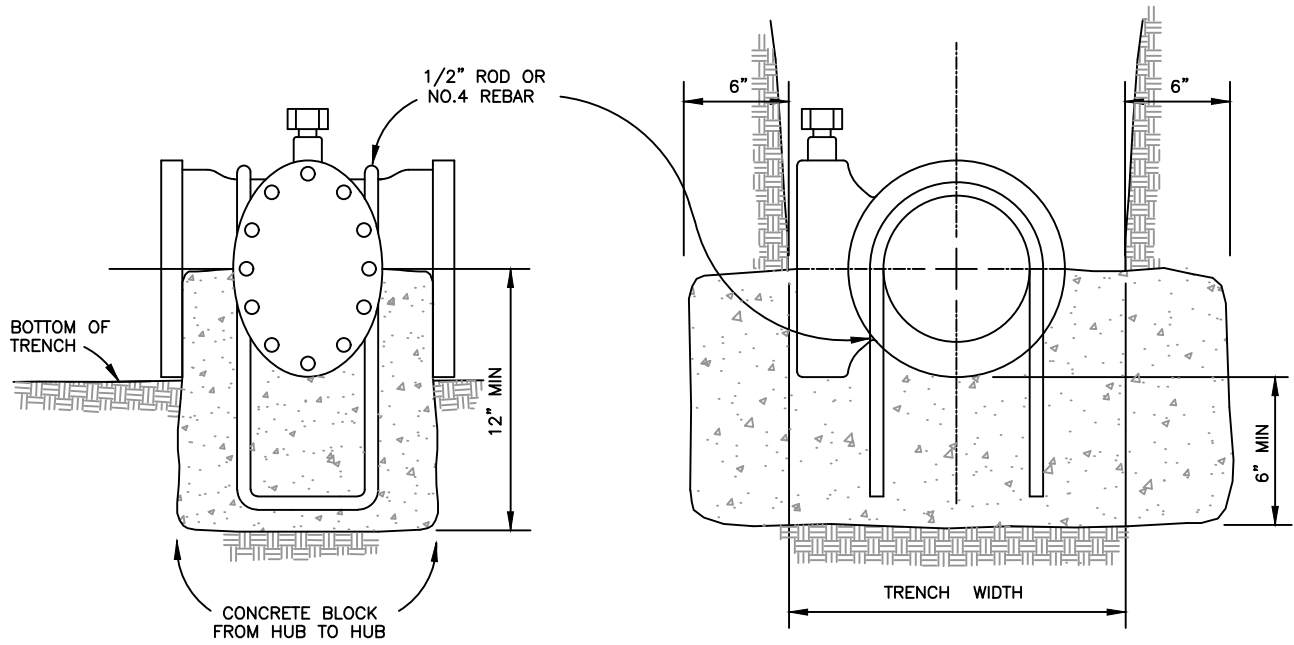
**NOTES:**

- REFER TO STANDARD SPECIFICATIONS SECTION 19 – JACKING PIPE.
- SIZE AND THICKNESS OF CASING SHALL BE AS SHOWN IN STEEL CASING SCHEDULE HEREON. FOR LONG BORES OR SPECIAL SITUATIONS GREATER WALL THICKNESS THAN SHOWN IN SCHEDULE MAY BE REQUIRED. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE STRUCTURAL SUFFICIENCY OF THE CASING DURING CONSTRUCTION AND ALSO THE METHOD OF INSTALLATION.
- CASING INSTALLATIONS AND WALL THICKNESS UNDER RAILROADS ARE SUBJECT TO APPROVAL BY THE APPROPRIATE RAILWAY AUTHORITY.
- CASING SPACERS SHALL BE STAINLESS STEEL CENTER RESTRAINED POSITION TYPE.
- INSTALL A MINIMUM OF THREE (3) CASING SPACERS PER 18' OF CARRIER PIPE SECTION, EQUALLY SPACED.
- EACH END OF CASING SHALL BE SEALED WITH AN APPROVED RUBBER CASING END SEAL SECURED WITH STAINLESS STEEL BANDS.
- CARRIER PIPE SHALL BE DUCTILE IRON AND ALL JOINTS INSIDE THE STEEL CASING AND A MINIMUM OF 5' OUTSIDE THE STEEL CASING SHALL BE RESTRAINED. REFER TO STANDARD SPECIFICATION SECTION 21-15 FOR RESTRAINTS.
- 45° PIPELINE RISERS RUNNING FROM CARRIER PIPE TO TYPICAL DEPTH PIPELINE SHALL BE DUCTILE IRON WITH ALL JOINTS RESTRAINED.

**INSTALLATION OF WATER PIPE  
IN JACKED STEEL CASING**

REF. & REV.  
AUG., 2002  
MAR. 2021 (A.7)

CITY OF FRESNO  
W-24



**NOTE:**

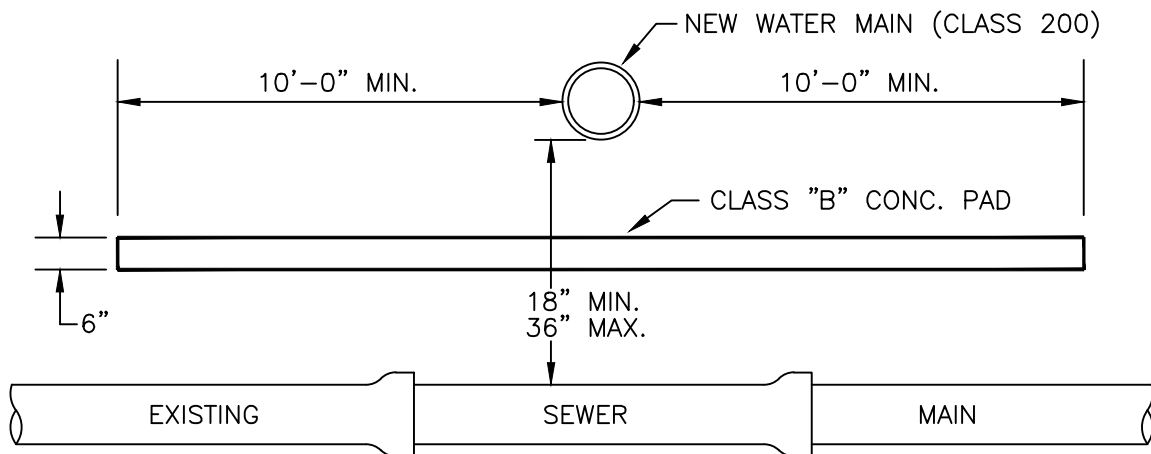
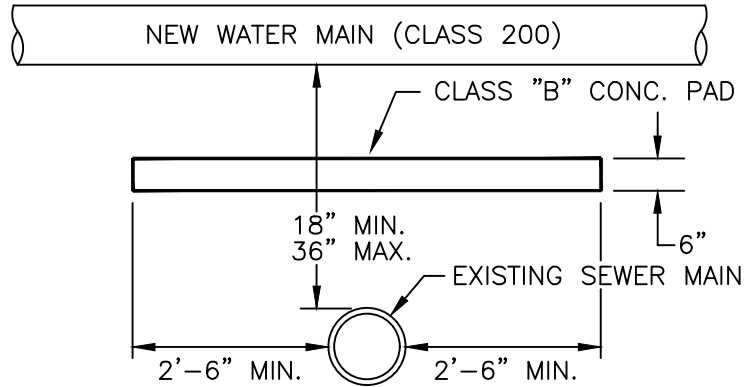
1. OPERATING NUT OF BUTTERFLY VALVE SHALL BE PLACED ON SOUTH OR WEST SIDE DEPENDING ON LINE LOCATION.

**VALVE ANCHOR  
FOR LINE VALVE**

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-25



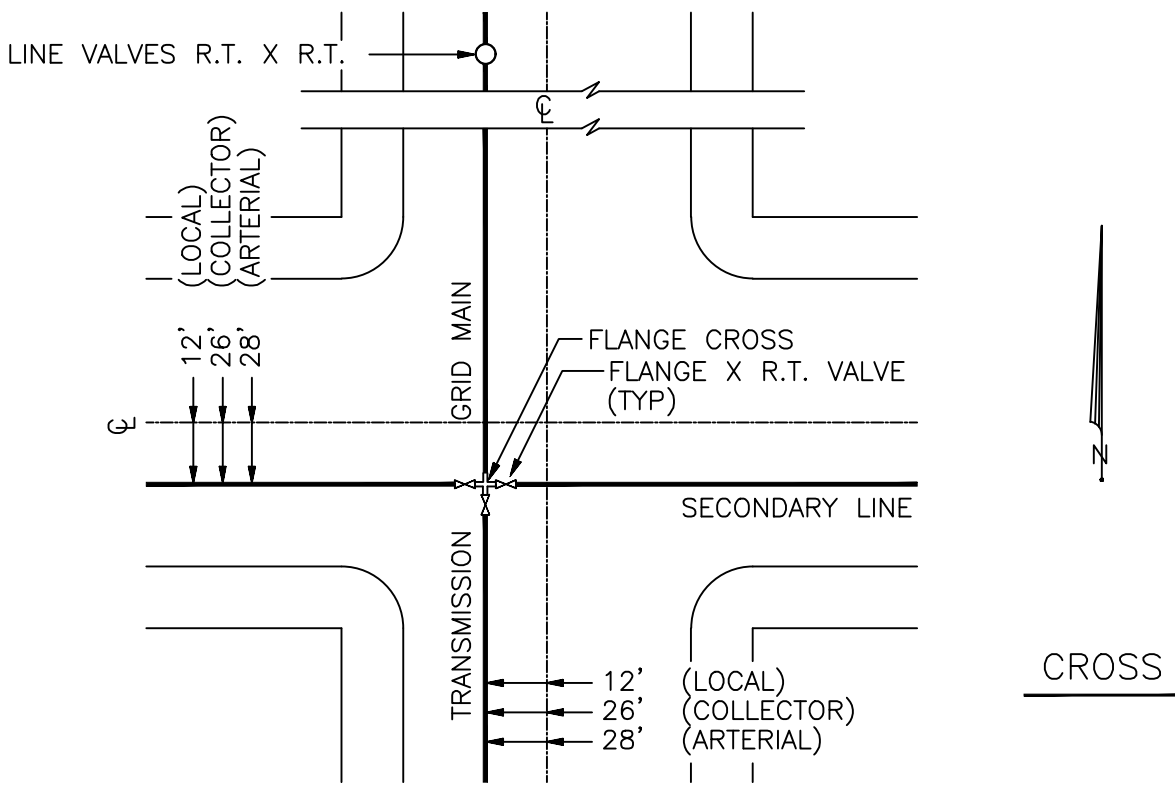
ALTERNATIVE TO FULL CONCRETE  
ENCASEMENT  
(NEW WATER MAIN CROSSING EXISTING SEWER MAIN ZONE D)

REF. & REV.  
AUG. 2002

CITY OF FRESNO

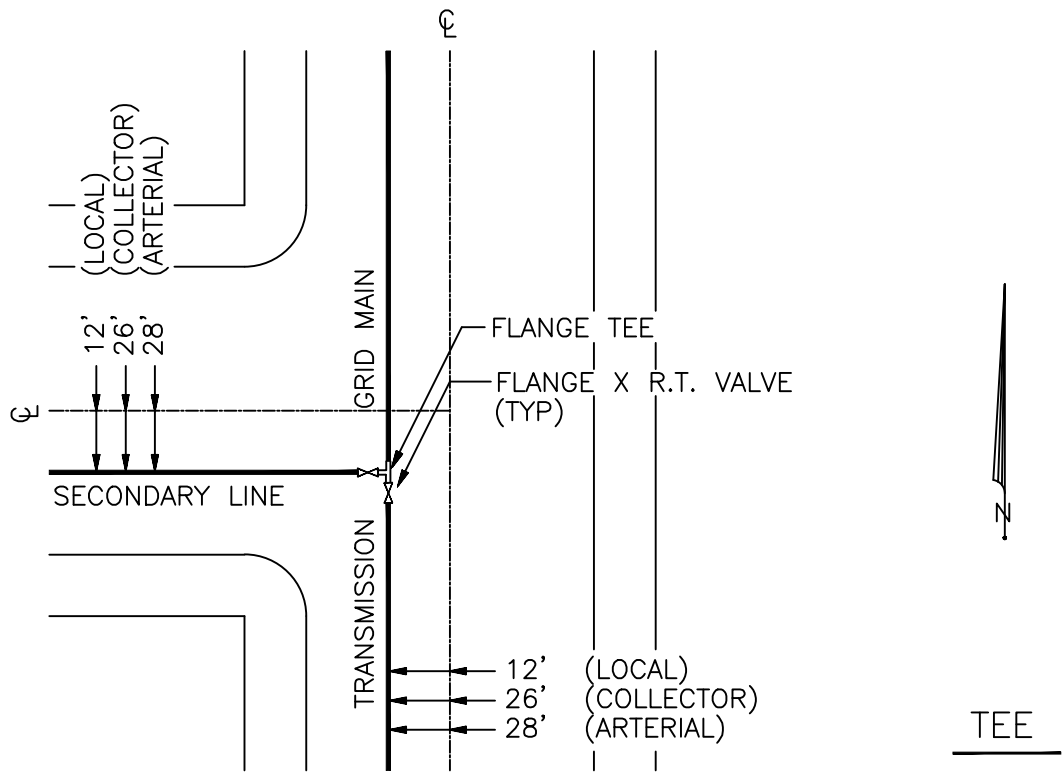
W-26





**NOTES:**

1. DISTANCE BETWEEN VALVES SHALL NOT EXCEED 600' WITHOUT APPROVAL OF ENGINEER.
2. RINGTITE JOINTS SHALL MEAN TYTON JOINT WHERE CAST IRON OR DUCTILE IRON PIPE IS USED.

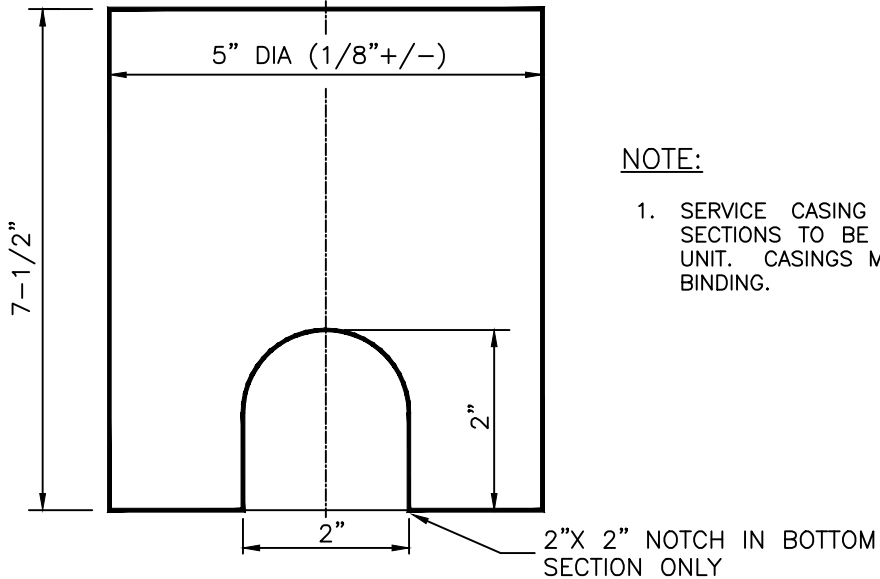
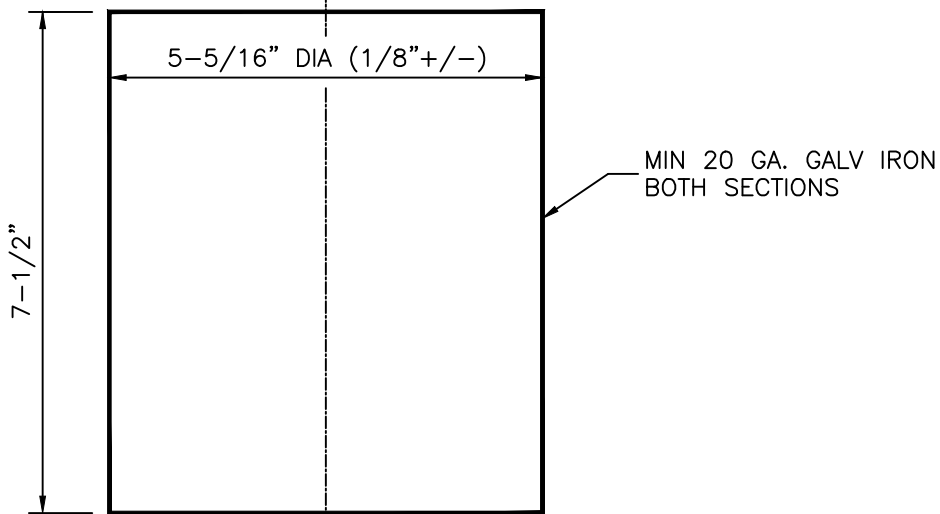
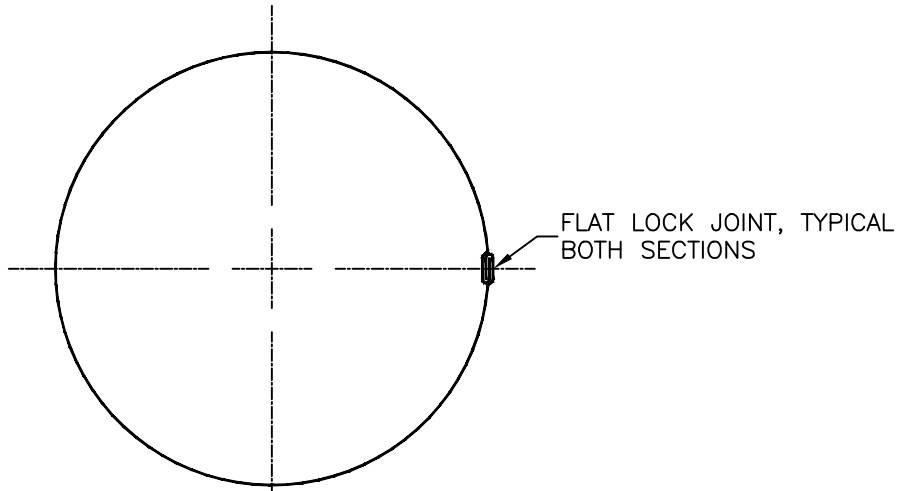


**TYPICAL INTERSECTION CONNECTIONS**

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-27



NOTE:

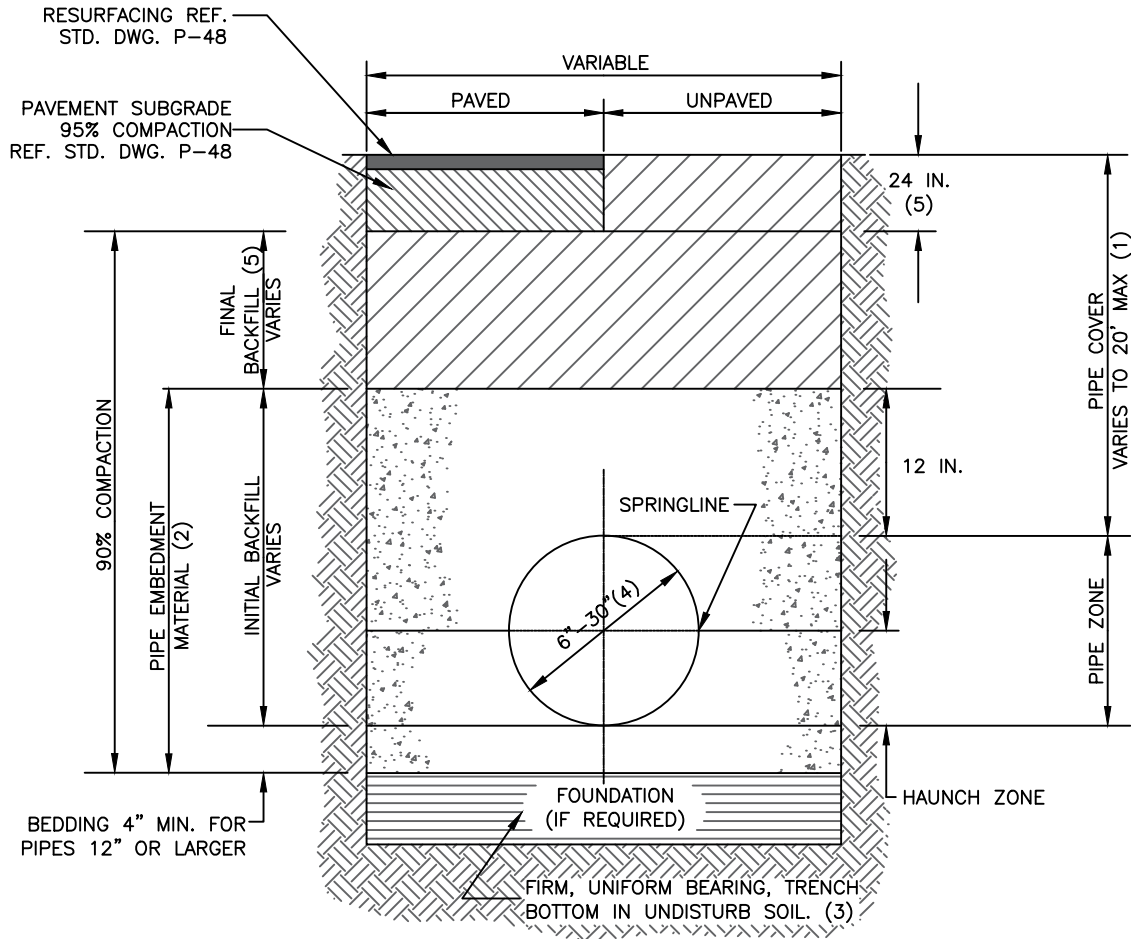
1. SERVICE CASING SHALL CONSIST OF BOTH SECTIONS TO BE SLIPPED TOGETHER AS ONE UNIT. CASINGS MUST SLIDE FREELY WITH NO BINDING.

SERVICE CASING

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-28



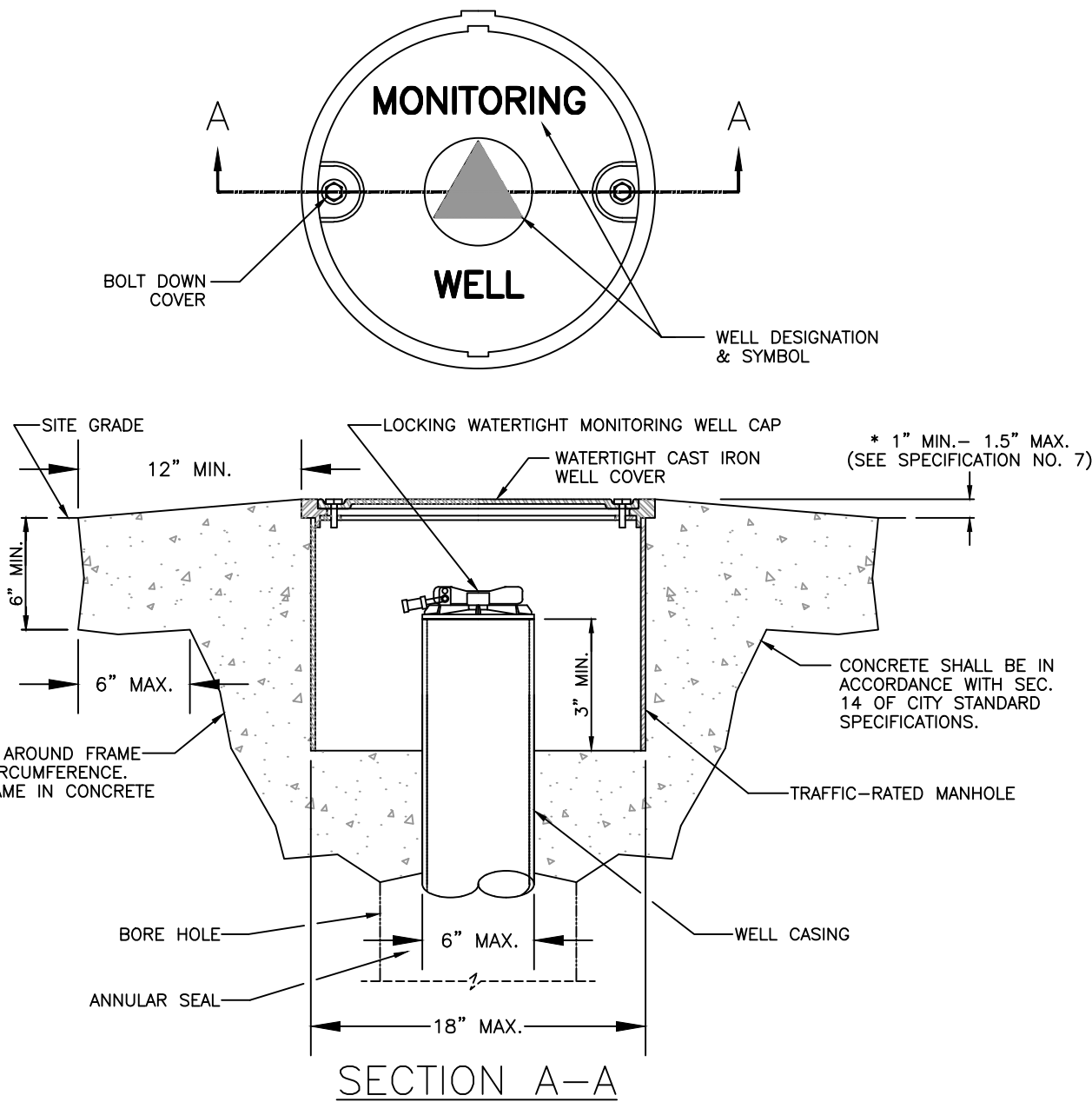
**NOTES**

1. PIPE INSTALLATIONS WHERE COVER OVER PIPE EXCEEDS 20' SHALL BE DESIGNED BY A CIVIL ENGINEER AND SPECIFIED IN THE PROJECT PLANS AND SPECIAL PROVISIONS.
2. PIPE EMBEDMENT MATERIAL SHALL CONSIST OF CLASS II OR CLASS III SELECT NATURAL MATERIAL OR PROCESSED PRODUCT AS DEFINED IN SUBSECTION 22-8.2, "PIPE EMBEDMENT ZONE" OF STANDARD SPECIFICATIONS AND INITIAL BACKFILL PLACED IN ACCORDANCE WITH SUBSECTION 22-8.3, "INITIAL BACKFILL", OF THE STANDARD SPECIFICATIONS.
3. BOTTOM OF TRENCH SHALL BE IN FIRM, UNIFORM-BEARING SOIL SURFACES. WHEN UNSUITABLE OR DISTURBED, THE CONTRACTOR SHALL REMOVE AND REFILL WITH SUITABLE MATERIAL AS SPECIFIED IN SUBSECTION 22-8.1, "FOUNDATION AND BEDDING", OF THE STANDARD SPECIFICATIONS.
4. STANDARD DETAIL W-29 SHALL BE APPLICABLE TO ALL WATER PIPE INSTALLATIONS WITH DIAMETERS OF 6 TO 30 INCHES. CONSTRUCTION PROCEDURES FOR PIPES LARGER THAN 30 INCHES SHALL BE PROVIDED BY THE DESIGN ENGINEER.
5. IN UNPAVED AREAS FINAL BACKFILL SHALL EXTEND TO THE SURFACE ELEVATION WITH 95% COMPACTION IN THE UPPER 24" OF TRENCH.

**WATER MAIN TRENCH, BEDDING,  
AND BACKFILL DETAIL**

REF. & REV.  
DEC. 2003  
MAR. 2021 (A.7)

CITY OF FRESNO  
**W-29**



**SPECIFICATIONS:**

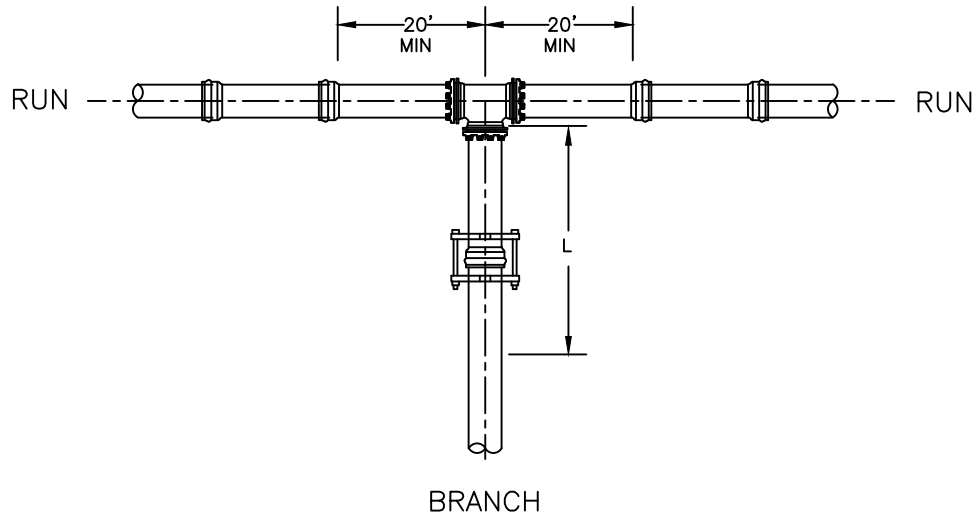
1. THIS STANDARD IS NOT ALLOWED WITHIN THE TRAVELED WAY AND ANY PAVED AREAS OF A PUBLIC STREET.
2. NO LESS THAN 12 FEET OF HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN THE MONITORING WELL AND ANY EXISTING UNDERGROUND UTILITY.
3. THE WELL BOX SHALL BE STRUCTURALLY SOUND AND STRONG ENOUGH TO SUPPORT VEHICULAR TRAFFIC. IT SHALL BE TRAFFIC-RATED AS TESTED BY AN OFFICIAL TESTING LABORATORY TO MEET AASHTO STANDARD FOR "H-20" TRUCK LOADINGS.
4. THE TOP OF THE WELL SHALL BE PERMANENTLY MARKED WITH LARGE LETTERS "MONITORING WELL".
5. THE WELL COVER SHALL BE BOLT DOWN OR EQUIVALENT TO PROVIDE PROTECTION AGAINST UNAUTHORIZED ACCESS.
6. THE WELL COVER SHALL BE WATERTIGHT TO PROTECT AGAINST ENTRY OF SURFACE WATER.
7. THE TOP OF THE WELL SHALL BE SET 1.0 TO 1.5 INCHES ABOVE SURROUNDING GRADE TO PROVIDE FOR DRAINAGE AWAY FROM THE COVER, EXCEPT FOR WELLS INSTALLED IN SIDEWALK OR PAVED AREAS WHERE TOP OF THE CONCRETE PAD SHALL BE INSTALLED FLUSH AND MATCH EXISTING CONDITIONS.
8. A CONCRETE PAD WITH A MINIMUM THICKNESS OF 6 INCHES SHALL BE CONSTRUCTED AROUND THE WELL BOX. THE PAD SHALL EXTEND Laterally A MINIMUM OF 12 INCHES FROM OUTSIDE OF THE WELL BOX. THE PAD SHALL BE CONSTRUCTED TO BE FREE OF CRACKS OR OTHER DEFECTS LIKELY TO AFFECT WATER TIGHTNESS.
9. A LOCKING WATERTIGHT WELL CAP SHALL BE INSTALLED AT THE TOP OF THE WELL CASING SO THAT SURFACE WATER THAT MAY ENTER THE VAULT WILL NOT ENTER THE WELL.
10. MONITORING WELLS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE CALIFORNIA WELL STANDARDS.

**MONITORING WELL MANHOLE  
CONSTRUCTION DETAIL**

REF. & REV.  
AUG. 2002

CITY OF FRESNO

W-30



		RUN SIZE									
		4	6	8	10	12	14	16	18	20	24
BRANCH SIZE	4	*	*	*	*	*	*	*	*	*	*
	6	X	*	*	*	*	*	*	*	*	*
	8	X	X	*	*	*	*	*	*	*	*
	10	X	X	X	*	*	*	*	*	*	*
	12	X	X	X	X	13	*	*	*	*	*
	14	X	X	X	X	X	24	13	*	*	*
	16	X	X	X	X	X	X	36	25	14	*
	18	X	X	X	X	X	X	X	47	37	16
	20	X	X	X	X	X	X	X	X	58	39
	24	X	X	X	X	X	X	X	X	X	79

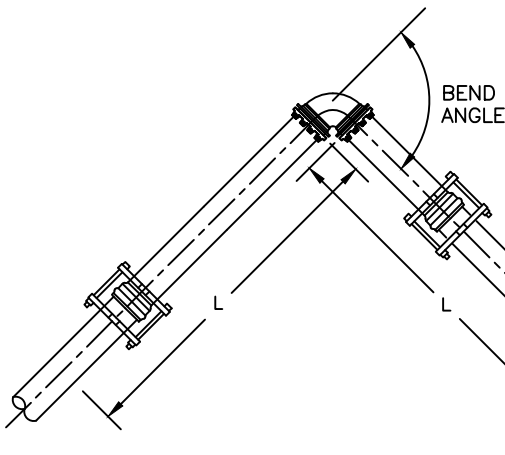
\* FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET OF THE TEE.

RESTRAINED LENGTHS, "L" (IN FEET)

SPECIFICATIONS:

1. RESTRAIN THE TWO MECHANICAL JOINTS ON THE RUN SIDES OF THE TEE. WHEN LESS THAN A FULL 20' LENGTH OF PIPE IS INSTALLED ON EACH SIDE OF THE RUN.
2. ALL JOINTS WITHIN THE LENGTH "L" ON THE BRANCH MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH-ON PIPE PER CITY SPECIFICATION.
3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.

## HORIZONTAL BEND



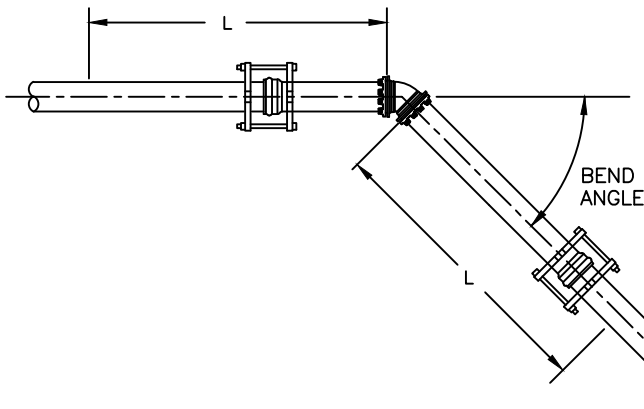
**SPECIFICATIONS:**

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STD. SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.

		SIZE						
		4	6	8	10	12	14	16
BEND ANGLE	11.25	3	3	3	4	4	5	5
	22.5	3	5	7	7	9	10	11
	45	7	11	13	15	18	20	23
	90	17	24	31	37	43	49	55

RESTRAINED LENGTHS, "L" (IN FEET)

## VERTICAL BEND



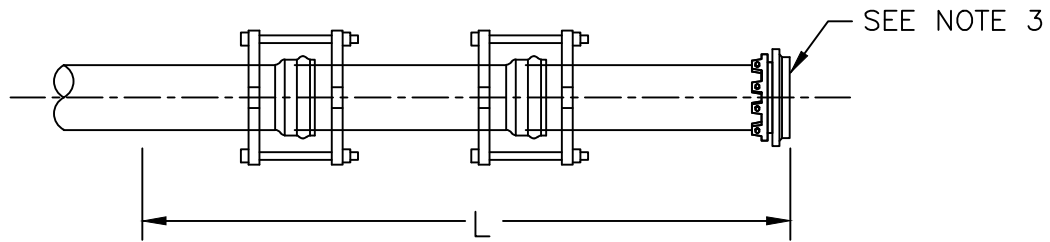
**SPECIFICATIONS:**

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STD. SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.

		SIZE						
		4	6	8	10	12	14	16
BEND ANGLE	11.25	5	7	9	11	13	15	17
	22.5	11	15	19	23	27	31	35
	45	23	31	40	48	56	64	72

RESTRAINED LENGTHS, "L" (IN FEET)

## DEAD END FOR PVC PIPE



### NOTES:

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STANDARD SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS, SEE SECTION 22 OF GENERAL CONDITIONS.
3. WHEN APPROVED, CONCRETE THRUST BLOCK MAY BE USED AS SHOWN ON STANDARD DRAWING W-6.

### PIPE SIZE

4	6	8	10	12	14	16
52	73	96	115	136	155	174

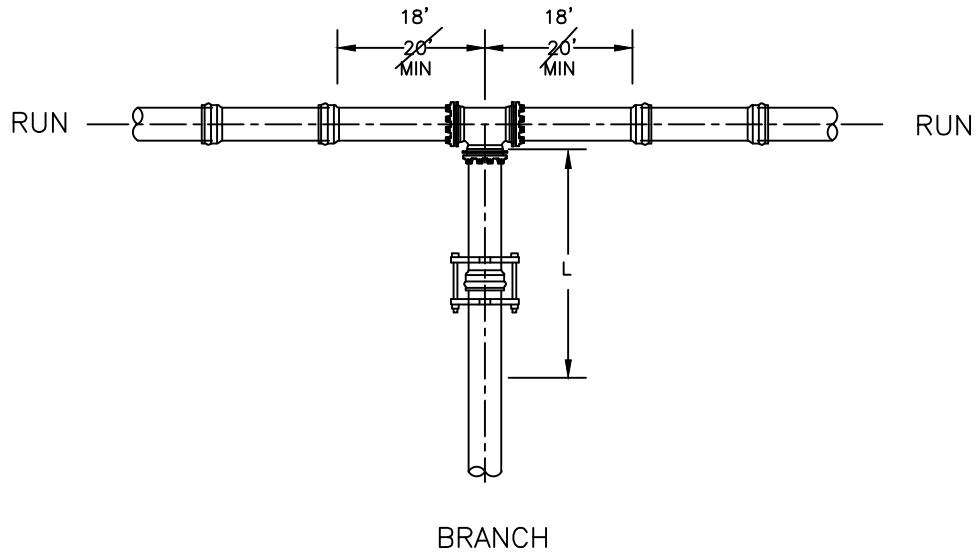
## RESTRAINED LENGTHS, "L" (IN FEET)

### GENERAL NOTES ON USE OF RESTRAINED JOINT LENGTHS

THESE RESTRAINED LENGTH CALCULATIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA:

1. THREE (3) FEET MINIMUM DEPTH OF COVER
2. A SAFETY FACTOR OF 1.5
3. SOIL TYPE OF SM--SILTY GRAVEL AND SILTY SANDS AS DEFINED BY ASTM D-2487
4. TRENCH COMPACTION OF TYPE 5 - PIPE BEDDED IN COMPACTED GRANULAR MATERIAL TO THE CENTER LINE OF PIPE, 4 INCHES MINIMUM UNDER PIPE. COMPACTED GRANULAR MATERIAL OR SELECT MATERIAL TO TOP OF THE PIPE (APPROXIMATELY 90 PERCENT STANDARD PROCTOR DENSITY, AASHTO T-99).
5. TEST PRESSURES OF 200 PSI FOR THE 4 THROUGH 16 INCH SIZES.

IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, CONSULT THE DESIGN ENGINEER FOR MODIFICATIONS TO THE RESTRAINED LENGTHS OR DESIGN.



		RUN SIZE									
		4	6	8	10	12	14	16	18	20	24
BRANCH SIZE	4	*	*	*	*	*	*	*	*	*	*
	6		*	*	*	*	*	*	*	*	*
	8			*	*	*	*	*	*	*	*
	10				*	*	*	*	*	*	*
	12					13	*	*	*	*	*
	14						24	13	*	*	*
	16							36	25	14	*
	18								47	37	16
	20									58	39
	24										79

\* FOR THIS CONDITION NEED ONLY RESTRAIN THE BRANCH OUTLET OF THE TEE.

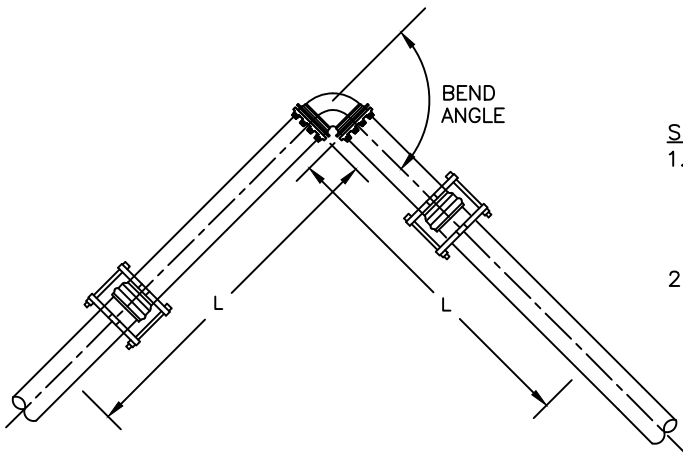
RESTRAINED LENGTHS, "L" (IN FEET)

SPECIFICATIONS:

1. RESTRAIN THE TWO MECHANICAL JOINTS ON THE RUN SIDES OF THE TEE WHEN LESS THAN A FULL 18' LENGTH OF PIPE IS INSTALLED ON EACH SIDE OF THE RUN.
2. ALL JOINTS WITHIN THE LENGTH "L" ON THE BRANCH MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH-ON PIPE PER CITY SPECIFICATION.
3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.



## HORIZONTAL BEND



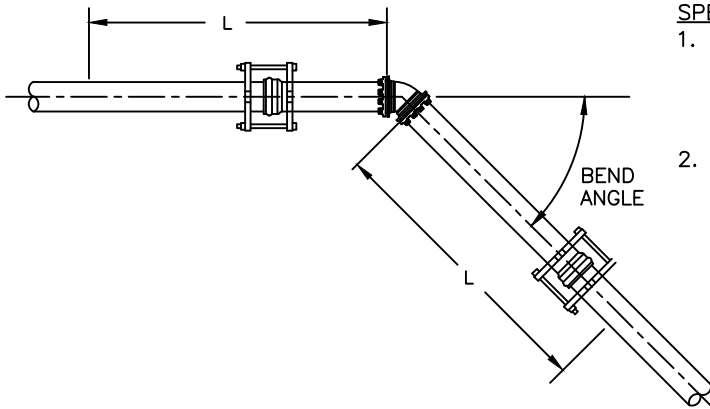
**SPECIFICATIONS:**

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STD. SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.

		SIZE						
		4	6	8	10	12	14	16
BEND ANGLE	11.25	3	3	3	4	4	4	5
	22.5	3	4	7	7	8	9	10
	45	7	9	12	15	17	19	21
	90	16	23	29	35	40	45	51

RESTRAINED LENGTHS, "L" (IN FEET)

## VERTICAL BEND



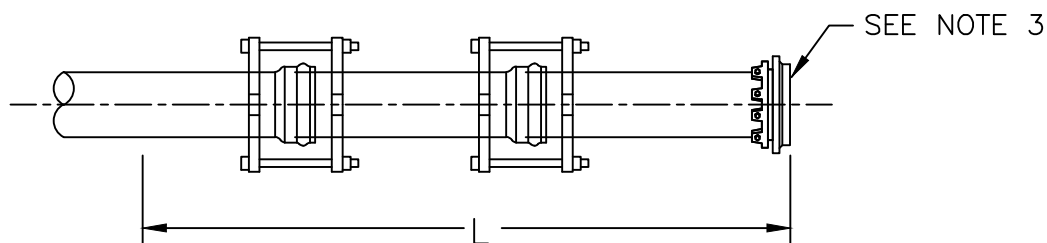
**SPECIFICATIONS:**

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STD. SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION 22 OF GENERAL CONDITIONS.

		SIZE						
		4	6	8	10	12	14	16
BEND ANGLE	11.25	3	5	7	8	8	10	11
	22.5	7	11	12	15	17	20	22
	45	15	19	25	31	36	41	46

RESTRAINED LENGTHS, "L" (IN FEET)

## DEAD END FOR DUCTILE IRON PIPE



### NOTES:

1. ALL JOINTS WITHIN LENGTH "L" MUST BE RESTRAINED. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS WITH PUSH-ON PIPE PER CITY STANDARD SPECIFICATIONS.
2. FOR TEST PRESSURES AND LAYING CONDITIONS, SEE SECTION 22 OF GENERAL CONDITIONS.
3. WHEN APPROVED, CONCRETE THRUST BLOCK MAY BE USED AS SHOWN ON STANDARD DRAWING W-6.

### PIPE SIZE

4	6	8	10	12	14	16
33	47	61	73	86	98	111

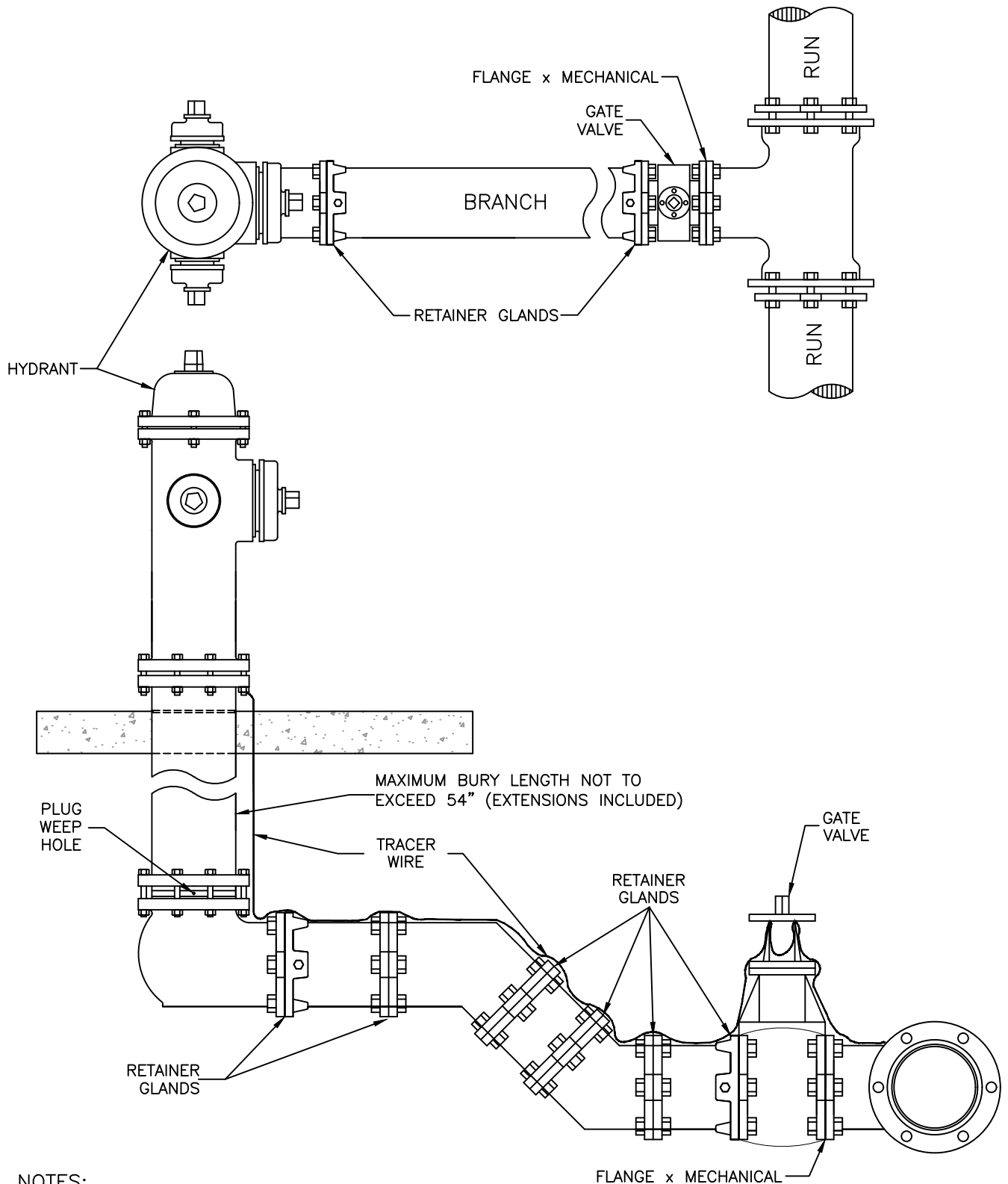
## RESTRAINED LENGTHS, "L" (IN FEET)

### GENERAL NOTES ON USE OF RESTRAINED JOINT LENGTHS

THESE RESTRAINED LENGTH CALCULATIONS ARE BASED ON THE FOLLOWING DESIGN CRITERIA:

1. THREE (3) FEET MINIMUM DEPTH OF COVER
2. A SAFETY FACTOR OF 1.5
3. SOIL TYPE OF SM--SILTY GRAVEL AND SILTY SANDS AS DEFINED BY ASTM D-2487.
4. TRENCH COMPACTION OF TYPE 5 - PIPE BEDDED IN COMPACTED GRANULAR MATERIAL TO THE CENTER LINE OF PIPE, 4 INCHES MINIMUM UNDER PIPE. COMPACTED GRANULAR MATERIAL OR SELECT MATERIAL TO TOP OF THE PIPE (APPROXIMATELY 90 PERCENT STANDARD PROCTOR DENSITY, AASHTO T-99).
5. TEST PRESSURES OF 200 PSI FOR THE 4 THROUGH 16 INCH SIZES.

IF ACTUAL CONDITIONS DIFFER FROM THOSE LISTED ABOVE OR THE REQUIRED RESTRAINED LENGTH CANNOT BE MET, CONSULT THE DESIGN ENGINEER FOR MODIFICATIONS TO THE RESTRAINED LENGTHS OR DESIGN.



**NOTES:**

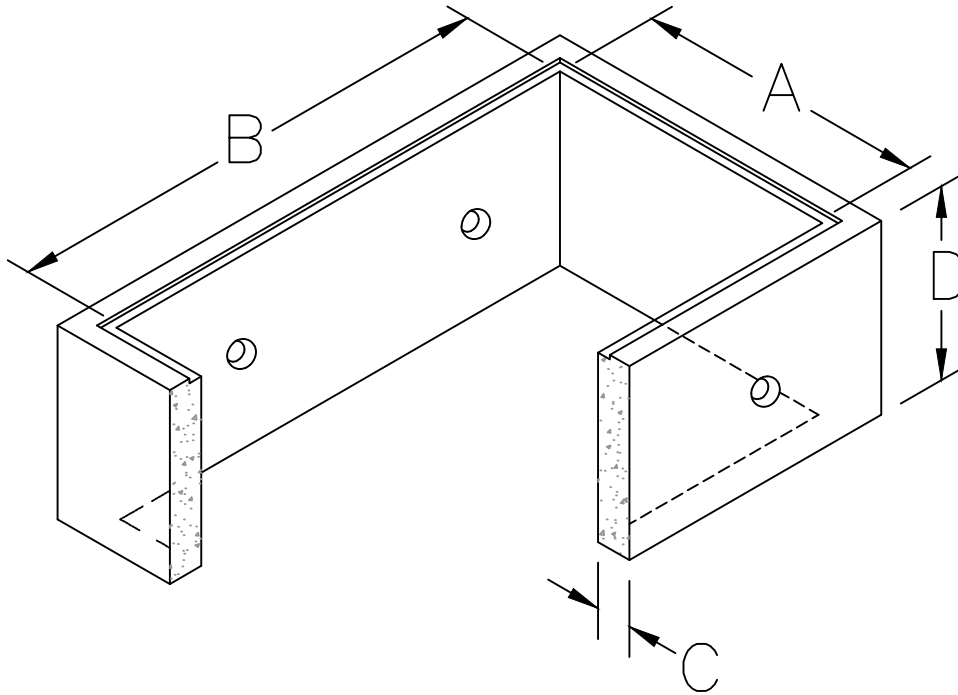
1. HYDRANT MUST BE FULLY RESTRAINED FROM TEE TO HYDRANT. USE RETAINER GLAND AT MECHANICAL JOINTS AND HARNESS ON PUSH ON PIPE PER CITY SPECIFICATIONS.
2. JOINT RESTRAINT IS NOT REQUIRED ON THE RUN OF THE TEE UNLESS THE TEE FALLS WITHIN THE RESTRAINED LENGTH REQUIREMENT OF ANOTHER FITTING.
3. FOR TEST PRESSURES AND LAYING CONDITIONS SEE SECTION ON GENERAL NOTES FOR USE OF RESTRAINED JOINT LENGTHS.

**HYDRANT RUN TEE RESTRAINT  
FOR PVC OR DUCTILE IRON PIPE**

REF. & REV.  
DEC. 2003  
MAR. 2021 (A.7)

CITY OF FRESNO

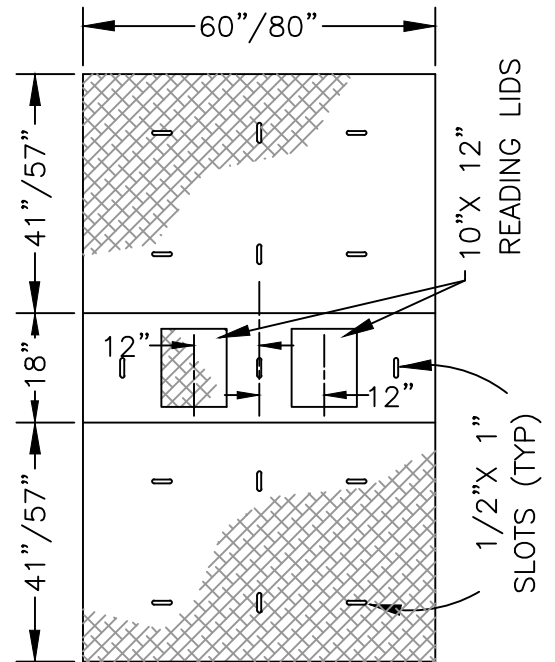
W-37



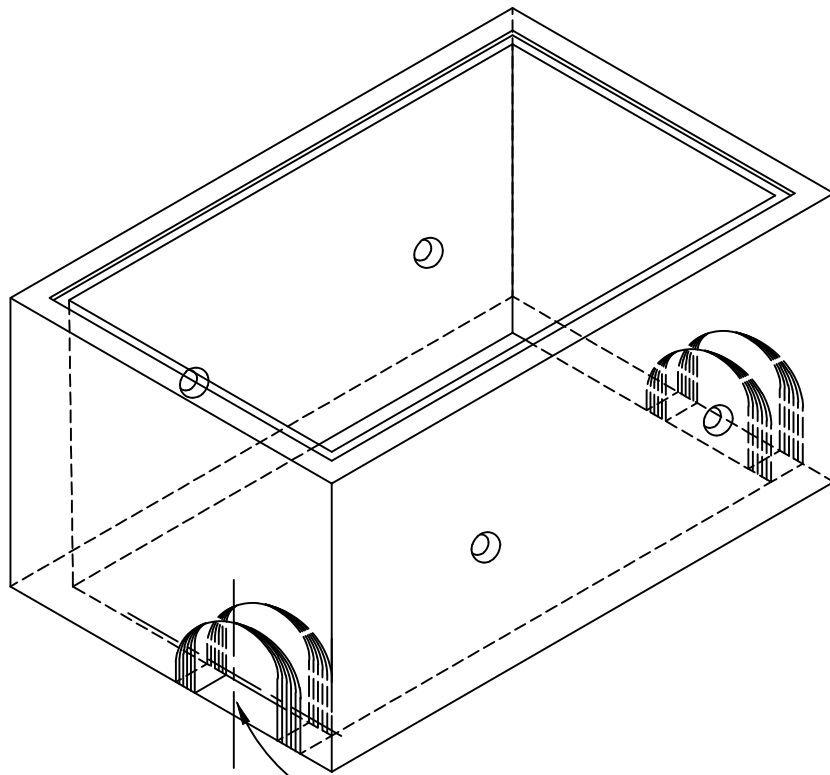
VAULT	A	B	C	D
TYPE I	60"	100"	6"	42"
TYPE II	80"	132"	6"	42"

MANUFACTURER SHALL PROVIDE:

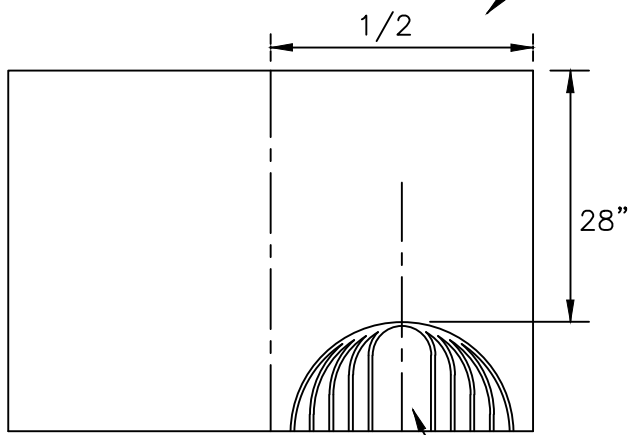
1. SHOP DRAWINGS OF VAULTS WITH WEIGHTS AND PROPOSED LIFTING LUG DETAILS.
2. SHOP DRAWINGS OF DIAMOND PLATE PARKWAY COVERS WITH REQUIRED REINFORCEMENT DETAILS.
3. SHOP DRAWINGS OF READING LIDS INDICATING METHOD OF HINGING OR RETAINING LID IN THE HOLE.



THREE PIECE DIAMOND  
PLATE COVER WITH  
READING LID

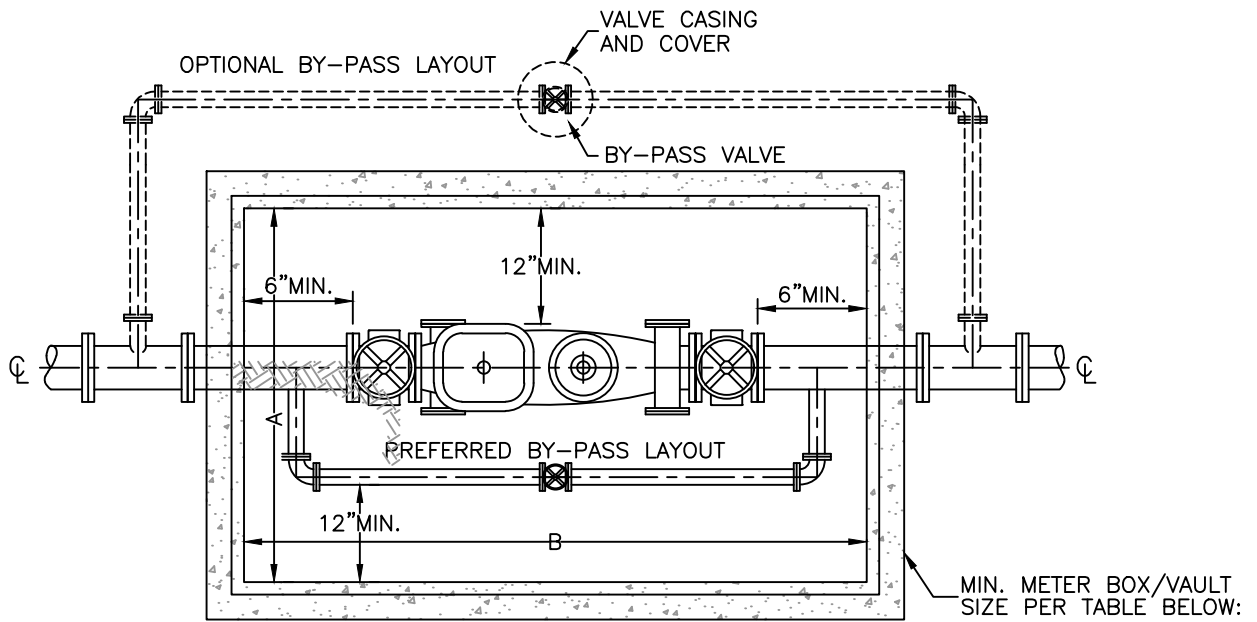


KNOCKOUTS IN ENDS OF VAULT SHALL BE CENTERED IN ONE-HALF THE WIDTH.

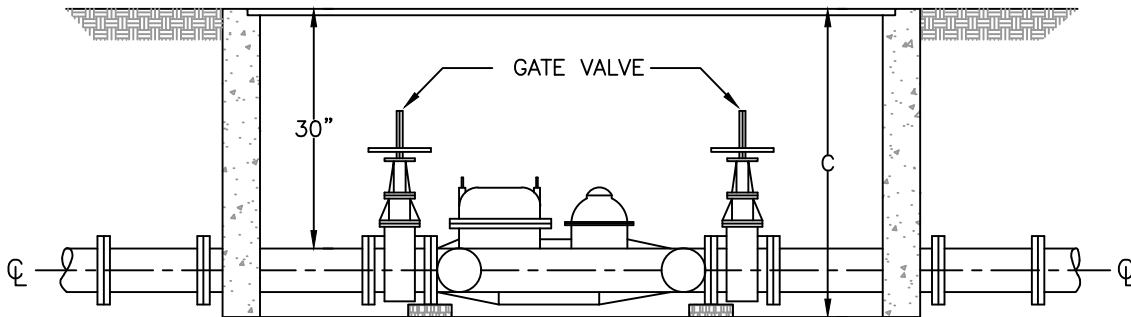


END VIEW

SLEDGE HAMMER KNOCKOUTS



PLAN VIEW



ELEVATION

	A	B	C
3",4"&6"	40"	72"	42"

MINIMUM METER BOX/VAULT SIZE

NOTES:

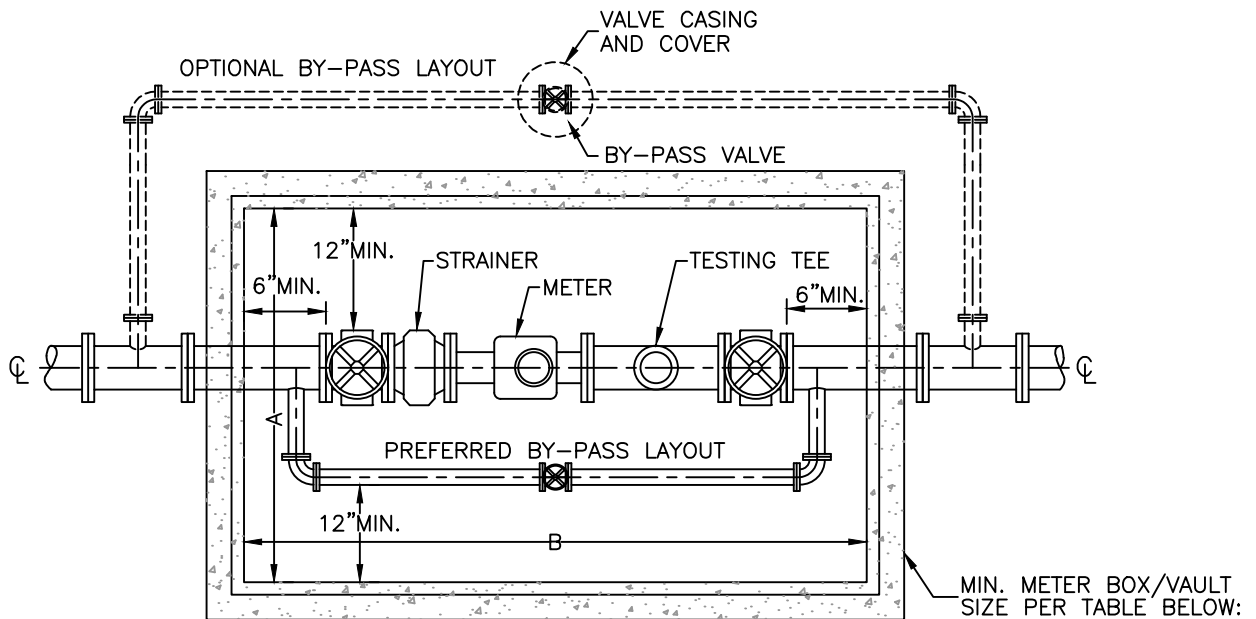
1. BY-PASS MAY BE INSIDE METER BOX OR OUTSIDE METER BOX. IF INSTALLED OUTSIDE METER BOX A CASING AND COVER WILL BE REQUIRED OVER BY-PASS VALVE.
2. 1-1/2 INCH AND 2 INCH BY-PASS VALVES MUST BE BALL VALVES. THREE INCH AND LARGER TO BE RESILIENT SEATING SHUT-OFF VALVES.
3. METERS DEEPER THAN 30 INCHES TO TOP OF PIPE MUST BE RAISED TO 30 INCHES.
4. INLET AND OUTLET VALVES TO BE INSTALLED AT EACH END OF METER.
5. BY-PASS MATERIAL, 2 INCHES AND GREATER, SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.
6. TEST TEE TO BE 3 PIPE DIAMETERS DOWNSTREAM OF METER.

COMPOUND METER SETTING  
WITH BY-PASS

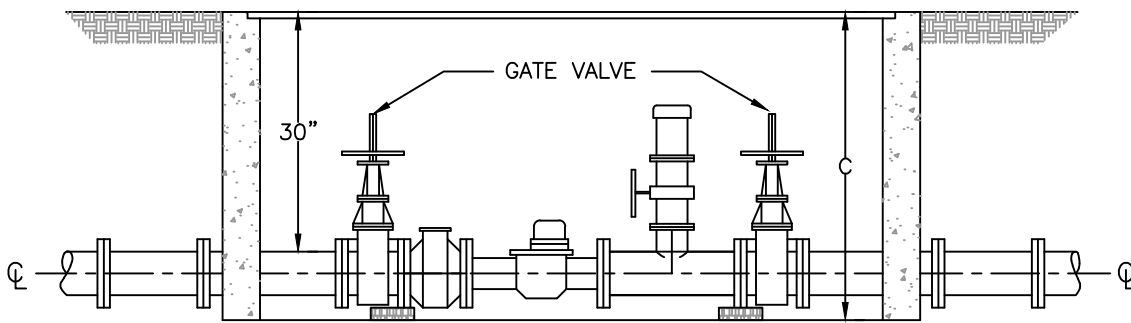
REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO

W-40



PLAN VIEW



ELEVATION

	A	B	C
2", 3" & 4"	20"	48"	42"
4", 6" & 8"	40"	72"	42"
10"	60"	100"	42"

MINIMUM METER  
BOX/VAULT SIZE

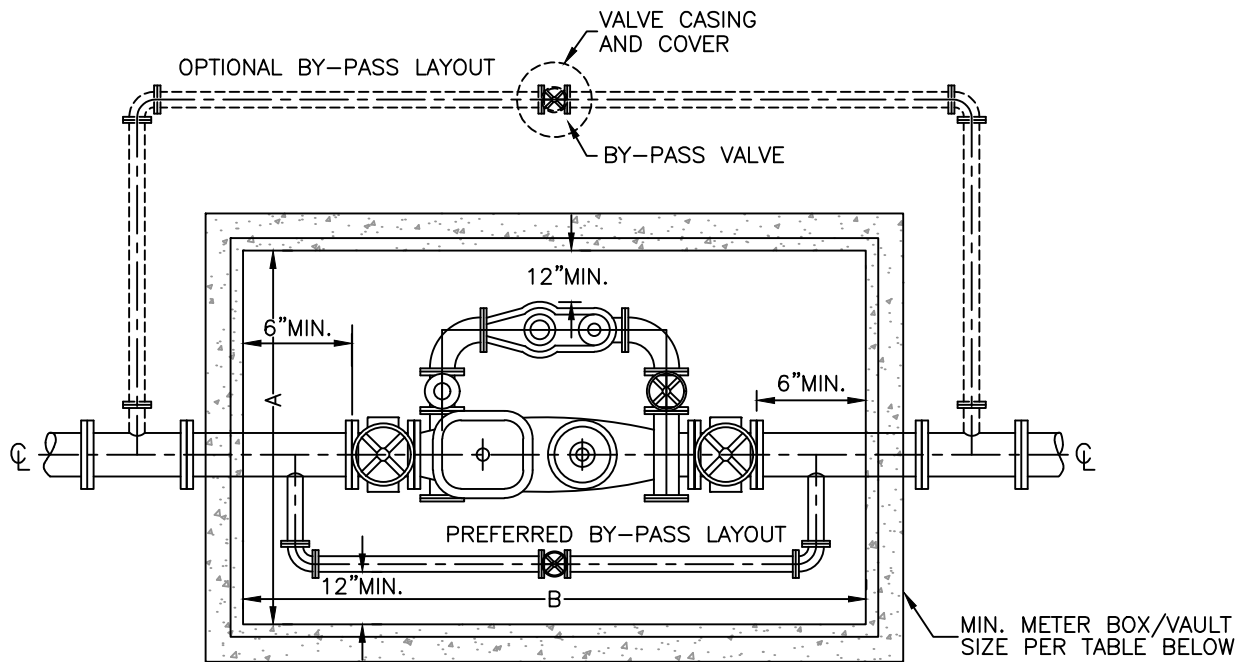
NOTES:

1. BY-PASS MAY BE INSIDE METER BOX OR OUTSIDE METER BOX. IF INSTALLED OUTSIDE METER BOX A CASING AND COVER WILL BE REQUIRED OVER BY-PASS VALVE. 1-1/2 INCH AND 2 INCH BY-PASS VALVES MUST BE BALL VALVES. THREE INCH AND LARGER TO BE RESILIENT SEATING SHUT-OFF VALVES.
2. METERS DEEPER THAN 30 INCHES TO TOP OF PIPE MUST BE RAISED TO 30 INCHES.
3. INLET AND OUTLET VALVES TO BE INSTALLED AT EACH END OF METER.
4. TEST TEE TO BE 3 PIPE DIAMETERS DOWNSTREAM OF METER.
5. WHEN CHARGING METER WITH WATER - OPEN INLET VALVE VERY SLOWLY, THEN SLOWLY OPEN OUTLET VALVE.
6. BY-PASS MATERIAL, 2 INCHES AND GREATER, SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.

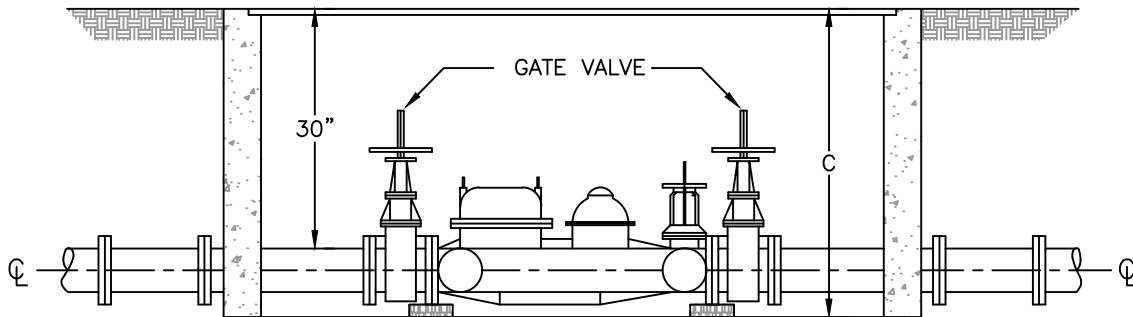
TURBINE METER SETTING  
WITH BY-PASS

REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO  
W-41



PLAN VIEW



ELEVATION

	A	B	C
4" & 6"	60"	100"	42"
8" & 10"	80"	132"	42"

MINIMUM METER BOX/VAULT SIZE

NOTES:

1. BY-PASS MAY BE INSIDE METER BOX OR OUTSIDE METER BOX. IF INSTALLED OUTSIDE METER BOX A CASING AND COVER WILL BE REQUIRED OVER BY-PASS VALVE.
2. 1-1/2 INCH AND 2 INCH BY-PASS VALVES MUST BE BALL VALVES. THREE INCH AND LARGER TO BE RESILIENT SEATING SHUT-OFF VALVES.
3. METERS DEEPER THAN 30 INCHES TO TOP OF PIPE MUST BE RAISED TO 30 INCHES.
4. INLET AND OUTLET VALVES TO BE INSTALLED AT EACH END OF METER.
5. BY-PASS MATERIAL 2 INCHES AND GREATER SHALL BE DUCTILE IRON OR C900 PVC. LESS THAN 2 INCHES SHALL BE COPPER.

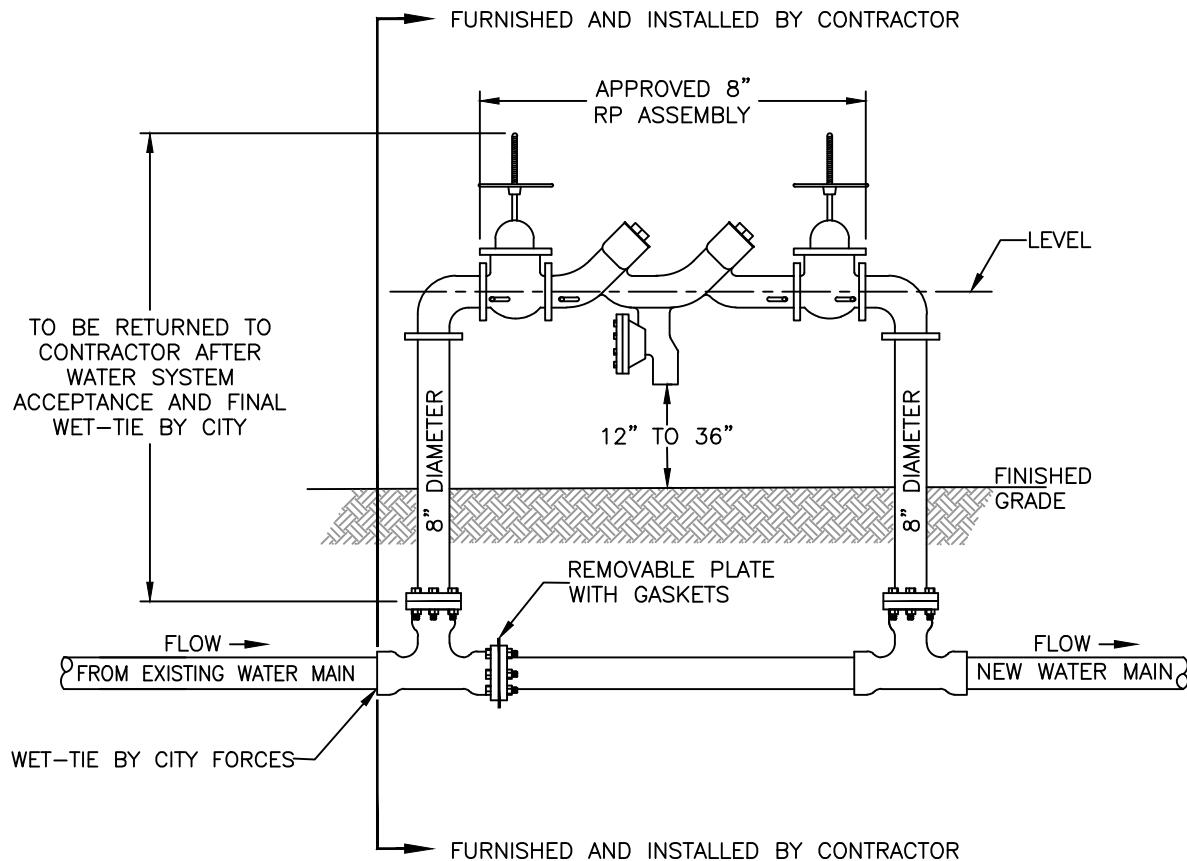
COMPOUND FM METER SETTING  
WITH BY-PASS

REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO

W-42





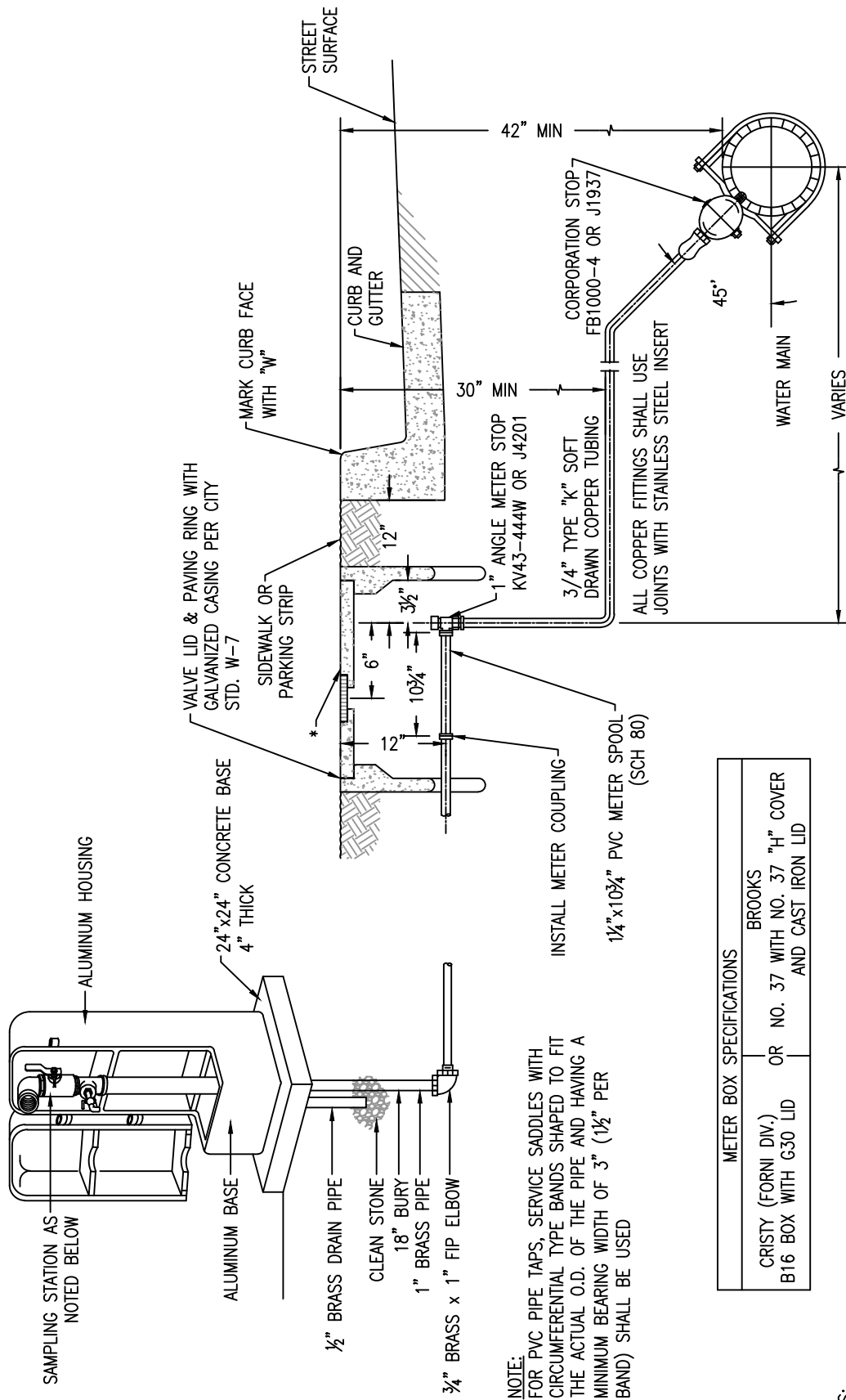
**NOTES:**

1. VALVES SHALL BE "ULFM INDICATING OS&Y" TYPE.
2. CURRENTLY APPROVED RP DEVICES ARE:
  - a. AMES MAXIM 400
  - b. WILKINS 3750SY
  - c. FEBCO 860
3. RESILIENT SEATED SHUT OFF VALVES AND TEST COCKS ARE REQUIRED.
4. ASSEMBLY MUST BE ACCESSIBLE FOR TESTING AND MAINTENANCE BY FRESNO CITY WATER DIVISION.
5. ANY DEVIATION FROM THESE REQUIREMENTS SHALL BE APPROVED BY THE WATER SYSTEM MANAGER PRIOR TO INSTALLATION.
6. RP DEVICE WITH ASSOCIATED PIPING, VALVES, TEES AND FITTINGS SHALL BE FURNISHED AND INSTALLED BY THE CONTRACTOR.
7. NEW SYSTEM OF MAINS, HYDRANTS AND SERVICES SHALL BE PRESSURE TESTED AND SHALL PASS STANDARD BACTERIAL TESTING PRIOR TO CONNECTION TO EXISTING CITY WATER SYSTEM.
8. WET TIE TO EXISTING SYSTEM WILL BE PERFORMED BY CITY FORCES.
9. AFTER INSTALLATION AND PRIOR TO PLACING IN SERVICE, THE RP DEVICE SHALL BE TESTED BY THE CITY.
10. PRIOR TO FINAL ACCEPTANCE OF THE WATER SYSTEM, A FINAL SET OF PRESSURE TESTS AND BACTERIAL TESTS SHALL BE PERFORMED.
11. UPON PUBLIC WORKS ACCEPTANCE OF THE COMPLETE WATER SYSTEM, CITY FORCES WILL REMOVE THE RP DEVICE AND ASSOCIATED PIPING, VALVES, TEES AND FITTINGS, AND WILL CALL FOR PICKUP BY THE CONTRACTOR.

# SAMPLE STATION INSTALLATION

REF & REV  
 AUG. 1994  
 MAR. 2007  
 SEPT. 2009  
 MAR. 2021 (A.7)

CITY OF FRESNO  
**W-44**



SAMPLING STATION AS NOTED BELOW

ALUMINUM HOUSING

24" x 24" CONCRETE BASE 4" THICK

1/2" BRASS DRAIN PIPE

CLEAN STONE

18" BRASS PIPE

1" BRASS PIPE

3/4" BRASS x 1" FIP ELBOW

NOTE:  
 FOR PVC PIPE TAPS, SERVICE SADDLES WITH CIRCUMFERENTIAL TYPE BANDS SHAPED TO FIT THE ACTUAL O.D. OF THE PIPE AND HAVING A MINIMUM BEARING WIDTH OF 3" (1 1/2" PER BAND) SHALL BE USED

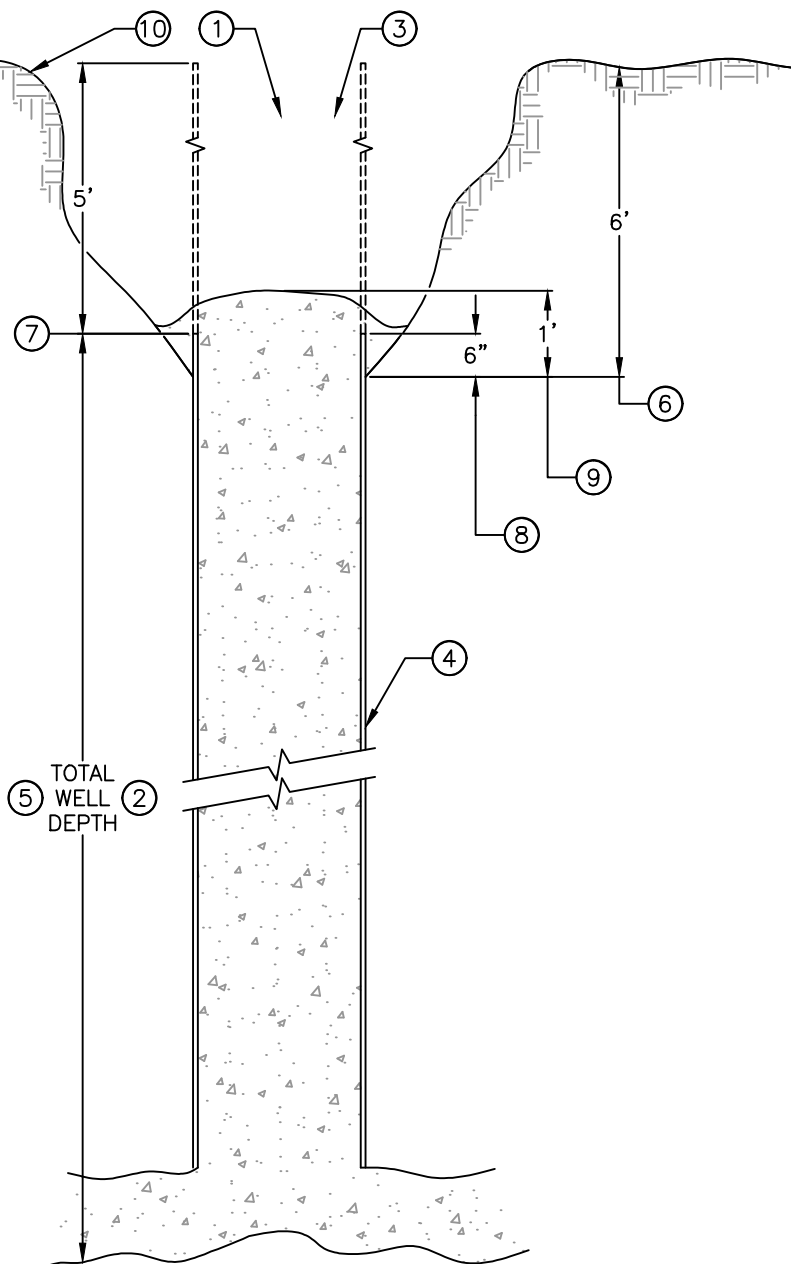
INSTALL METER COUPLING  
 1/4" x 10 3/4" PVC METER SPOOL (SCH 80)

METER BOX SPECIFICATIONS	
CRISTY (FORNI DIV.) B16 BOX WITH G30 LID	BROOKS OR NO. 37 WITH NO. 37 "H" COVER AND CAST IRON LID

- NOTES:
1. SAMPLING STATIONS SHALL BE ECLIPSE 88WC OR SAFETY GUARD BSS02 OR EQUAL AS APPROVED BY THE WATER DIVISION.
  2. SAMPLING STATIONS SHALL BE 18" BURY, WITH A 1" FIP DISCHARGE. A 1/4" BENT-NOSE SAMPLING BIBB SHALL BE LOCATED BEFORE THE DISCHARGE.
  3. ALL STATIONS SHALL BE ENCLOSED IN A LOCKABLE, ALUMINUM-CAST HOUSING.
  4. WHEN OPENED, THE STATION SHALL REQUIRE NO KEY FOR OPERATION AND THE WATER WILL FLOW IN ALL BRASS WATERWAY.
  5. ALL WORKING PARTS SHALL BE OF BRASS AND SERVICEABLE FROM ABOVE GROUND WITH NO DIGGING. (OPTIONAL: IF DESIRED, PROVIDE A DRAINAGE HOLE WITHIN THE LOCKING COVER TO PREVENT WATER FROM ACCUMULATING INSIDE THE UNIT).
  6. A 1" BALL VALVE SHALL CONTROL THE WATER FLOW, AND BE LOCATED BEFORE (OR AFTER) THE SAMPLING BIBB, AS MANUFACTURED BY KUPFERELE FOUNDRY, ST. LOUIS, MO 63102.

**LEGEND:**

1. REMOVE ALL PUMPING EQUIPMENT AND DEBRIS FROM THE WELL PRIOR TO THE PLACEMENT OF ANY SEALING MATERIAL INTO THE WELL.
2. A VIDEO OF THE ENTIRE DEPTH OF THE WELL SHALL BE SUBMITTED TO THE WATER DIVISION FOR REVIEW.
3. A TREMIE PIPE SHALL BE USED FOR THE PLACEMENT OF SEALING IN WELLS, WHEN ONE OR MORE OF THE FOLLOWING CONDITIONS EXIST:
  - THE TOTAL WELL DEPTH IS GREATER THAN 30'
  - THE STATIC WATER LEVEL IS MORE THAN 10'
  - THE WELL'S DIAMETER IS 4" OR LESS
4. WHEN THE EXISTING WELL CASING IS FOUND TO BE PERFORATED, SLOTTED, CRACKED, SEPARATED, OR TO HAVE HOLES. THE WELL SHALL BE FILLED TO THE TOP WITH A SEALING MATERIAL APPROVED BY THE CITY OF FRESNO WATER DIVISION AND PRESSURIZED PER DWR BULLETIN 74-81 AND 74-90.
5. THE TOTAL DEPTH OF THE WELL SHALL BE FILLED WITH AN IMPERVIOUS MATERIAL, CEMENT GROUT OR PER SECTION 33 OF CITY OF FRESNO'S WELL DESTRUCTION STANDARDS.
6. EXCAVATE A HOLE AROUND THE WELL CASING TO A DEPTH OF NOT LESS THAN 6' BELOW GROUND SURFACE, OR SUBMIT FOR REVIEW AND APPROVAL METHODS OF PREP TO REMOVE 5' OF WELL CASING.
7. REMOVE A MINIMUM OF FIVE LINEAL FEET OF EXISTING WELL CASING, BELOW GROUND SURFACE.
8. REMAINING CASING TO EXTEND SIX INCHES ABOVE THE BOTTOM OF THE EXCAVATED HOLE.
9. ALLOW SPILL OVER TO FORM A ONE FOOT THICK CAP.
10. AFTER THE WELL HAS BEEN PROPERLY FILLED, AND THE SEALING MATERIAL HAS SET, BACKFILL AND COMPACT THE EXCAVATION WITH NATIVE SOIL.



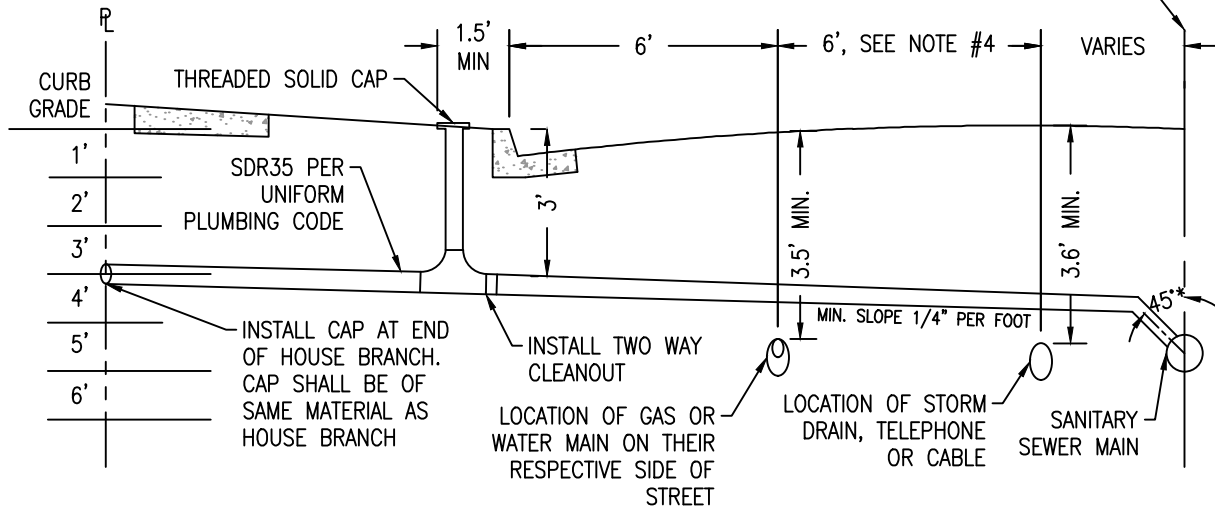
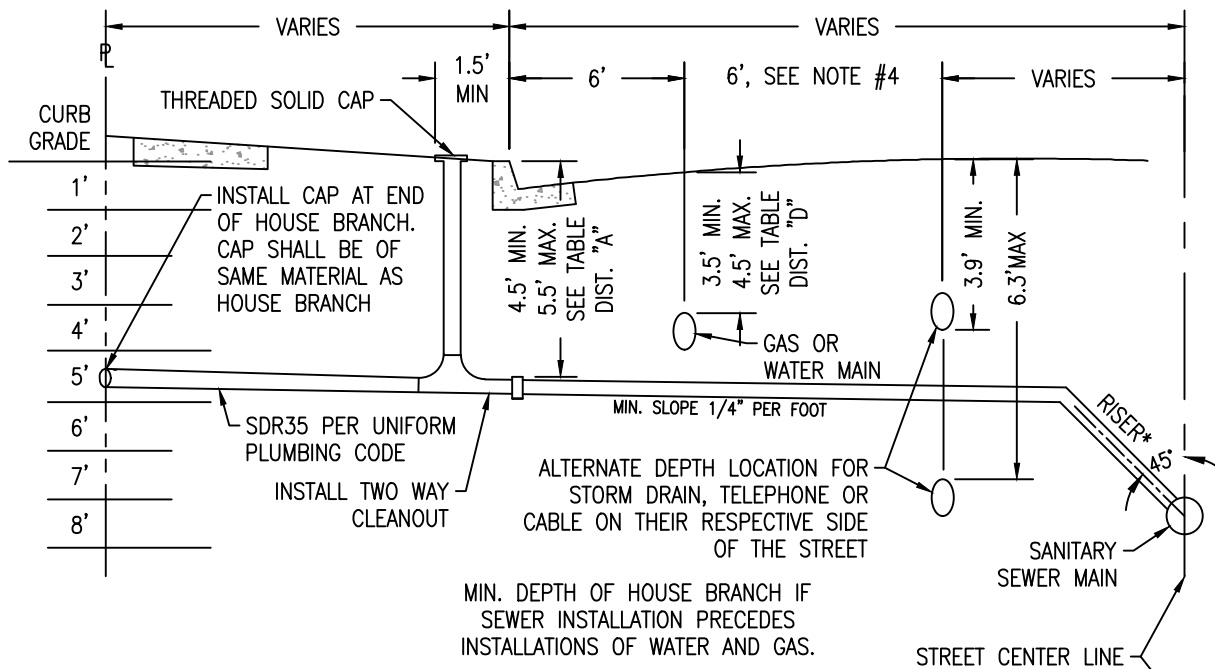
**NOTES:**

- A. THE DESTRUCTION OF ALL WATER WELLS WITHIN THE JURISDICTION OF THE CITY OF FRESNO SHALL CONFORM TO THE STATE OF CALIFORNIA DEPARTMENT OF WATER RESOURCES STANDARDS: BULLETINS 74-81 & 74-90, AND AS DIRECTED BY THE CITY OF FRESNO WATER DIVISION.
- B. AUTHORIZATION FROM THE CAL EPA DEPARTMENT OF TOXIC SUBSTANCES CONTROL (DTSC) OR CALIFORNIA DEPARTMENT OF WATER RESOURCES (DWR) IS REQUIRED TO DESTROY DECOMMISSIONED MONITORING WELLS, SUBMIT A COPY OF THE AUTHORIZATION DOCUMENTATION WITH WELL DESTRUCTION PERMIT APPLICATION.
- C. THERE ARE THREE TYPES OF SEALING GROUT MIXTURES USED IN DESTROYING WELLS WITHIN THE CITY OF FRESNO (SEE TABLE FOR BATCH SPECIFICATIONS)
- D. BEFORE WELL DESTRUCTION OPERATIONS BEGIN, A COMPLETE WELL PERMIT APPLICATION PACKAGE FOR DESTRUCTION INCLUDING THE FOLLOWING CALCULATIONS ARE TO BE SUBMITTED FOR APPROVAL:
  - A MIX DESIGN OF THE SEALING MATERIAL PREPARED BY THE GROUT SUPPLIER.
  - A MIX DESIGN OF THE SEALING MATERIAL PREPARED BY THE PROJECT ENGINEER, OUTLINING FIELD MIXING PROCESS.
  - A VOLUME CALCULATION OF THE SEALING MATERIAL, PREPARED BY THE PROJECT ENGINEER.
  - A VOLUME CALCULATION FOR THE WELL PREPARED BY A PROJECT ENGINEER SHOWING THE FOLLOWING:
    - a. VOLUME OF THE WELL CASING & VOLUME OF THE FILTER PACK TO BE FILLED (FOR GRAVEL PACKED WELLS)
    - b. VOLUME OF THE WELL (FOR OPEN BOTTOM WELLS)
- E. ONLY COMPLETE PERMIT APPLICATION PACKAGES WILL BE PROCESSED
- F. ONLY CALIFORNIA C57 LICENSED CONTRACTORS ARE AUTHORIZED TO DESTROY ANY WELLS WITHIN THE CITY OF FRESNO.

**BATCH TABLE**

		water		cement		sand		bentonite	
		gal	sack	lbs	lbs	lbs	lbs	n/a	n/a
1	CEMENT AND SAND GROUT	=	6	94	188	n/a			
2	NEAT CEMENT GROUT	=	6	94	n/a	n/a			

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MIN. DEPTH OF WATER OR GAS MAINS IF INSTALLATION OF WATER OR GAS MAINS PRECEDES INSTALLATION OF SEWERS ONLY IF APPROVED BY THE ENGINEER.

**NOTES:**

1. WATER MAINS AND TELEPHONE DUCTS SHALL OCCUPY ONE SIDE OF STREET, GAS MAINS AND STORM SEWERS TO OCCUPY OTHER SIDE.
2. IN NEW SUBDIVISIONS EXTEND HOUSE BRANCHES ABOUT 1.0' BEYOND PROPERTY LINE.
3. IN ALL OTHER CASES, EXTEND HOUSE BRANCHES ABOUT 1.0' BEYOND PROPERTY LINE OR AS DIRECTED BY CITY ENGINEER. REFER TO DWG. P-47 FOR LOCATION OF UNDERGROUND FACILITIES IN ARTERIAL AND COLLECTOR STREETS.
5. MINIMUM VERTICAL CLEARANCE BETWEEN THE HOUSE BRANCH AND WATER MAIN SHALL BE 1.0'.
6. FOR TRENCH BACKFILL SEE DWG's P-48, S-10, W-29 AND SECTION 17-5 OF CITY STANDARD SPECIFICATIONS.
7. SEWER WYE's MUST JOIN THE SEWER MAIN WITH FLOW IN THE SAME DIRECTION.

DEPTH SCHEDULE		
DISTANCE	"A"	"D"
6" WATER OR GAS MAIN	4.5'	3.5'
8" WATER OR GAS MAIN	4.8'	3.8'
10" WATER OR GAS MAIN	5.2'	4.2'
12" WATER OR GAS MAIN	5.5'	4.5'

"A" & "D" DIMENSIONS ARE SET TO ALLOW 1.0' CLEARANCE BETWEEN SEWER AND GAS OR WATER LINES.

\* SPECIAL APPROVAL REQUIRED FOR DEVIATION FROM 45° STANDARD ANGLE.

# HOUSE BRANCH & UTILITIES LOCATIONS IN STREETS

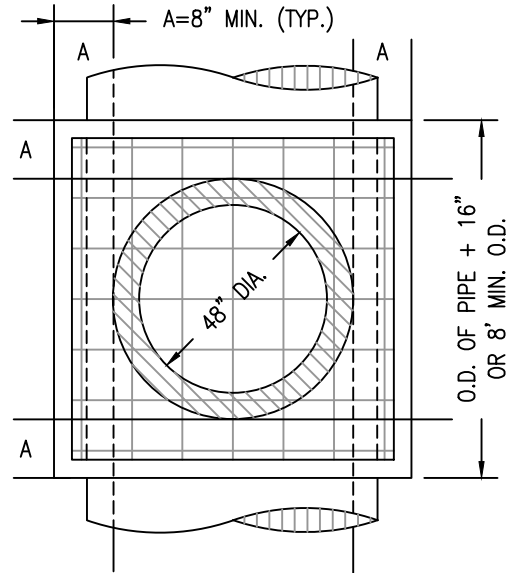
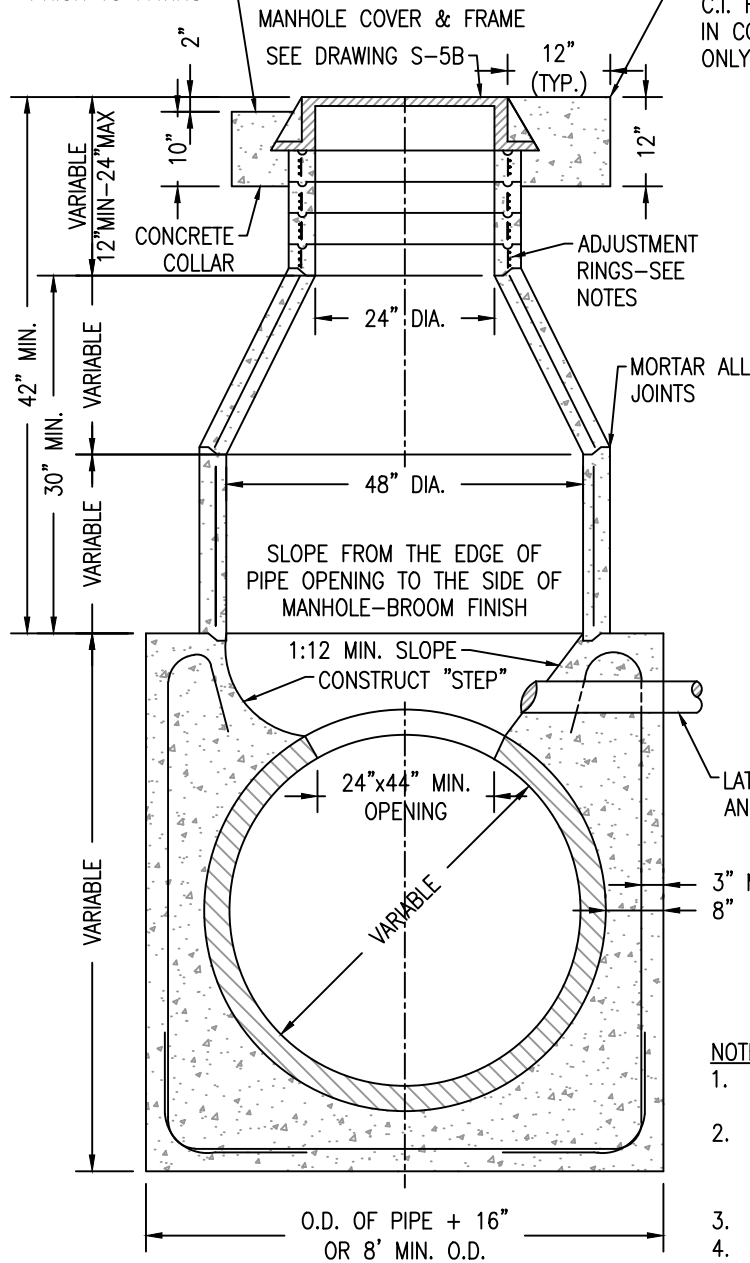
REF. & REV.  
JUNE 2014  
MAR. 2021 (A.7)

CITY OF FRESNO

S-1

IN-STREET INSTALLATION  
TO BE PAVED WITH A.C.  
(PG 64-10 ASPHALT)  
TACK-COAT CONCRETE  
AND METAL SURFACES  
PRIOR TO PAVING

NON-STREET INSTALLATION  
6 SACK P.C.C. COLLAR AROUND  
C.I. FRAME - AS SHOWN. FRAME  
IN CONC. BED FOR CONC. STREET  
ONLY.



NOTES FOR MANHOLE SUB-STRUCTURE:

1. ALL CONCRETE SHALL HAVE A COMPRESSIVE STRENGTH OF 3,000 P.S.I. AT 28 DAYS.
2. ALL REINFORCING STEEL TO BE NO. 4 BARS GRADE 60 STEEL, SPACED 12" O.C., BOTH WAYS, IN TOP, BOTTOM & WALLS.
3. MINIMUM WALL THICKNESS IS 8".
4. SEE PLAN FOR FLOW LINE ELEVATION & PIPE SIZE.

GENERAL NOTES:

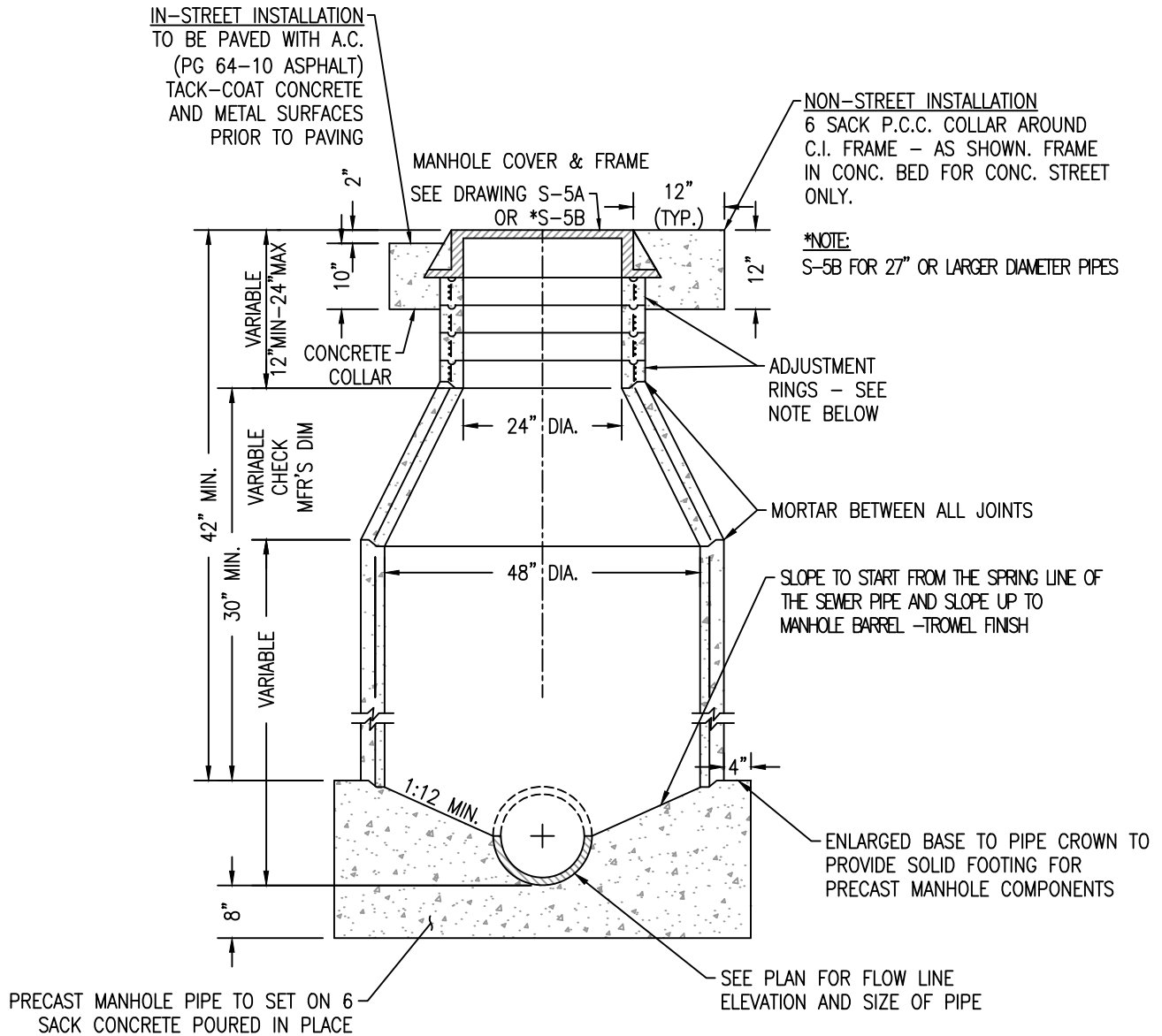
1. PRECAST PIPE, ADJUSTMENT RINGS & TAPERED SECTIONS SHALL BE CLASS 2 R.C.P. IN ACCORDANCE WITH ASTM C-478, ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED.
2. MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR RAVEN 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE.
3. THIS STANDARD DRAWING SHALL BE USED FOR SEWER PIPES WITH DIAMETERS GREATER THAN 42" OR IN SITUATIONS WHERE THE MANHOLE SUB-STRUCTURE IS REQUIRED AS DIRECTED BY THE CITY ENGINEER.
4. DESIGN FLOW CONFIGURATION SEE DRAWING S-12.

SPECIAL SEWER MANHOLE  
FOR SEWER PIPES WITH DIAMETER  
GREATER THAN 42'

REF. & REV.  
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CITY OF FRESNO

S-2



### MANHOLE DETAILS

**NOTES:**

1. PRECAST RISER SECTIONS, ADJUSTMENT RINGS & TAPERED SECTIONS SHALL BE CLASS 2 R.C.P. IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED.
2. THIS STANDARD DRAWING SHALL BE USED FOR SEWER PIPES WITH DIAMETERS OF UP TO AND INCLUDING 27".
3. DESIGN FLOW CONFIGURATION SEE DRAWING S-12.
4. MANHOLES ON SEWER LINES EQUAL TO OR GREATER THAN 12", OR ON ANY SIZE SEWER WITHIN 600' OF A 30" OR LARGER SEWER LINE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400, 405 OR 405FS, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE.
5. FOR SEWER LINES 12" TO 18", AND NOT WITHIN 600' OF A 30" OR LARGER SEWER MAIN, MAY USE SEWPERCOAT OR APPROVED EQUAL.

## 48" SEWER MANHOLE

SEWER PIPES W/DIA. UP TO AND INCLUDING 27" WITH  
PRECAST SECTIONS AND CAST IRON FRAME AND COVER

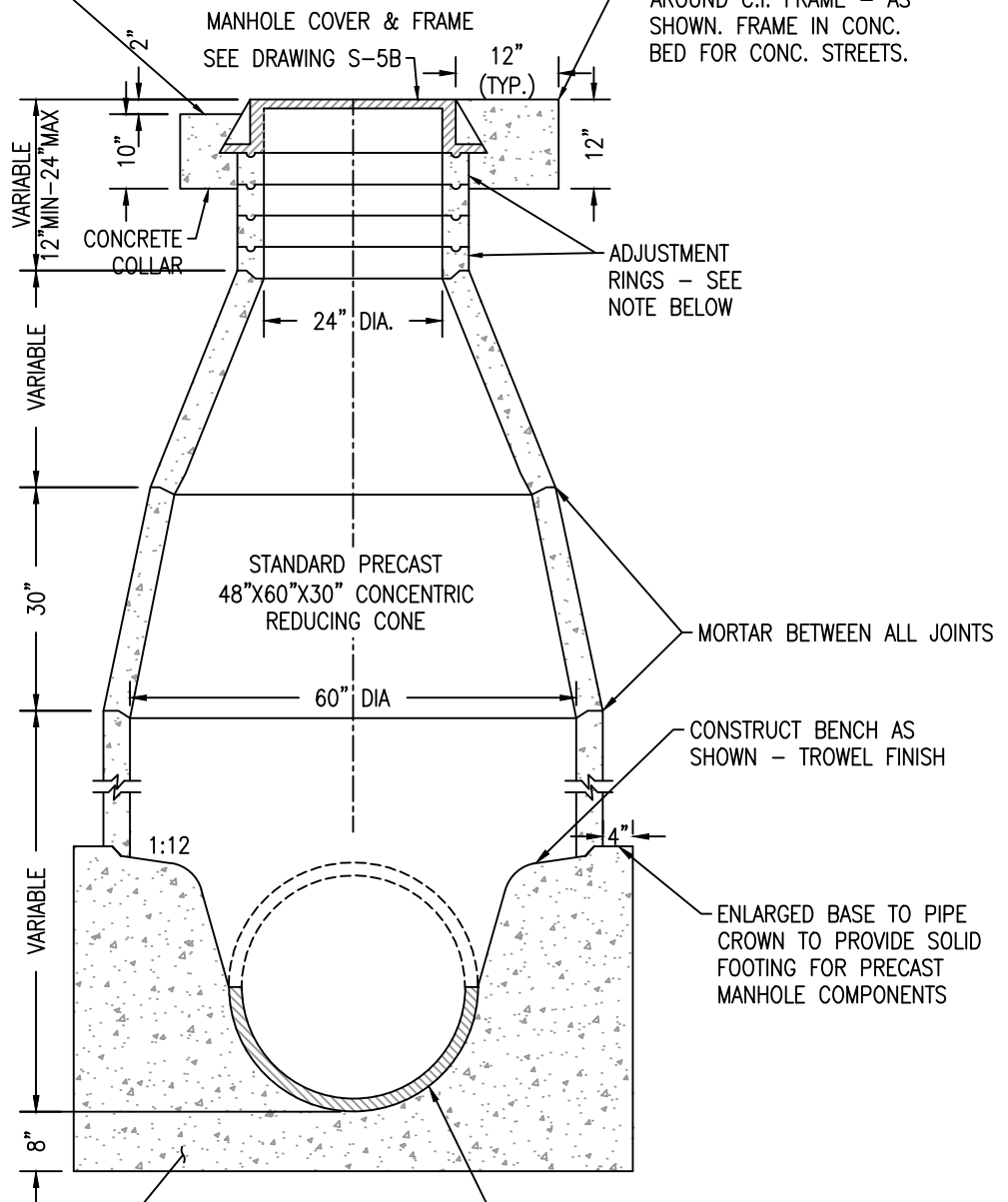
REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO

S-3

**IN-STREET INSTALLATION**  
 TO BE PAVED WITH A.C.  
 (PG 64-10 ASPHALT)  
 TACK-COAT CONCRETE  
 AND METAL SURFACES  
 PRIOR TO PAVING

**NON-STREET INSTALLATION**  
 6 SACK P.C.C. COLLAR  
 AROUND C.I. FRAME - AS  
 SHOWN. FRAME IN CONC.  
 BED FOR CONC. STREETS.



PRECAST MANHOLE PIPE TO SET ON 6 SACK CONCRETE POURED IN PLACE

SEE PLAN FOR FLOW LINE ELEVATION AND SIZE OF PIPE

MANHOLE DETAILS

**NOTES:**

1. PRECAST RISER SECTIONS, ADJUSTMENT RINGS & TAPERED SECTIONS SHALL BE CLASS 2 R.C.P. IN ACCORDANCE WITH ASTM C-478. ELLIPTICAL SINGLE LINE REINFORCEMENT WILL NOT BE PERMITTED.
2. THIS STANDARD DRAWING SHALL BE USED FOR SEWER PIPES WITH DIAMETERS OF 30" THROUGH 42".
3. MANHOLE SHALL BE LINED WITH T-LOCK OR COATED WITH ONE OF THE FOLLOWING: RAVEN 400 OR 405, PRODUCTS OF RLS SOLUTIONS; NEOPOXY 5304 OR 5305, PRODUCTS OF NEOPOXY INTERNATIONAL; OR QUADEX STRUCTURE GUARD, A PRODUCT OF QUADEX. APPROVED PRODUCTS SHALL BE APPLIED PER MANUFACTURER'S SPECS. NO SUBSTITUTIONS ARE ACCEPTABLE.
4. WHEN PIPE IS CUT, ALL EXPOSED REINFORCING STEEL TO BE COATED WITH 2" OF CONCRETE.
5. DESIGN FLOW CONFIGURATION SEE DRAWING S-12.

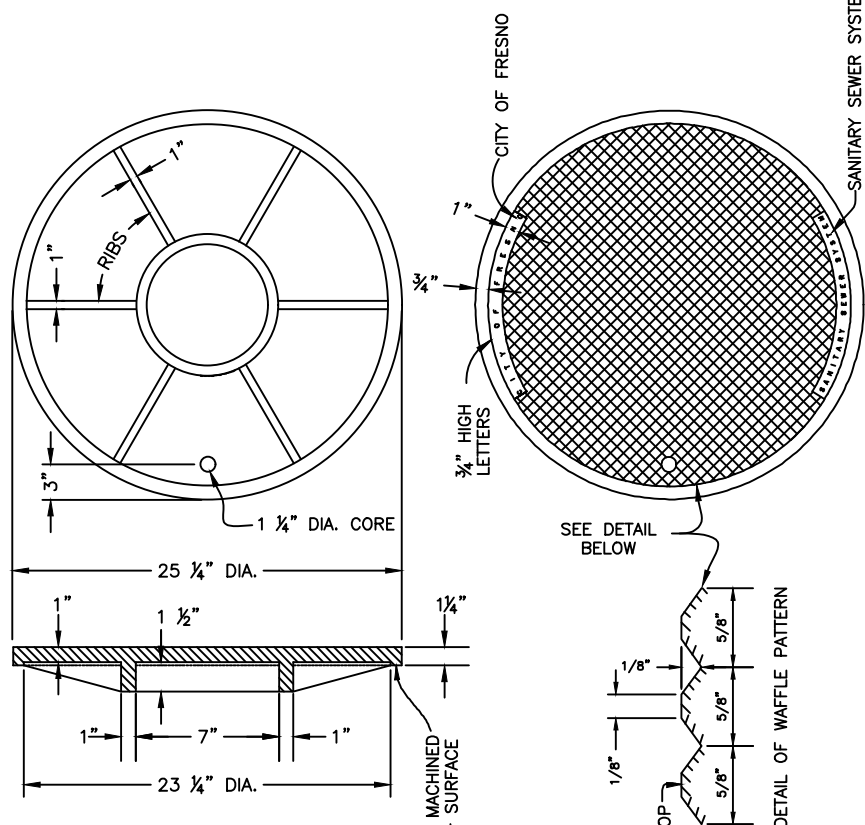
**60" SEWER MANHOLE**  
 SEWER PIPES W/DIA. OF 30" THRU AND INCLUDING 42"  
 WITH PRECAST SECTIONS AND  
 CAST IRON FRAME AND COVER

REF. & REV.  
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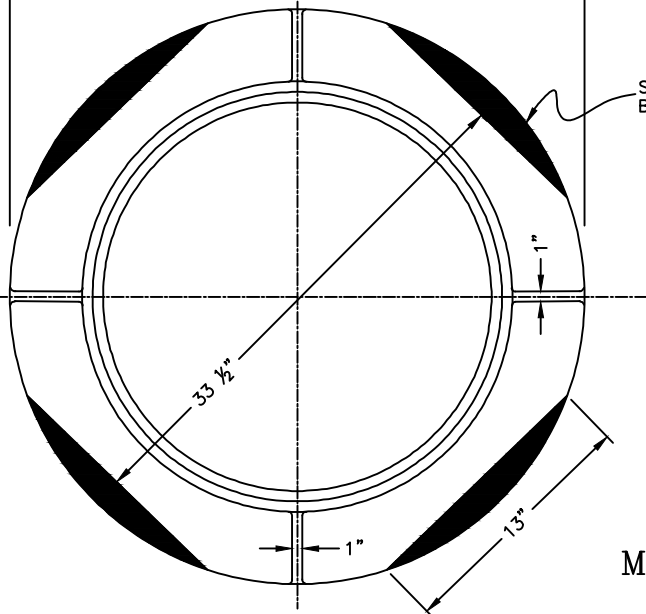
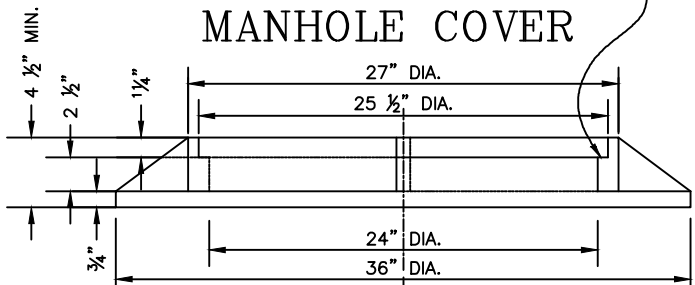
CITY OF FRESNO

S-4





**MANHOLE COVER**



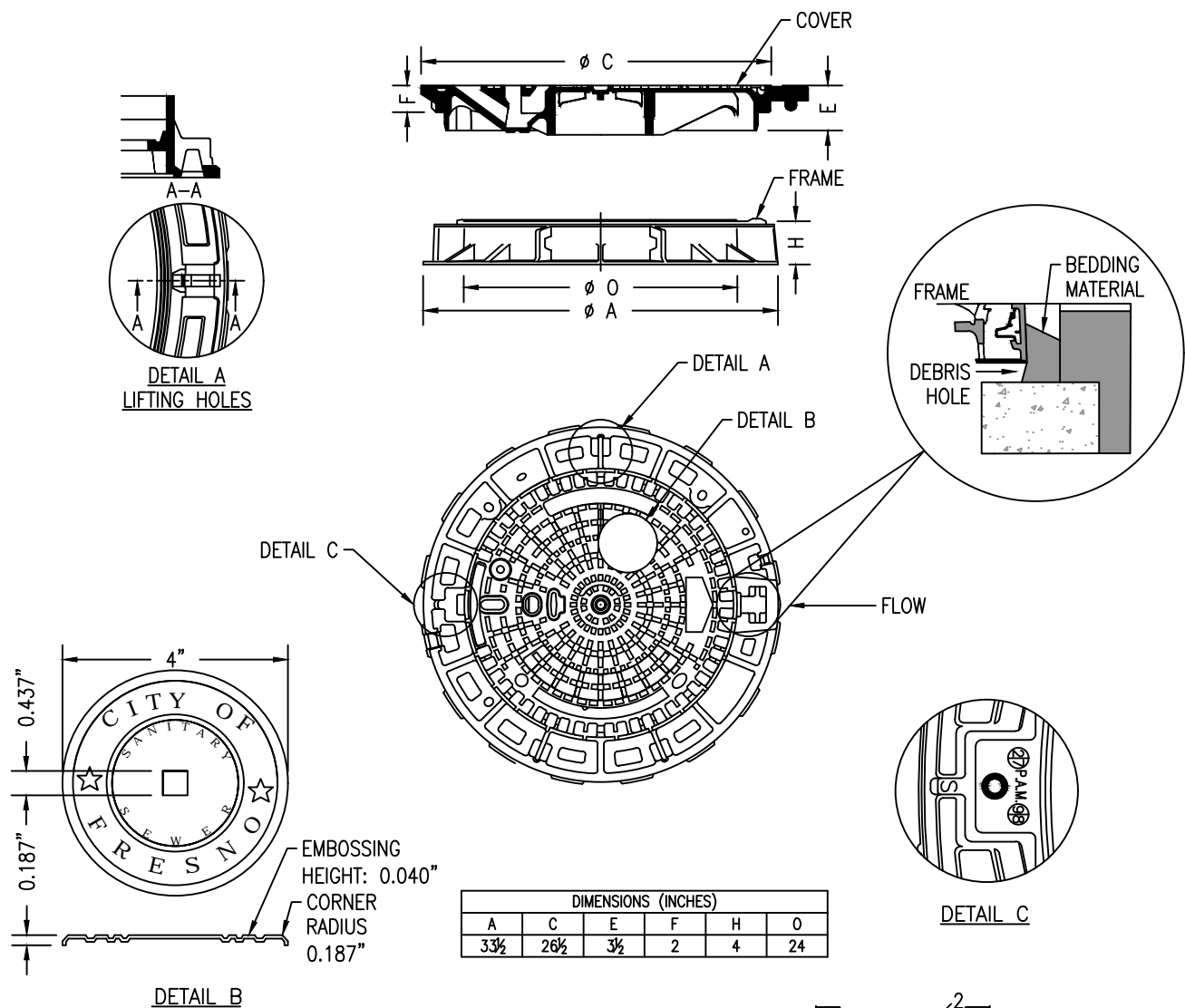
**MANHOLE FRAME**

**MINIMUM WEIGHTS**  
 FRAME - 180 lbs.  
 COVER - 147 lbs.

**CAST IRON MANHOLE  
 FRAME AND COVER**

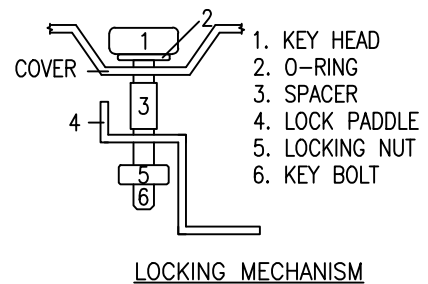
REF. & REV.  
 JUNE 2014

**CITY OF FRESNO  
 S-5A**



**NOTES:**

1. MANHOLE COVER AND FRAME SHALL BE PAMREX OR APPROVED EQUAL.
2. FRAME AND COVER SHALL BE MANUFACTURED FROM DUCTILE IRON.
3. COVERS SHALL BE HINGED AND INCORPORATE A 90° BLOCKING SYSTEM TO PREVENT ACCIDENTAL CLOSURE.
4. COVERS SHALL BE ONE MAN OPERABLE USING STANDARD TOOLS AND SHALL BE CAPABLE OF WITHSTANDING A TEST LOAD OF 120,000 LBS.
5. FRAMES SHALL BE CIRCULAR, INCORPORATE A SEATING RING AND A FITTED PLUG IN THE HINGE HOUSING, AND BE AVAILABLE WITH A 24-INCH CLEAR OPENING.
6. THE FRAME DEPTH SHALL NOT EXCEED 4 INCHES, AND THE FLANGE SHALL INCORPORATE BEDDING SLOTS, BOLT HOLES, AND LIFTING EYES.
7. ALL COMPONENTS SHALL BE BLACK BITUMINOUS PAINT COATED IN ACCORDANCE WITH ISO 2531.  
 FRAME WEIGHT: 73 LBS.  
 COVER WEIGHT: 122 LBS.  
 TOTAL WEIGHT: 195 LBS.
8. HINGE SHOULD BE PLACED 90° TO THE ROAD TOWARD THE UPSTREAM FLOW OF THE DOMINATE LINE.



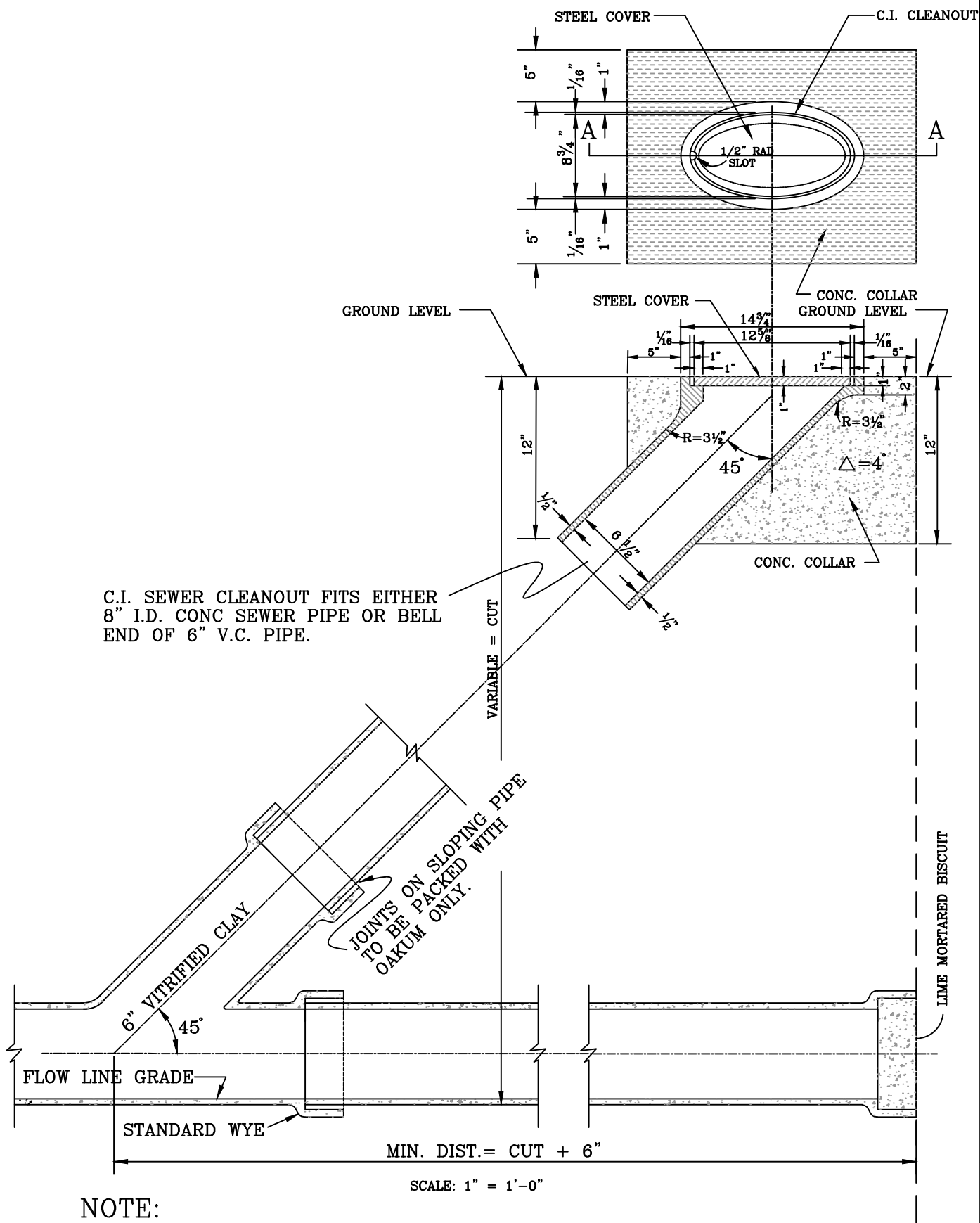
**LOCK INSTALLATION INSTRUCTIONS:**

1. DRILL HOLE IN THE COVER AT THE LOCK PUNCH OUT.
2. INSERT KEY BOLT (6) WITH ONLY THE KEY HEAD (1) AND O-RING (2) SHOWING ON THE TOP SIDE OF THE COVER.
3. ON THE BOTTOM SIDE OF THE COVER, INSTALL SPACER (3), LOCK PADDLE (4), AND LOCK NUT (5) IN THE ORDER SHOWN ABOVE.
4. TIGHTEN LOCK NUT (5) UNTIL THERE IS NO SPACE BETWEEN LOCKING NUT, LOCK PADDLE, AND SPACER.
5. WHEN INSTALLING THE COVER, ENSURE THAT THERE IS ADEQUATE CLEARANCE BENEATH THE FRAME FOR THE LOCK TO FULLY ENGAGE, TURNING TO A 90° ANGLE IN RELATION TO THE FRAME.

**PAMREX DUCTILE IRON  
 FRAME AND COVER FOR SEWER  
 PIPE 27" OR LARGER**

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 AUG. 2015  
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 S-5B

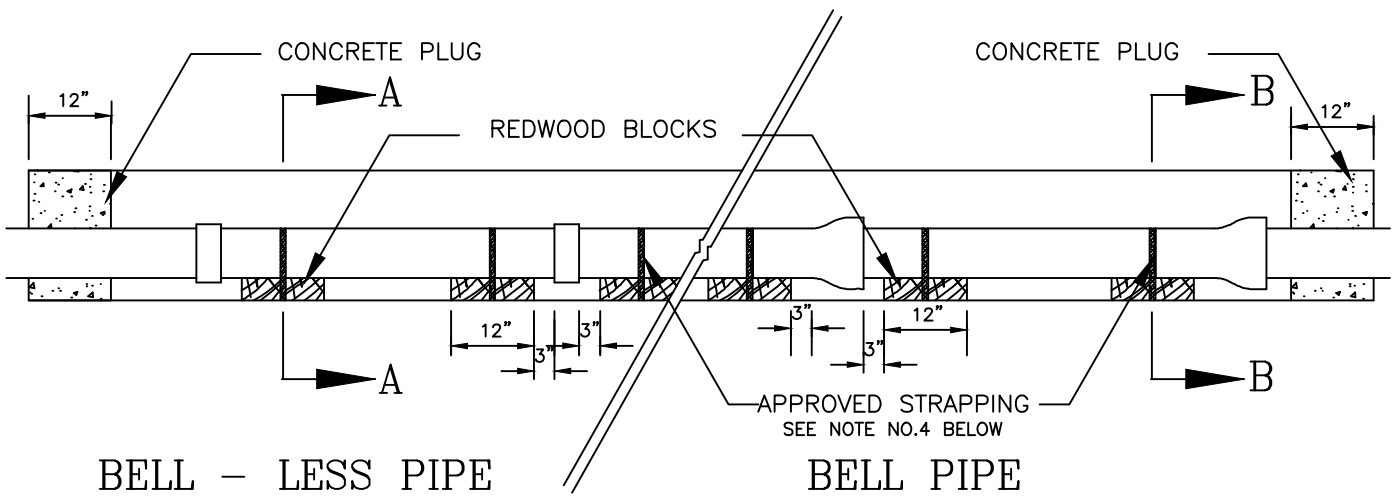


**NOTE:**  
 LAMPHOLES NO LONGER CONSTRUCTED IN CITY OF FRESNO. THIS DRAWING IS RETAINED FOR INFORMATIONAL PURPOSES TO SHOW CONSTRUCTION OF EXISTING LAMPHOLES.

**SLOPING LAMPHOLE  
 WITH C.I. CLEANOUT & COVER**

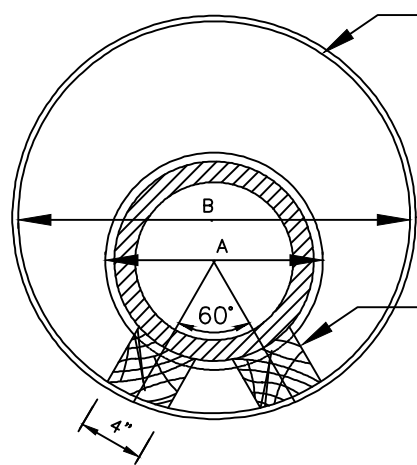
REF. & REV.  
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CITY OF FRESNO  
 S-6



BELL - LESS PIPE

BELL PIPE

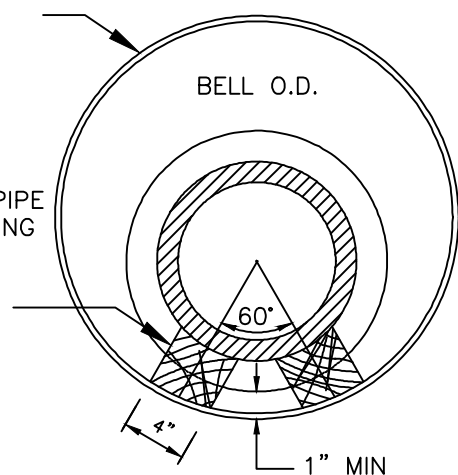


SECTION A-A

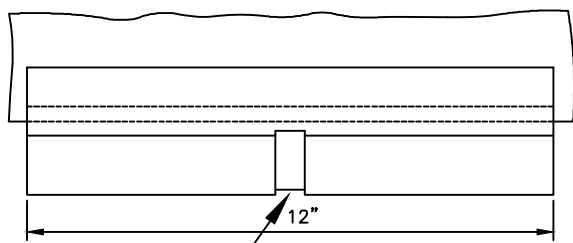
JACKED CASING  
SEE PLANS FOR SIZE  
AND THICKNESS

$B = A + 6"$   
A = O.D. OF SEWER PIPE  
B = MIN. I.D. OF CASING

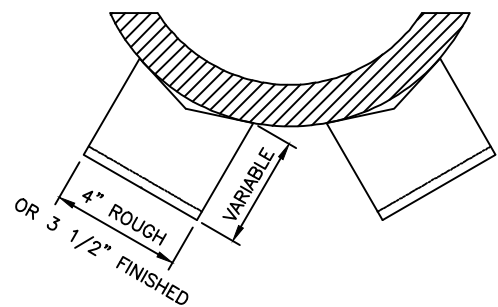
TRIM BLOCKS  
FOR ALIGNMENT  
AND GRADE



SECTION B-B



GROOVE  
FOR STEEL STRAPPING



REDWOOD BLOCK DETAIL

NOTES:

1. REDWOOD BLOCKS SHALL BE CONSTRUCTION GRADE.
2. REDWOOD BLOCKS SHALL BE VEED TO FIT CONTOUR OF PIPE.
3. WHEN JACKING, CASING GRADE SHALL BE SET SO CENTER LINE OF CASING SHALL COINCIDE WITH CENTER LINE OF SEWER PIPE.
4. REDWOOD BLOCKS SHALL BE STRAPPED TO THE PIPE WITH STEEL STRAPPING OR APPROVED WIRE BANDS.
5. PLUG ENDS OF CASING WITH 12 INCHES MINIMUM OF CONCRETE.
6. CONCRETE SHALL BE CLASS "B" P.C.C.
7. APPROVED CASING SPACERS AND END SEALS MAY BE USED IN LIEU OF REDWOOD BLOCKS AND CONCRETE PLUGS.
8. STEEL CASING WALL THICKNESS CHART, SEE DETAIL S-7B.

NOMINAL DIAMETER (INCHES)	WHEN COATED OR CATHODICALLY PROTECTED NOMINAL THICKNESS (INCHES)	WHEN NOT COATED OR CATHODICALLY PROTECTED NOMINAL THICKNESS (INCHES)
12-3/4 and under	0.188	0.188
14	0.188	0.250
16	0.219	0.281
18	0.250	0.312
20 and 22	0.281	0.344
24	0.312	0.375
26	0.344	0.406
28	0.375	0.438
30	0.406	0.469
32	0.438	0.500
34 and 36	0.469	0.531
38	0.500	0.562
40	0.531	0.594
42	0.562	0.625
44 and 46	0.594	0.656
48	0.625	0.688
50	0.656	0.719
52	0.688	0.750
54	0.719	0.781
56 and 58	0.750	0.812
60	0.781	0.844
62	0.812	0.875
64	0.844	0.906
66 and 68	0.875	0.938
70	0.906	0.969
72	0.938	1.000

**NOTES:**

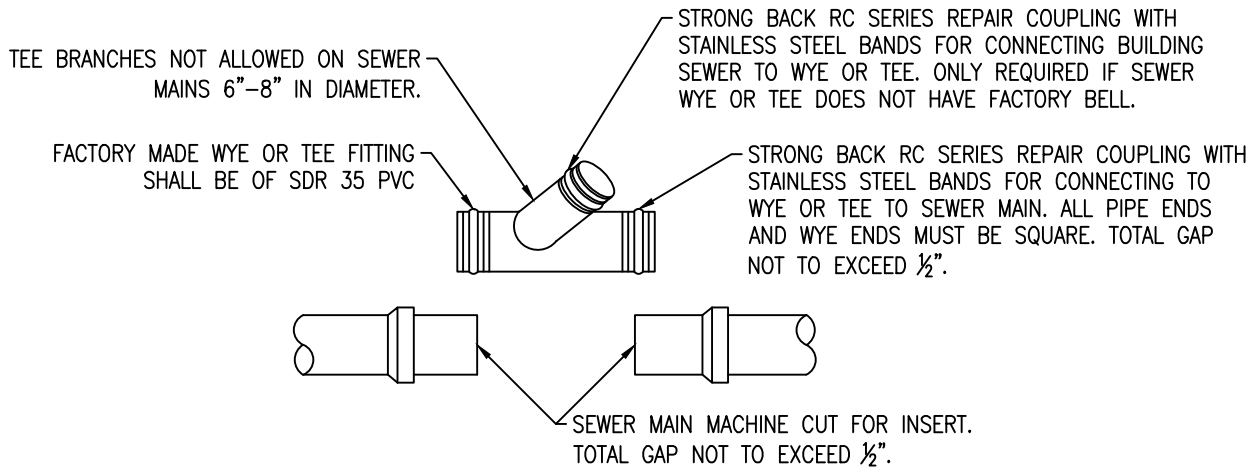
1. THIS TABLE WAS REFERENCED FROM AREMA MANUAL FOR RAILWAY ENGINEERING

MINIMUM WALL THICKNESS FOR  
STEEL CASING PIPE

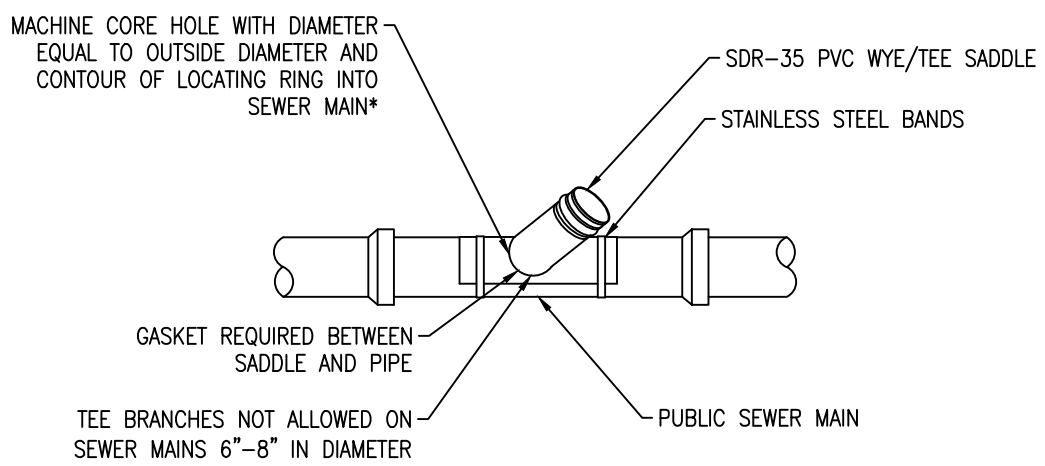
REF. & REV.  
AUG. 2015

CITY OF FRESNO

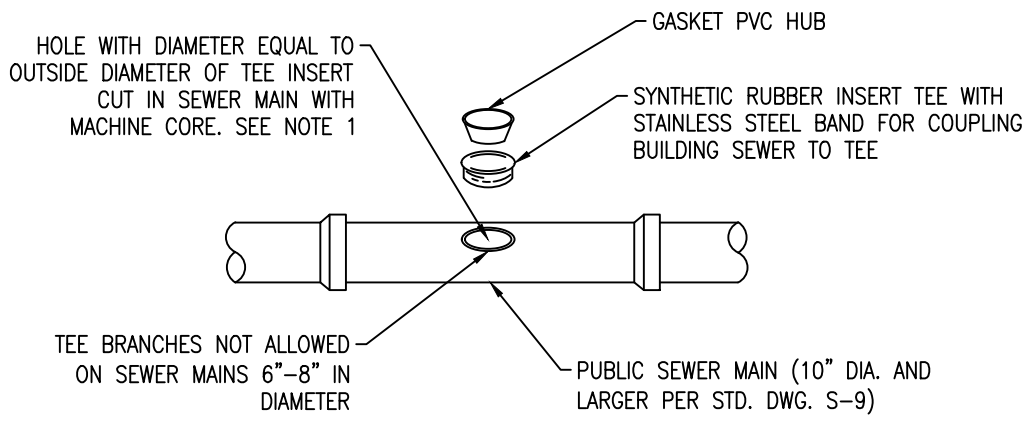
S-7B



METHOD 1: INSERTION OF FACTORY MADE WYE OR TEE



METHOD 2: SADDLE WYE OR TEE



METHOD 3: COMPRESSION TEE

NOTES:

1. IF MACHINE CORE IS NOT CLEAN CUT (WITHOUT DAMAGE TO THE HOST PIPE) MUST USE METHOD 1 TO INSTALL HOUSE BRANCH

# HOUSE BRANCH SIZE—APPROVED CONNECTION METHOD (METHODS SHOWN ON S-8)

		SEWER MAIN SIZE				
		6"	8"	10"	12"	15"
H.B. SIZE	4"	MTHD. 1,2	MTHD. 1,2	MTHD. 1,2,3	MTHD. 1,2,3	MTHD. 1,2,3
	6"	MTHD. 1	MTHD. 1	MTHD. 1,2,3	MTHD. 1,2,3	MTHD. 1,2,3

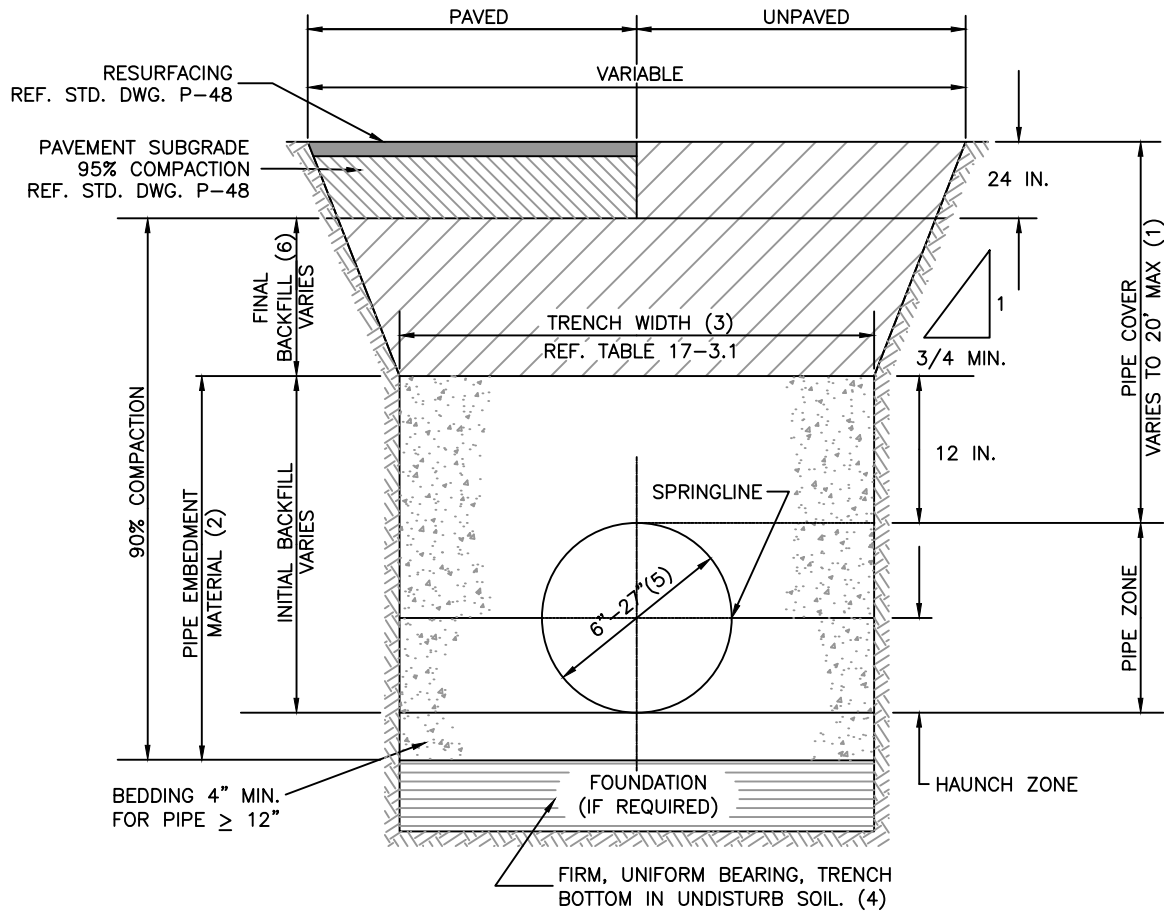
**NOTES:**

1. ALL WYES AND TEES SHALL BE OF SAME MATERIALS AS THAT OF THE SEWER MAIN OR APPROVED EQUAL.
2. 8 INCH DIAMETER AND LARGER HOUSE BRANCHES REQUIRE A MANHOLE AT POINT OF CONNECTION.
3. HOUSE BRANCH CONNECTIONS WITH AN APPROVED SADDLE TO EXISTING SEWER MAINS INSTALLED BY ANY OTHER METHOD THAN A MACHINE CORE SHALL NOT BE ALLOWED.
4. SADDLES SHALL BE OF SAME MATERIAL AS SEWER MAIN OR APPROVED EQUAL AND SHALL NOT EXTEND BEYOND 1/4" INTO THE MAIN SEWER.
5. SEWER HOUSE BRANCHES SHALL BE INSTALLED IN CONFORMANCE WITH DRAWING S-1 OF THE CITY STANDARD SPECIFICATIONS AND THE UNIFORM PLUMBING CODE.
6. ALL NEW HOUSE BRANCHES AND SERVICE LATERALS MUST BE INSTALLED GREATER THAN 5'-0" FROM OUTSIDE EDGE OF MANHOLE AND MUST BE BETWEEN TWO ACCESS STRUCTURES (I.E. MANHOLE, LAMPHOLE)

**ADDITIONAL LIMITATIONS  
ON HOUSE BRANCH CONNECTIONS**

REF. & REV.  
~~AUG. 2015~~  
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CITY OF FRESNO  
**S-9**



**NOTES**

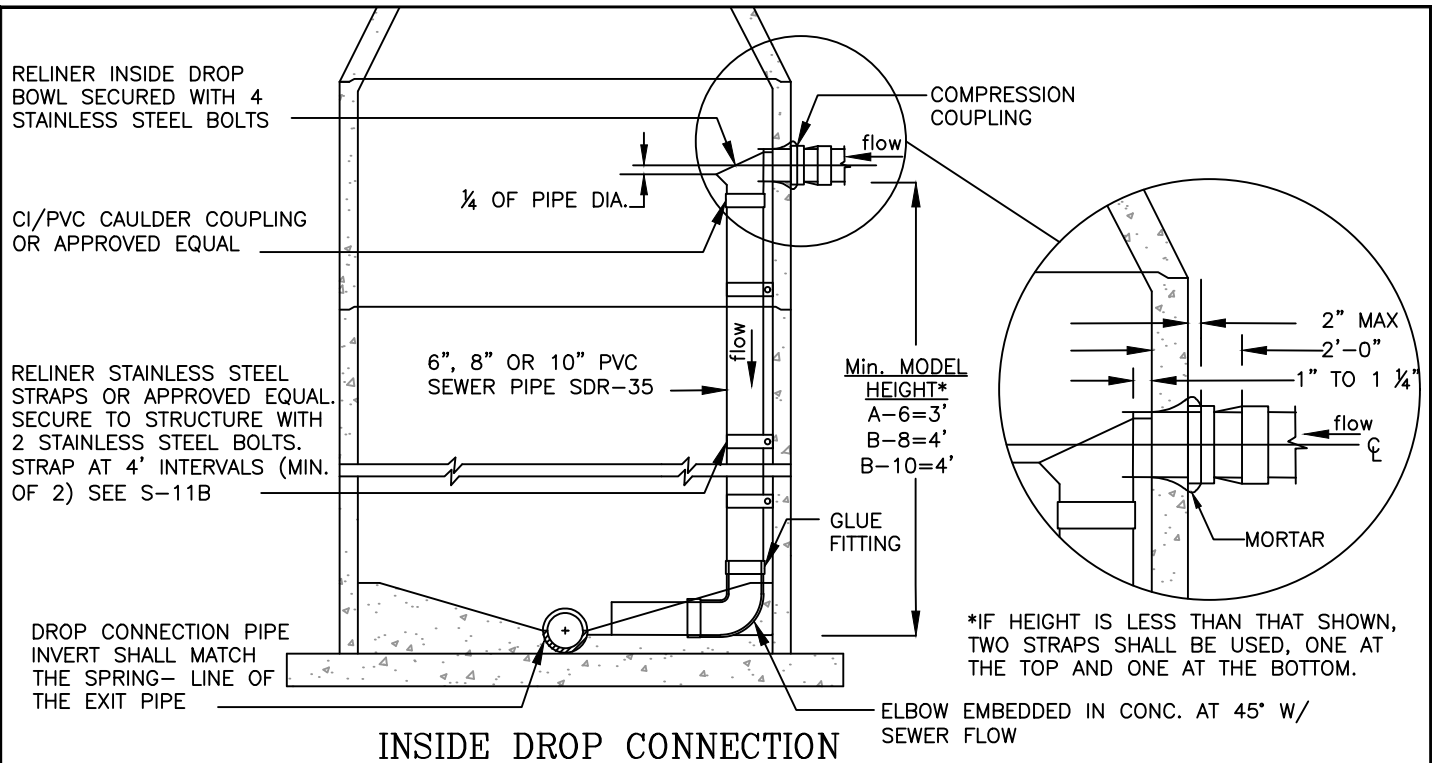
1. PIPE INSTALLATIONS WHERE COVER OVER PIPE EXCEEDS 20' SHALL BE DESIGNED BY A CIVIL ENGINEER AND SPECIFIED IN THE PROJECT PLANS AND SPECIAL PROVISIONS.
2. PIPE EMBEDMENT MATERIAL SHALL CONSIST OF CLASS II OR CLASS III SELECT NATURAL MATERIAL OR PROCESSED PRODUCT AS DEFINED IN SUBSECTION 17-5.2, "PIPE EMBEDMENT ZONE" OF STANDARD SPECIFICATIONS AND INITIAL BACKFILL PLACED IN ACCORDANCE WITH SUBSECTION 17-5.3, "INITIAL BACKFILL", OF THE STANDARD SPECIFICATIONS.
3. MINIMUM AND MAXIMUM TRENCH WIDTH ALLOWED SHALL BE MAINTAINED AS SPECIFIED IN TABLE 17-3.1, SUBSECTION 17-3.2.1, "TRENCH WIDTHS", OF THE STANDARD SPECIFICATIONS.
4. BOTTOM OF TRENCH SHALL BE IN FIRM, UNIFORM-BEARING SOIL SURFACES. WHEN UNSUITABLE OR DISTURBED, THE CONTRACTOR SHALL REMOVE AND REFILL WITH SUITABLE MATERIAL AS SPECIFIED IN SUBSECTION 17-5.1, "FOUNDATION AND BEDDING", OF THE STANDARD SPECIFICATIONS.
5. STANDARD DETAIL S-10 SHALL BE APPLICABLE TO ALL SEWER PIPE INSTALLATIONS WITH DIAMETERS OF 6 TO 27 INCHES. CONSTRUCTION PROCEDURES FOR PIPES LARGER THAN 30 INCHES SHALL BE PROVIDED BY THE CITY ENGINEER.
6. IN UNPAVED AREAS FINAL BACKFILL SHALL EXTEND TO THE SURFACE ELEVATION WITH 95% COMPACTION IN THE UPPER 24" OF TRENCH.

**SEWER MAIN TRENCH, BEDDING,  
AND BACKFILL DETAIL**

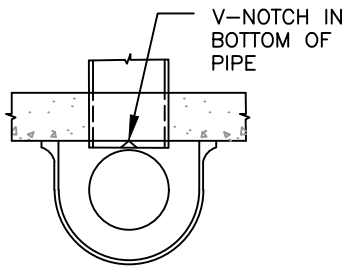
REF. & REV.  
NOV. 2007  
MAR. 2021 (A.7)

CITY OF FRESNO  
**S-10**

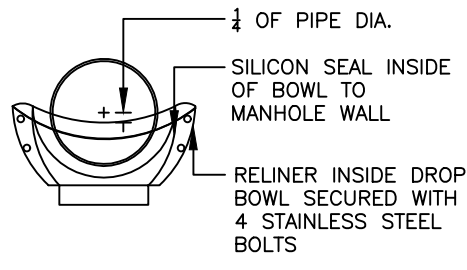




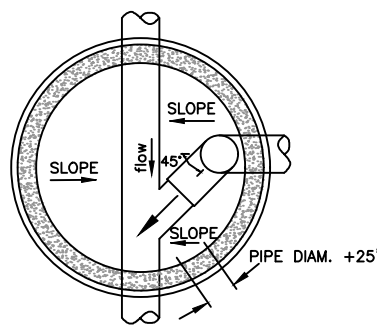
**INSIDE DROP CONNECTION**



**DROP BOWL MOUNTING POSITION TOP VIEW**



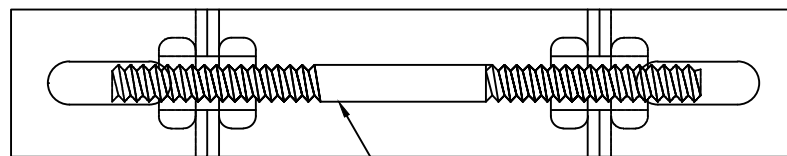
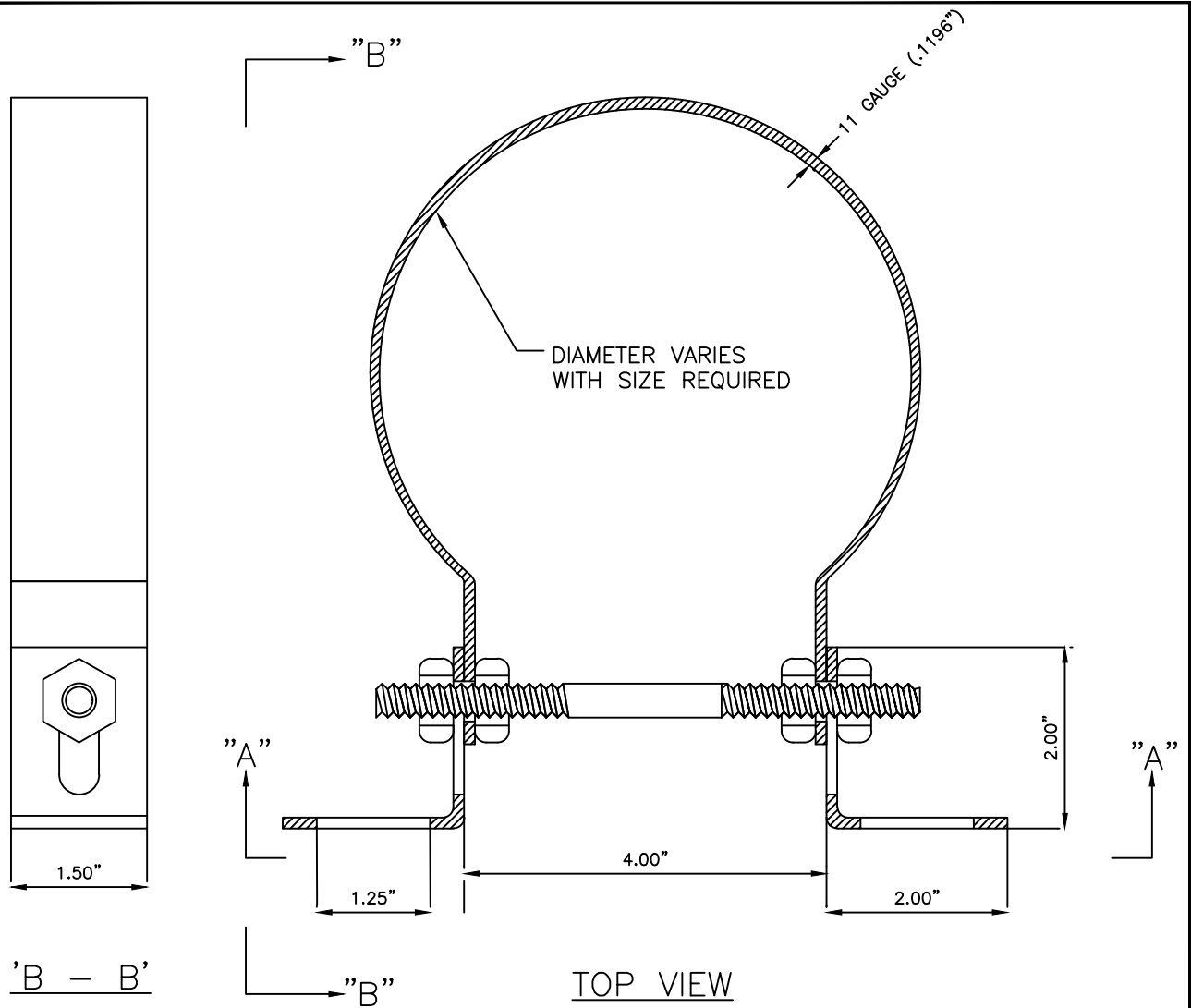
**DROP BOWL MOUNTING POSITION FRONT VIEW**



**INSIDE DROP - PLAN**

**NOTES:**

1. ALL INSIDE DROP CONNECTIONS FOR SERVICES AND COLLECTOR SEWER SHALL USE THE DROP BOWL AS PRODUCED BY: RELINER-DURAN, INC. 53 MT. ARCHER RD. LYME, CT 06371 (860)434-0277 FAX: (860)434-3195 OR APPROVAL EQUAL
2. DROP BOWL MODEL "A-6" SHALL BE USED FOR ALL LINES UP THROUGH FULL 6" INLETS. DROP BOWLS MODEL "B-8" SHALL BE USED FOR ALL 8" INLETS. DROP BOWLS MODEL "B-10" SHALL BE USED FOR ALL 10" INLETS. 6" ONLY ALLOWABLE FOR REPLACING EXISTING 6" DROP. LINES LARGER THAN 10" SHALL BE AS DIRECTED BY THE ENGINEER.
3. SECURE DROP PIPE TO MANHOLE WALL WITH RELINER-DURAN, INC STAINLESS STEEL ADJUSTABLE CLAMPING BRACKETS OR APPROVED EQUAL (SEE DETAIL S-11B).
4. ATTACH THE DROP BOWL & EACH CLAMPING BRACKET TO THE MANHOLE WALL WITH 3/8" X 3 3/4" RAMSET/RED HEAD BOLTS. PRE-ROTO DRILL AND SET BOLTS IN PLACE WITH EPOXY PASTE. EPOXY SHALL MEET THE FOLLOWING REQUIREMENTS:
  - A. EPOXY PASTE SHALL BE A TWO COMPONENT, 100% SOLID SYSTEM. EPOXY SHALL BE SIKADUR 31 HI-MOD GEL BY SIKA CORPORATION (PHONE 592/941-0231) OR EQUAL.
  - B. THE EPOXY PASTE SHALL DEVELOP A MINIMUM COMPRESSIVE STRENGTH OF 5,000 PSI IN 28 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D695 AT 73 DEGREES.
  - C. THE EPOXY PASTE SHALL DEVELOP A MINIMUM TENSILE STRENGTH OF 3,000 PSI IN 14 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM D638.
  - D. THE EPOXY PASTE SHALL DEVELOP A MINIMUM BOND STRENGTH OF 2,000 PSI IN 2 DAYS WHEN TESTED IN ACCORDANCE WITH ASTM C882 (HARDENED CONCRETE TO HARDENED CONCRETE).



3/8" DIAMETER STAINLESS  
STEEL PINCH BOLT

STAINLESS STEEL ADJUSTABLE CLAMPING  
BRACKET AS MANUFACTURED BY:

RELINER-DURAN, INC.  
53 MT. ARCHER RD.  
LYME, CT 06371  
(860)434-0277 FAX: (860)434-3195  
OR APPROVAL EQUAL

SPECIFICATIONS:

- 1) CLAMP AND BRACKETS IS TYPE 304 STAINLESS STEEL, 11 GAUGE (.1196").
- 2) 3/8"  $\phi$  PINCH BOLT AND NUTS IS TYPE 18-8 STAINLESS STEEL.

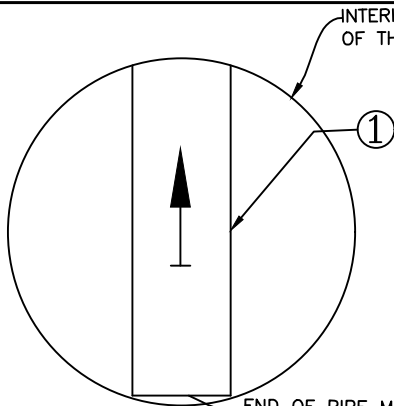
STAINLESS STEEL ADJUSTABLE  
CLAMPING BRACKETS

REF. & REV.  
JUNE 2014

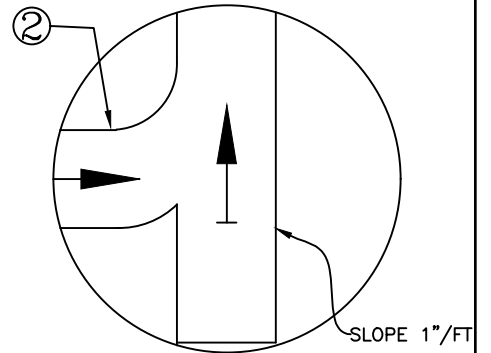
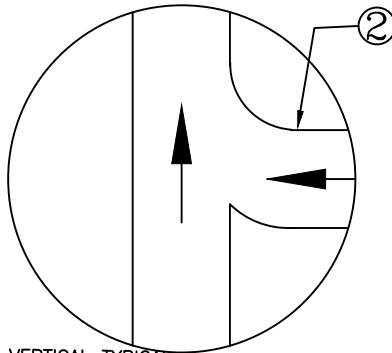
CITY OF FRESNO

S-11B

2 OF 2

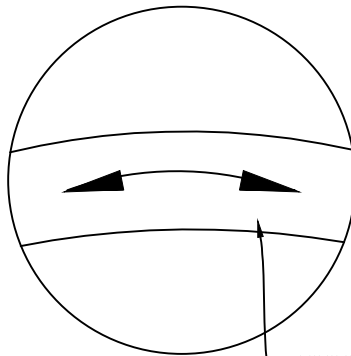
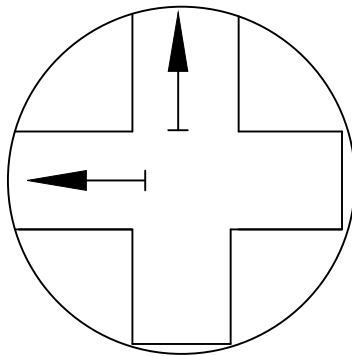
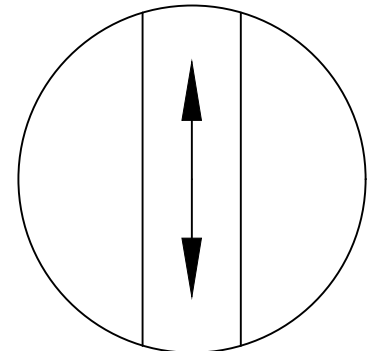
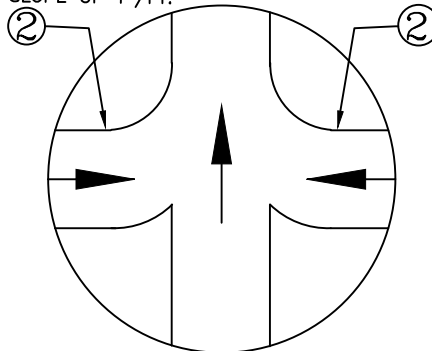
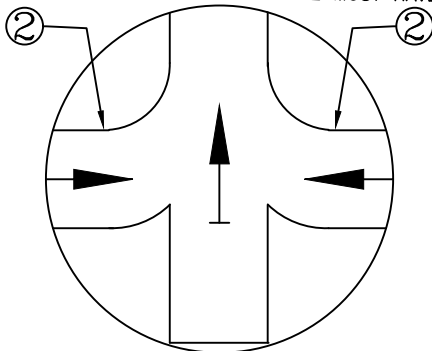


INTERIOR DIAMETER OF THE BARREL AT MH. BASE (TYP)

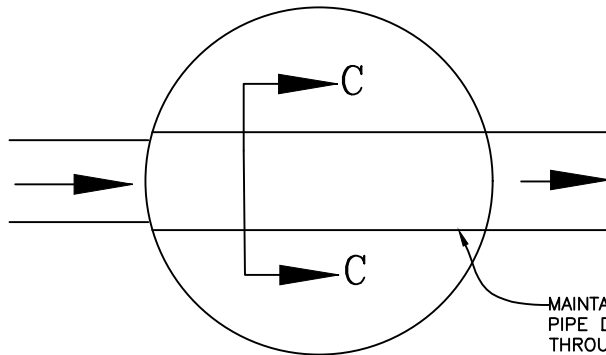
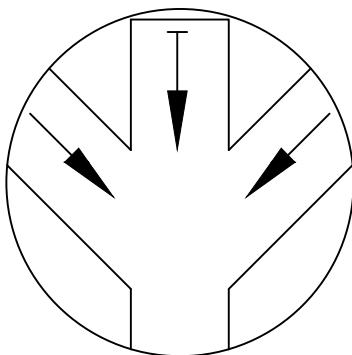
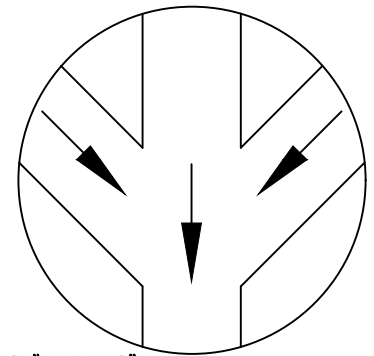


SLOPE 1"/FT

END OF PIPE MUST BE VERTICAL TYPICAL OF ALL STARTER PIPES WITH ↑ SYMBOL PIPE MUST HAVE A SLOPE OF 1"/FT.



MINIMUM RADIUS 24" IN A 48" MH AND 30" IN A 60" MH.



SECTION C-C

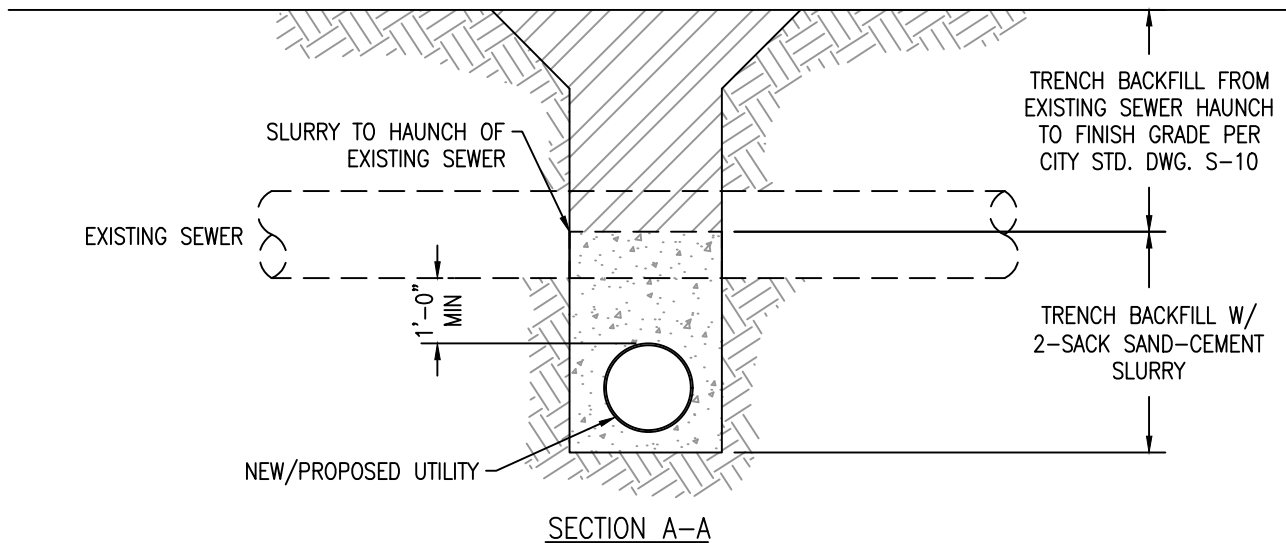
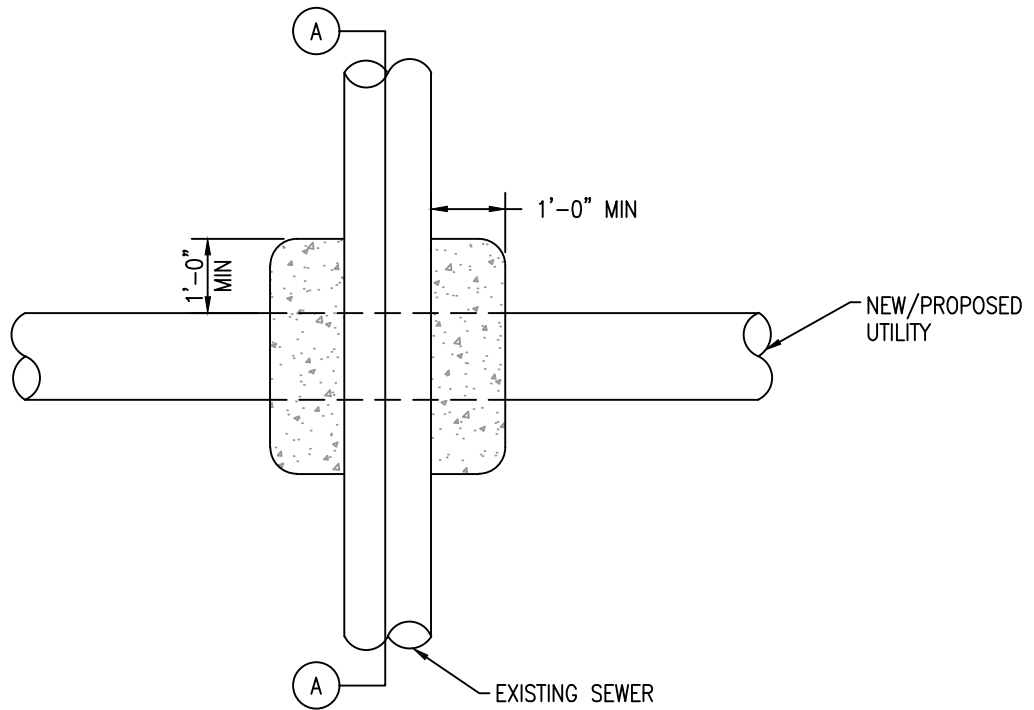
MAINTAIN LARGER PIPE DIAMETER THROUGHOUT MH.

↑↑ INDICATE FLOW DIRECTION

- ① ALL STRAIGHT PIPE TO BE LAID THROUGH MANHOLES WITH TOP HALF REMOVED TO PROVIDE AT LEAST A 44" OR 56" LONG OPENING. ROUGH BROKEN EDGES SHALL BE MORTARED SMOOTH. THIS INCLUDES UPPER ENDS OF LINE MANHOLE.
- ② ALL TURNS MUST BE MADE SUCH THAT THE CENTER LINE OF THE FLOW CHANNEL BEND RADIUS IS MINIMUM 24" IN A 48" MANHOLE AND MINIMUM 30" IN A 60" MANHOLE. TURNS TO BE CONSTRUCTED TO FORM A SMOOTH FLOW LINE OF SAME SHAPE AND PATTERN AS BOTTOM WALL PIPE.

NOTE:  
WHEN PIPE IS CUT, ALL EXPOSED REINFORCING STEEL TO BE COATED WITH 2" OF CONCRETE.

# CASE 1: UNDAMAGED EXISTING UTILITY AT NEW UTILITY INSTALLATION



**NOTES:**

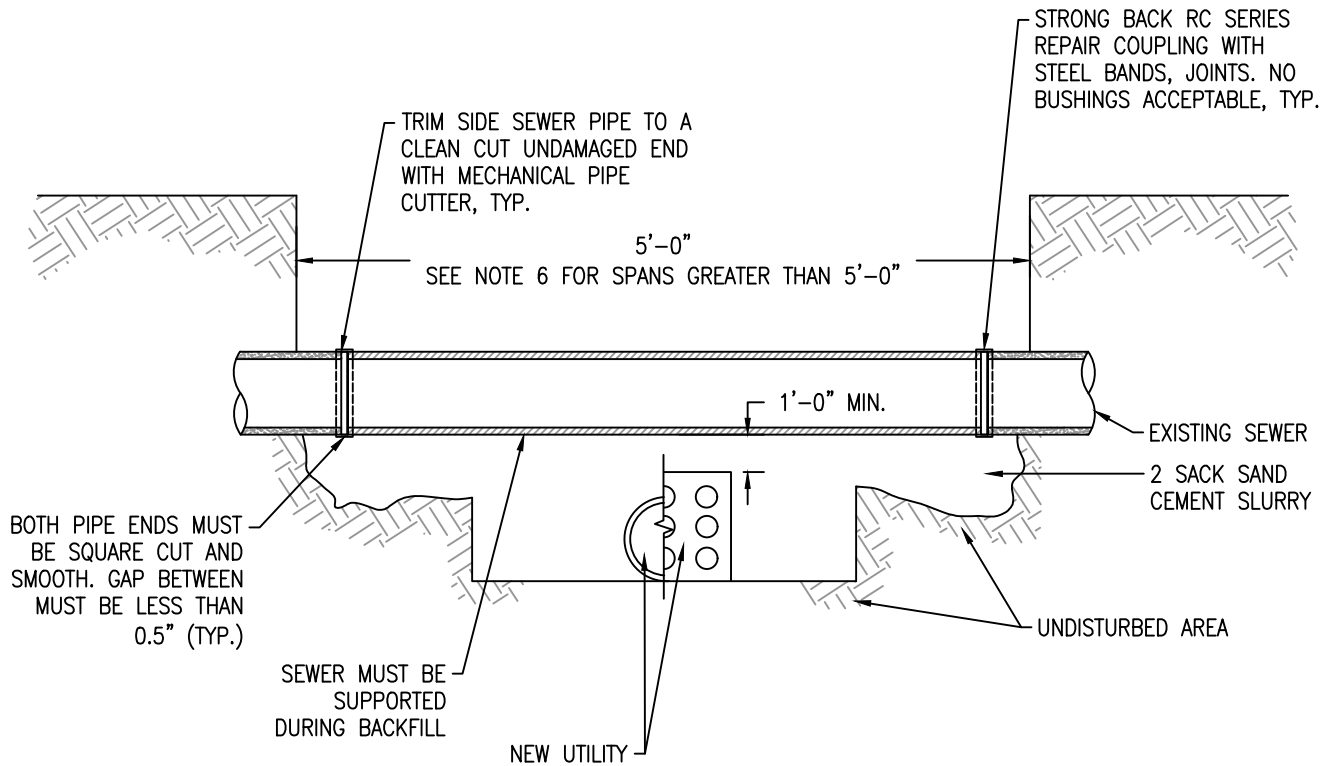
1. ALL LINES TO BE PROTECTED IN PLACE.
2. NO VENTS OR STRUCTURES TO BE LOCATED WITHIN PIPELINE EASEMENT.
3. ANY NEW UTILITY SHALL HAVE A MINIMUM OF 1'-0" CLEARANCE FROM ANY SEWER FACILITY. ANY NEW UTILITY WITHIN 1'-0" SHALL HAVE CLSM, 2 SACK, BETWEEN THE UTILITY LINES.
4. WHERE JOINT IN THE UTILITY OCCURS AT THE EDGE OF THE SLURRY SUPPORT, EXTEND SUPPORT 6" MIN BEYOND THE JOINT.

PIPE/CONDUIT CROSSING UNDER  
EXISTING SEWER – CASE 1

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO  
S-13A

## CASE 2: SEWER REPAIR AT NEW UTILITY INSTALLATION



**NOTES:**

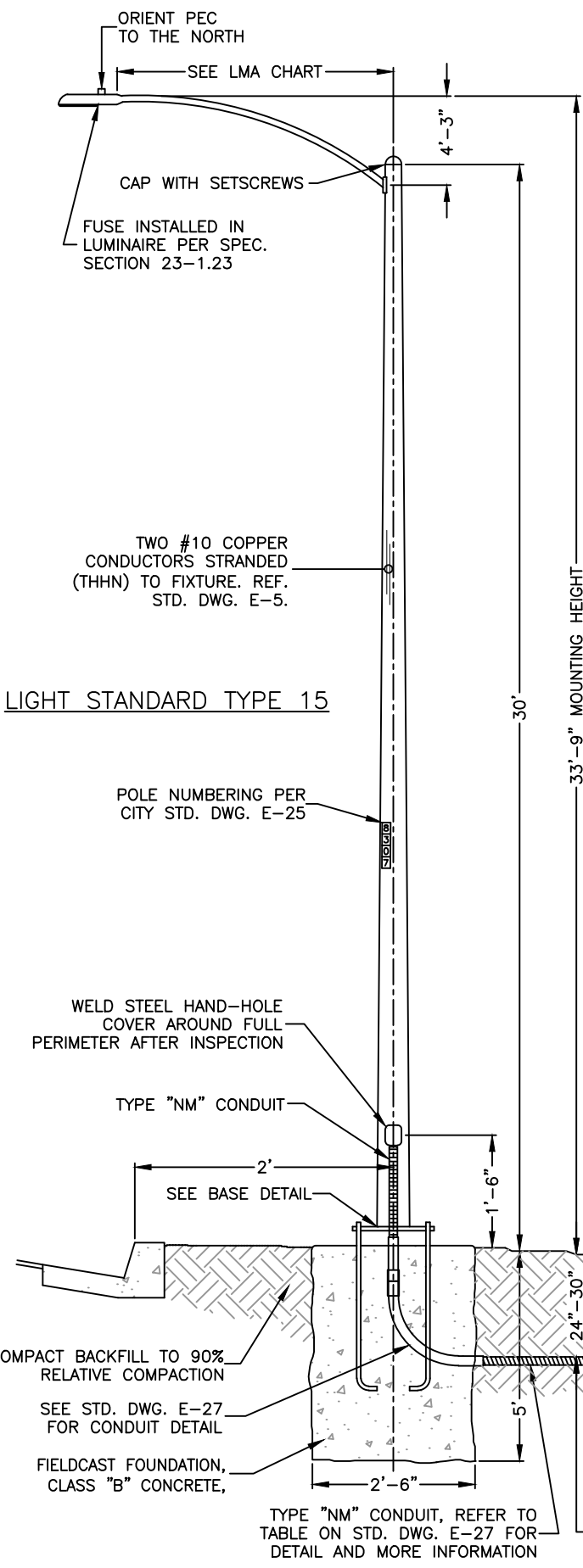
1. ALL LINES TO BE PROTECTED IN PLACE. THIS DETAIL SHALL APPLY WHENEVER THE SEWER MAIN IS CUT OR DAMAGED WHEN CONSTRUCTION PASSES BENEATH THESE LINES.
2. INSIDE DIAMETER OF REPLACEMENT PIPE TO BE THE SAME AS THE EXISTING PIPE TO WHICH IT CONNECTS.
3. PIPE TO HAVE THE SAME SLOPE AS ADJACENT PIPELINES.
4. MINIMUM CLEARANCE BETWEEN SEWER AND UTILITY SHALL BE 1'-0", CLEARANCE LESS THAN 1'-0" MUST BE APPROVED BY CITY PRIOR TO INSTALLATION.
5. ANY NEW UTILITY WITHIN 1'-0" SHALL HAVE CLSM, 2 SACK, BETWEEN THE UTILITY LINES.
6. BACKFILL EXCAVATION WITH 2 SACK CLSM TO SPRING LINE OF SEWER PIPE. IF MORE THAN 5'-0" OF SEWER IS EXPOSED, BACKFILL THE ENTIRE EXPOSED LENGTH TO 1'-0" ABOVE SEWER WITH 2 SACK CLSM.
7. SEWER PIPES MUST BE CCTV INSPECTED AFTER BACKFILL AND, IF APPLICABLE, PRIOR TO PAVING.

**PIPE/CONDUIT CROSSING UNDER  
EXISTING SEWER – CASE 2**

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO  
**S-13B**

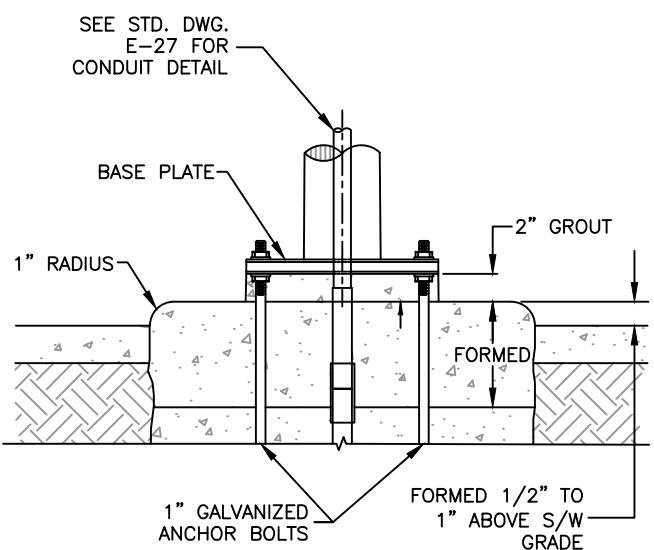
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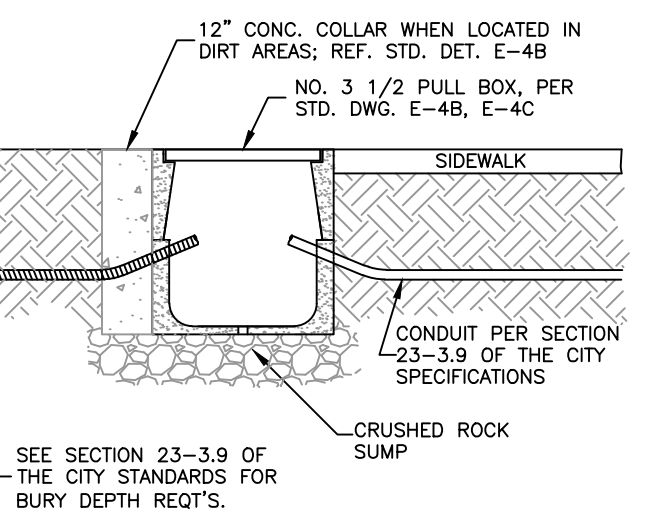
**NOTES:**

1. ALL WORK SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE SPECIFICATIONS ENTITLED "STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION" (1997 REVISION) AND THE NATIONAL ELECTRICAL CODE.
2. LUMINAIRE SHALL BE COBRA HEAD TYPE, 120V LIGHT EMITTING DIODE (LED). PHOTOELECTRIC CELL SHALL BE EXTENDED LIFE, QUICK ACTING.
3. ALL STREET LIGHTS SHALL BE NUMBERED. NUMERICAL SEQUENCE TO BE OBTAINED FROM P.G.&E. NUMBERS TO BE 2-1/2" HIGH AND INSTALLED 10'-6" ABOVE FINISHED GRADE PER STD. DWG. E-25.

LMA CHART	
ROADWAY CLASSIFICATION	REQUIRED ARM LENGTH
LOCAL STREET:	8'
COLLECTOR, ARTERIAL, OR EXPRESSWAY:	12'



**BASE DETAIL**

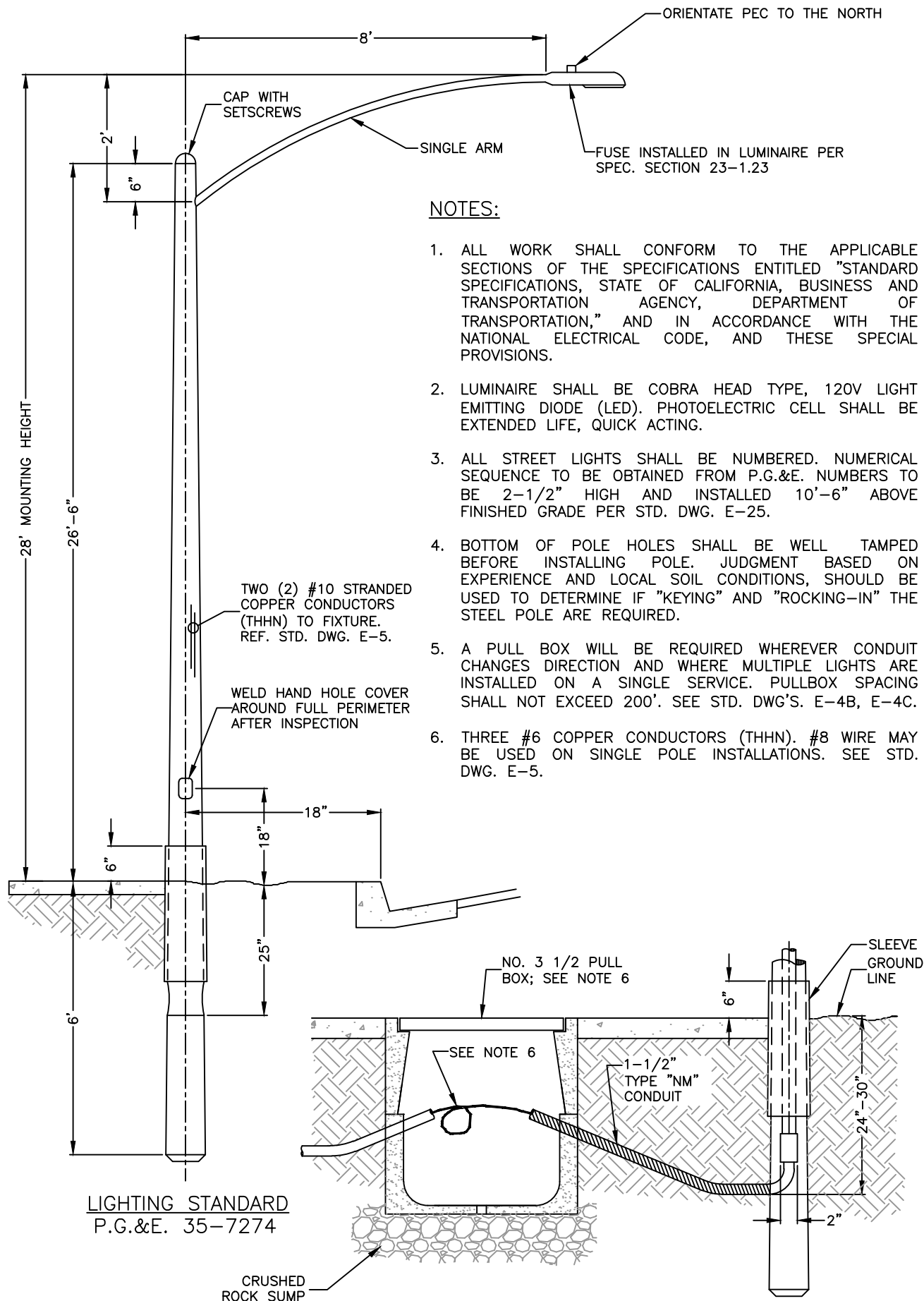


**LIGHT STANDARD TYPE 15**

**STREETLIGHT-WITH BASE  
INCLUDES PULL BOX & PVC CONDUIT**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
**E-1**



**NOTES:**

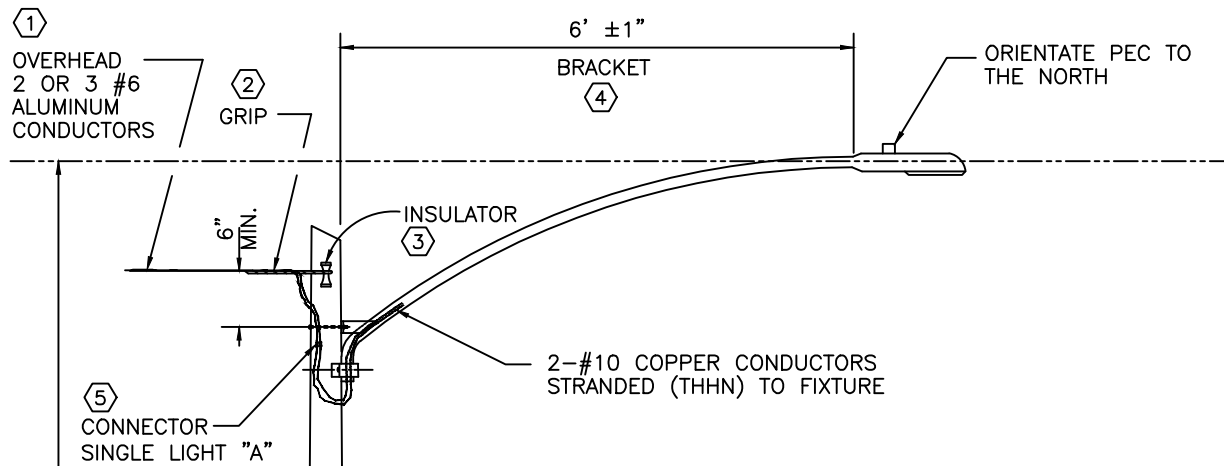
1. ALL WORK SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE SPECIFICATIONS ENTITLED "STANDARD SPECIFICATIONS, STATE OF CALIFORNIA, BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION," AND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE, AND THESE SPECIAL PROVISIONS.
2. LUMINAIRE SHALL BE COBRA HEAD TYPE, 120V LIGHT EMITTING DIODE (LED). PHOTOELECTRIC CELL SHALL BE EXTENDED LIFE, QUICK ACTING.
3. ALL STREET LIGHTS SHALL BE NUMBERED. NUMERICAL SEQUENCE TO BE OBTAINED FROM P.G.&E. NUMBERS TO BE 2-1/2" HIGH AND INSTALLED 10'-6" ABOVE FINISHED GRADE PER STD. DWG. E-25.
4. BOTTOM OF POLE HOLES SHALL BE WELL TAMPED BEFORE INSTALLING POLE. JUDGMENT BASED ON EXPERIENCE AND LOCAL SOIL CONDITIONS, SHOULD BE USED TO DETERMINE IF "KEYING" AND "ROCKING-IN" THE STEEL POLE ARE REQUIRED.
5. A PULL BOX WILL BE REQUIRED WHEREVER CONDUIT CHANGES DIRECTION AND WHERE MULTIPLE LIGHTS ARE INSTALLED ON A SINGLE SERVICE. PULLBOX SPACING SHALL NOT EXCEED 200'. SEE STD. DWG'S. E-4B, E-4C.
6. THREE #6 COPPER CONDUCTORS (THHN). #8 WIRE MAY BE USED ON SINGLE POLE INSTALLATIONS. SEE STD. DWG. E-5.

**STREETLIGHT-EMBEDDED  
POLE WITH NO FOUNDATION**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
**E-2**





DOUGLAS FIR, CLASS 5 STREET LIGHT POLE

NOTES:

1. ALL WORK SHALL CONFORM TO THE APPLICABLE SECTIONS OF THE SPECIFICATIONS ENTITLED "STANDARD SPECIFICATIONS, STATE OF CALIFORNIA BUSINESS AND TRANSPORTATION AGENCY, DEPARTMENT OF TRANSPORTATION" AND IN ACCORDANCE WITH THE NATIONAL ELECTRICAL CODE AND THESE SPECIAL PROVISIONS.
2. LUMINAIRE SHALL BE COBRA HEAD TYPE, 120V LIGHT EMITTING DIODE (LED). PHOTOELECTRIC CELL SHALL BE EXTENDED LIFE, QUICK ACTING.
3. ALL STREET LIGHTS SHALL BE NUMBERED. NUMERICAL SEQUENCE TO BE OBTAINED FROM P.G.&E. NUMBERS TO BE 2-1/2" HIGH AND INSTALLED NINE FEET ABOVE FINISHED GRADE.
4. POLES TO BE PRESSURE TREATED, BY OIL-PENTA PROCESS.
5. POLES SHALL BE P.G.& E. INSPECTED & APPROVED.

INSTALLATION NOTES

① N-SD SERVICE DROP / SECONDARY CABLE (SINGLE LIGHT - DUPLEX) (MULTIPLE LIGHTS - TRIPLEX) (SEE SPECIAL PROVISIONS)

STREET LIGHT DROP SAGS

SPAN LENGTH	40'	60'	80'	100'	120'	140'	150'	175'	200'	225'
SAG	2"	5"	9"	1'-2"	1'-9"	2'-4"	3'-2"	4'-4"	5'-7"	7'-1"

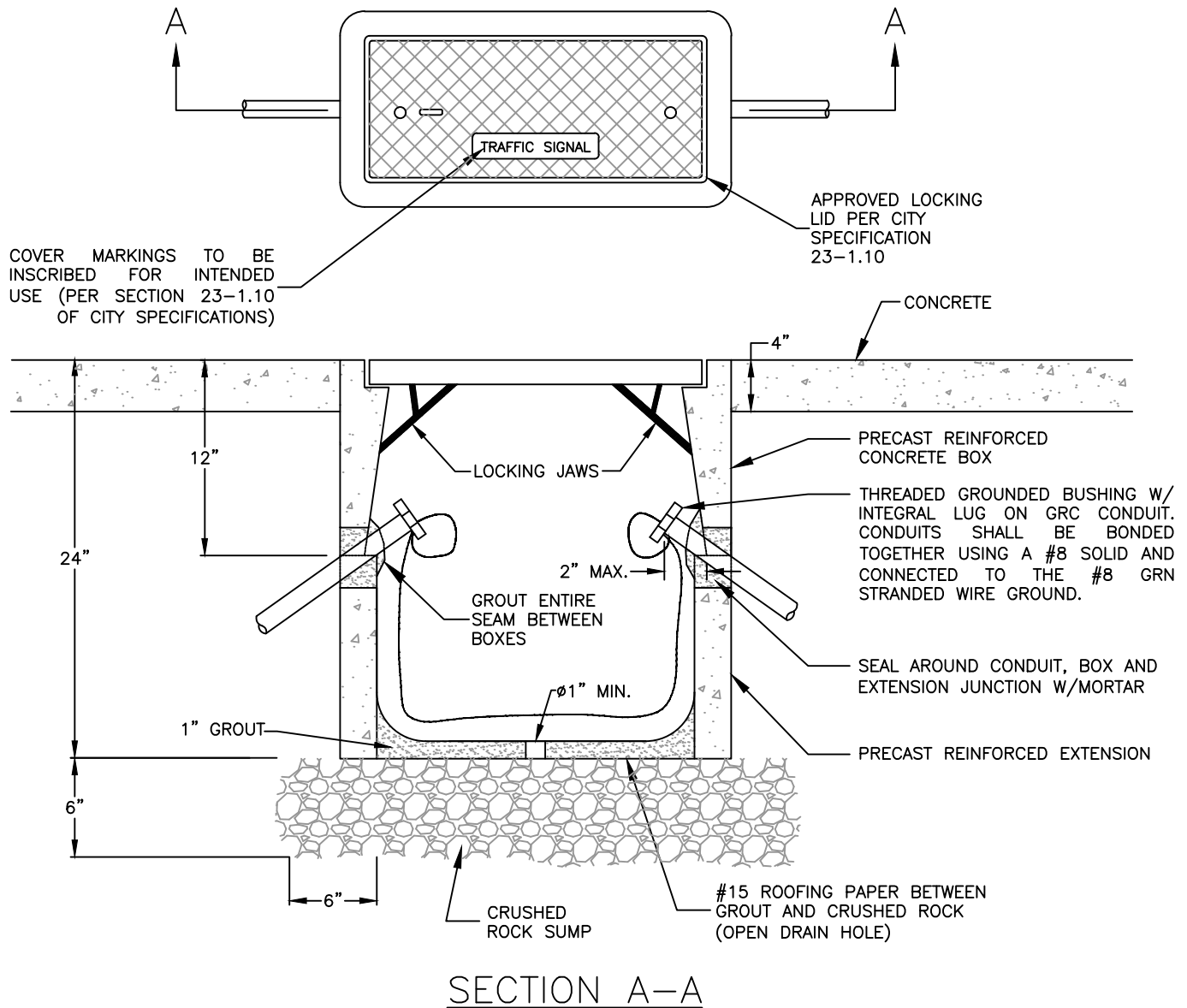
OVERHEAD CONDUCTORS NOT TO SPAN MORE THAN 225'

- ② CHANCE : DEADEND - 10AWCG  
LINE TIE - 10AWTY-56
- ③ JOSLYN J101/J1398 (SPOOL & CLEVIS)
- ④ JOSLYN JP40482 (BRACKET)
- ⑤ CONNECTOR (SEE SPECIAL PROVISIONS)

**STREETLIGHT-LOCAL STREET**  
OVERHEAD SERVICE - WOOD POLE  
TEMPORARY USE ONLY

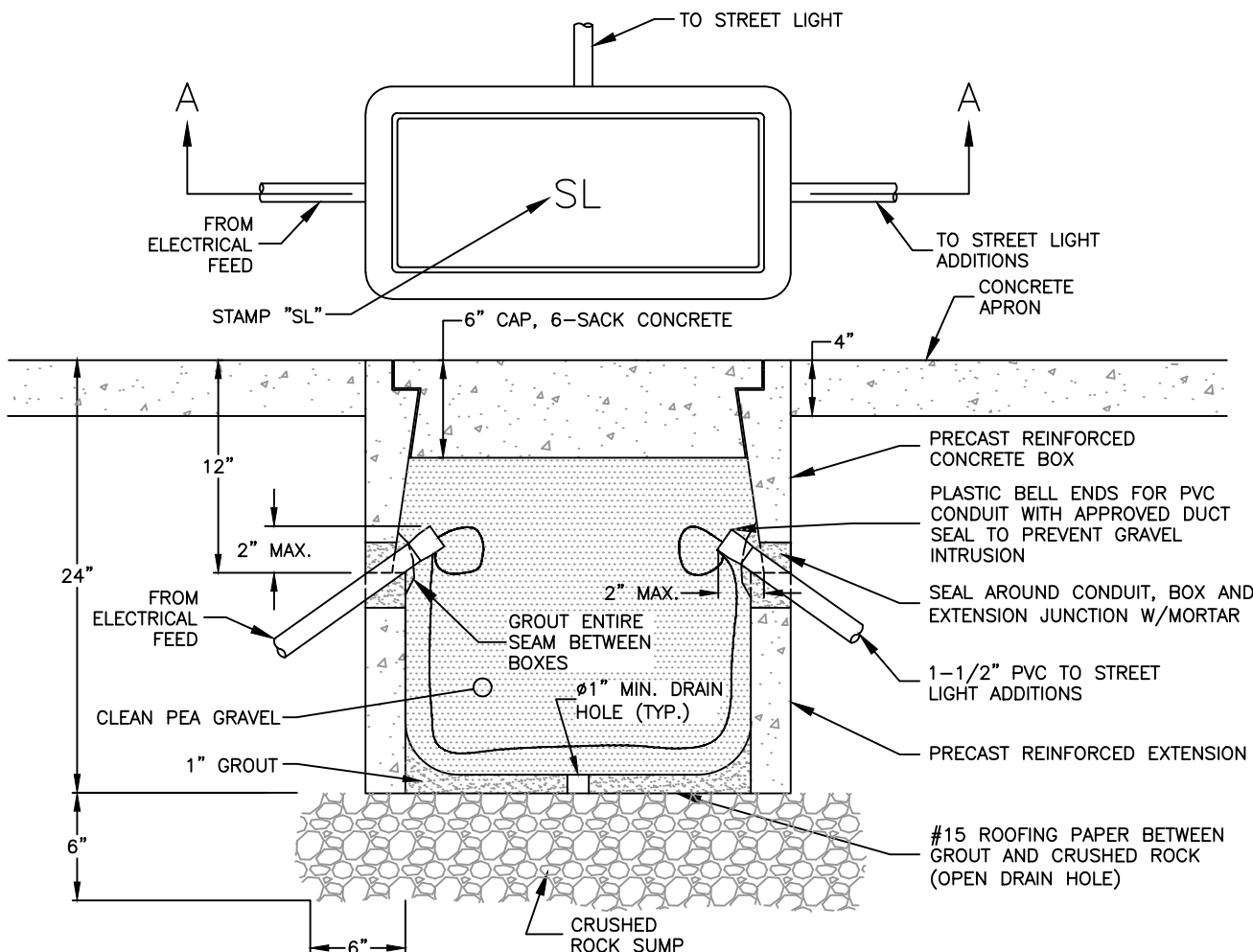
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DEC. 2003  
MAR. 2021 (A.7)

CITY OF FRESNO  
**E-3**

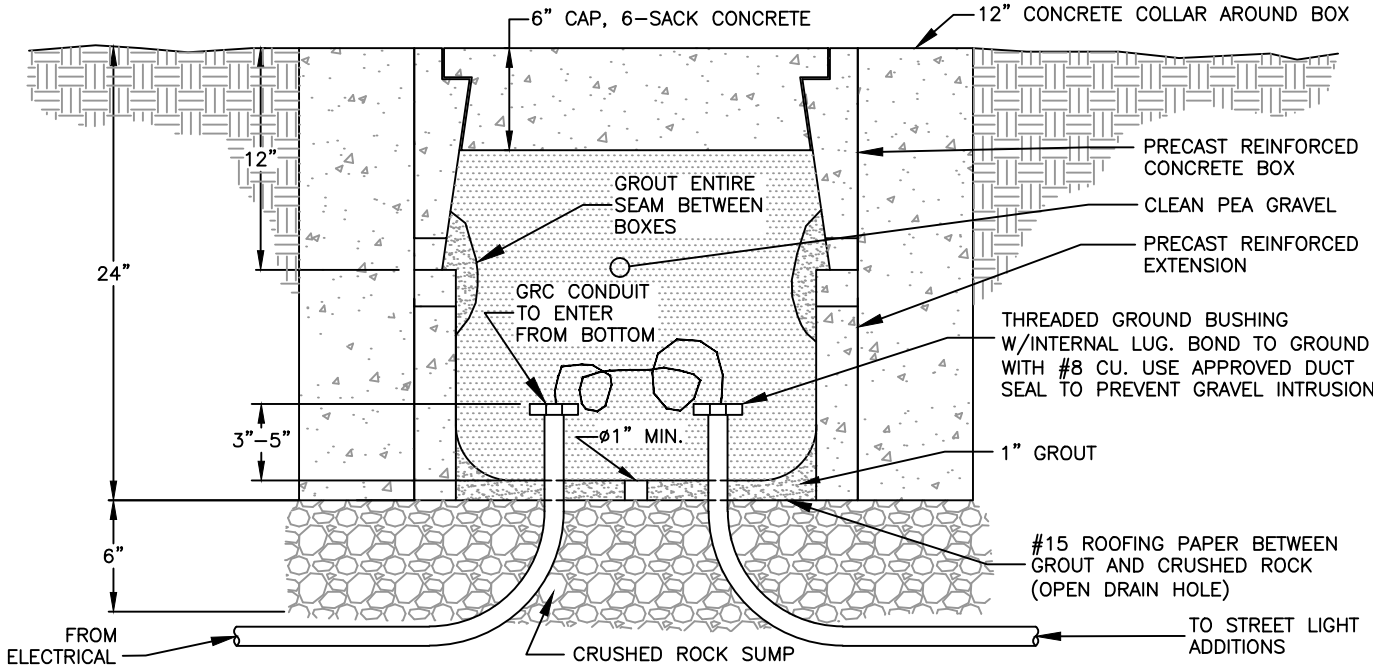


NOTES:

1. PULL BOXES SHALL BE #5 UNLESS OTHERWISE NOTED ON PLANS.
2. WRAP ENTIRE PULL BOX WITH #15 ROOFING PAPER BEFORE BACKFILLING.
3. INSTALL A ONE-FOOT RING OF CONCRETE, 24" DEEP, AROUND THE WRAPPED PULL BOXES INSTALLED IN NON- CONCRETE AREAS, SLOPED TO DRAIN AWAY FROM THE PULL BOX. PULL BOXES IN SIDEWALKS MUST BE SET AT FINISHED GRADE WITH TEMPORARY CONCRETE APRON OR SECTION OF SIDEWALK POURED.
4. PULL BOXES SHALL BE GROUTED PRIOR TO INSTALLATION OF CONDUCTORS, SLOPED TOWARD THE DRAIN HOLE. PLACE A LAYER OF ROOFING PAPER BETWEEN THE CRUSHED ROCK AND THE GROUT, OPEN AT THE DRAIN HOLE.
5. AN APPROVED LOCKING LID SHALL BE INSTALLED ON ALL TRAFFIC SIGNAL PULL BOXES PER SECTION 23-1.10 OF THE CITY STANDARDS.
6. PROVIDE 3' MIN. SLACK ON ALL CONDUCTORS.

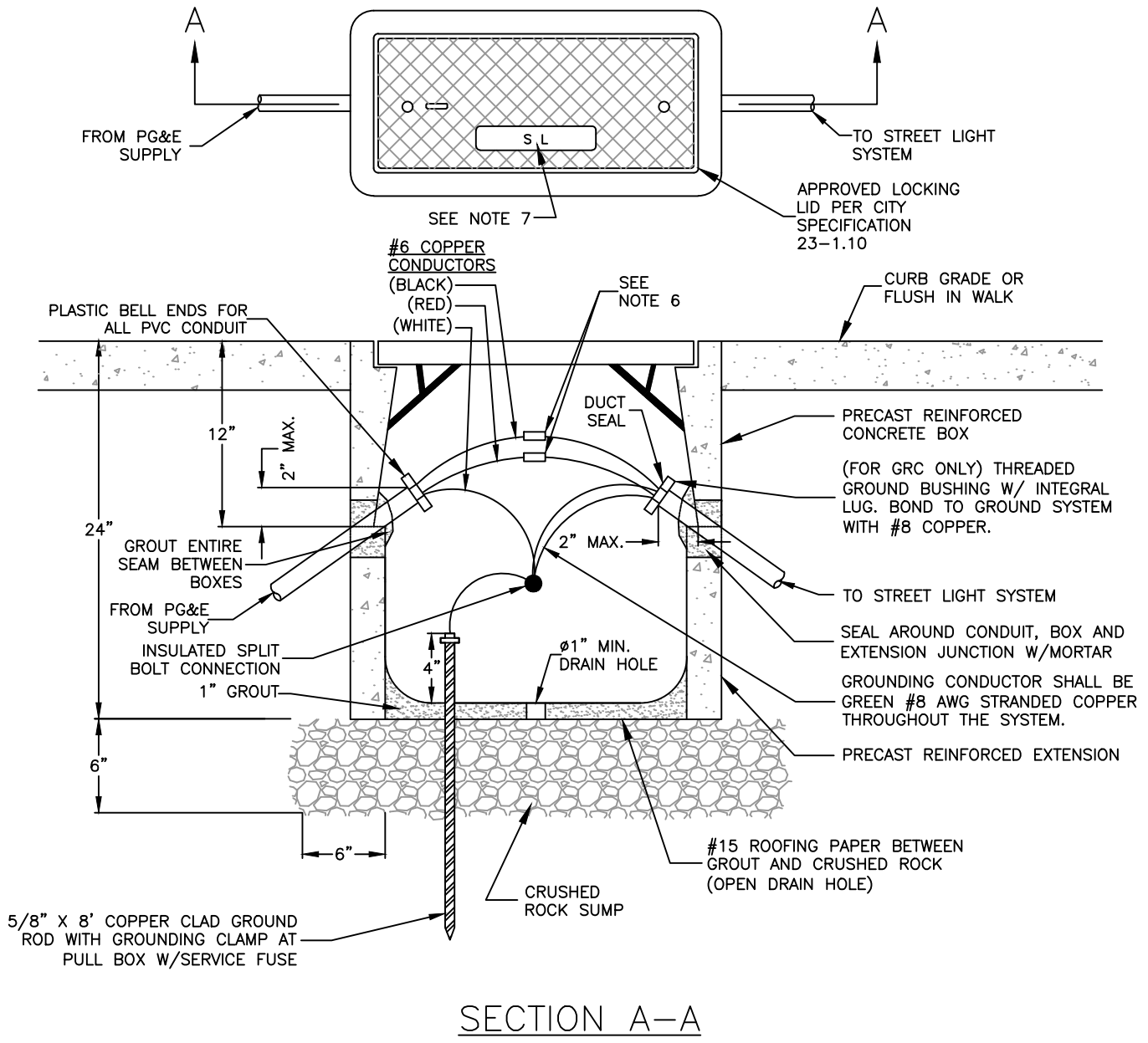


**STREET LIGHT PULL BOX IN CONCRETE AREA**



**STREET LIGHT PULL BOX IN NON-CONCRETE AREA**

- NOTES:**
1. NOTES PER STD. DETAIL E-4A SHALL APPLY
  2. IF SPLICES\* OCCUR WITHIN BOX, A LOCKING LID PER SECTION 23-1.10 OF THE CITY SPECIFICATIONS SHALL BE USED IN LIEU OF CONCRETE.
- \* SPLICES MUST BE APPROVED BY TSSL.

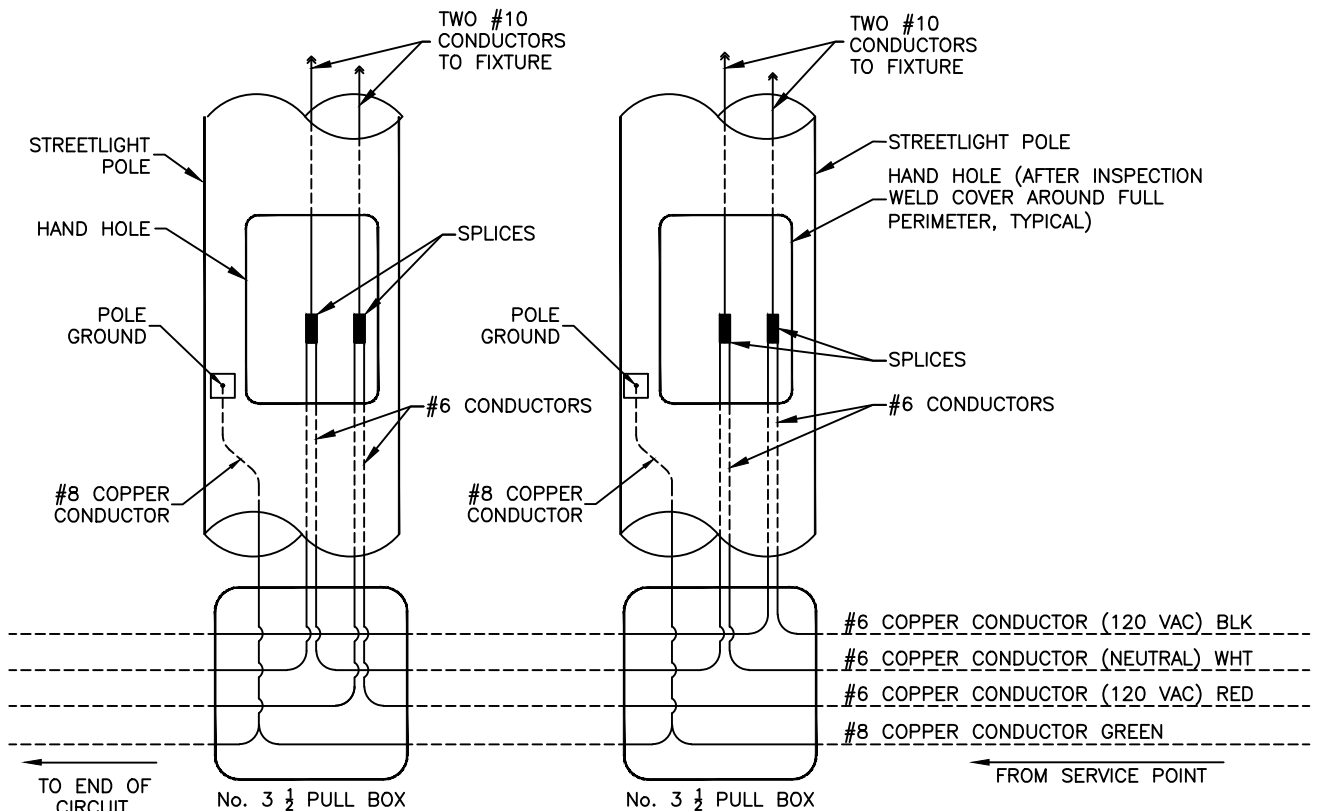


SECTION A-A

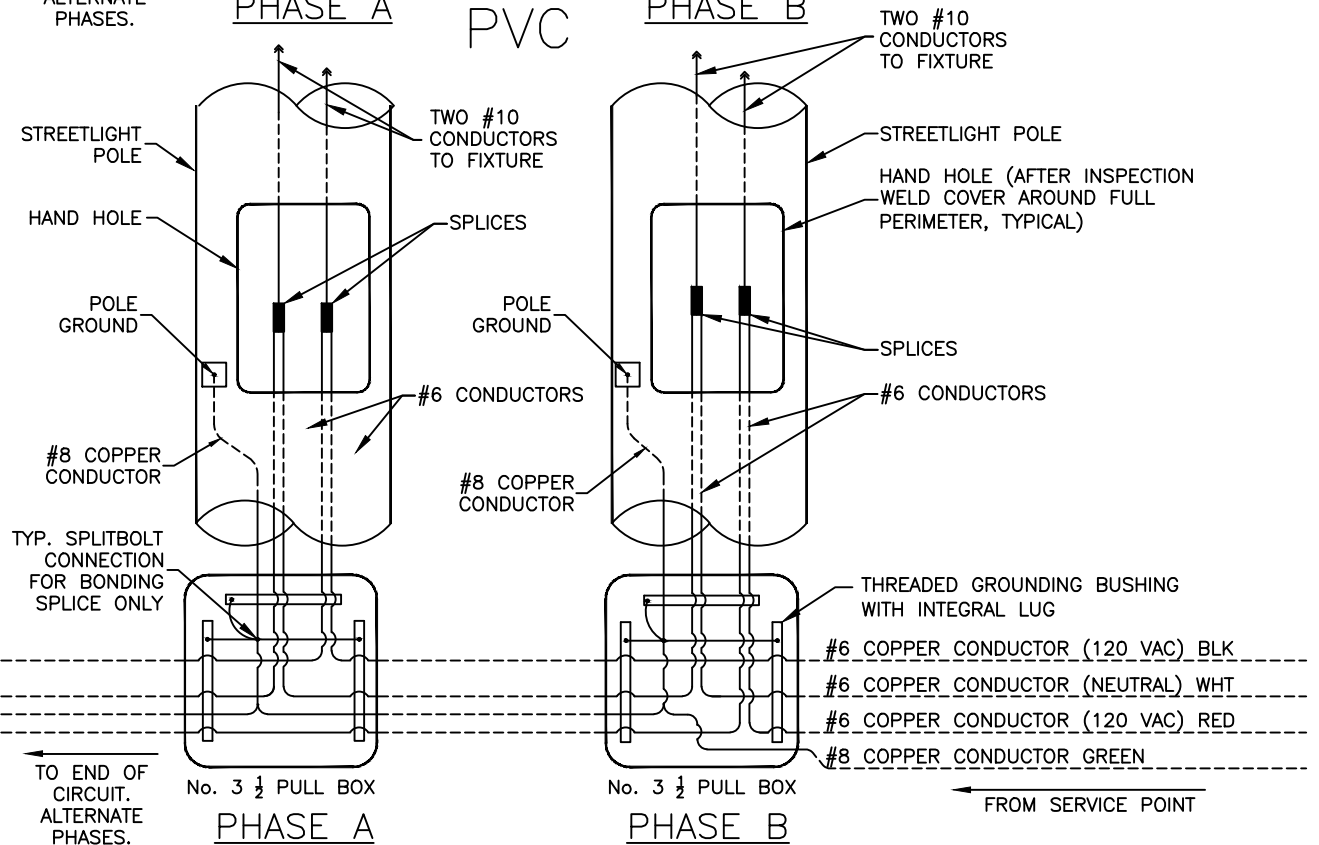
NOTES:

1. PULL BOXES SHALL BE #3-1/2 UNLESS OTHERWISE NOTED ON PLANS.
2. SERVICE PULL BOX SHALL BE WITHIN THE STREET R.O.W. AND NOT PRIVATE PROPERTY.
3. WRAP ENTIRE PULL BOX WITH #15 ROOFING PAPER BEFORE BACKFILLING.
4. INSTALL A ONE-FOOT CONCRETE COLLAR, 24" DEEP, AROUND THE WRAPPED PULL BOXES WHEN INSTALLED IN DIRT OR TURF AREAS, SLOPED TO DRAIN AWAY FROM THE PULL BOX. PULL BOXES IN SIDEWALKS MUST BE SET AT FINISHED GRADE WITH A TEMPORARY CONCRETE APRON OR SECTION OF SIDEWALK POURED.
5. PULL BOXES SHALL BE GROUTED PRIOR TO INSTALLATION OF CONDUCTORS, SLOPED TOWARD THE DRAIN HOLE. PLACE A LAYER OF ROOFING PAPER BETWEEN THE CRUSHED ROCK AND THE GROUT, OPEN AT THE DRAIN HOLE.
6. FUSE AT POINT OF SERVICE SHALL BE 60A FOR #6 CONDUCTOR AND SHALL HAVE A TRON HEJ TYPE FUSE HOLDER (SINGLE POLE). INSULATE WIRE CONNECTION SAME AS SPLICES (23-3.12).
7. AN APPROVED LOCKING LID SHALL BE PROVIDED AND INSCRIBED "SL" PER SECTION 23-1.10 OF THE CITY SPECIFICATIONS.

<p align="center"><b>STREETLIGHT POINT OF SERVICE</b>  <b>CONCRETE PULL BOX</b>  <b>LOCAL STREETS ONLY (RESIDENTIAL)</b></p>	<p>REF. &amp; REV.          JUNE 2015          MAR. 2021 (A.7)</p>	<p align="center">CITY OF FRESNO  <b>E-4C</b></p>
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PVC



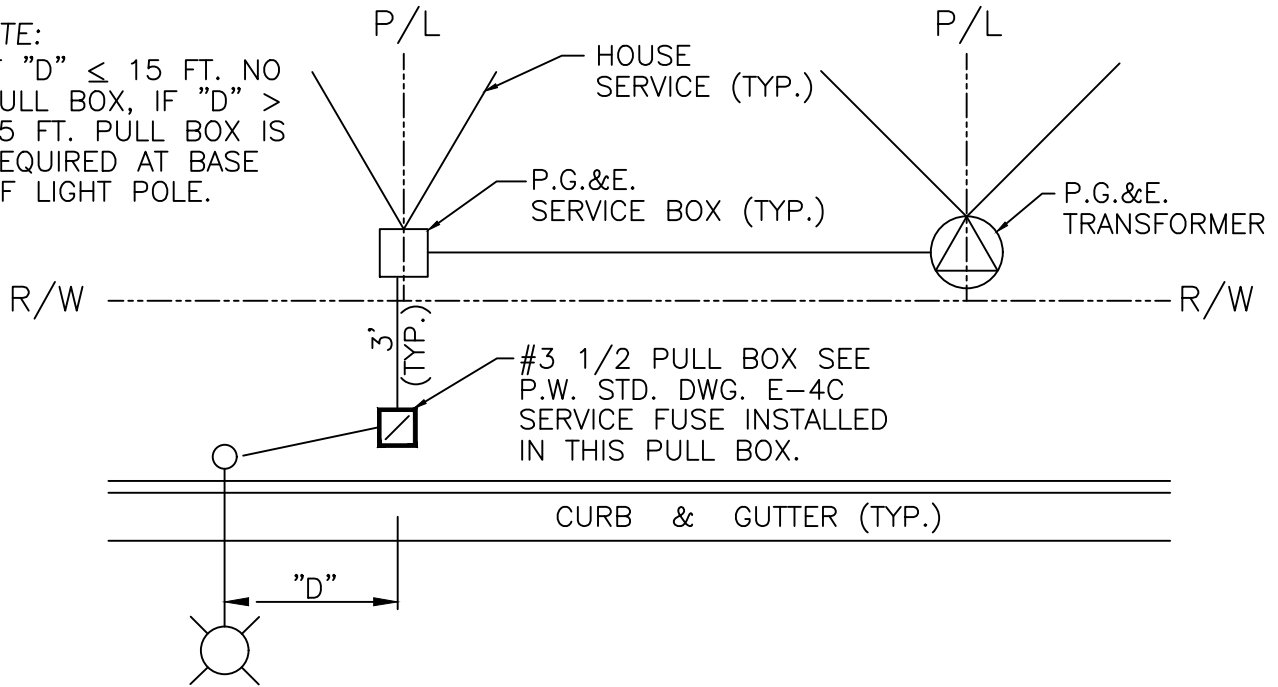
GRC

**NOTES:**

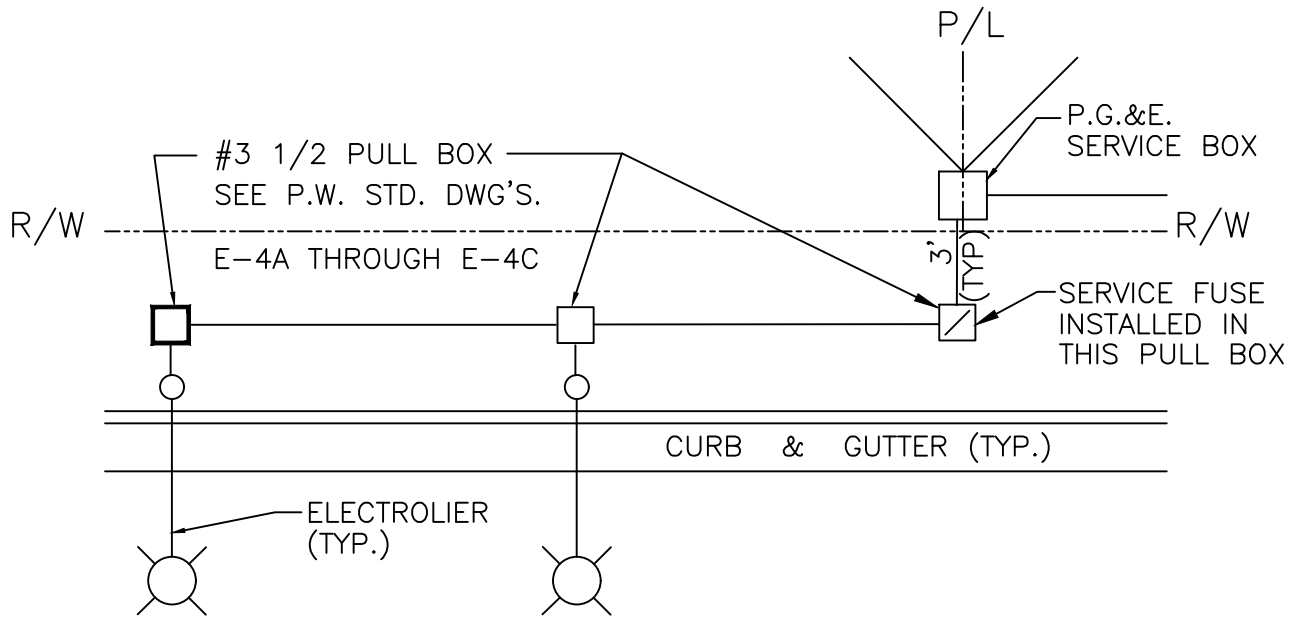
1. WITH EXCEPTION OF BONDING JUMPERS, NO SPLICES WILL BE ALLOWED IN PULL BOXES WITHOUT PRIOR APPROVAL AND THE INSTALLATION OF AN APPROVED LOCKING LID PER SECTION 23-1.10 OF CITY SPECIFICATIONS.

**NOTE:**

IF "D" ≤ 15 FT. NO PULL BOX, IF "D" > 15 FT. PULL BOX IS REQUIRED AT BASE OF LIGHT POLE.



SINGLE LIGHT INSTALLATION



MULTIPLE LIGHT INSTALLATION

NOTES:

1. CONDUIT SHALL BE SCHEDULE 40 PVC ON LOCAL STREETS AND SCHEDULE 80 PVC ON MAJOR STREETS. LOCAL STREET CROSSINGS SHALL BE SCHEDULE 80 PVC, AND MAJOR STREETS CROSSINGS SHALL BE GALVANIZED RIGID CONDUIT (GRC). CONDUIT NOT PLACED UNDERNEATH CONCRETE SIDEWALK OR UNDERNEATH ROADWAYS SHALL BE GRC ENCASED IN A MINIMUM 4" WIDE TWO SACK CONCRETE SLURRY MIX.
2. LOCATE STREET LIGHTS ON THE SAME SIDE OF THE STREET AS THE P.G.&. SERVICE WHEN POSSIBLE.
3. DO NOT LOCATE THE PULL BOXES ABOVE THE JOINT TRENCH.
4. PULL BOX SPACING SHALL NOT EXCEED 200' AND SHALL BE REQUIRED IN ALL CONDUIT CHANGE OF DIRECTION.
5. STREET LIGHT(S) INSTALLED ON MAJOR STREETS SHALL BE FED FROM A SERVICE PEDESTAL WITH A MASTER PHOTO CONTROL AS DETAILED IN SECTION 3-3.17 OF THE CITY SPECIFICATIONS AND STD. DWG'S. E-15, E-18, OR AS APPROVED BY CITY ENGINEER.

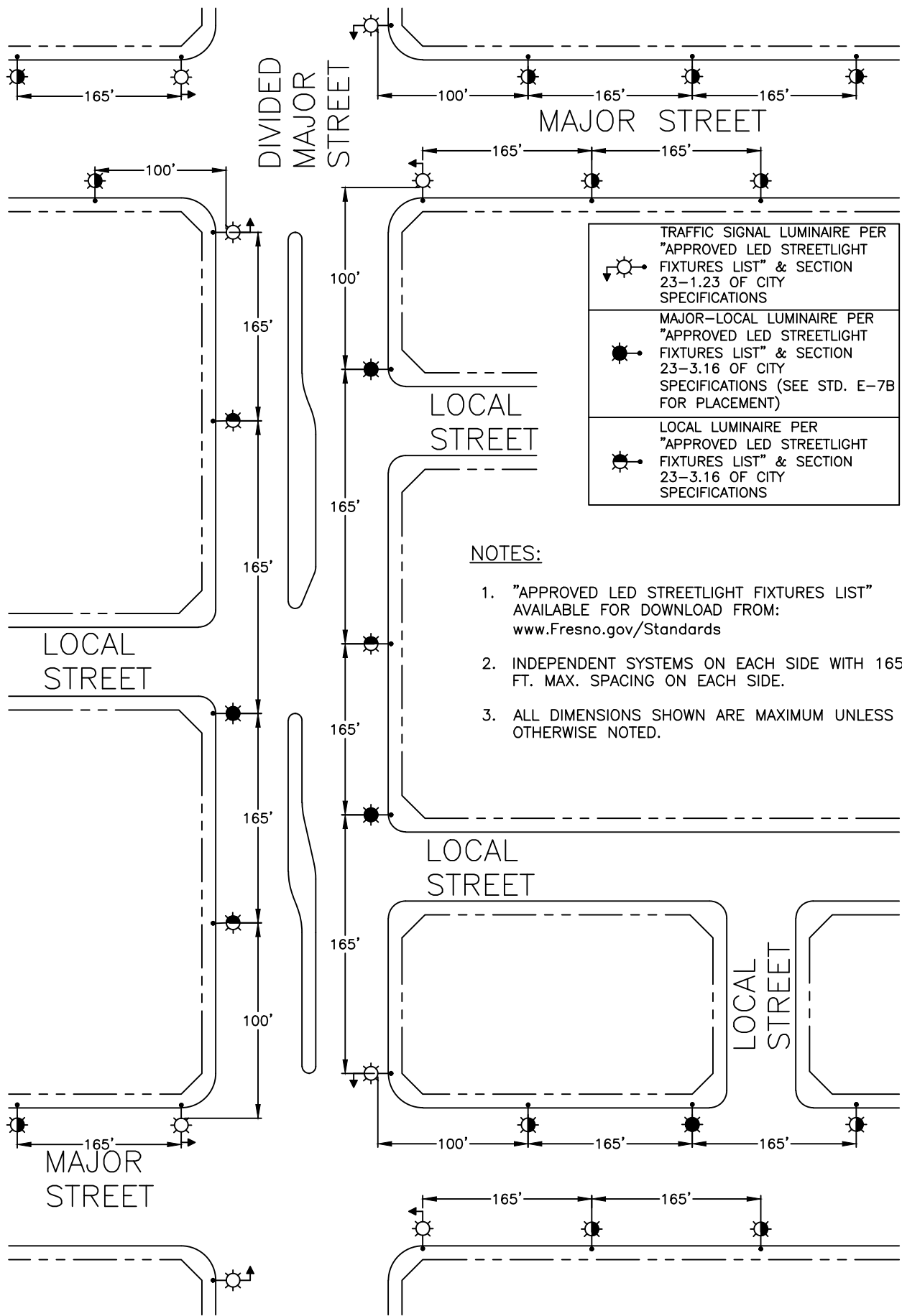
THIS STANDARD IS  
NO LONGER USED

NO LONGER USED  
SEE E-7A

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO

E-7



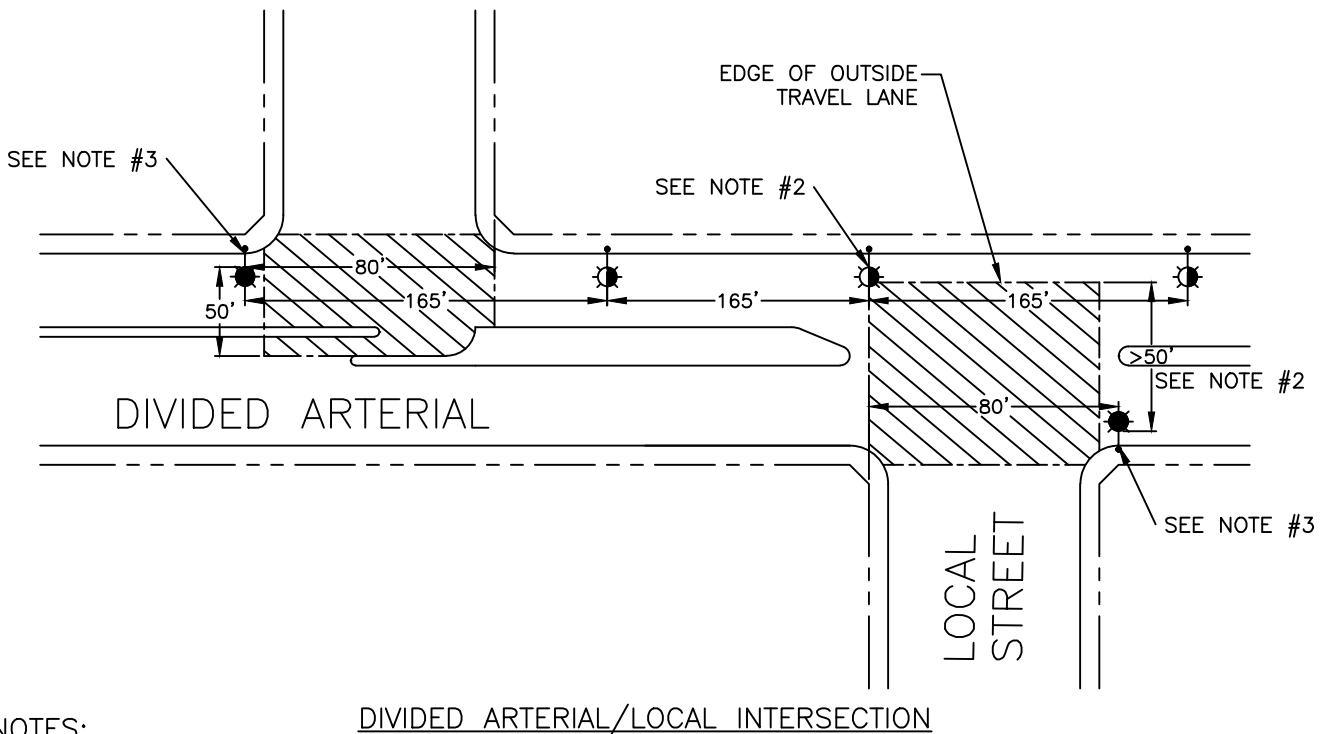
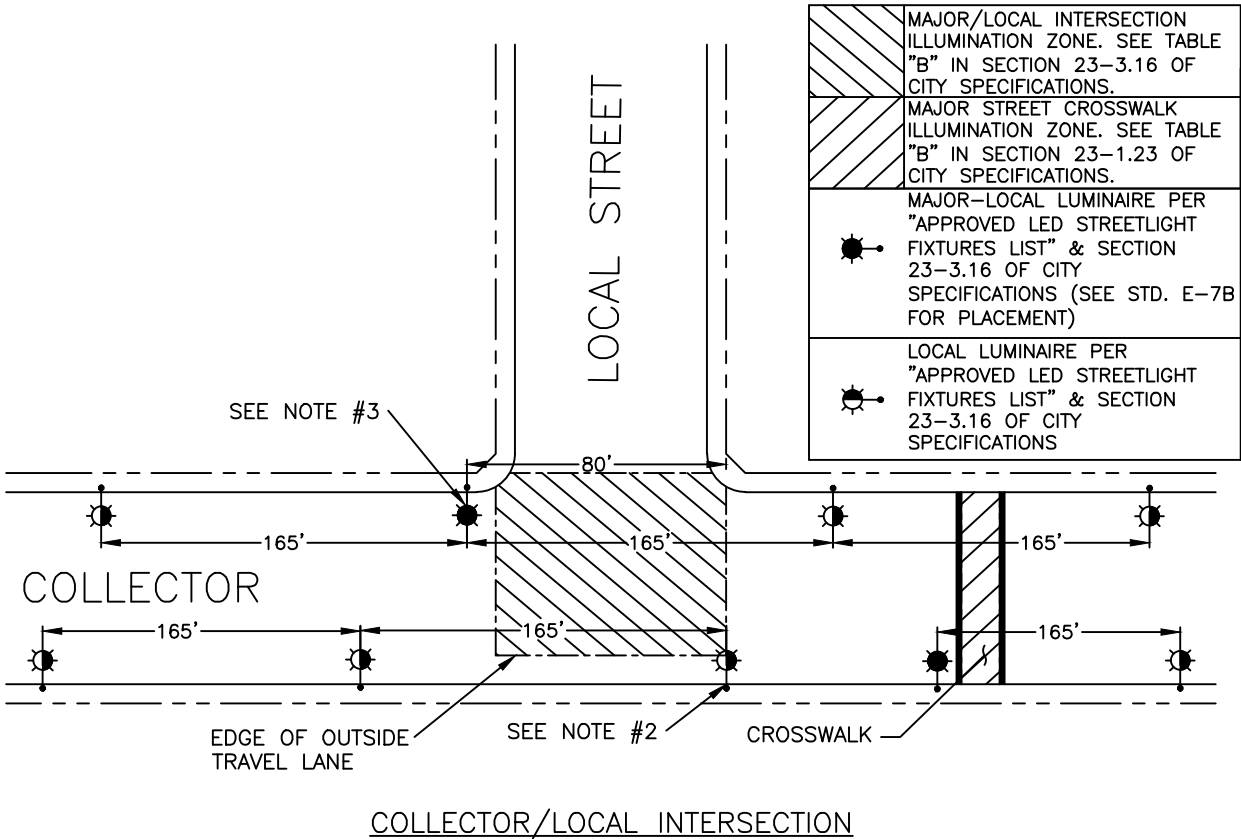
**STREETLIGHT-PLACEMENT  
MAJOR STREETS**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO

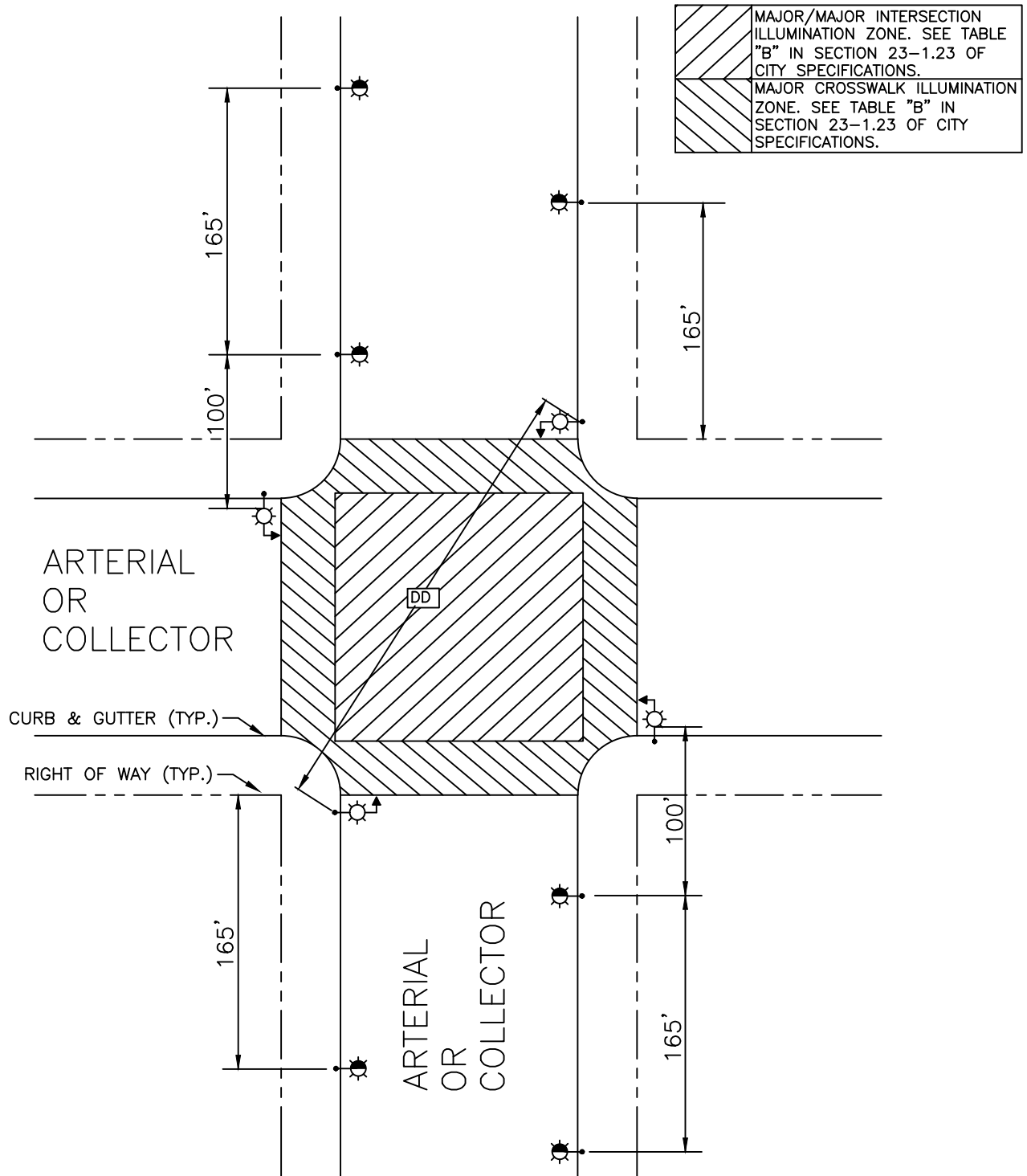
**E-7A**







**NOTES:**

1. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.
2. IF ILLUMINATION ZONE DEPTH IS GREATER THAN 50 FEET, PLACE MID-BLOCK (LOCAL) LUMINAIRE LIGHT ON RIGHT OF WAY PROJECTION
3. STREETLIGHT POLE SHOULD BE LOCATED WITHIN 10 FEET OF ADJACENT CURB RETURN.



	MAJOR/MAJOR INTERSECTION ILLUMINATION ZONE. SEE TABLE "B" IN SECTION 23-1.23 OF CITY SPECIFICATIONS.
	MAJOR CROSSWALK ILLUMINATION ZONE. SEE TABLE "B" IN SECTION 23-1.23 OF CITY SPECIFICATIONS.

-  SMALL, MEDIUM, OR LARGE\* TRAFFIC SIGNAL LUMINAIRE PER SECTION 23-1.23 OF CITY SPECIFICATIONS. \*SIZE BASED ON MAXIMUM POLE TO POLEDIAGONAL DISTANCE "DD" AS SHOWN ABOVE.
-  LOCAL LUMINAIRE PER "APPROVED LED STREETLIGHT FIXTURES LIST" & SECTION 23-3.16 OF CITY SPECIFICATIONS

**NOTES:**

1. TRAFFIC SIGNAL LUMINARIES, MAJOR-LOCAL, & LOCAL LUMINARIES LIGHTS (ENTRANCE & EXIT) TO BE ON SEPARATE BREAKERS OF SAME CONTACTOR.
2. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED  
SEE E-9A

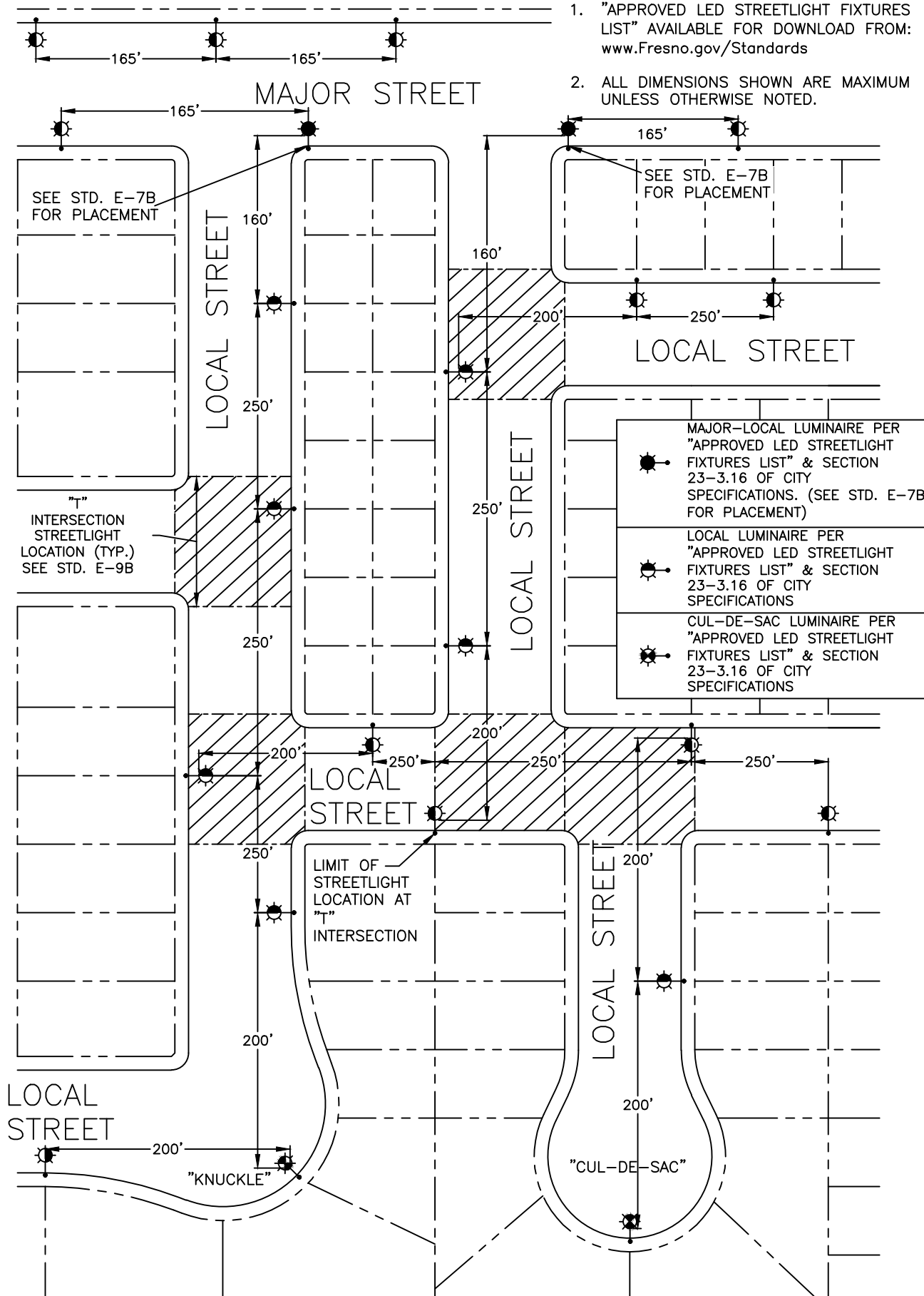
REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO

E-9

**NOTES:**

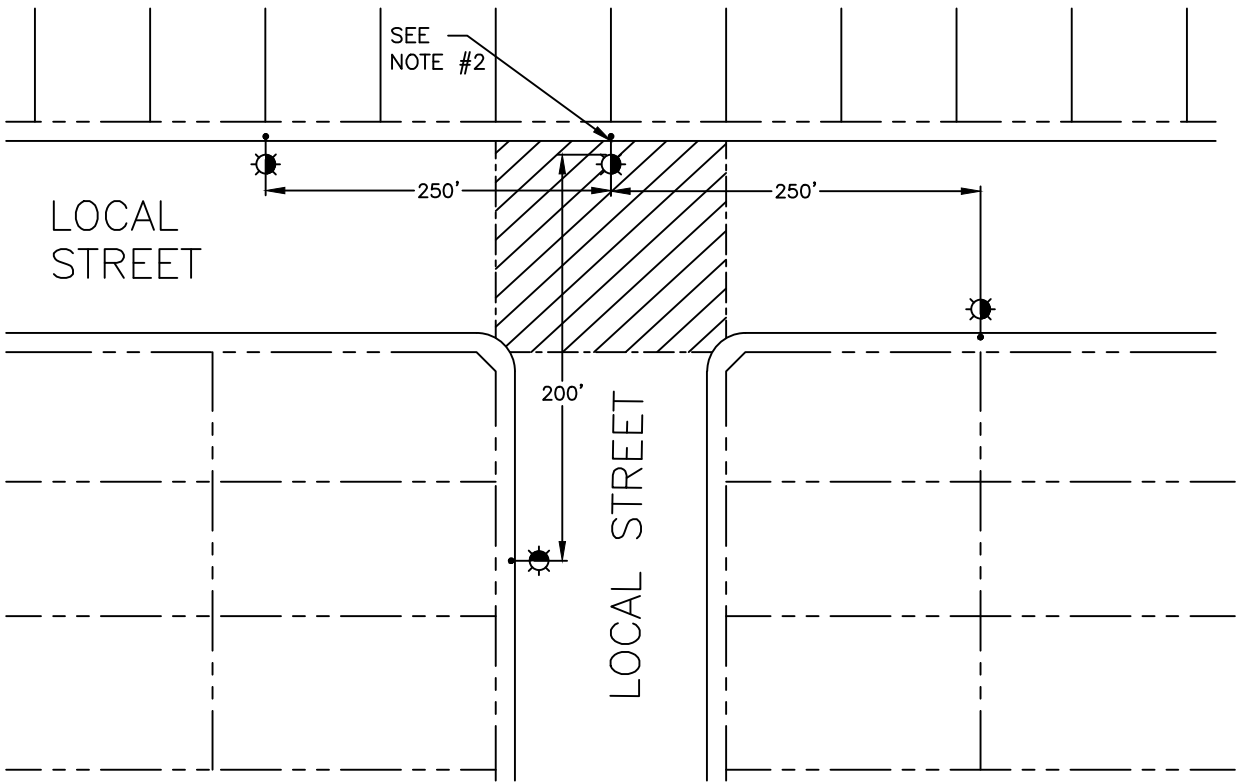
1. "APPROVED LED STREETLIGHT FIXTURES LIST" AVAILABLE FOR DOWNLOAD FROM: [www.Fresno.gov/Standards](http://www.Fresno.gov/Standards)
2. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.




**STREETLIGHT-PLACEMENT  
LOCAL STREETS**

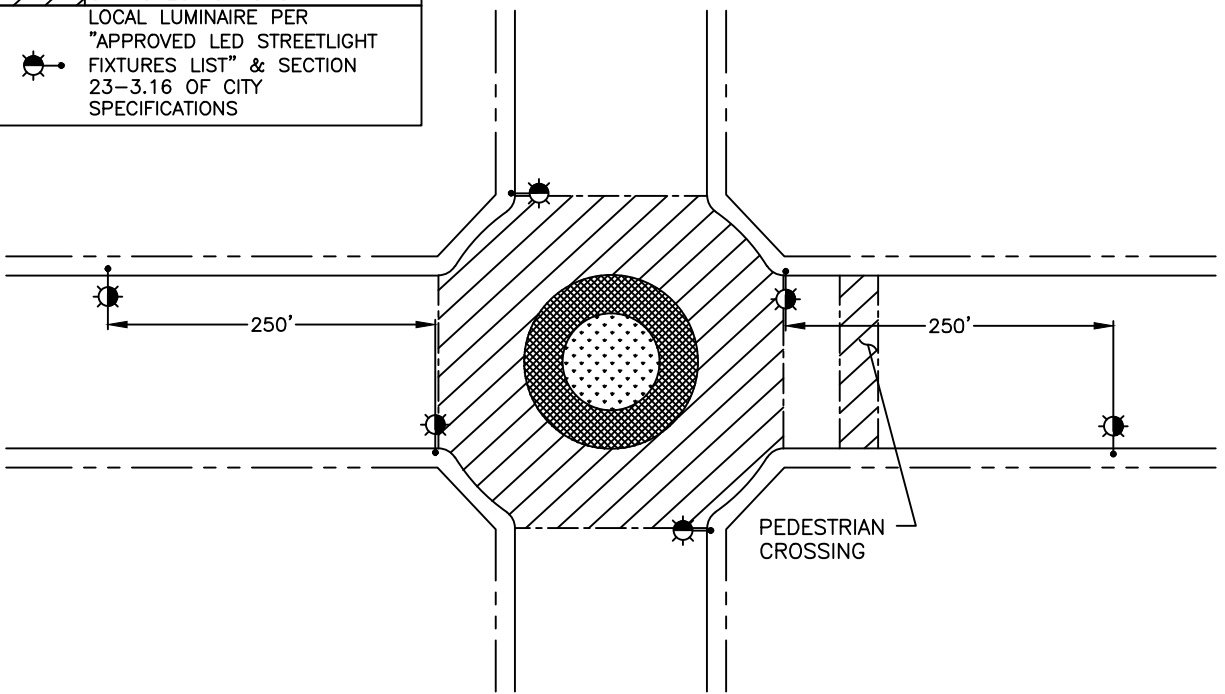
REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

**CITY OF FRESNO  
E-9A**



"T" INTERSECTION

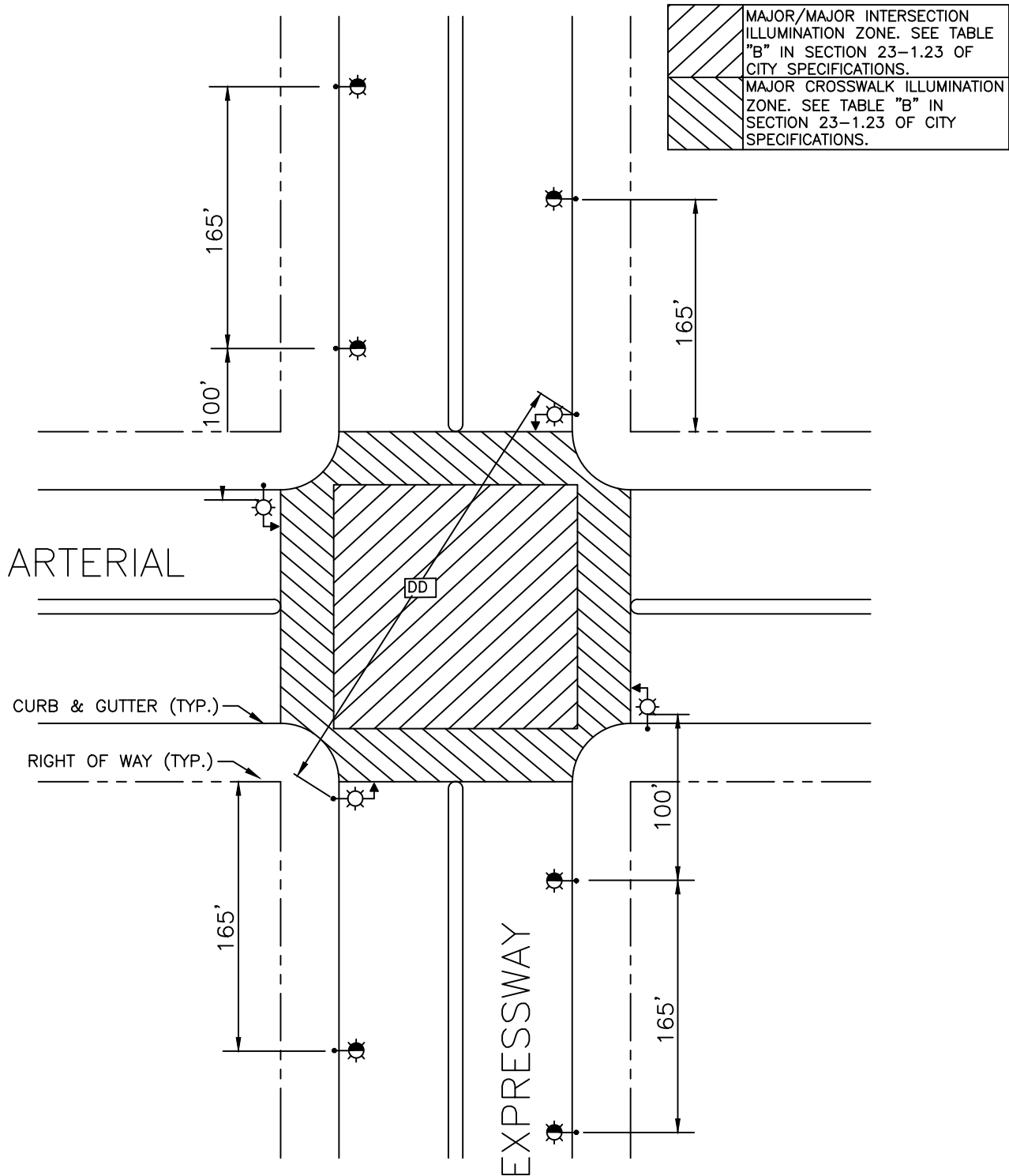
	LOCAL INTERSECTION ILLUMINATION ZONE. SEE TABLE "B" IN SECTION 23-3.16 OF CITY SPECIFICATIONS.
	LOCAL LUMINAIRE PER "APPROVED LED STREETLIGHT FIXTURES LIST" & SECTION 23-3.16 OF CITY SPECIFICATIONS



LOCAL TRAFFIC CIRCLE INTERSECTION

**NOTES:**

1. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.
2. LOCAL LUMINAIRE STREETLIGHT MUST BE PLACED WITHIN RIGHT OF WAY PROJECTION. (ILLUMINATION ZONE)



	MAJOR/MAJOR INTERSECTION ILLUMINATION ZONE. SEE TABLE "B" IN SECTION 23-1.23 OF CITY SPECIFICATIONS.
	MAJOR CROSSWALK ILLUMINATION ZONE. SEE TABLE "B" IN SECTION 23-1.23 OF CITY SPECIFICATIONS.

- IF THE POLE TO POLE DIAGONAL DISTANCE "DD" IS GREATER THAN 200 FEET, PROVIDE PHOTOMETRIC ANALYSIS.
- LOCAL LUMINAIRE PER "APPROVED LED STREETLIGHT FIXTURES LIST" & SECTION 23-3.16 OF CITY SPECIFICATIONS

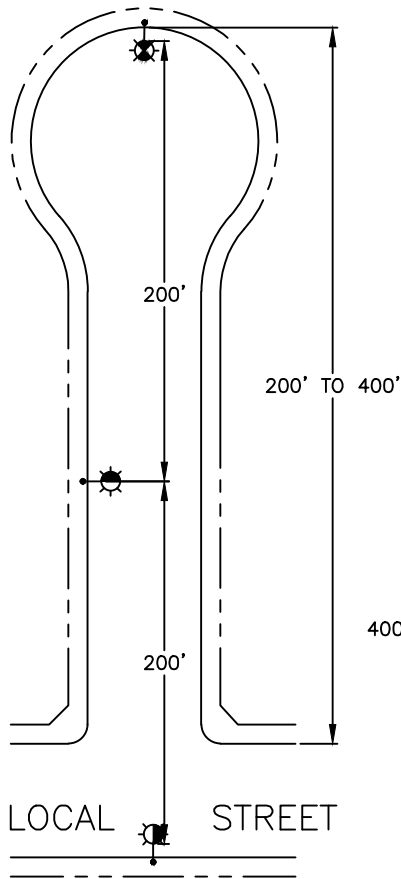
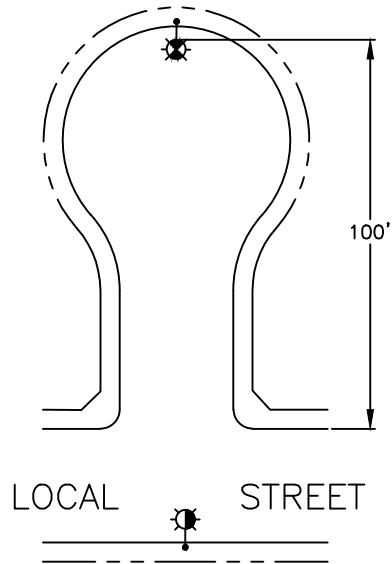
**NOTES:**

1. TRAFFIC SIGNAL LUMINARIES, MAJOR-LOCAL, & LOCAL LUMINARIES LIGHTS (ENTRANCE & EXIT) TO BE ON SEPARATE BREAKERS OF SAME CONTACTOR.
2. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.

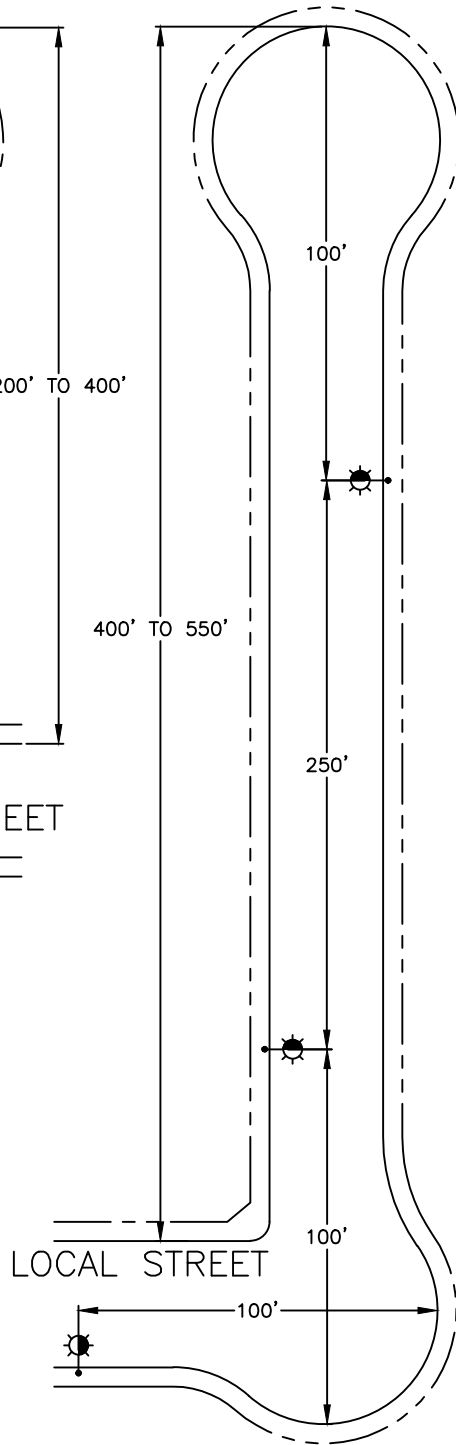
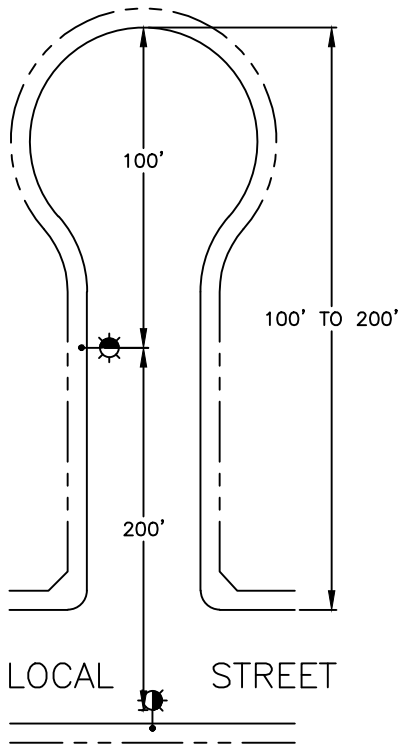
**STREETLIGHT-PLACEMENT  
EXPRESSWAY**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
**E-10**



	LOCAL LUMINAIRE PER "APPROVED LED STREETLIGHT FIXTURES LIST" & SECTION 23-3.16 OF CITY SPECIFICATIONS
	CUL-DE-SAC LUMINAIRE PER "APPROVED LED STREETLIGHT FIXTURES LIST" & SECTION 23-3.16 OF CITY SPECIFICATIONS



**NOTES:**

1. "APPROVED LED STREETLIGHT FIXTURES LIST" AVAILABLE FOR DOWNLOAD FROM: [www.Fresno.gov/Standards](http://www.Fresno.gov/Standards)
2. ALL DIMENSIONS SHOWN ARE MAXIMUM UNLESS OTHERWISE NOTED.

THIS STANDARD IS  
NO LONGER USED

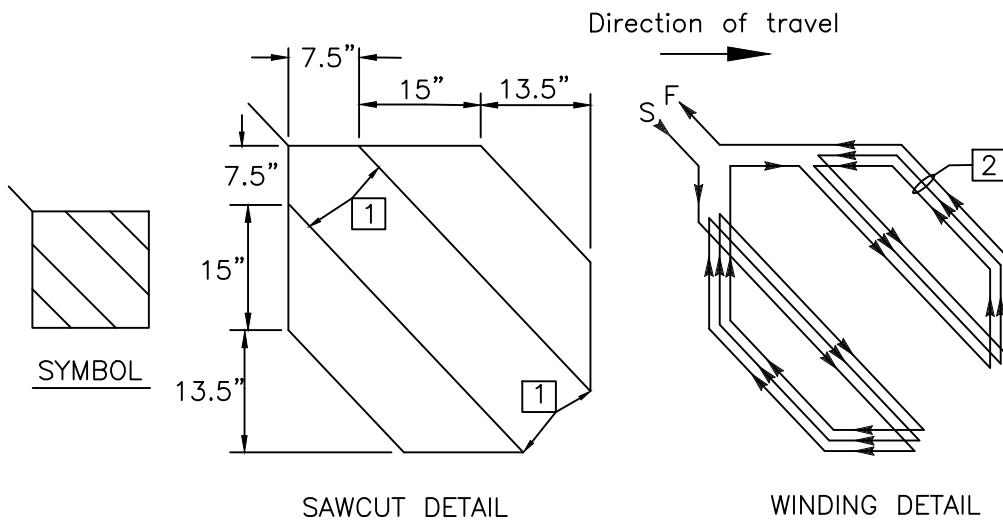
NO LONGER USED

REF. & REV.  
~~AUG. 2002~~  
MAR. 2021 (A.7)

CITY OF FRESNO

E-12





SAWCUT DETAIL

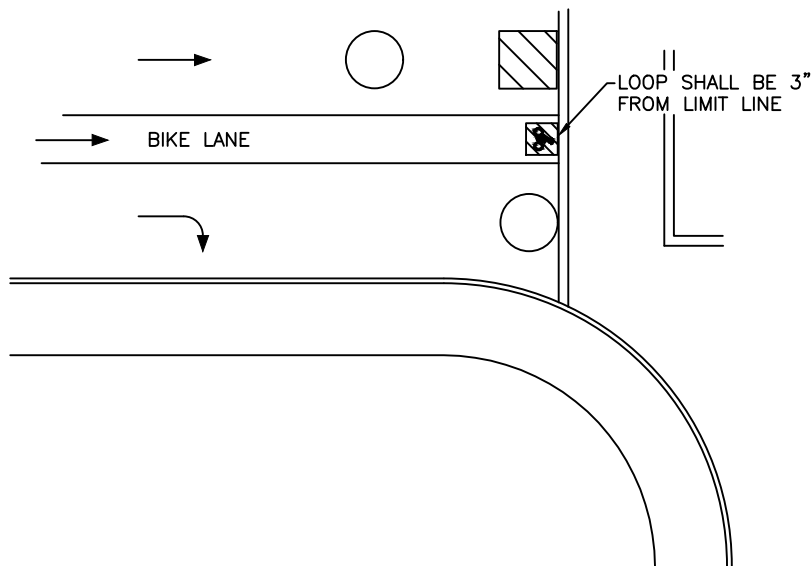
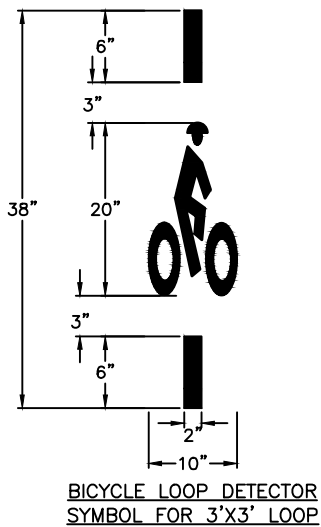
WINDING DETAIL

BIKE LOOP (3'X3')  
DETECTOR CONFIGURATION

- 1 ROUND CORNERS OF ACUTE ANGLE SAWCUTS TO PREVENT DAMAGE TO CONDUCTORS.
- 2 INSTALL 3 TURNS WHEN ONLY ONE BIKE LOOP IS ON A SENSOR UNIT CHANNEL. INSTALL 5 TURNS WHEN ONE BIKE LOOP IS CONNECTED IN SERIES WITH 3 ADDITIONAL 6'X6' LOOPS ON A SENSOR UNIT CHANNEL.



CITY OF FRESNO BIKE LOOP WITH BIKE LOOP DETECTOR SYMBOL 9C-7 OF THE CA-MUTCD, CENTERED ON LOOP.



NOTES:

1. LOOP SEALANT SHALL BE CALTRANS APPROVED ELASTOMERIC SEALANT OR HOT MELT RUBBERIZED ASPHALT SEALANT.
2. ALL NEW LOOPS SHALL BE TESTED AND DOCUMENTED ON SHEET PROVIDED IN SECTION 23-2; TESTING SHALL BE PER CALTRANS STANDARD SPECIFICATIONS.
3. REFER TO STD. DWG. E-14 FOR LOOP PLACEMENT.

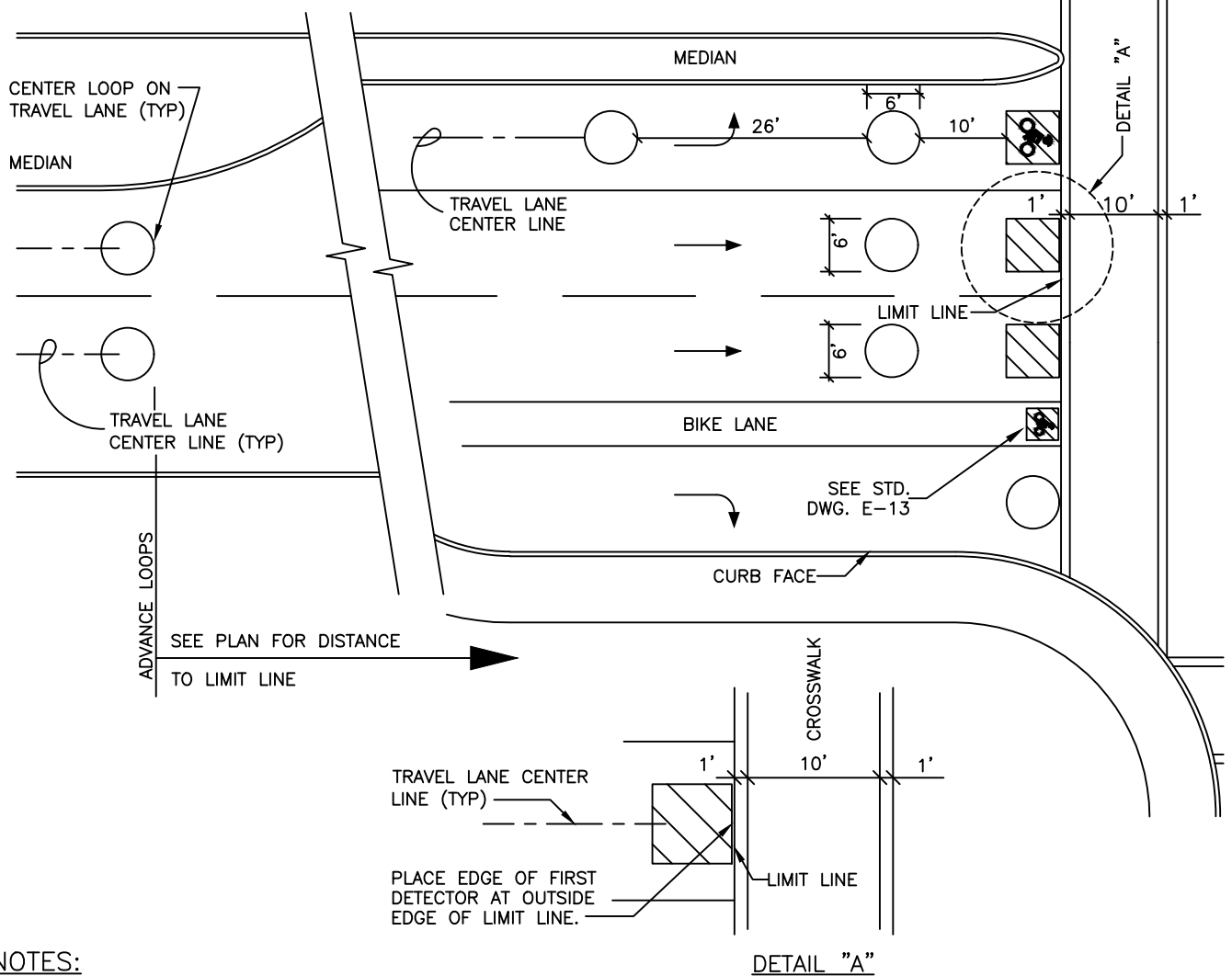
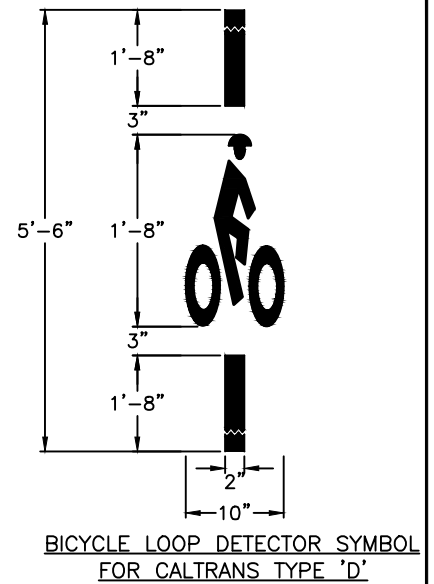
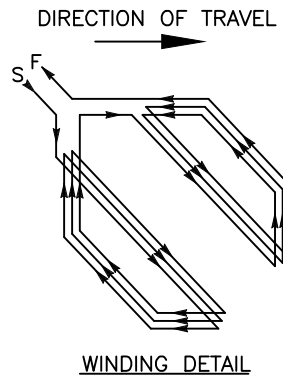
**LEGEND:**

○ CALTRANS TYPE 'E': SAWCUT CIRCULAR LOOP DETECTOR - "TYPE 2" LOOP WIRE (ES-5B).

▨ CALTRANS TYPE 'D': SAW CUT DIAGONAL LOOP DETECTOR "TYPE 2" LOOP WIRE (ES-5B). SEE WINDING DETAIL, RIGHT.

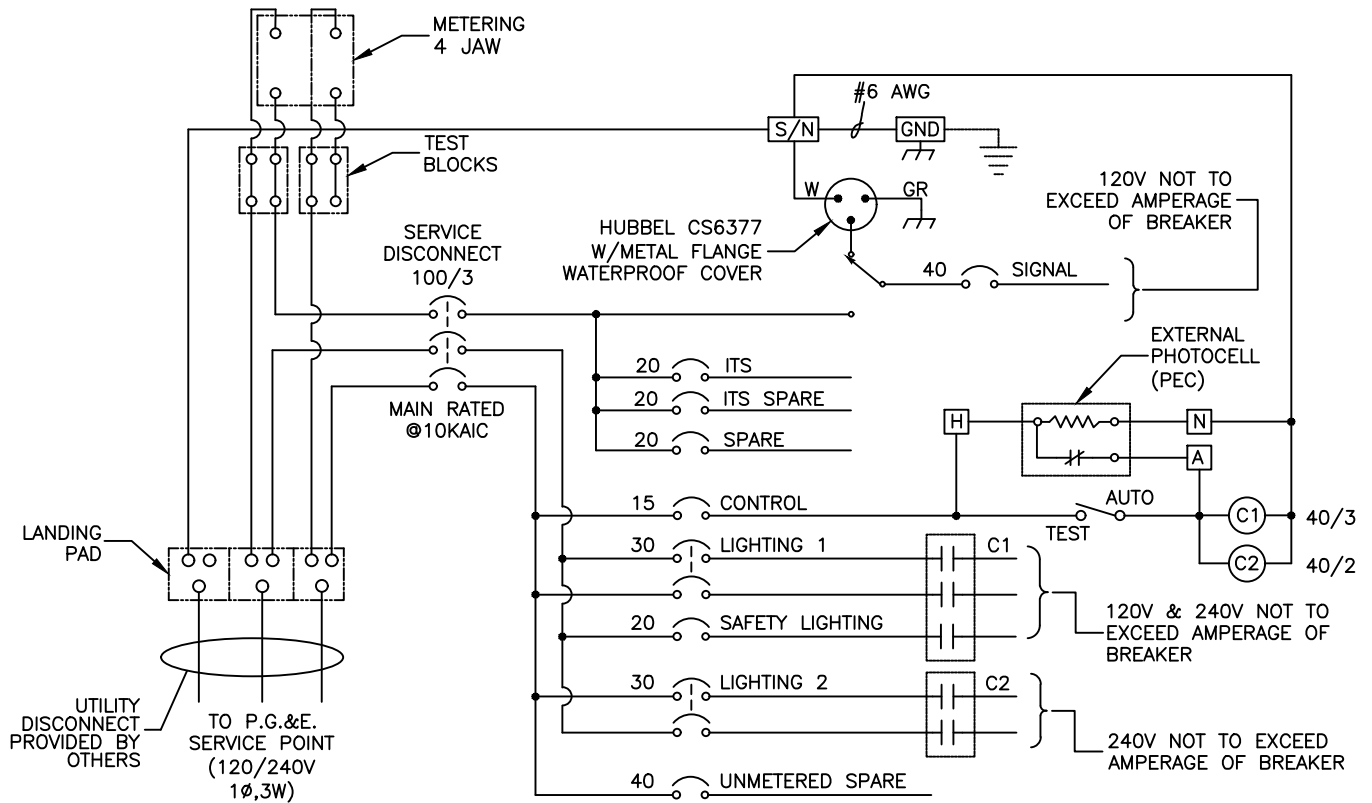
🚲 CALTRANS TYPE 'D' W/BIKE: DETECTOR SYMBOL (ON STATE STD. PLANS A24C & FIG. 9C-7 (CA) CA-MUTCD) CENTERED ON LOOP. SEE WINDING DETAIL, RIGHT.

🚲 CITY OF FRESNO STD. DWG. E-13 BIKE LOOP (3'x3') WITH BIKE DETECTOR SYMBOL CENTERED ON LOOP. SEE WINDING DETAIL, RIGHT.

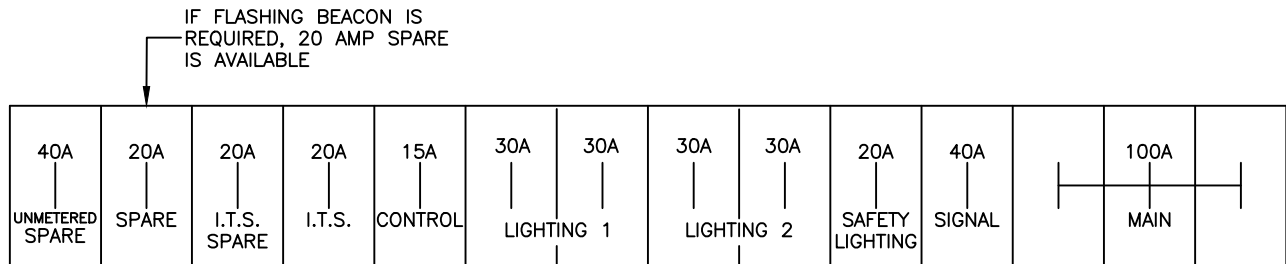


**NOTES:**

1. PAVEMENT SHALL BE DEEMED SUITABLE FOR INSTALLATION OF LOOP(S) BY THE CITY TRAFFIC ENGINEER. IF DEEMED NOT SUITABLE, PROJECT SHALL GRIND AND OVERLAY AND/OR RECONSTRUCT PAVEMENT AS DETERMINED BY THE CITY TRAFFIC ENGINEER.
2. ALL NEW LOOPS SHALL BE TESTED AND DOCUMENTED ON THE SHEET PROVIDED IN SECTION 23-2 OF THE CITY SPECIFICATIONS. TESTING SHALL BE TO CALTRANS STATE STANDARD PLANS.



## SERVICE PEDESTAL SCHEMATIC

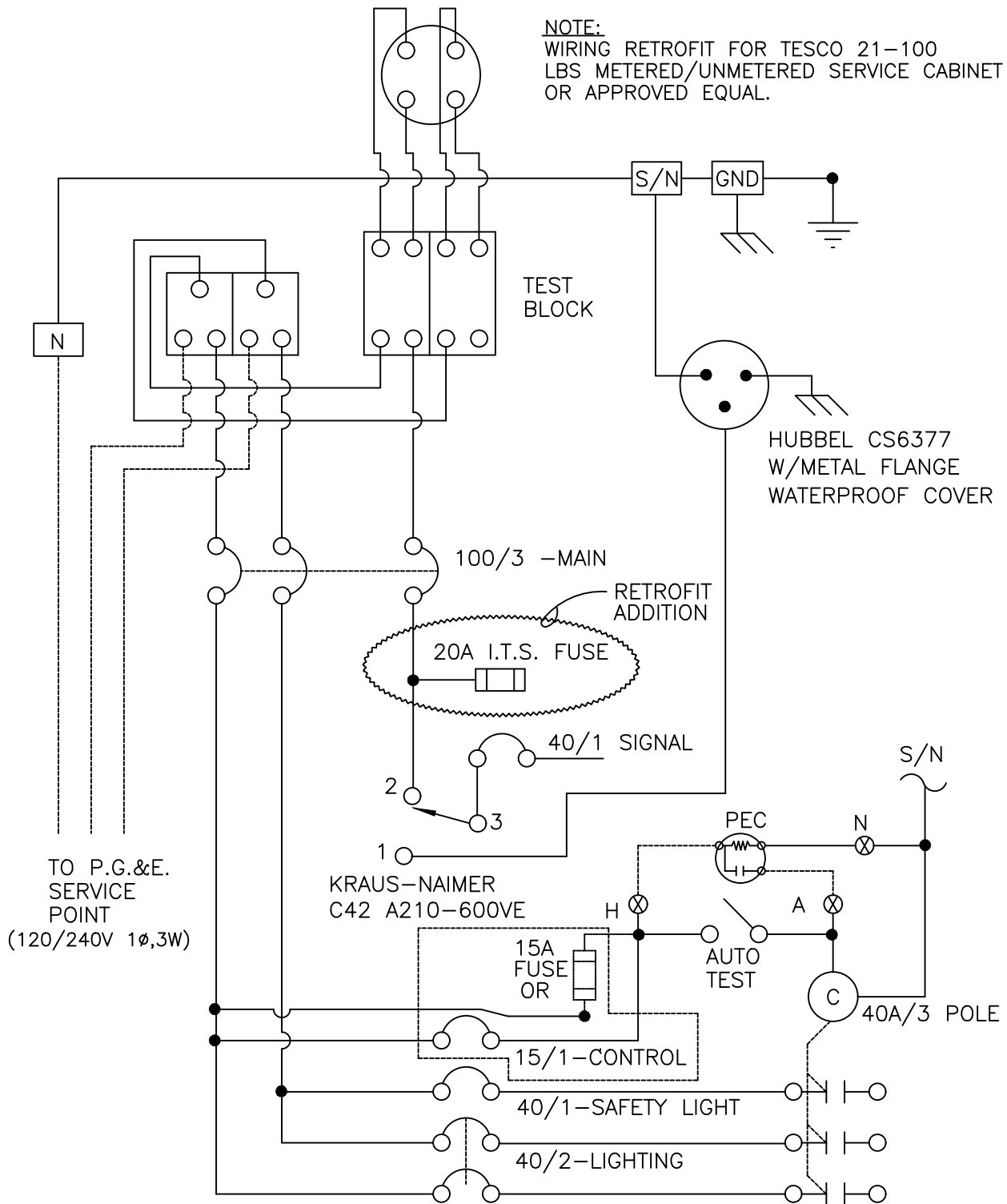


## SWITCH LOCATION

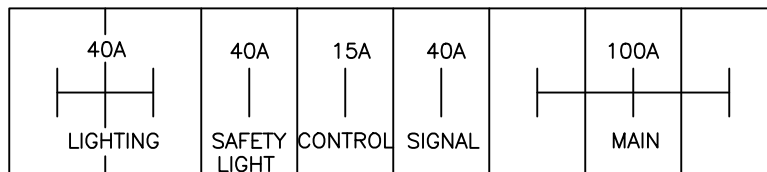
### NOTES:

- SERVICE CABINET SHALL BE TESCO 26-100 LBS METERED/UNMETERED OR APPROVED EQUAL.

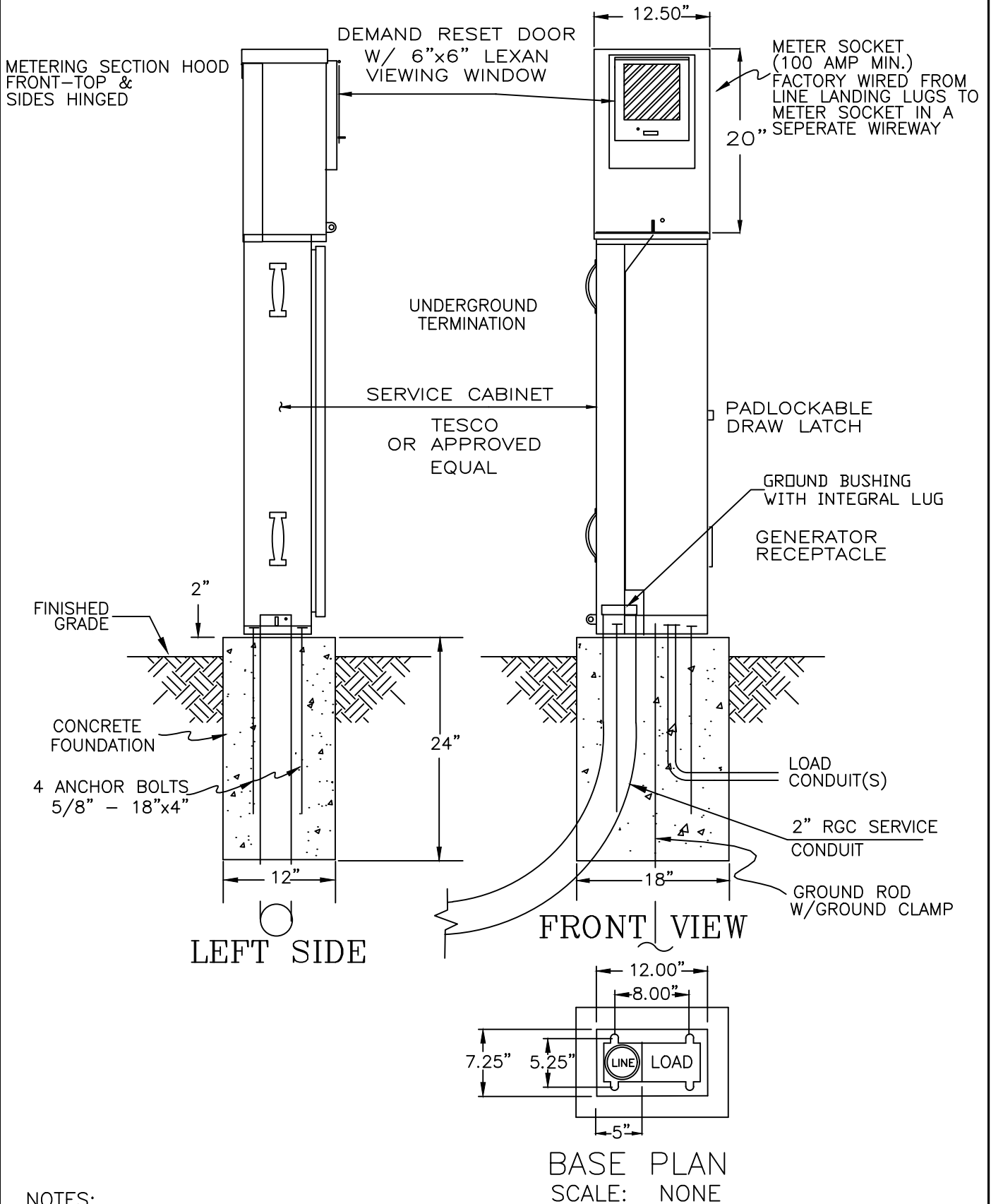
**NOTE:**  
 WIRING RETROFIT FOR TESCO 21-100  
 LBS METERED/UNMETERED SERVICE CABINET  
 OR APPROVED EQUAL.



SERVICE PEDESTAL SCHEMATIC



SWITCH LOCATION



NOTES:

1. IN ORDER FOR CONFORMITY AND REPLACEMENT PURPOSES ALL SERVICE PEDESTAL FOUNDATIONS TO BE CONSTRUCTED TO THESE SPECIFICATIONS. ANY DEVIATIONS FROM THESE REQUIREMENTS SHALL HAVE THE APPROVAL OF THE ELECTRICAL SUPERINTENDENT.
2. FRONT OF CABINET SHALL FACE ACCESSIBLE RIGHT OF WAY.

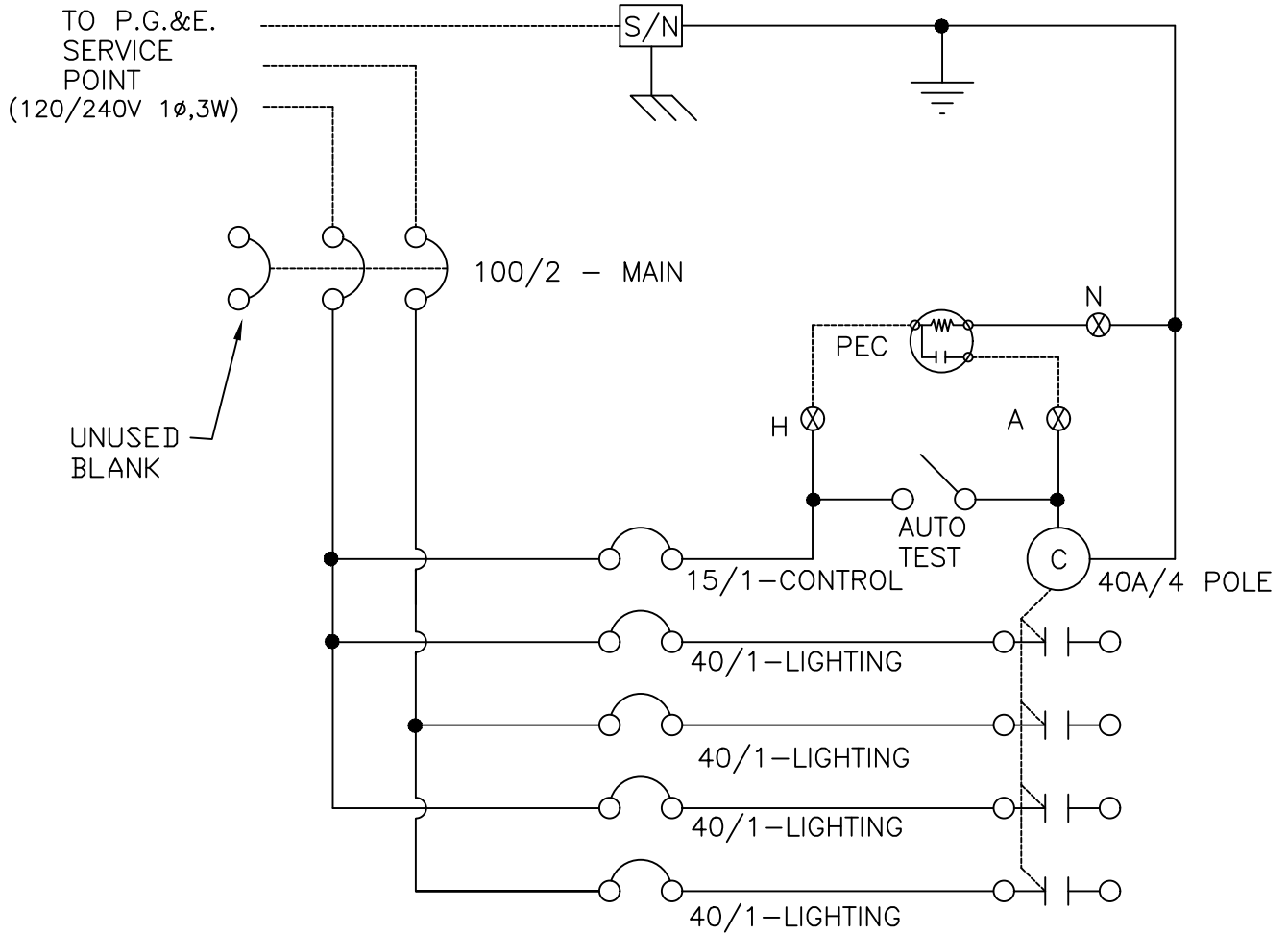
SIGNAL LIGHT  
SERVICE FOUNDATION DETAIL

REF. & REV.  
JUNE 2015

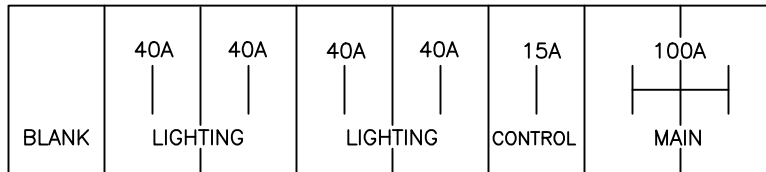
CITY OF FRESNO

E-17

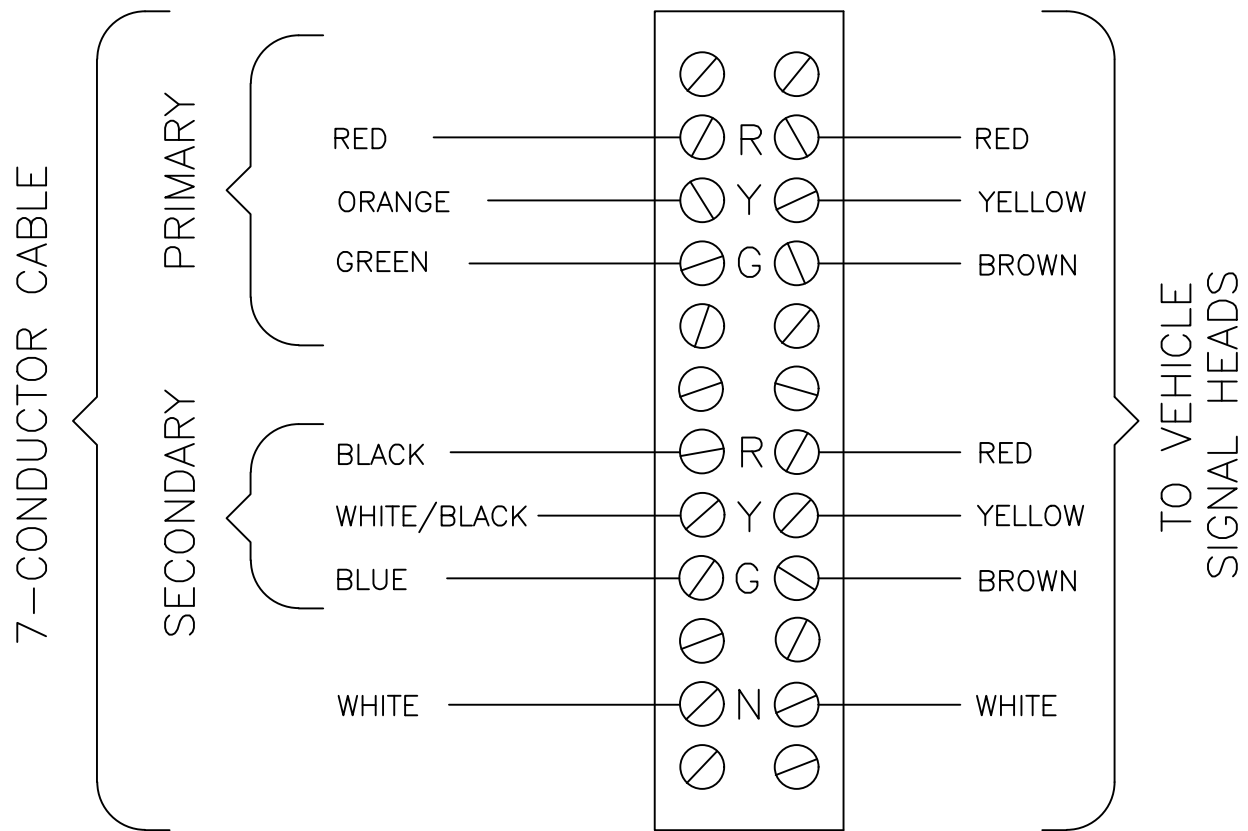
NOTE:  
 SERVICE CABINET SHALL BE TESCO 26-000 NM  
 UNMETERED OR APPROVED EQUIVALENT.



SERVICE PEDESTAL SCHEMATIC



SWITCH LOCATION

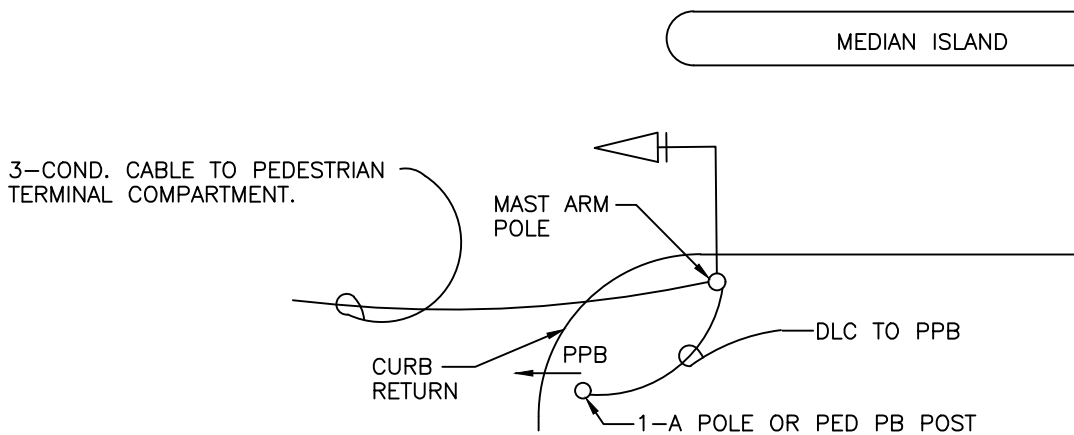
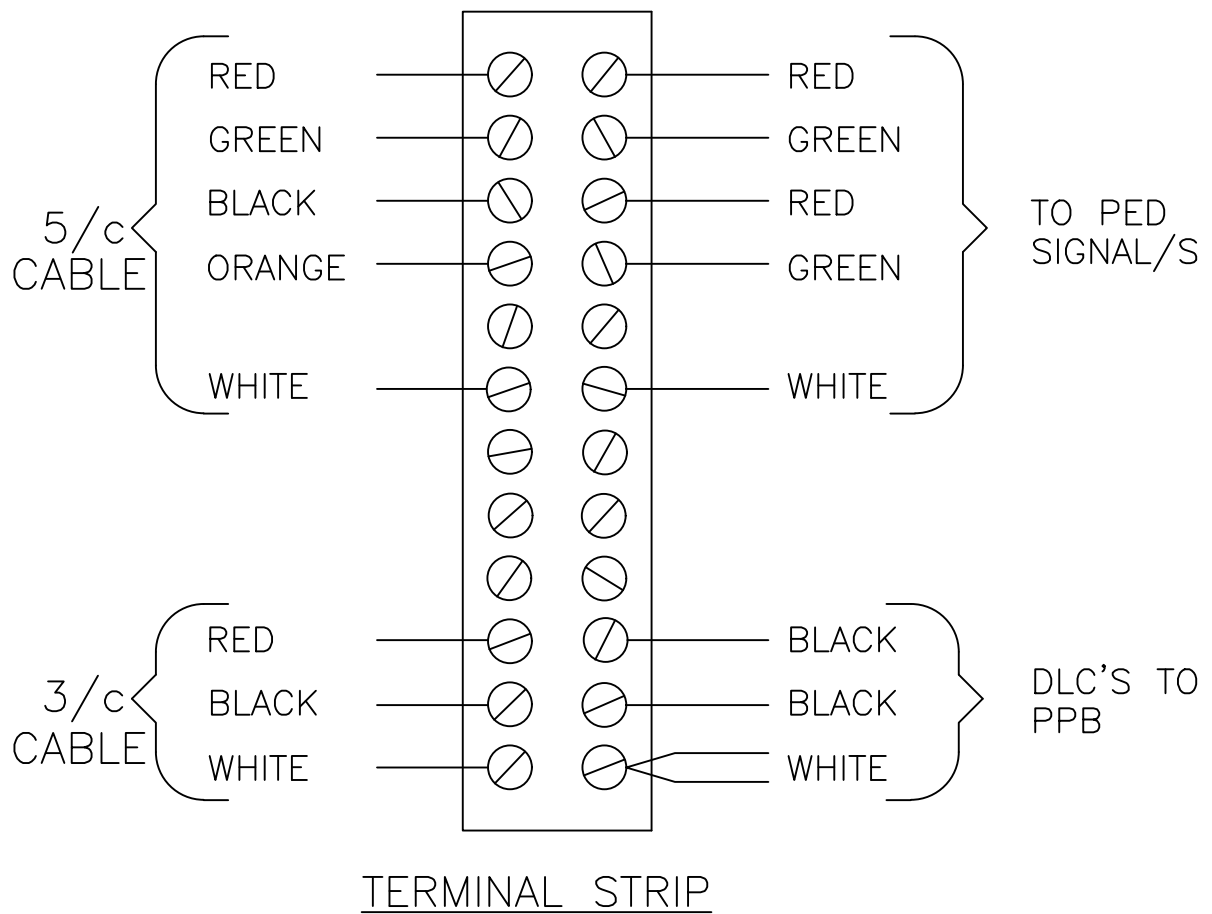


VEHICLE TERMINAL COMPARTMENT

NOTES:

1. INSTALL SINGLE CONDUCTOR COLOR CODED #14 THWN COPPER WIRE BETWEEN TERMINAL STRIP AND EACH SIGNAL ASSEMBLY AND CONNECT.
2. ALL STRANDED CONDUCTORS SHALL HAVE ALL LOOSE STRANDS TIGHTLY TWISTED TOGETHER AND INDIVIDUAL CONDUCTORS TINNED WITH SOLDER.
3. WITHIN INDIVIDUAL CABLES THE ASSIGNMENTS OF PRIMARY OR SECONDARY COLORS ARE BASED UPON THE TABLE BELOW:

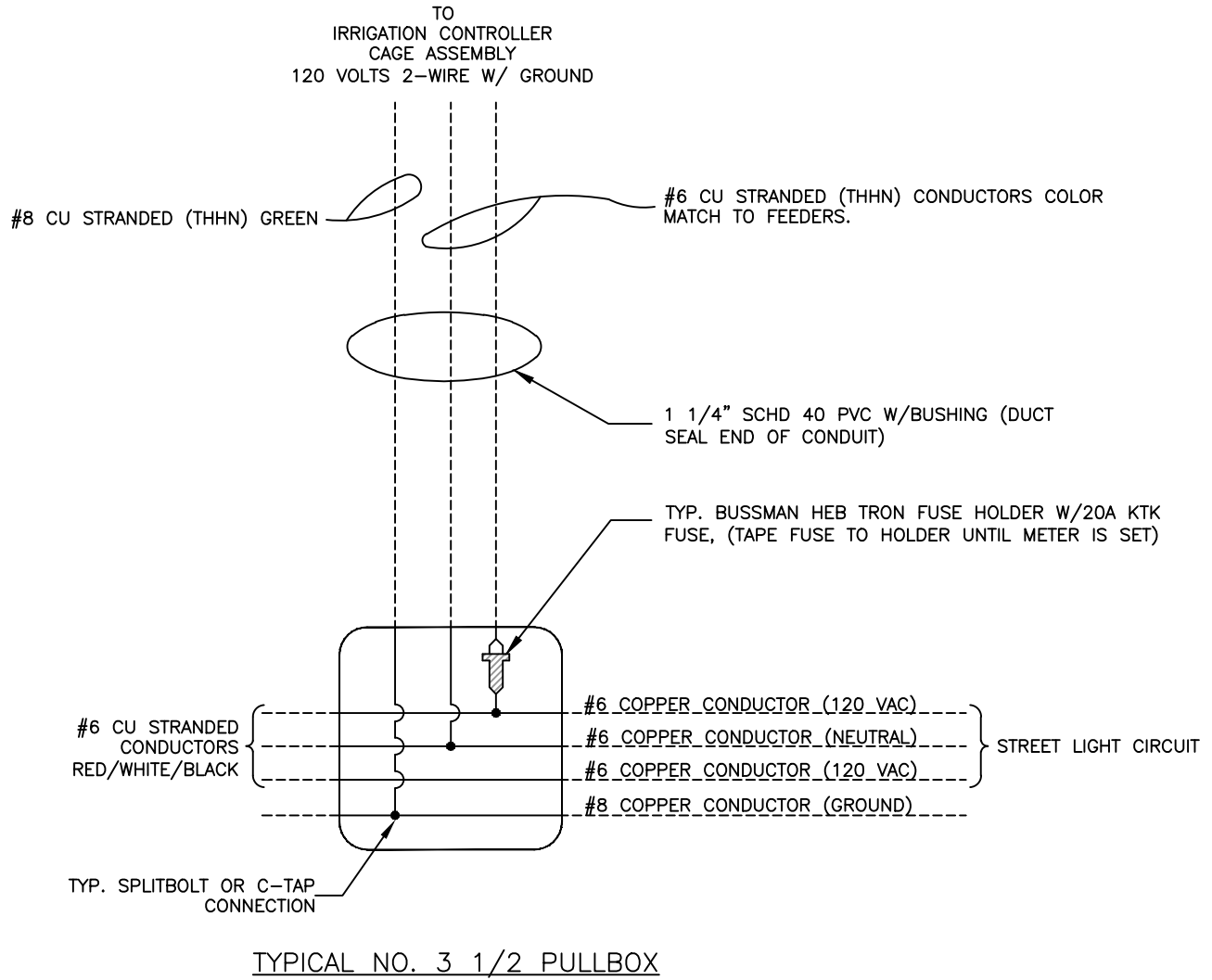
PRI	SEC
NB	EB or SB or WB
EB	SB or WB
SB	WB
THRU	TURN



NOTES:

1. INSTALL SINGLE CONDUCTOR COLOR CODED #14 THWN COPPER WIRE BETWEEN TERMINAL STRIP AND EACH SIGNAL ASSEMBLY AND CONNECT.
2. ALL STRANDED CONDUCTORS SHALL HAVE ALL LOOSE STRANDS TIGHTLY TWISTED TOGETHER AND INDIVIDUAL CONDUCTORS TINNED WITH SOLDER.

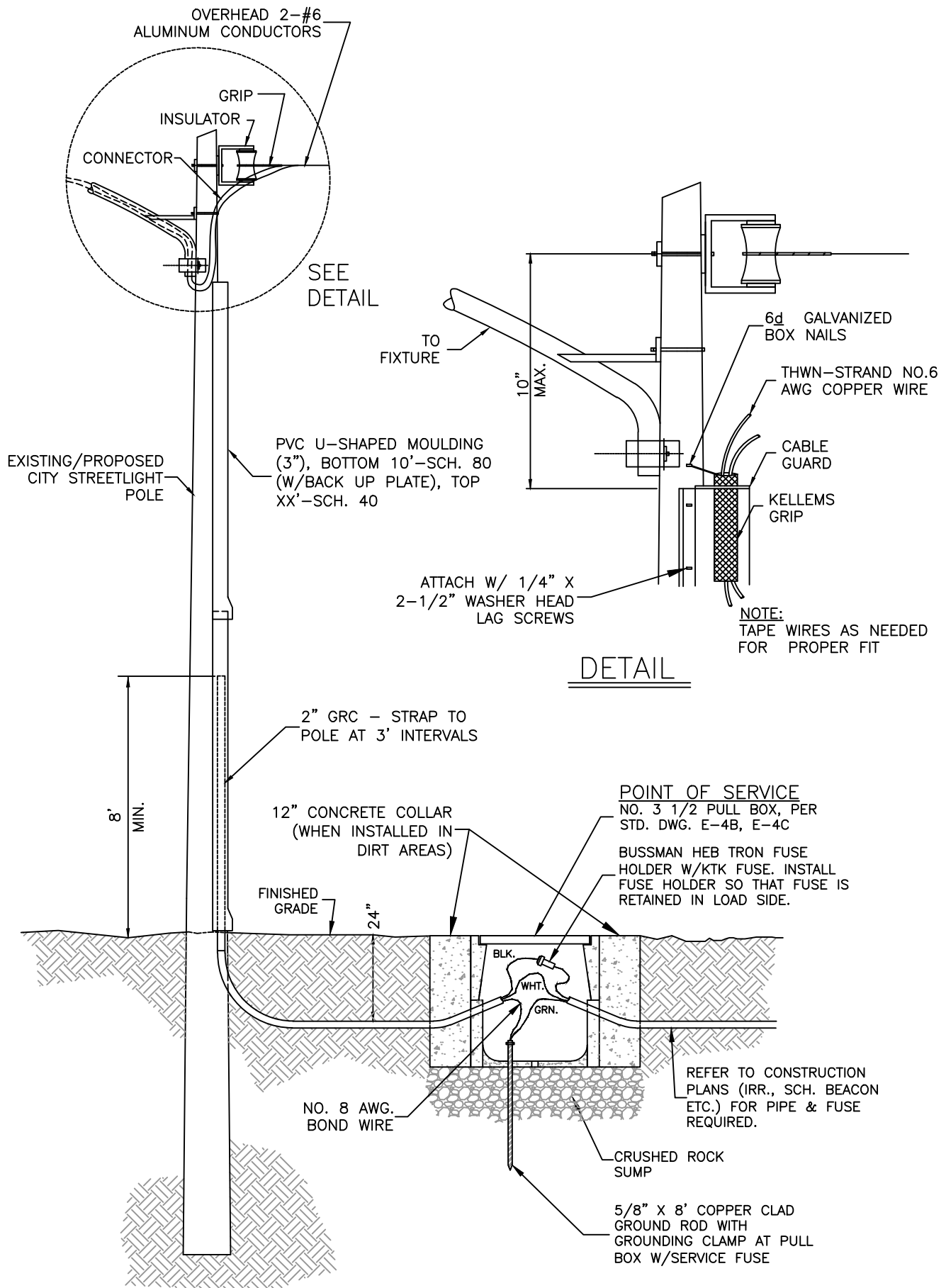




TYPICAL NO. 3 1/2 PULLBOX

NOTES:

1. GROUT BOX AT CONDUIT ENTRANCE. RESTORE ANY GROUT DAMAGED BY INSTALLATION.
2. INSULATE HOT/NEUTRAL SPLICES AS FOLLOWS:  
 COVER WITH 2-LAYERS RUBBER TAPE-FILLING VOIDS.  
 APPLY 1-LAYER 1/2 LAPPED PVC TAPE.  
 APPLY 1-LAYER FRICTION TAPE & COAT WITH AN APPROVED ELECTRICAL SEALING COMPOUND.
3. AN APPROVED LOCKING LID PER SECTION 23-1.10 OF CITY SPECIFICATIONS SHALL BE INSTALLED AT THE "IRRIGATION SERVICE" PULLBOX.



**SERVICE RISER DETAIL  
FROM EXISTING STREETLIGHT**

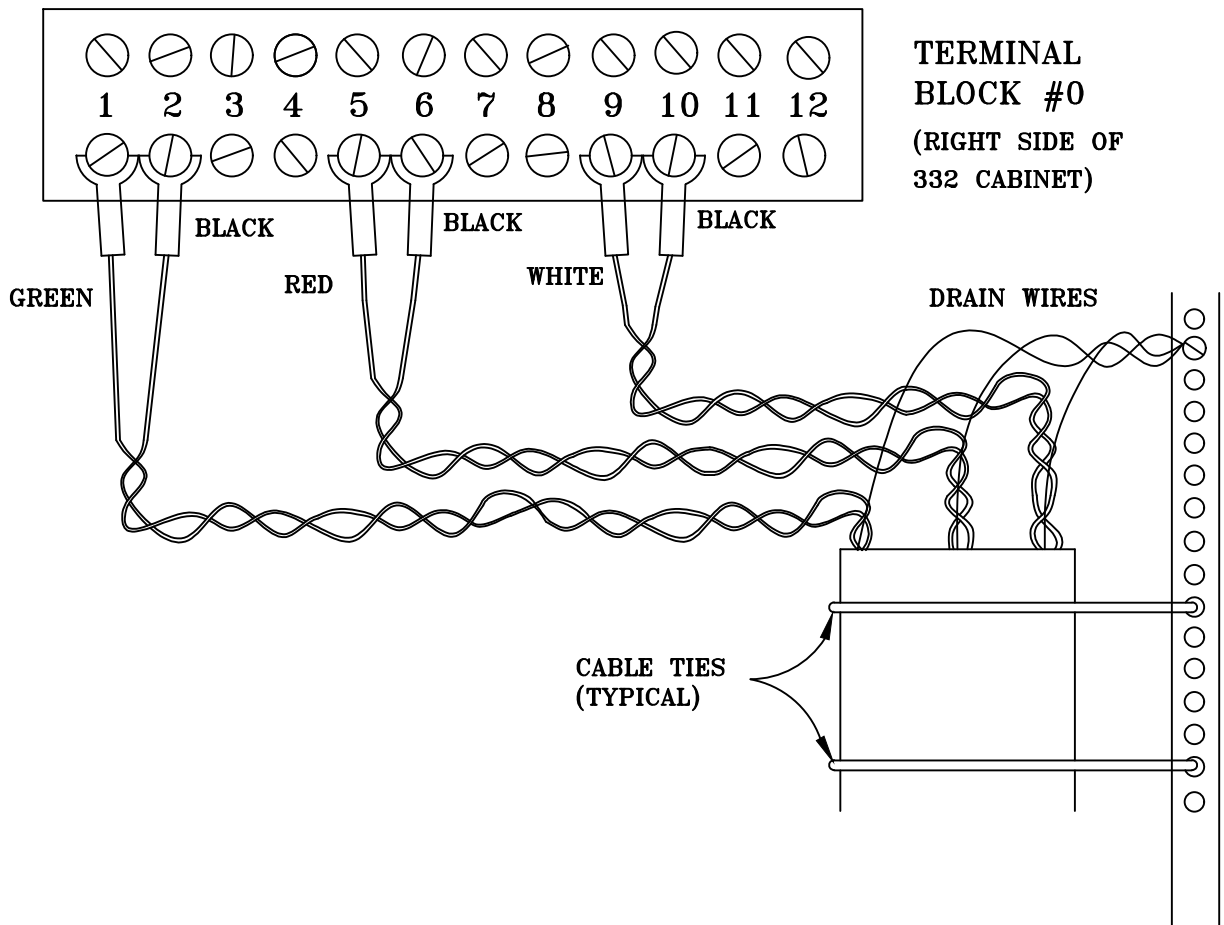
REF. & REV.  
AUG. 2002  
MAR. 2021 (A.7)

CITY OF FRESNO

E-22

# COORDINATION CABLE TERMINATION

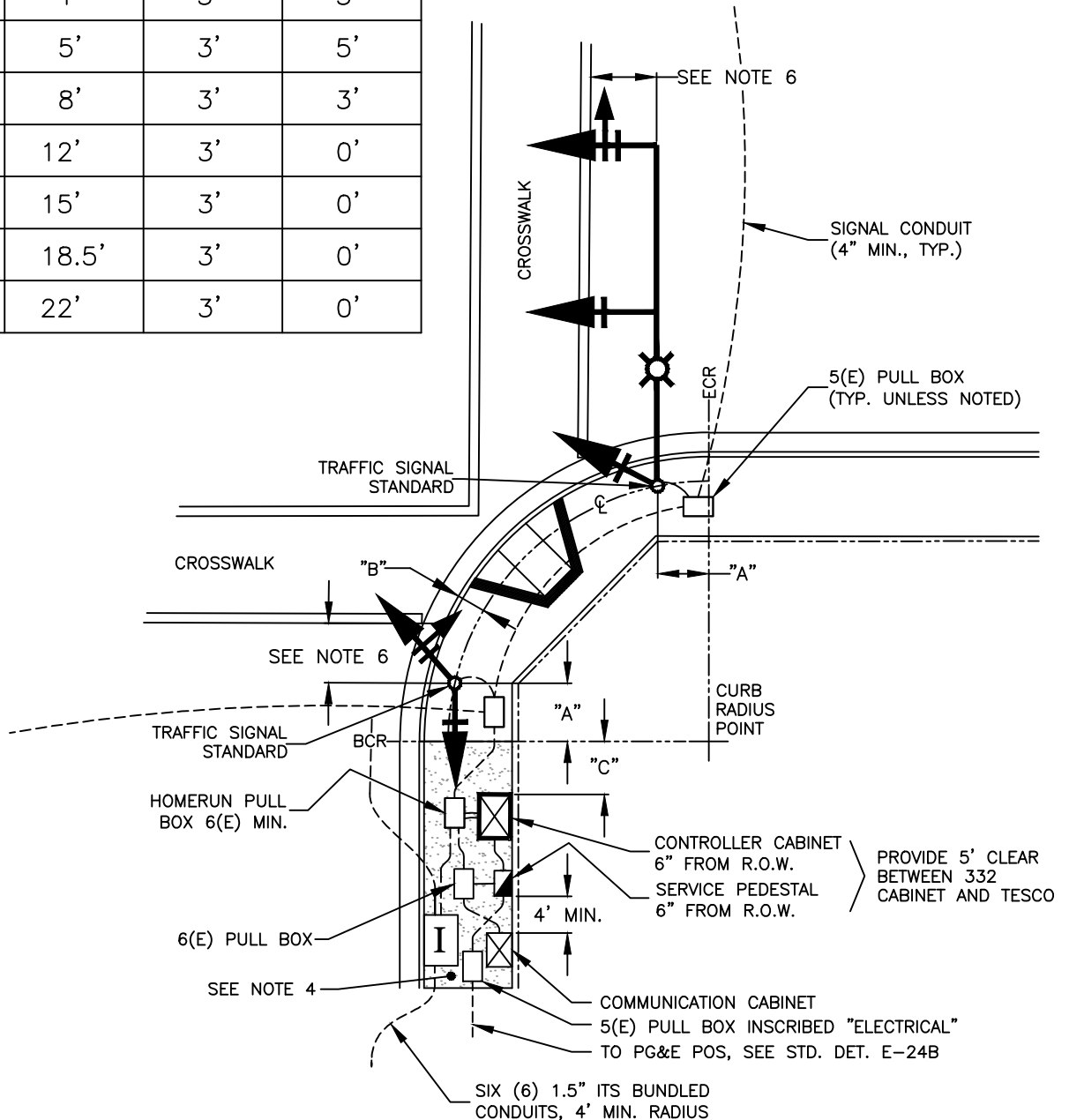
(ONE OR MORE CABLES AS APPROPRIATE)



**NOTES:**

1. TERMINATE TWISTED PAIRS AS SHOWN USING APPROPRIATE SOLDERLESS INSULATED FORK TERMINALS.
2. TERMINATE DRAIN WIRES WITH A SINGLE INSULATED RING TERMINAL TO RACK SIDE FRAME (GROUND) USING 10-32 MACHINE SCREW ON ONE END ONLY OF EACH CABLE. FOR STANDARDIZATION, ONLY CABLE ENDS FROM SOUTH OR EAST OF INTERSECTION ARE GROUNDED. UNUSED DRAIN WIRES ARE FOLDED BACK ALONG JACKET MINIMUM 1" & TAPED.
3. UNDERGROUND INLINE SPLICES ARE NOT PERMITTED. CONDUCTORS & DRAIN WIRES SHALL BE SPLICED USING UNINSULATED CRIMP CONNECTORS. THE CONNECTION SHALL BE STAGGERED AND SOLDERED (FLAMELESS METHOD) EACH INDIVIDUAL CONDUCTOR SPLICE SHALL HAVE HEAT SHRINK TUBING APPLIED. THE ENTIRE SPLICE ASSY. SHALL HAVE TWO (2) LAYERS OF HEAT SHRINK TUBING APPLIED. TUBING SHALL BE 3M I.T.C.S.N. OR APPROVED EQUAL. ALL HEAT SHRINK TUBING SHALL BE APPLIED USING A FLAMELESS METHOD.

CURB RADIUS	"A" DISTANCE	"B" DISTANCE (MIN.)	"C" DISTANCE
20'	1'	3'	5'
25'	5'	3'	5'
30'	8'	3'	3'
35'	12'	3'	0'
40'	15'	3'	0'
45'	18.5'	3'	0'
50'	22'	3'	0'



**NOTES:**

1. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO CITY OF FRESNO APPROVED PLANS. ANY VARIATION TO THE PLANS SHALL HAVE THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
2. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO THE ULTIMATE STREET WIDTH AND CURB RETURNS.
3. ULTIMATE AND EXISTING CURB RETURN ARE/SHALL BE SHOWN ON CONSTRUCTION PLANS.
4. ADDITIONAL SIDEWALK TO BE INSTALLED PER CITY STANDARDS AS APPLICABLE TO MAINTAIN A 4' MINIMUM ADA CLEAR PATH ADJACENT TO EQUIPMENT.
5. DISTANCE "C" SHALL BE ADJUSTED AS NECESSARY FOR THE 4' ADA CLEARANCE REQUIREMENT.
6. DISTANCE "A" HAS BEEN CALCULATED TO PLACE A PEDESTRIAN PUSH BUTTON APPROXIMATELY 5' FROM CROSSWALK. IF UNFORESEEN CONDITIONS DO NOT ALLOW SIGNAL STANDARD OR CROSSWALK PLACEMENT AS SHOWN, A PEDESTRIAN PUSH BUTTON POST SHALL BE INSTALLED TO MEET ADA GUIDELINES.
7. LOCATE PULLBOXES FOR TESCO & TS COMBINED 3' FROM FACE OF CURB TO EDGE OF PULLBOX

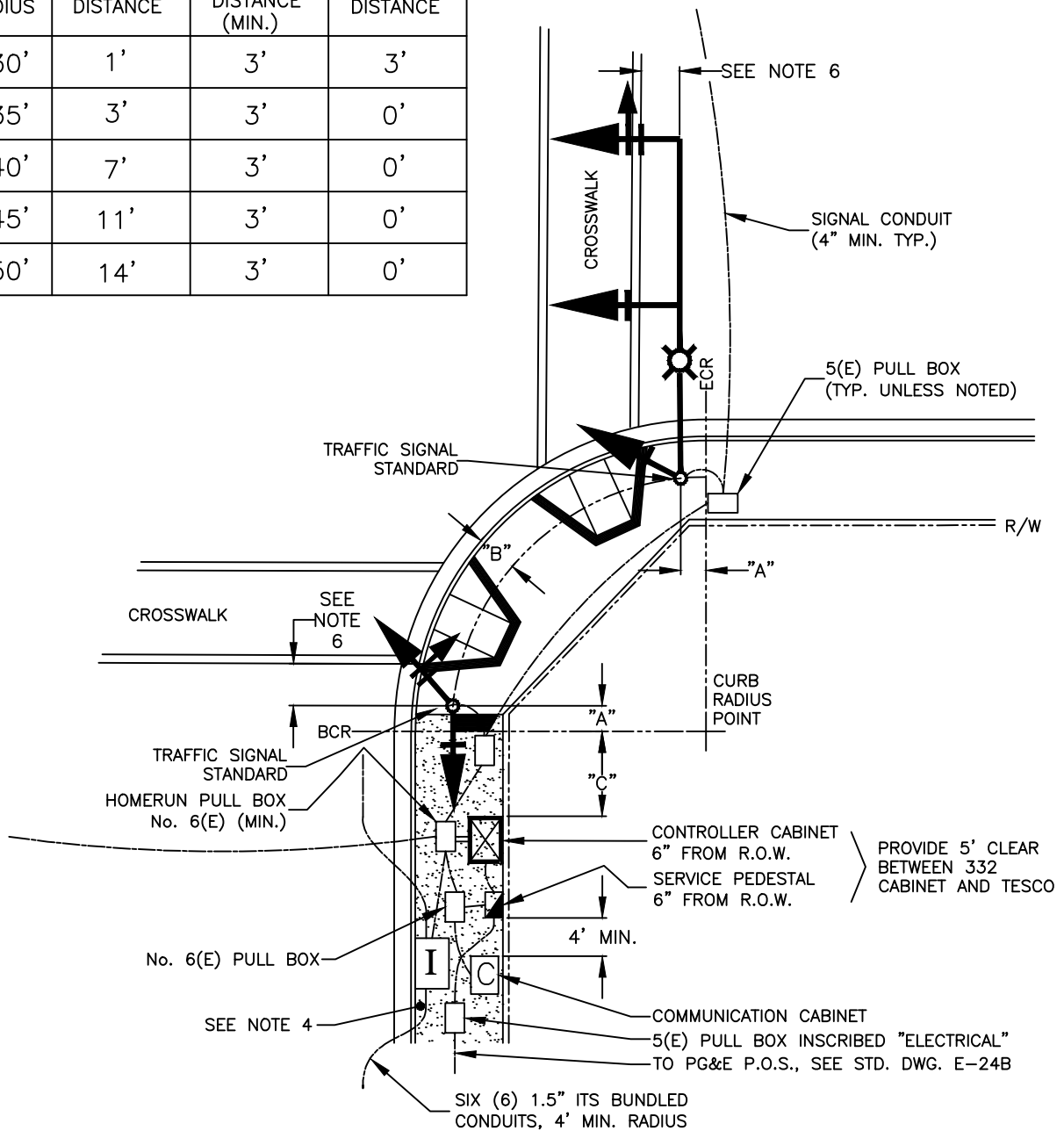
**SIGNAL LIGHT  
EQUIPMENT PLACEMENT GUIDELINE**

REF. & REV.  
NOV. 2007  
MAR. 2021 (A.7)

CITY OF FRESNO

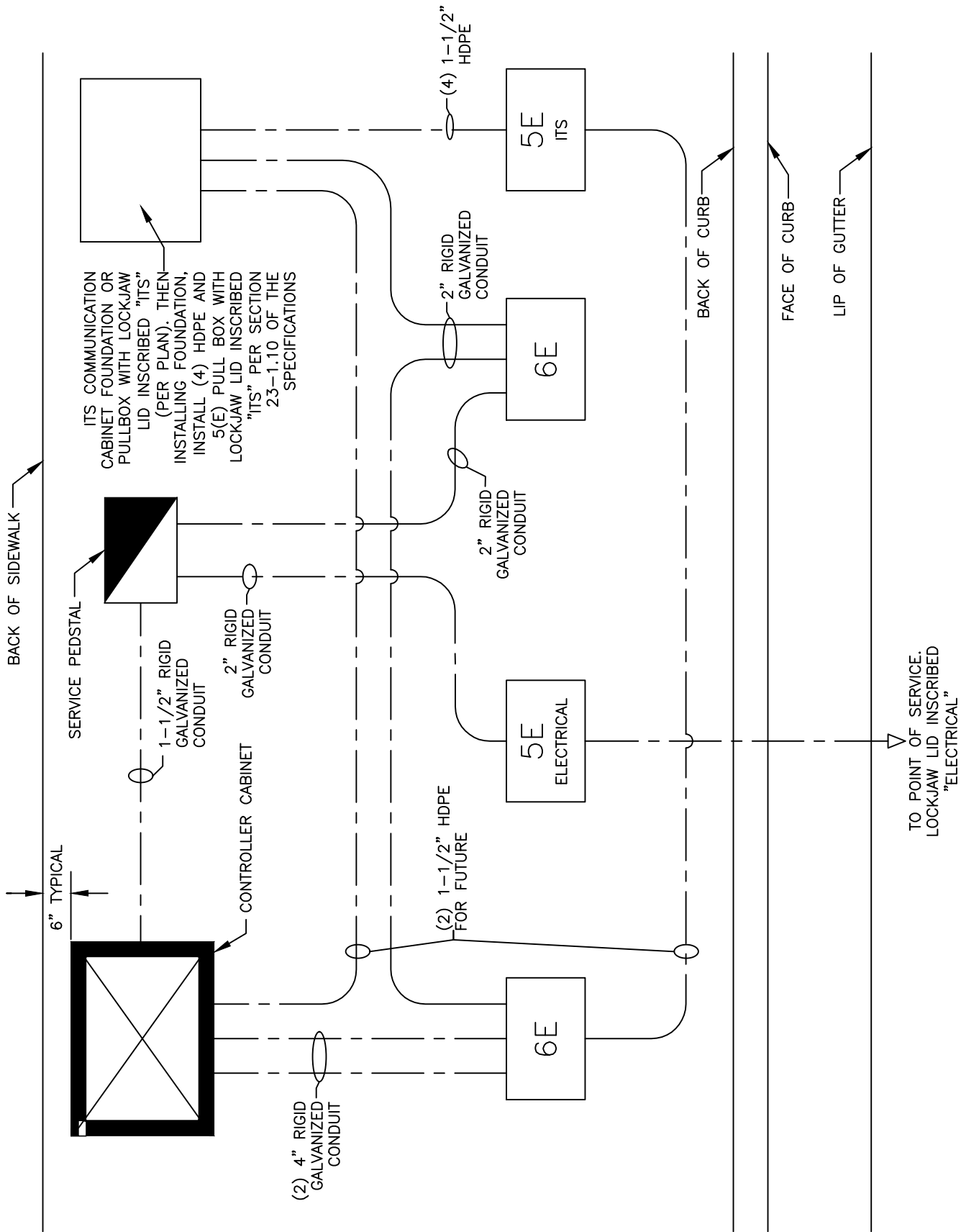
**E-24**

CURB RADIUS	"A" DISTANCE	"B" DISTANCE (MIN.)	"C" DISTANCE
30'	1'	3'	3'
35'	3'	3'	0'
40'	7'	3'	0'
45'	11'	3'	0'
50'	14'	3'	0'



**NOTES:**

1. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO CITY OF FRESNO APPROVED PLANS. ANY VARIATION TO THE PLANS SHALL HAVE THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
2. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO THE ULTIMATE STREET WIDTH AND CURB RETURNS.
3. ULTIMATE AND EXISTING CURB RETURN ARE/SHALL BE SHOWN ON CONSTRUCTION PLANS.
4. ADDITIONAL SIDEWALK TO BE INSTALLED PER CITY STANDARDS AS APPLICABLE TO MAINTAIN A 4' MINIMUM ADA CLEAR PATH ADJACENT TO EQUIPMENT.
5. DISTANCE "C" SHALL BE ADJUSTED AS NECESSARY FOR THE 4' ADA CLEARANCE REQUIREMENT.
6. DISTANCE "A" HAS BEEN CALCULATED TO PLACE A PEDESTRIAN PUSH BUTTON APPROXIMATELY 5' FROM CROSSWALK. IF UNFORESEEN CONDITIONS DO NOT ALLOW SIGNAL STANDARD OR CROSSWALK PLACEMENT AS SHOWN, A PEDESTRIAN PUSH BUTTON POST SHALL BE INSTALLED TO MEET ADA GUIDELINES.



**NOTES:**

1. SEE CITY OF FRESNO STANDARD DRAWINGS E-24 AND E-24A FOR SPACING REQUIREMENTS.

**SIGNAL LIGHT  
EQUIPMENT PLACEMENT DETAIL**

REF. & REV.  
MAR. 2021 (A.7)

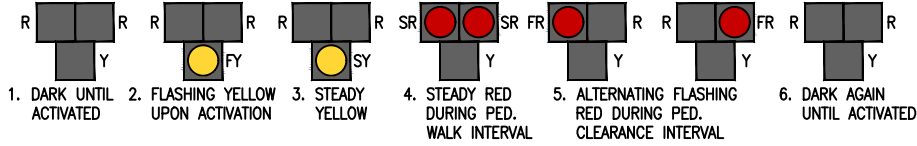
CITY OF FRESNO  
**E-24B**

FY = FLASHING YELLOW  
 SY = STEADY YELLOW  
 SR = STEADY RED  
 FR = FLASHING RED

### FLASHING SEQUENCE FOR PEDESTRIAN CROSSING SIGNAL

R10-23 SIGN TO BE INSTALLED WITHIN 5' O.C. OF PED. CROSSING SIGNAL

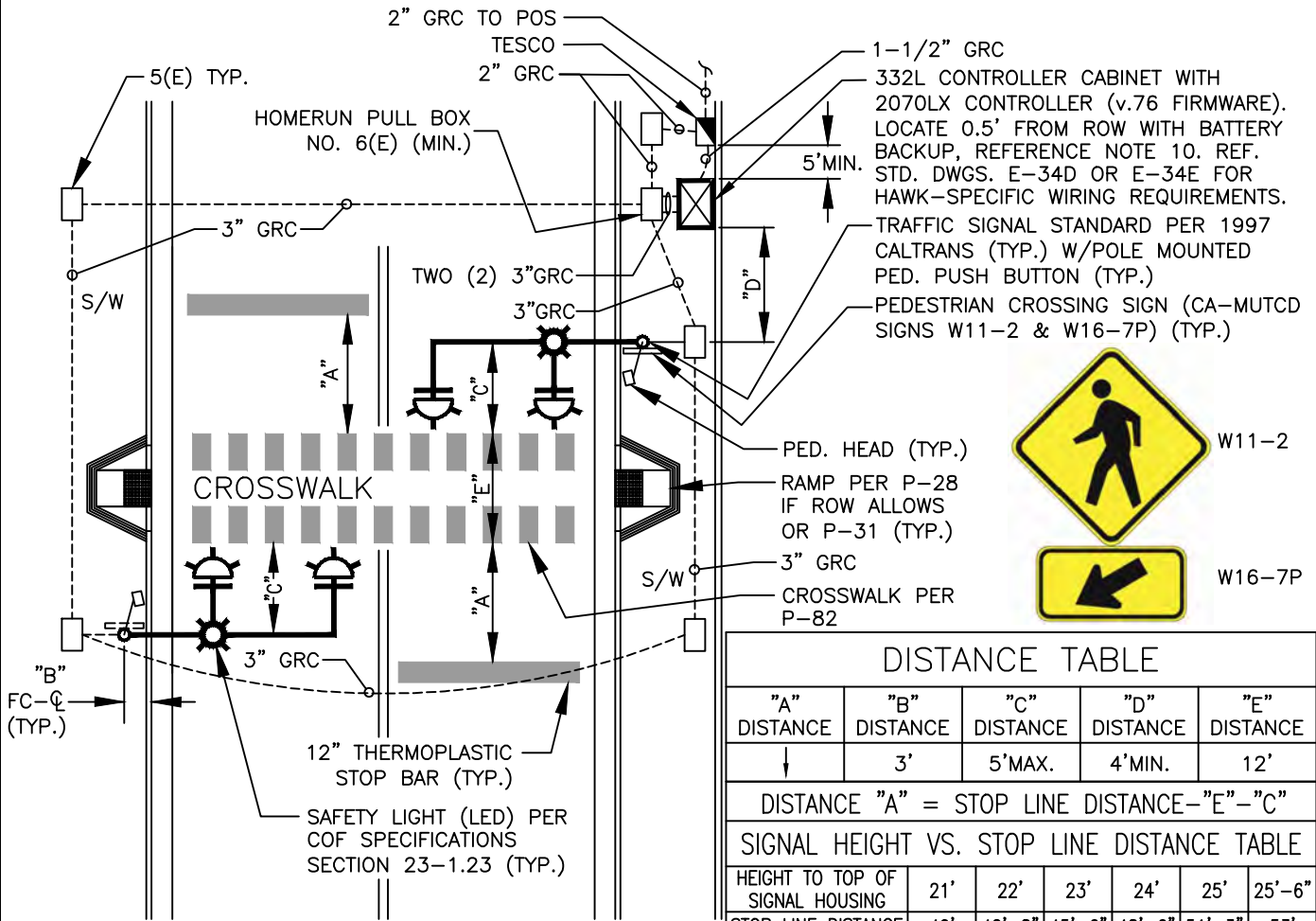
WHAT DRIVER SEES:



WHAT PEDESTRIAN SEES:



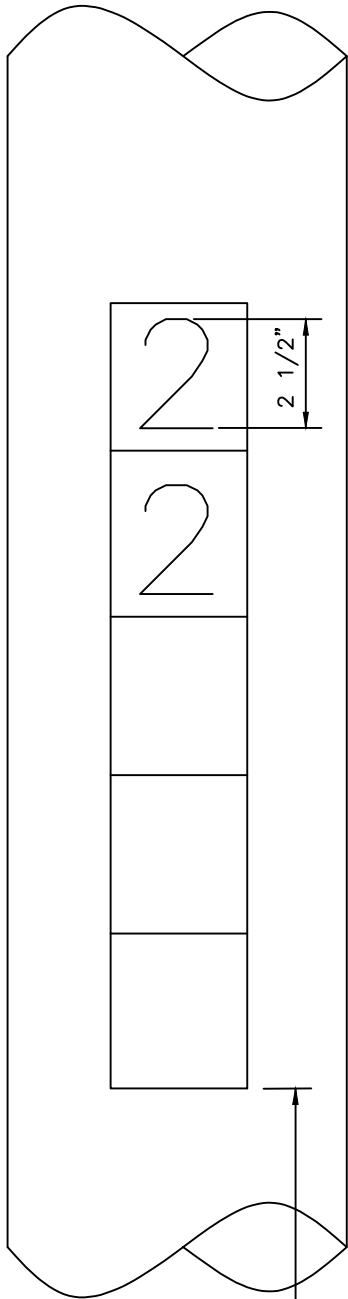
R10-23



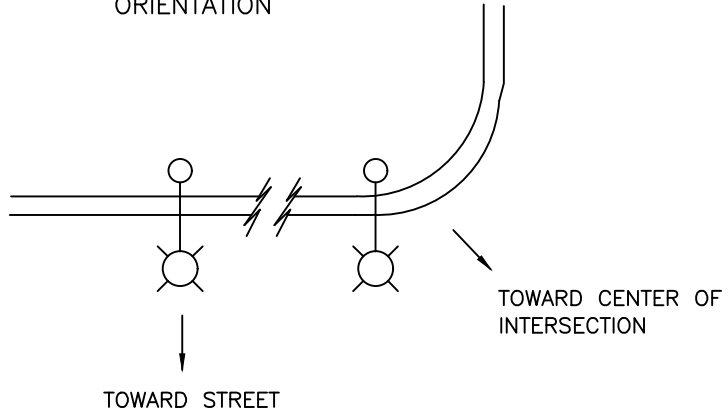
DISTANCE TABLE						
"A" DISTANCE	"B" DISTANCE	"C" DISTANCE	"D" DISTANCE	"E" DISTANCE		
↓	3'	5'MAX.	4'MIN.	12'		
DISTANCE "A" = STOP LINE DISTANCE - "E" - "C"						
SIGNAL HEIGHT VS. STOP LINE DISTANCE TABLE						
HEIGHT TO TOP OF SIGNAL HOUSING	21'	22'	23'	24'	25'	25'-6"
STOP LINE DISTANCE	40'	42'-8"	45'-6"	48'-6"	51'-3"	53'

**NOTES:**

1. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO CITY OF FRESNO APPROVED PLANS. ANY VARIATION TO THE PLANS SHALL HAVE THE APPROVAL OF THE CITY TRAFFIC ENGINEER.
2. ALL EQUIPMENT SHALL BE LOCATED ACCORDING TO THE ULTIMATE STREET WIDTH WITHIN CITY ROW.
3. ULTIMATE AND EXISTING STREET WIDTH SHALL BE SHOWN ON CONSTRUCTION PLANS.
4. ADDITIONAL SIDEWALK TO BE INSTALLED PER CITY STANDARDS AS APPLICABLE TO MAINTAIN A 4' MINIMUM ADA CLEAR PATH ADJACENT TO EQUIPMENT.
5. DISTANCE "C" SHALL BE ADJUSTED AS NECESSARY FOR THE 4' ADA CLEARANCE REQUIREMENT.
6. PLACE PEDESTRIAN PUSH BUTTON APPROXIMATELY 5' FROM CROSSWALK. IF CONDITIONS DO NOT ALLOW SIGNAL STANDARD OR CROSSWALK PLACEMENT AS SHOWN, A PEDESTRIAN PUSH BUTTON POST SHALL BE INSTALLED TO MEET ADA GUIDELINES.
7. LOCATE PULLBOXES FOR TESCO & TS COMBINED 3' FROM FACE OF CURB TO EDGE OF PULLBOX.
8. INSTALLATION OF I.T.S. EQUIPMENT AND CONDUITS SHALL BE AT THE DISCRETION OF THE CITY ENGINEER.
9. ALL EQUIPMENT SHALL MEET CURRENT CITY OF FRESNO DEPARTMENT OF PUBLIC WORKS STANDARD SPECIFICATIONS.
10. A BATTERY-BACKUP SYSTEM SHALL BE INCLUDED AS PART OF THIS INSTALLATION UNLESS DIRECTED OTHERWISE BY THE CITY ENGINEER.



NUMBERING  
ORIENTATION



NOTES:

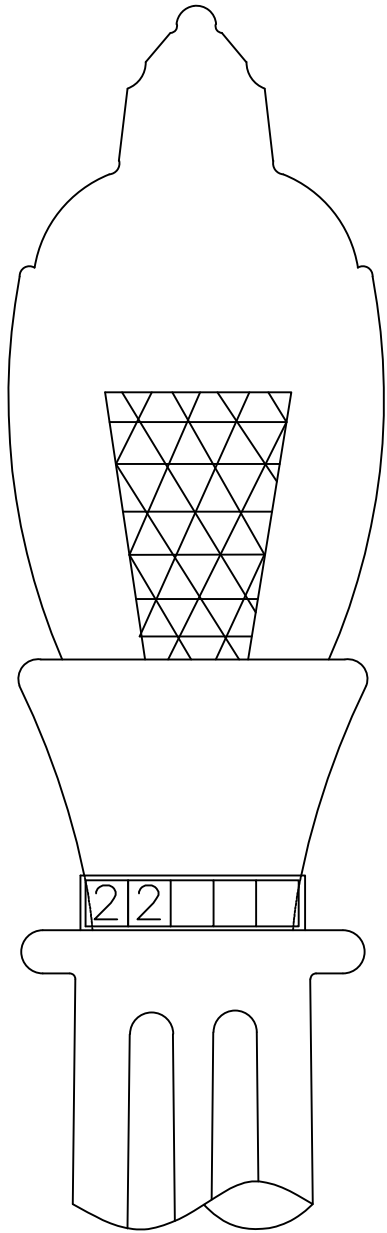
1. NUMERALS SHALL BE ALMETEK PS-2.5 SERIES, OR APPROVED EQUAL, BLACK ON WHITE PRESSURE SENSITIVE MARKERS OF REFLECTIVE SCOTCHLITE.
2. FOR METAL POLES, APPLY TO CLEAN SURFACE.
3. FOR WOOD POLES, USE EMBOSSED ALUMINUM BACKING PLATE SECURED WITH 1-1/2" ALUMINUM ROOFING NAILS. BACKING PLATE SHALL BE ALMETEK PS-2.5V5 OR APPROVED EQUAL.

10'6" FROM GRADE/SIDEWALK ELEVATION, ADJUST AS NEEDED TO CLEAR HARDWARE OR APPURTENANCES.



**NOTES:**

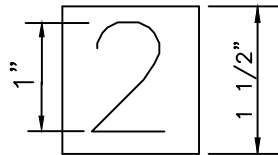
INSERT #'S AS NEEDED INTO HOLDER.  
FORM TO BASE OF CAPITAL & SECURE  
WITH STAINLESS STEEL STRAP.



**GLOBE**

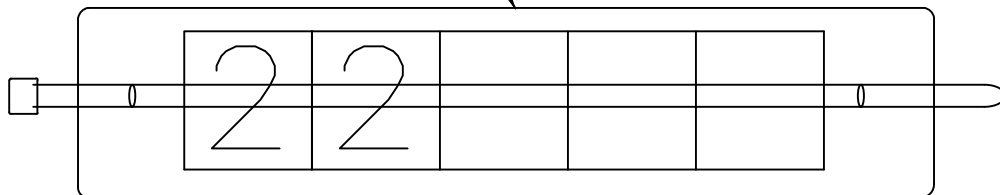
**CAPITAL**

**POLE**



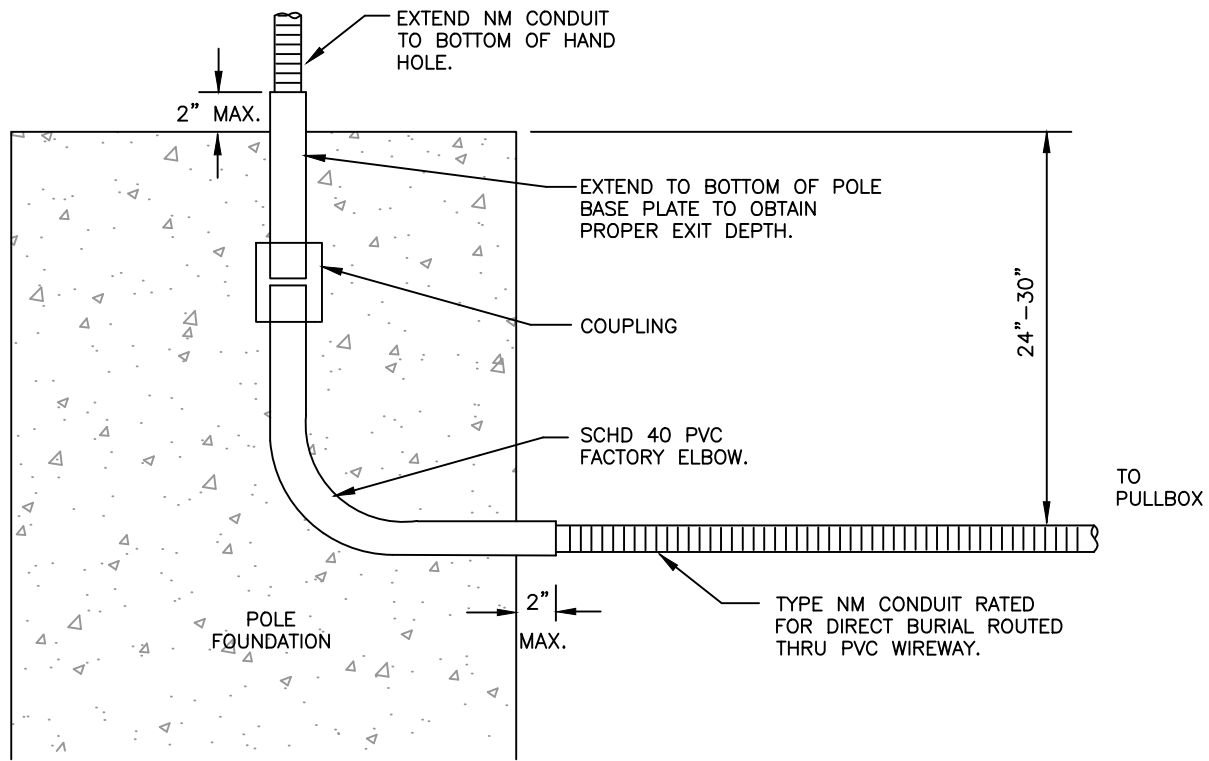
UV RESISTANT POLY NUMERAL TAGS  
ALMETEK H900 SERIES BLACK ON  
YELLOW.

UV RESISTANT POLY TAG HOLDER  
ALMETEK TH-6P



STAINLESS STEEL  
STRAP PANDUIT  
MLT8H-LP OR  
APPROVED EQUAL.

**NUMERAL HOLDER DETAIL**



POLE TYPE	PVC	NM	GRC
PPBP	--	--	1"
POLE TYPE 1A	2.5"	1.5"	--
POLE TYPE 15	2.5"	1.5"	--
POLE TYPES 16-61	3"	2"	--

SIGNAL LIGHT  
FOUNDATION WIRE-WAY DETAIL

REF. & REV.  
JUNE 2015

CITY OF FRESNO  
E-27

THIS STANDARD IS  
NO LONGER USED

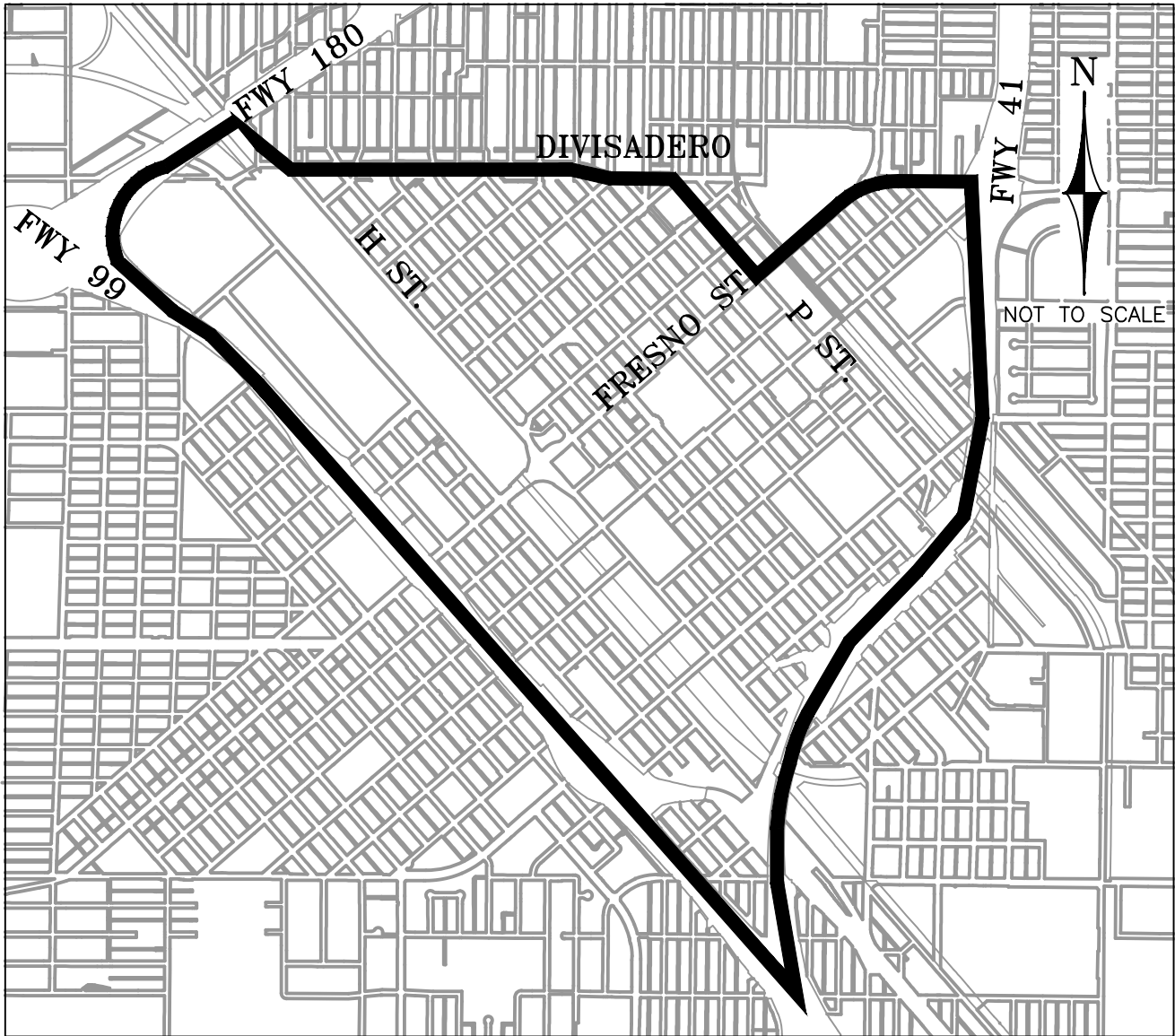
STREETLIGHT POINT OF SERVICE  
CONCRETE PULL BOX

REF. & REV.  
~~SEPT. 2009~~  
MAR. 2021 (A.7)

CITY OF FRESNO

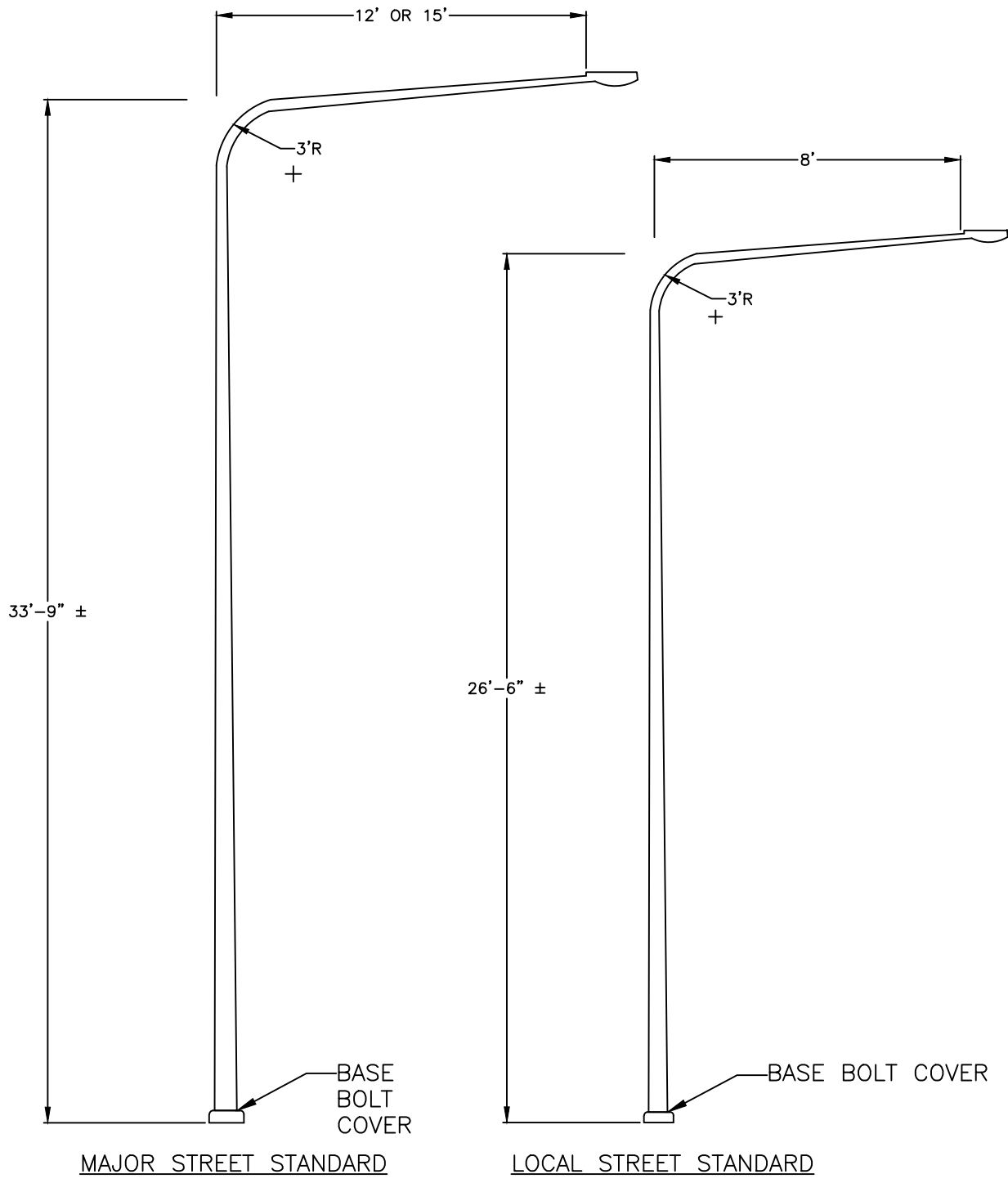
E-28

# DOWNTOWN VICINITY MAP



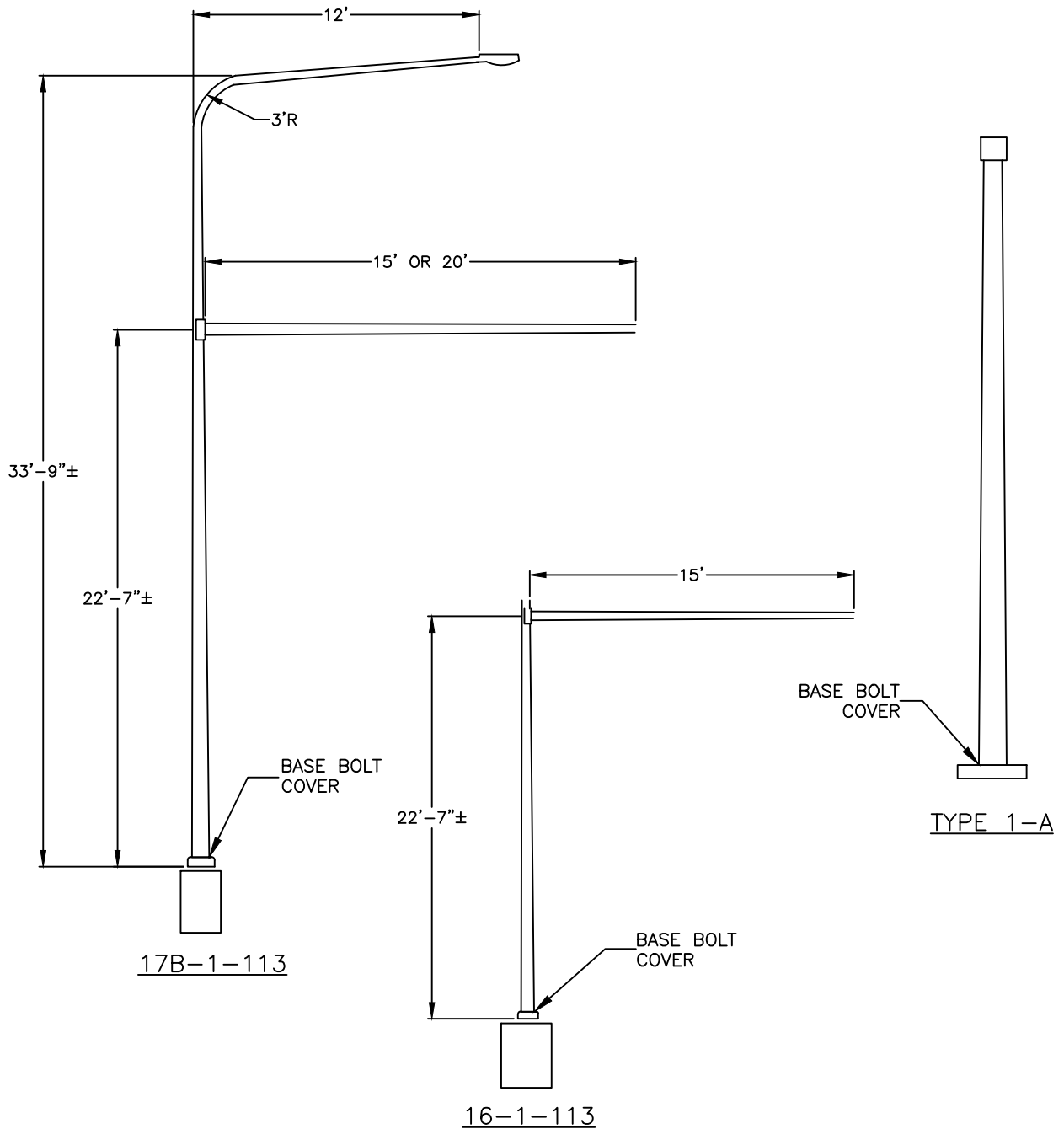
## NOTES:

1. ALL STREET LIGHTS AND TRAFFIC SIGNAL POLES INSTALLED WITHIN THE "DOWNTOWN FRESNO AREA" SHALL BE IN ACCORDANCE WITH THE DECORATIVE POLE STANDARDS INCLUDED HEREIN.
2. THE "DOWNTOWN FRESNO AREA" IS BOUNDED BY THE FOLLOWING ROADWAYS: DIVISADERO (41 TO FRESNO ST), FRESNO ST (DIVISADERO TO P ST), P ST (FRESNO ST TO DIVISADERO), DIVISADERO (P ST TO H ST), H ST (DIVISADERO TO 180), 180 (H ST TO 99), 99 (180 TO 41), 41 (99 TO DIVISADERO). BOTH SIDES OF THE BOUNDRY STREETS SHALL UTILIZE DECORATIVE POLES.



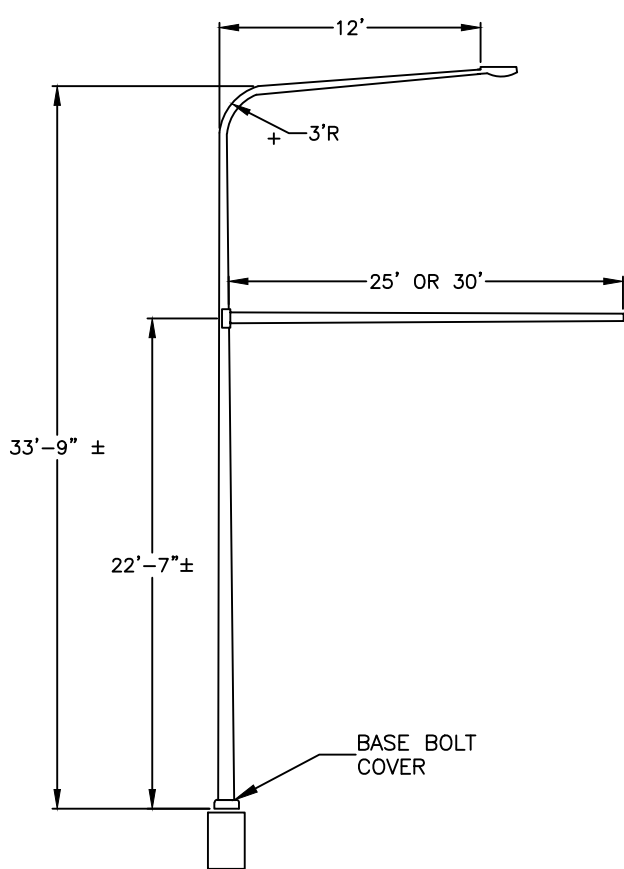
NOTES:

1. THE DECORATIVE POLE STANDARDS SHALL APPLY TO THE "DOWNTOWN FRESNO AREA" AS DEFINED BY P.W. STD. DWG. E-29.
2. WITH THE EXCEPTION OF POLE DIMENSIONS AND COLORS, ALL NOTES AND REQUIREMENTS PER P.W. STD. DWG. E-1 SHALL APPLY.
3. POLE FINISH: BASE COAT - HOT DIP GALVANIZE TO ASTM A123  
 FINISH COAT - TGIC OR URETHANE POLYESTER POWDER  
 COLOR - BRONZE TO MATCH ADJACENT DECORATIVE POLES
4. MATCHING BASE BOLT COVERS SHALL BE INSTALLED.

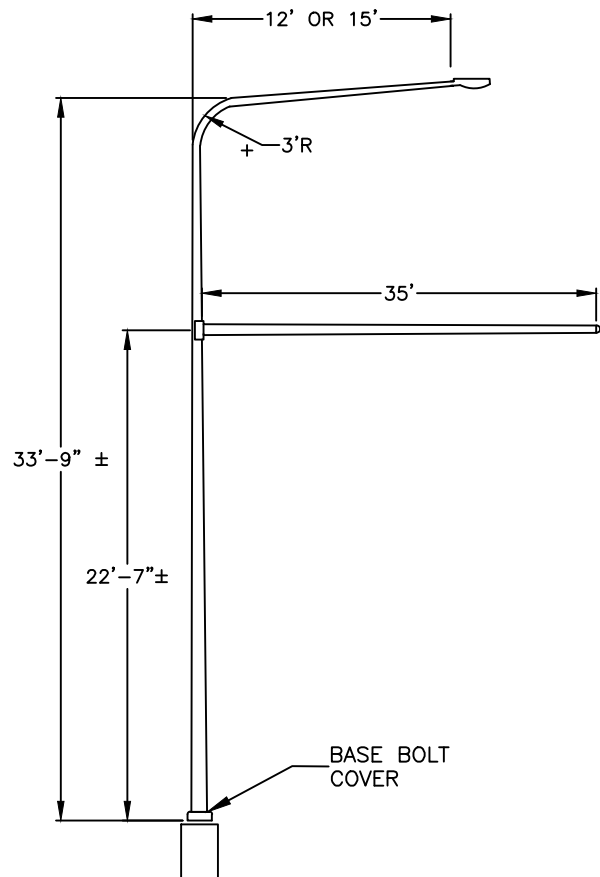


**NOTES:**

1. THE DECORATIVE POLE STANDARDS SHALL APPLY TO THE "DOWNTOWN FRESNO AREA" AS DEFINED BY P.W. STD. DWG. E-29.
2. POLE FINISH: BASE COAT – HOT DIP GALVANIZE TO ASTM A123  
 FINISH COAT – TGIC OR URETHANE POLYESTER POWDER  
 COLOR – BRONZE TO MATCH ADJACENT DECORATIVE POLES
3. POLES MUST MEET CALTRANS 1997 STANDARD SPECIFICATIONS FOR TYPE 1-A, 16-1-113, AND 17B-1-113.
4. MATCHING BASE BOLT COVERS SHALL BE INSTALLED.



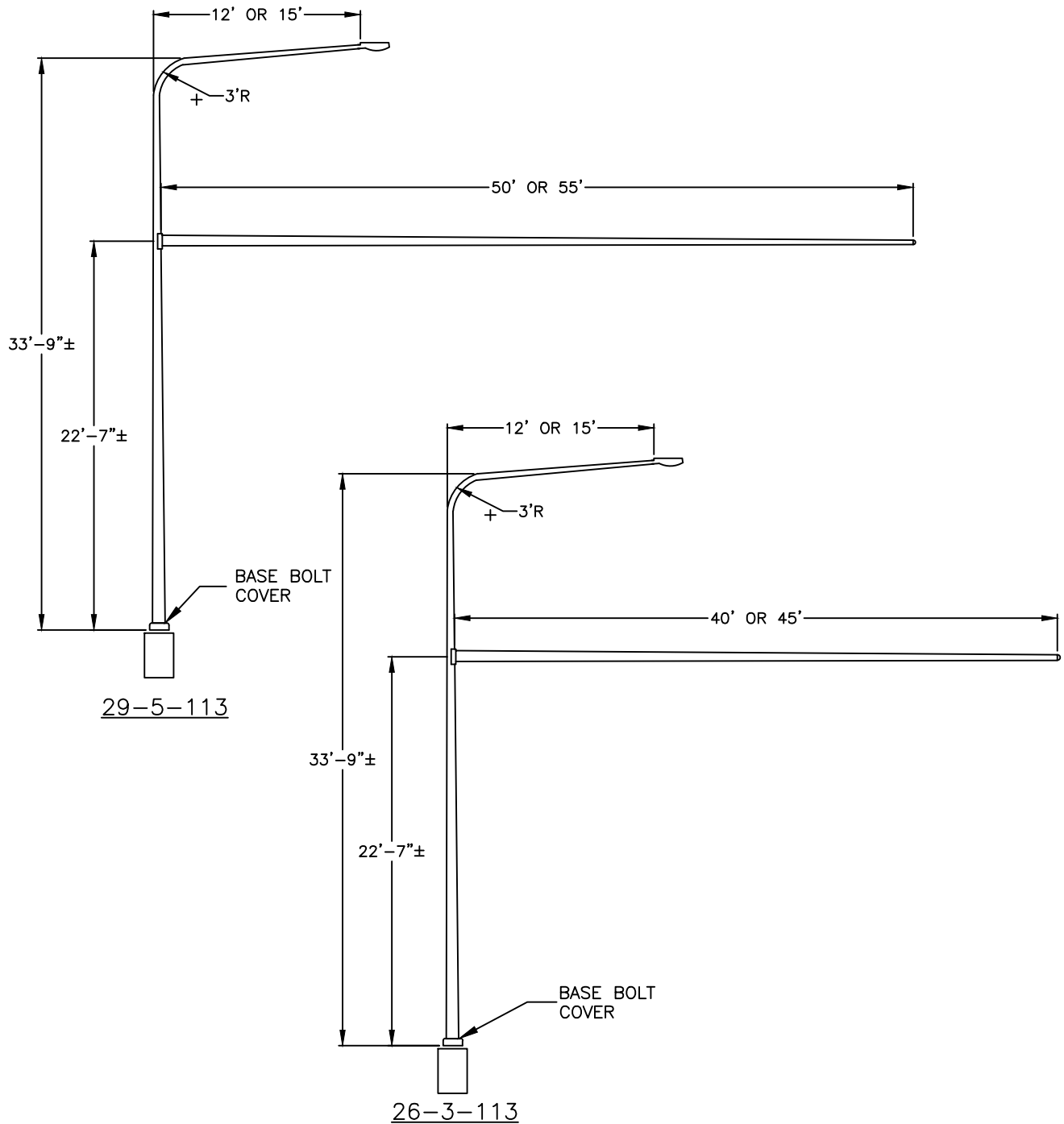
19-3-113



24-3-113

NOTES:

1. THE DECORATIVE POLE STANDARDS SHALL APPLY TO THE "DOWNTOWN FRESNO AREA" AS DEFINED BY P.W. STD. DWG. E-29.
2. POLE FINISH: BASE COAT - HOT DIP GALVANIZE TO ASTM A123  
FINISH COAT - TGIC OR URETHANE POLYESTER POWDER  
COLOR - BRONZE TO MATCH ADJACENT DECORATIVE POLES
3. POLES MUST MEET CALTRANS 1997 STANDARD SPECIFICATIONS FOR TYPES 19-3-113 AND 24-3-113.
4. MATCHING BASE BOLT COVERS SHALL BE INSTALLED.



**NOTES:**

1. THE DECORATIVE POLE STANDARDS SHALL APPLY TO THE "DOWNTOWN FRESNO AREA" AS DEFINED BY P.W. STD. DWG. E-29.
2. POLE FINISH: BASE COAT – HOT DIP GALVANIZE TO ASTM A123  
 FINISH COAT – TGIC OR URETHANE POLYESTER POWDER  
 COLOR – BRONZE TO MATCH ADJACENT DECORATIVE POLES
3. POLES MUST MEET CALTRANS 1997 STANDARD SPECIFICATIONS FOR TYPES 29-5-113 AND 26-3-113.
4. MATCHING BASE BOLT COVERS SHALL BE INSTALLED.

**DOWNTOWN SIGNAL POLES**  
**DECORATIVE POLE DETAILS – TYPE 26, 29**

REF. & REV.  
 SEPT. 2009  
 MAR. 2021 (A.7)

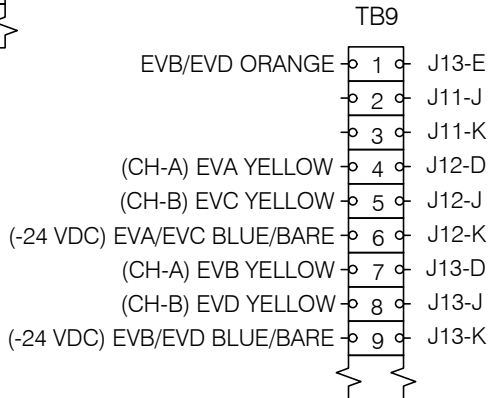
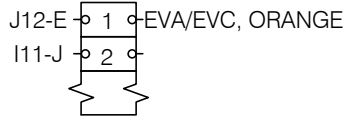
CITY OF FRESNO

**E-33**

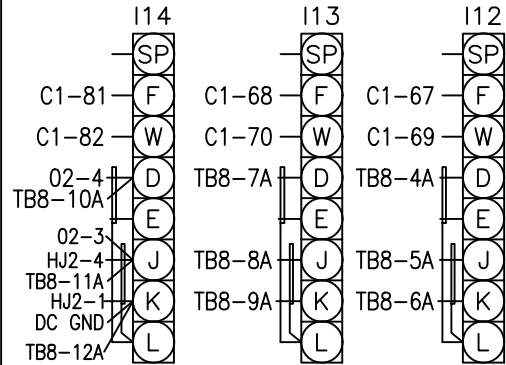


# OPTICOM FIELD WIRE DETAIL (FOR STANDARD MODEL 721/752 INSTALLATIONS)

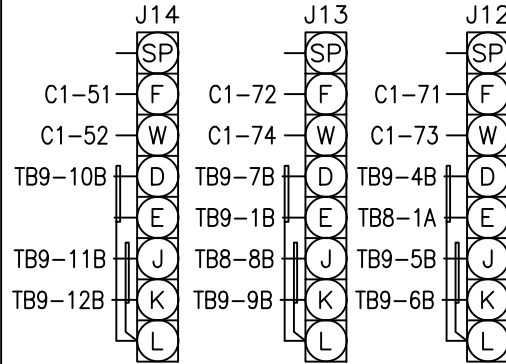
TB8



## I INPUT FILE - ISOLATION (REAR VIEW)



## J INPUT FILE- ISOLATION (REAR VIEW)



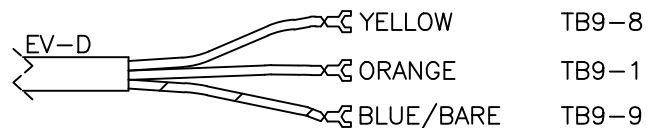
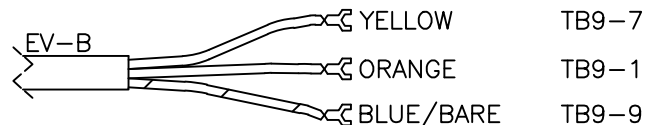
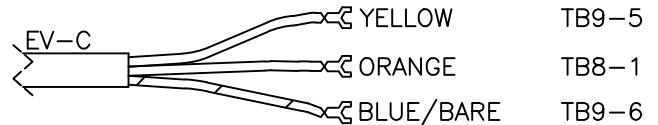
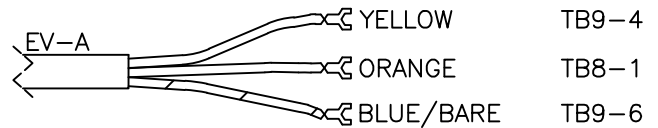
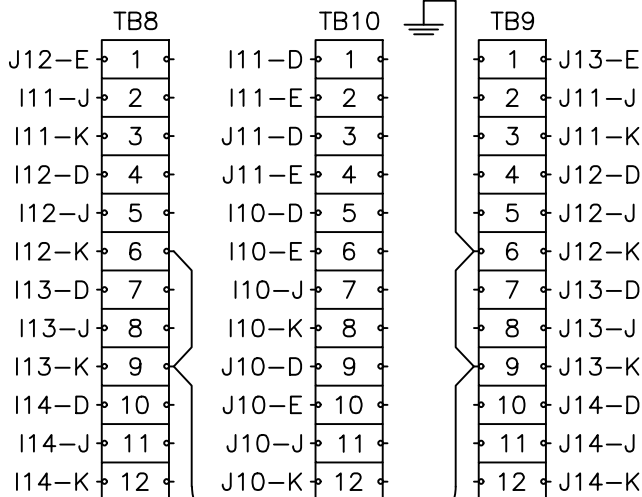
### NOTES:

332 CABINET MODIFICATIONS FOR OPTICOM MODEL 762 DISCRIMINATORS (TWO-CHANNEL, DUAL PRIORITY, ENCODED) AND MODEL 721 DETECTORS (TWO DIRECTION, SINGLE CHANNEL).

### CAUTION:

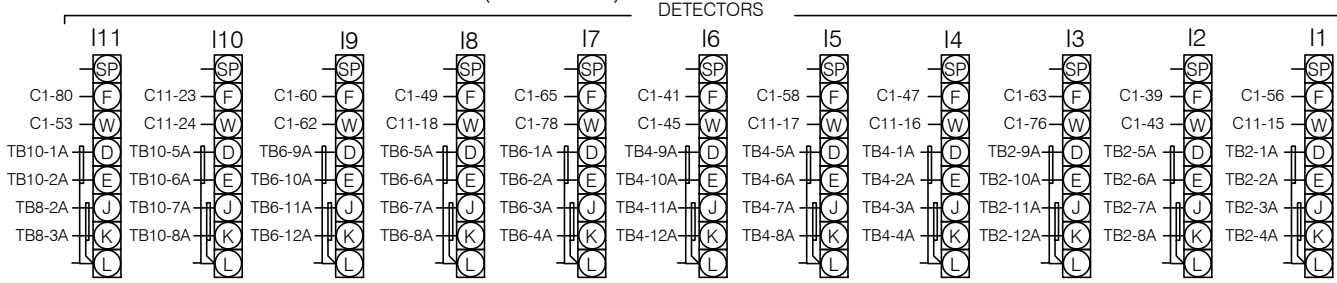
CONNECT TERMINAL K OF THE INPUT FILE SLOTS J12&J13 TO THE EARTH GROUND TO ALLOW DISSIPATION OF STATIC CHARGES ON THE DETECTOR CABLE. FAILURE TO CONNECT TERMINAL K TO THE EARTH GROUND MAY DAMAGE THE EQUIPMENT. IF DETECTORS HAVE BEEN MOUNTED BUT NOT CONNECTED TO THE PHASE SELECTOR, STRIP INSULATION FROM EACH DETECTOR CABLE AND CONNECT ALL THE WIRES TO EARTH GROUND UNTIL THE INSTALLATION CAN BE COMPLETED.

## LOWER INPUT PANEL



TB10 HD30A SERIES TERMINAL BLOCK OR EQUAL.

I INPUT FILE (REAR VIEW)

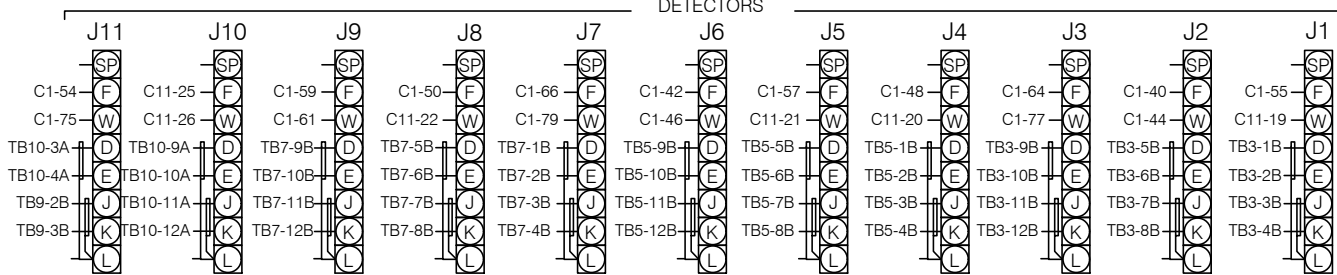


DETECTORS

NOTE:  
SEE CITY STANDARD DRAWING E-34  
WIRING DETAILS FOR INPUT FILE  
I12, I13, I14, J12, J13 & J14.

		INPUT FILE FRONT VIEW													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
U		111U (1)	212U (2)	213U (4)	214U (6)	315U (7)	416U (8)	417U (10)	418U (12)	119U (13)	SP110U (41)	2111U (29)	Ø2P	Ø6P	FS
L		111L (33)	212L (3)	213L (5)	214L (34)	315L (35)	416L (9)	417L (11)	418L (36)	319L (14)	SP110L (42)	4111L (30)	Ø4P	Ø8P	ST

J INPUT FILE (REAR VIEW)

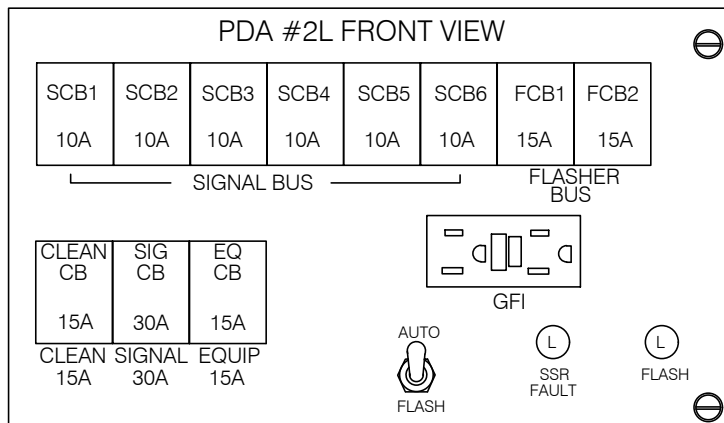
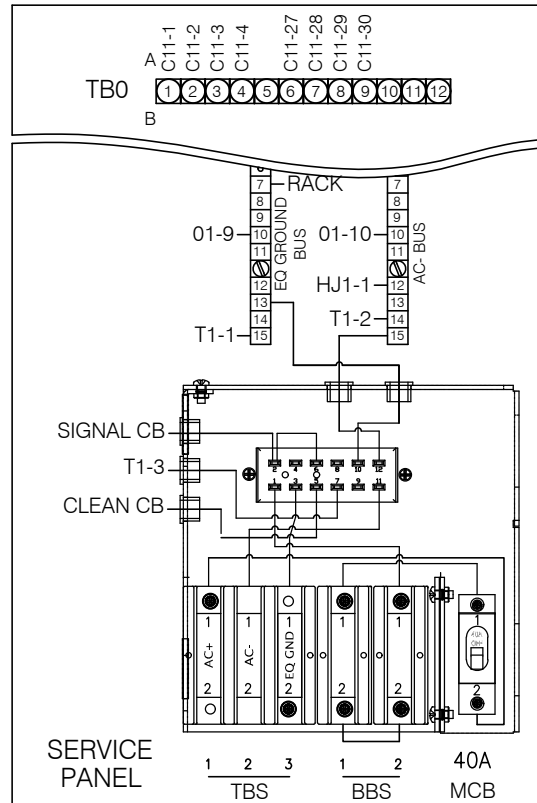


DETECTORS

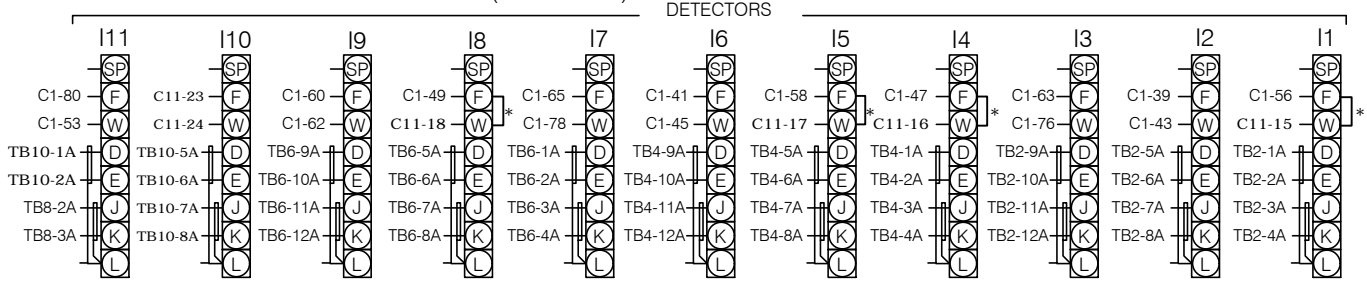
CABLE C11S		
PIN NO.	UNIVERSAL FUNCTION	CONN. TO
1	SPECIAL-OUTPUT	TB0-1A
2	SPECIAL-OUTPUT	TB0-2A
3	SPECIAL-OUTPUT	TB0-3A
4	SPECIAL-OUTPUT	TB0-4A
5-14	NOT USED	NOT USED
15	1 CALL, EXT	I1-W
16	2 CALL, QUEUE	I4-W
17	3 CALL, EXT	I5-W
18	4 CALL, QUEUE	I8-W
19	5 CALL, EXT	J1-W
20	6 CALL, QUEUE	J4-W
21	7 CALL, EXT	J5-W
22	8 CALL, QUEUE	J8-W
23	SPECIAL-INPUT	I10-F
24	SPECIAL-INPUT	I10-W
25	SPECIAL-INPUT	J10-F
26	SPECIAL-INPUT	J10-W
27	SPECIAL-INPUT	TB0-6A
28	SPECIAL-INPUT	TB0-7A
29	SPECIAL-INPUT	TB0-8A
30	SPECIAL-INPUT	TB0-9A
21-34	NOT USED	NOT USED

		INPUT FILE FRONT VIEW													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
U		5J1U (15)	6J2U (16)	6J3U (18)	6J4U (20)	7J5U (21)	8J6U (22)	8J7U (24)	8J8U (26)	5J9U (27)	SPJ10U (43)	6J11U (31)	EVA	EVB	RR1
L		5J1L (37)	6J2L (17)	6J3L (19)	6J4L (38)	7J5L (39)	8J6L (23)	8J7L (25)	8J8L (40)	7J9L (28)	SPJ10L (44)	8J11L (32)	EVC	EVD	RR2

NOTES: 332L CONTROLLER CABINETS MASTER CIRCUIT BREAKER SHALL BE 40A AND THE SIGNAL CIRCUIT BREAKER SHALL BE 30A AND THE FLASHER BUS SHALL BE 2P-15A . C11S CABLE SHALL BE PROVIDED WITH CABINET.



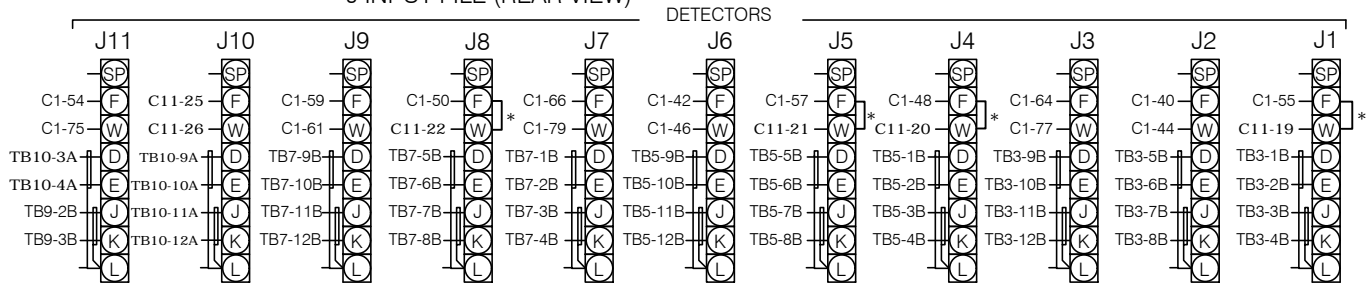
I INPUT FILE (REAR VIEW)



**NOTE:**  
SEE CITY STANDARD DRAWING E-34  
WIRING DETAILS FOR INPUT FILE  
I12, I13, I14, J12, J13 & J14.

		INPUT FILE FRONT VIEW													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
U		111U (1)	212U (2)	213U (4)	214U (6)	315U (7)	416U (8)	417U (10)	418U (12)	119U (13)	SP110U (41)	2111U (29)	Ø2P	Ø6P	FS
L		111L (33)	212L (9)	213L (5)	214L (34)	315L (35)	416L (9)	417L (11)	418L (36)	319L (14)	SP110L (42)	4111L (30)	Ø4P	Ø8P	ST

J INPUT FILE (REAR VIEW)

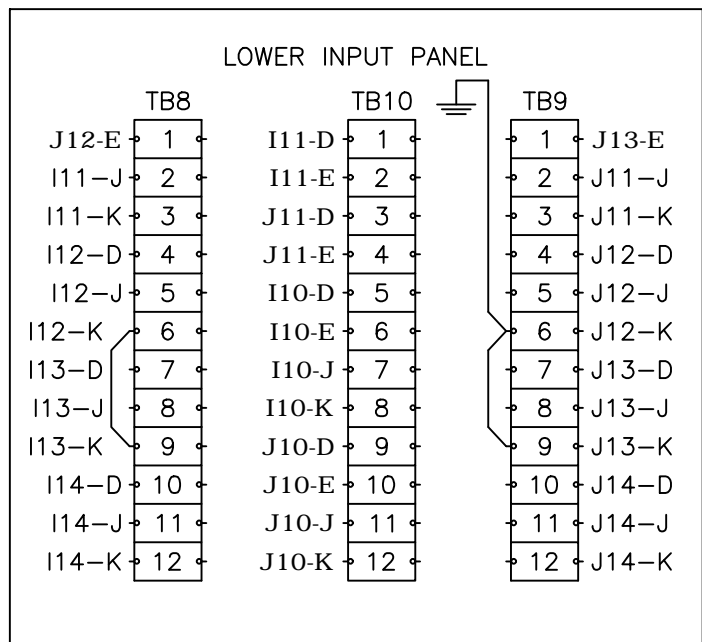


		INPUT FILE FRONT VIEW													
		1	2	3	4	5	6	7	8	9	10	11	12	13	14
U		5J1U (15)	6J2U (16)	6J3U (18)	6J4U (20)	7J5U (21)	8J6U (22)	8J7U (24)	8J8U (26)	5J9U (27)	SPJ10U (43)	6J11U (31)	EVA	EVB	RR1
L		5J1L (37)	6J2L (17)	6J3L (19)	6J4L (38)	7J5L (39)	8J6L (23)	8J7L (25)	8J8L (40)	7J9L (28)	SPJ10L (44)	8J11L (32)	EVC	EVD	RR2

\* REMOVE EXISTING JUMPERS FROM I AND J FILES

INSTALL TERMINAL BLOCK TB10, REWIRE TERMINAL BLOCKS TB8-1  
AND TB9-1. LABEL TERMINAL BLOCK TB10 AND C11 CONDUCTORS.

CABLE C11S		
PIN NO.	UNIVERSAL FUNCTION	CONN. TO
1	SPECIAL-OUTPUT	TB0-1A
2	SPECIAL-OUTPUT	TB0-2A
3	SPECIAL-OUTPUT	TB0-3A
4	SPECIAL-OUTPUT	TB0-4A
5-14	NOT USED	NOT USED
15	1 CALL, EXT	I1-W
16	2 CALL, QUEUE	I4-W
17	3 CALL, EXT	I5-W
18	4 CALL, QUEUE	I8-W
19	5 CALL, EXT	J1-W
20	6 CALL, QUEUE	J4-W
21	7 CALL, EXT	J5-W
22	8 CALL, QUEUE	J8-W
23	SPECIAL-INPUT	I10-F
24	SPECIAL-INPUT	I10-W
25	SPECIAL-INPUT	J10-F
26	SPECIAL-INPUT	J10-W
27	SPECIAL-INPUT	TB0-6A
28	SPECIAL-INPUT	TB0-7A
29	SPECIAL-INPUT	TB0-8A
30	SPECIAL-INPUT	TB0-9A
21-34	NOT USED	NOT USED

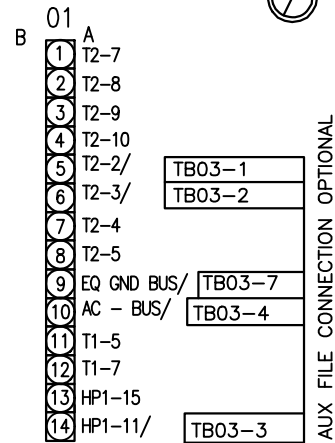
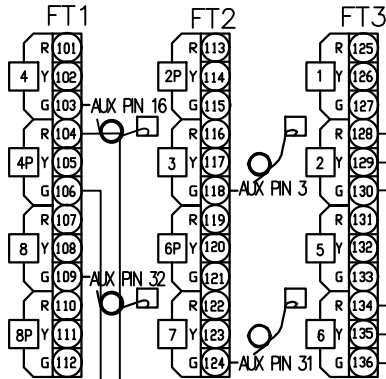
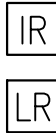
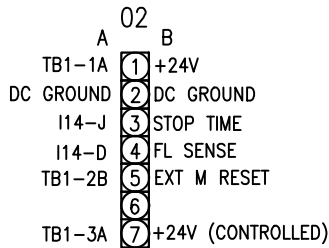


TB10 HD30A SERIES TERMINAL BLOCK OR EQUAL.



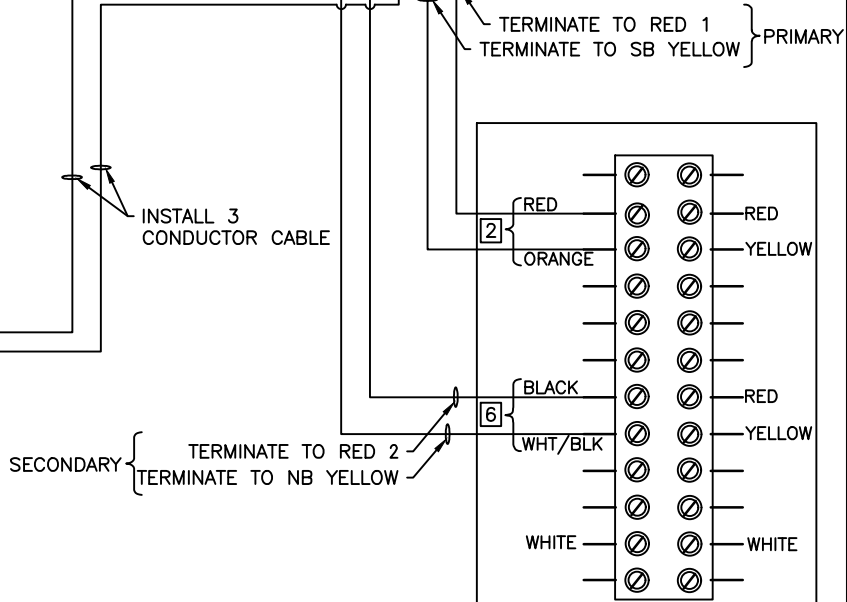
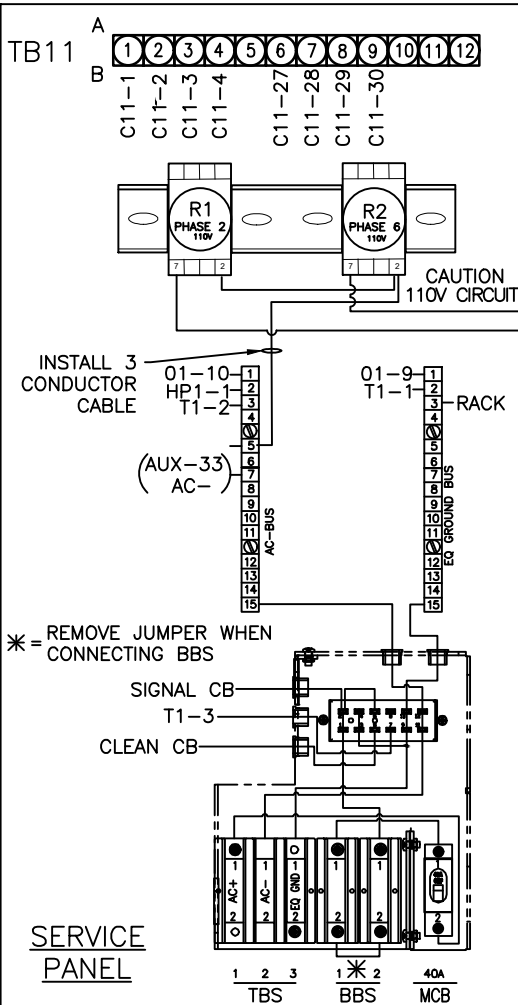
C4

### FLASH PROGRAM BLOCKS (INSIDE)

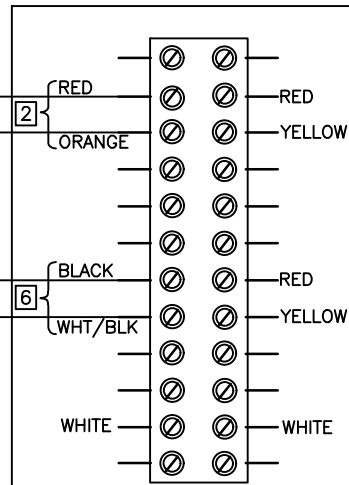
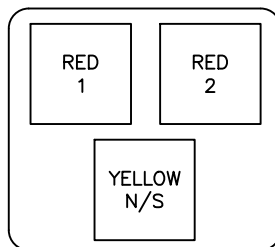


### OUTPUT FILE REAR VIEW

TERMINATE TO PED 04 MODULE  
SEE CITY STD. DWG. E-20 FOR PEDESTRIAN  
SIGNAL & PPB TERMINAL LOCATION DETAILS



### HAWK SIGNAL HEAD



### VEHICLE TERMINAL COMPARTMENT

SEE CITY STD. DWG. E-19  
FOR VEHICLE SIGNAL  
TERMINAL LOCATION DETAILS

NOTE: SPARE CONDUCTORS TO  
BE TAPED AND NEATLY LACED  
IN TS-4

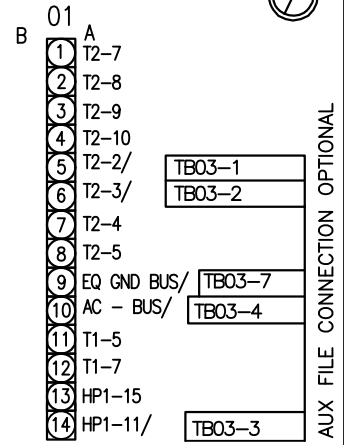
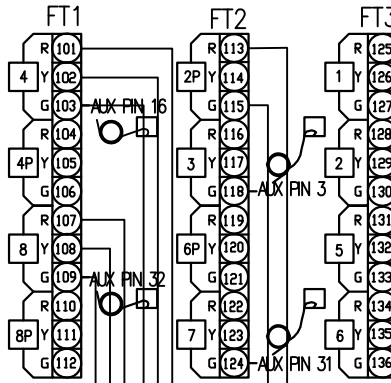
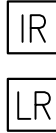
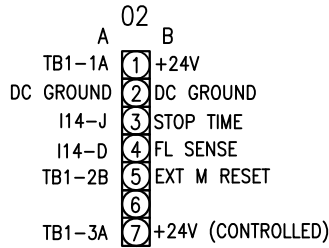
### HAWK - BILL OF MATERIAL

ITEM NUMBER	DESCRIPTION
RR2P-UL-AC110V	IDEC, DPDT, RELAY, INDICATOR LIGHT, AC110V, 10A
SR2P-06	IDEC, RAIL SOCKET, 8 POSITION, DIN RAIL
PB345-ND	TE, DIN RAIL, 34.8MMx10.29mm, SLOTTED
2005.2	CONTRAC-CLIP, END STOP FOR 35MM DIN RAIL



C4

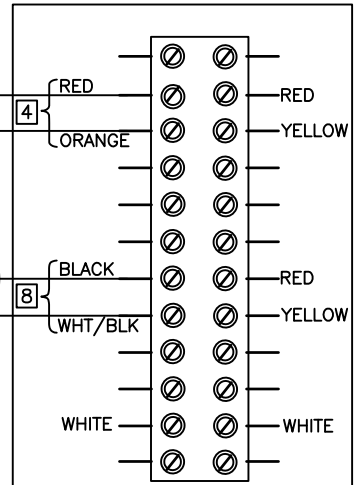
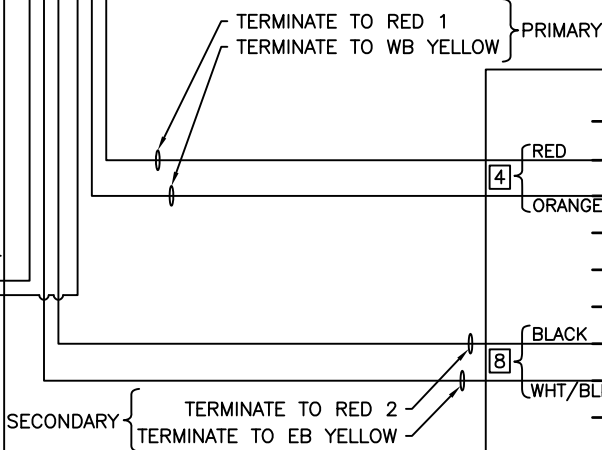
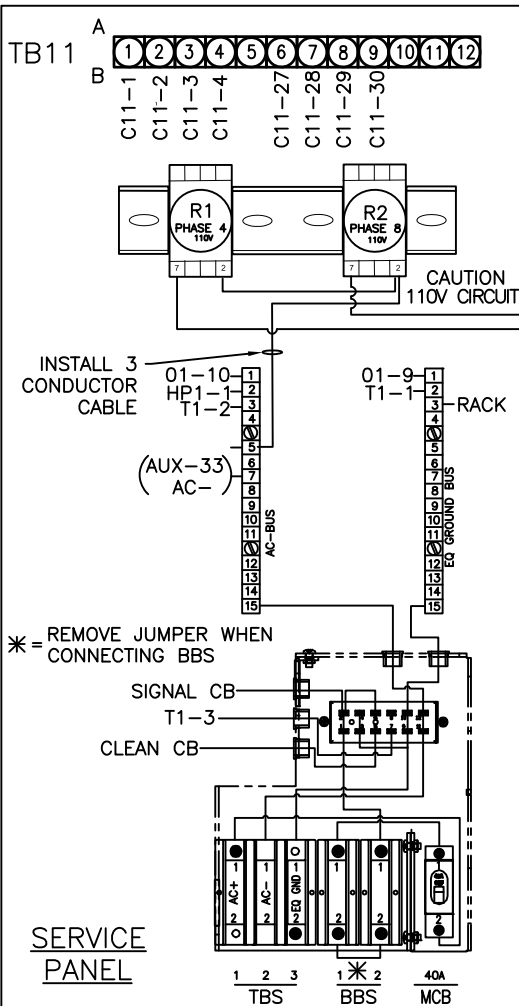
### FLASH PROGRAM BLOCKS (INSIDE)



### OUTPUT FILE REAR VIEW

INSTALL 3 CONDUCTOR CABLE

TERMINATE TO PED 02 MODULE  
SEE CITY STD. DWG. E-20 FOR PEDESTRIAN  
SIGNAL & PPB TERMINAL LOCATION DETAILS

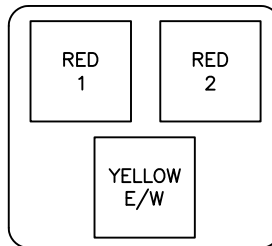


### VEHICLE TERMINAL COMPARTMENT

SEE CITY STD. DWG. E-19 FOR VEHICLE SIGNAL TERMINAL LOCATION DETAILS

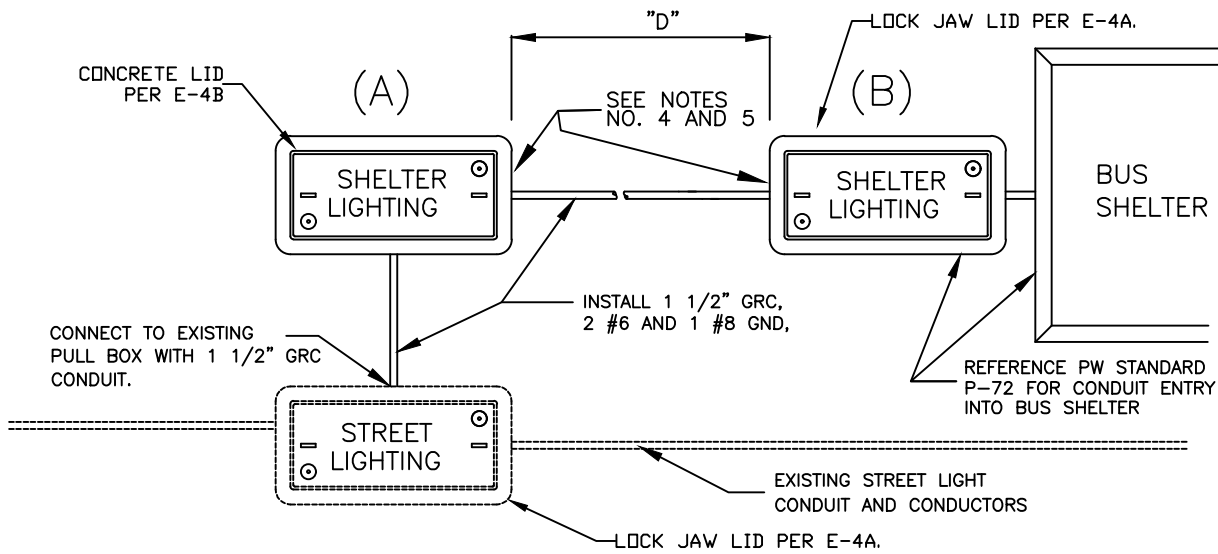
NOTE: SPARE CONDUCTORS TO BE TAPED AND NEATLY LACED IN TS-4

### HAWK SIGNAL HEAD

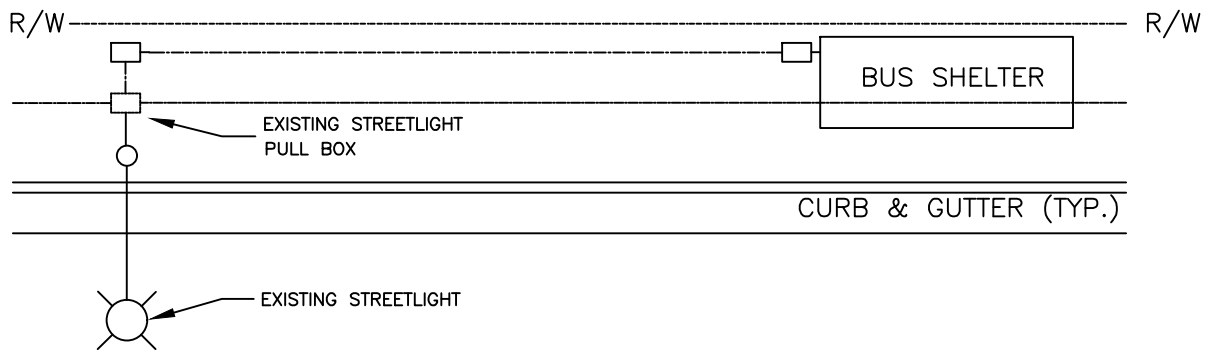


A		B	
1	HAWK - BILL OF MATERIAL		
2	ITEM NUMBER	DESCRIPTION	
3	RR2P-UL-AC110V	IDEC, DPDT, RELAY, INDICATOR LIGHT, AC110V, 10A	
4	SR2P-06	IDEC, RAIL SOCKET, 8 POSITION, DIN RAIL	
5	PB345-ND	TE, DIN RAIL, 34.8MMx10.29mm, SLOTTED	
6	2005.2	CONTRAC-CLIP, END STOP FOR 35MM DIN RAIL	

INSTALLATIONS TO BE APPROVED AND MAINTAINED BY CITY OF FRESNO, FACILITIES MANAGEMENT DIVISION  
 PHONE: 621-1487 OR CHIEF OF FACILITIES (ELECTRICAL) 621-1230



BUS SHELTER LIGHTING CONNECTION

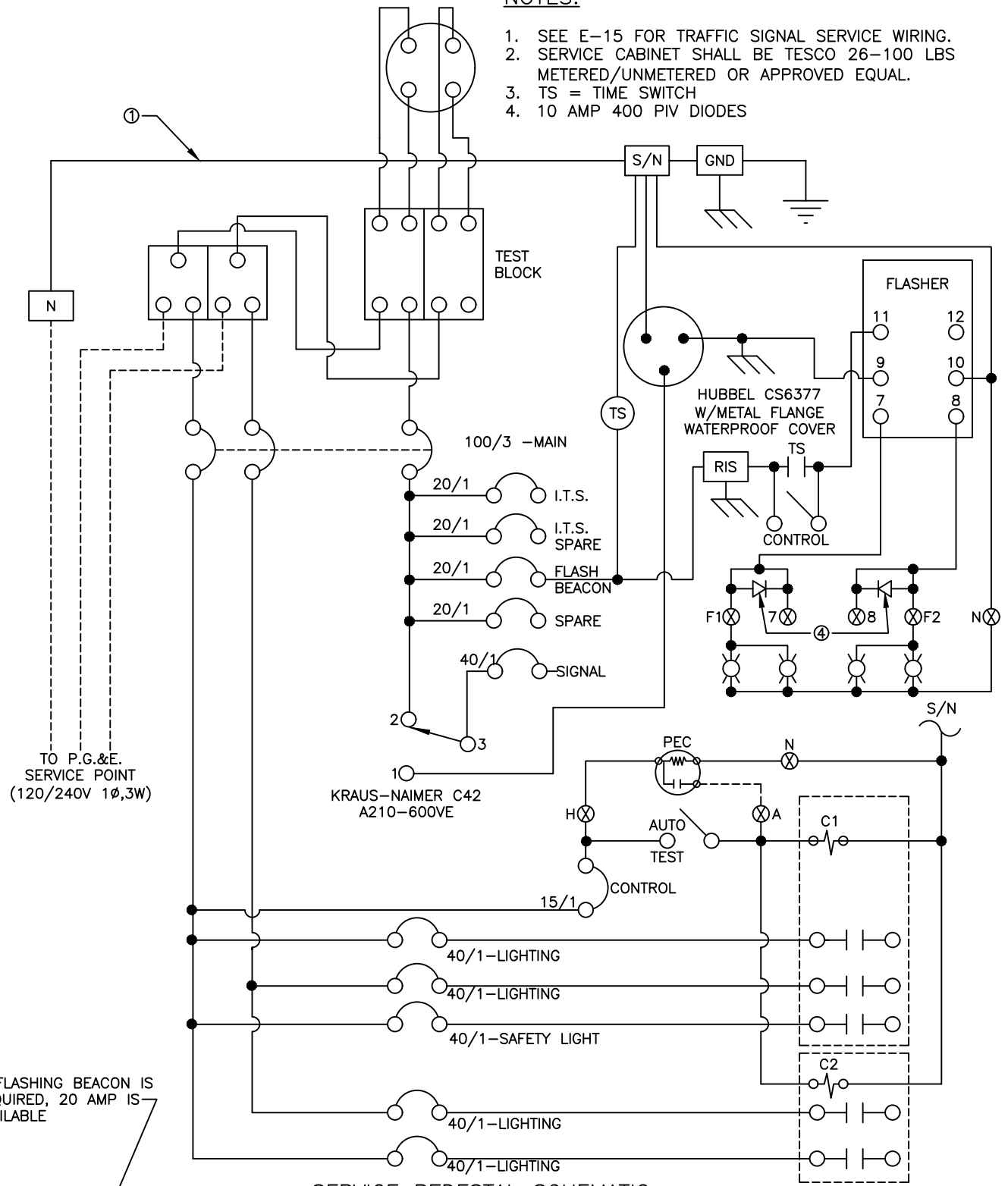


GENERAL NOTES:

1. PULL BOXES SHALL BE INSTALLED PER CITY STANDARD E-4. PULL BOXES SHALL UTILIZE LOCKING LIDS PER E-4.
2. DO NOT LOCATE THE PULL BOXES ABOVE THE JOINT TRENCH.
3. PULL BOX COVER SHALL BE AN APPROVED LOCKING TYPE AND SHALL BE INSCRIBED "SHELTER LIGHTING".
4. IF DISTANCE "D" EXCEEDS 20 FT. PULL BOX "A" IS REQUIRED ADJACENT TO EXISTING STREET LIGHT PULL BOX. IF DISTANCE "D" IS LESS THAN 20', PULL BOX "A" IS NOT REQUIRED.
5. A TRON TYPE FUSE HOLDER WITH 5A FUSE TO BE INSTALLED IN NEAREST PULL BOX. INSCRIBED "SHELTER LIGHTING" ADJACENT TO EXISTING STREET LIGHT PULL BOX.
6. ALL BUS SHELTER LIGHTING CONDUCTOR SPLICES SHALL BE TO APPLICABLE ELECTRICAL, STATE AND CITY STANDARDS.
7. ALL SHELTER LIGHTING SHALL BE NUMBERED. NUMERICAL SEQUENCE TO BE OBTAINED FROM PG&E. NUMBERS TO BE 2 1/2" HIGH AND INSTALLED ON SHELTER STRUCTURE.
8. ELECTRICAL FEED FROM EXISTING STREET LIGHTING SYSTEM TO SHELTER LIGHTING SHALL BE CONTINUOUS AND NOT BE IMPACTED BY A MASTER PHOTO CELL (PEC). INSTALL PEC'S ON STREET LIGHT LUMINAIRES AFFECTED BY SHELTER LIGHTING INSTALLATION REQUIREMENTS.

**NOTES:**

1. SEE E-15 FOR TRAFFIC SIGNAL SERVICE WIRING.
2. SERVICE CABINET SHALL BE TESCO 26-100 LBS METERED/UNMETERED OR APPROVED EQUAL.
3. TS = TIME SWITCH
4. 10 AMP 400 PIV DIODES



IF FLASHING BEACON IS REQUIRED, 20 AMP IS AVAILABLE

**SERVICE PEDESTAL SCHEMATIC**

20A	20A	20A	20A	15A	40A	40A	40A	40A	40A	40A			
SPARE	FLASH BEACON	I.T.S. SPARE	I.T.S.	CONTROL	LIGHTING	LIGHTING	SAFETY LIGHT	SIGNAL				100A	

**SWITCH LOCATION**

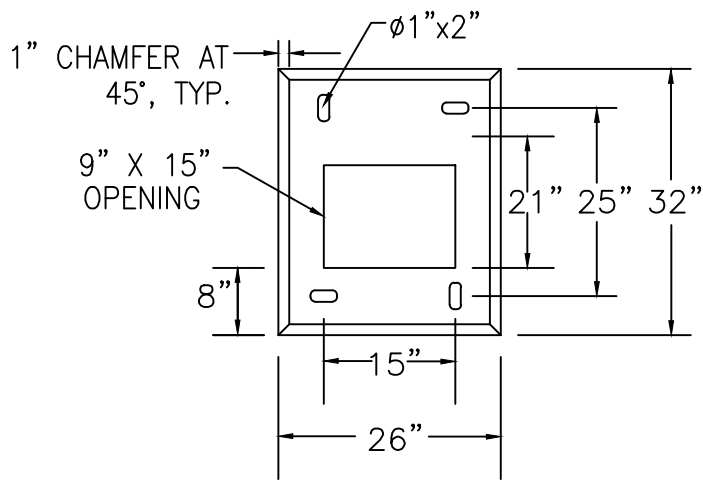
**FLASHING BEACON**

WIRING NEW INSTALLATIONS 26-100 CABINETS

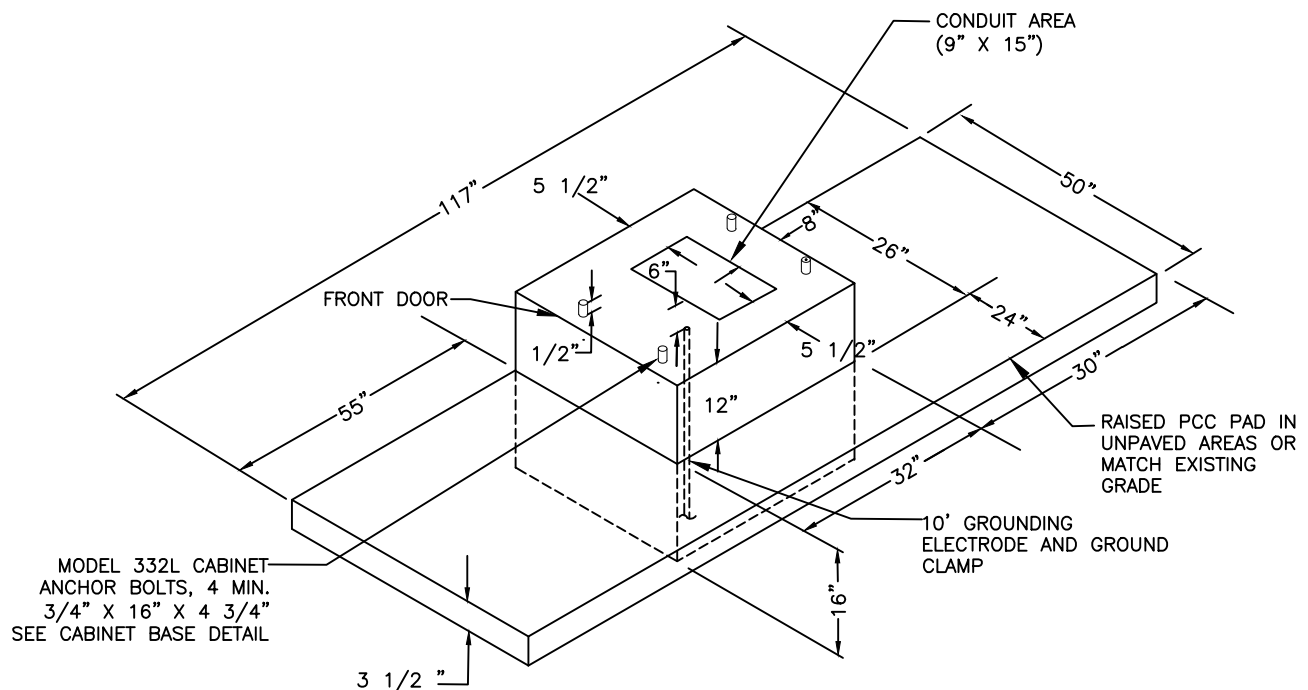
REF. & REV. JUNE 2015

CITY OF FRESNO

**E-36**



CABINET BASE DETAIL\*

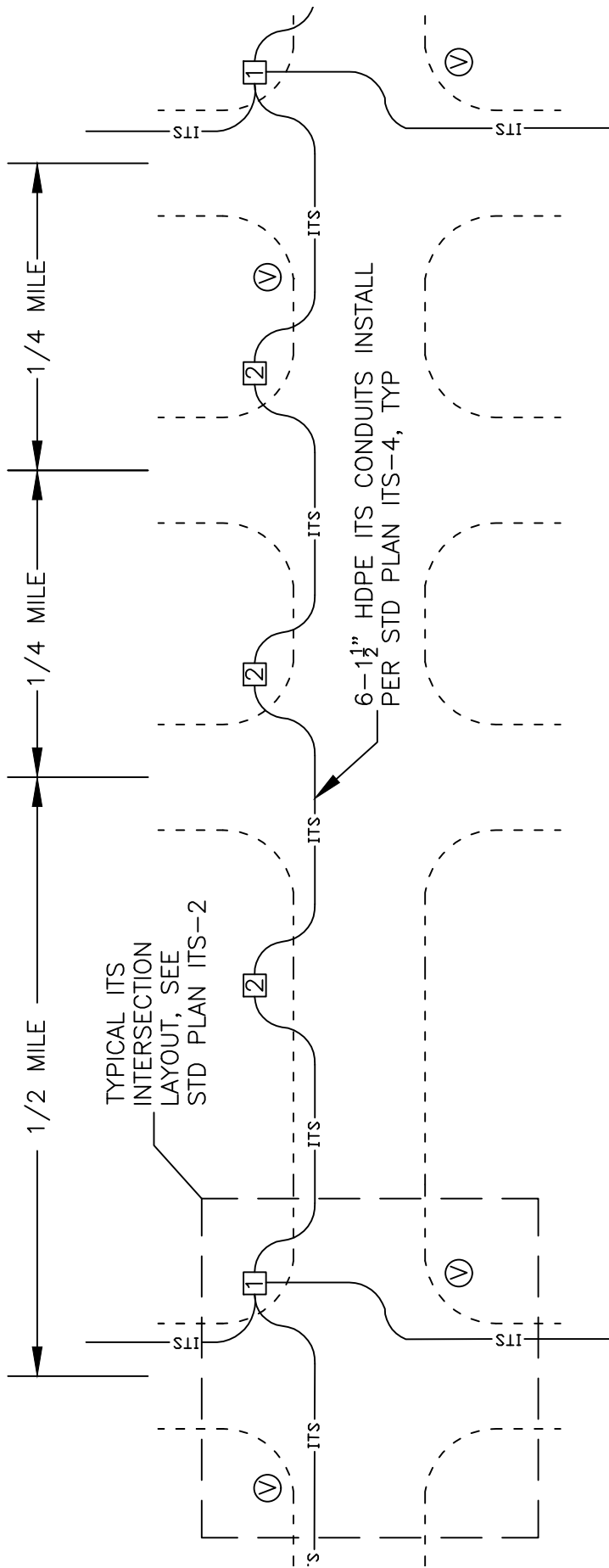


332L FOUNDATION DETAILS

NOTES:

1. TOP OF FOUNDATION SHALL BE 12" ABOVE FINISHED GRADE.
  2. CONDUITS EXITING THE CONTROLLER FOUNDATION AND ENTERING INTO THE CONTROLLER CABINET SHALL BE ALIGNED TO ENTER WITHIN THE TEES SPECIFIED CABINETS WITHOUT ANY MODIFICATIONS TO THE CABINET BASE.
  3. FOUNDATION SHALL CONFORM TO SECTION 23-1.7 OF THE CITY OF FRESNO STANDARD SPECIFICATIONS AND ES-3C STATE OF CALIFORNIA STANDARD PLANS, WITH THE EXCEPTION OF THE FOUNDATION HEIGHT.
  4. AN APPROVED MASTIC OR CAULKING COMPOUND SHALL BE PLACED ON THE FOUNDATION PRIOR TO PLACING THE CABINET TO SEAL OPENINGS BETWEEN BOTTOM OF CABINET AND FOUNDATION.
  5. SEE CITY STD. DWG. E-24B FOR LOCATION OF SERVICE PEDESTAL AND ITS CABINET.
- \* DIMENSIONS ROUNDED TO THE NEAREST 0.1".





LEGEND

- 1 4'X7' ITS VAULT, SEE STD PLAN ITS-13 AND ITS-14.
- 2 3'X5' ITS VAULT, SEE STD PLAN ITS-11 AND ITS-12.
- Ⓟ IP CAMERA

TYPICAL ITS  
CORRIDOR LAYOUT

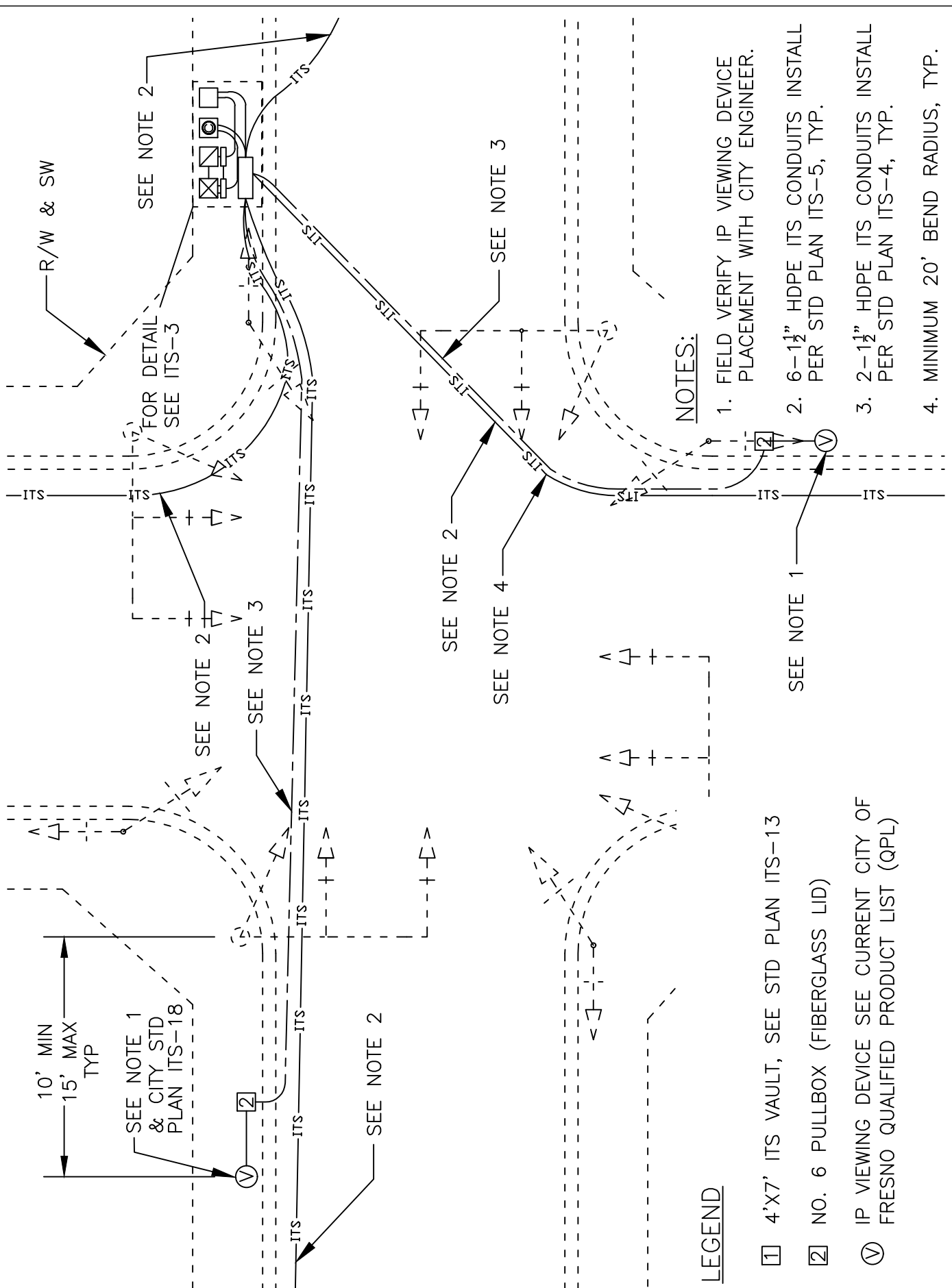
REF. & REV.  
JULY 2011  
MAR. 2021 (A.7)

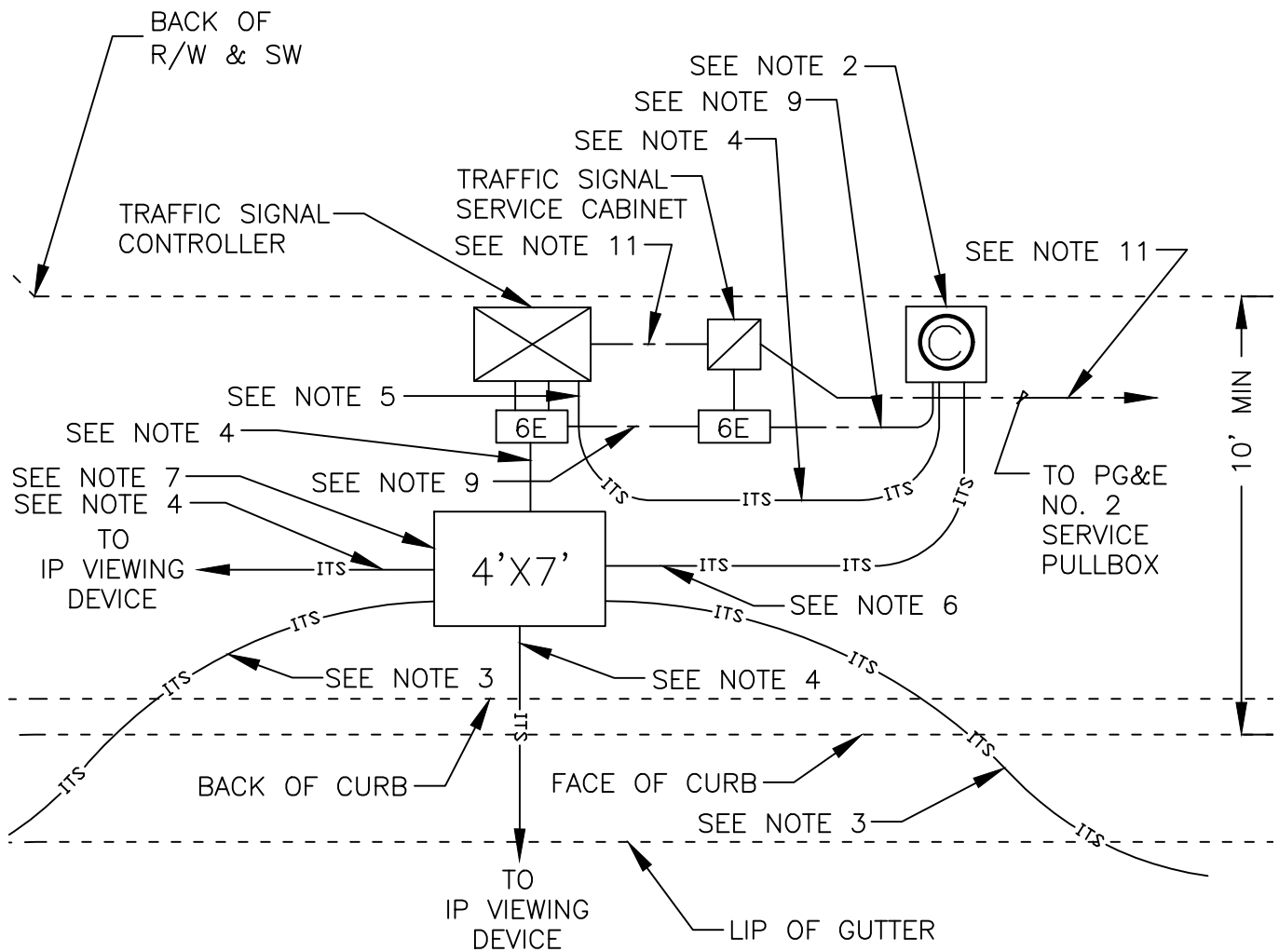
CITY OF FRESNO  
ITS-1

# TYPICAL ITS INTERSECTION LAYOUT

REF. & REV.  
JULY 2011

CITY OF FRESNO  
ITS-2





**LEGEND**

- ITS— ITS CONDUITS, HDPE CONDUIT
- - - TRAFFIC SIGNAL CONDUITS, RIGID GALVANIZED CONDUIT (RGC)

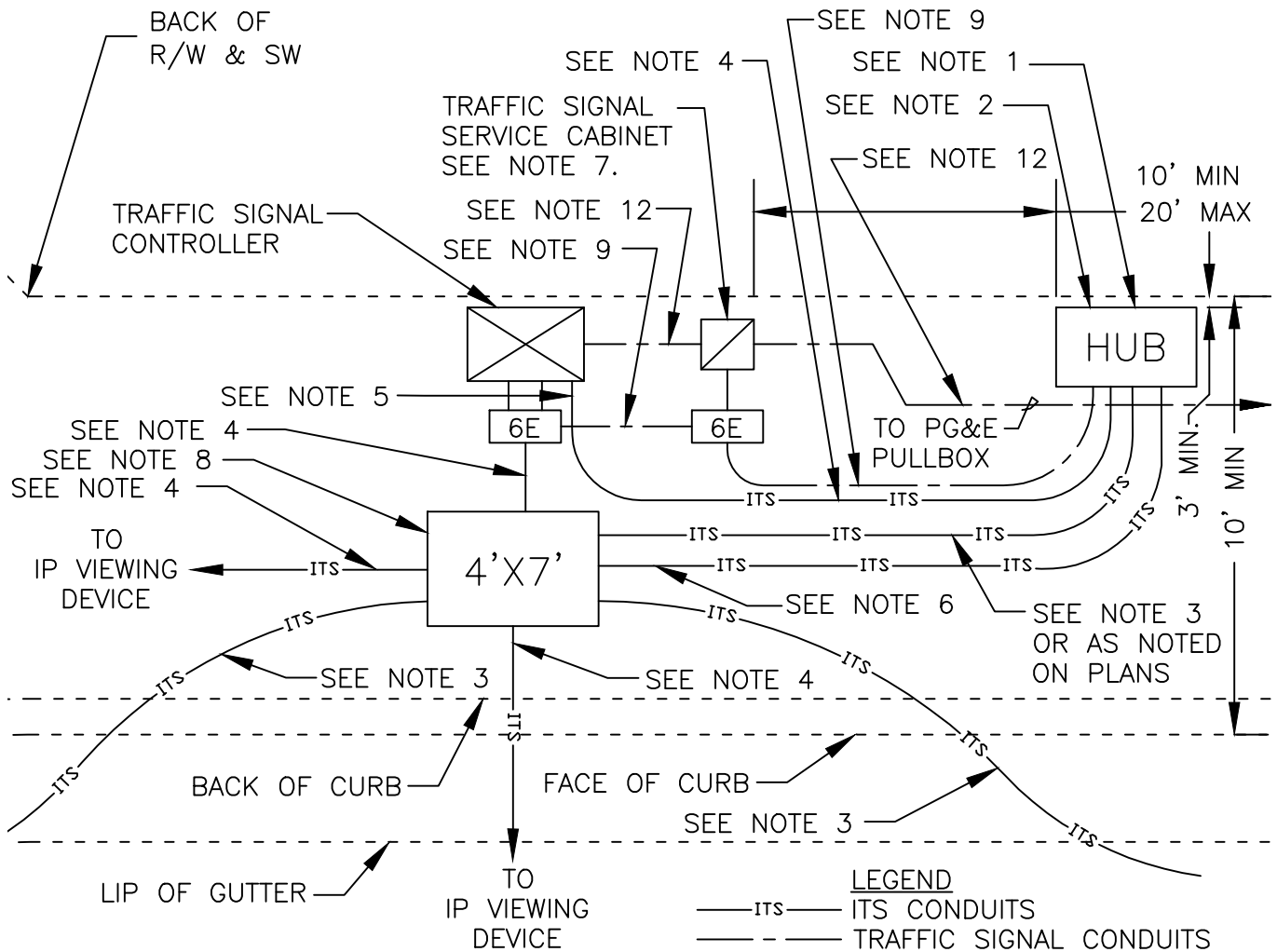
**NOTES:**

1. FOR LAYOUT WITH ITS HUB CABINET, SEE ITS-3A
2. ITS INTERSECTION COMMUNICATIONS CABINET, SEE STD PLAN ITS-20A.
3. 6-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-5, TYP.
4. 2-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-4, TYP.
5. FOR EXISTING TRAFFIC SIGNAL CONTROLLER, INSTALL 2-1½" CONDUITS INTO HOMERUN 6E PULLBOX.
6. 4-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-4, TYP.
7. 4'x7' ITS VAULT, SEE STD PLAN ITS-13 AND ITS-14.
8. FOR TRAFFIC SIGNAL EQUIPMENT LAYOUT, SEE STD PLAN E-24.
9. INSTALL 2" RIGID CONDUIT.
10. ANY VARIATION FROM THIS STANDARD SHALL HAVE THE APPROVAL OF THE CITY ENGINEER.
11. INSTALL 1½" RIGID CONDUIT.

**TYPICAL ITS INTERSECTION  
CONDUIT RUN LAYOUT**

REF. & REV.  
JULY 2011  
MAR. 2021 (A.7)

**CITY OF FRESNO  
ITS-3**



**NOTES:**

1. ITS CABINET HUB SHALL BE INSTALLED IN A LOCATION APPROVED BY CITY ENGINEER.
2. ALL REQUIRED COMMUNICATIONS EQUIPMENT ASSEMBLIES SPECIFIED ON ITS-21B SHALL BE INSTALLED INSIDE HUB CABINET AS DIRECTED BY ENGINEER.
3. 6-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-5, TYP.
4. 2-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-4, TYP.
5. FOR EXISTING TRAFFIC SIGNAL CONTROLLER, INSTALL 2-1½" CONDUITS INTO HOMERUN 6E PULLBOX.
6. 4-1½" ITS CONDUITS INSTALL PER STD PLAN ITS-4, TYP.
7. UPGRADE TRAFFIC SIGNAL SERVICE CABINET TO TESCO 27-000 AT LOCATIONS REQUIRING A HUB CABINET.
8. 4'x7' ITS VAULT, SEE STD PLAN ITS-13.
9. INSTALL 2" RIGID CONDUIT.
10. FOR TRAFFIC SIGNAL EQUIPMENT LAYOUT, SEE STD PLAN E-24.
11. ANY VARIATION FROM THIS STANDARD SHALL HAVE THE APPROVAL OF THE CITY ENGINEER.
12. INSTALL 1½" RIGID CONDUIT.

CONDUIT COLOR CODES

1. WHITE (TONEABLE)
2. BLUE
3. GREEN
4. ORANGE W/  
YELLOW STRIPE

CONCRETE  
SLURRY  
BACKFILL PER  
SPECIFICATIONS

CENTER LINE OF  
TRENCH OR BORE

2-1½" HDPE  
COMMUNICATION  
CONDUIT

SEE NOTE 6

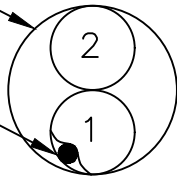
4-1½" HDPE  
COMMUNICATION  
CONDUIT

TYPE 2-1 1/2"  
TRENCHING DETAIL  
SEE NOTE 5

TYPE 4-1 1/2"  
TRENCHING DETAIL  
SEE NOTE 5

4" COMMUNICATION  
DUCT

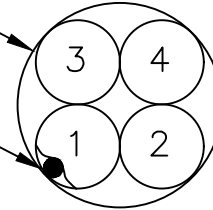
TONEABLE CONDUIT



TYPE 2 CONDUIT  
INNERDUCT DETAIL

4" COMMUNICATION  
DUCT

TONEABLE CONDUIT



TYPE 4 CONDUIT  
INNERDUCT DETAIL

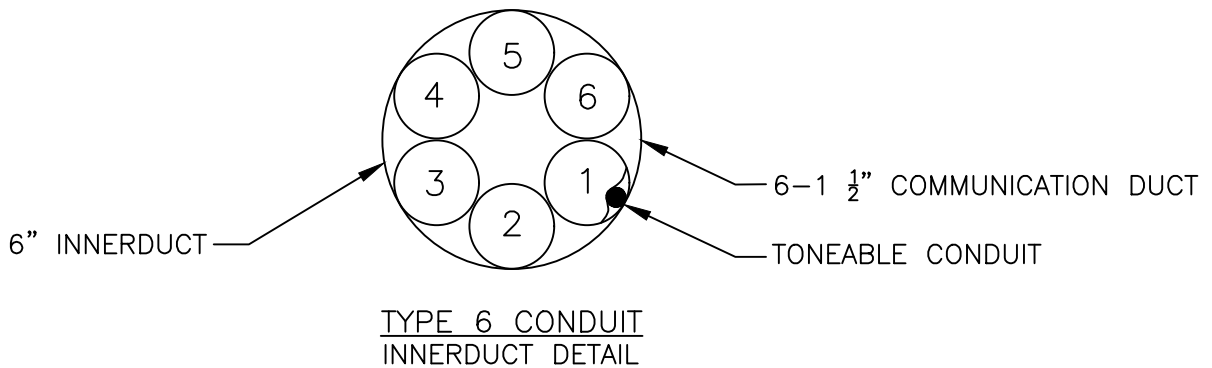
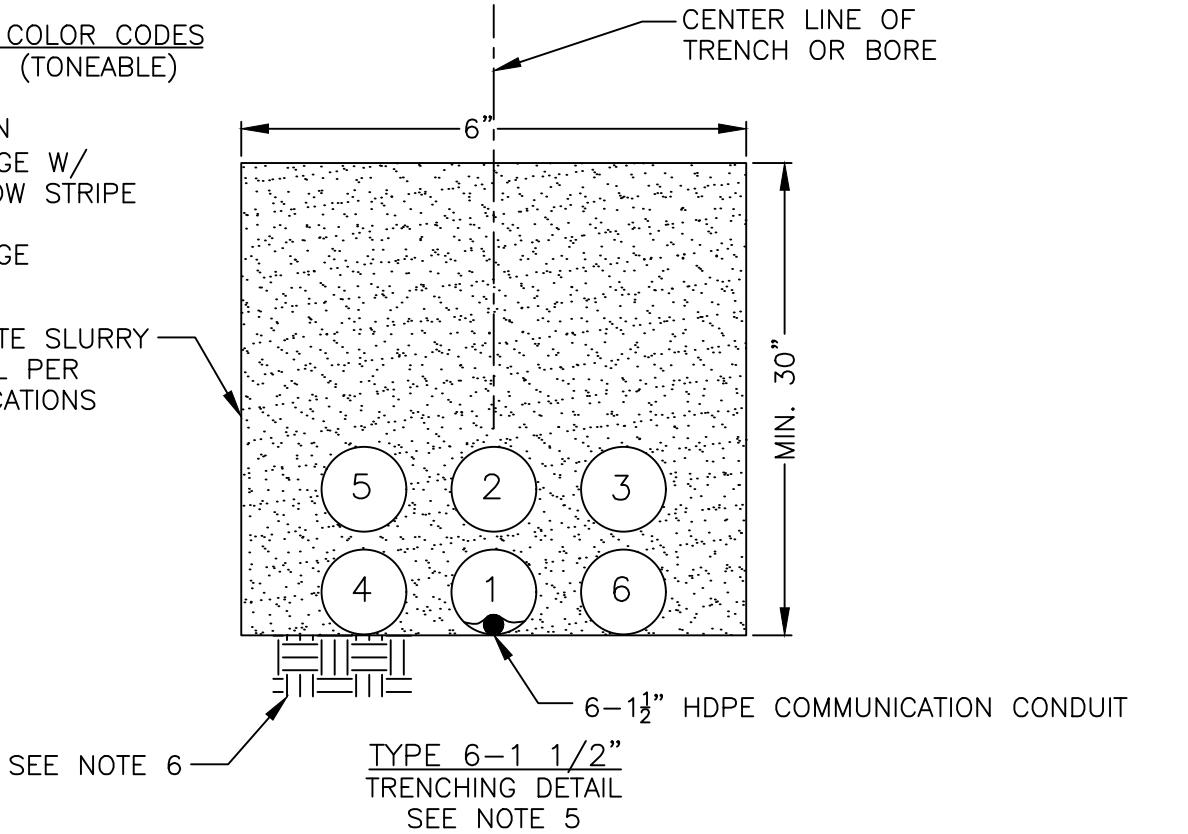
NOTES:

1. ALL CONDUIT SHALL BE SDR-11 HDPE COMMUNICATION.
2. ALL CONDUIT PLACEMENT SHALL BE PLACED PER CALIFORNIA GENERAL ORDER 128 (G.O.128).
3. ALL TRENCH OR BORING OF ITS CONDUIT SHALL HAVE ONE TONEABLE CONDUIT USED FOR TRACER.
4. CONDUITS SHALL BE WHITE, BLUE, GREEN, AND ORANGE W/YELLOW STRIPE AS NUMBERED ABOVE.
5. DIRECTIONAL BORING OPTIONAL.
6. REMOVE TRENCH SPOIL MATERIALS TO UNDISTURBED GROUND.
7. ALL CONDUITS SHALL CONTAIN CITY APPROVED PULL TAPE.

CONDUIT COLOR CODES

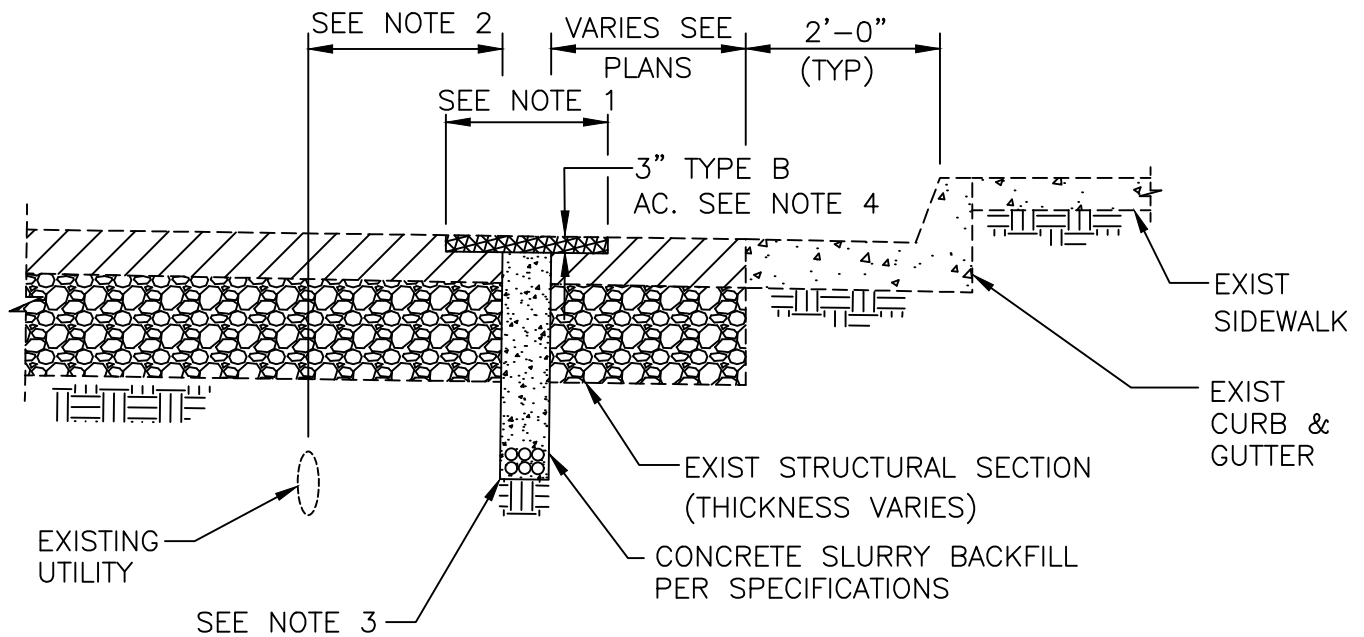
1. WHITE (TONEABLE)
2. BLUE
3. GREEN
4. ORANGE W/  
YELLOW STRIPE
5. RED
6. ORANGE

CONCRETE SLURRY  
BACKFILL PER  
SPECIFICATIONS



NOTES:

1. ALL CONDUIT SHALL BE SDR-11 HDPE COMMUNICATION.
2. ALL CONDUIT PLACEMENT SHALL BE PLACED PER CALIFORNIA GENERAL ORDER 128 (G.O.128).
3. ALL TRENCH OR BORING OF ITS CONDUIT SHALL HAVE ONE TONEABLE CONDUIT USED FOR TRACER.
4. CONDUITS SHALL BE WHITE, BLUE, GREEN, ORANGE W/YELLOW STRIPE, RED, AND ORANGE AS NUMBERED ABOVE.
5. DIRECTIONAL BORING OPTIONAL.
6. REMOVE TRENCH SPOIL MATERIALS TO UNDISTURBED GROUND.
7. ALL CONDUITS SHALL CONTAIN CITY APPROVED PULL TAPE.



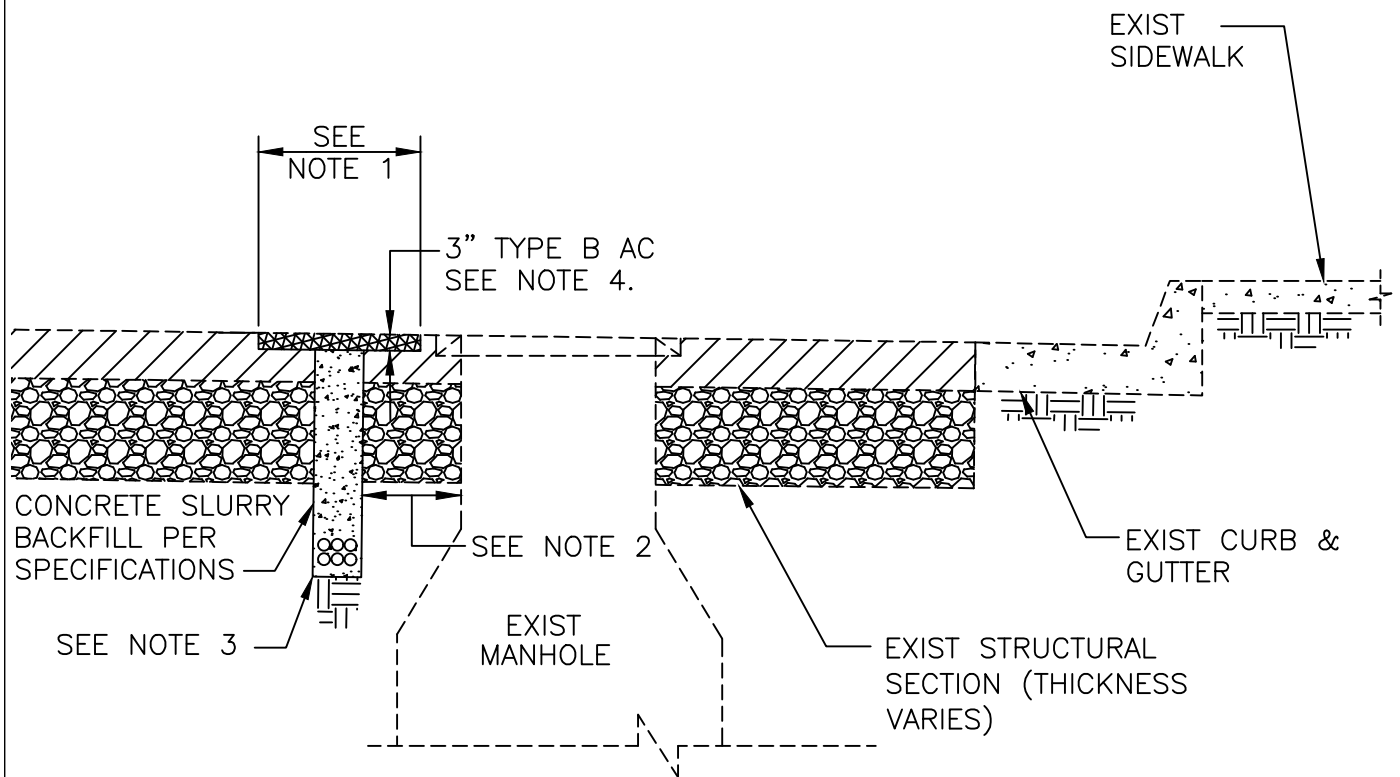
NOTES:

1. GRIND EXISTING PAVEMENT TO NEAT EDGE MINIMUM 20" WIDE.
2. CONTRACTOR SHALL ADJUST HORIZONTAL TRENCH ALIGNMENT TO AVOID EXISTING UTILITIES AS NECESSARY. VERIFY ALIGNMENT ADJUSTMENTS WITH CITY REPRESENTATIVE. MAINTAIN MIN 12" CLEARANCE FROM EXISTING UTILITIES AND OBSTRUCTIONS.
3. FOR ITS CONDUIT TRENCH DETAIL, SEE STD DWG ITS-4 AND ITS-5.
4. REPAVING OPERATIONS SHALL BE TO CITY STD SPECS AND DRAWINGS.

ITS CONDUIT TRENCH  
LAYOUT NO. 1

REF. & REV.  
FEB. 2008

CITY OF FRESNO  
ITS-6



NOTES:

1. GRIND EXISTING ASPHALT PAVEMENT TO NEAT EDGE MINIMUM 20" WIDE.
2. CONTRACTOR SHALL ADJUST HORIZONTAL TRENCH ALIGNMENT TO AVOID EXISTING UTILITIES AS NECESSARY. VERIFY ALIGNMENT ADJUSTMENTS WITH CITY REPRESENTATIVE. MAINTAIN MIN 12" CLEARANCE FROM EXISTING UTILITIES AND OBSTRUCTIONS.
3. FOR ITS CONDUIT TRENCH DETAIL, SEE STD DWG ITS-4 AND ITS-5.
4. REPAVING OPERATIONS SHALL BE TO CITY STD SPECS AND DRAWINGS.

ITS CONDUIT TRENCH  
LAYOUT NO. 2

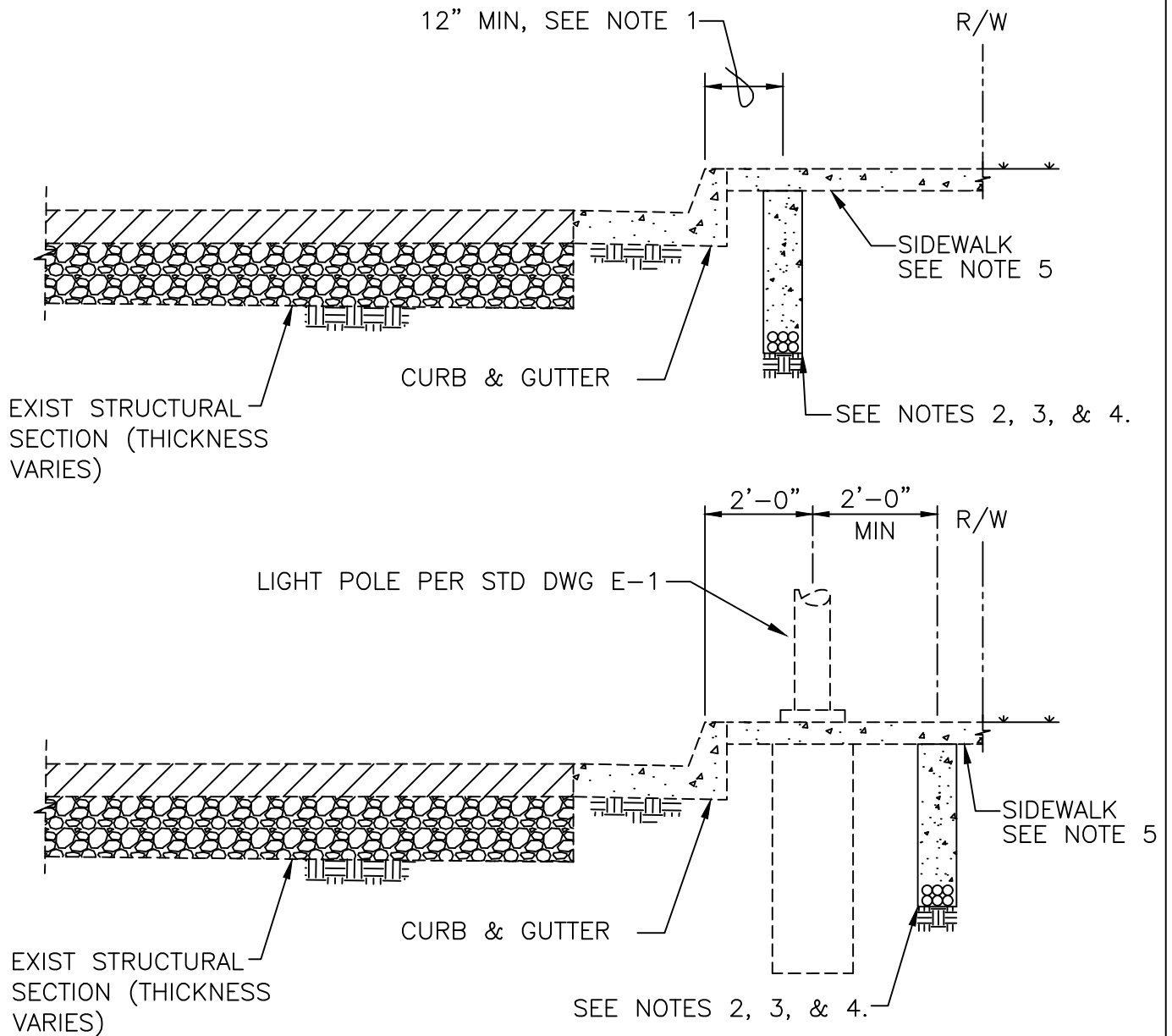
REF. & REV.  
FEB. 2008

CITY OF FRESNO  
ITS-7



NOTES:

1. LOCATE ITS TRENCH UNDER SIDEWALK TO AVOID EXISTING & PROPOSED UTILITIES.
2. TRENCH BEFORE INSTALLATION OF NEW SIDEWALK.
3. CONTRACTOR SHALL ADJUST HORIZONTAL TRENCH ALIGNMENT TO AVOID EXISTING UTILITIES AS NECESSARY. VERIFY ALIGNMENT ADJUSTMENTS WITH CITY REPRESENTATIVE.
4. FOR ITS CONDUIT TRENCH DETAIL, SEE STD DWG ITS-4 AND ITS-5.
5. DIRECTIONAL BORE OR REMOVE & REPLACE SIDEWALK (BETWEEN EXISITING JOINT) & TRENCH.
6. INSTALLATION OF ITS CONDUITS UNDER SIDEWALK SHALL ONLY BE ALLOWED WITH WRITTEN PERMISSION FROM THE CITY ENGINEER.



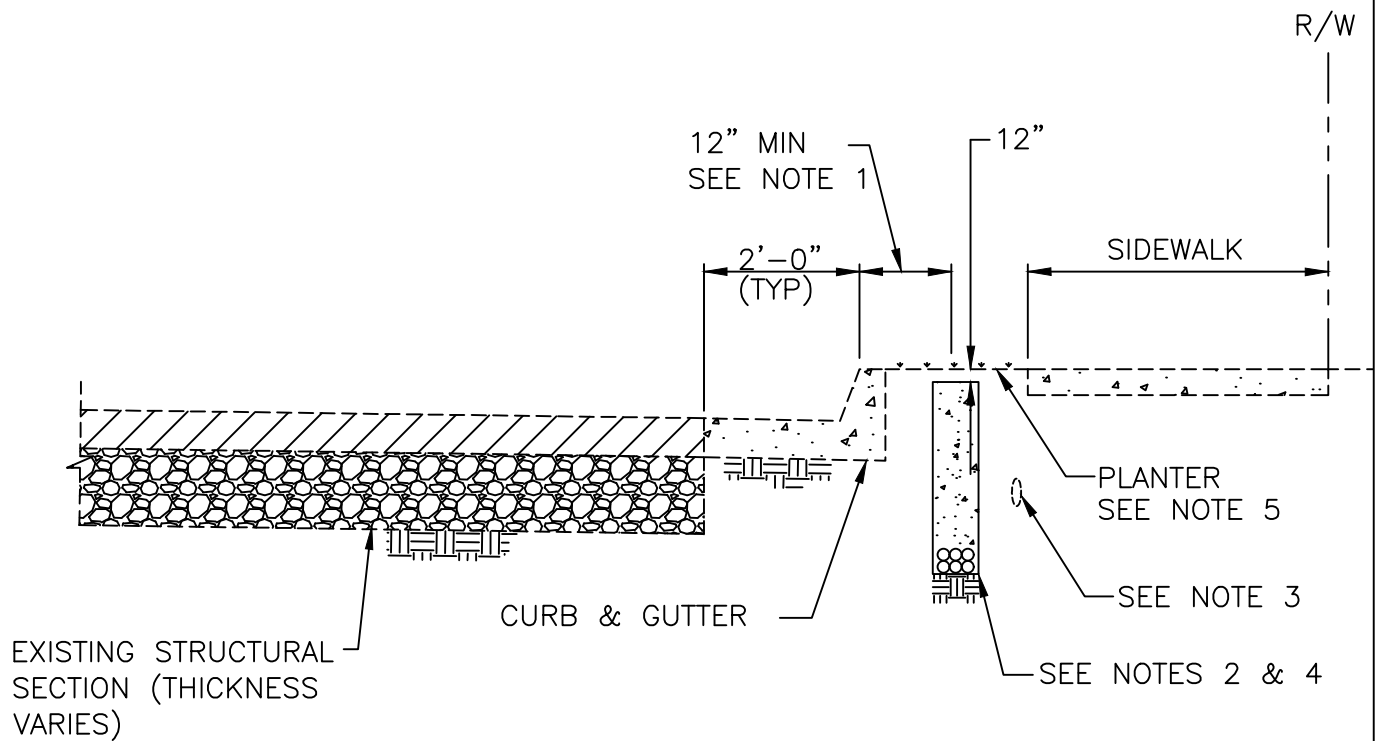
ITS CONDUIT TRENCH  
LAYOUT NO. 3

REF. & REV.  
FEB. 2008

CITY OF FRESNO  
ITS-8

NOTES:

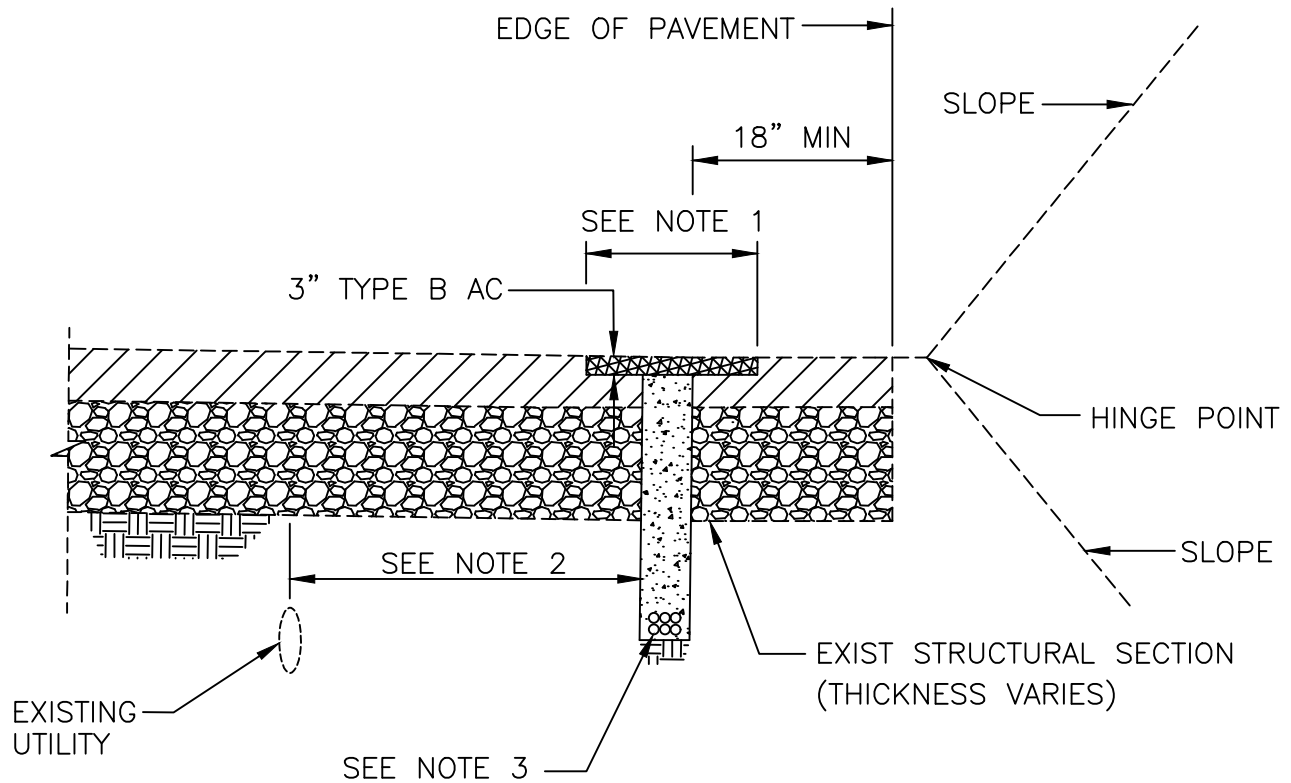
1. LOCATE ITS TRENCH UNDER PLANTER TO AVOID EXISTING & PROPOSED UTILITIES.
2. TRENCH BEFORE INSTALLATION OF LANDSCAPING IN NEW CONSTRUCTION.
3. CONTRACTOR SHALL ADJUST HORIZONTAL TRENCH ALIGNMENT TO AVOID EXISTING UTILITIES AS NECESSARY. VERIFY ALIGNMENT ADJUSTMENTS WITH CITY REPRESENTATIVE.
4. FOR ITS CONDUIT TRENCH DETAIL, SEE STD DWG ITS-4 AND ITS-5.
5. DIRECTIONAL BORE OR REMOVE & REPLACE IRRIGATION AND LANDSCAPING IN KIND.
6. INSTALLATION OF ITS CONDUITS IN PLANTER AREAS SHALL ONLY BE ALLOWED WITH WRITTEN PERMISSION FROM THE CITY ENGINEER.



ITS CONDUIT TRENCH  
LAYOUT NO. 4

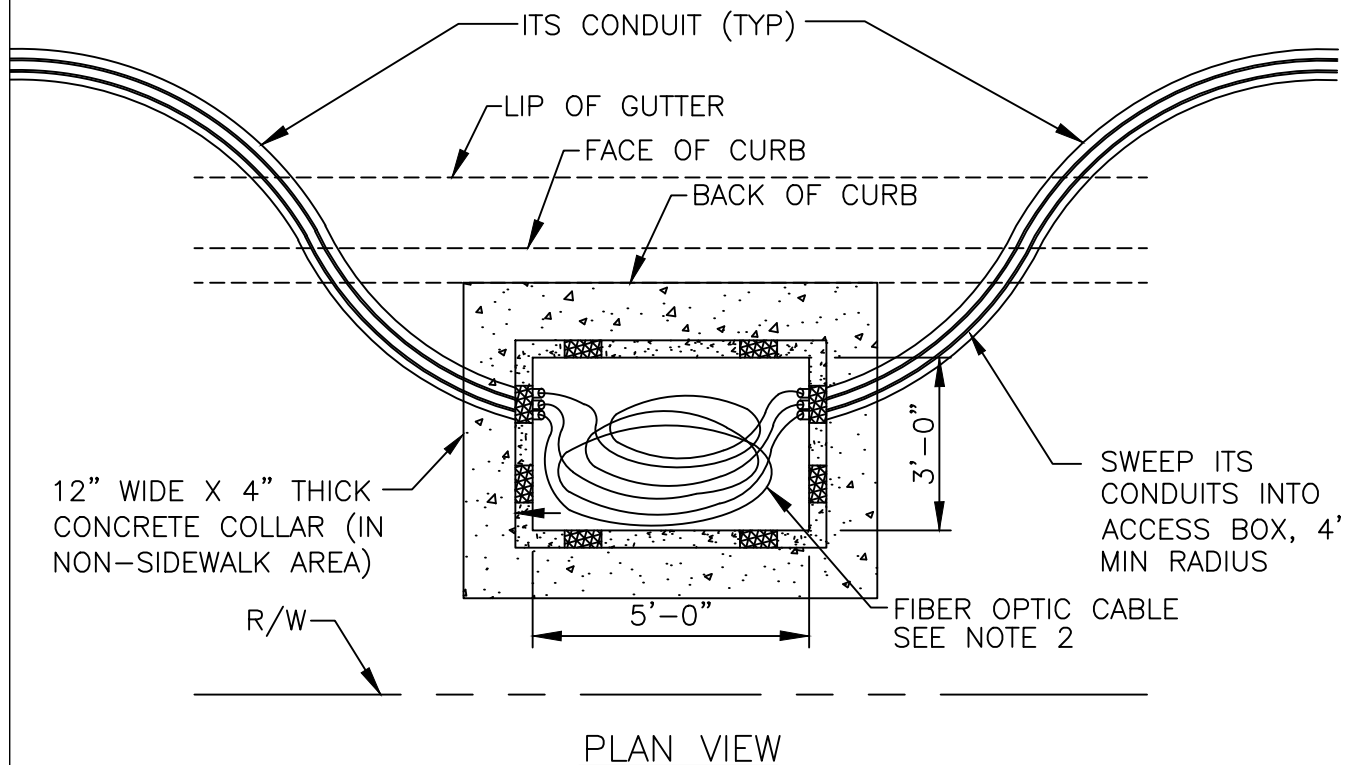
REF. & REV.  
FEB. 2008

CITY OF FRESNO  
ITS-9



NOTES:

1. GRIND EXISTING ASPHALT PAVEMENT TO NEAT EDGE MINIMUM 20" WIDE.
2. CONTRACTOR SHALL ADJUST HORIZONTAL TRENCH ALIGNMENT TO AVOID EXISTING UTILITIES AS NECESSARY. VERIFY ALIGNMENT ADJUSTMENTS WITH CITY REPRESENTATIVE. MAINTAIN MIN 12" CLEARANCE FROM EXISTING UTILITIES AND OBSTRUCTIONS.
3. FOR ITS CONDUIT TRENCH DETAIL, SEE STD DWG ITS-4 AND ITS-5.
4. REPAVING OPERATIONS SHALL BE TO CITY STD SPECS AND DRAWINGS.



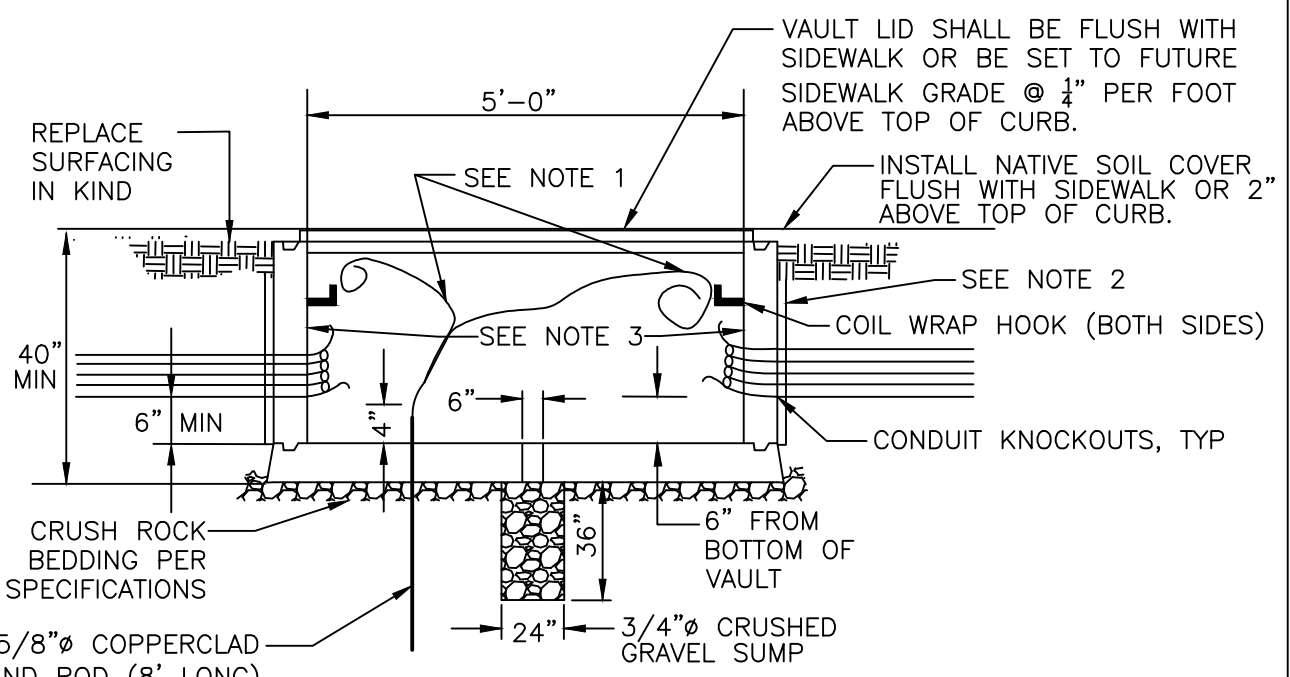
NOTES:

1. TOP THREE CONDUITS NOT SHOWN FOR CLARITY.
2. COIL APPROXIMATELY 150 FEET (OR AS NOTED ON PLANS) OF FIBER OPTIC CABLE AROUND INSIDE BASE OF COMMUNICATIONS VAULT VERTICALLY WITH A MINIMUM RADIUS OF 32". (ATTACH TO HOLD DOWNS WITH METAL TIE WRAPS) PER SPECIFICATIONS.
3. 90° CONDUIT ENTRIES ARE NOT ALLOWED. CONDUIT SHALL BE DIRECTLY ACROSS FROM ADJACENT CONDUITS.
4. LABEL ALL CABLE IN PULL BOX & SERVICE BOX.
5. VAULT SHALL HAVE A TORSION SUSPENDED & SPRING LOADED LID WITH TWO HOLDUP BRACING BARS.
6. VAULTS SHALL INCLUDE BOLT DOWN LIDS.
7. LABELING ON LID SHALL READ "ITS COMMUNICATIONS".
8. VAULTS SHALL BE PER CURRENT CITY OF FRESNO QUALIFIED PRODUCTS LIST (QPL).
9. FOR ADDITIONAL 3' X 5' VAULT DETAILS, SEE STD PLAN ITS-12.

ITS 3' X 5' VAULT  
DETAILS NO. 1

REF. & REV.  
JULY 2011

CITY OF FRESNO  
ITS-11

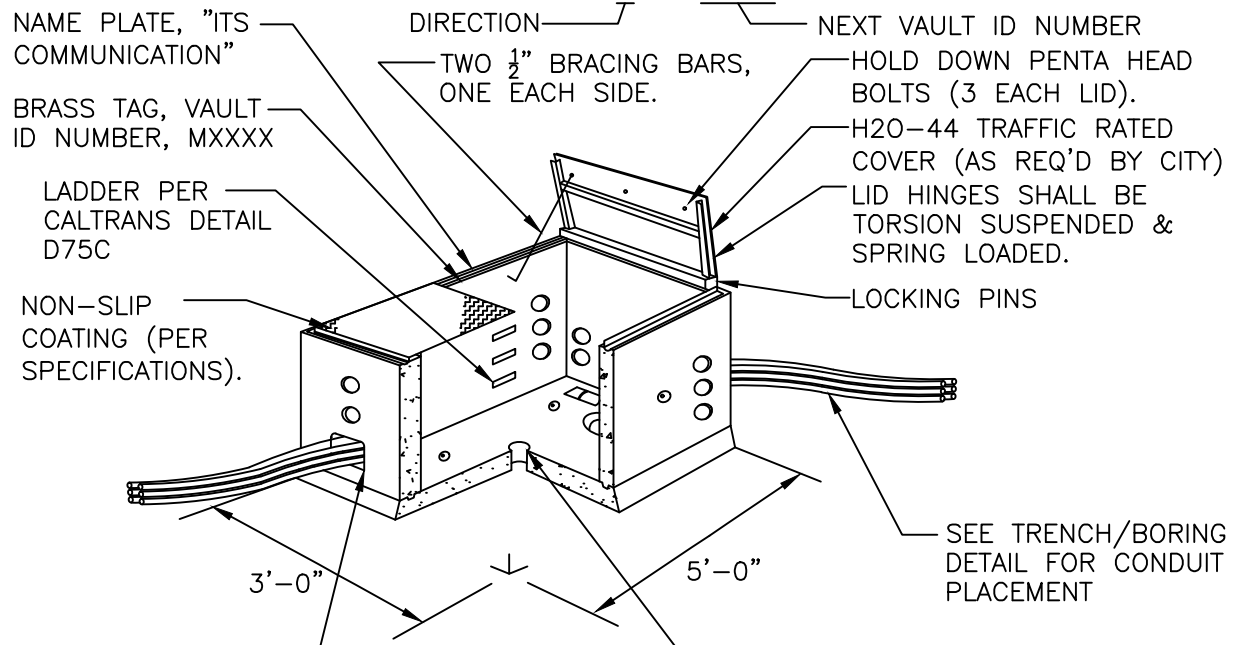


ELEVATION VIEW

5/8"Ø COPPERCLAD GROUND ROD (8' LONG) W/ 10 GA STRANDED WIRE & ACORN CONNECTOR (OR APPROVED EQUAL).

NOTES:

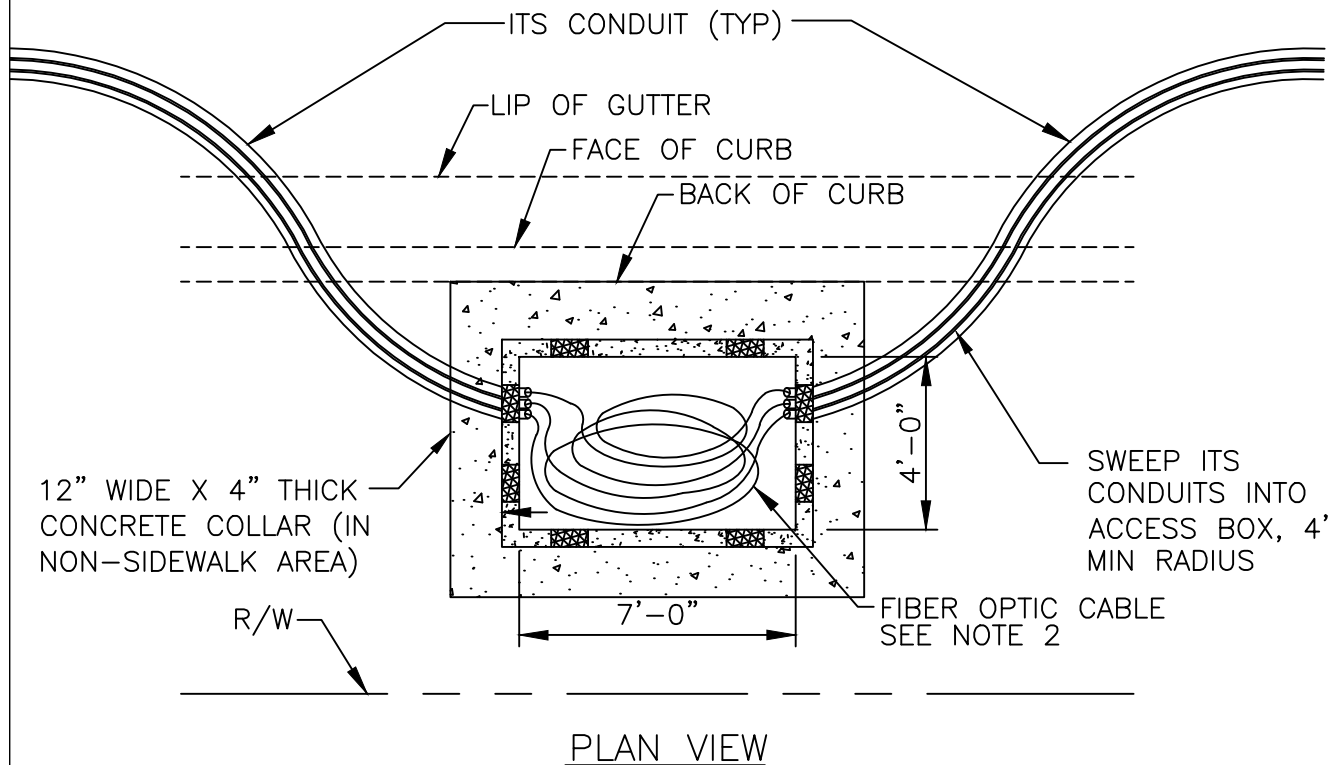
1. INSTALL COMMUNICATIONS BELLS ON CONDUIT ENDS & CONNECT TONEABLE CONDUIT TO GROUNDING ROD.
2. WRAP VAULT WITH BUILDING PAPER PER SPECIFICATIONS BEFORE BACKFILLING.
3. ALL CONDUITS INSTALLED SHALL BE LABELED WITH DIRECTION BRASS TAG DIRECTLY ABOVE CONDUITS. EXAMPLE: N TO IXXXX



3-D VIEW

PENETRATE VAULT THROUGH LOWEST KNOCKOUTS OR AS DIRECTED BY CITY ENGINEER

ALL VAULTS SHALL HAVE A 6"Ø DRAIN HOLE. ALL DRAIN HOLES SHALL BE OPEN FOR DRAINAGE.



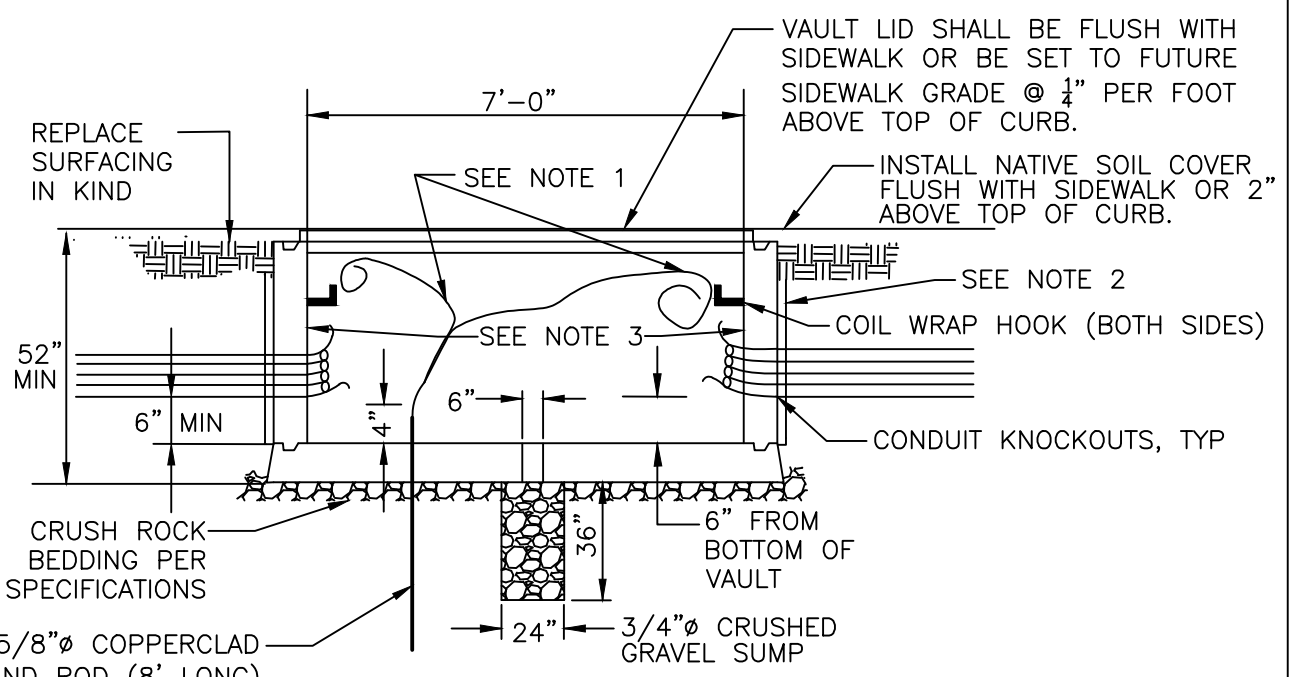
NOTES:

1. TOP THREE CONDUITS NOT SHOWN FOR CLARITY.
2. COIL APPROXIMATELY 300 FEET (OR AS NOTED ON PLANS) OF FIBER OPTIC CABLE AROUND INSIDE BASE OF COMMUNICATIONS VAULT VERTICALLY WITH A MINIMUM RADIUS OF 32". (ATTACH TO HOLD DOWNS WITH METAL TIE WRAPS) PER SPECIFICATIONS.
3. 90° CONDUIT ENTRIES ARE NOT ALLOWED. CONDUIT SHALL BE DIRECTLY ACROSS FROM ADJACENT CONDUITS.
4. LABEL ALL CABLE IN PULL BOX & SERVICE BOX.
5. VAULT SHALL HAVE A TORSION SUSPENDED & SPRING LOADED LID WITH TWO HOLDUP BRACING BARS.
6. VAULTS SHALL INCLUDE BOLT DOWN LIDS.
7. LABELING ON LID SHALL READ "ITS COMMUNICATIONS".
8. VAULTS SHALL BE PER CURRENT CITY OF FRESNO QUALIFIED PRODUCTS LIST (QPL).
9. FOR ADDITIONAL 4' X 7' VAULT DETAILS, SEE STD PLAN ITS-14.

ITS 4' X 7' VAULT  
DETAILS NO. 1

REF. & REV.  
JULY 2011

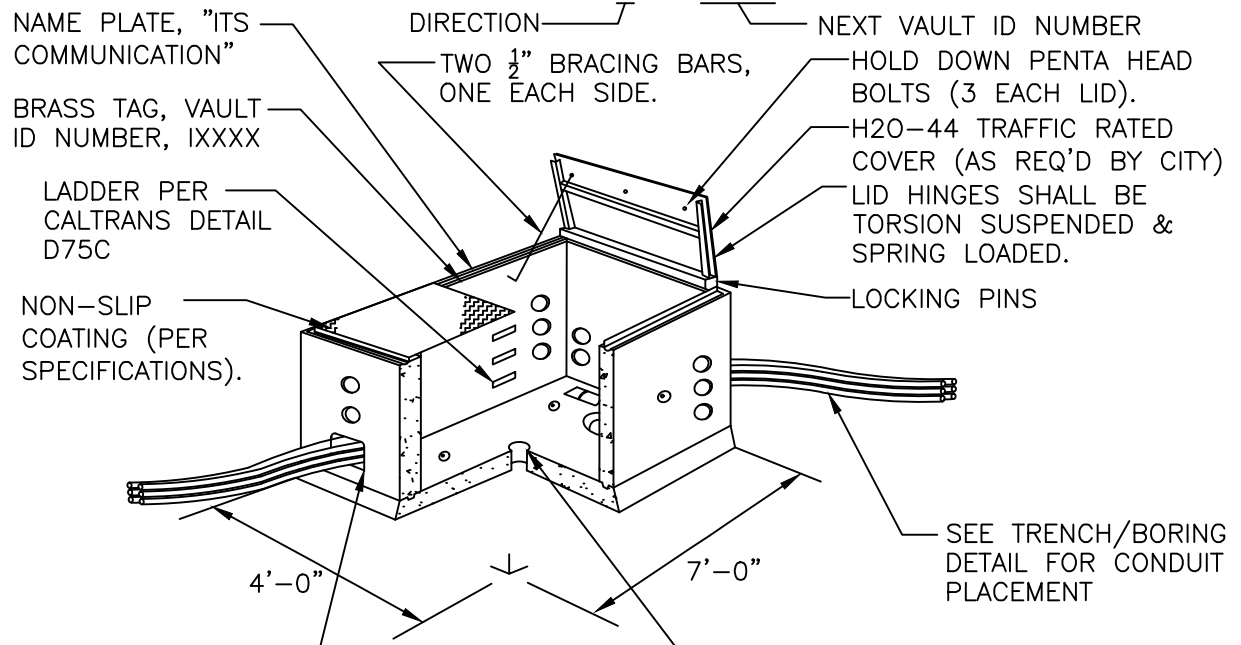
CITY OF FRESNO  
ITS-13



ELEVATION VIEW

NOTES:

1. INSTALL COMMUNICATIONS BELLS ON CONDUIT ENDS & CONNECT TONEABLE CONDUIT TO GROUNDING ROD.
2. WRAP VAULT WITH BUILDING PAPER PER SPECIFICATIONS BEFORE BACKFILLING.
3. ALL CONDUITS INSTALLED SHALL BE LABELED WITH DIRECTION BRASS TAG DIRECTLY ABOVE CONDUITS. EXAMPLE: N TO IXXXX



3-D VIEW

PENETRATE VAULT THROUGH LOWEST KNOCKOUTS OR AS DIRECTED BY CITY ENGINEER

ALL VAULTS SHALL HAVE A 6"Ø DRAIN HOLE. ALL DRAIN HOLES SHALL BE OPEN FOR DRAINAGE.

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

REF. & REV.  
~~FEB. 2008~~  
MAR. 2021 (A.7)

CITY OF FRESNO  
ITS-15



THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

REF. & REV.  
FEB. 2008  
MAR. 2021 (A.7)

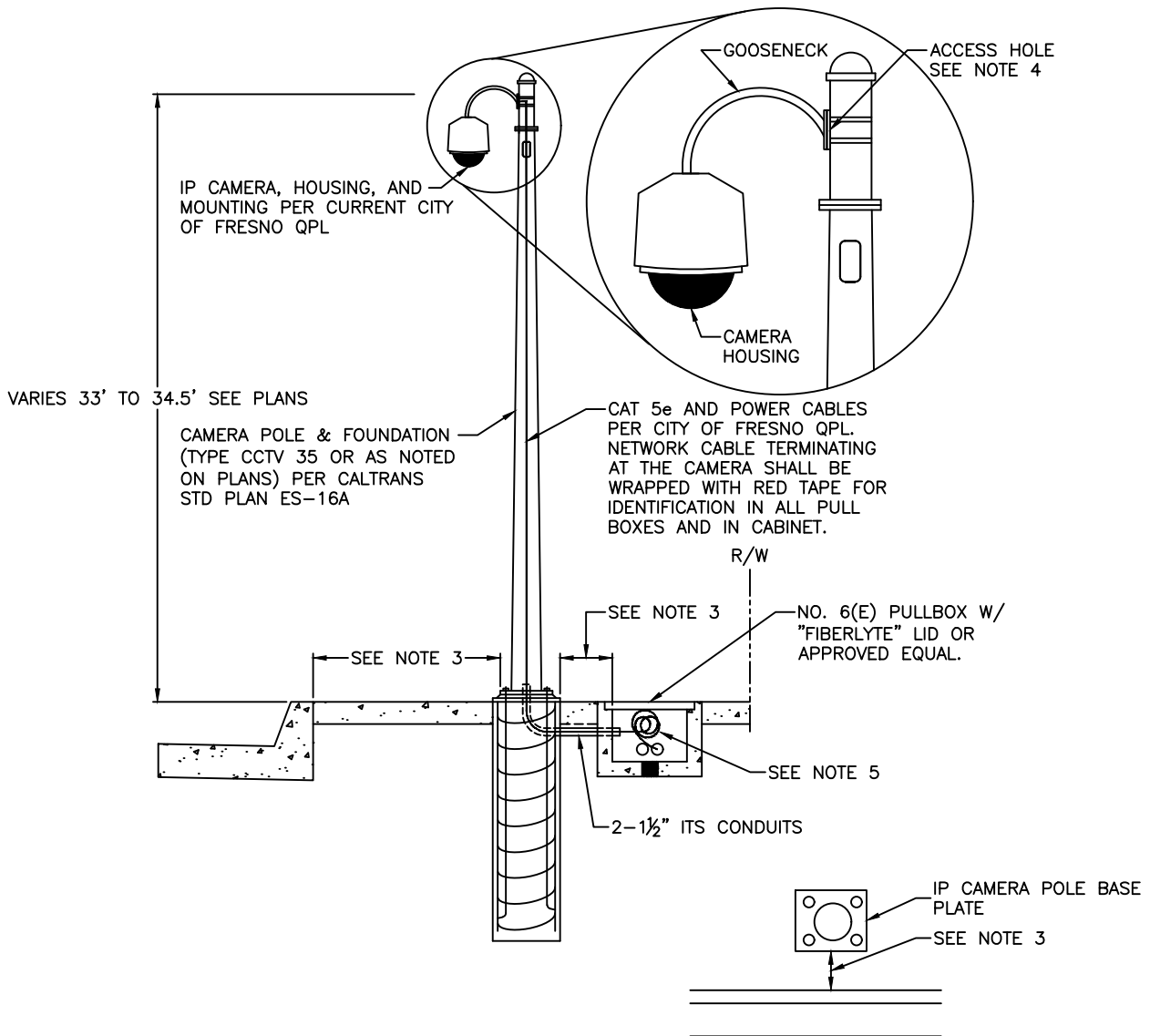
CITY OF FRESNO  
ITS-16

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

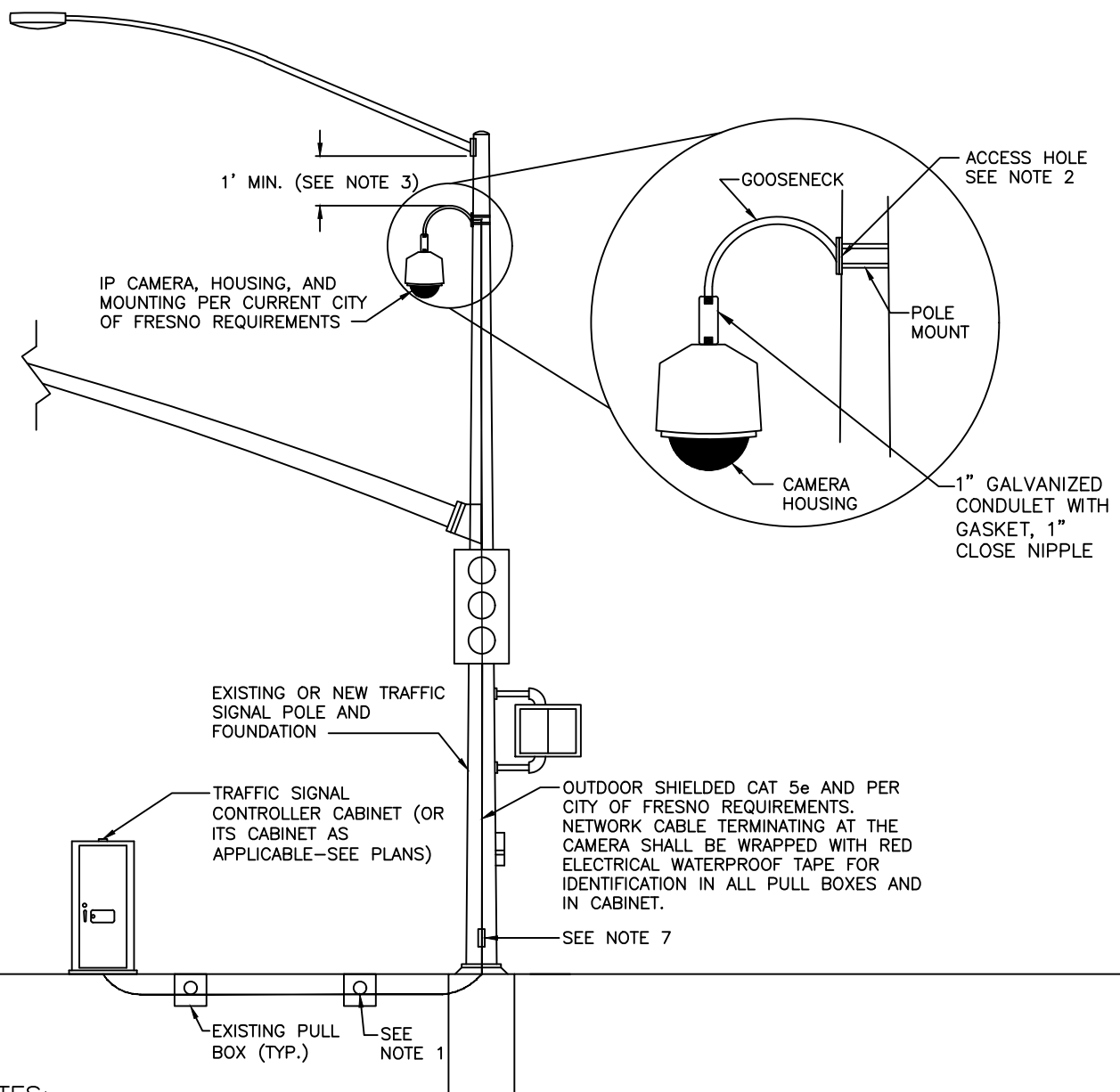
REF. & REV.  
~~FEB. 2008~~  
MAR. 2021 (A.7)

CITY OF FRESNO  
ITS-17



**NOTES:**

1. THE CONTRACTOR SHALL VERIFY EXISTING UTILITY LOCATIONS, IDENTIFYING POTENTIAL CONFLICTS BEFORE ORDERING OR FABRICATING ANY MATERIAL.
2. DURING POLE ERECTION, THE POST SHALL BE RAKED AS NECESSARY WITH THE USE OF LEVELING NUTS TO PROVIDE A PLUMB POLE AXIS.
3. ALIGN SIDE OF POLE BASE PLATE PARALLEL WITH CURB FACE. 1' MINIMUM & 3' MAXIMUM SETBACK. IF CURB & GUTTER DOESN'T EXIST, ALIGN BASE PLATE PER CITY ENGINEER. MAINTAIN MINIMUM 4' ADA CLEARANCES.
4. DRILL MAX 3/4" BEVELED HOLE. GROMMET SHALL FORM A TIGHT SEAL BETWEEN POLE AND CABLE.
5. COIL APPROXIMATELY 2' MAXIMUM OF CAT 5e AND POWER CABLES INSIDE BASE OF PULLBOX.



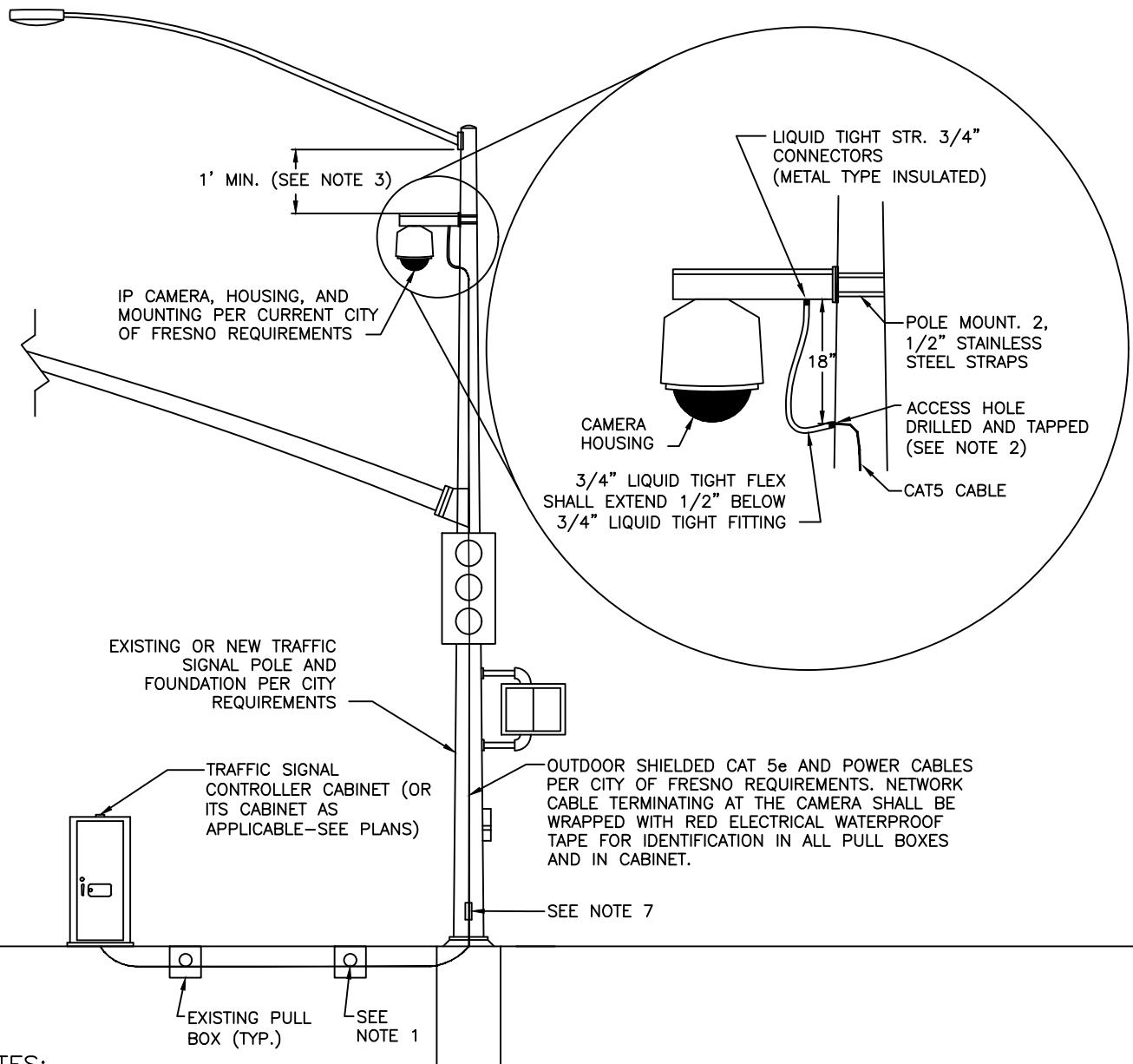
**NOTES:**

1. EXTEND CABLES THROUGH TRAFFIC SIGNAL CONDUIT AND PULL BOXES. COIL MAX. 2' OF SLACK IN EACH PULL BOX. NETWORK CABLE TERMINATING AT THE CAMERA SHALL BE WRAPPED WITH RED ELECTRICAL WATERPROOF TAPE FOR IDENTIFICATION IN ALL PULL BOXES AND IN CABINET.
2. DRILL MAX 3/4" BEVELED HOLE. USE RUBBER GROMMET TO SEAL.
3. CAMERA SHALL BE MOUNTED TO ATTAIN MAXIMUM HEIGHT UNLESS OTHERWISE NOTED ON PLANS, OR DIRECTED BY ENGINEER.
4. CAMERA SHALL BE MOUNTED WITH BRACKET AND CAMERA HOUSING FACING CENTER OF INTERSECTION OR AS DIRECTED BY ENGINEER.
5. BOND ALL CONNECTIONS PER CURRENT NEC STANDARD.
6. SHIELDED AND APPROVED RJ-45 CONNECTOR SHALL BE USED FOR GROUNDING TO OUTDOOR SHIELDED CAT5e CABLE.
7. POLE HAND HOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK ON EXISTING POLE IS COMPLETED AND INSPECTED. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING.

**TRAFFIC SIGNAL MOUNTED IP  
CAMERA (GOOSENECK)**

REF. & REV.  
JUNE 2015

**CITY OF FRESNO  
ITS-18A**



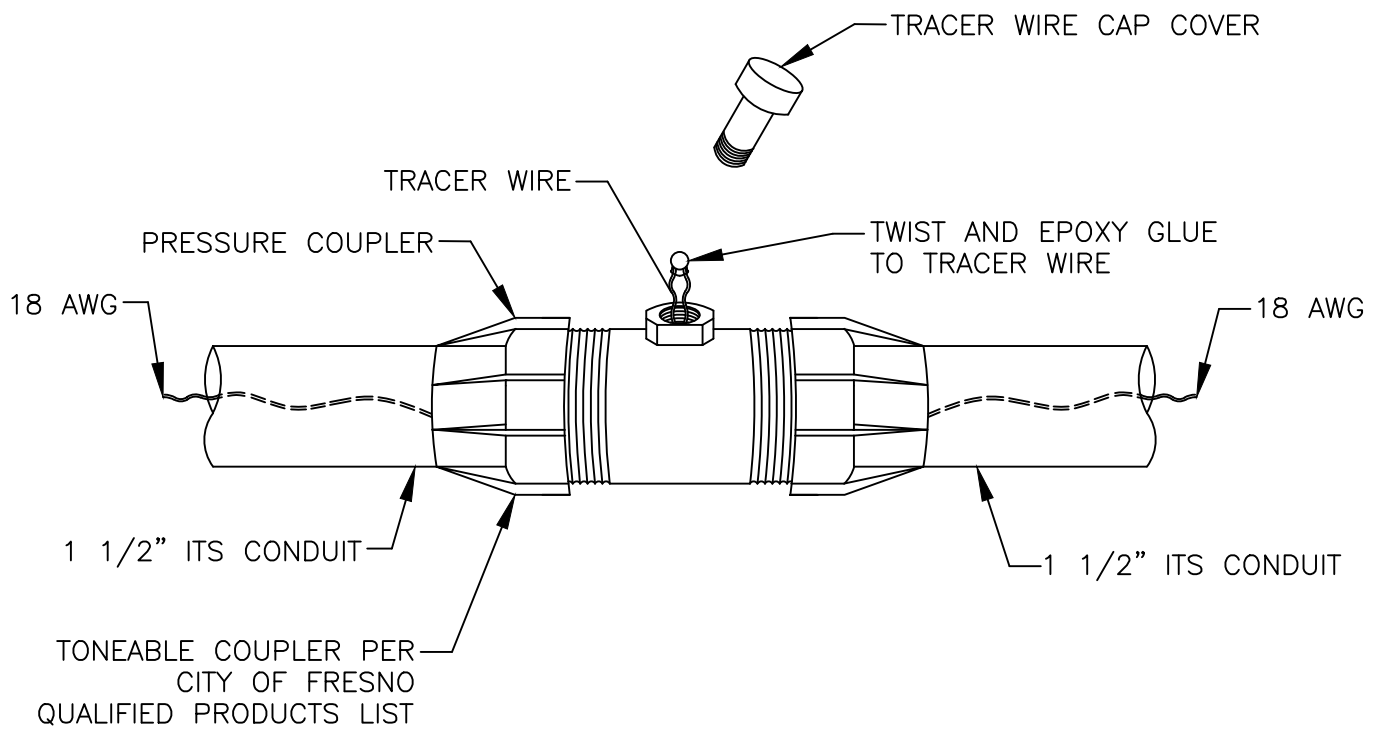
**NOTES:**

1. EXTEND CABLES THROUGH TRAFFIC SIGNAL CONDUIT AND PULL BOXES. COIL MAX. 2' OF SLACK IN EACH PULL BOX. NETWORK CABLE TERMINATING AT THE CAMERA SHALL BE WRAPPED WITH RED ELECTRICAL WATERPROOF TAPE FOR IDENTIFICATION IN ALL PULL BOXES AND IN CABINET.
2. DRILL MAX  $\frac{3}{4}$ " BEVELED HOLE. WEATHERPROOF FLEX CONDUIT CONNECTOR SHALL BE THREADED INTO POLE.
3. CAMERA SHALL BE MOUNTED TO ATTAIN MAXIMUM HEIGHT UNLESS OTHERWISE NOTED ON PLANS, OR DIRECTED BY ENGINEER.
4. CAMERA SHALL BE MOUNTED WITH BRACKET AND CAMERA HOUSING FACING CENTER OF INTERSECTION OR AS DIRECTED BY ENGINEER.
5. BOND ALL CONNECTIONS PER CURRENT NEC STANDARD.
6. APPROVED AND SHIELDED RJ-45 CONNECTOR SHALL BE USED FOR GROUNDING TO OUTDOOR SHIELDED CAT5e CABLE.
7. POLE HAND HOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK ON EXISTING POLE IS COMPLETED AND INSPECTED. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING.

**TRAFFIC SIGNAL MOUNTED IP  
CAMERA**

REF. & REV.  
JUNE 2015

**CITY OF FRESNO  
ITS-18B**



NOTES:

1. ALL COUPLER TRACER CAPS SHALL BE SEALED W/ WATER PROOF SEALER (SCOTCHCOAT) OR APPROVED EQUAL.

THIS STANDARD IS  
NO LONGER USED

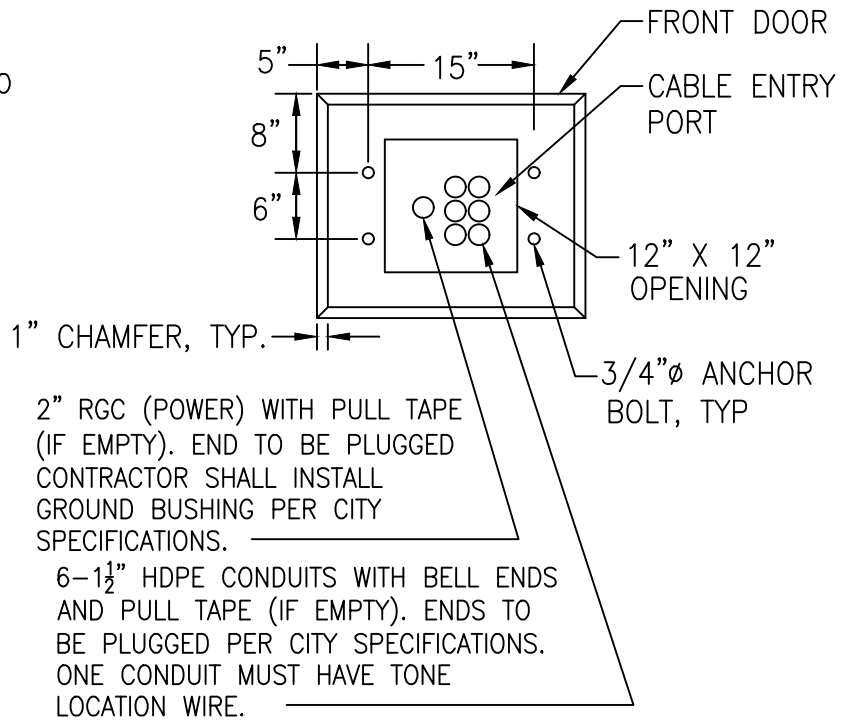
NO LONGER USED

REF. & REV.  
~~JULY 2011~~  
MAR. 2021 (A.7)

CITY OF FRESNO  
ITS-20

**NOTES:**

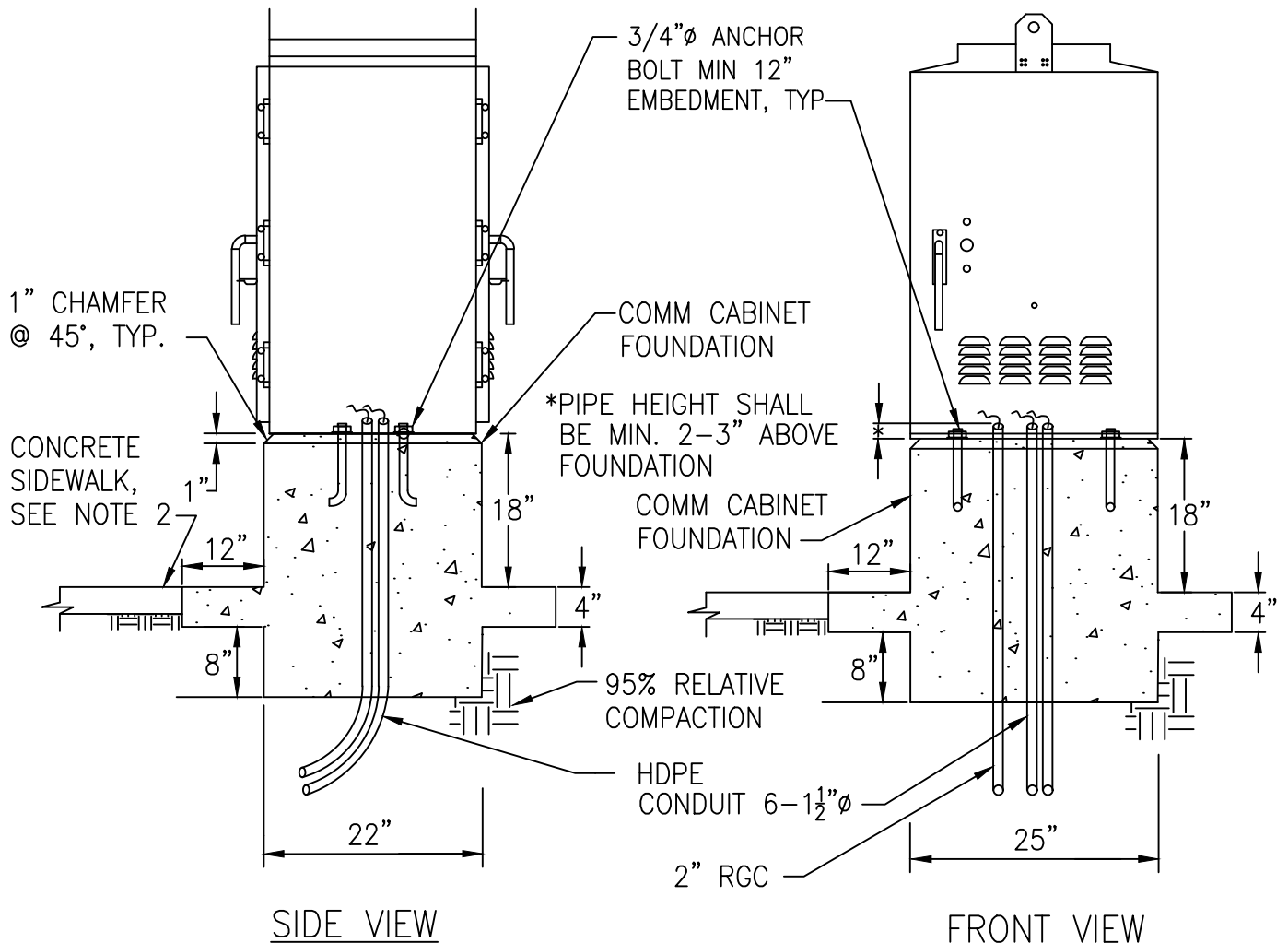
1. INSPECTOR SHALL APPROVE FORMS AND CONDUIT PLACEMENT PRIOR TO PLACING CONCRETE.
2. CONSTRUCT MINIMUM 36"X36"X4" CONCRETE MAINTENANCE PAD AT FRONT AND BACK DOORS IF NO SIDEWALK EXISTS.
3. MAINTAIN WORKING CLEARANCES PER NEC.
4. BOND PER CURRENT NEC STANDARD.
5. BOND ALL CONDUIT PER NEC STANDARDS USE #6 SOLID BARE COPPER FOR BONDING.
6. DOORS SHALL HAVE 4' WORKING CLEARANCE.
7. FINISH SHALL BE ANODIZED PER CITY OF FRESNO REQUIREMENTS.
8. CABINET BASE SHALL NOT BE MODIFIED FOR INSTALLATION.



2" RGC (POWER) WITH PULL TAPE (IF EMPTY). END TO BE PLUGGED CONTRACTOR SHALL INSTALL GROUND BUSHING PER CITY SPECIFICATIONS.

6-1 1/2" HDPE CONDUITS WITH BELL ENDS AND PULL TAPE (IF EMPTY). ENDS TO BE PLUGGED PER CITY SPECIFICATIONS. ONE CONDUIT MUST HAVE TONE LOCATION WIRE.

PLAN VIEW



SIDE VIEW

FRONT VIEW

MODEL 336 COMMUNICATION  
CABINET DETAILS

REF. & REV.  
JUNE 2015

CITY OF FRESNO  
ITS-20A



THIS STANDARD IS  
NO LONGER USED

NO LONGER USED

REF. & REV.  
~~JULY 2011~~  
MAR. 2021 (A.7)

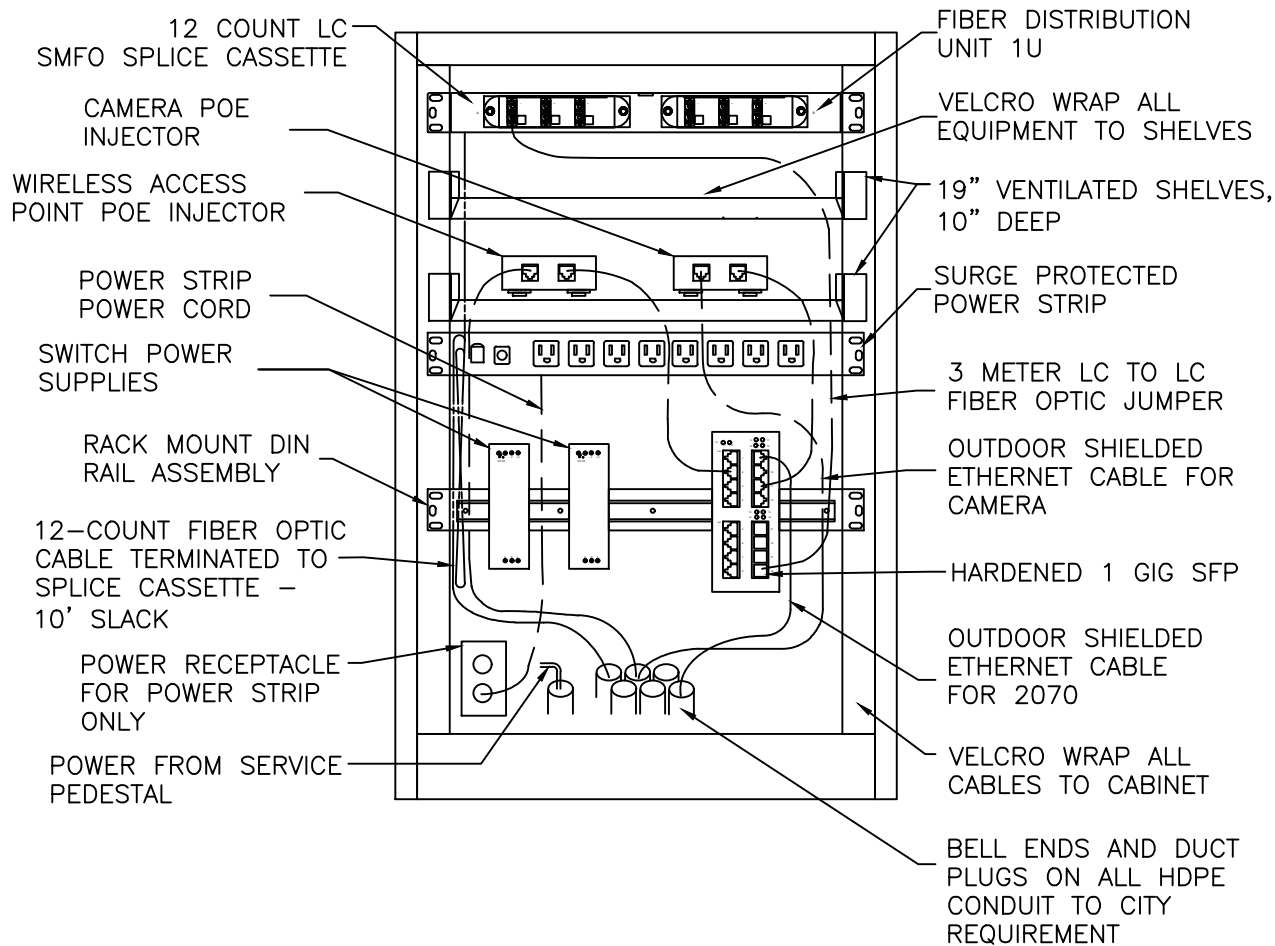
CITY OF FRESNO  
ITS-21

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NO LONGER USED

NO LONGER USED

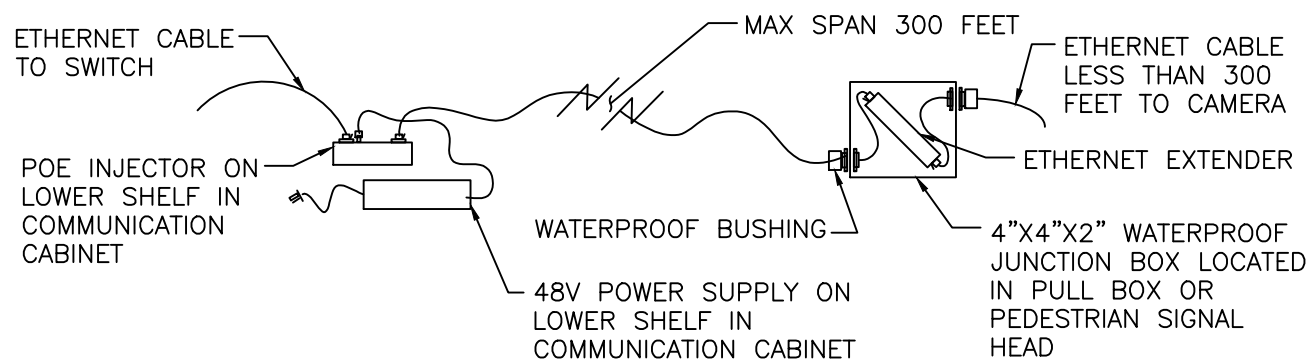
REF. & REV.  
JUNE 2015

CITY OF FRESNO  
ITS-21A



**NOTE:**  
 MINIMUM 4" VERTICAL SPACING ABOVE 19" SHELF

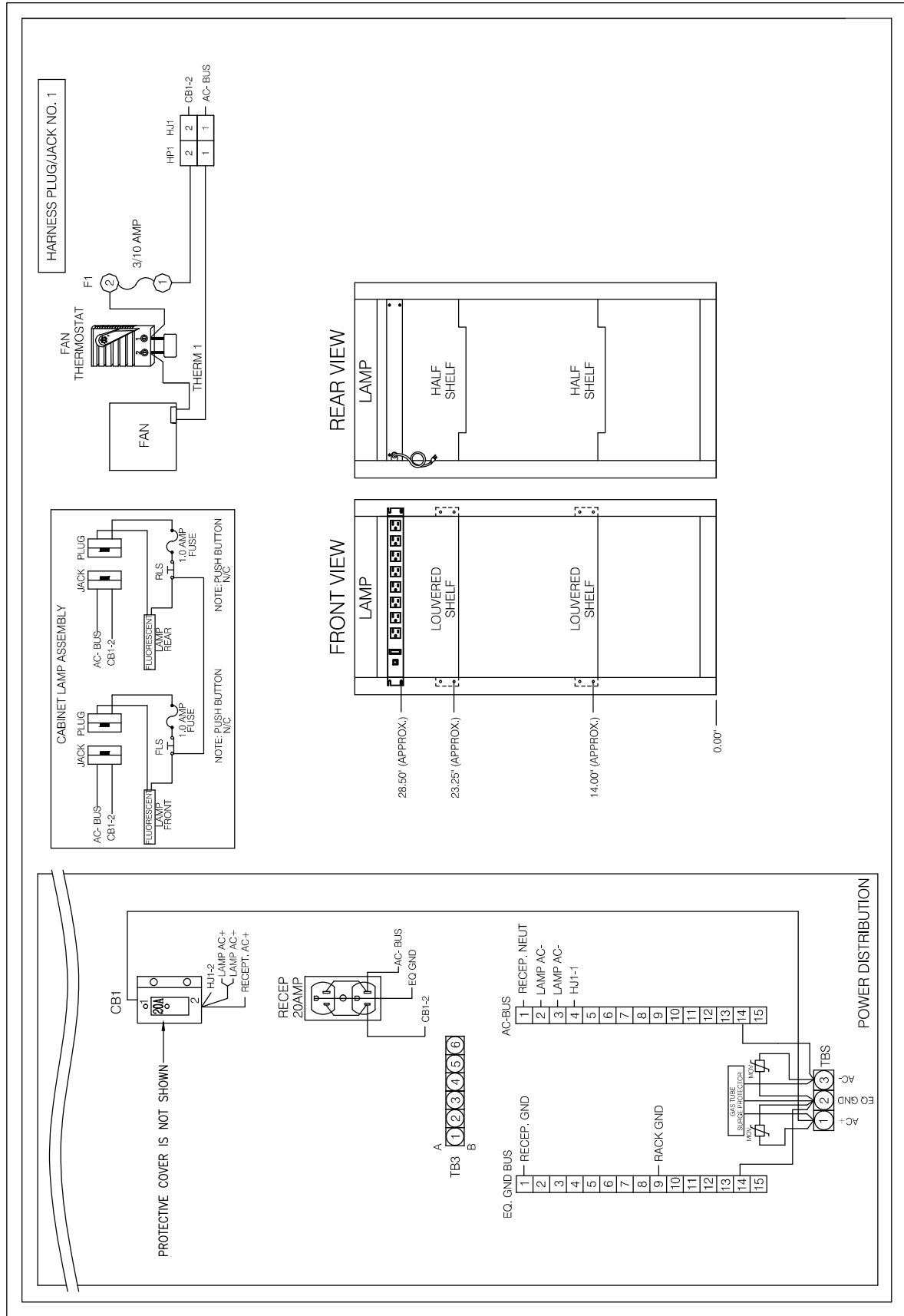
(ONLY FOR ETHERNET RUNS LONGER THAN 300')  
ETHERNET EXTENDER FOR CAMERA



# 336 COMMUNICATION CABINET WIRING DIAGRAM, 1 OF 2

REF. & REV.  
JUNE 2015

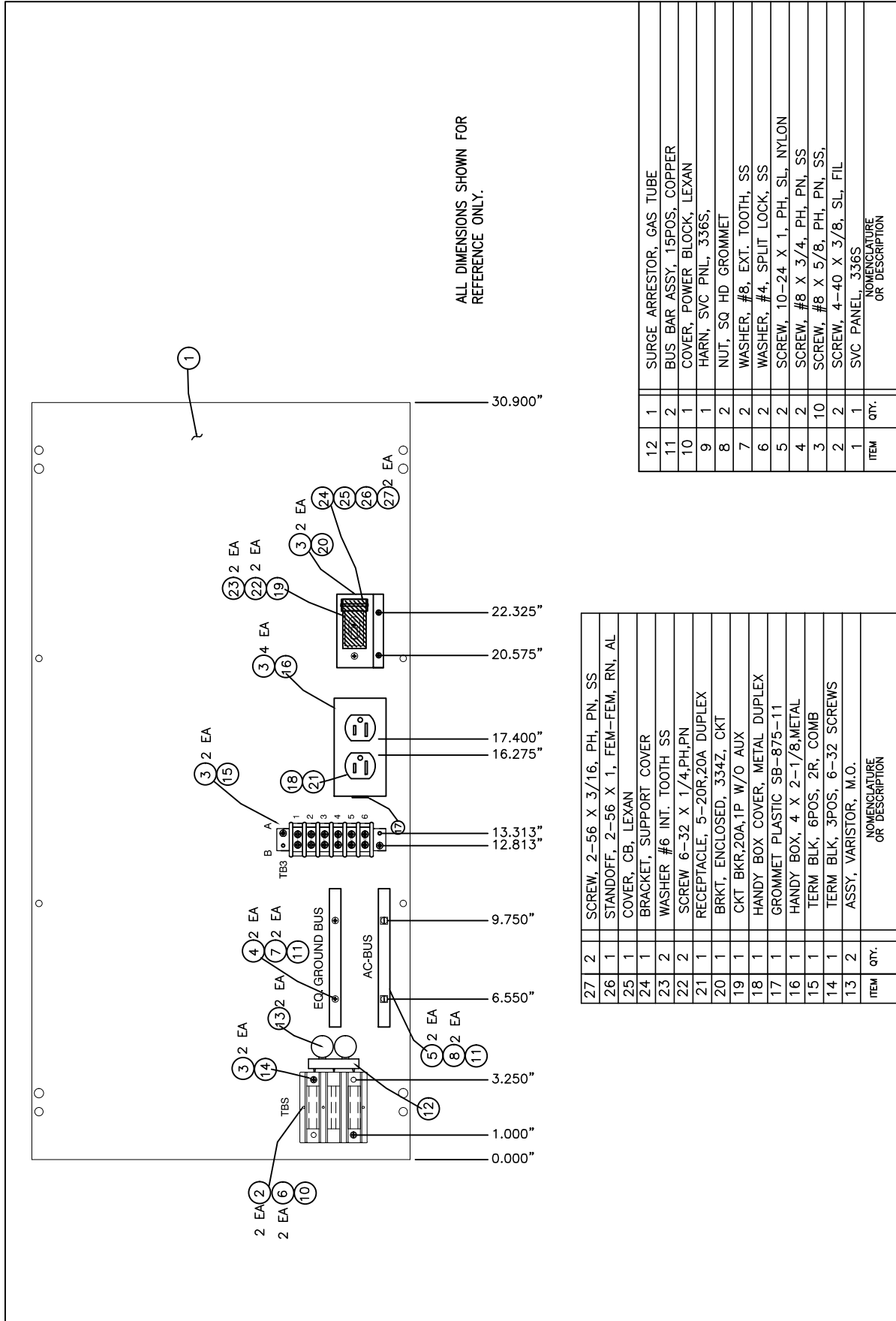
CITY OF FRESNO  
ITS-21C



# MODEL 336 COMMUNICATION CABINET POWER DISTRIBUTION, 2 OF 2

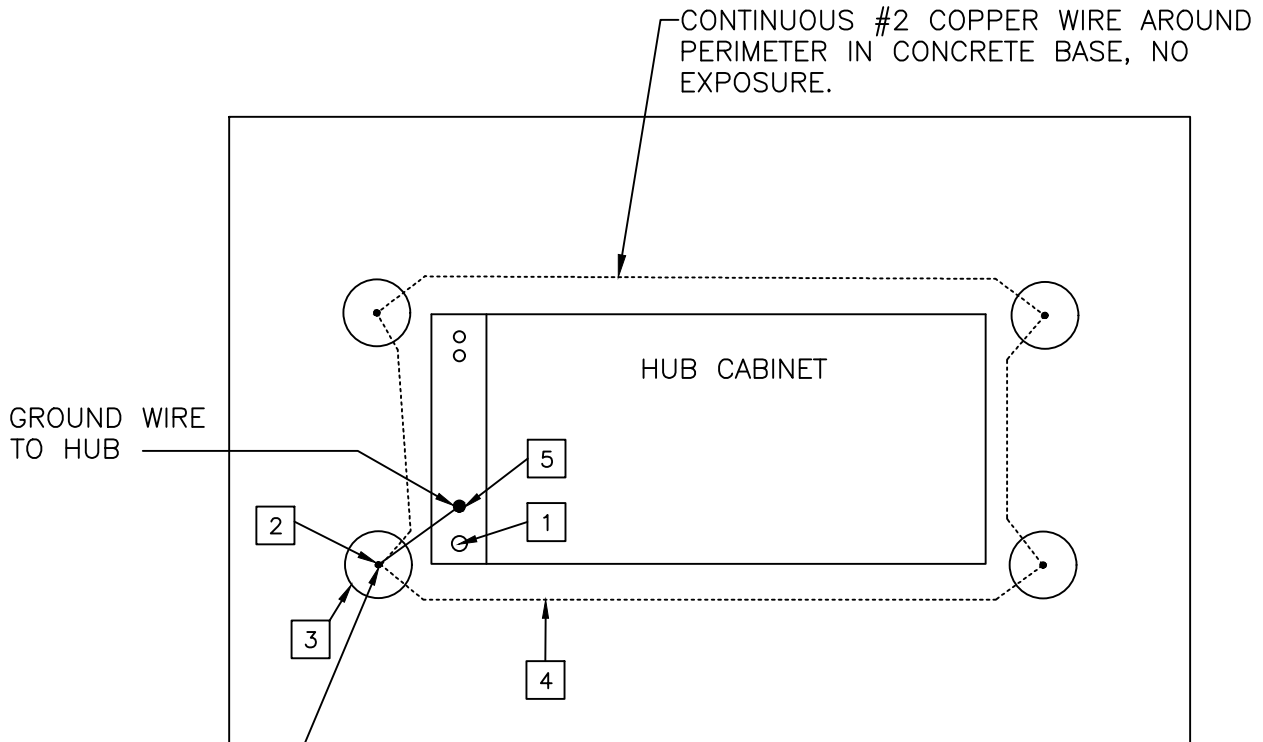
REF. & REV.  
JUNE 2015

CITY OF FRESNO  
ITS-21D



ITEM	QTY.	NOMENCLATURE OR DESCRIPTION
27	2	SCREW, 2-56 X 3/16, PH, PN, SS
26	1	STANDOFF, 2-56 X 1, FEM-FEM, RN, AL
25	1	COVER, CB, LEXAN
24	1	BRACKET, SUPPORT COVER
23	2	WASHER #6 INT. TOOTH SS
22	2	SCREW 6-32 X 1/4, PH, PN
21	1	RECEPTACLE, 5-20R, 20A DUPLEX
20	1	BRKT, ENCLOSED, 334Z, CKT
19	1	CKT BKR, 20A, 1P W/O AUX
18	1	HANDY BOX COVER, METAL DUPLEX
17	1	GROMMET PLASTIC SB-875-11
16	1	HANDY BOX, 4 X 2-1/8, METAL
15	1	TERM BLK, 6POS, 2R, COMB
14	1	TERM BLK, 3POS, 6-32 SCREWS
13	2	ASSY, VARISTOR, M.O.
ITEM	QTY.	NOMENCLATURE OR DESCRIPTION

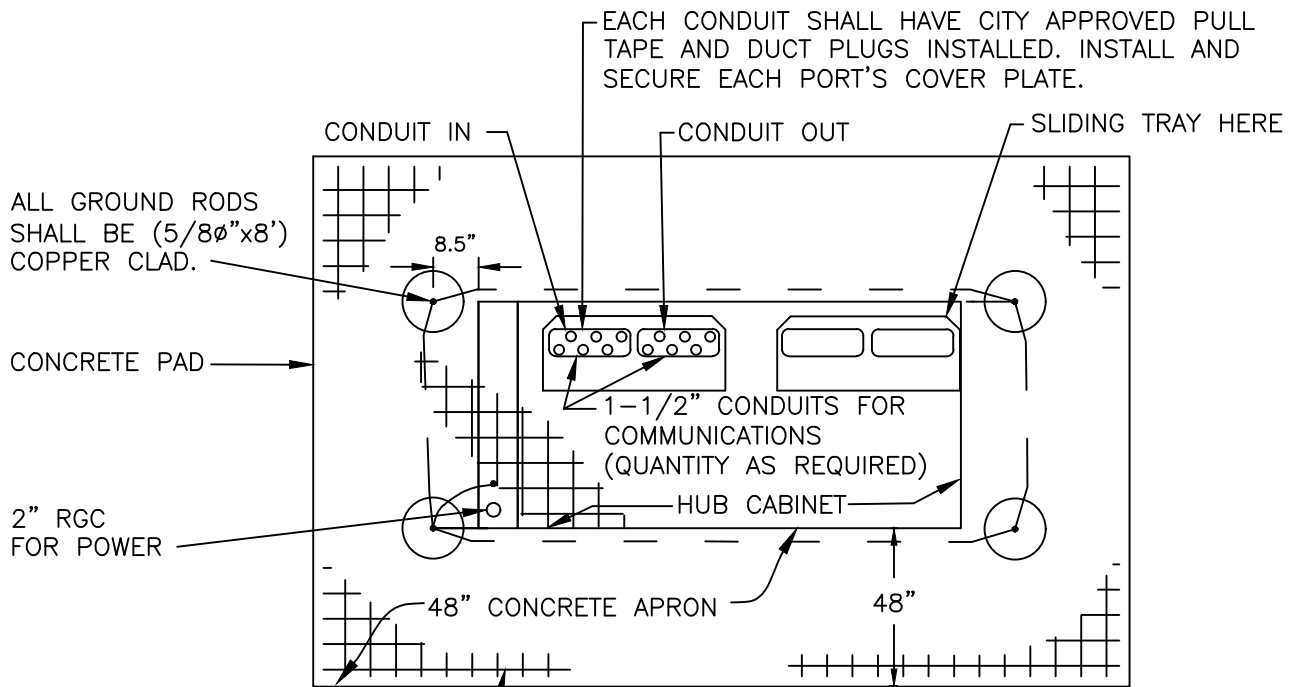
ITEM	QTY.	NOMENCLATURE OR DESCRIPTION
12	1	SURGE ARRESTOR, GAS TUBE
11	2	BUS BAR ASSY, 15POS, COPPER
10	1	COVER, POWER BLOCK, LEXAN
9	1	HARN, SVC PNL, 336S,
8	2	NUT, SQ HD GROMMET
7	2	WASHER, #8, EXT. TOOTH, SS
6	2	WASHER, #4, SPLIT LOCK, SS
5	2	SCREW, 10-24 X 1, PH, SL, NYLON
4	2	SCREW, #8 X 3/4, PH, PN, SS
3	10	SCREW, #8 X 5/8, PH, PN, SS,
2	2	SCREW, 4-40 X 3/8, SL, FIL
1	1	SVC PANEL, 336S
ITEM	QTY.	NOMENCLATURE OR DESCRIPTION



PLAN VIEW

ALL GROUND RODS (5/8" x 8')  
ATTACH USING ACORN CLAMP (COPPER  
ONLY)—CONTINUOUS #2 BARE COPPER.

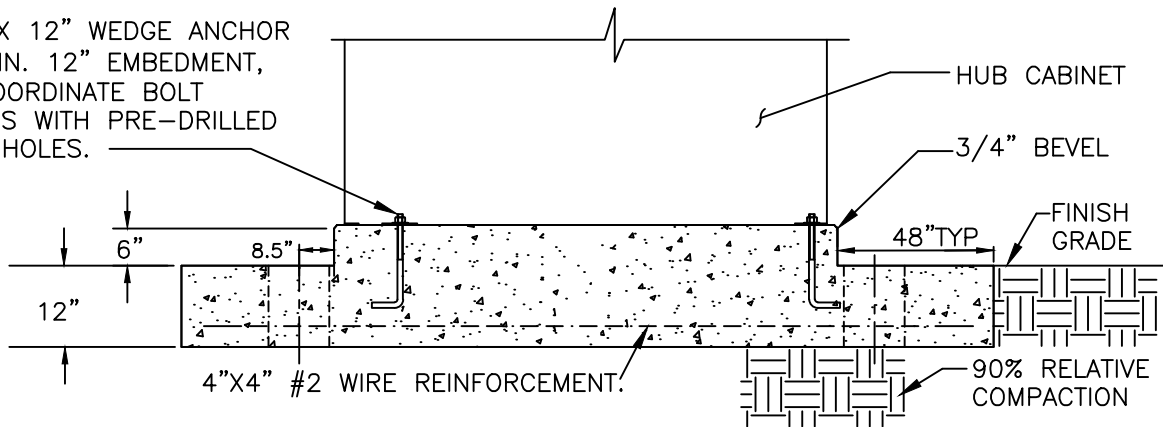
- 1 FURNISH AND INSTALL 1 - 8' GROUND ROD FOR POWER.
- 2 FURNISH AND INSTALL 4 - 8' GROUND RODS FOR GROUND CORNERS.
- 3 FURNISH AND INSTALL 4 - 9" FLOWER ROUND HAND HOLES, LID INSCRIBED "GROUND".
- 4 #2 AWG BARE TINNED WIRE.
- 5 GROUND #2 AWG BARE COPPER WIRE TO HUB POWER GROUND ROD. USE ACORN CLAMP FOR BONDING.



18" THICK CONCRETE FOUNDATION,  
4"x4" #2 WIRE REINFORCED.

PLAN VIEW  
NTS

3/4"  $\phi$  X 12" WEDGE ANCHOR  
BOLTS MIN. 12" EMBEDMENT,  
TYP. COORDINATE BOLT  
LOCATIONS WITH PRE-DRILLED  
CABINET HOLES.



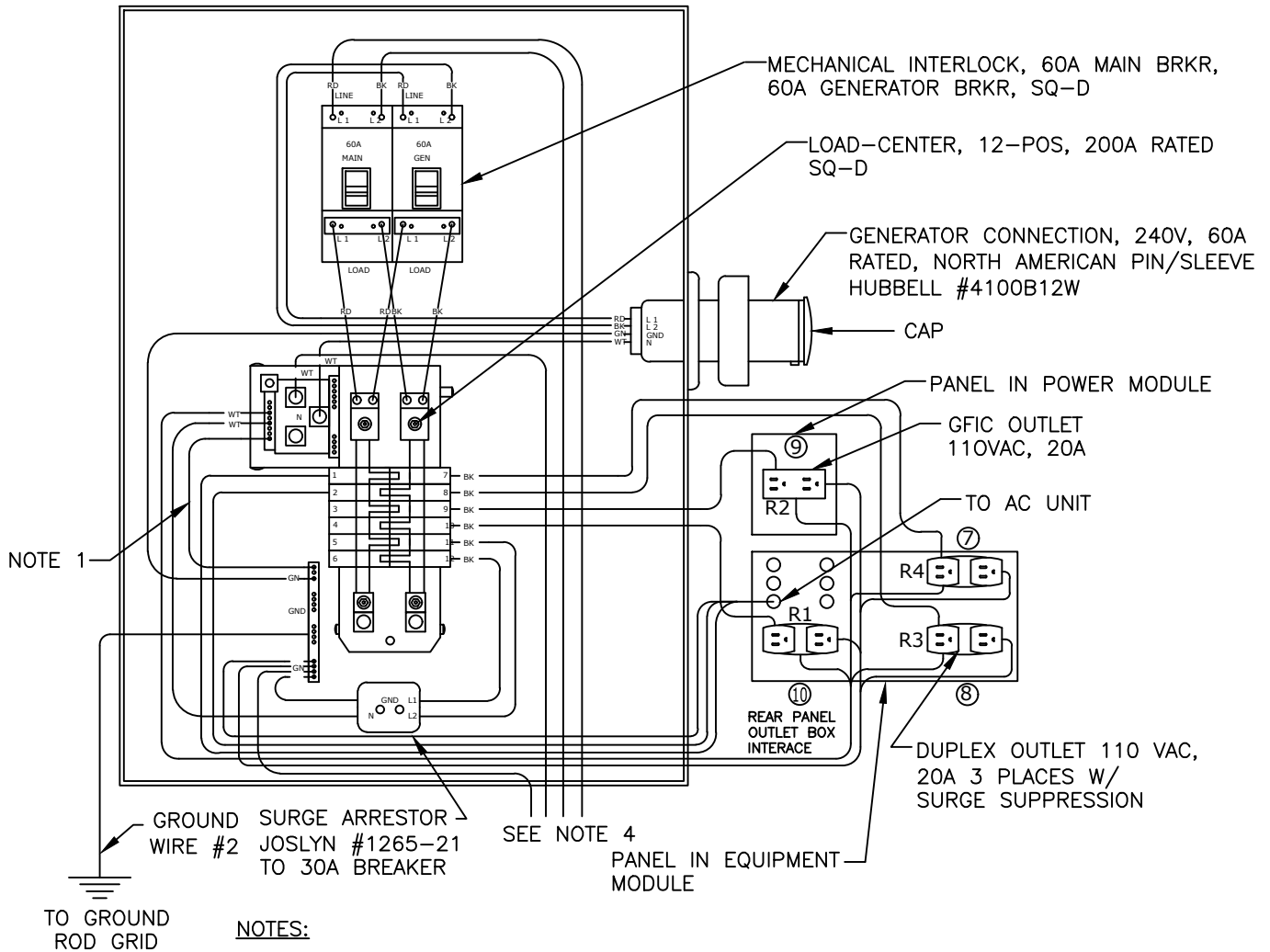
FRONT VIEW  
NTS

NOTES:

CABINET'S MANUFACTURERS TEMPLATE SHALL BE USED AND APPROVED  
BY CITY ENGINEER.

SEE ITS-22 FOR GROUNDING.

AMPS	VOLTS	DESCRIPTION	DESIG	COLOR	POS	POS	COLOR	DESIG	DESCRIPTION	VOLTS	AMPS
15	240	AIR CONDITIONER	L1		1	7	BK	L1	R4 DUPLEX RECEPTACLE	110	20
			L2		2	8	BK	L2	R3 DUPLEX RECEPTACLE	110	20
			L1		3	9	BK	L1	R2 GFIC RECEPTACLE	110	20
			L2		4	10	BK	L2	R1 DUPLEX RECEPTACLE	110	20
			L1		5	11	BK	L1	SURGE ARRESTOR	220	30
			L2		6	12	BK	L2			

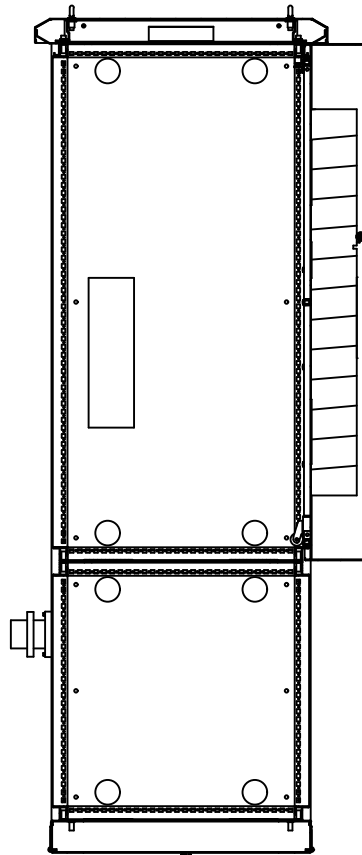


# HUB CABINET WIRING DIAGRAM

REF. & REV.  
JULY 2011

CITY OF FRESNO  
ITS-24

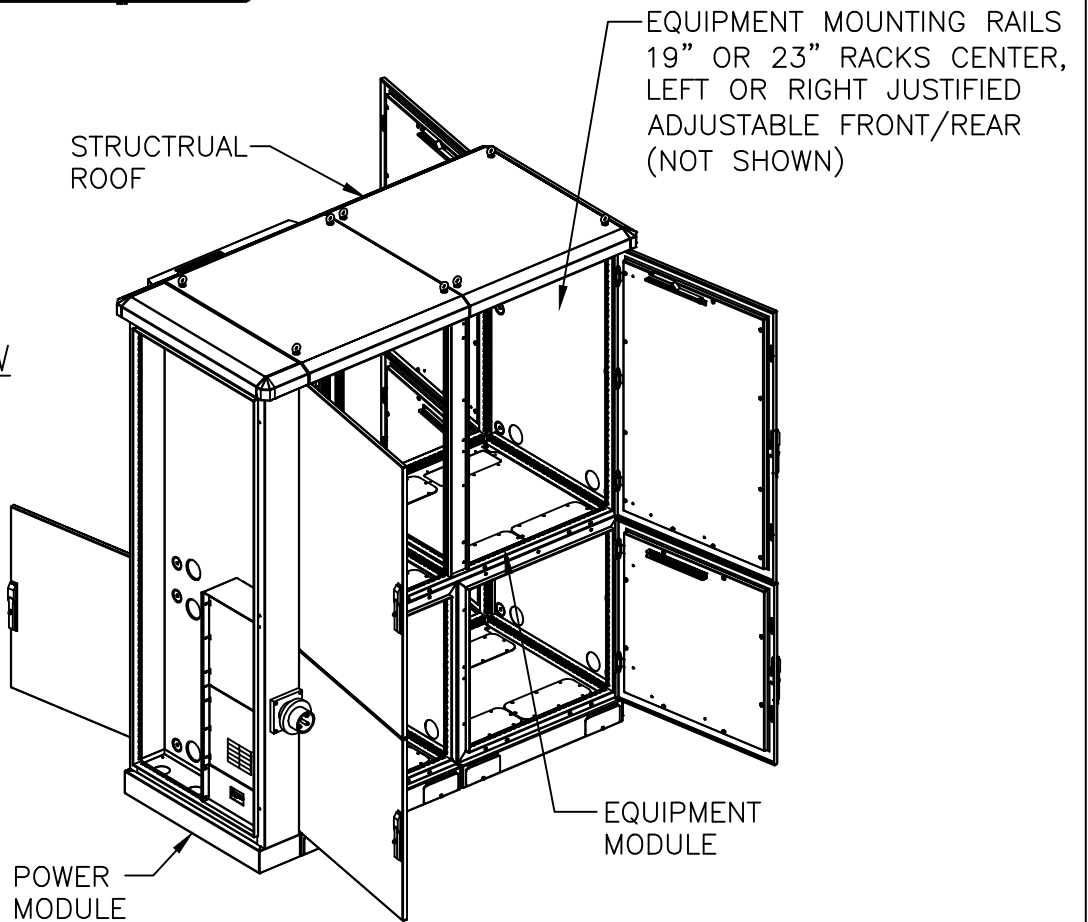




RIGHT SIDE VIEW

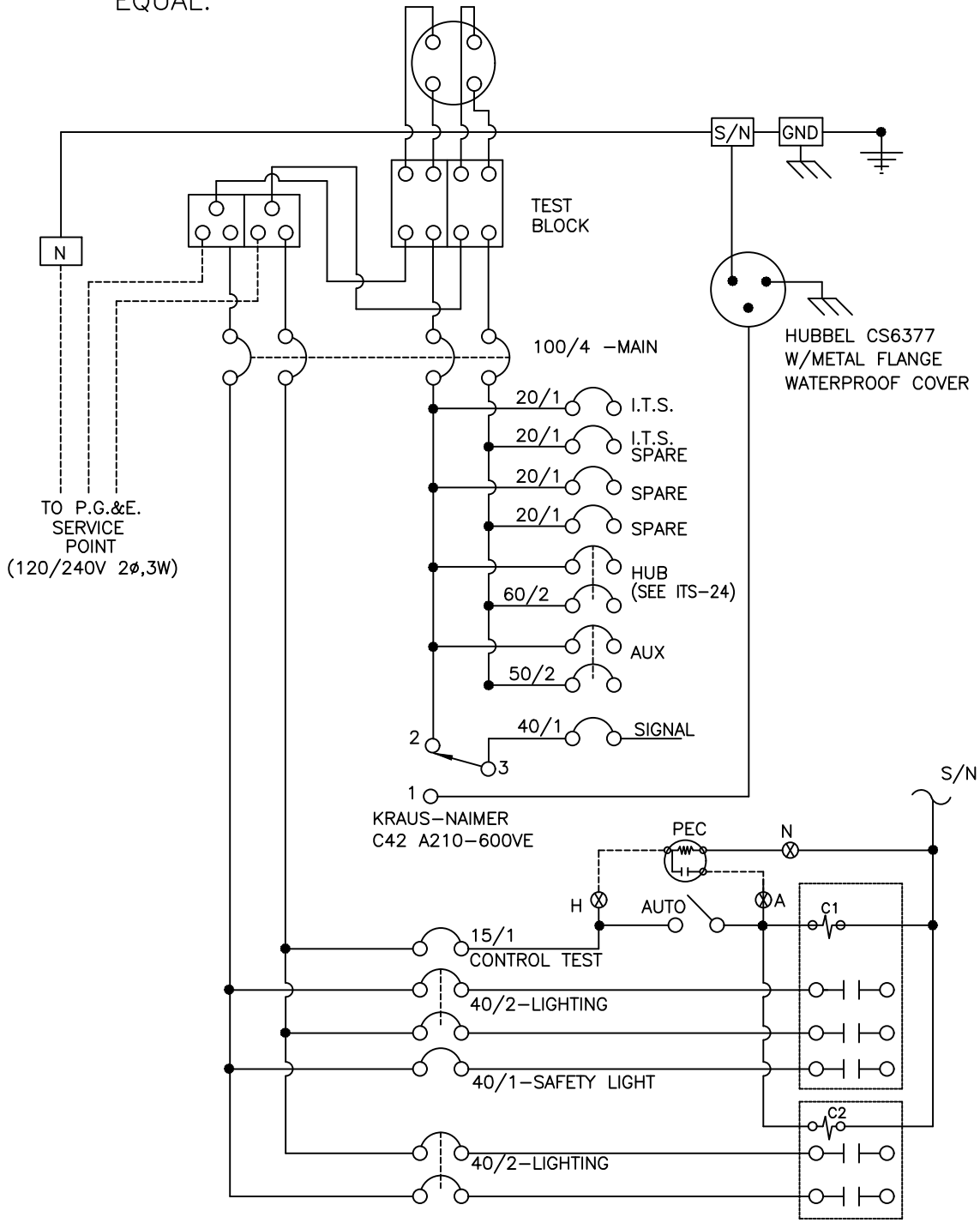
3-D VIEW

POWER  
MODULE DOOR  
REMOVED FOR  
CLARITY



NOTE:

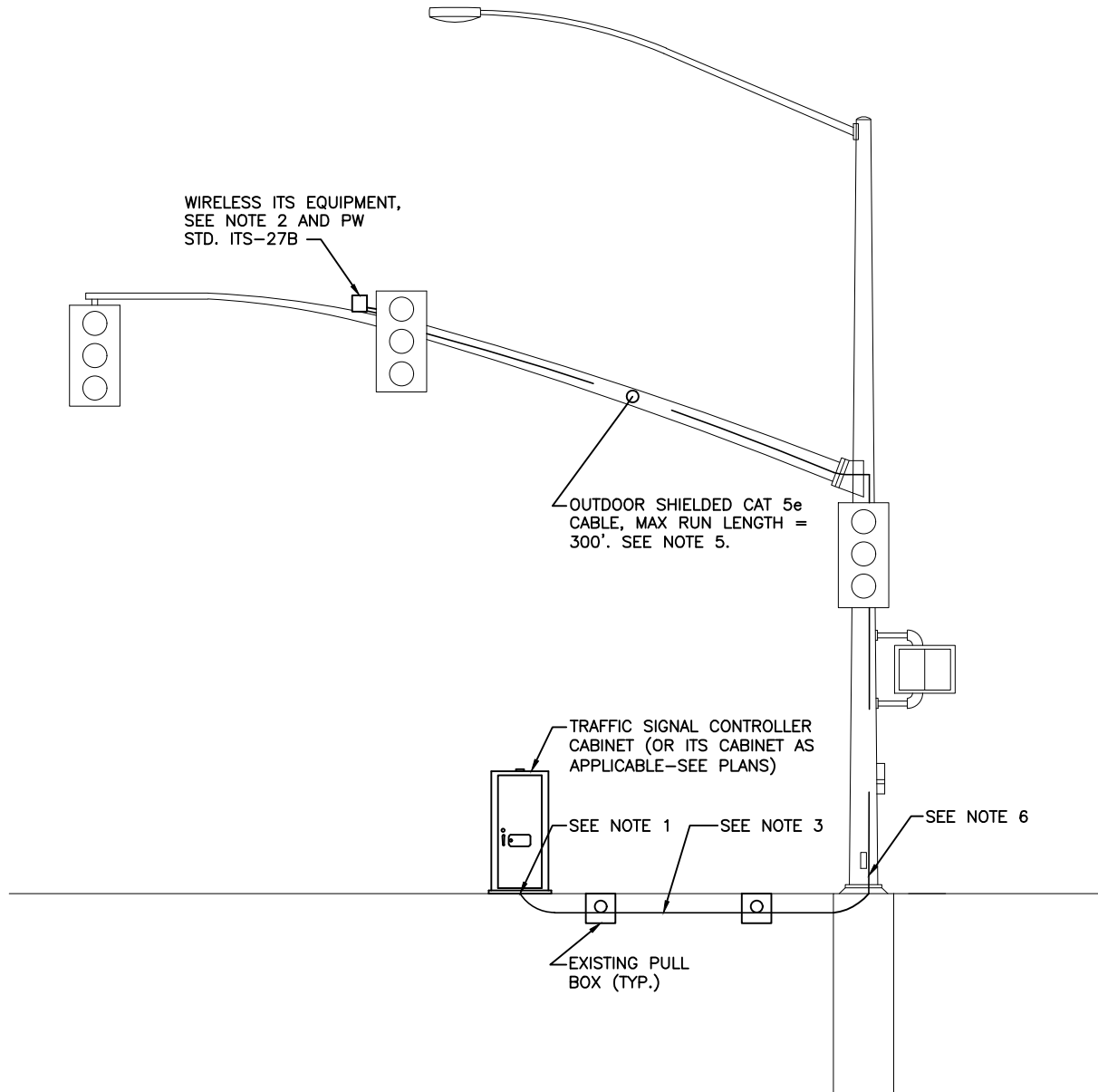
SERVICE CABINET SHALL BE TESCO 27-000  
 LBS METERED/UNMETERED OR APPROVED  
 EQUAL.



SERVICE PEDESTAL SCHEMATIC

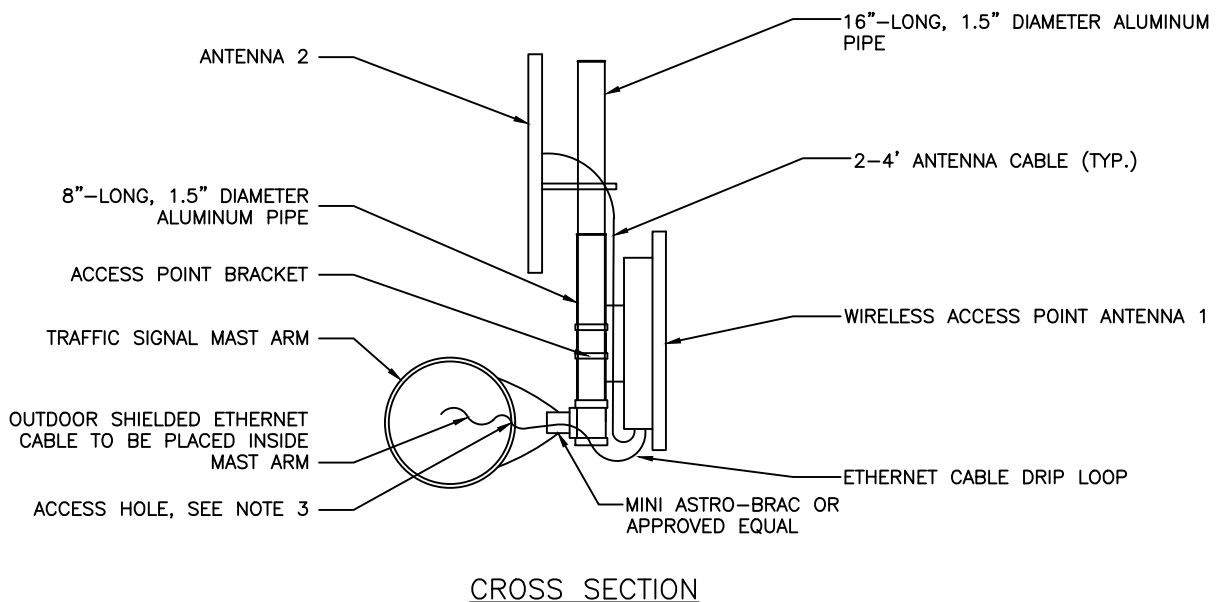
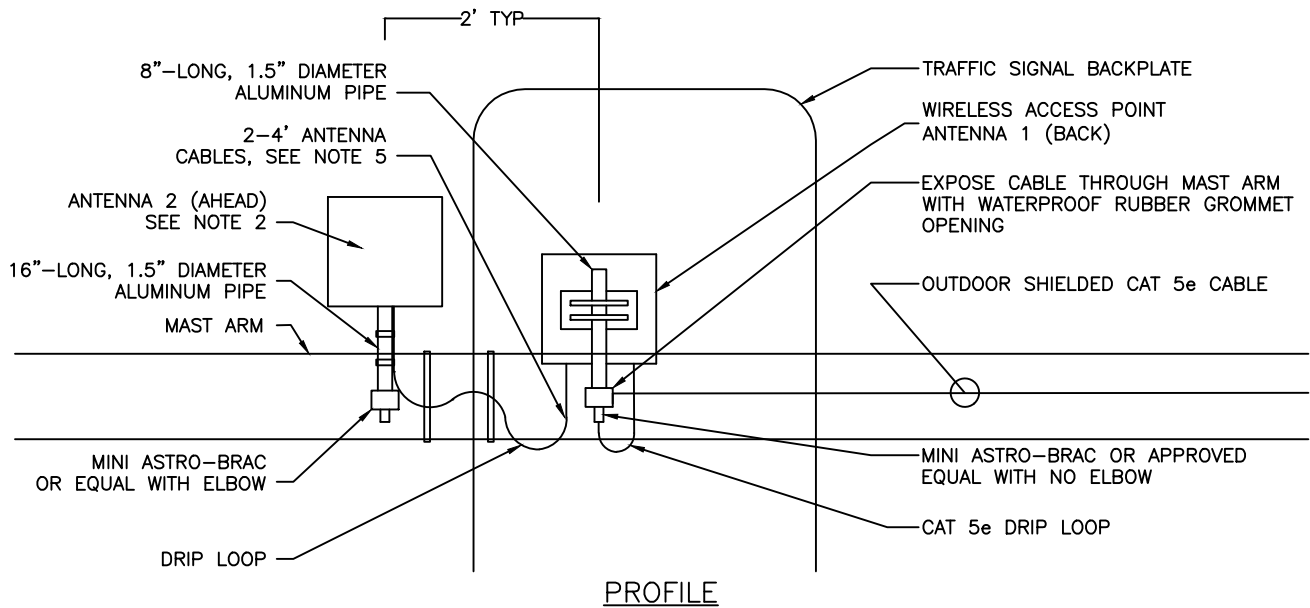
50A AUX	60A HUB	20A SPARE	20A SPARE	20A I.T.S. SPARE	20A I.T.S.	15A CONTROL TEST	40A LIGHTING	40A LIGHTING	40A SAFETY LIGHT	40A SIGNAL	100A MAIN
------------	------------	--------------	--------------	------------------------	---------------	------------------------	-----------------	-----------------	------------------------	---------------	--------------

SWITCH LOCATION



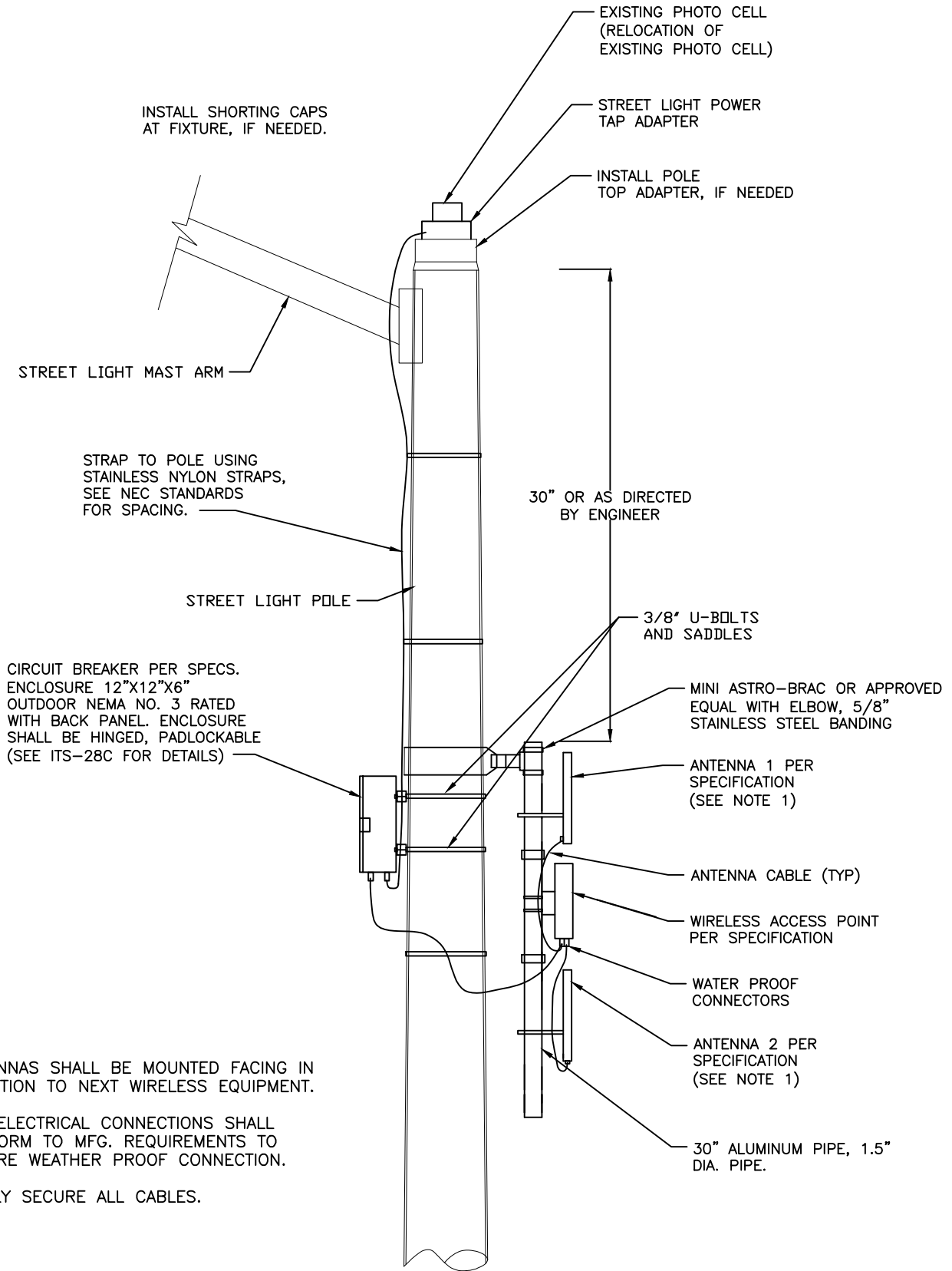
NOTES:

1. FOR NETWORKING CONNECTIONS, SEE SPECIFICATIONS. NETWORK CABLE TERMINATING AT ACCESS POINT SHALL BE WRAPPED WITH BLUE TAPE FOR IDENTIFICATION IN ALL PULL BOXES AND IN CABINET. NETWORK CABLE SHIELDING SHALL BE GROUNDED IN CONTROLLER CABINET.
2. CONTRACTOR SHALL PERFORM A FIELD SURVEY WITH A BUCKET TRUCK TO LOCATE OPTIMAL POSITION OF EQUIPMENT ON MAST ARM IN THE PRESENCE OF THE CITY ENGINEER PRIOR TO INSTALLATION.
3. EXTEND CABLES THROUGH TRAFFIC SIGNAL CONDUIT AND PULL BOXES. COIL MIN. 6' OF SLACK IN EACH PULL BOX.
4. CABLE SHALL BE INSTALLED INSIDE SIGNAL MAST ARM FOR TRAFFIC SIGNAL POLES CONFORMING TO CALTRANS STANDARDS DATED 1977 OR NEWER. FOR TRAFFIC SIGNAL POLES CONFORMING TO OLDER STANDARDS - SEE PLANS.
5. CONTRACTOR MAY UTILIZE YELLOW WIRE AS A PULL TAPE TO BRING CAT 5e CABLE INTO PROPOSED WIRELESS EQUIPMENT (NOTE; YELLOW WIRE TO RE-INSTALL BACK IN GOOD CONDITION). CONTRACTOR SHALL COORDINATE THEIR SCHEDULE WITH CITY TSSL TO PLACE SIGNAL IN TEMPORARY FLASHING PRIOR TO INSTALLATION.
6. POLE HAND HOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK IS COMPLETED AND INSPECTED ON SIGNAL POLE. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING.



NOTES:

1. ANTENNA 2 WILL BE REQUIRED FOR ALL INTERSECTIONS FOR EXTENSION OF WIRELESS CORRIDOR, SEE PLANS.
2. ANTENNA 2 MOUNTING IS SIMILAR TO THAT SHOWN IN THE CROSS SECTION ABOVE, BUT NO HOLES ARE DRILLED IN THE MAST ARM, A 16"-LONG ALUMINUM PIPE IS USED, AN ACCESS POINT IS NOT INSTALLED.
3. DRILL MAX 3/4" BEVELED HOLE. GROMMET SHALL FORM A TIGHT SEAL BETWEEN POLE AND CABLE.
4. ANTENNA 1 AND ANTENNA 2 SHALL HAVE A MINIMUM 2' OF SEPARATION.
5. SECURELY STRAP ANTENNA CABLE TO MAST ARM WITH STAINLESS STEEL NYLON COATED STRAPS (FOLLOW NEC STANDARD FOR SPACING).
6. ALL ELECTRICAL CONNECTIONS SHALL CONFORM TO MANUFACTURER REQUIREMENTS TO ENSURE WEATHER PROOF CONNECTIONS.



CIRCUIT BREAKER PER SPECS.  
ENCLOSURE 12"x12"x6"  
OUTDOOR NEMA NO. 3 RATED  
WITH BACK PANEL. ENCLOSURE  
SHALL BE HINGED, PADLOCKABLE  
(SEE ITS-28C FOR DETAILS)

**NOTES:**

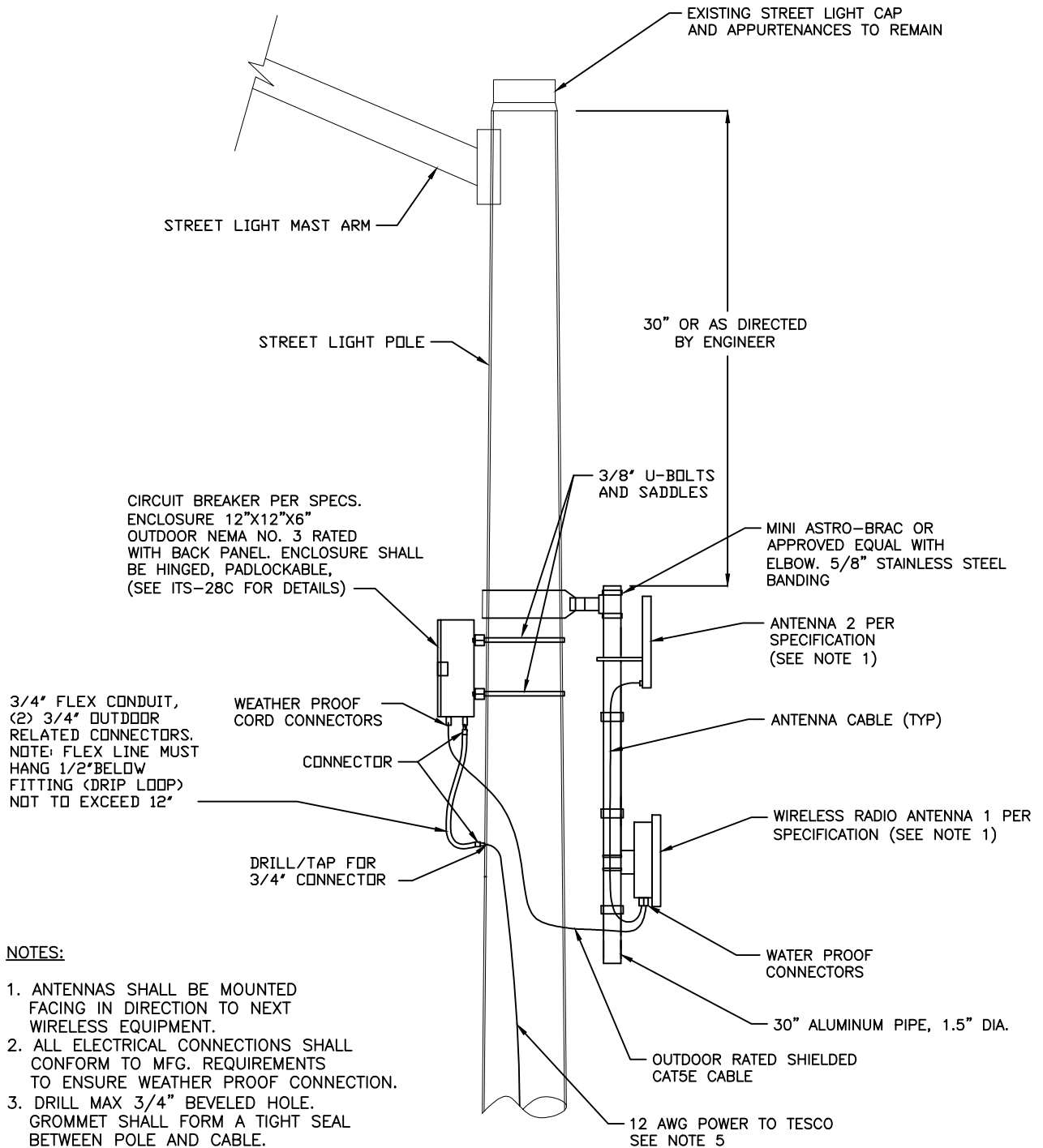
1. ANTENNAS SHALL BE MOUNTED FACING IN DIRECTION TO NEXT WIRELESS EQUIPMENT.
2. ALL ELECTRICAL CONNECTIONS SHALL CONFORM TO MFG. REQUIREMENTS TO ENSURE WEATHER PROOF CONNECTION.
3. NEATLY SECURE ALL CABLES.

FOR POLES WITH MASTER PHOTOCELL

**ITS WIRELESS POLE REPEATER  
INSTALLATION  
(POWERED THROUGH STREET LIGHT)**

REF. & REV.  
JUNE 2015

CITY OF FRESNO  
**ITS-28A**



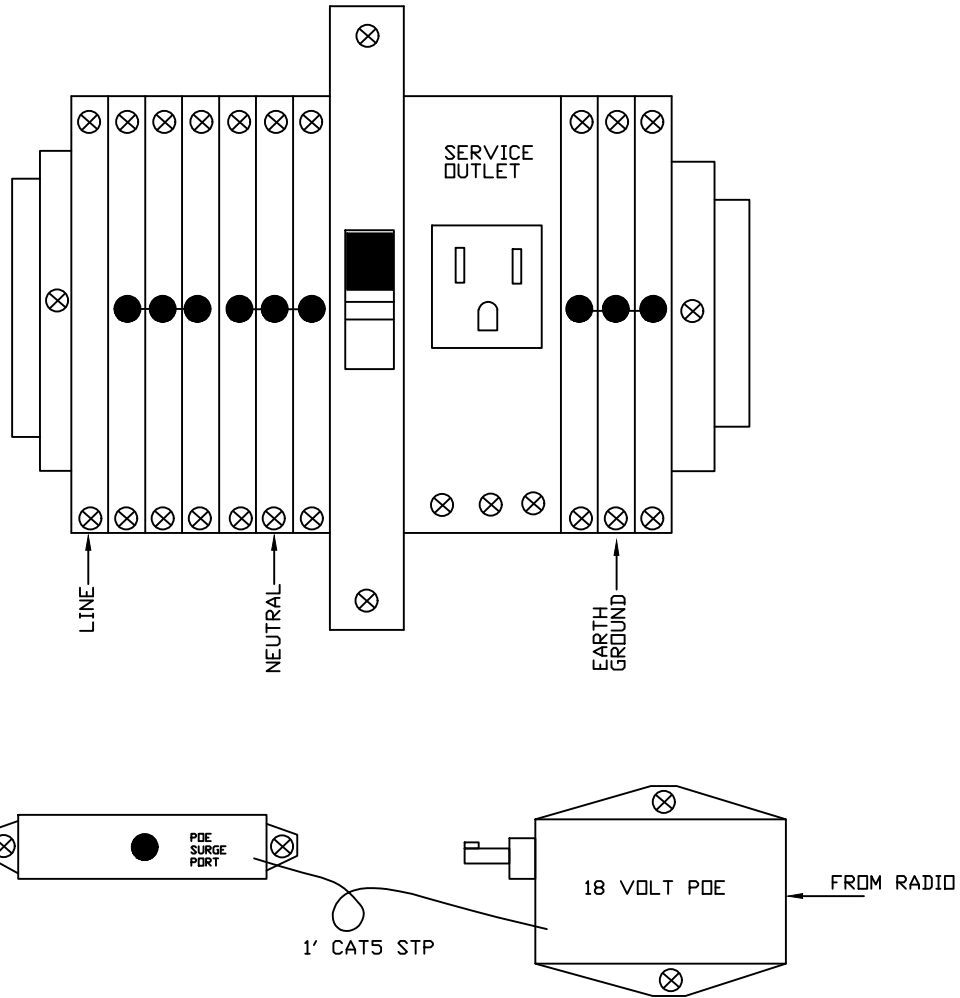
**NOTES:**

1. ANTENNAS SHALL BE MOUNTED FACING IN DIRECTION TO NEXT WIRELESS EQUIPMENT.
2. ALL ELECTRICAL CONNECTIONS SHALL CONFORM TO MFG. REQUIREMENTS TO ENSURE WEATHER PROOF CONNECTION.
3. DRILL MAX 3/4" BEVELED HOLE. GROMMET SHALL FORM A TIGHT SEAL BETWEEN POLE AND CABLE.
4. SECURELY STRAP ANTENNA CABLES TO POLE WITH STAINLESS STEEL NYLON COATED STRAPS (FOLLOW NEC STANDARDS FOR SPACING.)
5. CONTRACTOR SHALL CONNECT THE 120VAC POWER TO THE NEAREST EXISTING TESCO PEDESTAL WITH REQUIRED ADDITIONAL CIRCUIT BREAKER (20 AMP) AND NECESSARY CONDUCTORS (2 SOOW CONDUCTOR, 12 AWG). EXISTING PULLBOX ADJACENT TO EXISTING STREET LIGHT POLE WITH CONCRETE FILLED TO BE BROKE-OUT AND WELDS ON POLE. HAND HOLE COVER TO BE GROUND OFF, IN ORDER TO ACCESS AND INSTALL THE NECESSARY CONDUCTORS. POLE HAND HOLE SHALL BE WELDED BACK AND CONCRETE SHALL BE REPLACED BACK TO EXISTING PULLBOX AFTER ALL PROPOSED WORK IS COMPLETED AND INSPECTED.
6. THE CONTRACTOR SHALL CONNECT EARTH GROUND FROM A LOCAL GROUND ROD TO THE BUSSED TERMINALS MARKED "GROUND".
7. POLE HANDHOLE SHALL BE WELDED IN PLACE AFTER ALL PROPOSED WORK IS COMPLETED AND INSPECTED ON STREET LIGHT POLE. CONTRACTOR SHALL PROTECT CONDUCTORS FROM DAMAGE DURING WELDING

**ITS WIRELESS POLE REPEATER  
INSTALLATION  
(POWERED THROUGH SERVICE PEDESTAL)**

REF. & REV.  
JULY 2011  
MAR. 2021 (A.7)

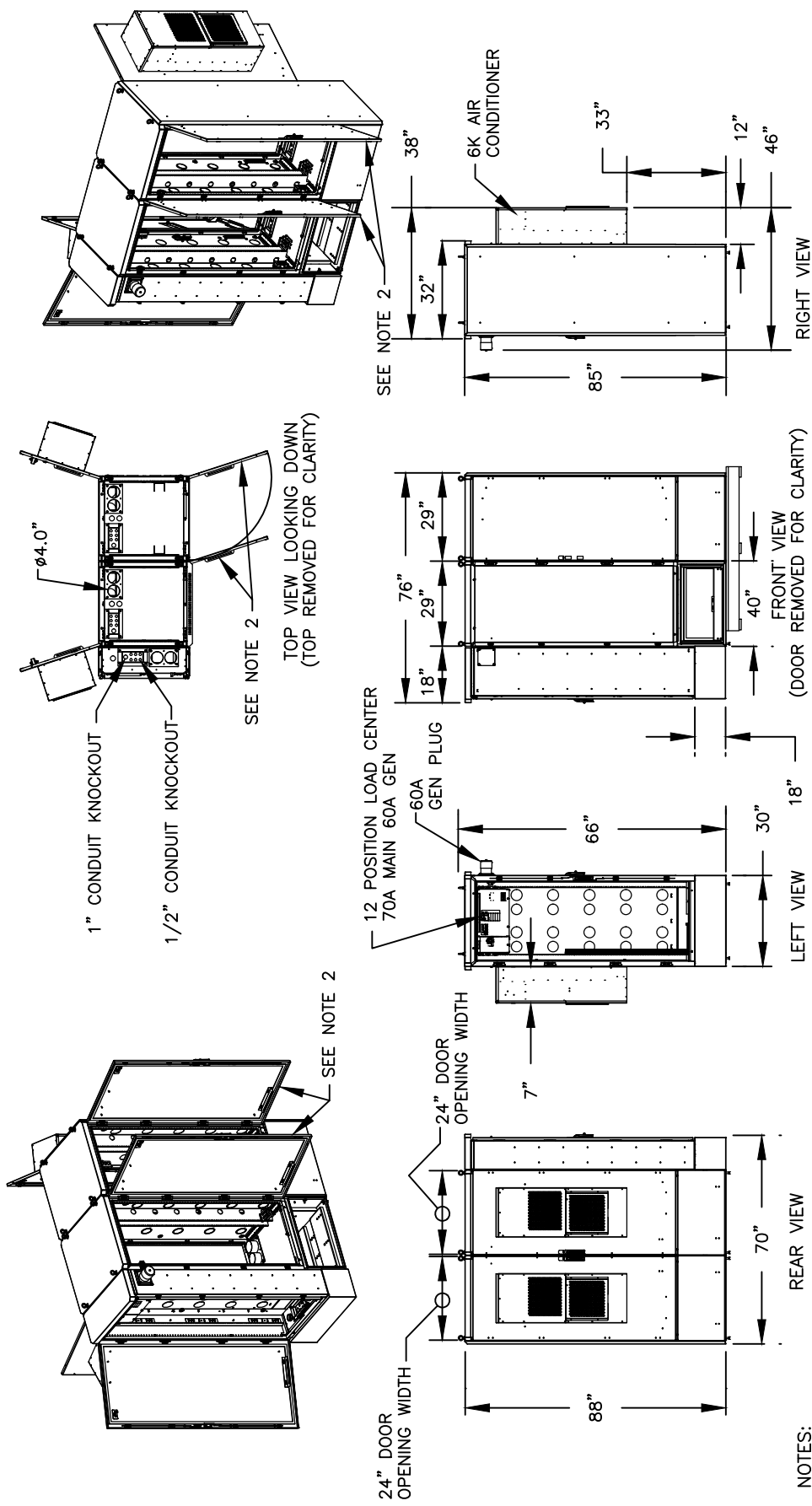
CITY OF FRESNO  
**ITS-28B**



NOTES:

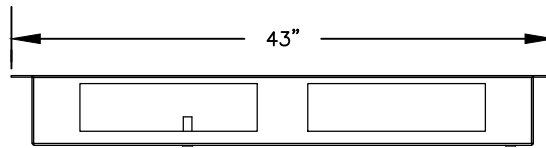
1. POWER DISTRIBUTION BOX TO BE POLE MOUNTED AT SELECT LOCATIONS TO SUPPORT MESH BROADBAND RADIO REPEATER CO-LOCATED ON POLE.
2. BOX WILL BE MOUNTED ON THE SIDE OF POLE AWAY FROM TRAFFIC AT A HEIGHT SPECIFIED IN THE PLANS OR BY THE ENGINEER ON SITE.
3. THE CONTRACTOR WILL CONNECT THE 120VAC POWER TAPPED FROM THE STREET LIGHT CIRCUIT TO THE BUSSED TERMINALS MARKED 'LINE' & 'NEUTRAL'
4. THE CONTRACTOR WILL CONNECT EARTH GROUND FROM A LOCAL GROUND ROD TO THE BUSSED TERMINALS MARKED 'GROUND'.
5. PADLOCK TO BE PROVIDED BY THE CITY.

DESCRIPTION	QTY
12"X12"X6" OUTDOOR RATED, NEMA 3 WITH BACK PANEL, HINGED, PADLOCK ENCLOSURE	1
ALUMINUM PANEL	1
SWEEP ELBOW	2
SS BANDING 5/8" W/ BUCKLE	4
ALUM DIN RAIL	A/R
END STOP	2
DIN MOUNT TERM BLOCK-GRAY	7
DIN MOUNT TERM BLOCK-GREEN	3
DIN MOUNT CIRCUIT BREAKER-4A	1
DIN MOUNT DUPLEX OUTLET	1
POE SURGE SUPPRESSOR	1
CAT5 JUMPER-12" SHIELDED	1

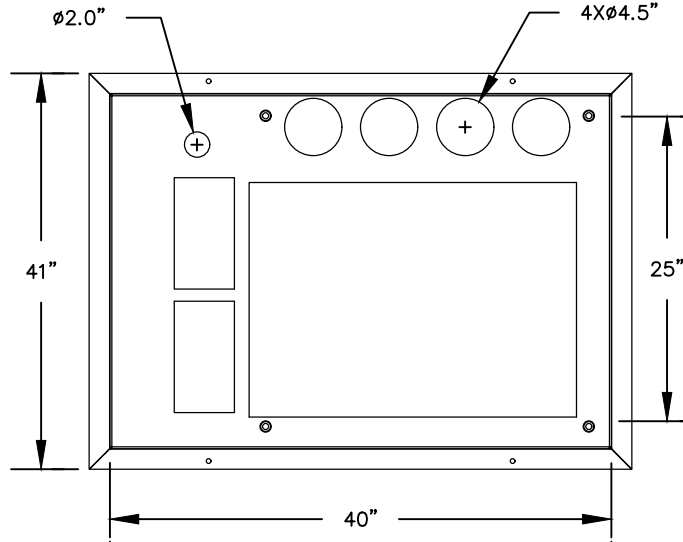


- NOTES:
1. REFER TO ITS-23 FOR HUB CABINET FOUNDATION DETAIL.
  2. BOTH DOORS HINGES SHALL BE INSTALLED AT OPPOSITE ENDS.
  3. REFER TO ITS-29B FOR REQUIRED HUB CABINET PLATE ANCHOR.
  4. ALL DOORS SHALL REQUIRE A CITY APPROVED LOCKING FEATURES AND KEYS SHALL BE PROVIDED TO CITY. ALL LOCKS TO BE KEYS TO CITY REQUIREMENTS.
  5. ALL DIMENSION SHOWN ARE APPROXIMATE WITH  $\pm 3\%$  TOLERANCE.

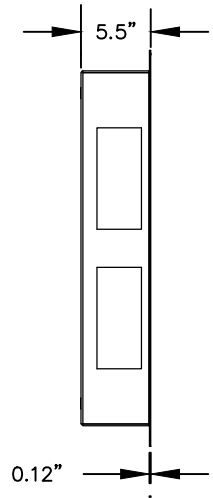




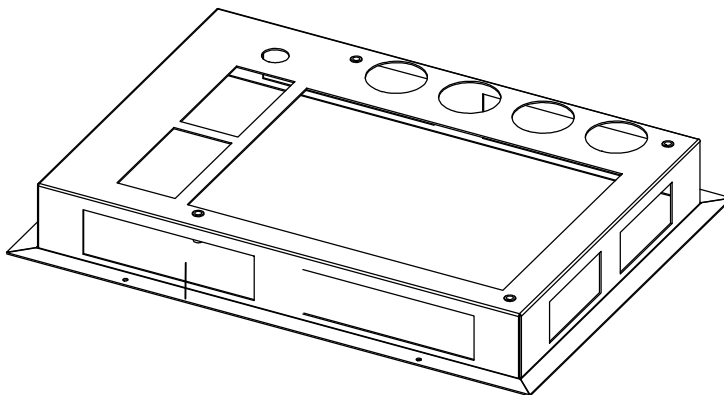
FRONT VIEW



TOP VIEW



SIDE VIEW

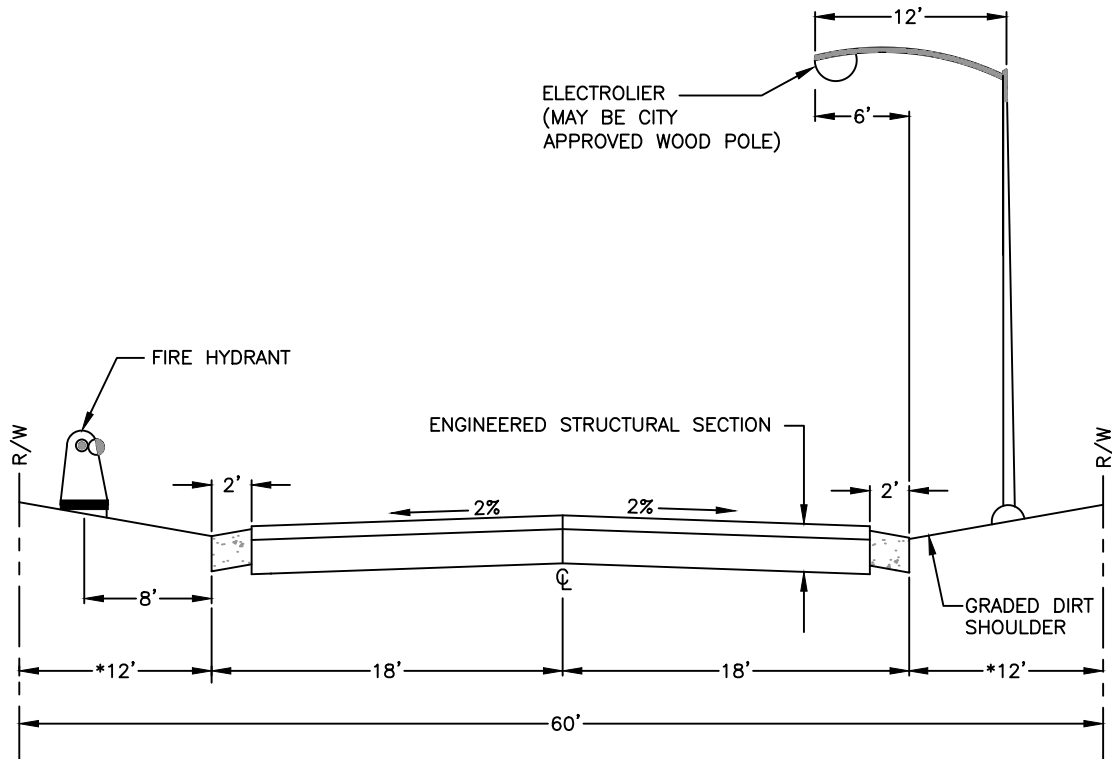


3-D VIEW

NOTES:

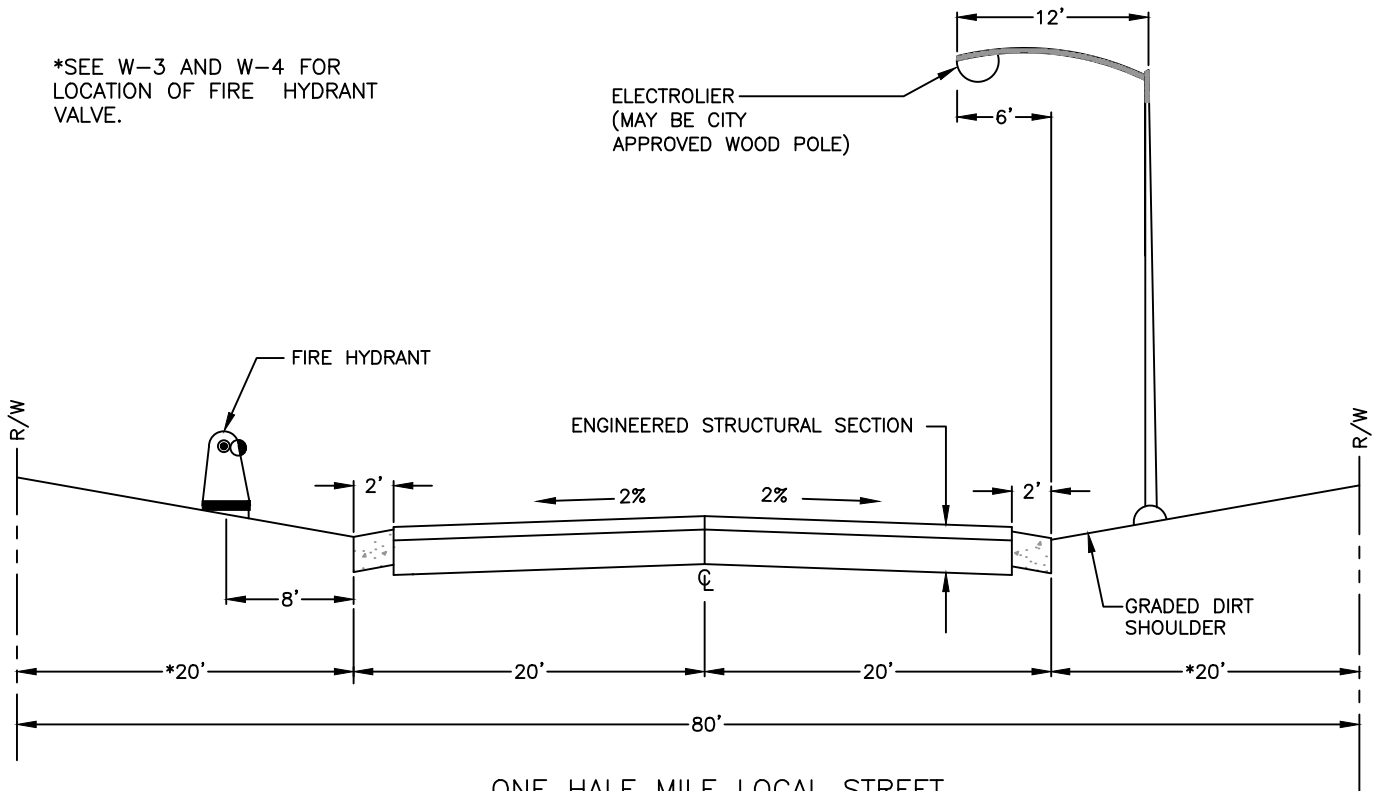
1. MATERIAL: STEEL ALLOY OPTIONAL, 0.120" THICKNESS UNLESS OTHERWISE SPECIFIED.
2. ALL DIMENSION SHOWN ARE APPROXIMATE WITH  $\pm 3\%$  TOLERANCE.

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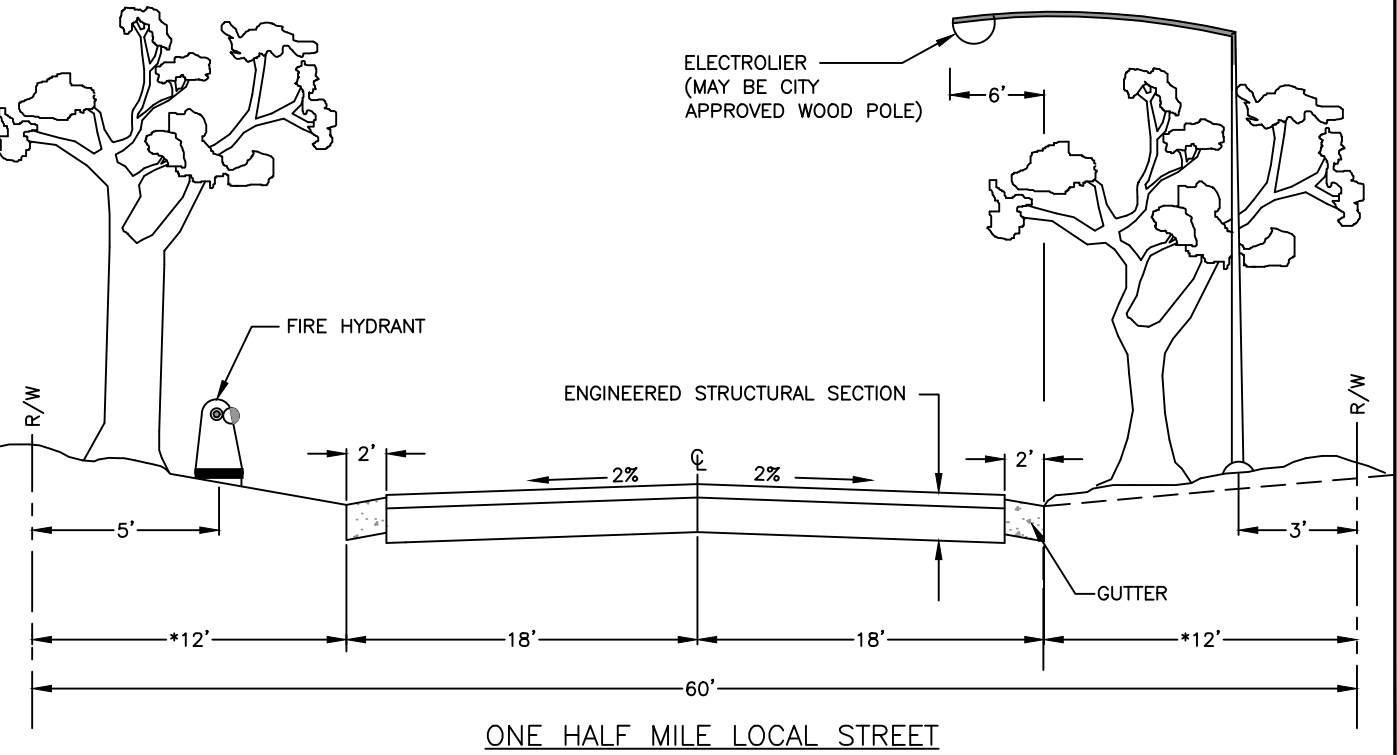
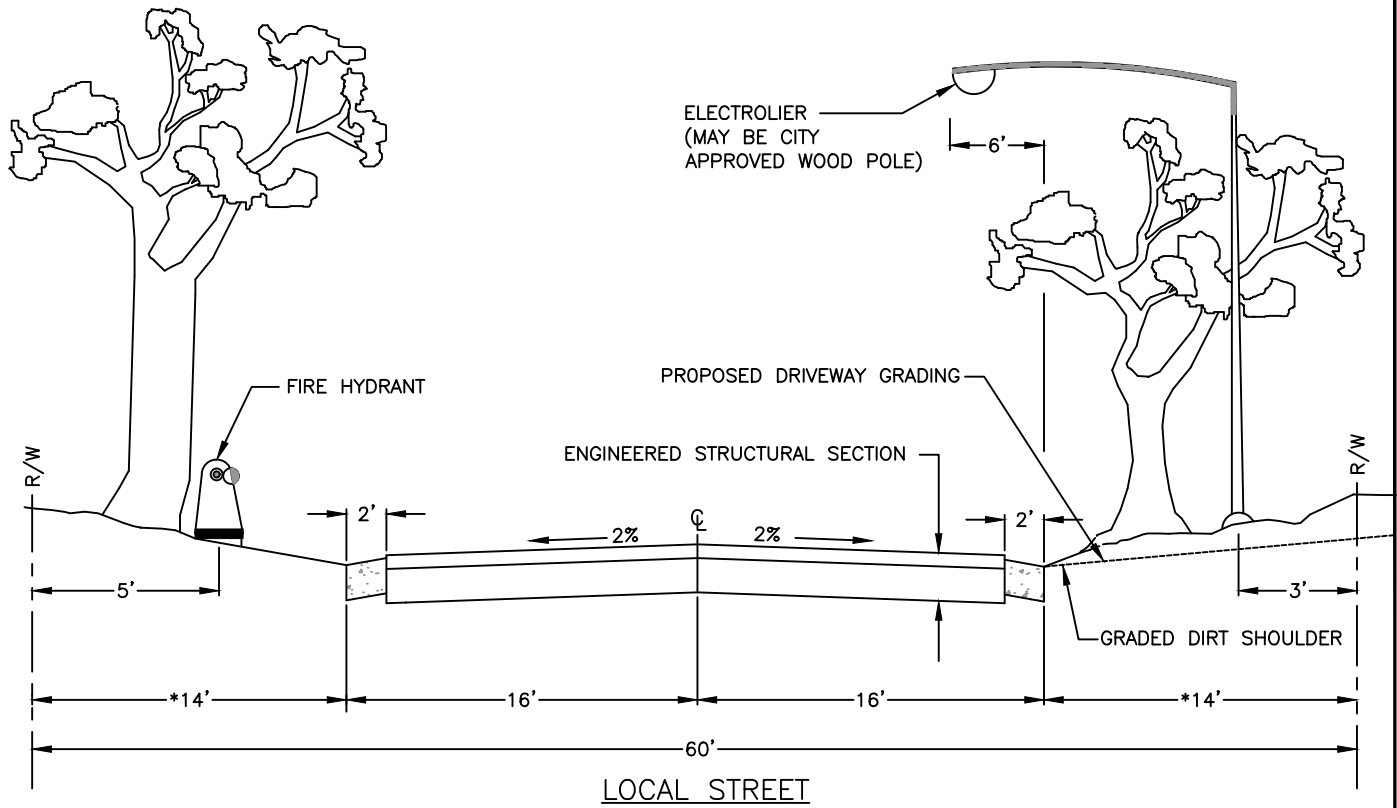
LOCAL STREET

\*SEE W-3 AND W-4 FOR LOCATION OF FIRE HYDRANT VALVE.



ONE HALF MILE LOCAL STREET

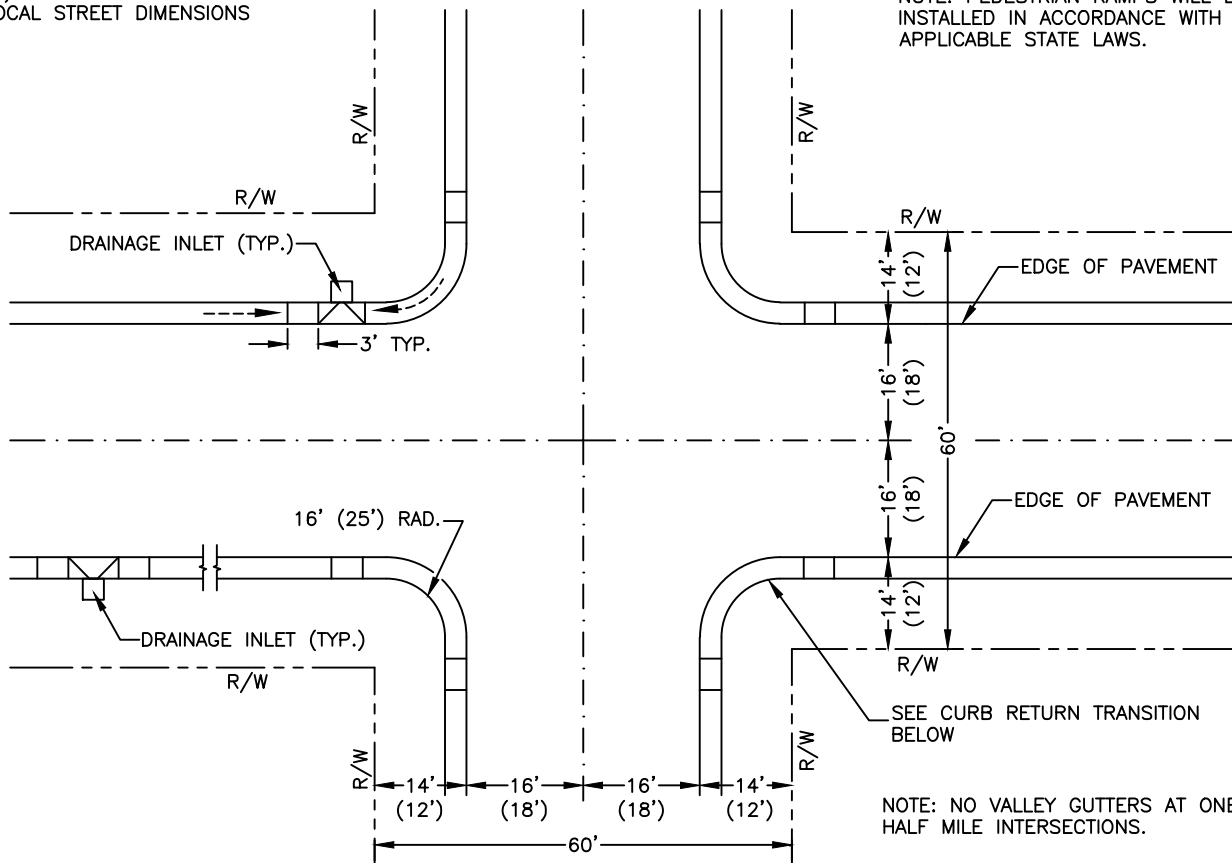
\*NO PAVEMENT OR BASE INSTALLATION (GRAVEL, SUBBASE, ETC.) EXCEPT FOR DRIVEWAY APPROACHES IN THIS AREA.



\*NO PAVEMENT OR BASE INSTALLATION (GRAVEL, SUBBASE, ETC.) EXCEPT FOR DRIVEWAY APPROACHES IN THIS AREA.

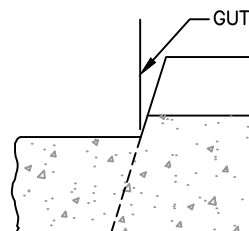
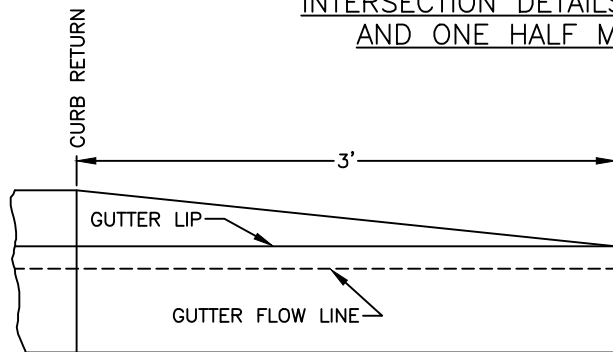
( ) DENOTES ONE HALF MILE LOCAL STREET DIMENSIONS

NOTE: PEDESTRIAN RAMPS WILL BE INSTALLED IN ACCORDANCE WITH APPLICABLE STATE LAWS.

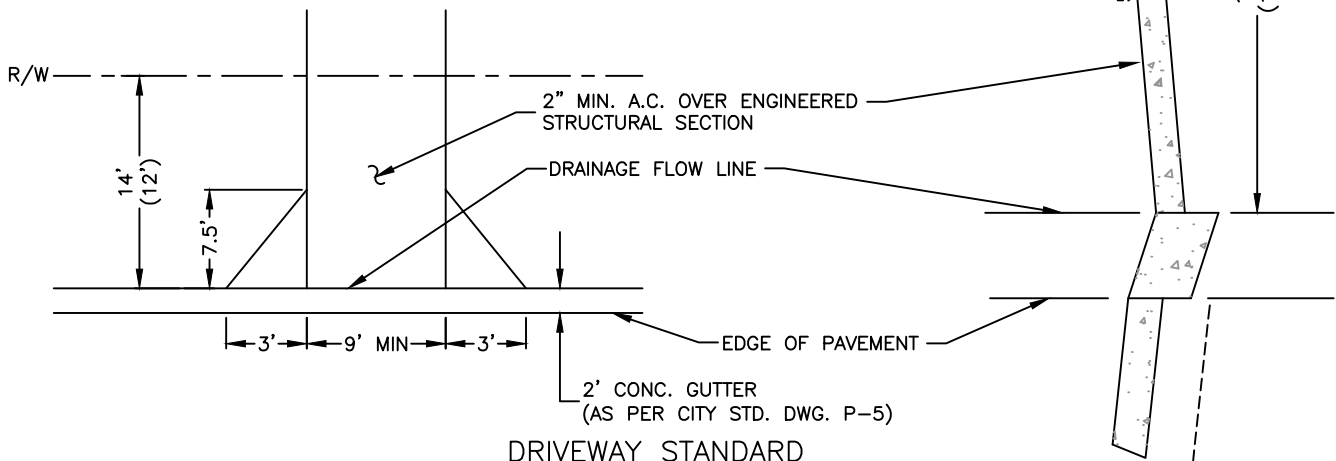


NOTE: NO VALLEY GUTTERS AT ONE HALF MILE INTERSECTIONS.

INTERSECTION DETAILS FOR MODIFIED LOCAL AND ONE HALF MILE LOCAL STREETS

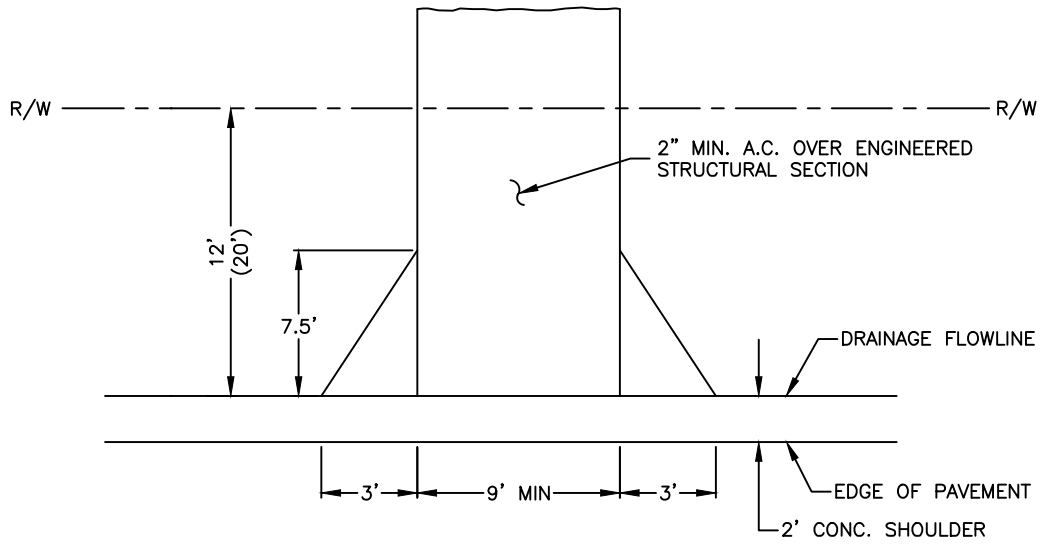


CURB RETURN TRANSITION

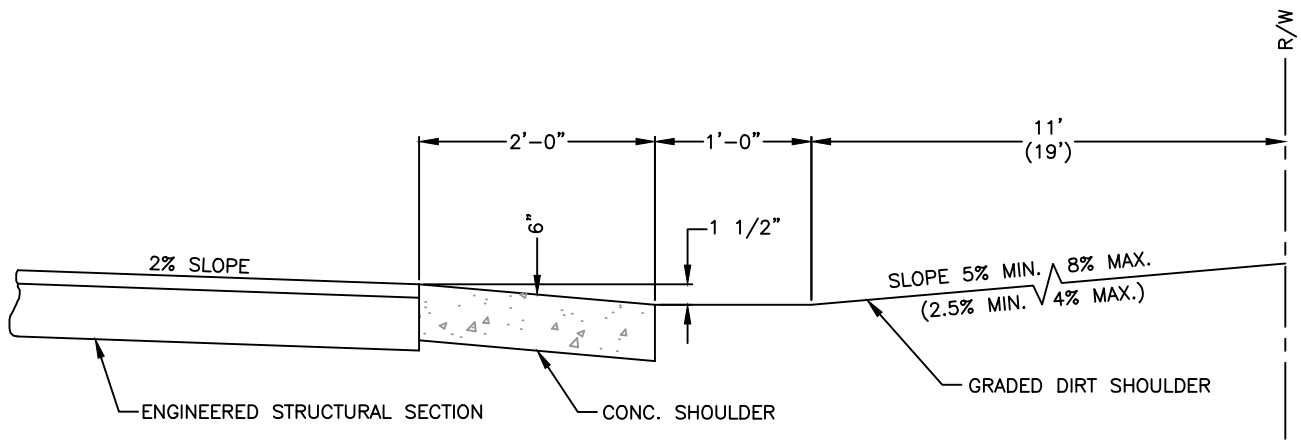


DRIVEWAY STANDARD

( ) DENOTES ONE HALF MILE LOCAL STREET DIMENSIONS.

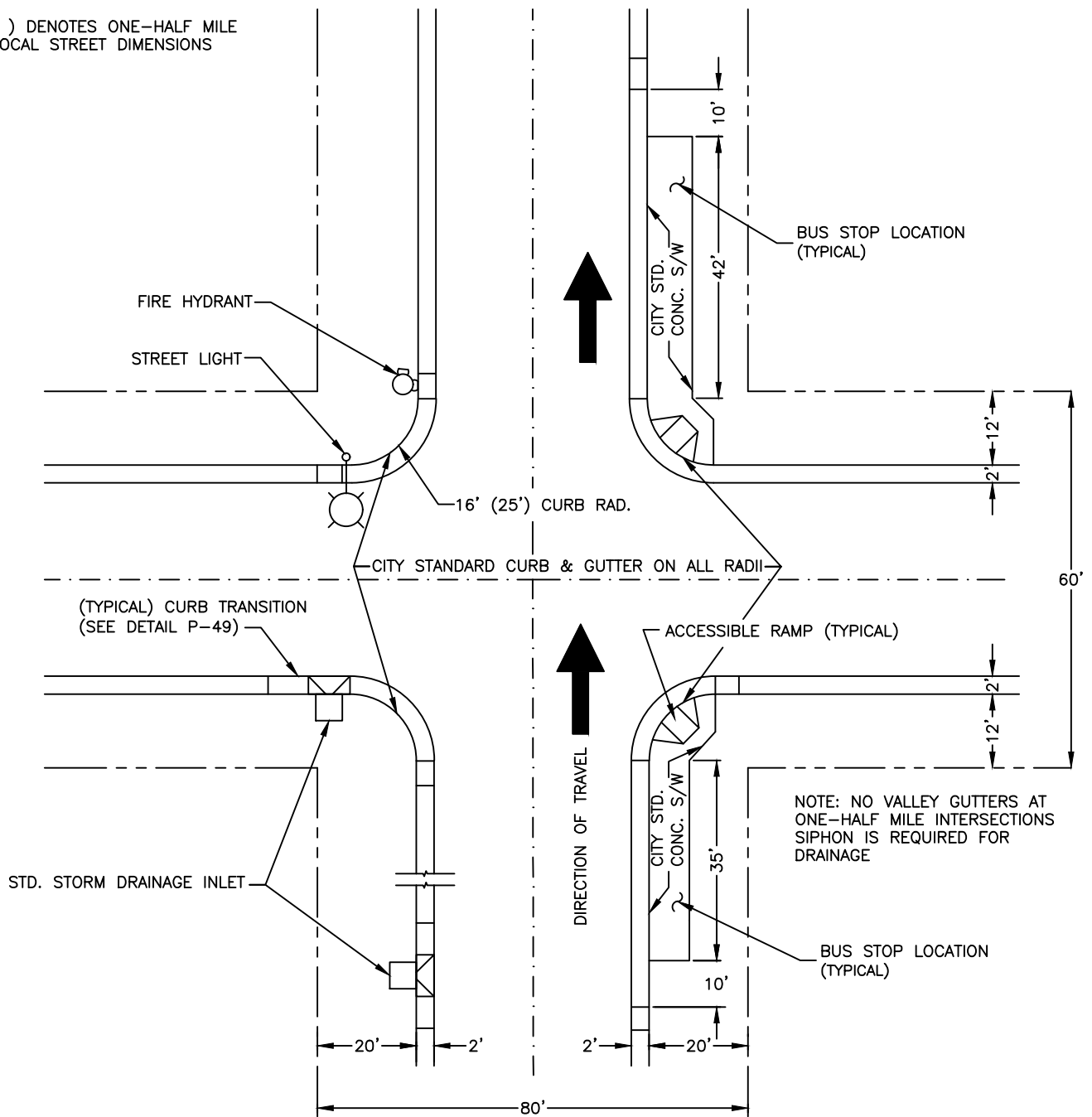


DRIVEWAY STANDARD

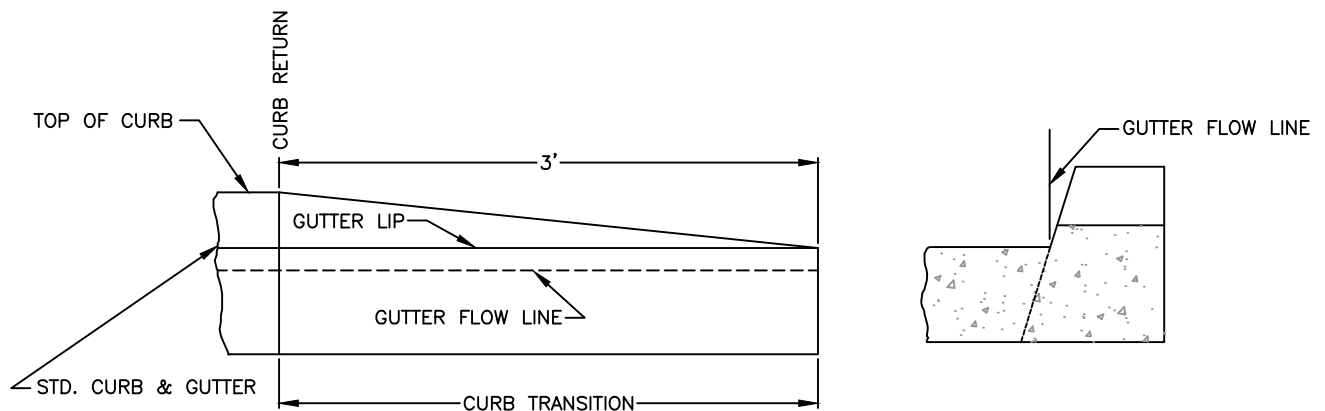


SHOULDER GRADING DETAIL

( ) DENOTES ONE-HALF MILE LOCAL STREET DIMENSIONS



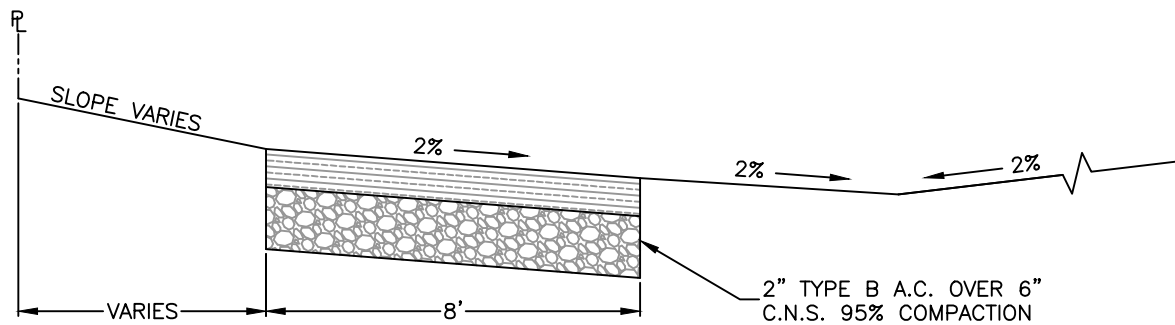
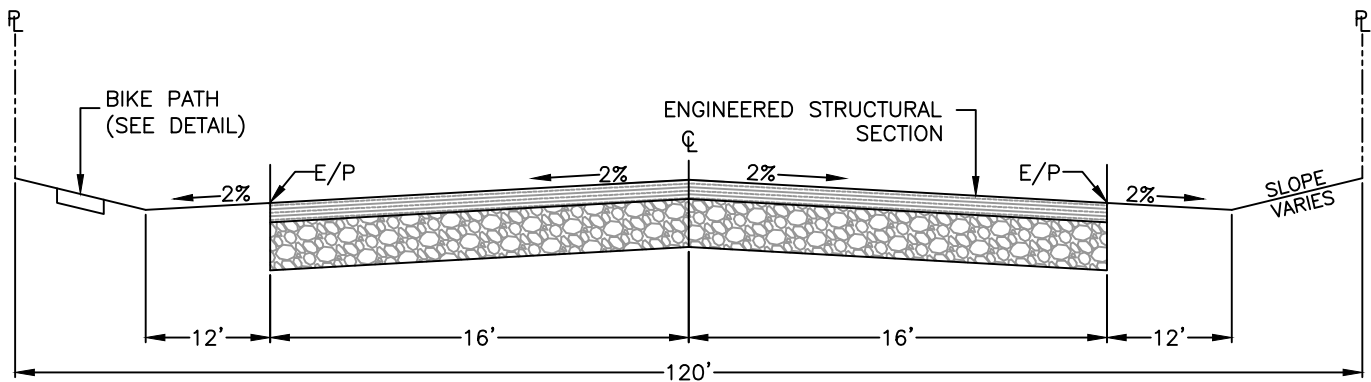
NOTE: MAJOR STREETS REQUIRE FULL STREET IMPROVEMENTS TO CURRENT URBAN STANDARDS.



**INTERSECTION DETAILS**  
**FOR MODIFIED STREETS**  
**(LOCAL & 1/2 MILE LOCAL)**

REF. & REV.  
 AUG. 2010  
 MAR. 2021 (A.7)

CITY OF FRESNO  
**API-5**

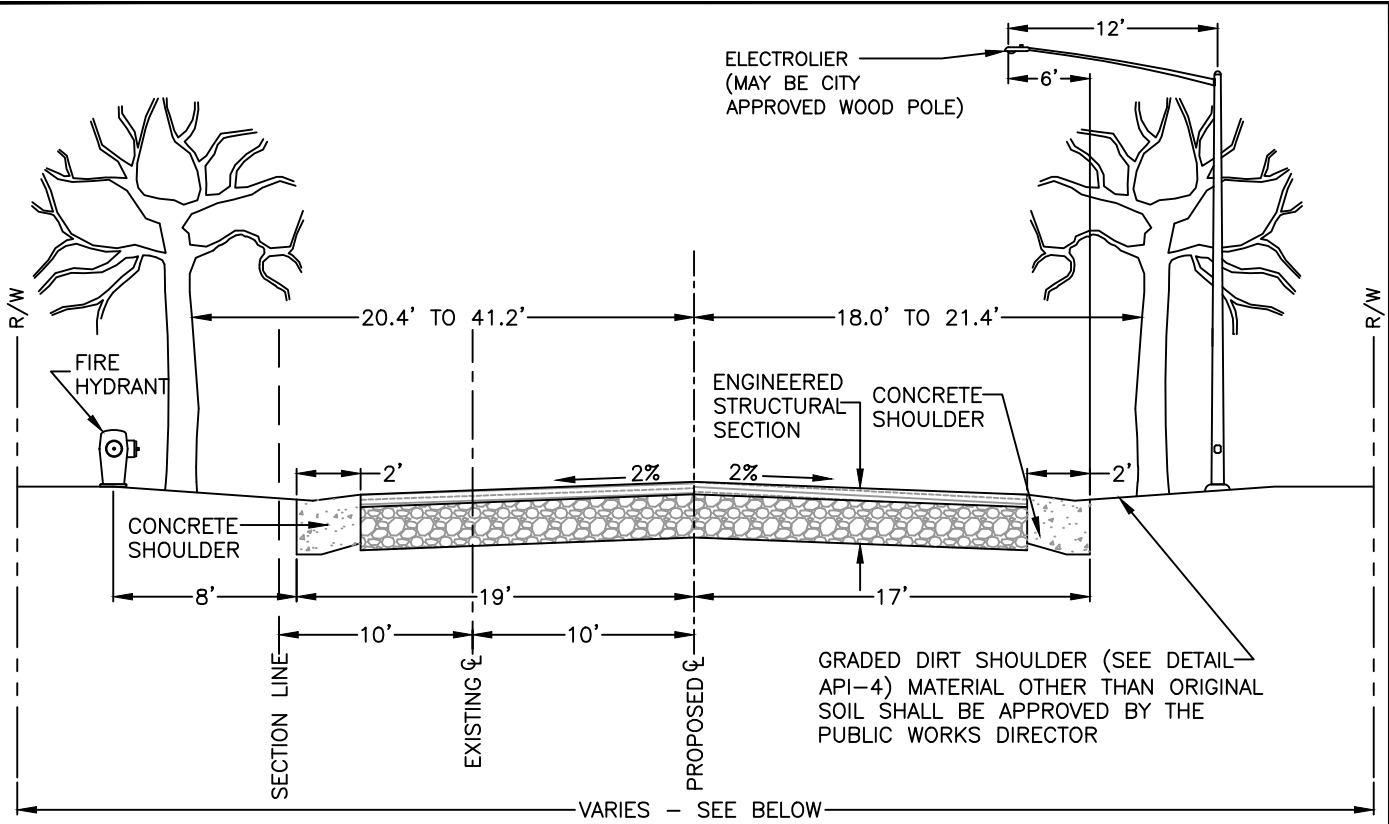


BIKE PATH DETAIL

NOTES:

1. CURB AND GUTTER IS PROHIBITED.
2. DRIVEWAY APPROACHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING API-4.
3. ASPHALT CONCRETE PAVEMENT SHALL CONFORM TO CITY STANDARDS.
4. SEE STANDARD DRAWINGS W-3 AND W-4 FOR LOCATION OF FIRE HYDRANT VALVES.
5. PROPERTY OWNER MAY PLACE ASPHALT CONCRETE PAVEMENT (2" A.C. OVER 6" C.N.S.) BETWEEN EDGE OF PAVEMENT (EP) AND PROPERTY LINE (PL) BY OBTAINING AN ENCROACHMENT PERMIT FROM THE PUBLIC WORKS DEPARTMENT. PROPERTY OWNER SHALL BE RESPONSIBLE FOR MAINTAINING PAVEMENT BETWEEN EP AND PL.
6. ANY ENCROACHMENT INTO THE PUBLIC RIGHT OF WAY SHALL HAVE AN ENCROACHMENT PERMIT AND FEES SHALL BE PAID IN ACCORDANCE WITH THE MASTER FEE SCHEDULE.
7. IF SHOULDER IS PAVED, FLOW LINE OF GUTTER MUST BE ESTABLISHED OR APPROVED BY THE PUBLIC WORKS DEPARTMENT.





EXISTING RIGHT-OF-WAY WIDTHS

- 40' FANCHER CREEK TO 25' S/O FLORENCE
- 60' 25' S/O FLORENCE TO 70' S/O PITT
- 40' 70' S/O PITT TO 30' S/O GEARY
- 60' 30' S/O GEARY TO 110' N/O GEARY
- 40' 110' N/O GEARY TO 90' S/O ATCHISON
- 60' 90' S/O ATCHISON TO CALIFORNIA

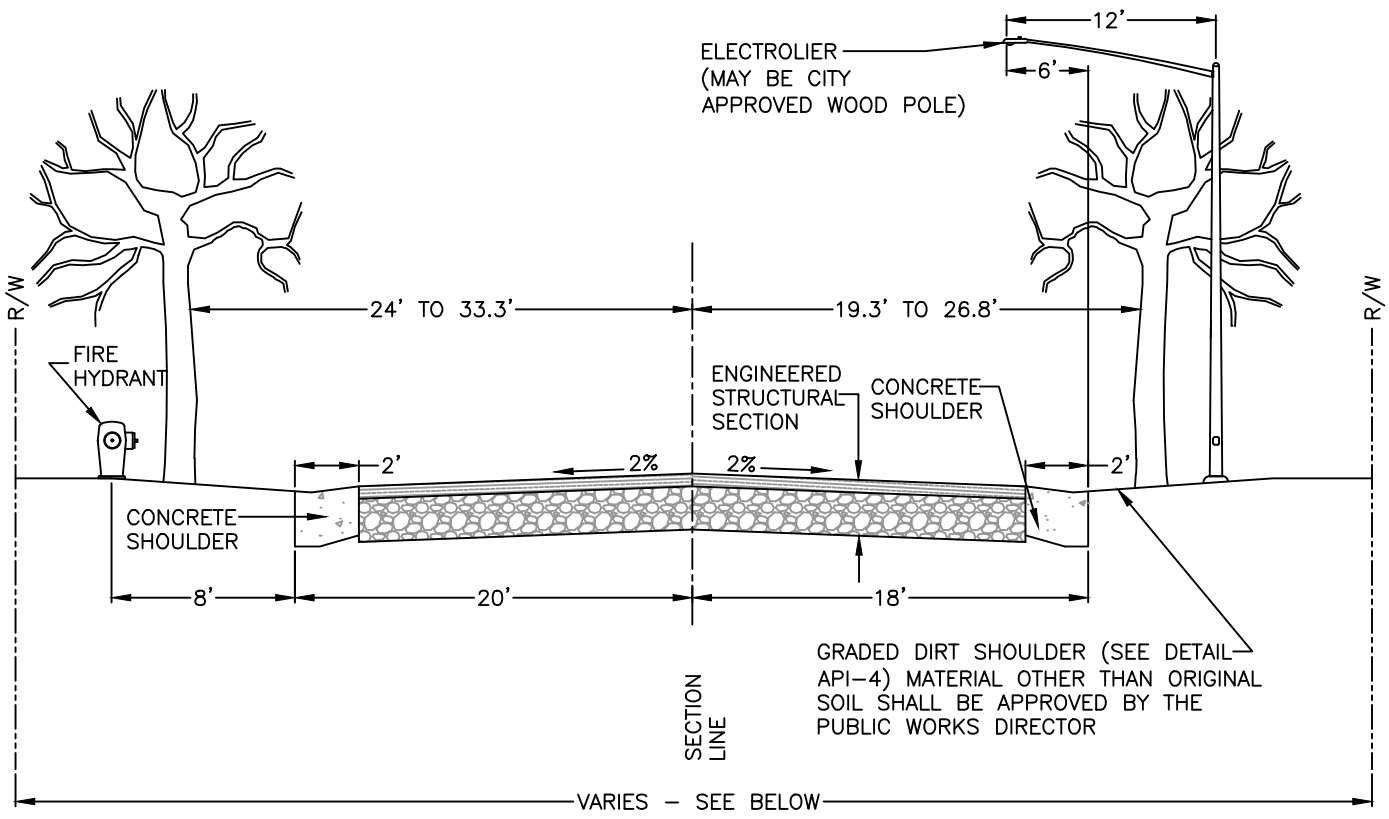
NOTES:

1. A TWO FOOT CONCRETE SHOULDER IS REQUIRED IN AN R-M OVERLAY DISTRICT.
2. ASPHALT CONCRETE PAVING BETWEEN THE EDGE OF PAVEMENT OR CONCRETE SHOULDER AND THE PROPERTY LINE IS PROHIBITED EXCEPT FOR DRIVEWAY APPROACHES.
3. DRIVEWAY APPROACHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING API-4.
4. ASPHALT CONCRETE PAVEMENT SHALL CONFORM TO CITY STANDARDS.
5. SEE STANDARD DRAWING W-3 AND W-4 FOR LOCATION OF FIRE HYDRANT VALVES.

MINNEWAWA AVENUE  
FANCHER CREEK TO CALIFORNIA AVENUE

REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
API-7



EXISTING RIGHT-OF-WAY WIDTHS

- 50' CALIFORNIA TO COLUMBIA
- 40' COLUMBIA TO 145' N/O COLUMBIA
- 50' 145' N/O COLUMBIA TO 535' N/O COLUMBIA
- 40' 535' N/O COLUMBIA TO 210' S/O HEATON
- 50' 210' S/O HEATON TO 205' N/O HEATON
- 40' 205' N/O HEATON TO BUTLER

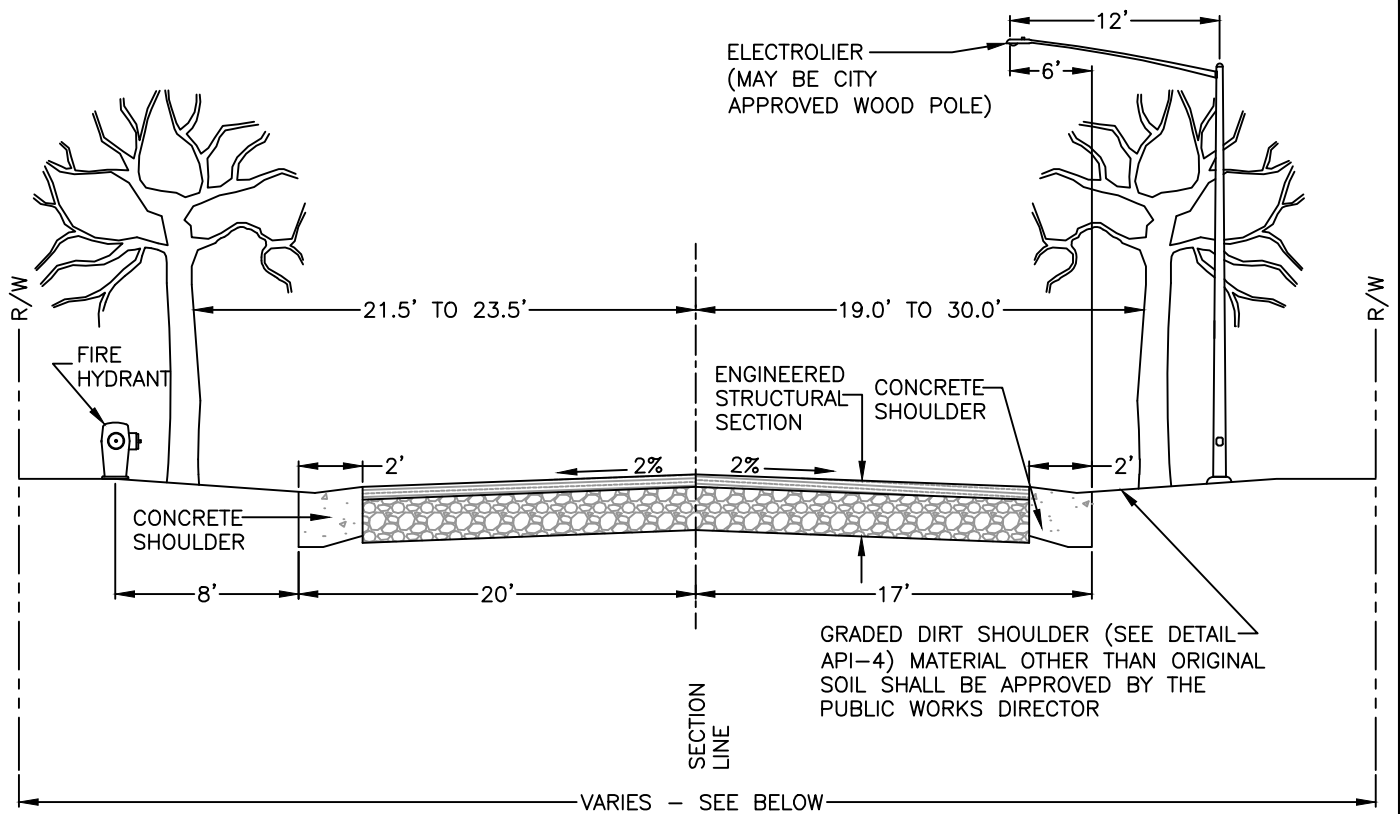
NOTES:

1. A TWO FOOT CONCRETE SHOULDER IS REQUIRED IN AN R-M OVERLAY DISTRICT. SEE STANDARD DRAWING API-4.
2. ASPHALT CONCRETE PAVING BETWEEN THE EDGE OF PAVEMENT OR CONCRETE SHOULDER AND THE PROPERTY LINE IS PROHIBITED EXCEPT FOR DRIVEWAY APPROACHES.
3. DRIVEWAY APPROACHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING API-4.
4. ASPHALT CONCRETE PAVEMENT SHALL CONFORM TO CITY STANDARDS.
5. SEE STANDARD DRAWING W-3 AND W-4 FOR LOCATION OF FIRE HYDRANT VALVES.
6. CURB AND GUTTER EXISTS ON THE EAST SIDE FOR APPROXIMATELY 255' NORTH AND SOUTH OF HEATON.

**MINNEWAWA AVENUE**  
**CALIFORNIA AVENUE TO BUTLER AVENUE**

REF. & REV.  
 AUG. 2010  
 MAR. 2021 (A.7)

CITY OF FRESNO  
**API-8**



#### EXISTING RIGHT-OF-WAY WIDTHS

50'	BUTLER TO 240' N/O LIBERTY
60'	240' N/O LIBERTY TO LANE
50'	LANE TO KINGS CANYON
60'	KINGS CANYON TO HUNTINGTON
40'	HUNTINGTON TO PALM DRIVE
40'-50'	PALM DRIVE TO TULARE

#### NOTES:

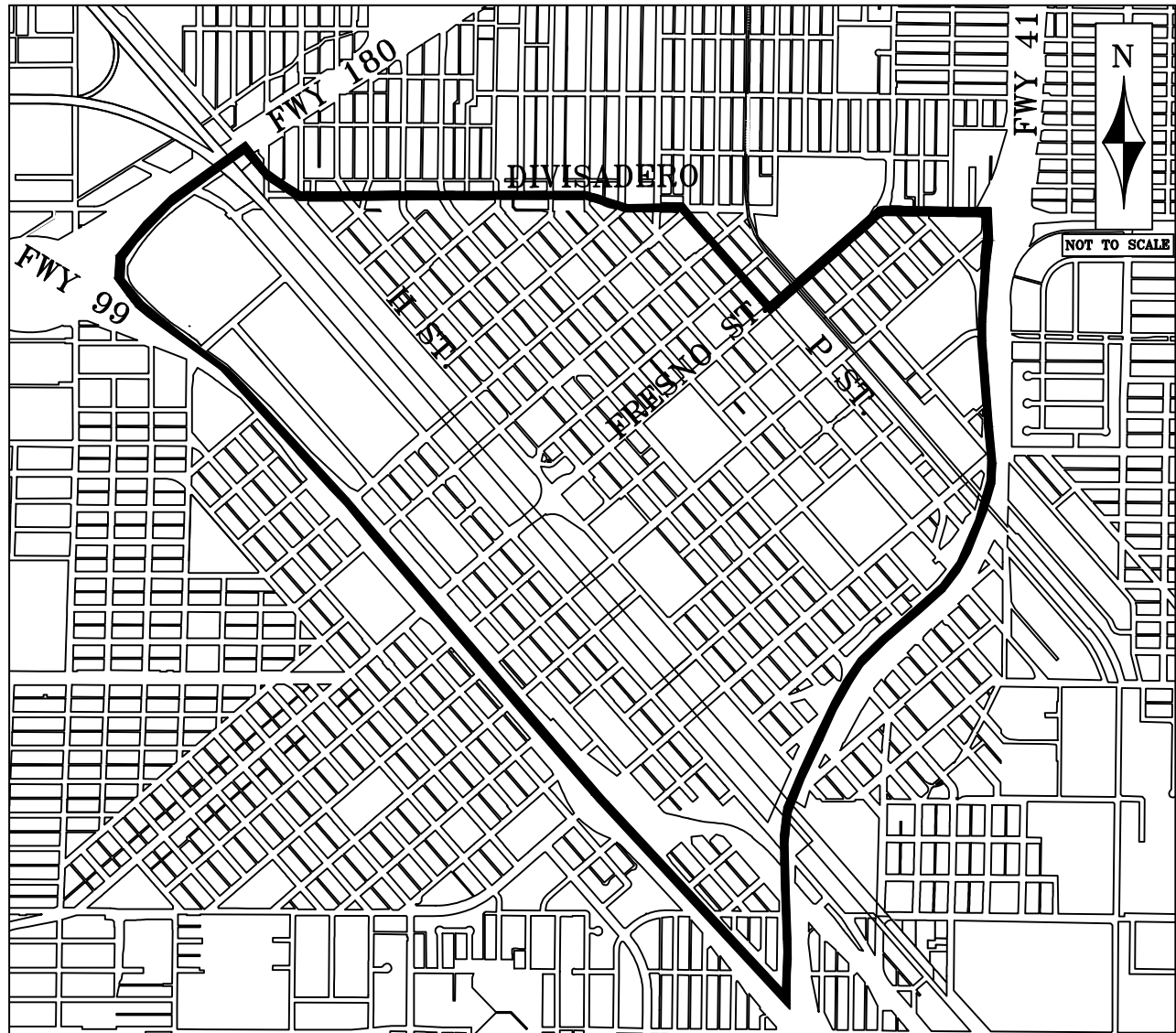
1. A TWO FOOT CONCRETE SHOULDER IS REQUIRED IN AN R-M OVERLAY DISTRICT.
2. ASPHALT CONCRETE PAVING BETWEEN THE EDGE OF PAVEMENT OR CONCRETE SHOULDER AND THE PROPERTY LINE IS PROHIBITED EXCEPT FOR DRIVEWAY APPROACHES.
3. DRIVEWAY APPROACHES SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARD DRAWING API-4.
4. ASPHALT CONCRETE PAVEMENT SHALL CONFORM TO CITY STANDARDS.
5. SEE STANDARD DRAWING W-3 AND W-4 FOR LOCATION OF FIRE HYDRANT VALVES.
6. CURB AND GUTTER EXISTS ON THE EAST SIDE FOR APPROXIMATELY 255' NORTH AND SOUTH OF HEATON, ON THE EAST SIDE FROM TULARE TO APPROXIMATELY 570' SOUTH OF TULARE, AND ON THE WEST SIDE FROM KINGS CANYON TO APPROXIMATELY 200' NORTH OF KINGS CANYON.

MINNEWAWA AVENUE  
BUTLER AVENUE TO TULARE AVENUE

REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
API-9

# DOWNTOWN VICINITY MAP



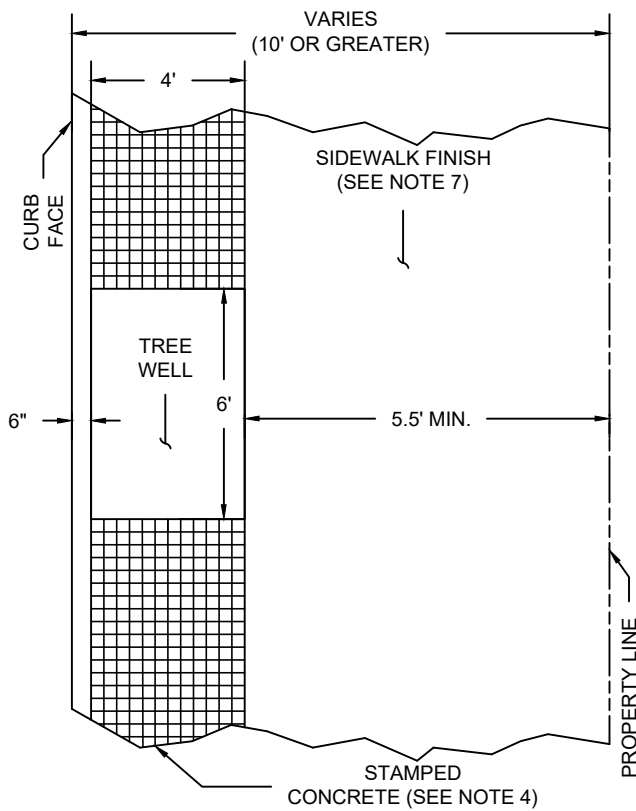
## NOTES:

1. NEW CONCRETE SIDEWALK TO BE POURED WITHIN THE "DOWNTOWN FRESNO AREA" SHALL BE DAVIS COLORS MIAMI BUFF COLORED CONCRETE, OR APPROVED EQUIVALENT, AS DETAILED IN THE CITY OF FRESNO STANDARD DRAWING API-11.
2. THE "DOWNTOWN FRESNO AREA" IS BOUNDED BY THE FOLLOWING ROADWAYS: DIVISADERO (SR41 TO FRESNO ST), FRESNO ST (DIVISADERO TO P ST), P ST (FRESNO ST TO DIVISADERO), DIVISADERO (P ST TO H ST), H ST (DIVISADERO TO SR180), SR180 (H ST TO SR99), SR99 (SR180 TO SR41), SR41 (SR99 TO DIVISADERO). BOTH SIDES OF THE BOUNDARY STREETS SHALL UTILIZE THIS SPECIAL AESTHETIC TREATMENT.

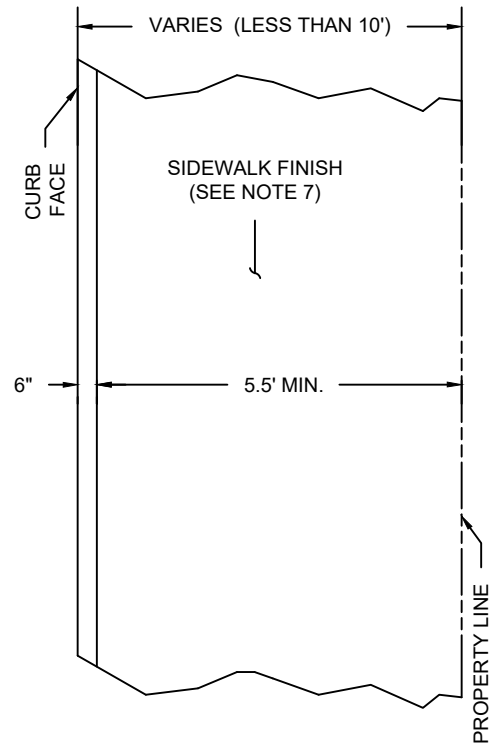
DOWNTOWN CONCRETE SIDEWALK  
AESTHETIC TREATMENT  
SIDEWALK AESTHETIC BOUNDARY

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO  
API-10



**CASE A**

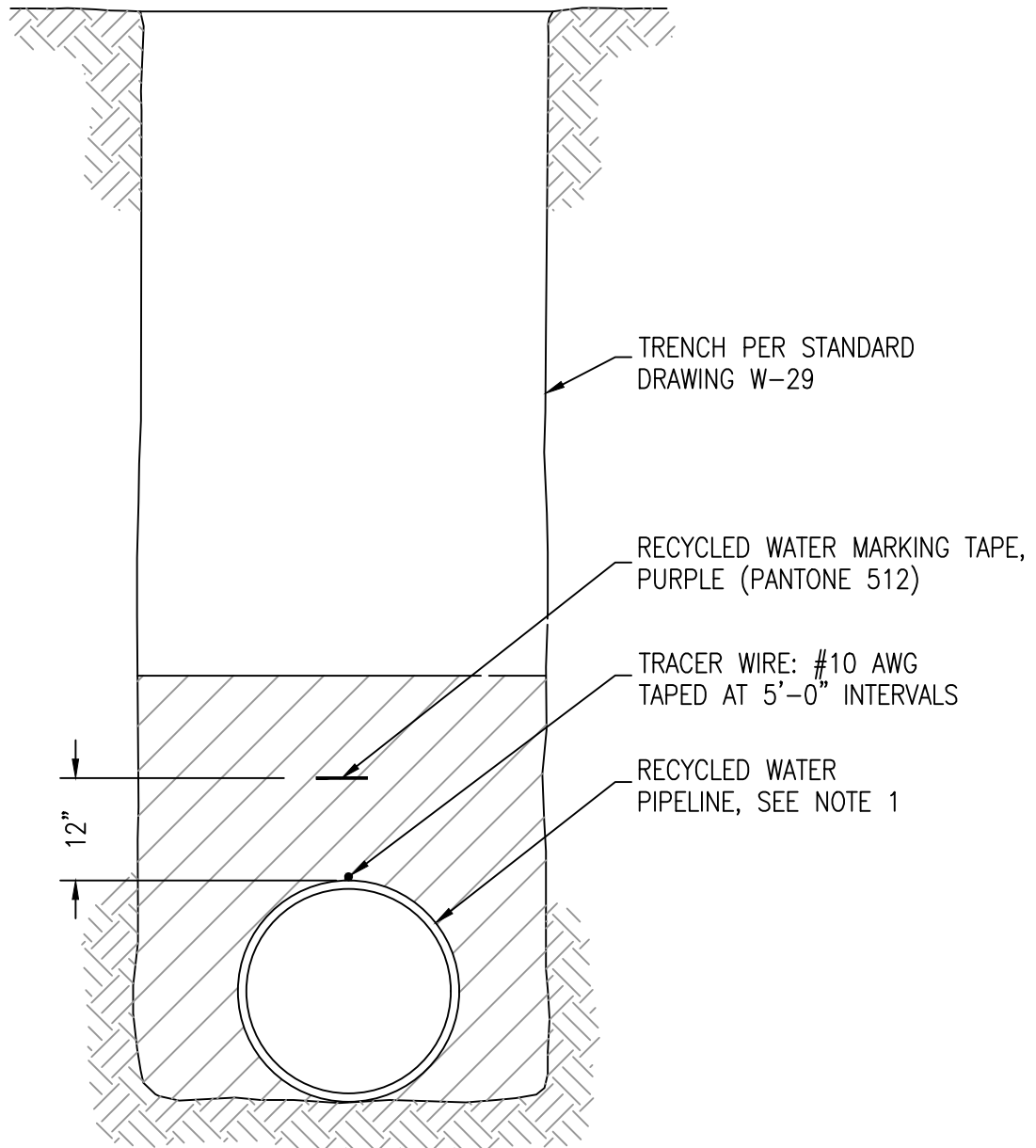


**CASE B**

**NOTES:**

1. DOWNTOWN AESTHETIC TREATMENT SHALL BE IMPLEMENTED WITHIN THE BOUNDARIES NOTED ON API-10.
2. ALL SIDEWALK CONCRETE INCLUDING DRIVE APPROACHES, BUT EXCLUDING CURB & GUTTER, SHALL BE COLORED WITH DAVIS COLORS MIAMI BUFF AS SPECIFIED IN API-10.
3. CASE A SHALL BE USED FOR SIDEWALK PATTERNS 10' WIDE OR GREATER; FOR SIDEWALK PATTERNS LESS THAN 10' WIDE CASE B SHALL BE IMPLEMENTED.
4. STAMPED CONCRETE SHALL HAVE A 4"X4" BOMANITE SQUARE PATTERN, OR APPROVED EQUIVALENT, WITH MIAMI BUFF COLOR.
5. TREE WELLS SHALL FOLLOW CITY STANDARD P-8, CASE A.
6. CONCRETE SIDEWALK, CURB, & GUTTER SHALL ADHERE TO CONSTRUCTION DETAILS ON CITY STANDARD P-5.
7. DOWNTOWN AESTHETIC TREATMENT SHALL IMPLEMENT A MEDIUM BROOM FINISH WITHIN THE BOUNDARIES NOTED ON API-10.

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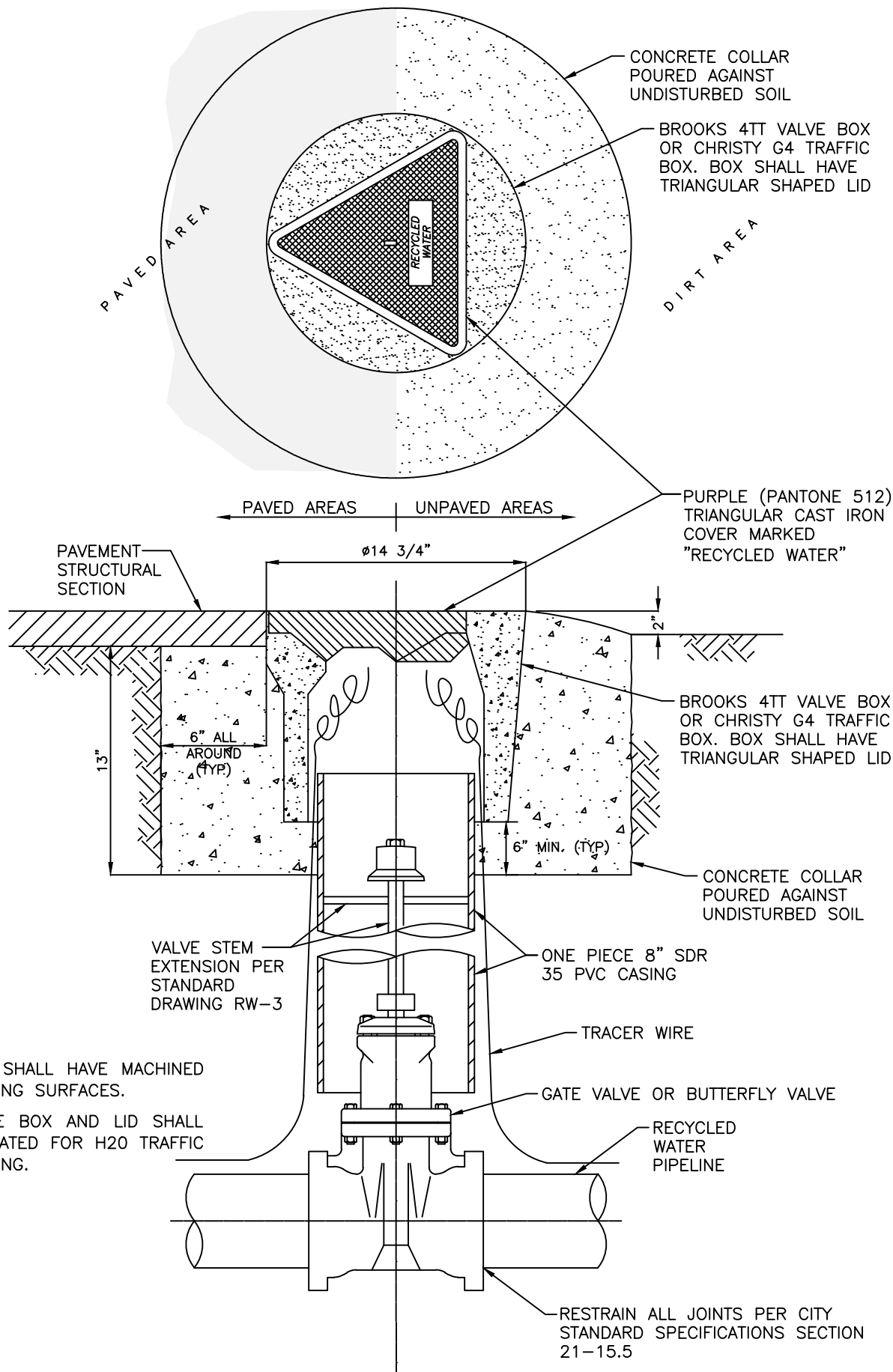
NOTE:

1. RECYCLED WATER PIPELINES SHALL BE COLORED PURPLE (PANTONE 512) AND INTEGRALLY STAMPED "RECYCLED WATER - DO NOT DRINK" ON OPPOSITE SIDES OF THE PIPE. ALTERNATIVELY, NON-PVC RECYCLED WATER PIPELINES SHALL BE MARKED WITH LETTERING ON PURPLE MARKING TAPE BEARING THE CONTINUOUS WORDING "RECYCLED WATER-DO NOT DRINK". THE MARKING TAPE SHALL BE A MINIMUM OF SIX INCHES WIDE AND SHALL BE SECURELY ATTACHED 12" ABOVE THE TOP OF THE PIPELINE.

RECYCLED WATER  
MAIN IDENTIFICATION

REF. & REV.  
AUG. 2010  
MAR. 2021 (A.7)

CITY OF FRESNO  
RW-1



**NOTES:**

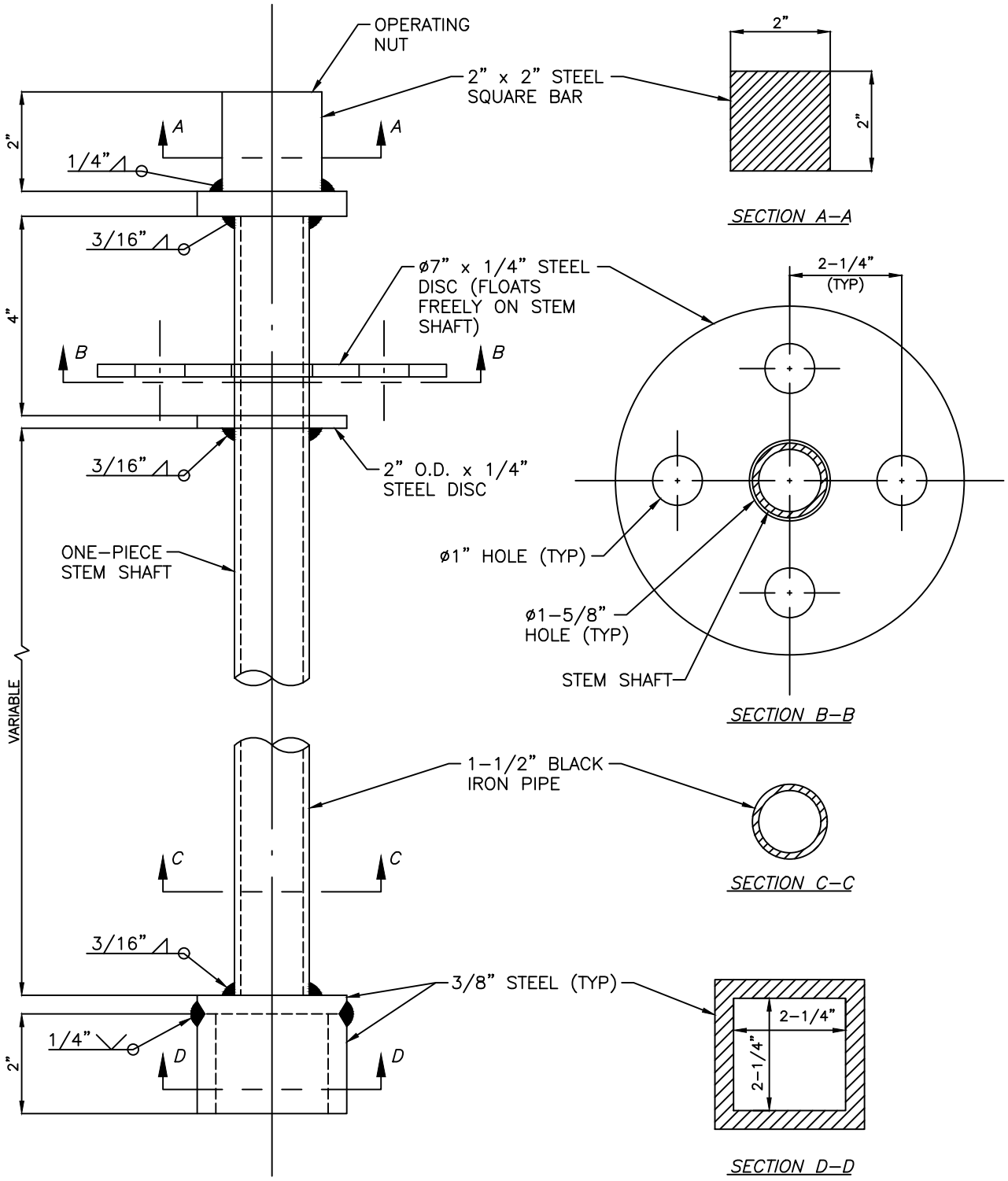
1. LIDS SHALL HAVE MACHINED COATING SURFACES.
2. VALVE BOX AND LID SHALL BE RATED FOR H20 TRAFFIC LOADING.

**RECYCLED WATER  
VALVE AND VALVE BOX**

REF. & REV.  
AUG. 2015

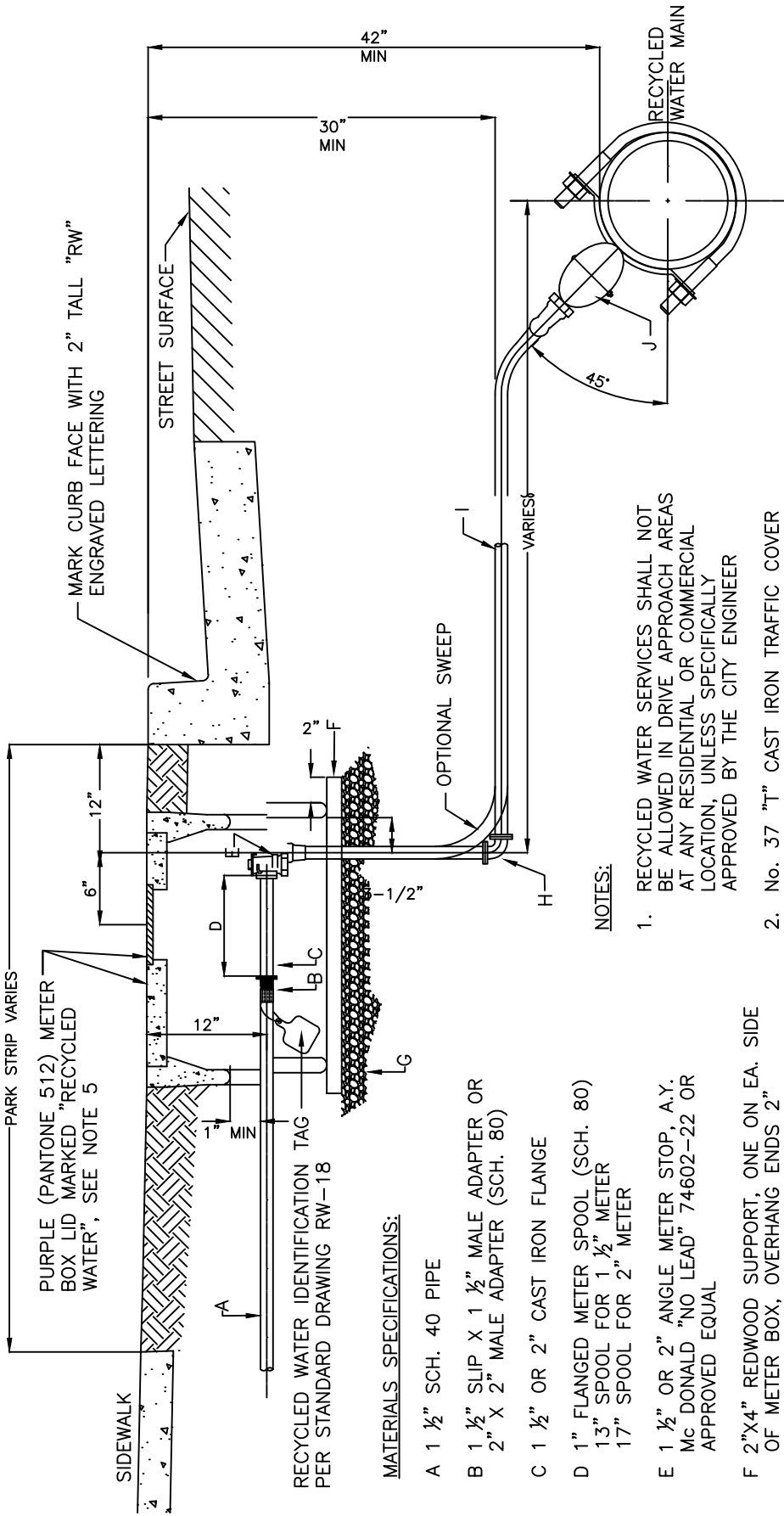
CITY OF FRESNO  
**RW-2**





**NOTES:**

1. EXTENSION STEM SHAFT SHALL BE ROUND OR SQUARE STEEL TUBING OF ONE-PIECE DESIGN (NO PINNED CONNECTIONS OR COUPLINGS PERMITTED).
2. VALVES DEEPER THAN 5' REQUIRE A VALVE STEM EXTENSION.
3. EXTENSION STEMS SHALL NOT BE ATTACHED/BOLTED TO OPERATING NUT OF THE VALVE.
4. VALVE STEM EXTENSION SHALL BE HOT DIP GALVANIZED AFTER FABRICATION IS COMPLETE.



MARK CURB FACE WITH 2" TALL "RW" ENGRAVED LETTERING

STREET SURFACE

RECYCLED WATER MAIN

**MATERIALS SPECIFICATIONS:**

- A 1 1/2" SCH. 40 PIPE
- B 1 1/2" SLIP X 1 1/2" MALE ADAPTER OR 2" X 2" MALE ADAPTER (SCH. 80)
- C 1 1/2" OR 2" CAST IRON FLANGE
- D 1" FLANGED METER SPOOL (SCH. 80)  
13" SPOOL FOR 1 1/2" METER  
17" SPOOL FOR 2" METER
- E 1 1/2" OR 2" ANGLE METER STOP, A.Y. Mc DONALD "NO LEAD" 74602-22 OR APPROVED EQUAL
- F 2"x4" REDWOOD SUPPORT, ONE ON EA. SIDE OF METER BOX, OVERHANG ENDS 2"
- G 6" THICK 3/4" CRUSHED ROCK WHEN BOX IS PLACED IN ALLEYS WITH TRASH PICK UP ONLY. ALL BOXES IN ALLEYS SHALL BE PLACED PARALLEL TO ALLEY
- H COMP X COMP 90° ELL, A.Y. Mc DONALD "NO LEAD" 74761-22 OR APPROVED EQUAL
- I TYPE "K" SOFT DRAWN COPPER TUBING CONTINUOUSLY WRAPPED IN PURPLE MARKING TAPE OR PURPLE (PANTONE 512) CAMPACK CTS SDR-9 PE 3408, USE COMPRESSION JOINTS WITH STAINLESS STEEL INSERT
- J 1" CORPORATION STOP A.Y. Mc DONALD "NO LEAD" 74701-22 OR APPROVED EQUAL

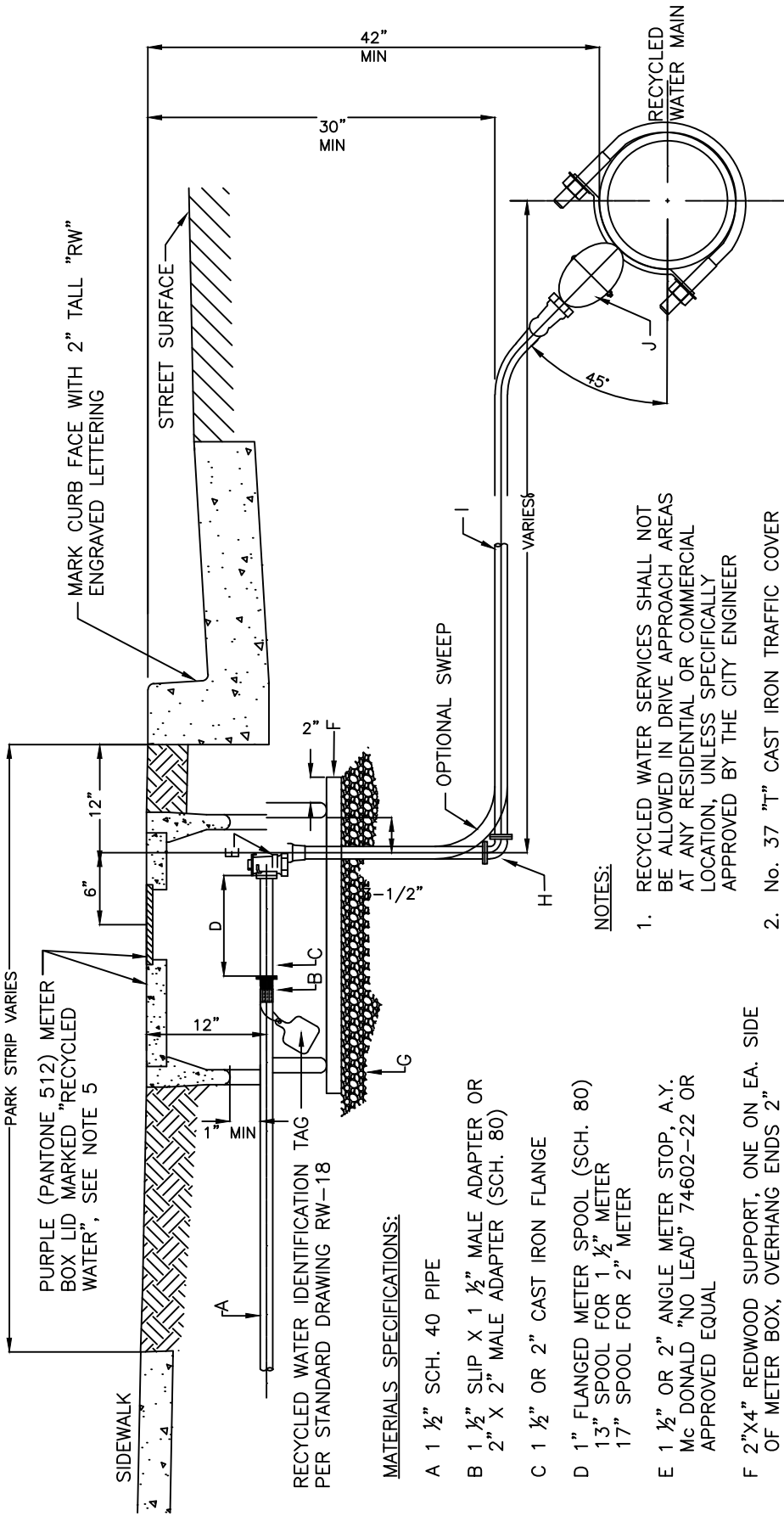
**NOTES:**

1. RECYCLED WATER SERVICES SHALL NOT BE ALLOWED IN DRIVE APPROACH AREAS AT ANY RESIDENTIAL OR COMMERCIAL LOCATION, UNLESS SPECIFICALLY APPROVED BY THE CITY ENGINEER
2. No. 37 "I" CAST IRON TRAFFIC COVER SHALL BE USED WHEN METER IS LOCATED IN ALLEYS OR DRIVE APPROACH AREAS, OR BEHIND ROLLED CURBS.
3. ALL COPPER FITTINGS SHALL BE CAMPACK COMPRESSION-TYPE.
4. POLYETHYLENE PIPE SHALL USE CAMPACK COMPRESSION-TYPE JOINTS WITH STAINLESS STEEL INSERT.
5. FOR 1 1/2" SERVICE, METER BOX SHALL BE ARMORCAST OR APPROVED EQUAL. OLD CASTLE B30 BOX W/ CAST-IN CORNER BRACKETS ARMORCAST A6001969-COF LID FOR 1 1/2" METER OR OLD CASTLE B36 BOX W/ CAST-IN CORNER BRACKETS & ARMORCAST A6001947T-COF LID FOR 2" METER.
6. FOR PVC RECYCLED WATER MAIN TAPS, SERVICE SADDLES WITH CIRCUMFERENTIAL TYPE BANDS SHAPED TO FIT THE ACTUAL O.D. OF THE PIPE AND HAVING A MINIMUM BEARING WIDTH OF 3" (1-1/2" PER BAND) SHALL BE USED. FOR DUCTILE AND CAST IRON MAINS USE BRONZE OR DUCTILE IRON SERVICE SADDLES, WITH BRONZE OR STAINLESS DOUBLE STRAPS.
7. RECYCLED WATER SERVICES SHALL BE LOCATED A MINIMUM OF 4' CLEAR OF POTABLE WATER SERVICES.

1-1/2" & 2" SERVICE CONNECTION & METER BOX INSTALLATION

REF. & REV. OCT. 2014

CITY OF FRESNO  
RW-5



MARK CURB FACE WITH 2" TALL "RW" ENGRAVED LETTERING

PURPLE (PANTONE 512) METER BOX LID MARKED "RECYCLED WATER", SEE NOTE 5

RECYCLED WATER IDENTIFICATION TAG PER STANDARD DRAWING RW-18

**MATERIALS SPECIFICATIONS:**

- A 1 1/2" SCH. 40 PIPE
- B 1 1/2" SLIP X 1 1/2" MALE ADAPTER OR 2" X 2" MALE ADAPTER (SCH. 80)
- C 1 1/2" OR 2" CAST IRON FLANGE
- D 1" FLANGED METER SPOOL (SCH. 80)  
13" SPOOL FOR 1 1/2" METER  
17" SPOOL FOR 2" METER
- E 1 1/2" OR 2" ANGLE METER STOP, A.Y. Mc DONALD "NO LEAD" 74602-22 OR APPROVED EQUAL
- F 2"x4" REDWOOD SUPPORT, ONE ON EA. SIDE OF METER BOX, OVERHANG ENDS 2"
- G 6" THICK 3/4" CRUSHED ROCK WHEN BOX IS PLACED IN ALLEYS WITH TRASH PICK UP ONLY. ALL BOXES IN ALLEYS SHALL BE PLACED PARALLEL TO ALLEY
- H COMP X COMP 90° ELL, A.Y. Mc DONALD "NO LEAD" 74761-22 OR APPROVED EQUAL
- I TYPE "K" SOFT DRAWN COPPER TUBING CONTINUOUSLY WRAPPED IN PURPLE MARKING TAPE OR PURPLE (PANTONE 512) CAMPACK CTS SDR-9 PE 3408, USE COMPRESSION JOINTS WITH STAINLESS STEEL INSERT
- J 1" CORPORATION STOP A.Y. Mc DONALD "NO LEAD" 74701-22 OR APPROVED EQUAL

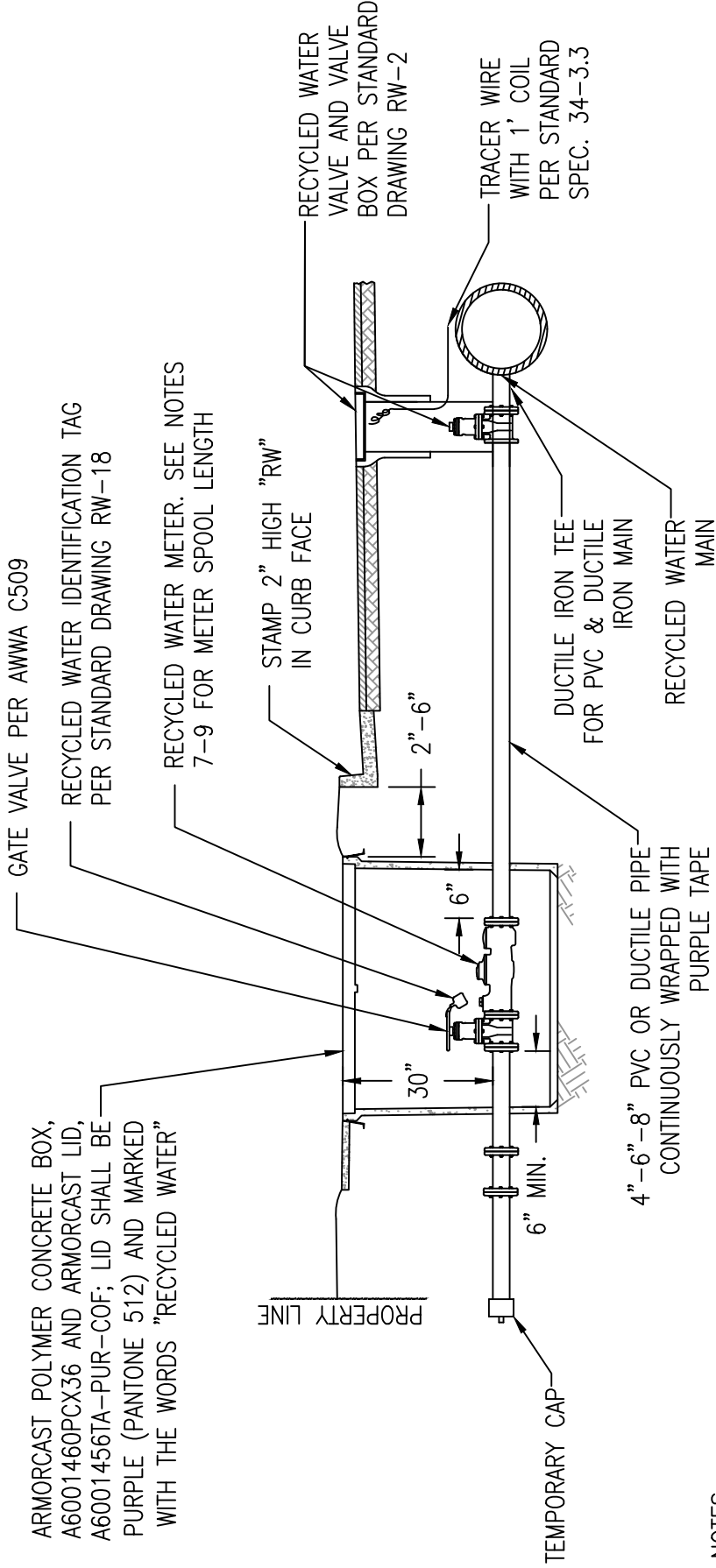
**NOTES:**

1. RECYCLED WATER SERVICES SHALL NOT BE ALLOWED IN DRIVE APPROACH AREAS AT ANY RESIDENTIAL OR COMMERCIAL LOCATION, UNLESS SPECIFICALLY APPROVED BY THE CITY ENGINEER
2. No. 37 "I" CAST IRON TRAFFIC COVER SHALL BE USED WHEN METER IS LOCATED IN ALLEYS OR DRIVE APPROACH AREAS, OR BEHIND ROLLED CURBS.
3. ALL COPPER FITTINGS SHALL BE CAMPACK COMPRESSION-TYPE.
4. POLYETHYLENE PIPE SHALL USE CAMPACK COMPRESSION-TYPE JOINTS WITH STAINLESS STEEL INSERT.
5. FOR 1 1/2" SERVICE, METER BOX SHALL BE ARMORCAST OR APPROVED EQUAL. OLD CASTLE B30 BOX W/ CAST-IN CORNER BRACKETS ARMORCAST A6001969-COF LID FOR 1 1/2" METER OR OLD CASTLE B36 BOX W/ CAST-IN CORNER BRACKETS & ARMORCAST A6001947T-COF LID FOR 2" METER.
6. FOR PVC RECYCLED WATER MAIN TAPS, SERVICE SADDLES WITH CIRCUMFERENTIAL TYPE BANDS SHAPED TO FIT THE ACTUAL O.D. OF THE PIPE AND HAVING A MINIMUM BEARING WIDTH OF 3" (1-1/2" PER BAND) SHALL BE USED. FOR DUCTILE AND CAST IRON MAINS USE BRONZE OR DUCTILE IRON SERVICE SADDLES, WITH BRONZE OR STAINLESS DOUBLE STRAPS.
7. RECYCLED WATER SERVICES SHALL BE LOCATED A MINIMUM OF 4' CLEAR OF POTABLE WATER SERVICES.

1-1/2" & 2" SERVICE CONNECTION & METER BOX INSTALLATION

REF. & REV. OCT. 2014

CITY OF FRESNO  
RW-5



ARMORCAST POLYMER CONCRETE BOX, A6001460PCX36 AND ARMORCAST LID, A6001456TA-PUR-COF; LID SHALL BE PURPLE (PANTONE 512) AND MARKED WITH THE WORDS "RECYCLED WATER"

RECYCLED WATER METER. SEE NOTES 7-9 FOR METER SPOOL LENGTH

PROPERTY LINE

30"

6"

TEMPORARY CAP

4" -6" -8" PVC OR DUCTILE PIPE CONTINUOUSLY WRAPPED WITH PURPLE TAPE

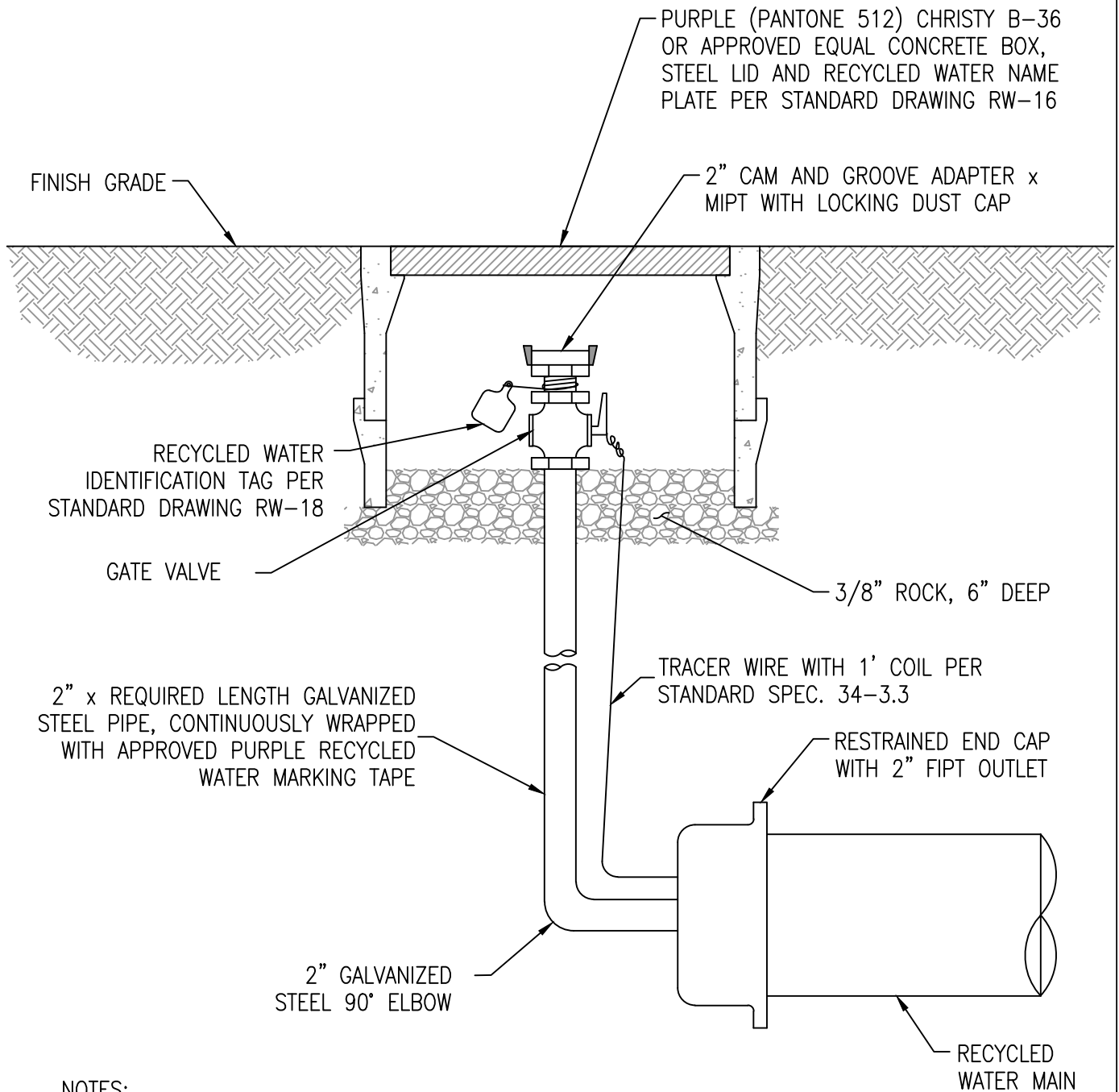
NOTES:

1. RECYCLED WATER SERVICE AND METER BOX INSTALLATION SHALL BE INSPECTED AND APPROVED BY CITY PRIOR TO SIDEWALK INSTALLATION.
2. RECYCLED WATER SERVICES SHALL BE LOCATED A MINIMUM OF 4' CLEAR OF POTABLE WATER SERVICES.
3. ALL MATERIALS SHALL BE AS NOTED OR CITY-APPROVED EQUAL.
4. ALL METER BOXES IN DIRT OR LANDSCAPE AREAS SHALL BE SET IN A 6" CONCRETE SLAB MEASURING AT LEAST 1' BEYOND METER BOX ON ALL SIDES.
5. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5
6. RECYCLED WATER SERVICES SHALL NOT BE ALLOWED IN DRIVEWAY APPROACH AREAS AT ANY RESIDENTIAL OR COMMERCIAL LOCATION.
7. FOR 4" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 13<sup>3</sup>/<sub>4</sub>".
8. FOR 6" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 17<sup>3</sup>/<sub>4</sub>".
9. FOR 8" RECYCLED WATER SERVICE, METER SPOOL LENGTH SHALL BE 24".
10. METERS DEEPER THAN 30 INCHES TO TOP OF PIPE MUST BE RAISED TO 30 INCHES.
11. WHEN CURB EXISTS, SET METER BOX 2" TO 6" FROM BACK OF CURB.

4", 6", 8" RECYCLED WATER SERVICE

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
RW-6



NOTES:

1. SET TOP OF METER BOX FLUSH WITH FINISH GRADE FOR ANY INSTALLATION IN THE CITY RIGHT OF WAY.
2. THE CONSTRUCTION OF A TEMPORARY BLOW-OFF FOR THE USE OF TESTING AND FLUSHING OF NEW RECYCLED WATER MAINS ONLY.
3. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5

**TEMPORARY 2" RECYCLED  
WATER BLOW-OFF**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

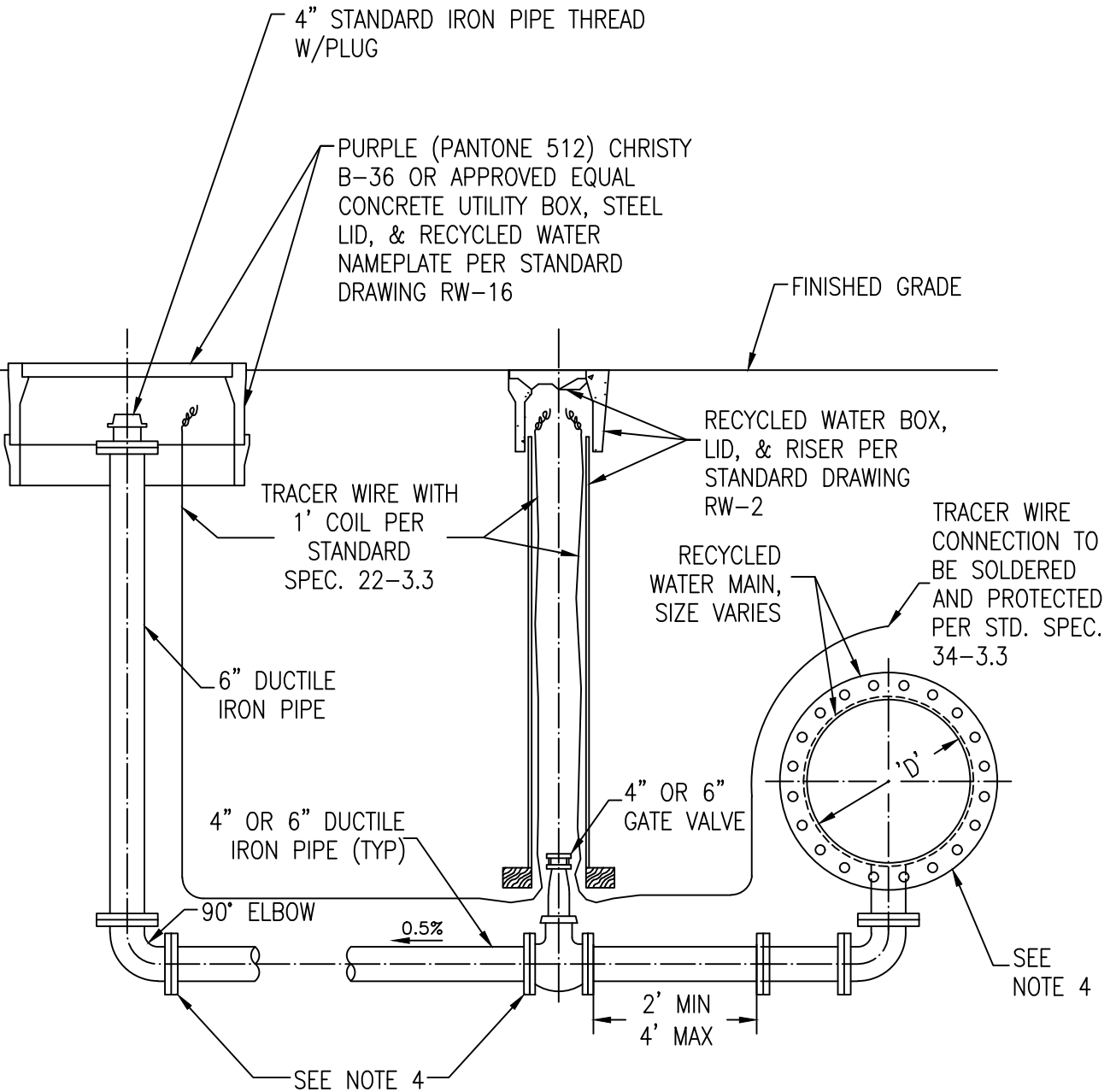
CITY OF FRESNO  
**RW-7**

THIS STANDARD IS  
NO LONGER USED

NO LONGER USED  
SEE RW-8A & RW-8B

REF. & REV.  
~~AUG. 2015~~  
MAR. 2021 (A.7)

CITY OF FRESNO  
RW-8



**NOTES:**

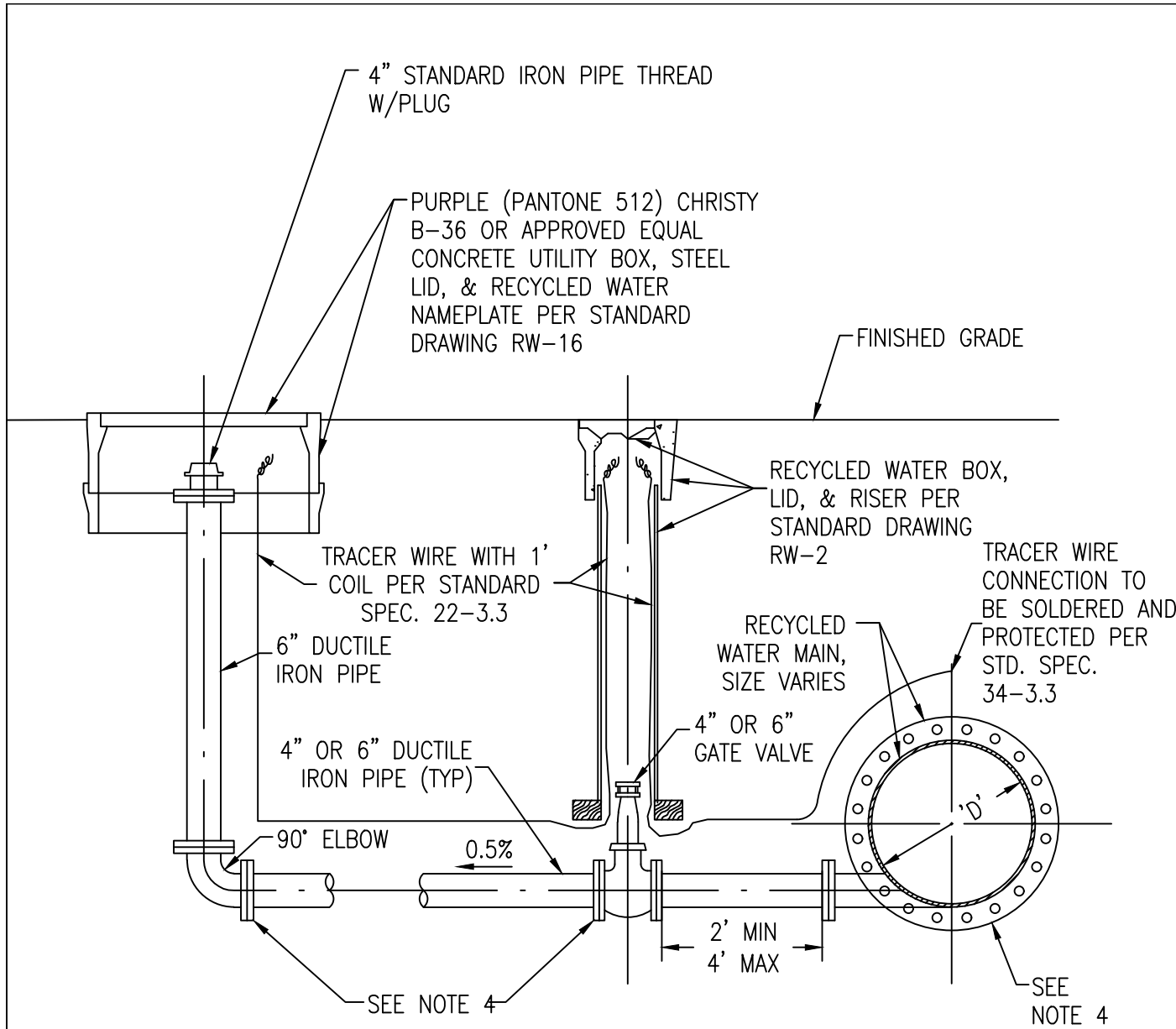
1. ALL FITTINGS SHALL BE SECURED WITH FLANGE CONNECTION, HARNESSES OR TIE-RODS AS APPLICABLE.
2. PLACE VALVES AND BLOW-OFFS OUTSIDE SIDEWALK AND DRIVEWAY AREAS.
3. ALL RISERS SHALL BE FLANGED, 6" DIAMETER.
4. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5

BLOW-OFF PIPE SIZE SCHEDULE	
MAIN	BLOW-OFF
6"	4"
8"	4"
10"	4"
12"	6"
14"	6"
16"	6"
18"	6"
24"	6"
30"	6"

**RECYCLED WATER  
BLOW-OFF ASSEMBLY  
(PVC OR DUCTILE IRON MAIN)**

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO  
**RW-8A**



**NOTES:**

1. ALL FITTINGS SHALL BE SECURED WITH FLANGE CONNECTION, HARNESSES OR TIE-RODS AS APPLICABLE.
2. PLACE VALVES AND BLOW-OFFS OUTSIDE SIDEWALK AND DRIVEWAY AREAS.
3. ALL RISERS SHALL BE FLANGED, 6" DIAMETER.
4. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5.

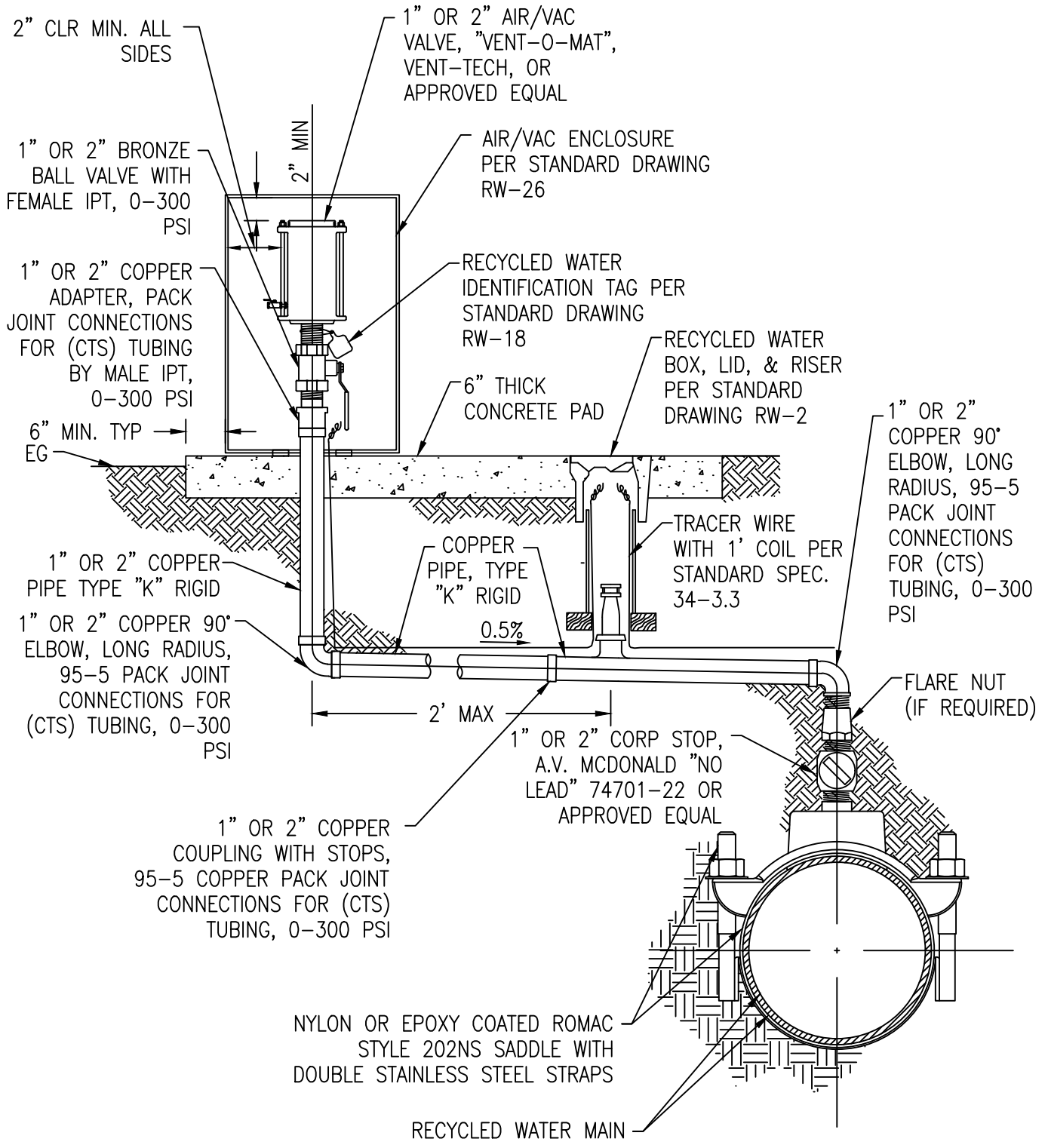
BLOW-OFF PIPE SIZE SCHEDULE	
MAIN	BLOW-OFF
6"	4"
8"	4"
10"	4"
12"	6"
14"	6"
16"	6"
18"	6"
24"	6"
30"	6"

**RECYCLED WATER  
BLOW-OFF ASSEMBLY  
(STEEL MAIN)**

REF. & REV.  
MAR. 2021 (A.7)

CITY OF FRESNO  
**RW-8B**





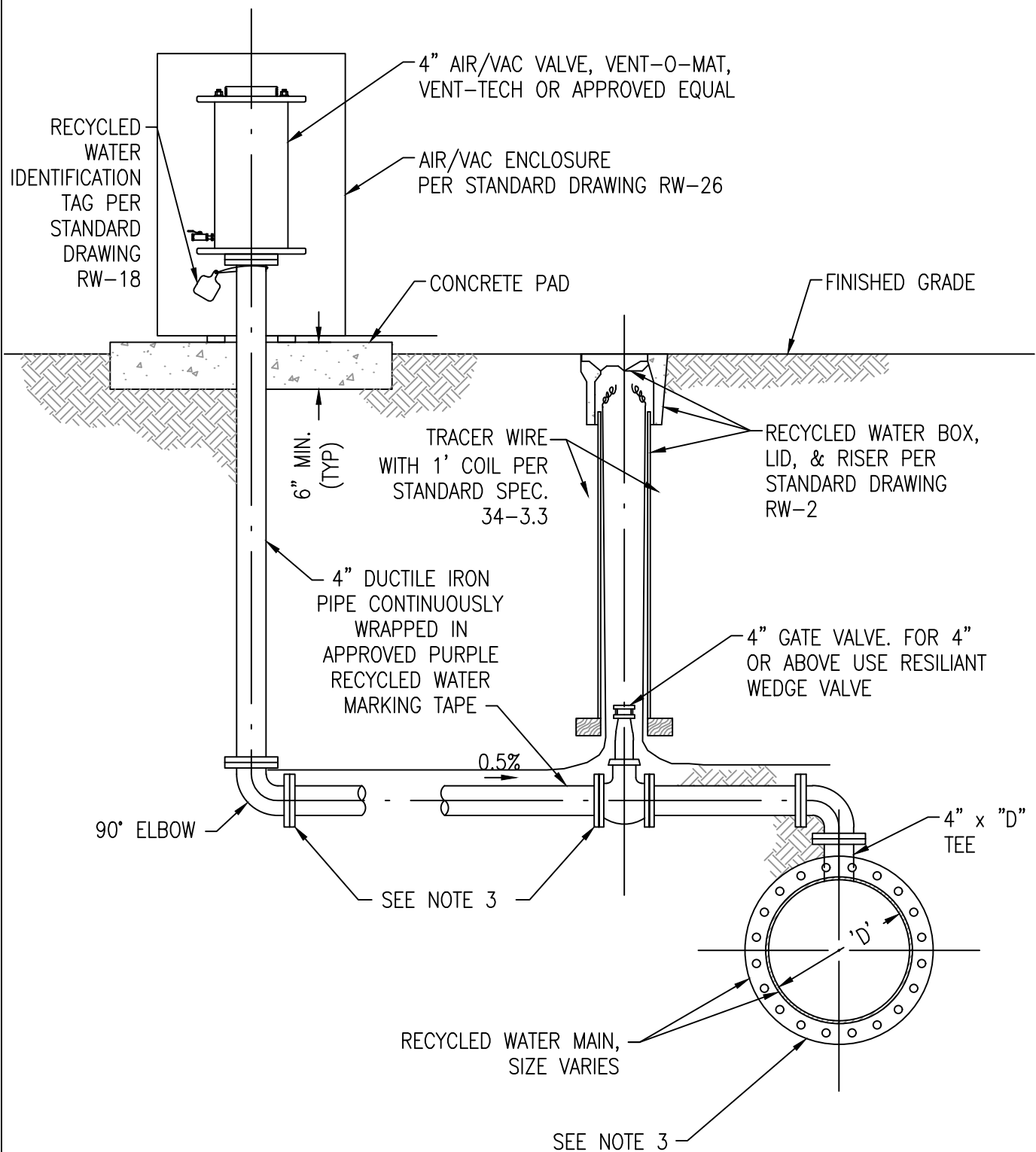
**NOTES:**

1. CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED.
2. ALL MATERIALS SHALL BE AS NOTED OR CITY-APPROVED EQUAL.
3. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5.

**RECYCLED WATER 1" OR 2" AIR  
RELEASE/VACUUM BREAKER ASSEMBLY**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

CITY OF FRESNO  
**RW-9**



**NOTES:**

1. CONTRACTOR SHALL FURNISH AND INSTALL ALL ITEMS REQUIRED.
2. ALL MATERIALS SHALL BE AS NOTED OR CITY-APPROVED EQUAL.
3. RESTRAIN ALL JOINTS PER CITY STANDARD SPECIFICATIONS SECTION 21-15.5

**RECYCLED WATER 4" AIR  
RELEASE/VACUUM BREAKER ASSEMBLY**

REF. & REV.  
AUG. 2015  
MAR. 2021 (A.7)

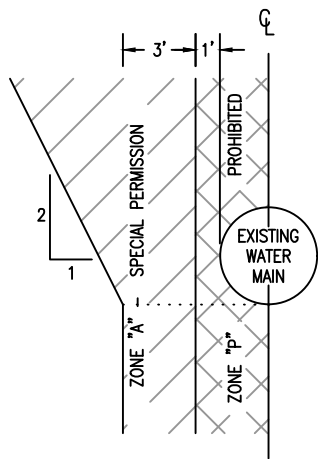
CITY OF FRESNO  
**RW-10**

THIS STANDARD IS  
NO LONGER USED

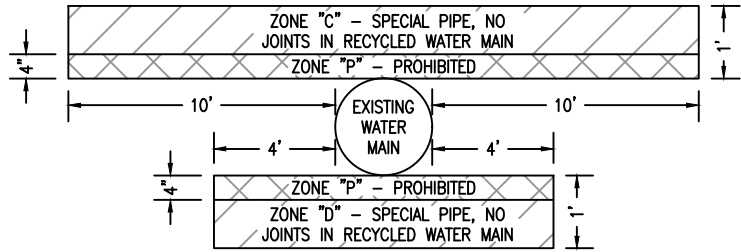
NO LONGER USED

REF. & REV.  
~~JUNE 2014~~  
MAR. 2021 (A.7)

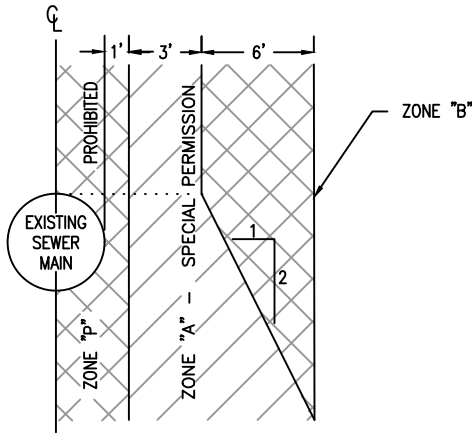
CITY OF FRESNO  
RW-11



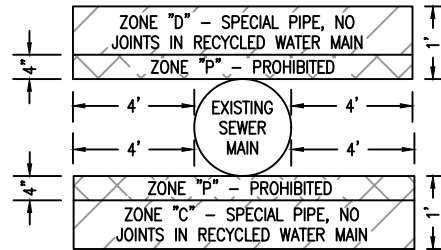
RECYCLED WATER MAIN PARALLEL TO POTABLE WATER MAINS



RECYCLED WATER MAIN CROSSING POTABLE WATER MAINS



RECYCLED WATER MAIN PARALLEL TO SEWER MAINS



RECYCLED WATER MAIN CROSSING SEWER MAINS

**BASIC SEPARATION STANDARDS**

1. SEPARATION DISTANCE SHALL BE MEASURED FROM THE NEAREST OUTSIDE EDGE OF PIPE.
2. WATER MAINS AND SUPPLY LINES OF 24" DIAMETER OR GREATER MAY CREATE SPECIAL HAZARDS BECAUSE OF THE LARGE VOLUMES OF FLOW. INSTALLATIONS OF WATER MAINS AND SUPPLY LINES 24" DIAMETER OR LARGER MUST BE REVIEWED AND APPROVED BY THE HEALTH AGENCY AND CITY ENGINEER PRIOR TO CONSTRUCTION.

**SPECIAL CONSTRUCTION REQUIRED FOR RECYCLED WATER**

ZONE:

"A" NO RECYCLED WATER LINES PARALLEL TO WATER MAINS SHALL BE PERMITTED IN THIS ZONE WITHOUT PRIOR WRITTEN APPROVAL FROM COUNTY, CALIFORNIA DEPARTMENT OF PUBLIC HEALTH AND THE CITY.

"B" RECYCLED WATER MAIN SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. DIPPED AND WRAPPED 1/4" THICK WELDED STEEL PIPE.
3. CLASS 305 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE, PER AWWA (C300 OR C302 OR C303).

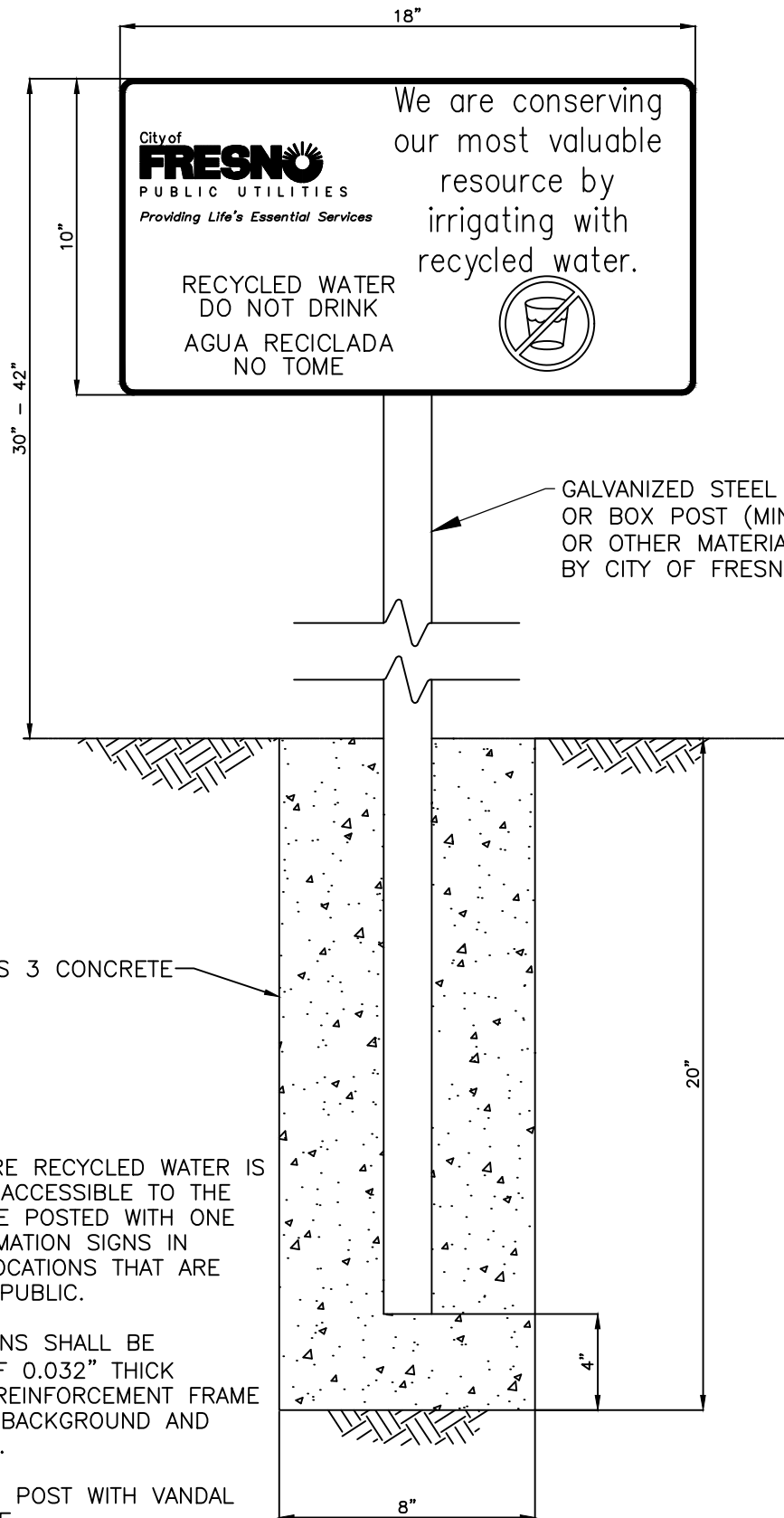
"C" A RECYCLED WATER MAIN SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. DIPPED AND WRAPPED 1/4" THICK WELDED STEEL PIPE.
3. CLASS 305 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
4. REINFORCED CONCRETE PRESSURE PIPE, STEEL CYLINDER TYPE PER AWWA (C300 OR C302 OR C303).

"D" A RECYCLED WATER MAIN SHALL BE CONSTRUCTED OF:

1. DUCTILE IRON PIPE WITH HOT DIP BITUMINOUS COATING.
2. DIPPED AND WRAPPED 1/4" WELDED STEEL PIPE.
3. CLASS 200 PRESSURE RATED PLASTIC WATER PIPE (DR 14 PER AWWA C900) OR EQUIVALENT.
4. REINFORCED CONCRETE PRESSURE PIPE STEEL CYLINDER TYPE, PER AWWA (C300 OR C302 OR C303).

"P" NO RECYCLED WATER MAIN SHALL BE CONSTRUCTED



GALVANIZED STEEL POST, U-CHANNEL, OR BOX POST (MIN 1-1/2" WIDE), OR OTHER MATERIALS AS APPROVED BY CITY OF FRESNO

CLASS 3 CONCRETE

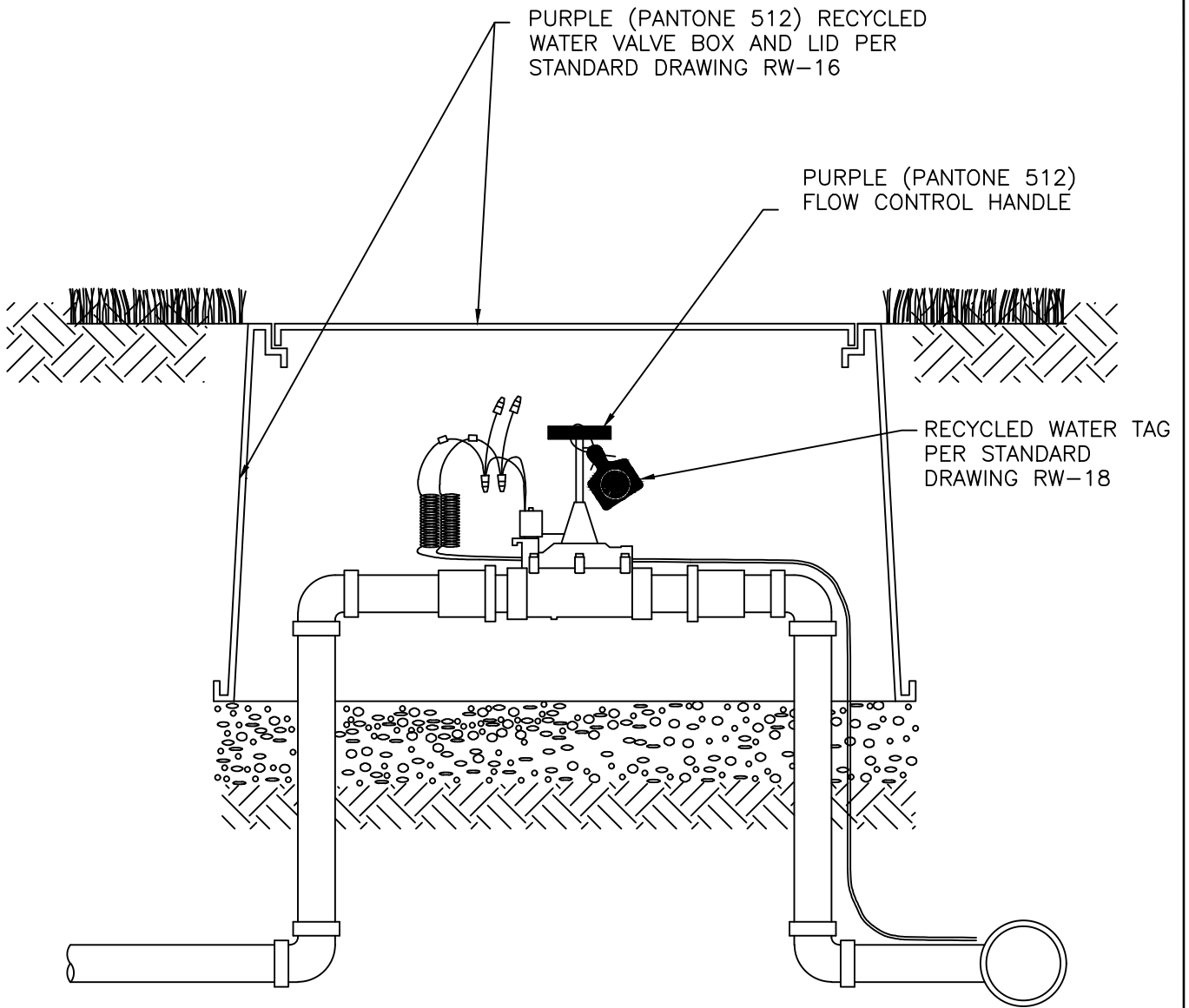
**NOTES:**

1. ALL AREAS WHERE RECYCLED WATER IS USED THAT ARE ACCESSIBLE TO THE PUBLIC SHALL BE POSTED WITH ONE OR MORE INFORMATION SIGNS IN CONSPICUOUS LOCATIONS THAT ARE VISIBLE TO THE PUBLIC.
2. INFORMATION SIGNS SHALL BE CONSTRUCTED OF 0.032" THICK ALUMINUM AND REINFORCEMENT FRAME WITH A PURPLE BACKGROUND AND WHITE LETTERING.
3. SECURE SIGN TO POST WITH VANDAL PROOF HARDWARE.

RECYCLED WATER  
IRRIGATION INFORMATION SIGN

REF. & REV.  
OCT. 2014

CITY OF FRESNO  
RW-13

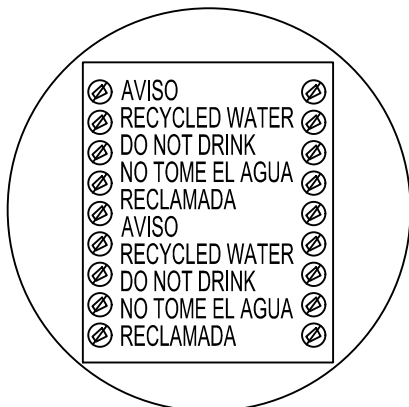
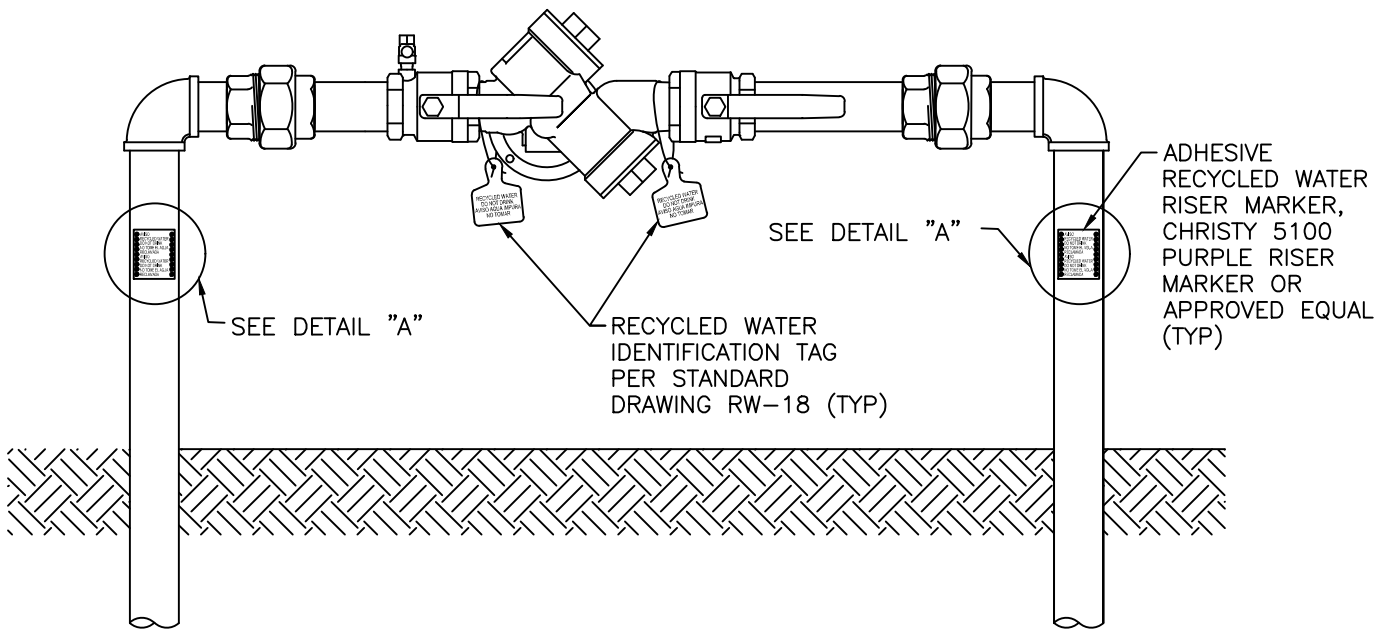


RECYCLED WATER REMOTE CONTROL  
IRRIGATION VALVE IDENTIFICATION

REF. & REV.  
OCT. 2014

CITY OF FRESNO

RW-14

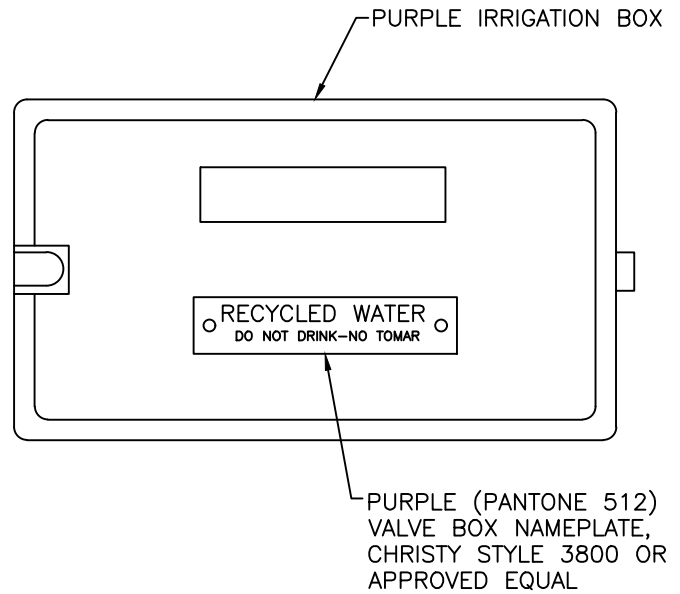
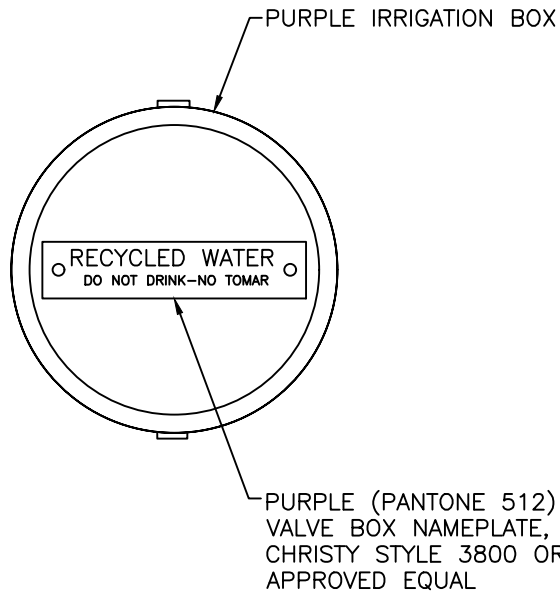


DETAIL "A"

RECYCLED WATER BACKFLOW PREVENTER IDENTIFICATION

REF. & REV. OCT. 2014

CITY OF FRESNO  
RW-15

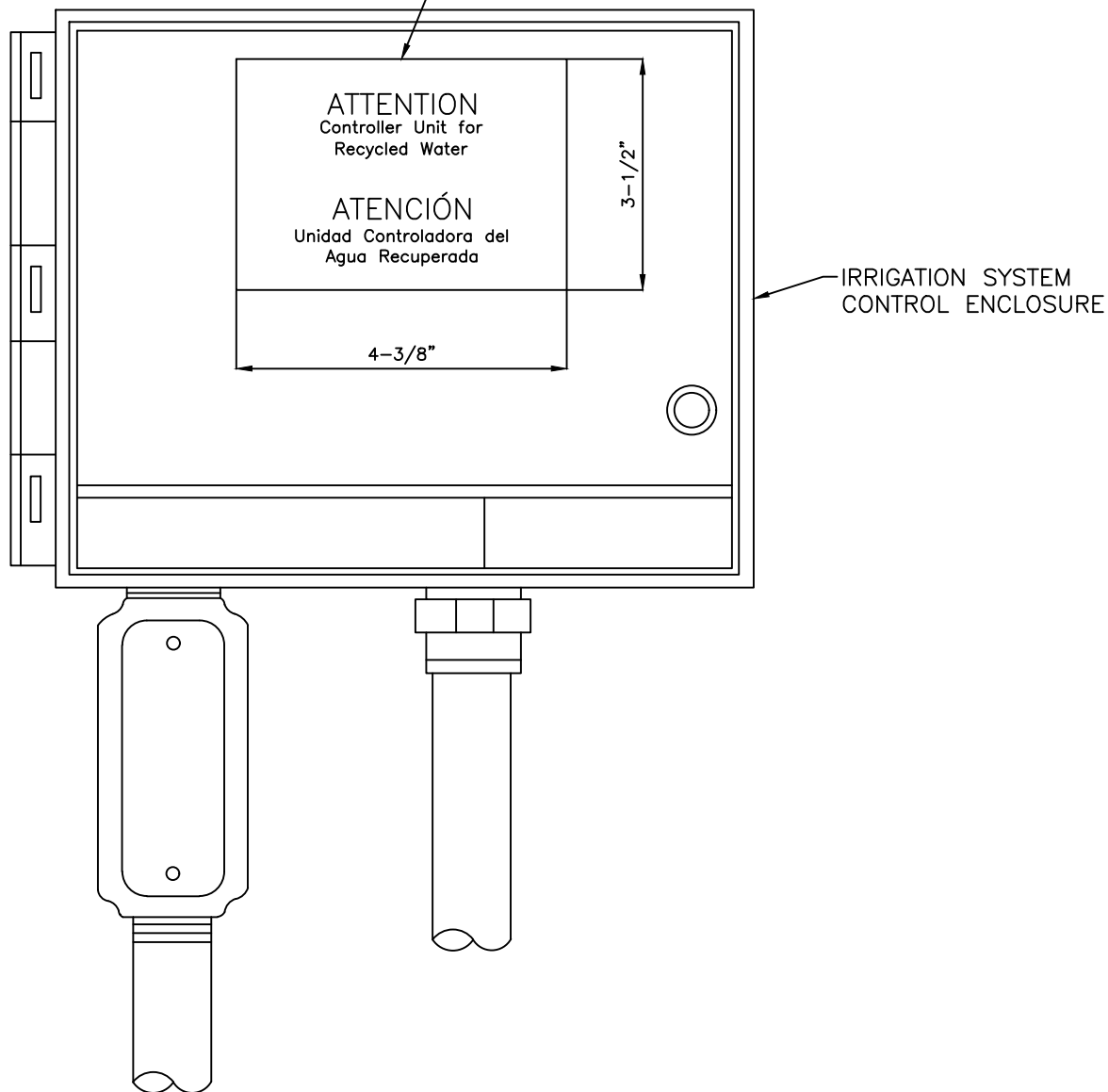


NOTES:

1. ALL RECYCLED WATER IRRIGATION BOXES AND LIDS SHALL BE COLORED PURPLE (PANTONE 512).
2. NAMEPLATE SHALL BE 5.75" LONG AND 1.25" WIDE AND SHALL BE MANUFACTURED IN PURPLE, WITH A UV RESISTANT CO-POLYMER PLASTIC.
3. NAMEPLATE SHALL BE ATTACHED TO VALVE BOX WITH TWO TAMPER-PROOF RIVETS.



MARKING DECAL SHALL BE PURPLE  
(PANTONE 512) AND SHALL BE AFFIXED TO  
INTERIOR OF ENCLOSURE



NOTES:

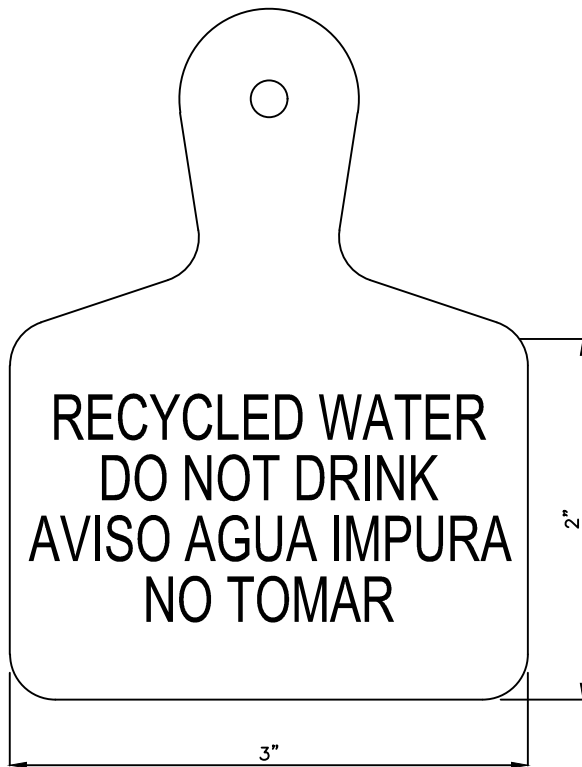
1. ALL RECYCLED WATER IRRIGATION CONTROL ENCLOSURES SHALL BE IDENTIFIED WITH A MARKING DECAL.
2. MARKING DECAL SHALL BE BACKED WITH A PERMANENT ACRYLIC ADHESIVE.
3. MARKING DECAL SHALL BE CHRISTY STYLE 4100, OR APPROVED EQUAL.

RECYCLED WATER  
IRRIGATION SYSTEM CLOCK MARKING

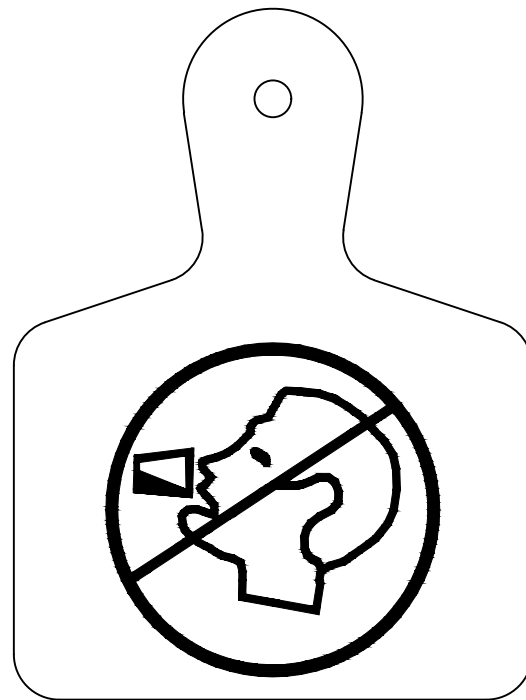
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FRONT



BACK

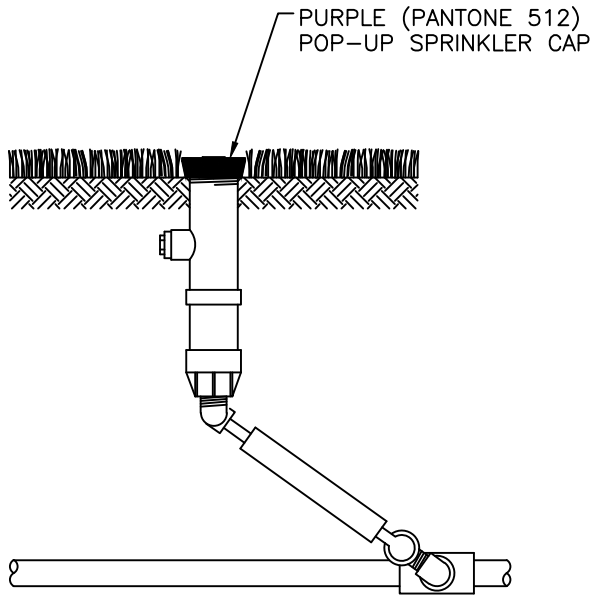
NOTES:

1. IDENTIFICATION TAGS SHALL INCORPORATE AN INTEGRAL ATTACHMENT NECK AND REINFORCED ATTACHMENT HOLE AND SHALL BE CAPABLE OF WITHSTANDING 180 LBS. OF PULL OUT RESISTANCE.
2. ALL LETTERING SHALL BE HOT-STAMPED IN BLACK AND APPROPRIATE FOR OUTDOOR USAGE.
3. IDENTIFICATION TAG COLOR SHALL BE PURPLE.
4. IDENTIFICATION TAG SHALL BE CHRISTY STYLE #007, OR APPROVED EQUAL.
5. IDENTIFICATION TAGS SHALL BE ATTACHED TO GATE VALVES, BALL VALVES, ANGLE STOPS, AND ALL OTHER VALVES IN RECYCLED WATER SERVICE.
6. ATTACH WITH UV RESISTANT ZIP TIES WITH A MINIMUM PULL STRENGTH OF 50 POUNDS.

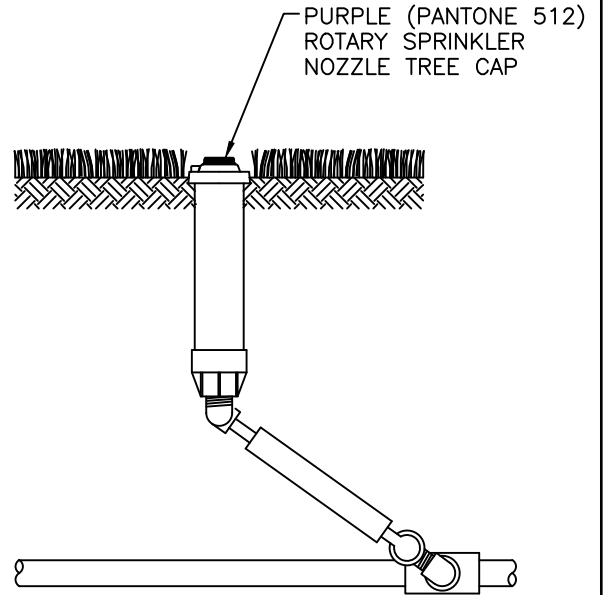
GENERAL RECYCLED WATER  
IDENTIFICATION TAG

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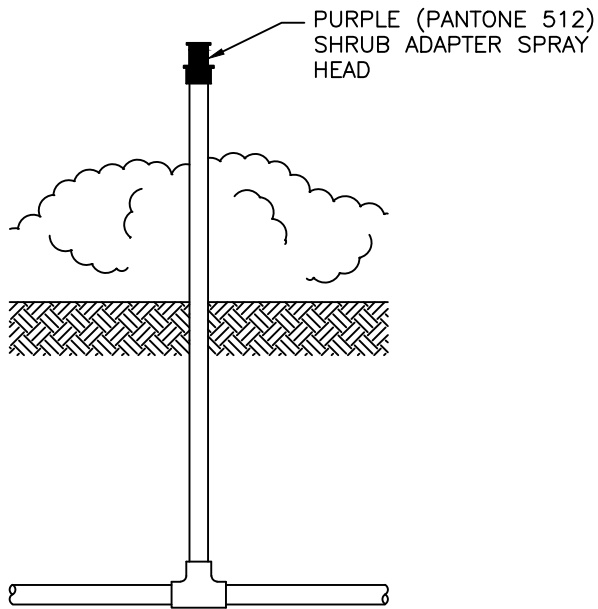
CITY OF FRESNO  
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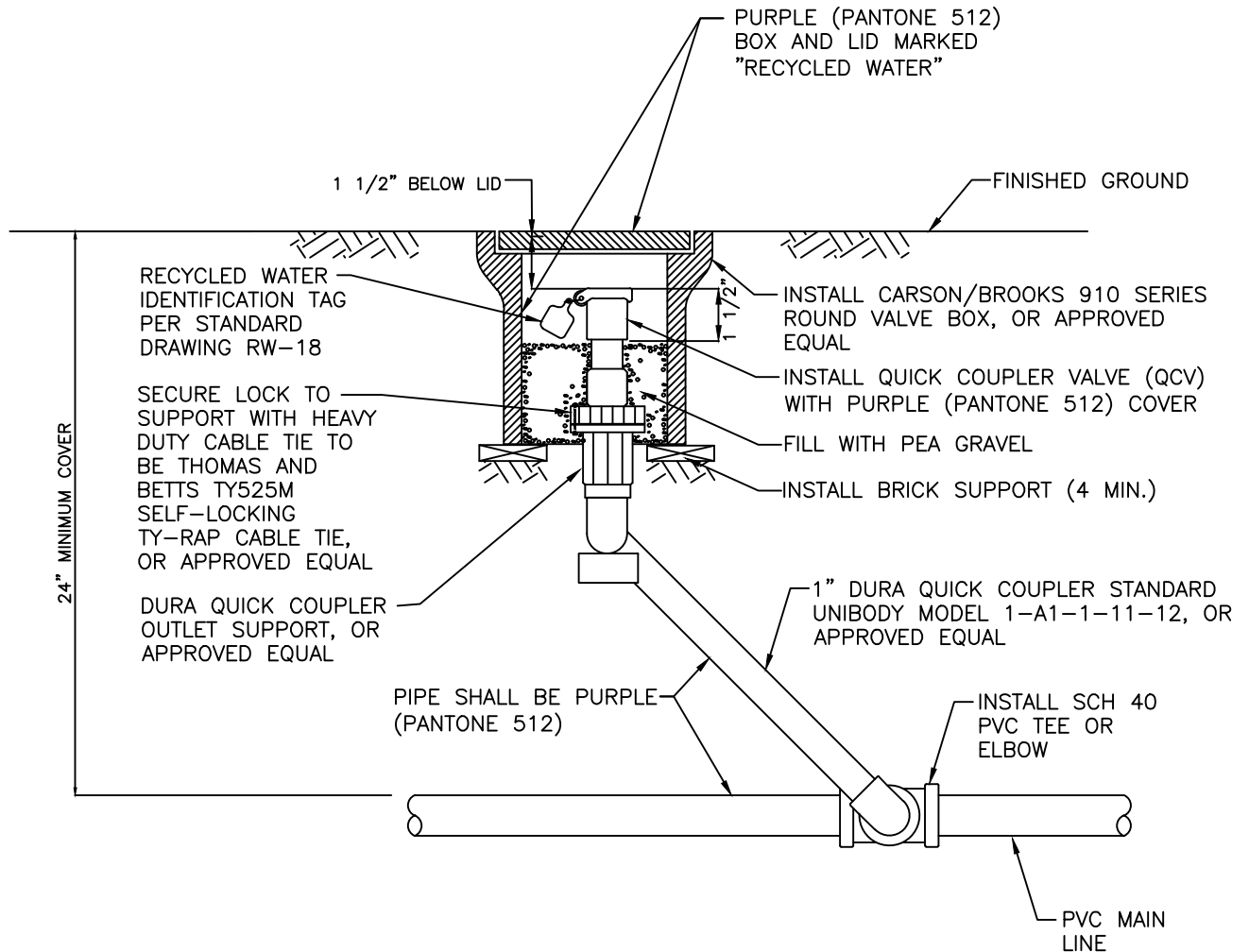
POP-UP SPRINKLER



ROTARY SPRINKLER



SHRUB RISER SPRINKLER



**NOTES:**

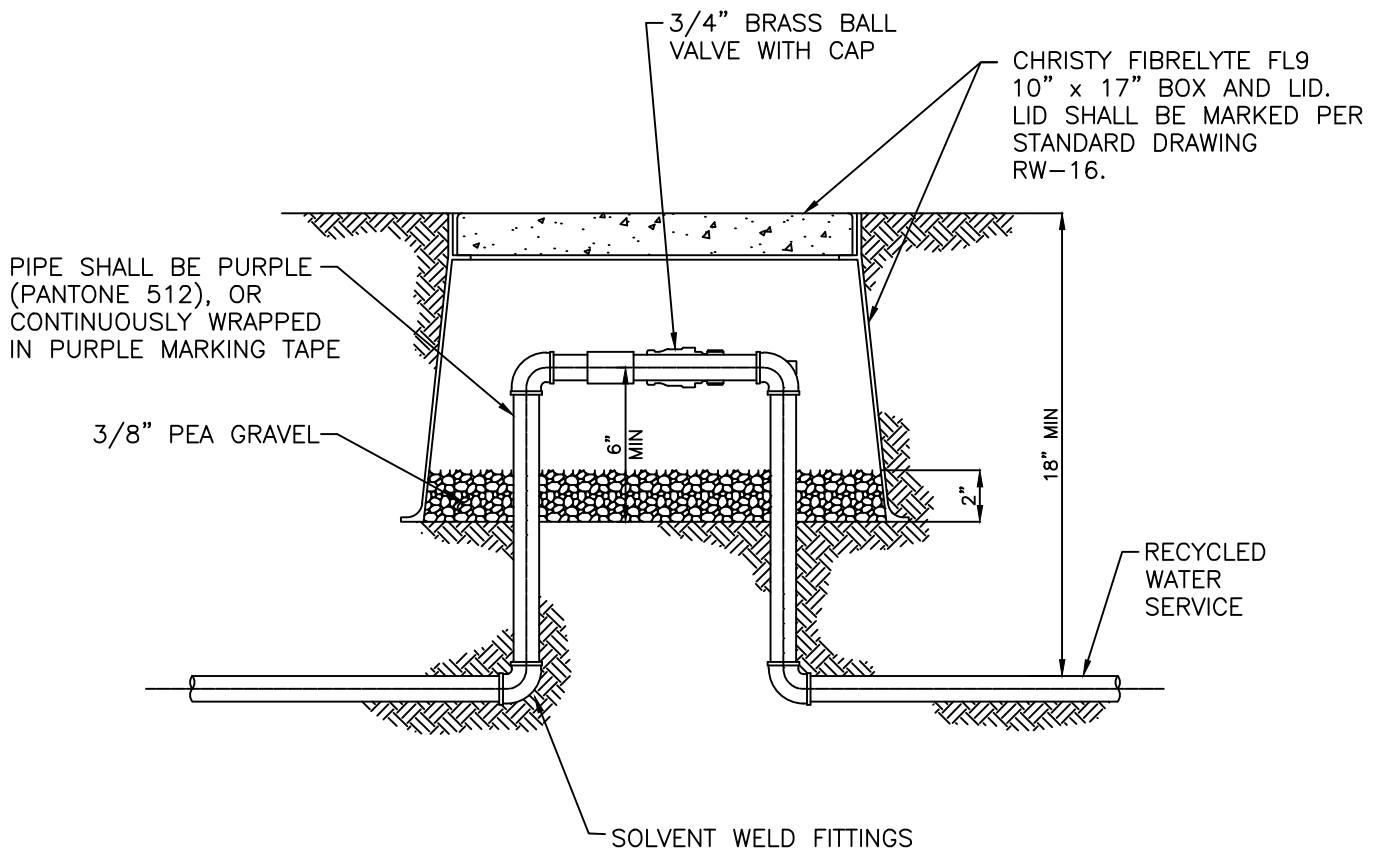
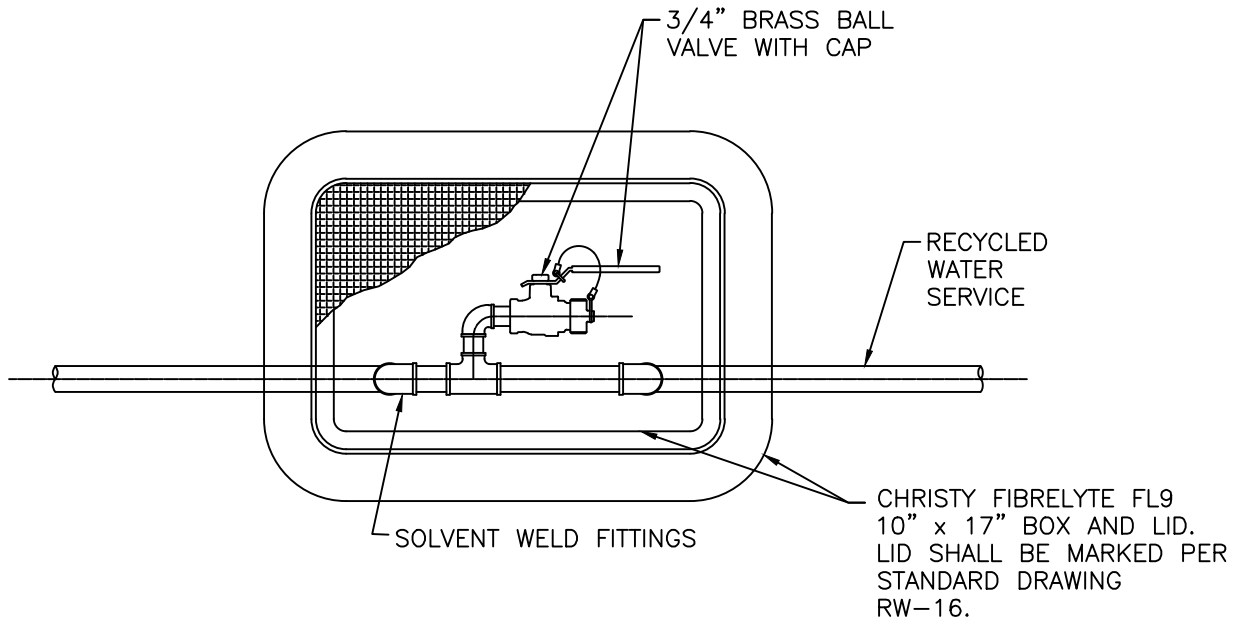
1. NEW-CONSTRUCTION - ALL QUICK COUPLING VALVES MUST HAVE NON-POTABLE LOCKING PURPLE THERMOPLASTIC RUBBER COVERS.
2. RETROFITS - REPLACE ALL EXISTING QUICK COUPLING VALVES WITH NON-POTABLE LOCKING PURPLE THERMOPLASTIC RUBBER COVERS.

QUICK COUPLING VALVE

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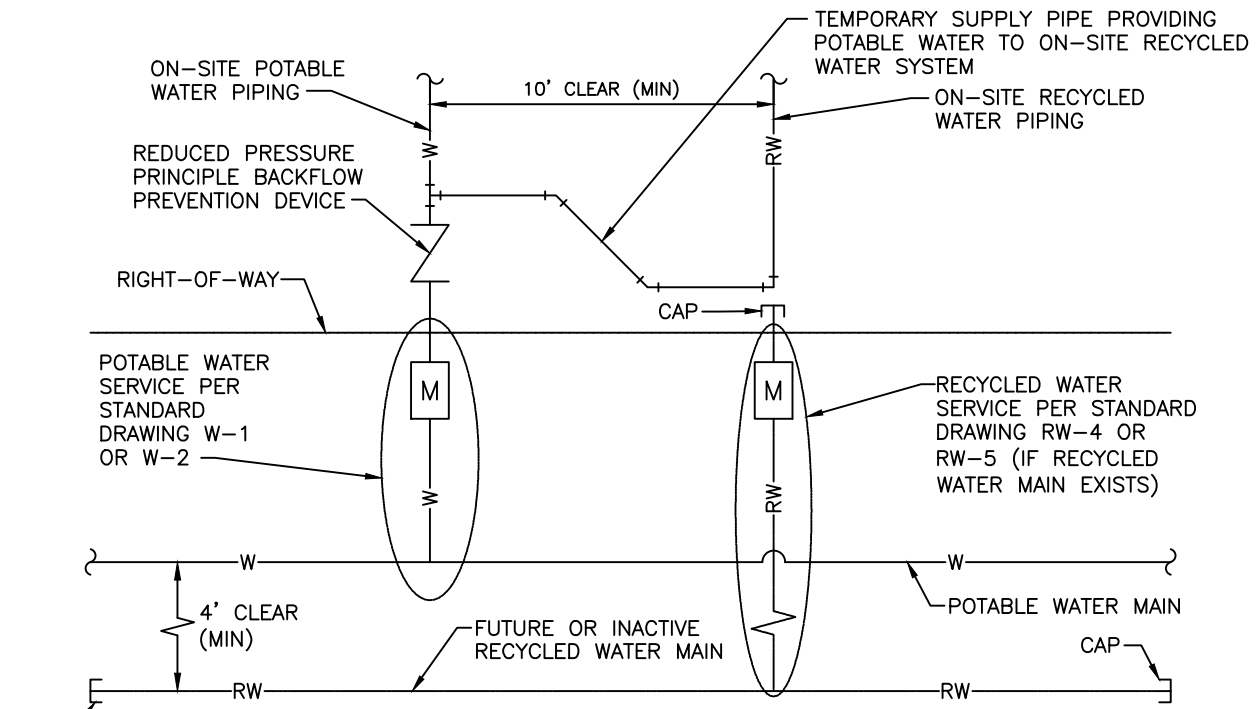
RW-20



CROSS CONNECTION CONTROL  
TEST STATION

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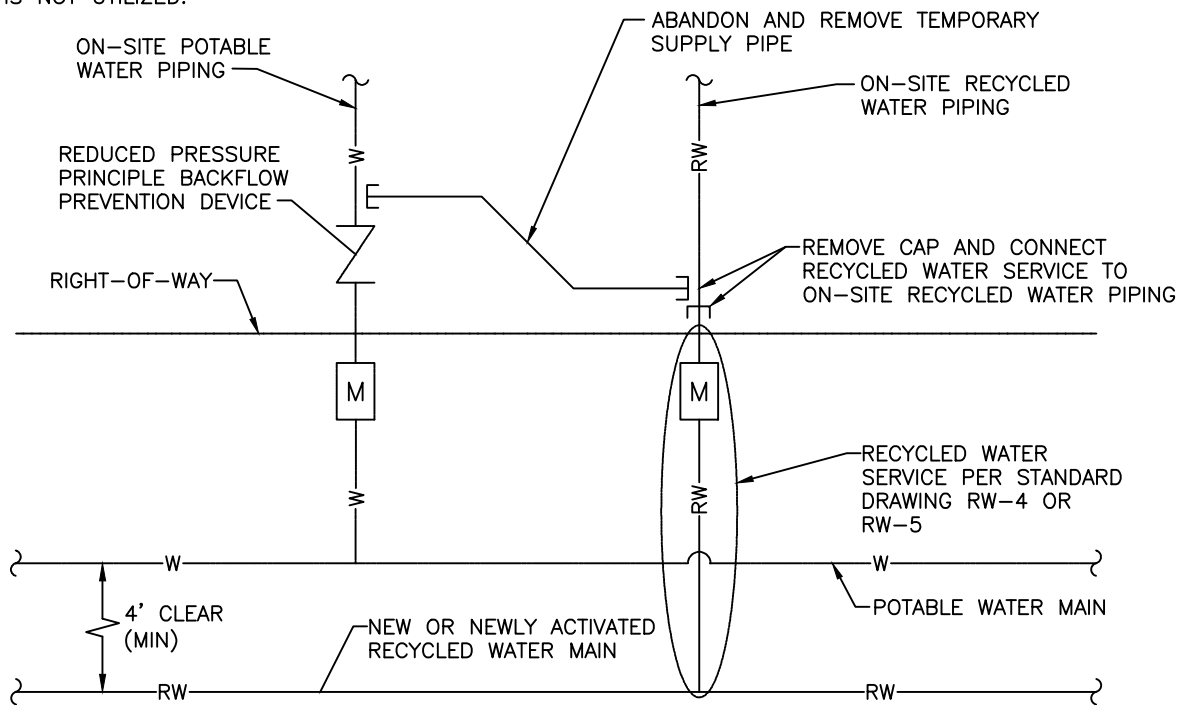
CITY OF FRESNO  
RW-21



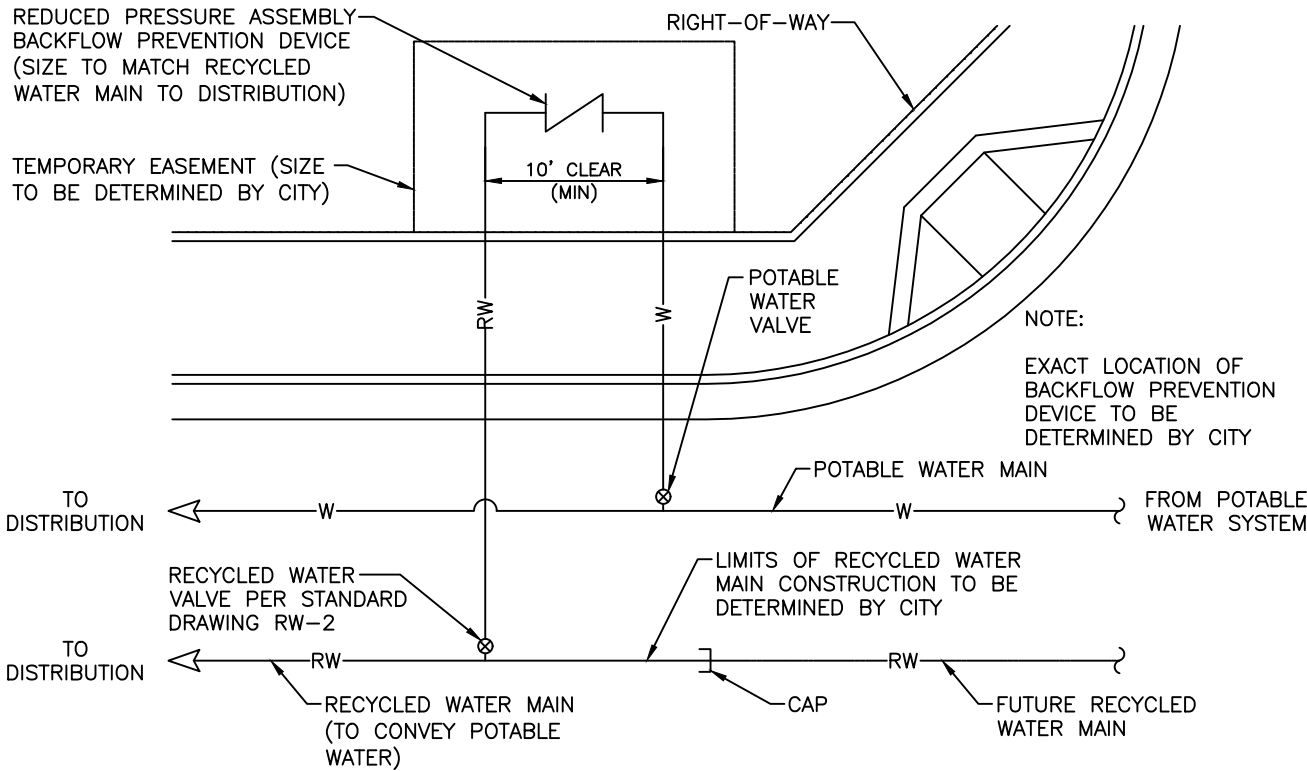
TEMPORARY POTABLE WATER SUPPLY TO ON-SITE RECYCLED WATER SYSTEM BEFORE RECYCLED WATER IS AVAILABLE

NOTE:

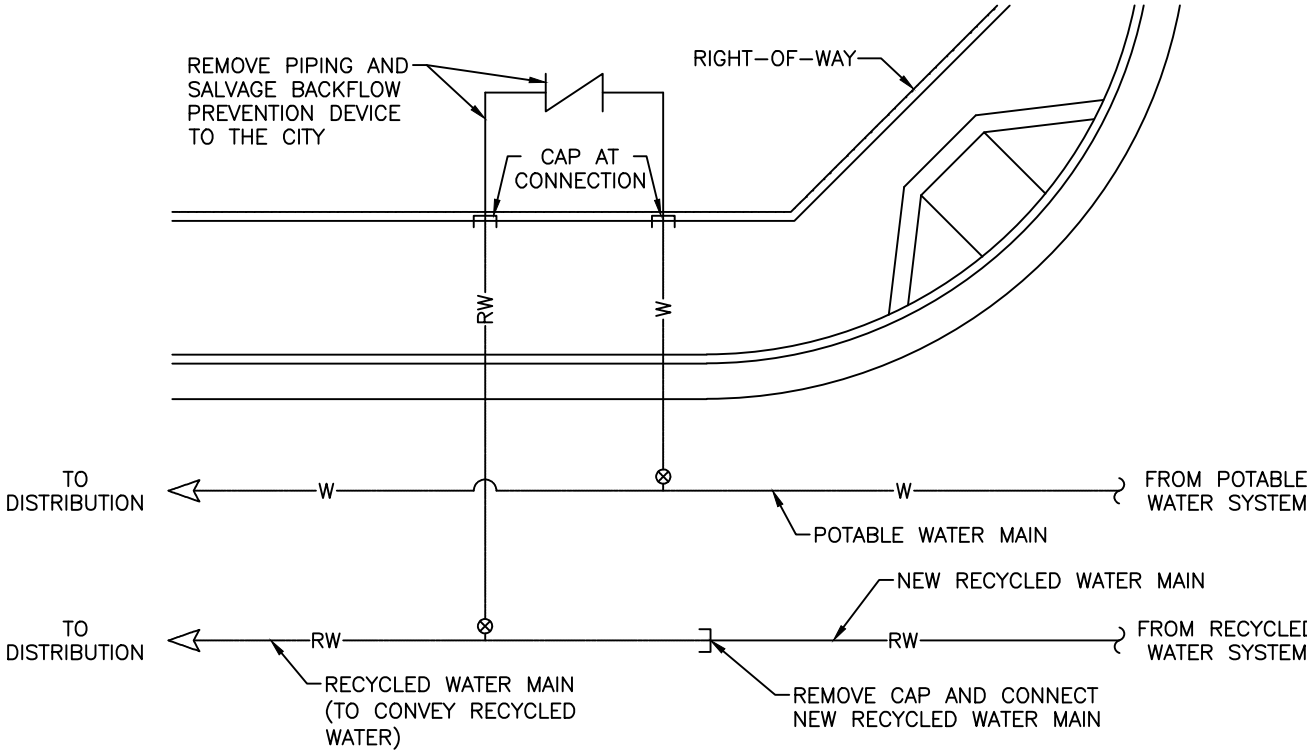
THIS STANDARD DRAWING IS ONLY USED WHEN STANDARD DRAWING RW-23 IS NOT UTILIZED.



PERMANENT RECYCLED WATER SUPPLY TO ON-SITE RECYCLED WATER SYSTEM AFTER RECYCLED WATER IS AVAILABLE

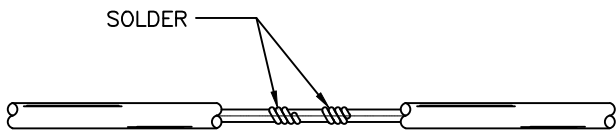
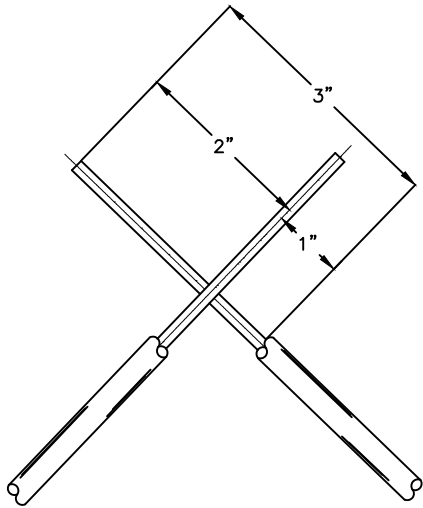


TEMPORARY POTABLE WATER SUPPLY TO RECYCLED WATER SYSTEM BEFORE RECYCLED WATER IS AVAILABLE

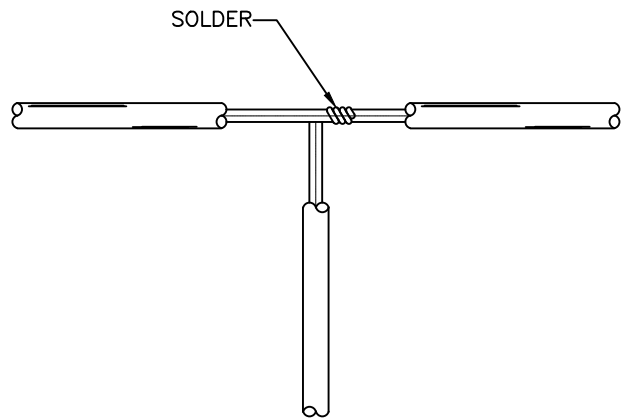
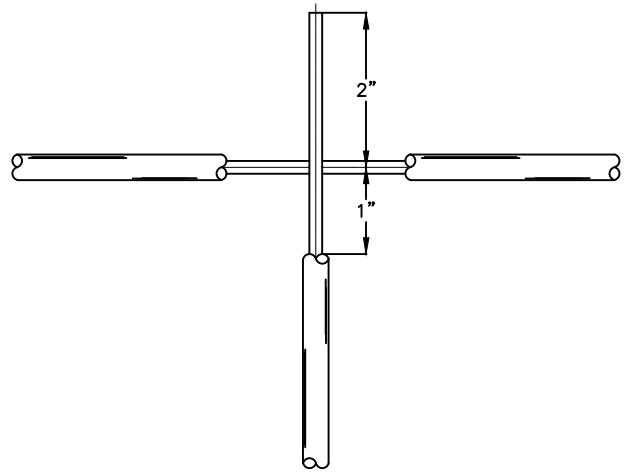


PERMANENT RECYCLED WATER SUPPLY TO RECYCLED WATER SYSTEM AFTER RECYCLED WATER IS AVAILABLE

IN-LINE CONNECTION



BRANCH CONNECTION



NOTES:

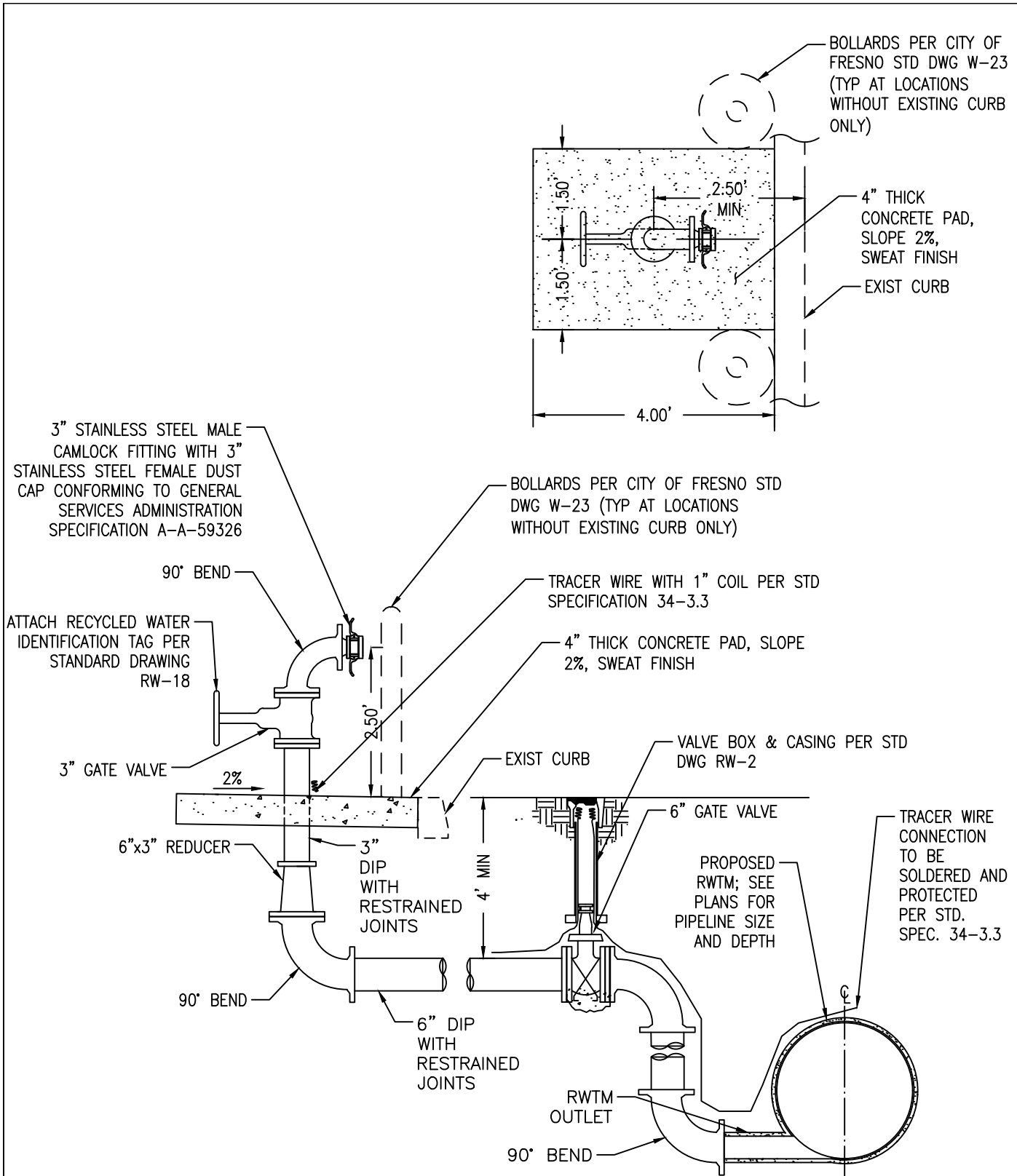
1. STRIP THE INSULATION FROM THE WIRE AS SHOWN IN THE DRAWING, BUT DO NOT CUT THE COPPER WIRE.
2. LOOP THE WIRE ENDS A MINIMUM OF (4) TIMES FOR EACH WIRE OF THE CONNECTION.
3. USING A PROPANE TORCH, APPLY THE FLAME DIRECTLY TO THE JOINT (LOOPS) TO BE SOLDERED.
4. APPLY 62SN OR EQUIVALENT ROSIN CORE SOLDER TO THE SPLICE. SOLDER SHOULD FLOW INTO THE JOINT.
5. SOLDERING PASTE MUST BE APPLIED TO THE LOOPS BEFORE HEAT IS APPLIED IF ROSIN CORE SOLDER IS NOT USED.
6. COVER ALL BARE COPPER WIRE WITH A WATERPROOF WRAP THAT IS APPROVED FOR UNDERGROUND CONNECTIONS (3M DBR/Y-6 OR APPROVED EQUAL). THE WRAP MUST EXTEND A MINIMUM OF TWO INCHES (2") BEYOND THE END OF THE STRIPPED WIRE.
7. ALL WIRE MUST BE 10 GAUGE COPPER WIRE.

TRACER WIRE SPLICE  
CONNECTION DETAIL

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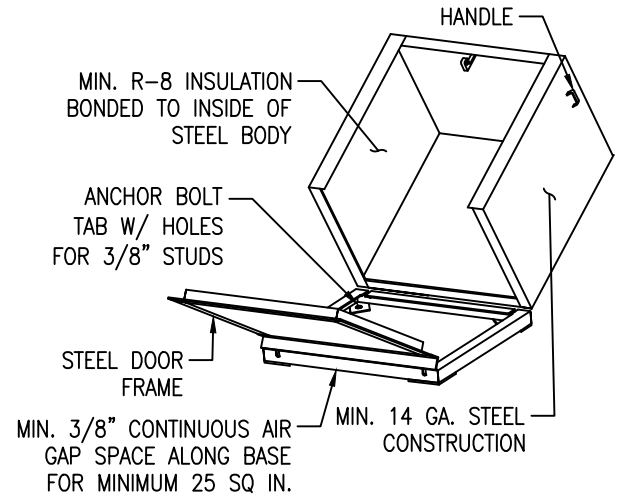
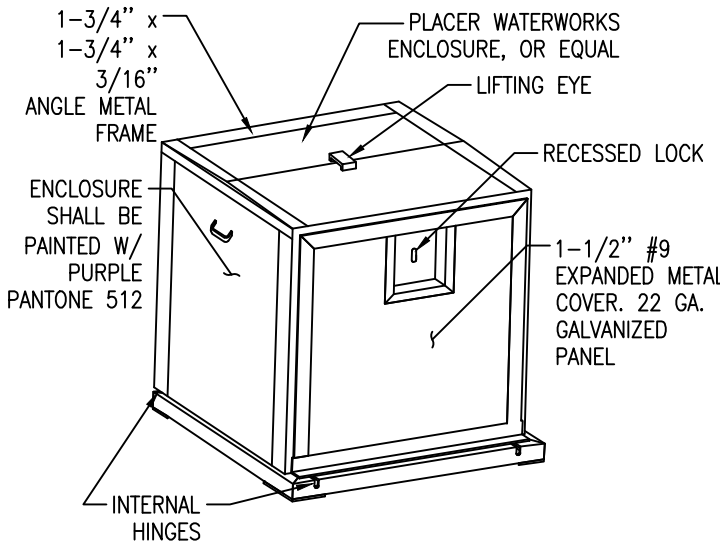




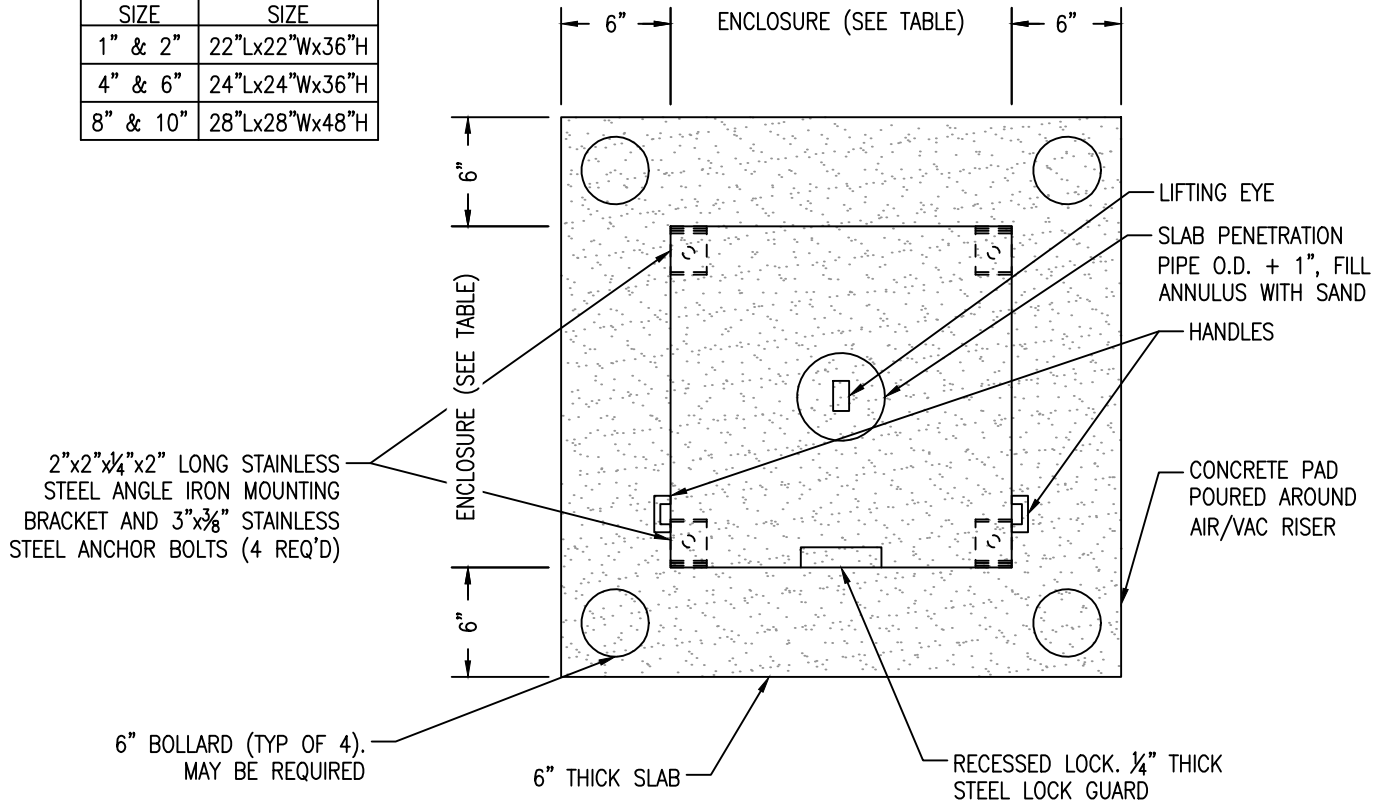
**NOTES:**

1. PAINT ALL EXPOSED PIPING, VALVE, AND BOLLARDS WITH PURPLE PANTONE 512.
2. ALL JOINTS SHALL BE RESTRAINED PER CITY STANDARD SPECIFICATIONS SECTION 33-14.5.
3. ALL UNDERGROUND PIPING SHALL BE CONTINUOUSLY WRAPPED WITH APPROVED PURPLE RECYCLED WATER MARKING TAPE.
4. ABOVE GROUND CONNECTIONS SHALL BE FLANGED.

<p><b>RECYCLED WATER COMMERCIAL TRUCK FILL STATION</b></p>	<p>REF. &amp; REV. MAR. 2021 (A.7)</p>	<p>CITY OF FRESNO <b>RW-25</b></p>
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ARVB SIZE	ENCLOSURE SIZE
1" & 2"	22"Lx22"Wx36"H
4" & 6"	24"Lx24"Wx36"H
8" & 10"	28"Lx28"Wx48"H



**NOTES:**

- ENCLOSURE SHALL NOT ENCR OACH ON TO PRIVATE PROPERTY, ADA PATH OF TRAVEL, OR VEHICLE TRAFFIC WHEN OPEN.
- PROVIDE 4' MINIMUM SIDEWALK CLEARANCE ADJACENT TO CAV FOR ADA ACCESSIBILITY REQUIREMENTS.
- ALL SURFACES SHALL BE ABRASIVE BLASTED (SSPC SP-5 WHITE METAL BLAST) AND POWDER COATED WITH 2-3 MILS ZINC RICH PRIMER WITH 4-5 MILS ANTI-GRAFFITI CHEMISTRY TOP COAT (DFT 6-8 MILS).
- VALVE ASSEMBLY AND METAL HOUSING SHALL BE LOCATED IN MEDIAN ISLANDS, LANDSCAPE AREAS, OR OUTSIDE OF SIDEWALK AREA WHERE POSSIBLE. VALVE ASSEMBLY MUST BE IN PUBLIC RIGHT-OF-WAY OR PUBLIC UTILITY EASEMENT.
- ENCLOSURE SHALL MOUNT SECURELY TO CONCRETE PAD USING INTEGRAL BOLT TABS. ONE ANCHOR IN EACH CORNER (4 TOTAL)

**AIR RELEASE/VACUUM BREAKER VALVE ENCLOSURE**

REF. & REV. MAR. 2021 (A.7)

CITY OF FRESNO  
**RW-26**