TEMPE SUPPLEMENT TO THE M.A.G. UNIFORM STANDARD DETAILS AND SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION

PUBLIC WORKS DEPARTMENT

2014
ARIZONA

The details and specifications are also accessible through our web site at www.tempe.gov/engineering

City of Tempe Supplement to
the Maricopa Association of Governments
Uniform Standard Specifications
for Public Works Construction

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CITY OF TEMPE

2014 City of Tempe Supplement to the
2012 Edition (including 2014 revisions)
of the Maricopa Association of Governments
Uniform Standard Specifications for Public Works Construction
(Supersedes all previous City of Tempe Supplements)

SECTION 301.3

Revise compaction table to read:

(A) All Streets . . . . . 95 Percent
(B) Other Traffic Ways . . . . . 90 Percent
(C) Curbs, Gutters, and Sidewalks . . . 95 Percent

SECTION 345.3

No concrete pipe valve boxes will be permitted. All valve boxes will be in accordance with Maricopa Association of Governments Standard Detail No. 391-1, Type C. In heavy traffic areas, pentagonal bolted lids shall be required.

SECTION 401

Add the following to Section 401.

On City Budget Projects:

Change the phrase "off-duty law enforcement officers" to "law enforcement officers" wherever it appears in Section 401.

SECTION 430

See also the City of Tempe Public Works Department Standard Landscape and Irrigation Details and Specifications.

SECTION 440

See also the City of Tempe Public Works Department Standard Landscape and Irrigation Details and Specifications.

SECTION 610.3

All water lines 6" through 16" shall be ductile iron pipe, pressure class 350.

SECTION 610.6

All waterlines shall be protected from corrosion by encasement in a polyethylene protective wrapping referred to hereafter as polywrap.

SECTION 610.9

Add the following to the last paragraph:

Contractor shall cover all hydrants installed with burlap or similar cover until hydrants are put into use.

SECTION 615.7

All sewer taps are to be made by machine drill tap (factory tap) and all sewer services are to be connected using a proper sewer cup fitting or approved equal.

SECTION 630.3

All valves shall be gate valves unless otherwise approved by the City Engineer.

SECTION 631.1

All water service connections from the main to the meter shall be constructed of type K copper pipe only. NO polyethylene pipe will be permitted.

SECTION 631.3.5

Double strap bronze saddles are required on all sizes of ACP pipe for water service sizes through 2".

SECTION 631.7

All taps shall be made by contractors upon proper application and payment of prevailing fees and upon approval and inspection by the City.

SECTION 631.8

Contractor shall install water services 2" or smaller on existing and new mains upon proper application and payment of prevailing fees and upon approval of inspection by the City.

SECTION 756

All hydrants shall be per City of Tempe Specification, supplemented as follows:

1. Clow Medallion, Waterous Pacer and Mueller Centurion.

2. Hose Nozzles: Number 2, Size 2 1/2"

3. Pumper Nozzles: Number 1, Size 4"

4. Type of Thread: Special Tempe Thread 6 to 1"
   A sample shall be submitted to the Water Superintendent and the Fire Chief for acceptance.

5. Barrel extension length shall be 3' 6" unless otherwise stated.

CITY OF TEMPE, ARIZONA

STREET LIGHTING STANDARDS

T-100.1 General Characteristics

Mounting

Street Type	Luminaire	ANSI/IES Type	Height
Local & Collector	9,500 Lumen (HPS/full cut off)	II	30'
Major (Arterial)	30,000 Lumen (HPS/full cut off)	III	32'

Note: These mounting heights may be changed when approved by the Traffic Engineering Division.

Provision shall be made in the street lighting structure for water, which gathers in the pole, to run out of the pole into the wiring access chamber at the structure bottom. All provisions shall be within the wiring access chamber and shall not be visible or apparent from without the compartment when its covers are in place. Care should be taken that this drain water does not interfere with or affect the wiring terminal block or electrical connections.

The contractor shall secure a pole (street light structure) manufacturer's warranty, in the City's name, which warrants the pole finish against loss of color, significant change in color, rusting or rust creepage, blistering/de-lamination and structural integrity. The warranty shall be for a 5-year period, starting from the date of final acceptance by the City. Upon final acceptance, the contractor will surrender the warranty to the City.

T-100.2 Design Requirements

It is required that the street lighting structures meet the design requirements of the AASHTO. See AASHTO standard specifications for luminaires. It is required that the structures meet all pertinent requirements of the City of Tempe and the State of Arizona.

The site location is Tempe, Arizona. Maximum Steady Wind Speed requirements shall be eighty (80) miles per hour as indicated by the National Wind Speed Map (Isotach) in miles per hour: annual extreme miles per hour thirty (30) feet above the ground, fifty (50) year mean recurrence interval. Calculations shall include a 1.3X wind gust factor.

The manufacturer shall provide the City with installation drawings, foundation and instructions for the street lighting structure. The instructions shall contain assembly and installation drawings and instructions. The installation instructions shall contain complete details regarding torquing of all nuts and bolts.

All component members of the structures shall be marked or labeled in such manner that they can be readily identifiable by the City.

T-100.3 Pole Locations

Street lighting poles shall be located 2 foot back of curb or 2 foot back of sidewalk, when possible.

T-100.4 Subdivision Lighting

All intersections of residential subdivisions shall have street lighting.

Street lighting shall be located on public road rights-of-way, at the side lot line of the property where possible.

T-100.5 Major (Arterial) Street Lighting

When streetlights are to be installed on separate steel poles, the following design levels shall be maintained:

Roadway width - (variable)
Two sided - staggered, opposite side or median (dual mast arm)
Minimum Average Foot Candles - 1.2 f.c.
Uniformity Ratio - 4:1

Where power poles are to remain adjacent to the roadway:

A. Streetlights may be mounted on the power poles when City and utility standards can be met.

- or -

B. Steel poles shall be interset where needed to meet City standards.

Where single family residences abut the major (arterial) street, the street lights shall be located as close as possible to the side property line and still maintain desirable lighting levels.

T.100.6 **Conductors**

All electrical wiring shall comply with the requirements of the Uniform Building Code (UBC), 1985 edition, as adopted and amended by the City of Tempe, the National Electric Code, and Underwriters' Laboratories, Inc.

All conductors, from the pull box to the lighting structures, shall be at a minimum No. 10 AWG soft-drawn copper and bear the UL label. Insulation shall be type THWN. The following wire color code shall be used:

Black - 120V Power
Black & Red - 240V Power
White - Neutral
Green - Grounding

Conductors shall be connected to luminaire and extended down the pole. Terminate conductors at pull box for connection by the utility.

The power conductor shall be fused, in-line, using Bussman No. HEB-AA (120V luminaires) or No. HEX-AA (240 V luminaires) waterproof fuse holders, or approved equal. Install the fuse holders inside the pull boxes and install Bussman FNM fuse.

T-100.7 **Grounding**

Street lighting poles shall be grounded in the pull boxes and conductors sizes will be as specified by current NEC standards.

Ground equipment enclosures and devices shall be in complete compliance with the NEC. Furnish and install all the necessary conductors, clamps, fittings, and hardware for a complete system.

Lugs and connectors shall be of the solderless compression type. Splices in grounding conductors and connection made underground or in concrete shall be made by Cadwell or Burndy Ther-O-Weld process. All lugs and connectors shall be suitable for use with all combinations of copper and aluminum conductors.

Provide copper-clad steel ground rods where shown on the plans.

T-100.8 **Pull Boxes** - The pull boxes are to be supplied by the utility company in

Arizona Public Service territory. Salt River Project does not supply boxes. Installation to be completed by the contractor.

Install where shown on the plans, record drawings will show actual location by locating data given from readily identifiable points, i.e. poles, property lines, fences, sidewalks, etc. (Contact Traffic Engineering Division for Old Town Special District requirements).

Install pull boxes with locking covers at final grade, and flush with finished surface in sidewalks or other paved areas.

T-100.9 Conduit

Conduit shall be 2 1/2", 90 C. Schedule 40 PVC (Polyvinyl chloride).

T-100.10 Photocells & Lamps

Photoelectric control shall be A.C. operated, cadmium sulfide cell, controlling a relay specifically designed for photocontrols. They will operate at low power levels and accommodate the conventional load requirements that occur in standard luminaire designs. During the day the relay is energized, holding its contacts open and the lamp load off.

Any component failure shall result in the lamp remaining on continuously.

The photocontrol shall be twist lock, three pole, with a housing fabricated of high impact poly-acrylic with ultra-violet inhibitor, conforming to NEMA Publication #SH18-1957 and proposed revisions. Photocontrol shall be factory set for turn-on at 1fc (footcandle) and turn-off at 3fc and will be installed facing north.

Acceptable manufacturer models:

Fisher Pierce No. 6660 (120V)
General Electric No. C402G600 (120V)
Ripley No. 6146 (120V)
ITT No. 6146 (120V)
Fisher Pierce No. 6690B (240V)
General Electric No. C402G660 (240V)
Other photocells, if equal, could be considered.

Lamps shall be high-pressure sodium type as follows:

Wattage	Lumens	ANSI Designation
100	9,500	S54SB-100
250	30,000	S50VA-250/S

Acceptable manufacturers:

Sylvania, (100-HPS) or (250w-HPS)
General Electric (100-HPS) or (250w-HPS)
Other lamps, if equal, could be considered.

T-100.11 Concrete Pole Foundations

Pole foundations shall be Class A (3000#) and conform to Section 725 of the Uniform Standard Specifications for Public Works Construction (MAG Specifications).

T-100.12 Anchor Bolts

Anchor bolts shall be made of high strength steel material capable of resisting at yield strength stress the bending movement of the street light at its yield strength stress (55,000 psi). The anchor bolt threads shall be galvanized after fabrication and have a minimum of 6" of threading.

CITY OF TEMPE, ARIZONA

STREET LIGHTING SPECIFICATIONS

T-101.1 Standard Street Lighting

Streamline Luminaire - (See Detail T-651) Furnish a street lighting fixture in accordance with the requirements of this specification and designed for roadway lighting with a built-in ballast for use with a high pressure sodium lamp. The luminaire shall bear the UL label. All luminaries shall be mounted with a zero degree tilt from horizontal.

A. Housing - The housing, both upper and lower, shall be die-cast aluminum joined by an integrally cast pin hinge at the mounting end and a one-hand latch at the door enclosing the lamp and/or ballast. The housing will have an integral four bolt slip fitter for 2-inch mast arm mounting and shall provide adjustment for leveling the luminaire. The housing shall be designed for full (90 degree) cut off. Exterior hardware shall be of stainless steel. The finish shall be a baked on ASA70 gray enamel applied by an electrostatic process.

B. Lens - The lens shall be a clear, tempered, high-quality, heat resistant glass with no aberrations and will be secured in the supporting frame.

C. Reflector - The reflector shall be of drawn aluminum and have a highly reflective surface. The reflector edge shall have an elastomer gasket which seats firmly against the lens door to seal the optical system. The optical system will have a filter permitting it to breathe during lamp heat-up and cool-down.

D. Ballast - The ballast shall be securely mounted in the compartment provided in the housing or on the door. The ballast shall be pre-wired at the factory and will be suitable for 115 degrees F. ambient temperature operation. The ballast shall be the lag regulating type, constant wattage, single lamp with a primary power factor of 90 percent or higher. The primary voltage rating shall be 120 volts.

E. Lamp Socket - The socket shall be high-quality, rugged, porcelain, mogul type with corrosion-resistant clamp-type terminals, which will position the lamp properly with respect to the reflector and lens. The socket shall be provided with a heat-resistant gasket for sealing the optical system.

F. Photo Cell Socket - A locking type photo cell receptacle in accordance with EEI-NEMA standards shall be provided in the top of the housing to accept the photo-cells specified in Section II, 9.4 (photocells).

G. Acceptable manufacturer models:

General Electric M-250 Cutoff Series (100 & 150W)
ITT-American Series (100 & 150W) 113-55962-D, 113-55912-D
Other models, if equal, could be considered.

T-101.2 **Steel Poles**

Sectional Telescope Design - The pole shall be of a sectional telescope design. The number, length and diameter of the sections will be as required for the varying pole heights. The attached details identify the pole and mast arm required for each type of street. The adjoining sections shall overlap as shown on the standard drawings. The pole shall be constructed of cold rolled mild steel of a sufficient gauge having a yield strength of not less than 36,000 PSI. The pole shall be capable of withstanding, without fracture or apparent deformation, a traverse load of 750 pounds applied 1.8 inches below the top.

The pole shall provide a rigid support at the mounting height for a fixture weighing as much as 50 pounds with a projected area of three square feet. The pole shall be capable of withstanding a wind load of 80 mph per American Association of State Highway and Transportation Officials (AASHTO) specifications with the fixture attached to a six or eight foot arm.

The pole shall be manufactured with a hand hole and grounding lug attachment at the elevation shown on the standard drawings.

The pole shall have a cable entry slot sized and located as shown on the standard drawings. The slot will be free of burrs and sharp edges.

Pole Painting - After fabrication, the steel poles shall be sandblasted, primed and painted. Sandblasting will be in accordance with SSPC Specification SP-6-63. This will be followed with a prime coat of paint within 24 hours. The prime coat of paint will be compatible with the finish coat of paint. Do not paint over dirt, rust, scale, grease, moisture or conditions otherwise detrimental to formation of a durable paint film. An approved Polyurethane Enamel (Catalyzed) paint shall be used for the finish coat. Minimum dry coat thickness to be 2.0 mil.

The manufacturer shall provide the engineer with a written copy of the warranty showing that the pole manufacturer warrants the finish for a period of five years from the date of acceptance, against the loss of gloss, change in or loss of color, rusting of the steel or rust creepage (unless coating has been damaged by physical means or vandalism) blistering or delamination.

Base Plate: (See Detail).
Acceptable manufacturers of poles & paint:
Poles: CEM-TEC Corporation
Fab Weld, Inc.
Paint: Sherwin Williams (Polane-B Gray, Polyurethane Enamel)
Pittsburg Paint (Acrylic - urethane enamel #97-806)
Q-Coat - UP 979 (Polyurethane Enamel)
Other poles and/or paint, if equal, could be considered.

T-101.3 **<u>Architectural Street Lighting (See Detail T-652)</u>**

A. Structures

All metal components shall be first quality and free of gouges, pits or other surface defects. Steel tubes shall be of such quality that welds will be ground smooth or otherwise dressed and not readily available on casual inspection or otherwise objectionable to the engineer.

The gauge of the tubing shall be as required by the design engineer for the manufacturer, as approved by the City.

Poles shall be capped and watertight at the top in such a manner that the steel cap appears to be one with the pole. Only a minimum visible lip or protrusion shall be permitted. All welds shall be ground smooth and flush with adjacent surface.

Each structural pole shall have a reinforced wiring handhold, three (3) inches wide and four (4) inches high located on the street side of

the pole. Install grounding connector, I ISCO TA6-S or equivalent with a 1/4" round head allen drive machine screw and nut.

The structure shall consist of the vertical pole, mast arms, caps and covers, screws, bolts and other hardware required for completion of the unit according to the requirements of the specifications and drawings for the project.

All necessary holes for assembly of the structure, mounting of mast arms, installation of the structure or any other purpose required by the specifications and drawings shall be factory made prior to coating. HOLES SHALL BE PUT ON THE STRUCTURE, OR ANY OF ITS COMPONENT PARTS, AFTER THE STRUCTURE IS COATED.

B. Threaded Holes

Where threaded holes are required, those holes shall have threaded filler plugs placed in them prior to coating to avoid filling threads with coating materials. Filler plugs shall have hex heads or other similar type heads for ease of removal. Filler plugs shall not be removed by the coater prior to shipment to the City.

The manufacturer shall provide a means of ventilating the structure poles at the top to allow a flow of air through the poles to keep the interior of the poles dry. Ventilation shall be placed in a location wherein it will not be visible from normal viewing angles.

C. Anchor Base

The anchor base shall consist of a four-bolt plate welded to the structure pole. Each plate shall be a rectangular plate of size, steel thickness and composition sufficient to enable the structure to meet all AASHTO and local codes and shall be designed by a registered professional engineer.

The manufacturer shall submit complete drawings of the anchor base detail indicating all sizes, materials, welding details, anchor bolts to be used, and all other pertinent data.

Provide two anchor bolt templates for the structure. Templates are to be of .250 inch steel and shall have all holes for anchor bolts, wiring conduit, etc.

D. Mast Arms

The mast arm shall be of welded construction so that it is a single unit with regard to its structural members. The corners of the mast arm shall be mitered and welded so that there are no gaps or openings in the joint between the members. The welds shall be ground smooth and flush with surrounding metal so that the adjoining members are continuous.

The mast arm shall accommodate the luminaire. The mast arm shall contain such holes, couplings, etc., as are required for the proper installation.

The mast arm shall be fastened to the structure pole so that it meets the requirements of AASHTO and other applicable codes. The mast arm shall be attached to the structure in the field by mechanical means and no welding shall be allowed between the arm and the vertical structure. The mast arm shall be removable from the vertical structure without burning, cutting or otherwise damaging or defacing the mast are, vertical structure or the finish of either.

All fastening hardware shall be non-corrosive or treated with a corrosion retardant.

It shall be the responsibility of the manufacturer to allow sufficient access to wiring and working area, to assure the City free and easy access to those areas for maintenance.

Submittal drawings shall clearly indicate how wiring of the luminaire is to be accomplished through the structure and its mast arm.

At no time or point shall the top of the arm sag below the horizontal. The mast arm must be physically and visually perpendicular at the top of the arm to the vertical structure. No shims or other devices shall be used to level the arm. Raking or adjusting of the vertical structure will not be allowed.

Should the mast arm fail to meet the requirements herein, the developer shall replace the arm with another arm that does meet these specifications. NO modification or correction of the mast arm will be allowed other than at the manufacturer's plant unless prior approval of such modification is given by the owner or his

representative in writing.

The luminaire shall mount to the mast arm which, in turn, shall bolt to the pole. The last six inches (6") of the luminaire mast arm shall be 2-3/8" O.D. pipe to accept luminaire.

E. Finishing

The coating must be capable of withstanding ultraviolet radiation, blowing sand and debris, atmospheric pollutants, physical abuse, time, heat and cold, moisture, chemical assault (vandalism) and other abuse.

It is required that ALL metal surfaces be treated as follows at the factory or coating facility:

1. Sandblast metal in accordance with Steel Structures Painting Council standard SSPC-10 (white metal).

F. Luminaires

American Electric Series 153/154, G.E. Decashield III, or approved equal.

- 250 W HPS
- Multitap ballast (120/208/240/277)
- Internal slip-fitter

T-101.4 Old Town Special District Lighting

A. General (See Detail T-653)

Construct concrete foundations as shown on drawings.

Assemble poles and fixtures and pre-wire poles on the ground. Lift poles with slings, set on anchor bolts and plumb with adjusting nuts. Site-in line with plumb bob from various angles, and tighten nuts. Grout bases as necessary.

Install fuses in base of pole and complete wiring. Make all connections with compression type fittings.

Ground poles at each location.

B. Service Pedestals

Provide for concrete bases, conduit, power and control wiring required for setting and connecting service pedestals as shown on the plans.

Set pedestals per manufacturers instructions.

C. Concrete Work

Before placing concrete, embedded items shall be properly located, accurately positioned, and maintained securely in place.

Concrete must be protected during curing by a sprayed-on curing

compound or by plastic sheet cover secured in place for five (5) days.

Concrete finish shall be smooth, straight and free from marks.

Install concrete pole bases and equipment pads as indicated on the drawing. Concrete shall comply with construction notes on the plans.

D. Decorative Lighting Poles

Moldcast Washington Contra/Cline Pole #C7614JA or approved equal.

- Fiber glass
- Cast iron
- 14' - 6"

E. Luminaires

Moldcast Washington Contra/Cline 84122 or approved equal.

- 150 W HPS
- Single light
- Black polyester
- Multitap ballast

Moldcast Washington Contra/Cline 84123 or approved equal.

- 250 W HPS
- Single light
- Black polyester
- Multitap ballast

F. Paint Specifications

1. Items are to be sandblasted near white with a surface profile of 1.5 to 2 mils depth to remove any surface scale, rust or other surface contaminants.

2. Apply Aliphatic Polyurethane with 73 percent volume solids in accordance with the coating manufacturer's instructions.

3. Application of the finish shall meet specifications issued by the licensed formulator, using approved applicators, and the following:

    a. Coating films shall be uniform and free from flowlines, streaks, sags, blisters or other surface imperfections in dry-film state on all surfaces.
    b. Total dry film thickness of coating shall be 5 mil.
    c. Color to be Medium Bronze.

The City shall consider other coating systems shown to be of equal or greater durability.

* Note: This painting process or approved equal must be used. Technical specifications and/or samples must be submitted within three days upon request.

Contractor shall touch-up any damaged paint after installation with matching color, as directed by the City Traffic Engineer.

CITY OF TEMPE, ARIZONA

MODULAR TRAFFIC SIGNAL SPECIFICATIONS

T-200.1 GENERAL PURPOSE OF THE STRUCTURES:

The Structures and certain other items covered by this section and all pertinent sections hereof, shall be multiple purpose steel structures which serve to integrate various functions such as pedestrian control signals, vehicular control signals, graphics and signs and such other equipment and services as may be required by the City and the engineer, and as indicated on the drawings and these specifications.

All dimensions shall be designed to allow the structure to be modular in nature and to accept any of the items referred to above. The manufacturer shall make provisions for the neat, sturdy, workmanlike and aesthetically pleasing mounting of specified equipment within and/or on the structure legs and/or mast arms. All component parts and accessories shall be mounted in such a manner as to appear to be an integral part of the structure and give a "BUILT-IN" appearance. All fasteners and mounting hardware shall be concealed from the normal line of sight wherever possible and when such concealment is not possible, the fasteners or hardware shall be finished to match the structure finish.

Dimensions of legs, mast arms, etc. are critical due to the modularity and multifunctional purposes of the structures. Said dimensions become part of the final specifications and are not subject to change without prior approval of the engineer.

T-200.2 All structures shall meet the design requirements of the American Association of State Highway Officials (AASHTO). See AASHTO standard specifications for structural supports for highway signs, luminaires and traffic signals. The structures shall also meet all pertinent requirements of the City of Tempe and the State of Arizona.

The structures are to be used in Tempe, Arizona. Maximum Steady Wind requirement shall be eighty (80) miles per hour as indicated by the National Wind Speed Map (Isotach) in miles per hour: Annual Extreme Miles per hour thirty (30) feet above the ground, fifty (50) year mean recurrence interval. Calculations shall include a 1.3X wind gust factor.

Manufacturer shall submit sealed calculations and drawings to the City proving compliance of his product with the above requirements. Calculations shall be furnished and sealed by an Arizona registered professional structural or civil engineer whose license shall be current and active.

All structures shall be built by one manufacturer and shall be finished in the same facility using the same process and material to assure uniformity of finish, color and appearance.

Provisions shall be made in each vertical leg for water, which gathers in the leg to run out of the leg into the wiring access chamber at the structure bottom. All said provisions shall be within the wiring access and shall not be visible or apparent from without the compartment when its covers are in place. Care shall be taken that this drain water does not interfere with or affect the wiring terminal block or electrical connections.

The manufacturer shall provide the City with a mylar reproducible of installation drawings, foundations and instructions for each structure type. The instructions shall contain assembly and installation drawings and instructions. The installation instructions shall contain complete details regarding torquing of all nuts and bolts.

All component members of the structures shall be marked or labeled in such a manner that they can be readily identifiable by the City.

T-200.3 Bidders shall provide the City with proof of the proposed manufacturer's experience and ability at the time of bid opening. Failure to do so can be grounds for rejecting a manufacturer's bid. The required proof shall include the following:

1. Name of manufacturer and location.

2. Names of projects built by the proposed manufacturer wherein demountable, integrated, modular traffic/lighting structures of the type shown on the drawings of equal or greater complexity were supplied by the proposed manufacturer, and photographs of same.

3. Evidence that the proposed manufacturer has at least three (3) years of experience in building such structures.

4. Preliminary drawings showing proposed tube sizes, dimensions, gauges to be used, mast arm connection details for mast arm structures, base plate and anchor bolt sizes and gauges, and leg connection details.

5. Preliminary engineering calculations for the above and the name and location of the engineer who provided them.

Structures shall be shipped to the City fully finished and factory assembled to the extent that the vertical portion of any structure shall be ready for installation on the anchor bolts immediately upon receipt in the City's yard. Panels, sign braces, traffic equipment, etc., shall be supplied for field installation.

Panels, signs and traffic equipment shall be field installed.

Panels, non-structural braces and other "field installed" components shall be crated for shipment in such a manner as to prevent "in-transit" damage, scratching or warping.

T-200.4 STRUCTURES:

All structures (unless otherwise indicated on the drawings or in the specifications) shall consist of two rectangular steel legs, which are mechanically fastened to one another in such a manner that the broad faces of the legs face one another. The legs shall be of the same dimensions with regard to width and length of the tubing. If the legs have visible weld seams, those seams shall be placed so that they are, if possible, on the inner facing surfaces of the tube, facing one another. All metal components shall be first quality and free of gouges, pits or other surface defects.

Steel tubes shall be of such quality that welds shall be ground smooth or otherwise dressed and not be readily available on casual inspection or otherwise objectionable to the engineer.

The leg spacing as shown on the drawings is critical and care shall be taken by the manufacturer to assure that it is maintained to insure correct fit of controllers, litter cans, panels and other equipment which the City may choose to integrate with the structure.

The gauge of the tubing shall be as required by the design engineer for the manufacturer, as approved by the City.

Legs shall be capped and watertight at the top in such a manner that the steel cap appears to be one with the leg. Only a minimum visible lip or protrusion shall be permitted. All welds shall be ground smooth and flush with adjacent surfaces.

Vertical legs shall be joined as often as is required by the design engineer and the requirements of steel cross braces which are mechanically fastened to the legs so that the fasteners are not visible when panels and traffic equipment are in place on the structure. There shall be no less than two (2) structural cross braces on any vertical structure. Cross braces shall be fabricated of steel, and shall be installed so that they are equidistant from the front and rear of the structure containing braces.

One brace shall be located so that its upper surface corresponds to the top of the vertical legs. The structure height shall be as indicated on the drawings.

Each structural leg shall have a wiring handhole, three (3) inches wide and five (5) inches high located on it's inner facing surface and within the wiring access compartment between grade level and the lower-most cross brace (twelve [12] inches above grade prox.). A one-half (1/2) inch by one and one-half (1-1/2) inch long grounding lug shall be welded on the inner-facing surface of each leg within the wire access compartment. A nut and washer shall be provided for each lug.

The structure shall consist of the vertical legs with the anchor base plates welded in place, structural cross braces (welded in place) and all panels, panel braces, caps and covers, screws, bolts and other hardware required for completion of the unit according to the requirements of the specifications and drawings.

All necessary holes for assembly of the structure, mounting of panels or accessories, mounting of component equipment, installation of the structure or any other purpose required by the specifications and drawings shall be factory made prior to coating. NO HOLES SHALL BE PUT IN THE STRUCTURE OR ANY OF Its COMPONENT PARTS AFTER THE STRUCTURE IS COATED (except for holes in panels for graphics, signs, etc.).

T-200.5 Where threaded holes are required, those holes shall have threaded filler plugs placed in them prior to coating so as to avoid filling threads with coating material. Filler plugs shall have hexheads or other similar type heads for ease of removal. Filler plugs shall not be removed by the coater prior to shipment to the City.

The manufacturer shall provide a means of ventilating the structure legs at the

top to allow a flow of air through the legs in order to keep the interior of the legs dry. Ventilation shall be placed in a location wherein it will not be visible from normal viewing angles.

T-200.6 ANCHOR BASE DETAILS:

The anchor base shall consist of four bolt plates welded to the structure leg. Each plate shall be a rectangular plate of size, steel thickness and composition sufficient to enable the structure to meet all AASHTO and local codes and shall be designed by an Arizona registered professional engineer. Bolt pattern shall be as indicated on the drawings.

The manufacturer shall submit complete mylar reproducible drawings of the anchor base detail indicating all sizes. materials, welding details, anchor bolts to be used, and all other pertinent data.

Each anchor bolt shall be hot dipped galvanized including the entire threaded area.

Applicable anchor bolts, nuts, and washers shall be supplied with each pole as specified.

Provide two anchor bolt templates for each type of structure. Templates are to be of 0.250-inch steel and shall have all holes for anchor bolts, wiring conduit, etc. A template shall encompass both legs simultaneously.

Pole manufacturer shall be responsible for foundation design details for each type of structure proposed herein. The design shall be based on soils able to develop a lateral bearing pressure of 300#PCF.

T-200.7 PANELS (Graphic, Signage and Enclosure):

All panels shall be of sixteen (16) gauge steel where the panel's longest dimension does not exceed fifty-one (51) inches. Where the longest dimension exceeds fifty-one (51) inches, the panel shall be fourteen (14) gauge steel.

Panels shall have a regress no less than 0.50" deep on all four sides. Panels, which are used between structure legs, shall have a 0.73" reveal at the top and bottom vertical edges. Panels shall be die formed to provide a flat, rigid, precise surface of application of signs and graphics.

Panels shall be cut out, where required, to fit around and enclose vehicular and/or pedestrian signals, call boxes, irrigation controls and such other equipment as called for in the drawings and specifications. All panel edges and cut outs shall be clean and straight and shall have no burrs, irregularities or visible defects.

Panels shall be used on the front and rear of structures, arms and outboard signals, unless otherwise noted on the drawings.

Where panels are cut out to accommodate traffic or pedestrian signals, the edge of the cut out shall be no further than one-half (1/2) inch from the signal edge. This provision shall apply to hinges, locking devices and all other signal appurtenances. It is intended that there shall be a minimum separation between the signal and its surrounding panel.

Panels shall mount to steel cross braces by means of self tapping steel 1/4-20 fasteners that shall screw into pre-drilled holes in the structure or cross braces. All pre-drilled holes shall be coated so as to prevent rusting of the steel cross brace and the consequent weeping of rust (through capillary action) onto the face of the panel.

All panel fasteners shall be located within the 0.750" reveal area to minimize fastener visibility. Fasteners shall be no smaller than 1/4-20.

Base panels (kickplates) shall be of seven (16) gauge steel and enclose the wiring access area from one-half (1/2) inch above grade (nominal and based on grade being straight and level) to the top of the lower most cross brace, twelve and one-half (12-1/2) inches above grade. Each access panel (kickplate) shall be retained by means of six (6) self tapping steel 1/4-20 fasteners.

Panels shall be pre-drilled for mounting to the structure and shall be drilled prior to coating.

Panels shall be dimensioned to fill the area between the legs and cross braces leaving no more than a one-eighth (1/8) inch gap on either edge.

All horizontal panel edges in the vertical structure shall be covered by a sixteen (16) gauge steel sheet metal cap which shall cover the exposed panel edge and fasten to the cross brace using the same screws by which the panel is fastened to the brace. The cap shall completely and neatly cover the panel edge and the cross brace.

Said caps shall be used at the top edge of the kickplates, the bottom edge of

the next lowest cross brace and all other edges where an open section meets the panel edges, or the edges shall be incorporated into the panels.

T-200.8 STRUCTURES WITH MAST ARMS:

All provisions of Section T-200.7 are hereby made a part of the specification for Mast Arm Structures.

The structure shall have a rectangular, horizontal mast arm mounted to the street side leg, in the plane through the two legs of the structure. The upper edge of the mast arm shall be level with the top of the leg to which it is mounted and there shall be no visible gap between the leg and the root end of the mast arm. The lower edge of the mast arm shall be located SEVENTEEN (17) feet above the street surface.

The mast arm shall be a rectangle constructed of rectangular welded steel tubing. The mast arm shall be of welded construction so that it is a single unit with regard to its structural members. The corners of the mast arm shall be mitred and welded so that there are no gaps or openings in the joint between members. The welds shall be ground smooth and flush with the surrounding metal so that the adjoining members are contiguous.

The mast arm shall be fabricated of tubing, which is nominally the same size as that of the structure legs, which support it. In every case, the width of the mast arm tubing shall be the same as that of the leg to which the mast arm is attached. For the vertical distance between the horizontal members of the mast arm, refer to the drawings.

The mast arm shall accommodate traffic signals as shown on the drawings. The mast arm shall contain one and one-half inch (1-1/2") threaded holes, couplings, etc., as required for the proper installation of said signals.

All signals that are to be mounted to the horizontal mast arm members shall be positioned midway between the horizontal members so as to be symmetrical with the mast arm and with one another. Signal arrays located in the mast arm shall be positioned between the vertical mast arm members.

Provisions shall be made for mounting steel enclosure panels around the signals per T-200.7. The panels shall be fabricated per T-200.7.

Such other panels and/or illuminated signs as are required by the engineer and as shown on the drawings for this structure shall be provided and provisions for their mounting shall be made.

The mast arm shall be fastened to the structure leg so that it meets the requirements of AASHTO and other applicable codes. The mast arm shall be attached to the structure in the field by mechanical means and no welding shall be allowed between the mast arm and the vertical structure. The mast arm shall be demountable from the vertical structure without burning, cutting or otherwise damaging or defacing the mast arms, vertical structure or finish of either.

All connections shall be concealed from view when the panels are in place. No bolts, nuts, brackets or other fastening hardware or devices shall be visible when the panels are in place. All fastening hardware shall be non-corrosive or treated with a corrosion retardant.

The manufacturer shall provide sufficient access to wiring and working areas, signal mountings, etc., to assure the City free and easy access to those areas for wiring and other maintenance.

There shall be a three (3) inch by five (5) inch reinforced hand hole located immediately adjacent to the lower mast arm member to facilitate wiring of the traffic signals located in the mast arm. This requirement shall apply wherever traffic signals are to be installed.

Submittal drawings shall clearly indicate how wiring of signals and other equipment is to be accomplished through the structure and its mast arm.

Mast arms of a specific length shall be interchangeable with all other modular mast arms of the same length.

The mast arms shall have a factory built-in camber so that the arm maintains a position not more than one inch above or below horizontal. The arm shall be straight and its horizontal members shall be parallel. The mast arm shall be physically and visually perpendicular to the vertical structure. No shims or other devices shall be used to level the arm.

Should the mast arm fail to meet the requirements hereof, the manufacturer shall replace the arm with another arm that does meet these specifications. No modification or correction of the mast arm will be allowed other than at the manufacturer's plant unless prior approval of such modification is given by the engineer.

Where required, the luminaire (by others) shall mount to a three foot six inch (3'-6") long square steel mast arm which in turn shall bolt to the side of the pole as shown in the drawings. The last six (6) inches of the luminaire mast arm shall be 2-3/5" O.D. round pipe to accept the luminaire. The pole shall (if necessary) be reinforced to support the luminaire and arm so that they stand straight out from the pole without sagging.

Connecting bolts shall be internal. (Size to be determined by manufacturers structural calculations).

Provide a wiring access hole between the pole and the luminaire arm.

T-200.9 SIGN MODULES:

Internally illuminated street name sign modules shall be provided as shown on the drawings.

Cabinet shall be constructed of 1/8" thickness mell finish aluminum and painted per the specifications.

Sign faces shall have an aluminum frame for stability, hinged on top for internal access, and 1/4 turn fasteners on the bottom for closing. Sign face shall be .187 lexan non-glare matte finish with green #3630-26 Scotchal translucent film background and 11" upper case, 8" lower case Universe 55 white letters. (Block numbering shall be six inches (6") high).

Internal lighting is to be provided by four (4) 117" H.O. lamps with number 51-861-R, high output, rapid start ballast for any combination of T-12, HO, RS lamps with a total overall footage of 48 feet maximum and 24 feet minimum, for 120 volts, 60 hz.

T-200.10 FINISHING:

The structure and equipment described in the foregoing sections are intended for use in Arizona.

The coating must be capable of withstanding Ultra Violet Radiation, blowing sand, and debris, atmospheric pollutants, physical abuse, time, heat and cold, moisture, chemical assault (vandalism) and other abuse.

It is therefore required that all metal surfaces be treated as follows at the factory or coating facility:

1. Sandblast metal in accordance with Steel Structures Painting Council

standard SSPC-10 (white). Remove all oil and grease from the surface by Solvent Cleaning per SSPC-SP1 (do not use hydrocarbon solvents).

2. Primer: Sherwin Williams DTM Primer/Finish B66 W1, One coat at 8.0 mils wet, 3.0 mils dft. Work prime coat by brush into crevices welds and sharp edges.

   Finish: Sherwin Williams Hydrogloss Coating B65 T184, one coat at 8.0 mils wet, 3.0 mils dft. Finish color is City of Tempe Bronze.

3. Application of the finish shall be performed under specifications issued by the licensed formulator using approved applicator and the following:

   1. Coating films shall be uniform and free from flowlines, streaks, sags, blisters or other surface imperfections in dry-film state on all surfaces.

   2. Total dry film thickness of coating shall be 6-Mil.

   3. Color to be Tempe Bronze.

The manufacturer shall provide the engineer with three (3) samples of the cured coating on 12 gauge steel panels, 6" x 6" square in the proper color. Panels shall be tested to determine whether "graffiti" such as cured Rustoleum and/or Krylon spray paint, adhesive tape, magic marker, grape juice and other discolorants can be removed without damage to the coating.

The manufacturer shall agree in writing to repair or replace any failed coating and to repair or replace any steel, which has been damaged as a direct result of the failure of the coating (repair or replacement to be at the option of the manufacturer). The manufacturer shall provide a six-month supply of paint to the City to be used as "touch-up" after installation of the modular poles.

The City will consider other coating systems shown to be equal or greater durability.

100 SERIES
GENERAL INFORMATION

T-115 GENERAL INFORMATION

200 SERIES
WATER INFORMATION

T-115 GENERAL INFORMATION
T-211 PRESSURE VACUUM BREAKER BACKFLOW ASSEMBLY
T-212 WATER METER & SERVICE TAP LOCATION.
T-212-A 1" & 2" METER INSTALLATION
T-213 REDUCED PRESSURE PRINCIPLE BACKFLOW PREVENTION ASSEMBLY.
T-213-A REDUCED PRESSURE BACKFLOW ASSEMBLY ƒ - 2 INCH
T-214 DOUBLE CHECK AND DOUBLE DETECTOR CHECK BACKFLOW PREVENTION ASSEMBLY.
T-214-A DOUBLE CHECK BACKFLOW ASSEMBLY ƒ - 2 INCH
T-215 STANDARD CASING DETAIL
T-216 VALVE VAULT INSTALLATION FOR EXISTING BUTTERFLY VALVE.
T-217-1 WATERLINE EXTENSION FOR BUILDING FIRE SPRINKLERS.
T-217-2 WATERLINE EXTENSION FOR BUILDING FIRE SPRINKLERS.

300 SERIES
STREET INFORMATION

T-115 GENERAL INFORMATION
T-303 DEPTH OF BASE COURSE. (L-1 STREETS)
T-304 DEPTH OF BASE COURSE. (L-2 AND C-1 STREETS)
T-305 DEPTH OF BASE COURSE. (C-2 STREETS)
T-306 DEPTH OF BASE COURSE. (A-1 AND HEAVY INDUSTRIAL STREETS)
T-311 STREET CROSS-SECTION. (L-1,L-2)
T-312 STREET CROSS-SECTION. (C-1,C-2)
T-313 ARTERIAL STREET CROSS-SECTION. (A-1)
T-314 STREET INTERSECTION.
T-315 STREET CROSS-SECTION. (RIBBON CURB.)
T-316 STREET CROSS-SECTION. (RIBBON CURB.)
T-317 STREET CROSS-SECTION. (RIBBON CURB.)
T-319 RETURN TYPE DRIVEWAYS
T-320 DRIVEWAY ENTRANCES
T-321 PRIVATE ENTRANCE WITH MEDIAN ISLAND.
T-322 MID-BLOCK RAMP FOR 4",6" AND 7" CURB.
T-324 DIAGONAL RAMPS - TYPE 'A'
NOT PREPFERRED - USE ONLY WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE.

300 SERIES
STREET INFORMATION (CONTINUED)

T-326 BLENDED TRANSITION RAMPS - TYPE 'B'
NOT PREFERRED - USE ONLY WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE.
T-328 PREFERRED - DIRECTIONAL SIDEWALK RAMPS DETAIL 25',30' RADIUS CURB RETURNS.
T-329 DETECTABLE WARNING
T-345 TYPICAL SIDEWALK ALIGNMENT.
T-347 BLENDED MID-BLOCK RAMP FOR 4",6" AND 7" CURB
T-348 SIDEWALK SCOOP RAMP DETAIL FOR RETURN TYPE DRIVEWAY.
T-349 SIDEWALK AND RAMP AT STREET INTERSECTIONS WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE.
T-350 VERTICAL CURB RETURNS ON RIBBON CURB STREETS
T-351 SOUTH TEMPE OVERLAY DISTRICT SIDEWALK DETAILS.
T-353-1 BRICK SIDEWALK AND TREE GRATE
T-353-2 BRICK SIDEWALK AND TREE GRATE
T-354 SLOTTED DRAIN
T-360 SIGNAGE/STRIPING FOR ADA ACCESSIBLE PARKING SPACES.

400 SERIES
UTILITY INFORMATION

T-115 GENERAL INFORMATION
T-431 STD. UTILITY LOCATION (20' ALLEY.)
T-432 STD. UTILITY LOCATION (16' ALLEY.)
T-433 STD. UTILITY LOCATION (12' ALLEY.)
T-434 STD. UTILITY LOCATION (16' EASEMENT.)
T-435 STD. UTILITY LOCATION (12' EASEMENT.)
T-436 STD. UTILITY LOCATION (C-2 COMM. & MID-SECTION COLLECTOR STREETS)
T-437 STD. UTILITY LOCATION (C-1 RESIDENTIAL COLLECTOR STREET)
T-438 STD. UTILITY LOCATION (L-1 SINGLE LOCAL STREET)
T-439 STD. UTILITY LOCATION (A-1 ARTERIAL STREET)
T-440 STD. UTILITY FIXTURE & CONDUIT PLACEMENT
T-445 VALVE GRADE ADJUSTMENT
T-446 MANHOLE GRADE ADJUSTMENT
T-450 TRENCH BACKFILL AND PAVEMENT REPLACEMENT.
T-452 IN-GROUND ELECTRICAL PULL BOXES (PARKS)
T-453 TRAFFIC SIGNAL PULL BOXES
T-454 CONTROL SAMPLING VAULT.
T-455 ENGINEERED UTILITY BORE

500 SERIES
TRAFFIC INFORMATION

T-115	GENERAL INFORMATION.
T-540	MODULAR POLE 'Q' - 25' MAST ARM.
T-541	MODULAR POLE 'J' - 25' MAST ARM.
T-544	MODULAR POLE 'Q' - 30' MAST ARM.
T-545	MODULAR POLE 'J' - 30' MAST ARM.
T-548	MODULAR POLE 'Q' - 50' MAST ARM.
T-550	MODULAR POLE 'Q' - 45' MAST ARM.
T-551	MODULAR POLE 'J' - 45' MAST ARM.
T-552	MODULAR POLE 'Q' - 40' MAST ARM.
T-553	MODULAR POLE 'J' - 40' MAST ARM.
T-554	MODULAR POLE 'Q' - 35' MAST ARM.
T-555	MODULAR POLE 'J' - 35' MAST ARM.
T-556	MODULAR POLE 'F' - 20' MAST ARM.
T-557	MODULAR POLE 'E' - 20' MAST ARM.
T-558	MODULAR POLE 'A-1'.
T-559	MODULAR POLE 'A-2'.
T-560	MODULAR POLE MAST ARM CONNECTION.
T-561	MODULAR SIGNAL ADD-ON STRUCTURES.
T-562	MODULAR SIGNAL MAST ARM SIGN MOUNTING STANDARDS.
T-570-1	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR TYPE "A" MODULAR (NO MAST ARM).
T-570-2	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR TYPE "A" MODULAR (NO MAST ARM).
T-571-1	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR MODULAR 20,35,40 MAST ARM STRUCTURES.
T-571-2	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR MODULAR 20,35,40 MAST ARM STRUCTURES.
T-572-1	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR MODULAR 45 MAST ARM STRUCTURE.
T-572-2	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR MODULAR 45 MAST ARM STRUCTURE.
T-573-1	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 50 MAST ARM STRUCTURE.
T-573-2	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 50 MAST ARM STRUCTURE.
T-575	TRAFFIC LOOP DETECTOR DETAIL.
T-576	BICYCLE LOOP DETECTOR DETAIL.
T-577	BICYCLE PUSH BUTTON AND POLE DETAIL.
T-578	BICYCLE RACK DETAIL.

600 SERIES
STREET LIGHTING

T-115	GENERAL INFORMATION.
T-645	TEMPE SPECIAL DISTRICT LIGHTING.
T-650	STREET LIGHT PULL BOX & CONNECTION DETAILS.
T-651-1	STREAMLINE STEEL POLE DETAILS.
T-651-2	STREAMLINE STEEL POLE DETAILS.
T-652-1	ARCHITECTURAL STREET LIGHT.
T-652-2	ARCHITECTURAL STREET LIGHT.
T-653-1	SPECIAL DISTRICT STREET LIGHT.
T-653-2	SPECIAL DISTRICT STREET LIGHT.
T-654-1	STANDARD BUS SHELTER - ELEVATIONS.
T-654-2	STANDARD BUS SHELTER - ROOF PLAN.
T-654-3	BUS SHELTER FLOOR/FOUNDATION PLAN.
T-654-4	STANDARD BUS SHELTER ROOF SECTION.
T-654-5	STANDARD BUS SHELTER CONNECTION DETAILS 1-3.
T-654-6	STANDARD BUS SHELTER CONNECTION DETAILS 4-6.
T-654-7	STANDARD BUS SHELTER CONNECTION DETAILS 7-9.
T-654-8	BARRIER-FREE PEDESTAL MOUNTED STEEL DRINKING FOUNTAIN.
T-654-9	STANDARD BUS SHELTER FOUNDATION LOCATION OPTIONS AND SPECIAL CURB & GUTTER.
T-654-10	STANDARD MID-BLOCK & FAR SIDE BUS PULLOUT.
T-654-11	SPECIAL NOTES AND SHELTER EASEMENT.
T-654-12	BUS SHELTER POWER AND LIGHT DETAIL.
T-655	PRIVATE STREET NAME SIGN DIAGRAM.
T-656-1	MULTI-USE PATH LIGHTING DETAILS.
T-656-2	MULTI-USE PATH AT T-INTERSECTIONS.
T-656-3	MULTI-USE PATH DESIGN AND LIGHTING DETAILS.
T-657	DUAL LOAD CENTER FOUNDATION DETAIL.
T-658	SPECIAL RIO SALADO MULTI-PATH LIGHTING FIXTURE.

REFER TO M.A.G. STANDARD DETAILS

DETAIL NO. 203 -	THIS SCUPPER DETAIL SHALL BE USED ONLY WITH APPROVAL OF THE CITY ENGINEER.
DETAIL NO. 210 -	12" REFLECTIVE WHITE STRIPES SHALL BE PER DETAIL T-356
DETAIL NO. 211 -	USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. "TYPE 2 PLATES ARE REQUIRED WHEN THE POSTED SPEED LIMIT IS 25 MPH OR GREATER
DETAIL NO. 220 -	CURB HEIGHT (H) ON ALL ARTERIAL STREETS SHALL BE 7"
DETAIL NO. 230 -	WIDTH OF CONCRETE SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE, 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY
DETAIL NO. 240 -	VALLEY GUTTER WIDTH TO BE DETERMINED IN THE FIELD BY THE ENGINEER (MAX. WIDTH 6')
DETAIL NO. 250-1, 250-2 -	TABLE FOR COMMERCIAL AND INDUSTRIAL - MINIMUM DRIVEWAY ENTRANCE WIDTH IS 30 FEET. TABLE FOR RESIDENTIAL - MINIMUM DRIVEWAY ENTRANCE WIDTH IS 20 FEET. DEPTH 'X' IS 6 INCHES. BACK OF CURB SCORE MARK IF POURED MONOLITHICALLY. IF NOT POURED MONOLITHICALLY INSTALL NO.4 REBAR DOWELS AT 24" O.C.
DETAIL NO. 251 -	CONCRETE THICKNESS SHALL BE 9" FOR ALL DRIVEWAYS.
DETAIL NO. 262 -	THIS DETAIL SHALL BE USED FOR ALL ALLEY ENTRANCES, WING WIDTH SHALL BE 6' FOR 6" VERT CURB. 7' FOR 7" VERT CURB. OTHERS MAINTAIN A MAX. SLOPE OF 1:12. CONCRETE THICKNESS SHALL BE 9" FOR ALL ALLEY ENTRANCES. WATER SERVICE TAP AND/OR WATER METER SHALL NOT BE INSTALLED WITHIN AN ALLEY ENTRANCE, EXISTING UTILITIES SHALL BE RELOCATED IF IN CONFLICT WITH NEW ENTRANCE.
DETAIL NO. 301 -	VALVES THAT ARE "IN-LINE" MAY HAVE MECHANICAL JOINTS ENDS, VALVES AT LINE INTERSECTIONS SHALL BE FLANGED DIRECTLY TO THE FITTING, ANY VALVE WHICH APPEARS TO BE WITHIN 25' OF THE PIPE INTERSECTION SHOWN OR INDICATED ON PLAN SHALL BE FLANGED TO THE TEE, CROSS OR ELBOW, UNLESS OTHERWISE SPECIFIED ON THE PLAN.
DETAIL NO. 340 -	DIMENSION IS 5' MINIMUM OF (DISTANCE AS REQUIRED BY TAPPING AGENCY)
DETAIL NO. 390 -	USE TYPE "B" CURB STOP WITH FLUSHING PIPE ONLY.
DETAIL NO. 391-1 -	USE TYPE "C" VALVE BOX INSTALLATION, TYLER AND RICH ONLY. NON-LOCKING DEEP SHOULDERED VALVE BOX COVERS ARE ACCEPTABLE.
DETAIL NO. 420,520-522 -	ALL MANHOLES SHALL BE 5' IN DIAMETER WITH NO STEPS
DETAIL NO. 440 -	USE TYPE "A" SEWER BUILDING CONNECTION ONLY. NO SEWER TAPS SHALL BE ALLOWED IN MANHOLES OR CLEANOUTS.
DETAIL NO. 441 -	NO SEWER TAPS SHALL BE ALLOWED IN CLEANOUTS
DETAIL Nos. 531 & 532 -	ALL CATCH BASINS SHALL BE PER DETAIL NO. 531 & 532 UNLESS APPROVED BY THE CITY ENGINEER. MULTIPLE CATCH BASINS SHALL BE CONSTRUCTED BY INSTALLING CATCH BASINS SIDE BY SIDE WITH THE BOTTOM 1.5' OF THE COMMON WALL REMOVED AND TWO #4 REBAR INSTALLED IN THE BOTTOM EDGE OF THE COMMON WALL

REFER TO TEMPE STANDARD DETAILS

DETAIL Nos. T-303 TO T-306 -	(DEPTH OF BASE COURSE CHARTS) CHARTS TO BE USED ONLY WHEN "AASHTO INTERIM GUIDE FOR DESIGN OF FLEXIBLE STRUCTURES" PROCEDURE NOT REQUIRED.
DETAIL Nos. T-322 TO T-328, T-348 TO T-351 RAMP PREFERENCE:	DIRECTIONAL RAMPS ARE PREFERRED AND SHOULD BE INSTALLED AT ALL INTERSECTIONS (PER DET. T-328) WHERE THERE IS ROOM FOR BOTH THE RAMPS AND THE REQUIRED 4-FOOT LANDING AREA. AT ARTERIAL-ARTERIAL INTERSECTIONS WHERE THERE IS NOT ROOM FOR THE FULL DIRECTIONAL RAMP TREATMENT, DIAGONAL RAMPS (PER DET T-324) WITH A MINIMUM 8-FOOT WIDTH AND 4-FOOT LANDING ARE ACCEPTABLE, AND IF THERE IS NOT ROOM FOR THE LANDING, A BLENDED TRANSITION RAMP SHOULD BE USED (PER DET T-326). AT ARTERIAL-TO-LOCAL INTERSECTIONS, IF THERE IS NOT ROOM FOR DIRECTIONAL RAMPS AND THEIR LANDINGS, THEN A BLENDED TRANSITION RAMP WILL BE PREFERRED (PER DET T-326). DIAGONAL RAMPS MAY BE USED IF FOR SOME REASON A BLENDED TRANSITION IS NOT WORKABLE, BUT THE WIDTH OF A DIAGONAL RAMP AT THE CURB LINE SHOULD BE A MINIMUM OF 8-FEET.

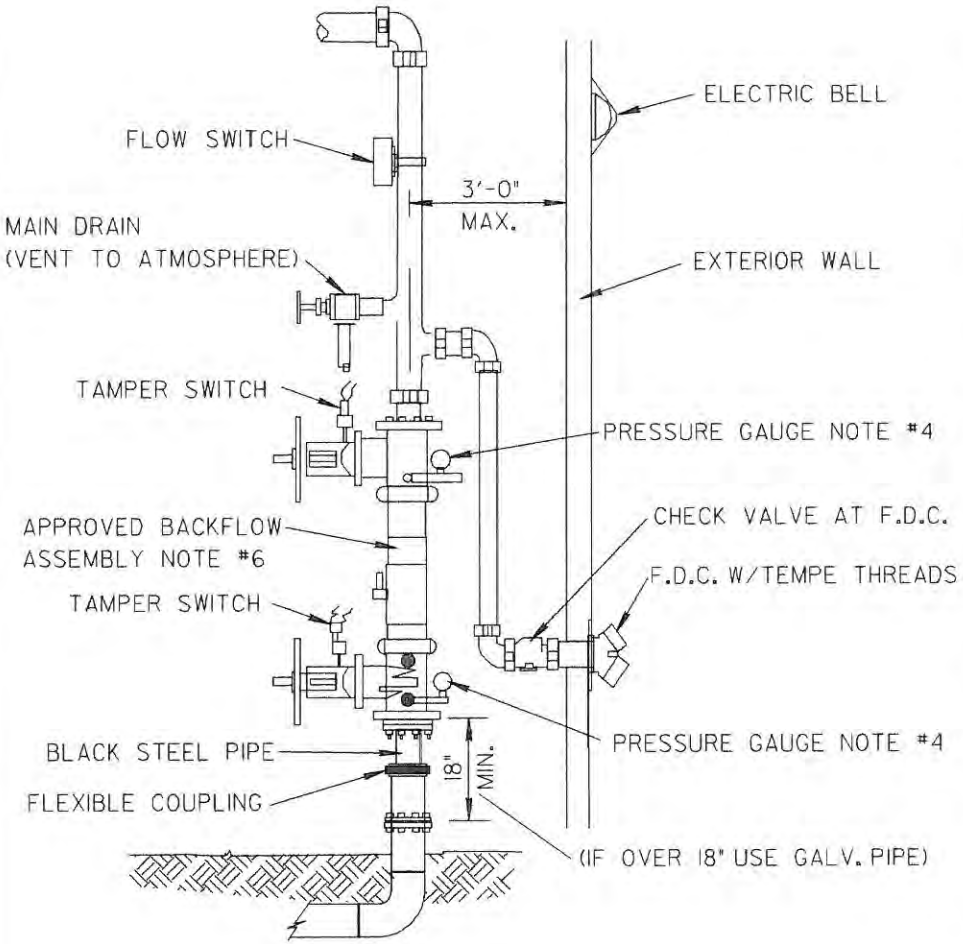
GENERAL NOTES

1. INSTALLATION OF NEW UTILITIES ON EXISTING CONCRETE STRUCTURES (I.E. CATCH BASINS, MANHOLES, HEADWALLS, STANDPIPE, PIPES ETC.,) SHALL BE CORE DRILLED.
2. UNLESS OTHERWISE NOTED ALL CONDUIT SHALL BE 2" MIN. PVC SCHEDULE 40 OR BETTER.
   INSTALLATION OR REPLACEMENT OF UTILITY CABLES TO BE SLEEVED IN SCHEDULE 40 PVC OR BETTER. CONDUITS SHOULD BE SIZED AND PLACED TO ALLOW REPLACEMENT OF OR THE ADDITION OF CAPACITY TO EXISTING FACILITIES WITHOUT DISTURBING THE SURFACE.
   CONDUITS IN PROTECTED AREAS SUCH AS BEHIND CURBS, IN SIDEWALKS, ETC, THAT ARE NOT SUBJECT TO VEHICULAR TRAFFIC SHALL BE AT A MINIMUM DEPTH OF 24 INCHES OR AS SPECIFIED IN EXHIBIT "C" OF THE CITY OF TEMPE UTILITY PERMIT MANUAL.
   CONDUITS INSTALLED UNDER ROADWAYS, DRIVEWAYS, PARKING LOTS OR ANY OPEN AREAS WHERE IT IS POSSIBLE FOR VEHICLES TO DRIVE, SHALL BE AT A MINIMUM DEPTH OF 24 INCHES OR AS SPECIFIED IN EXHIBIT "C" OF THE CITY OF TEMPE UTILITY PERMIT MANUAL.
   WHEN CONDUIT IN PROTECTED AND OPEN AREAS CANNOT BE INSTALLED AT THE MINIMUM DEPTHS, IT SHALL BE ENCASED IN CONCRETE A MINIMUM OF 3 INCHES.
3. NO NEW POLES OR OVERHEAD LINES ALLOWED IN TEMPE PER TEMPE CITY CODE. REPAIR OF EXISTING OVERHEAD LINES TO MAINTAIN 18' MIN. FROM GROUND.
4. DETAIL DRAWINGS ARE NOT TO SCALE.

APPROVED: Andy Ga 12-19-14

DEPUTY PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	GENERAL INFORMATION	DETAIL T-115 REVISED 2014



GENERAL NOTES

1. BACKFLOW ASSEMBLY SHALL BE TESTED FOR PROPER OPERATION PER CITY OF TEMPE REQUIREMENTS BY A CERTIFIED TESTER RECOGNIZED BY THE CITY OF TEMPE, BEFORE A CERTIFICATE OF OCCUPANCY IS ISSUED.

2. ADEQUATE CLEARANCE SHALL BE PROVIDED AROUND FIRE RISER, DIMENSIONS FROM FACE OF PIPE SHALL MEASURE A MINIMUM OF 12" OFF THE BACK WALL 18" ON EACH SIDE AND 36" CLEAR IN FRONT WITH A FULL HEIGHT DOOR, THE FIRE LINE SHALL EXTEND A MAXIMUM OF 36" INTO THE BUILDING FROM INSIDE FACE OF WALL TO CENTER OF PIPE.

3. RISER SHALL BE HYDROSTATICALLY TESTED AT 200 PSI. FOR TWO HOURS.

4. AT NO. 1 AND NO. 4 TEST PORTS INSTALL A $\frac{1}{2}$" BRASS NIPPLE, TEE AND PLUGS WITH $\frac{1}{2}$ BY $\frac{1}{4}$ MALE FLARED CONNECTION WITH CAP. (INSTALL PRESSURE GAUGE ON TEE OUTLET).

5. RESILIENT SEATED BUTTERFLY VALVES MAY BE USED ON ASSEMBLY. TAMPER SWITCHES MAY BE REQUIRED. CHAINED AND LOCKED IF NOT TAMPER PROOF.

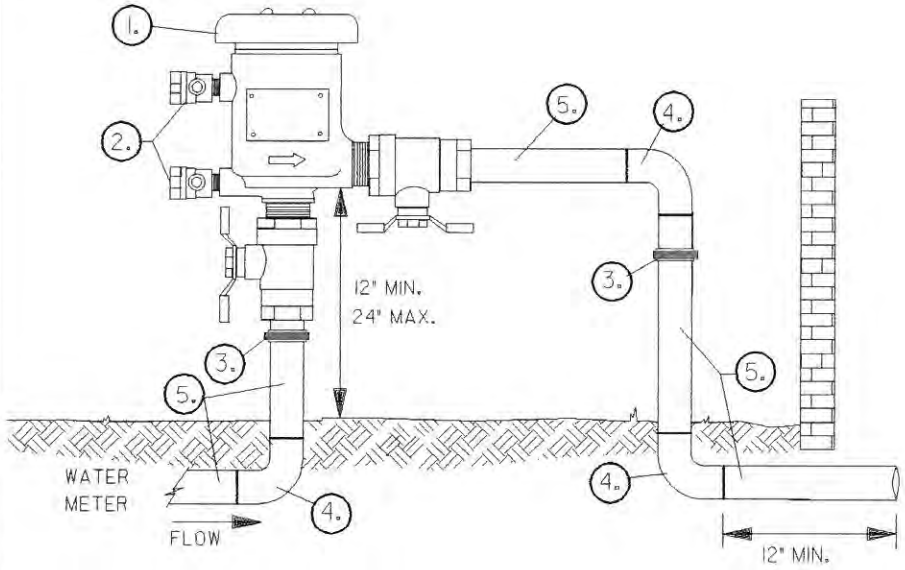
6. USC FCCCHR APPROVED DOUBLE CHECK, OTHER APPROVALS SUCH AS UL AND FM MAY BE INSTALLED WITH PERMISSION OF THE CROSS CONNECTION CONTROL SECTION OF WATER UTILITIES DEPARTMENT. DOUBLE CHECK VALVE ASSEMBLY WILL BE REQUIRED ON CLASS 1 AND 2 FIRE SYSTEMS. ALL OTHER SYSTEMS CONTACT CITY OF TEMPE WATER UTILITIES DEPARTMENT PHONE (480) 350-8674.

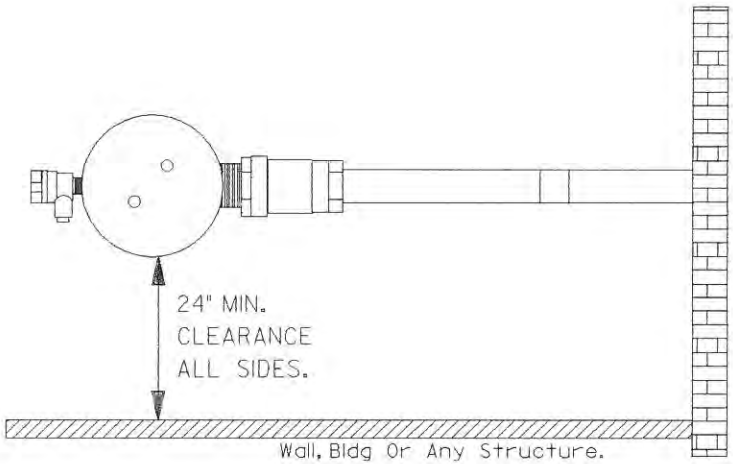
APPROVED: Andy Cr 11/8/07

DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER

DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	FIRE SPRINKLER RISER DETAIL BACKFLOW PREVENTION	DETAIL T-210 NOVEMBER. 2007





MATERIALS LIST

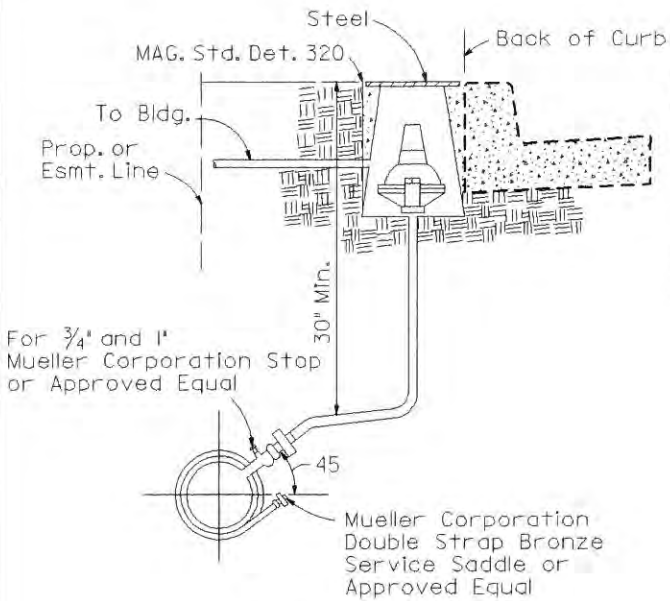
1. USC FCCCHR APPROVED PRESSURE VACUUM BREAKER BACKFLOW ASSEMBLY.
2. TEST COCKS WITH BRASS PLUGS OR ADAPTERS WITH CAPS.
3. BRASS 3 PC. UNION ONE REQUIRED.
4. COPPER X COOPER 90 ELL.
5. TYPE K COPPER PIPE.

NOTES:

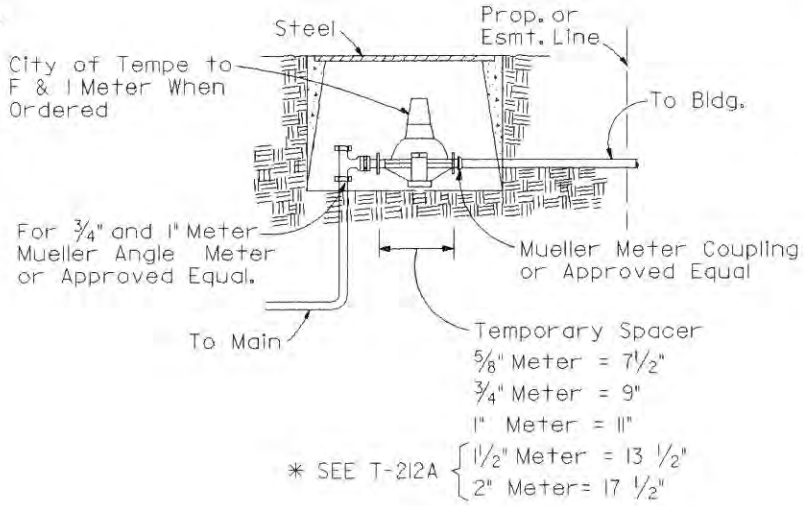
1. CONTACT CITY OF TEMPE ENVIRONMENTAL SERVICES SECTION AT (480) 350-8674 FOR LATEST LIST OF APPROVED ASSEMBLIES.
2. COPPER FITTINGS SHALL BE CONNECTED WITH LEAD FREE SOLDER.
3. CLEARANCE MINIMUM 24 INCHES AWAY FROM WALLS OR STRUCTURES ALL SIDES.
4. MINIMUM 12" ABOVE FINISHED GRADE MAX. 24".
5. COPPER PIPE TO 12" ON OUTLET SIDE.
6. INSTALLED AT METER UNLESS APPROVED BY CITY OF TEMPE.

APPROVED: Andy C — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — 7/2/07 DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	PRESSURE VACUUM BREAKER BACKFLOW ASSEMBLY	DETAIL T-211 REVISED 2007



VIEW A - A



VIEW B - B

WATER SERVICES PARTS FOR ACP & DIP

Saddles (3/4" & 1" Services):

4" - Mueller or Approved equal

6" - Mueller or Approved equal

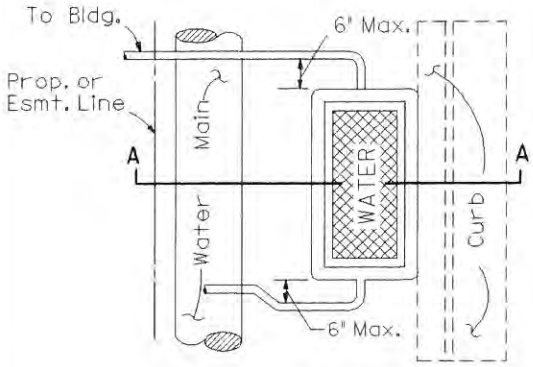
8" - Mueller or Approved equal

12" - Mueller or Approved equal

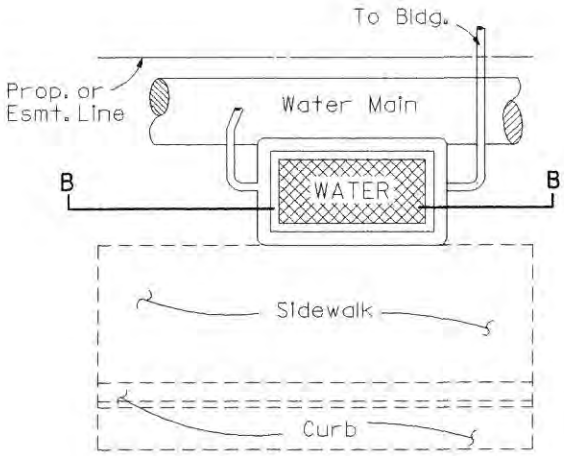
Corp. Stop (3/4" and 1" Services):

I.P. by Copper Flare - Mueller or Approved equal

Straight Meter Coupling With Meter Swivel Nut - Mueller or Approved equal



PLAN VIEW OF METER
ADJACENT TO CURB
TYPE "A"



PLAN VIEW OF METER
ADJACENT TO CURB
TYPE "B"

NOTES:

1. Copper service pipe shall meet A.S.T.M. spec. B-88 "Type K", All new services shall be installed with copper only.

2. All services for ⅝" and ¾" meters shall be ¾" "Type K" flared copper , all services for 1" meters shall be 1" "type K" flared copper.

3. All services for 1½" and 2" services shall be "Type K" rigid copper.

4. No compression fittings are allowed.

5. All water services shall terminate in the appropriate sized meter box with the appropriate size angle valve.

6. All ¾" through 2" water services must be at least two feet deep.

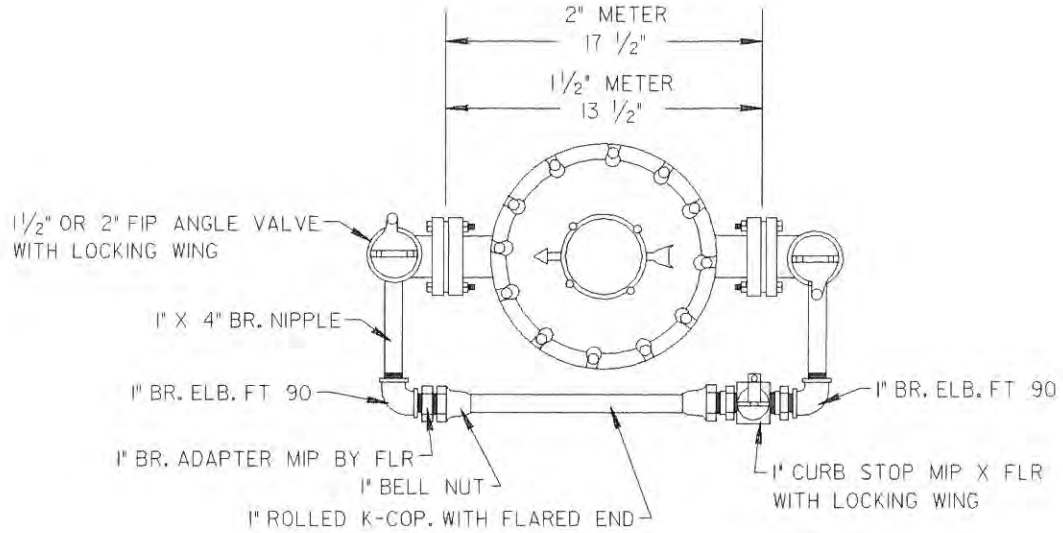
7. Only lead free silver solder shall be used.

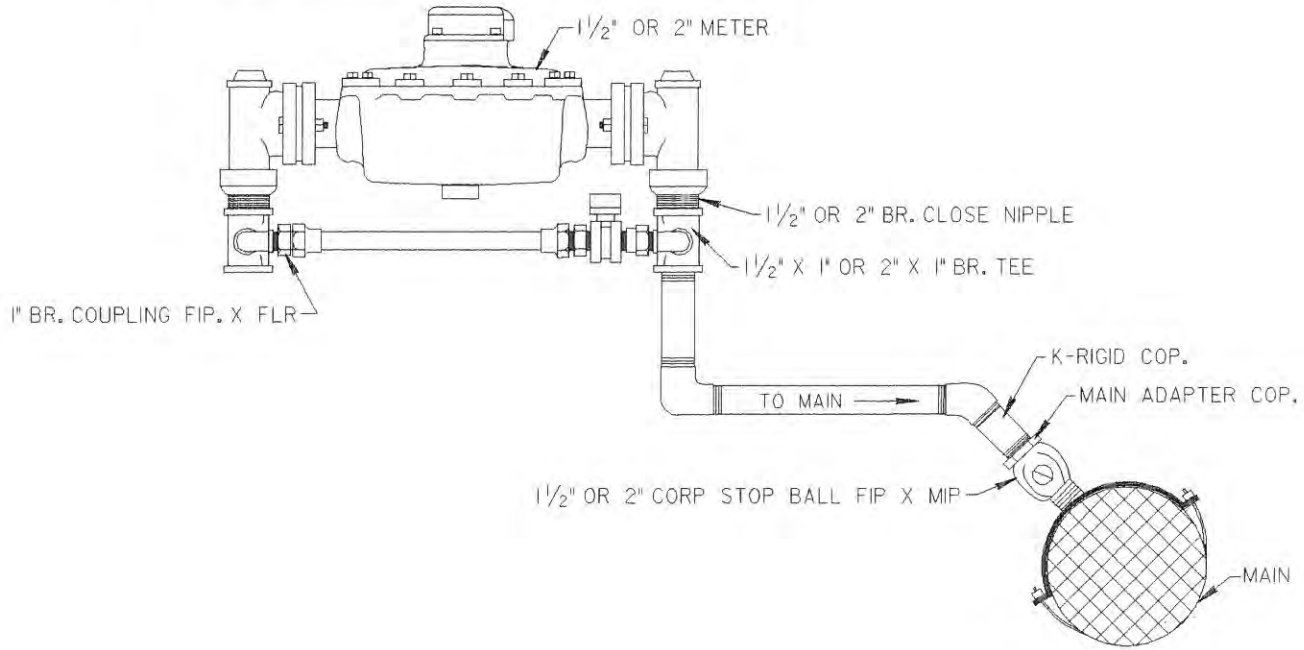
8. New water service taps and/or water meters shall not be installed within a driveway entrance.

9. All meter boxes shall be concrete with metal lids and installed to be flush with the final grade.

APPROVED: Andy Cu 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	WATER METER & SERVICE INSTALLATION	DETAIL T-212 REVISED 2007





NOTES:

- 1 1/2" METER USE NO. 3 BOX PER STANDARD MAG DETAIL NO. 320
- 2" METER USE NO. 4 BOX PER STANDARD MAG DETAIL NO. 320
- FITTINGS SHALL BE 1 1/2" OR 2" DEPENDING ON METER SIZE
- ANGLE VALVE MUST BE 5" BELOW FINISH GRADE

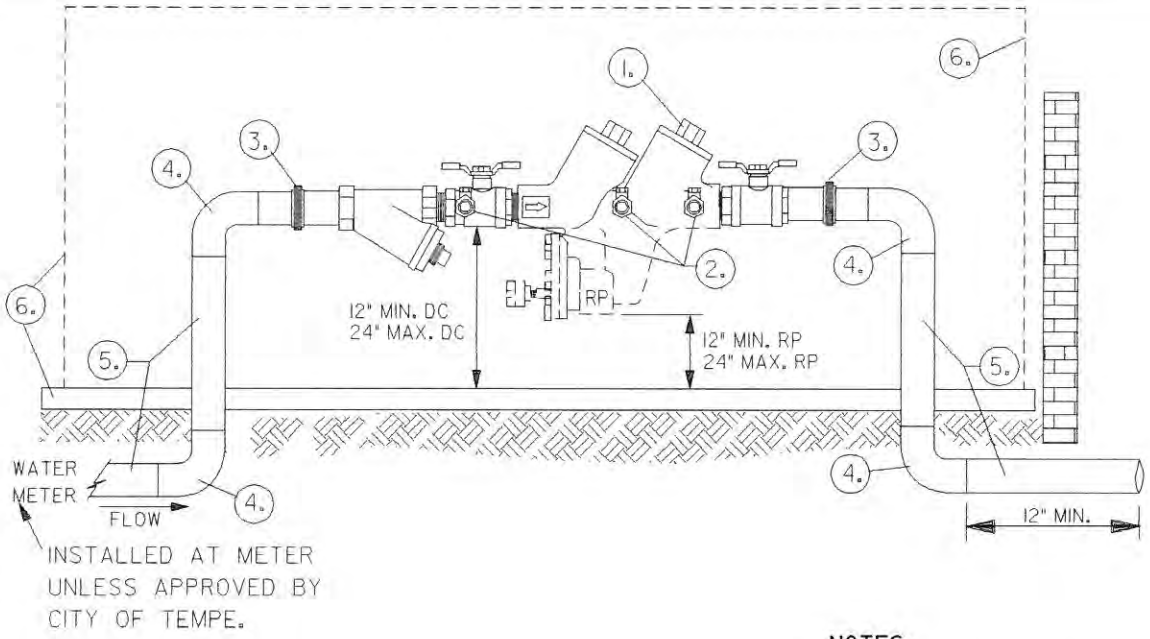
* - NOTES ON DETAIL NO. 212 APPLY TO THIS DETAIL.

APPROVED: Andy Cr 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

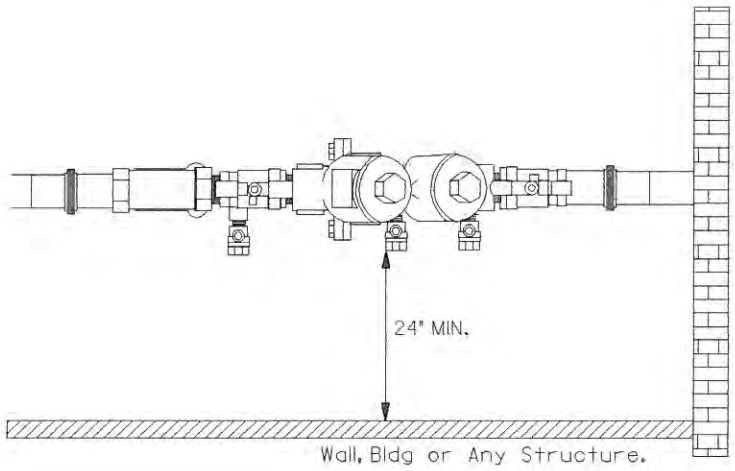
1 1/2" & 2" METER INSTALLATION

DETAIL T-212-A
REVISED 2007



MATERIALS LIST

1. USC FCCCHR APPROVED BACKFLOW ASSEMBLY.
   - ☐ REDUCED PRESSURE PRINCIPAL.
   - ☐ DOUBLE CHECK VALVE ASSEMBLY
2. TEST COCKS WITH BRASS PLUGS OR ADAPTERS WITH CAPS.
3. BRASS 3 PC. UNION ONE REQUIRED.
4. 90 ELL COPPER 3/4 THRU 2 1/2 INCH
5. TYPE K COPPER PIPE.
6. OPTIONAL ENCLOSURE WITH CONC. PAD 4" THICK.

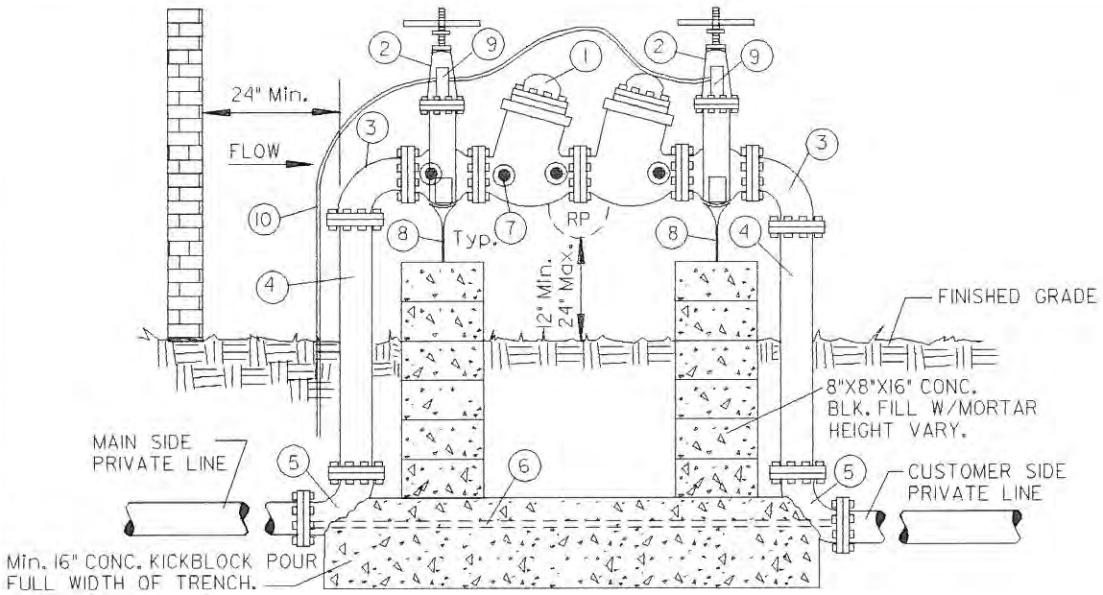


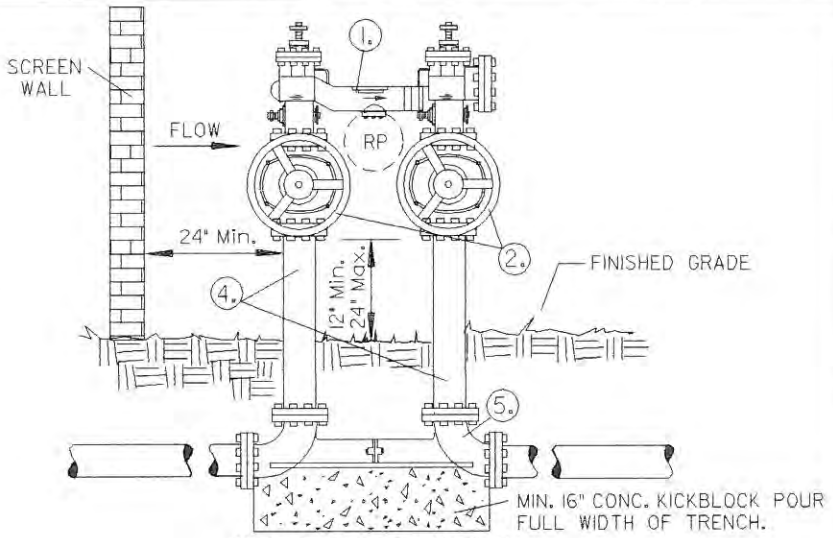
NOTES:

1. CITY OF TEMPE WILL DETERMINE TYPE OF BACKFLOW PREVENTION ASSEMBLY TO BE INSTALLED.
2. CONTACT CITY OF TEMPE ENVIRONMENTAL SERVICES SECTION AT (480) 350-8674 FOR LATEST LIST OF USC FCCCHR APPROVED ASSEMBLIES. (ASSEMBLY MUST BE TESTED BEFORE C OF O WILL BE ISSUED)
3. COPPER FITTINGS SHALL BE CONNECTED WITH LEAD FREE SOLDER.
4. CLEARANCE MINIMUM 24 INCHES AWAY FROM WALLS OR STRUCTURES ALL SIDES.
5. MINIMUM 12" ABOVE FINISHED GRADE MAX. 24".
6. COPPER PIPE TO 12" ON OUTLET SIDE.
7. INSTALLED AT METER UNLESS APPROVED BY CITY OF TEMPE.

APPROVED: Andy [illegible] 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BACKFLOW ASSEMBLY INSTALLATION 3/4 - 2 1/2 INCH	DETAIL T-213 REVISED 2007





VALVE SETTER OPTION

NOTES:

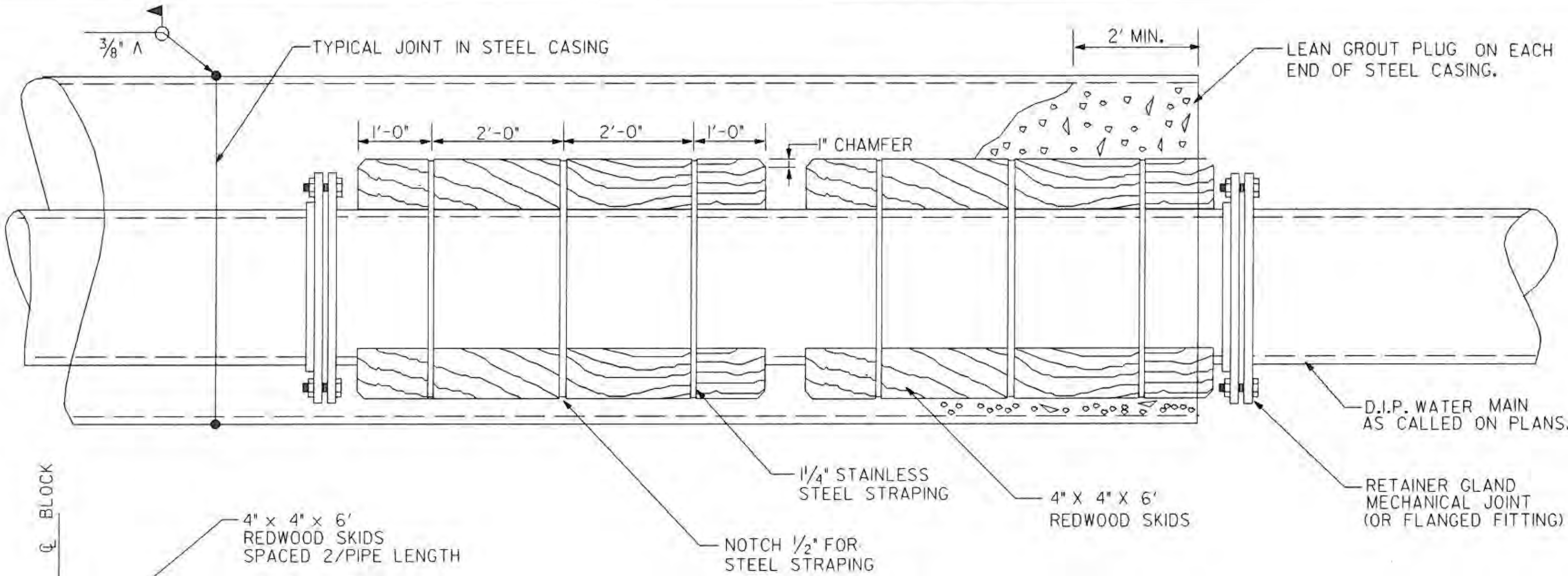
1. CITY OF TEMPE WILL DETERMINE WHAT TYPE OF BACKFLOW PREVENTION ASSEMBLY TO BE INSTALLED.
2. CONTACT CITY OF TEMPE ENVIRONMENTAL SERVICES SECTION AT (480) 350-8674 FOR LATEST LIST OF USC FCCCHR APPROVED ASSEMBLIES. (ASSEMBLIES MUST BE TESTED BEFORE C OF O WILL BE ISSUED)
3. INSTALLED AT METER UNLESS APPROVED BY CITY OF TEMPE.
4. DETAIL FOR SCREENING/GUARD POST SHALL BE SUBMITTED TO CITY OF TEMPE ENGINEERING AND DEVELOPMENT SERVICES DEPARTMENTS FOR APPROVAL.
5. SCREENING REQUIRED 3" OR LARGER DIAMETER, REQUIRES MASONRY SCREEN WALLS WITH MATERIALS, FINISH, AND COLOR TO MATCH BUILDING.
6. CITY CONTROL VALVE TO BE REQUIRED AT MAIN SIDE.
7. THE CITY WILL NOT PARTICIPATE IN THE COST OF CONSTRUCTION, REPAIR OR UTILITY RELOCATION.
8. CLEARANCE MINIMUM 24 INCHES AWAY FROM ANY WALL OR STRUCTURE AND MINIMUM 12 INCHES ABOVE FINISH GRADE MAXIMUM 24 INCHES.

MATERIALS LIST

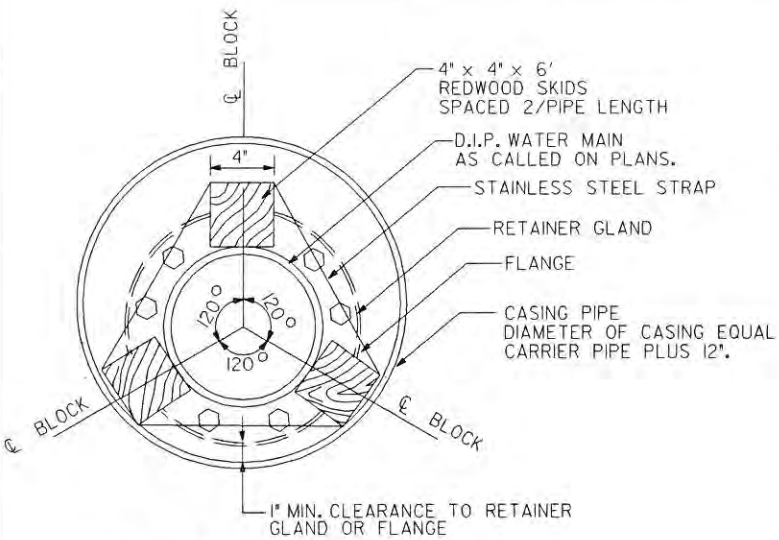
1. USC FCCCHR APPROVED BACKFLOW ASSEMBLY.
   - ☐ REDUCED PRESSURE PRINCIPAL.
   - ☐ DOUBLE CHECK VALVE ASSEMBLY
2. RESILIENT SEATED VALVE NRS (NON FIRE) OR OS&Y (FIRE)
3. 90 ELL FLANCED D.I.P. 3" THRU 10".
4. PIPE SPOOL (FLANGED D.I.P. 3" THRU 10")
5. 90 ELL. FLANGED BY MJ. D.I.P. OR (APPROVE VALVE SETTER)
6. 3/4" ZINC COATED THREADED ROD BOLT TO FLANCES AS SHOWN BOTH SIDES TYPICAL (NOT REQUIRED ON VALVE SETTER INSTALLATIONS)
7. TEST COCKS FOUR REQUIRED WITH BRASS PLUGS OR ADAPTERS WITH CAPS.
8. ADJUSTABLE PIPE SUPPORTS (NOT REQUIRED ON VALVE SETTER INSTALLATION)
9. TAMPER SWITCH OR CHAIN & LOCKED FIRE LINES.
10. ELECTRICAL CONDUIT FOR TAMPER SWITCH (FIRE LINE ONLY).

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BACKFLOW PREVENTION ASSEMBLY INSTALLATION 3" - 10" AND (VALVE SETTER OPTION)	DETAIL T-214 REVISED 2007



TYPICAL LONGITUDINAL SECTION



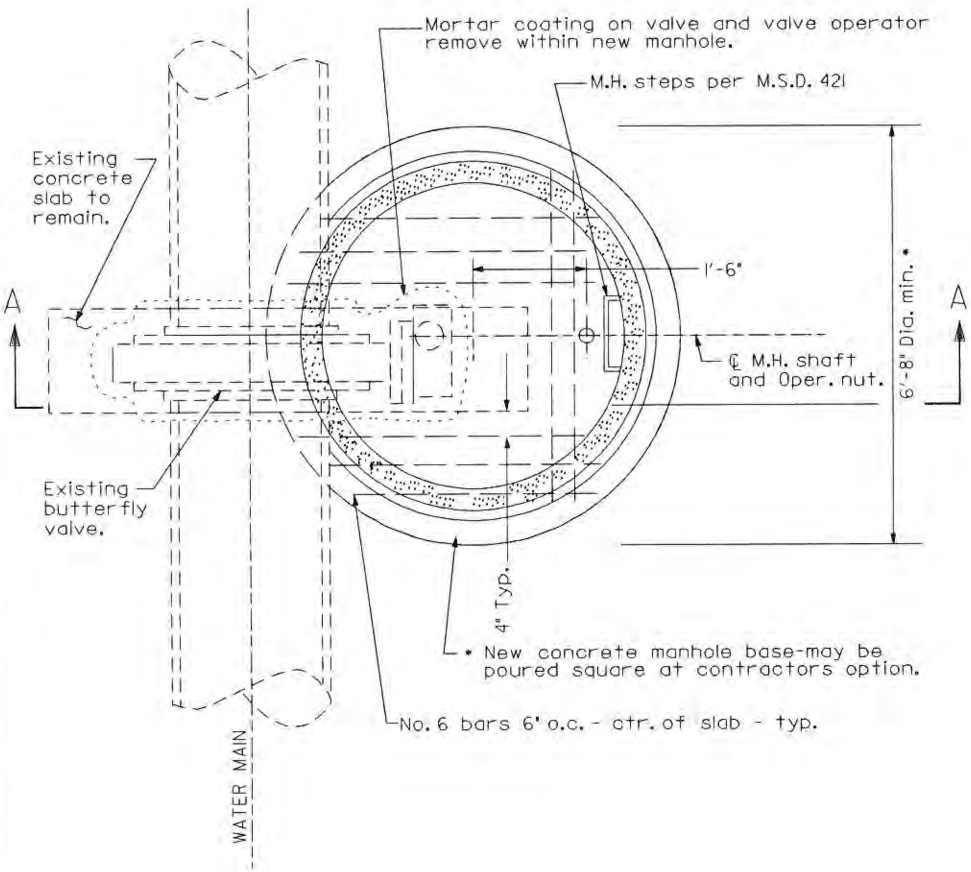
TYPICAL SECTION

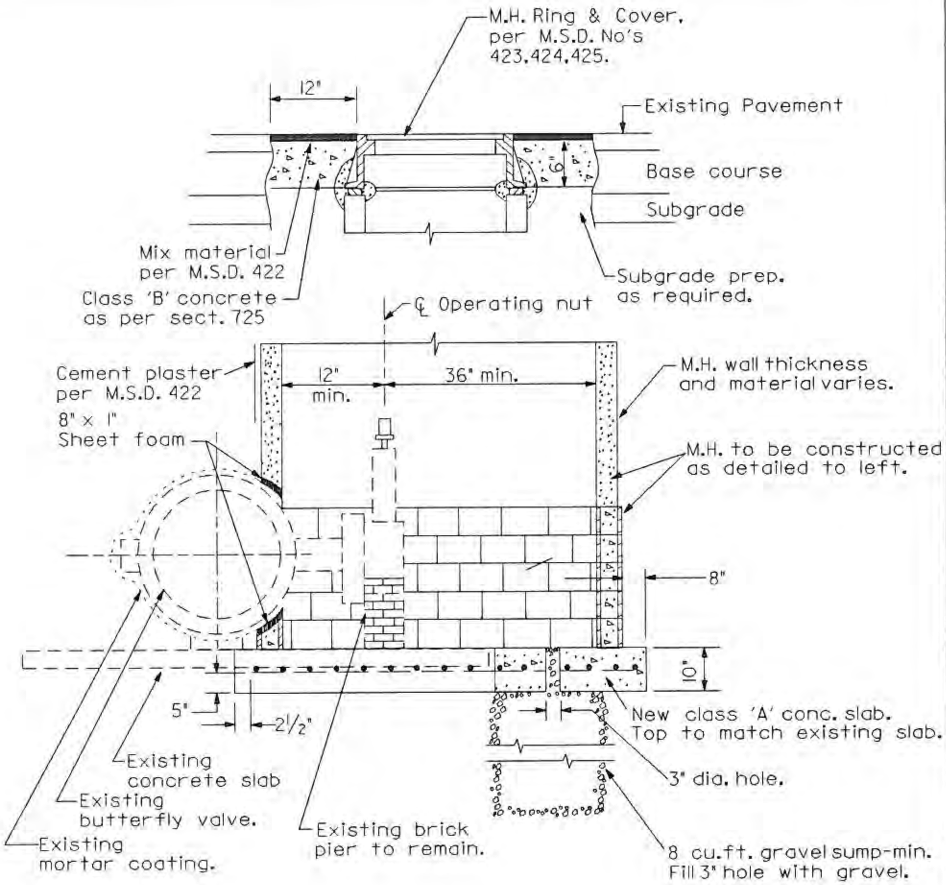
NOTES

- ALTERNATE SIZE REDWOOD BLOCKING MAY BE USED, SUBJECT TO APPROVAL BY THE ENGINEER. MINIMUM CLEARANCE SHALL BE MAINTAINED.
- TWO BLOCK ANGLES COULD VARY TO MAINTAIN REQUIRED CLEARANCES AND PROPER INSTALLATION.
- STEEL CASING PIPE TO BE (3/8' WALL THICKNESS) MINIMUM.
- ALL STEEL CASING SHALL BE WELDED CONTINUOUSLY AT ALL JOINTS
- ALL STEEL SHALL BE STRUCTURAL GRADE PER A.S.T.M. A283 OR A.S.T.M. A36 STEEL.
- ALL D.I.P PIPE SHALL HAVE RESTRAINED OR FLANGED JOINTS AS CALLED FOR ON PLANS

APPROVED: [signature] 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD CASING DETAIL	DETAIL T-215 REVISED 1998





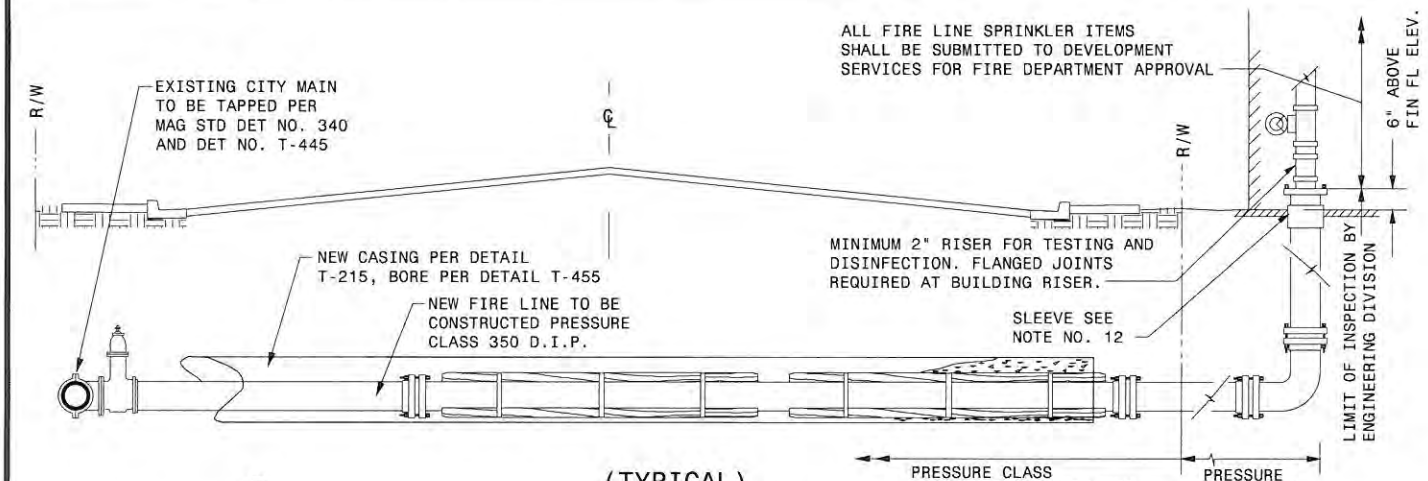
SECTION A - A

NOTES

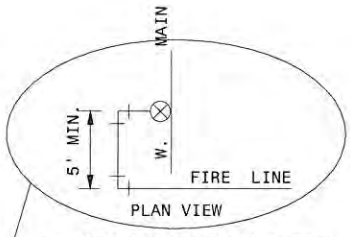
- EXISTING 6" AND 8" BLOWOFF PIPING TO BE REMOVED AND REPLACED AS REQUIRED TO CLEAR MANHOLE SHAFT A MIN. OF 2'-0". NEW 6" AND 8" WATERLINES TO BE M.J.D.I.P. WITH APPROVED JOINT RESTRAINTS.

APPROVED: [signature] CITY ENGINEER 12/8/98 DATE

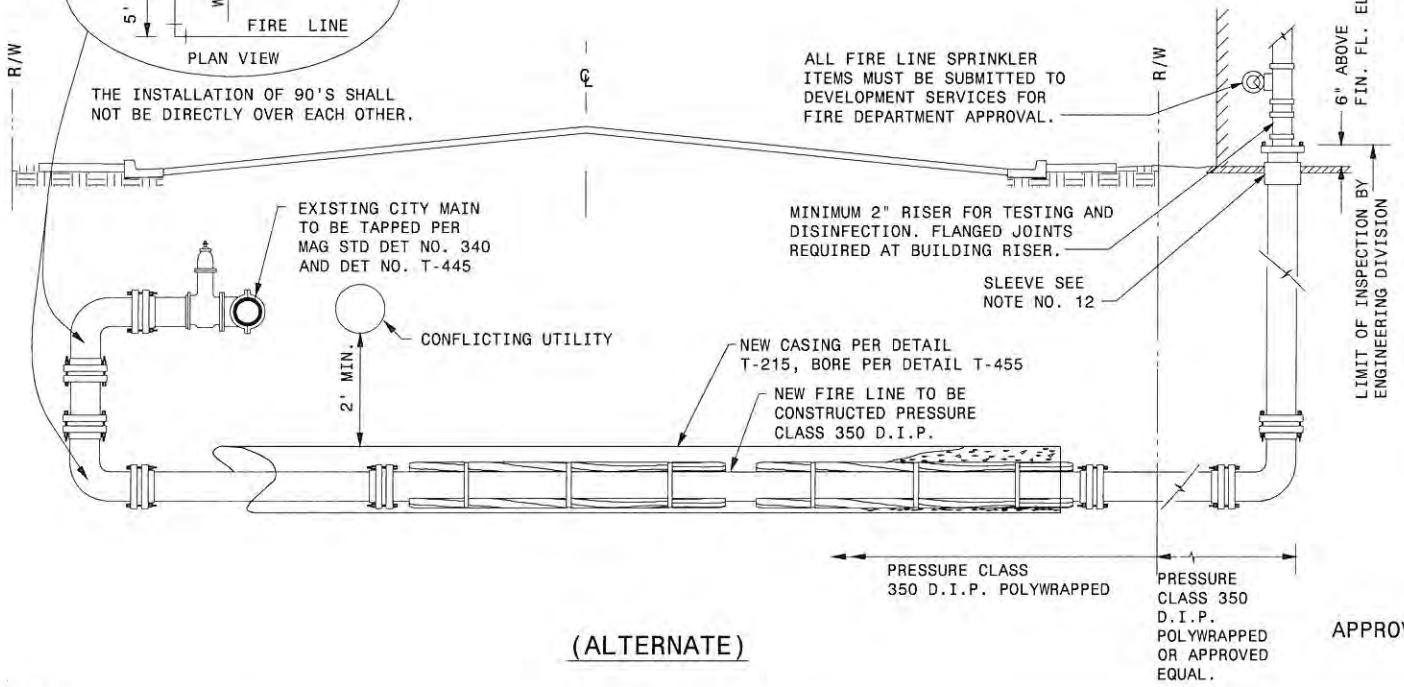
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	VALVE VAULT INSTALLATION FOR EXISTING BUTTERFLY VALVE	DETAIL T-216 REVISED 1998



(TYPICAL)



THE INSTALLATION OF 90'S SHALL NOT BE DIRECTLY OVER EACH OTHER.



(ALTERNATE)

NOTES

1. OPEN CUT REQUIRED UNLESS AN "BORE" IS APPROVED IN WRITING BY THE CITY ENGINEER.
2. ALL WATERLINES SHALL BE FLUSHED, PRESSURE TESTED, AND DISINFECTED IN ACCORDANCE WITH MAG SECTION 610 THROUGH A TEST POINT INSTALLED AT THE RISER.
3. ALL PIPE TO BE 6" DIA. PRESSURE CLASS 350 D.I.P POLYWRAPPED FROM THE MAIN TO THE FLANGE IN THE RISER (UNLESS CALCULATIONS ARE SUBMITTED AND APPROVED BY FIRE DEPT. FOR SMALLER SIZES).
4. BACKFILL TYPE-I IS REQUIRED WITHIN LIMITS OF RIGHT OF WAY OR EASEMENT. (SECTION 601 OF THE MAG SPECIFICATIONS).
5. COORDINATE INSPECTION WITH TEMPE ENGINEERING DIVISION INSPECTOR.
6. MINIMUM COVER IN STREETS IS PER MAG SPECIFICATIONS SECTION 610.4.
7. ALL SPRINKLER AND IRRIGATION SYSTEMS THAT ARE DISTURBED IN THE COURSE OF THE WORK IN AREAS WHERE LANDSCAPE WILL REMAIN SHALL BE REPAIRED. THE REPAIRED SYSTEM SHALL MEET OR EXCEED THE CONDITIONS EXISTING PRIOR TO THE DISTURBANCE.
8. ALL BROKEN OR DISPLACED CONCRETE CURB & GUTTER, SIDEWALK, AND ASPHALT SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE CITY OF TEMPE ENGINEERING DIVISION.
9. THRUST BLOCKS OR RESTRAINED JOINTS IN ACCORDANCE WITH MAG STANDARDS.
10. ALL WORK OUTSIDE THE PUBLIC RIGHT OF WAY SHALL CONFORM TO NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.
11. NO REDUCED PRESSURE BACKFLOW OR DOUBLE CHECK BACKFLOW PREVENTION DEVICES ALLOWED ON FIRELINES UNLESS APPROVED BY CITY ENGINEER.
12. 2" MIN. CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOORS, PLATFORMS, AND FOUNDATIONS, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS, AND OTHER AUXILIARY PIPING.

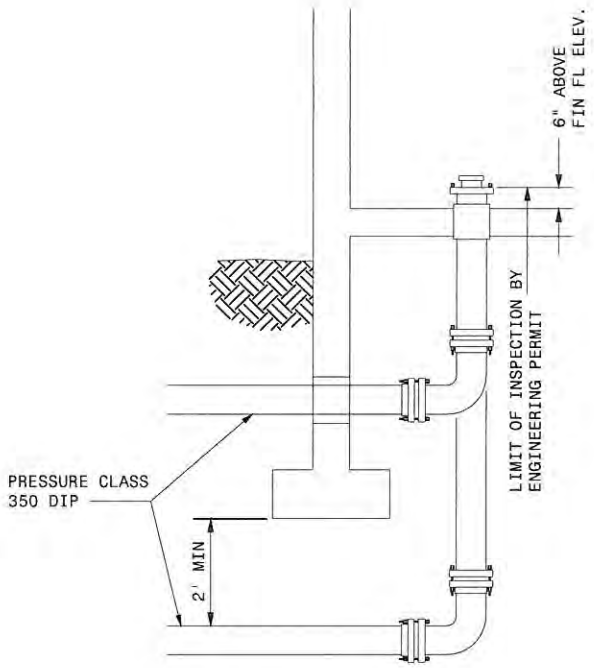
APPROVED: Andy [illegible] 12-19-14

DEPUTY PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE

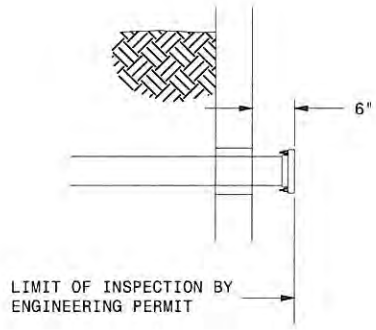
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

WATERLINE EXTENSION
FOR BUILDING FIRE SPRINKLERS

DETAIL T-217
SHEET 1 OF 2
REVISED 2014



ALTERNATE FOR CROSSING FOUNDATIONS



ALTERNATE FOR PENETRATION INTO BASEMENTS

NOTES

1. OPEN CUT REQUIRED UNLESS AN "BORE" IS APPROVED IN WRITING BY THE CITY ENGINEER.

2. ALL WATERLINES SHALL BE FLUSHED, PRESSURE TESTED, AND DISINFECTED IN ACCORDANCE WITH MAG SECTION 610 THROUGH A TEST POINT INSTALLED AT THE RISER.

3. ALL PIPE TO BE 6" DIA. PRESSURE CLASS 350 D.I.P POLYWRAPPED FROM THE MAIN TO THE FLANGE IN THE RISER (UNLESS CALCULATIONS ARE SUBMITTED AND APPROVED BY FIRE DEPT. FOR SMALLER SIZES).

4. BACKFILL TYPE-I IS REQUIRED WITHIN LIMITS OF RIGHT OF WAY OR EASEMENT. (SECTION 601 OF THE MAG SPECIFICATIONS).

5. COORDINATE INSPECTION WITH TEMPE ENGINEERING DIVISION INSPECTOR.

6. MIN. COVER IN STREETS IS PER MAG SPECIFICATIONS SECTION 610.4.

7. ALL SPRINKLER AND IRRIGATION SYSTEMS THAT ARE DISTURBED IN THE COURSE OF THE WORK IN AREAS WHERE LANDSCAPE WILL REMAIN SHALL BE REPAIRED. THE REPAIRED SYSTEM SHALL MEET OR EXCEED THE CONDITIONS EXISTING PRIOR TO THE DISTURBANCE.

8. ALL BROKEN OR DISPLACED CONCRETE CURB & GUTTER, SIDEWALK, AND ASPHALT SHALL BE REMOVED AND REPLACED AS DIRECTED BY THE CITY OF TEMPE ENGINEERING DIVISION.

9. THRUST BLOCKS OR RESTRAINED JOINTS IN ACCORDANCE WITH MAG. STANDARDS.

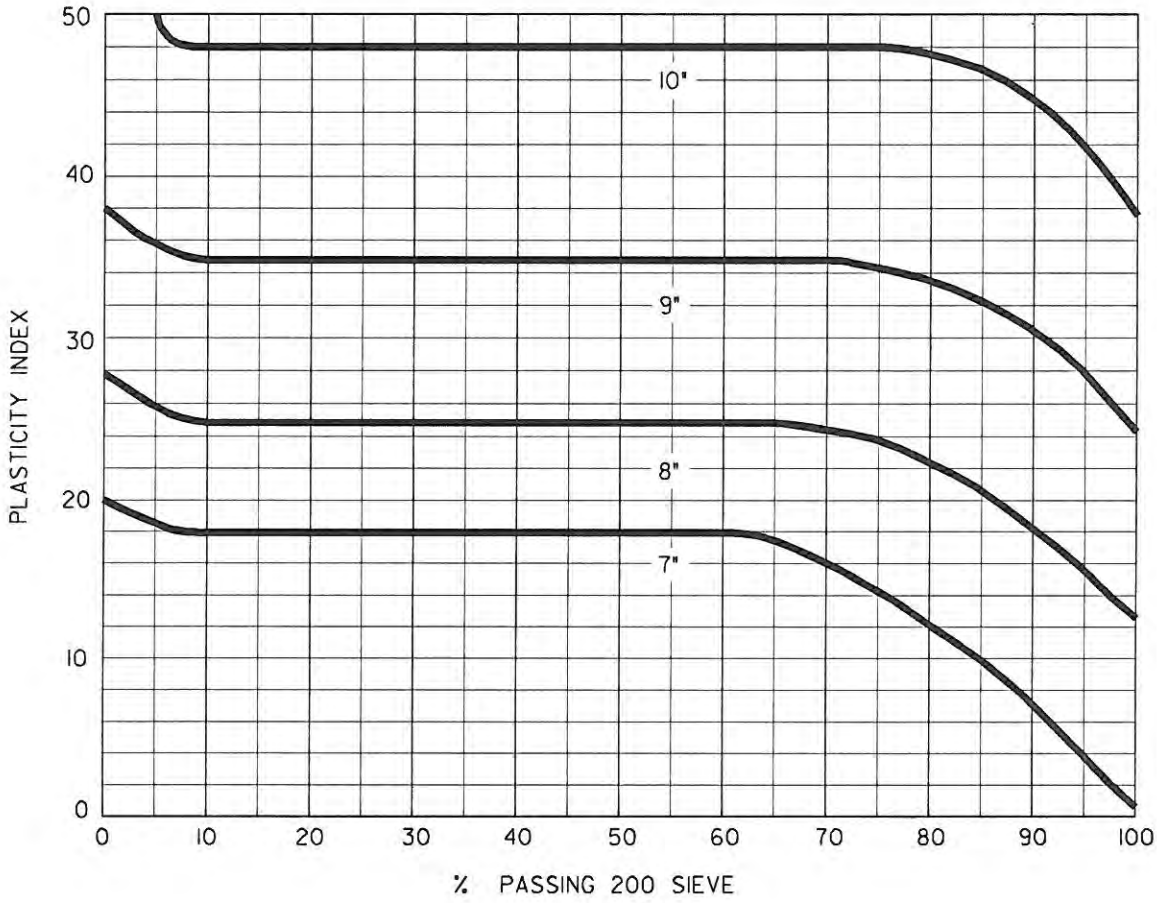
10. ALL WORK OUTSIDE THE PUBLIC RIGHT OF WAY SHALL CONFORM TO NATIONAL FIRE PROTECTION ASSOCIATION STANDARDS.

11. NO REDUCED PRESSURE BACKFLOW OR DOUBLE CHECK BACKFLOW PREVENTION DEVICES ALLOWED ON FIRELINES UNLESS APPROVED BY CITY ENGINEER.

12. 2" MIN. CLEARANCE SHALL BE PROVIDED AROUND ALL PIPING EXTENDING THROUGH WALLS, FLOORS, PLATFORMS, AND FOUNDATIONS, INCLUDING DRAINS, FIRE DEPARTMENT CONNECTIONS, AND OTHER AUXILIARY PIPING.

APPROVED: _____ 12-19-14
DEPUTY PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	WATERLINE EXTENSION FOR BUILDING FIRE SPRINKLERS	DETAIL T-217 SHEET 2 OF 2 REVISED 2014

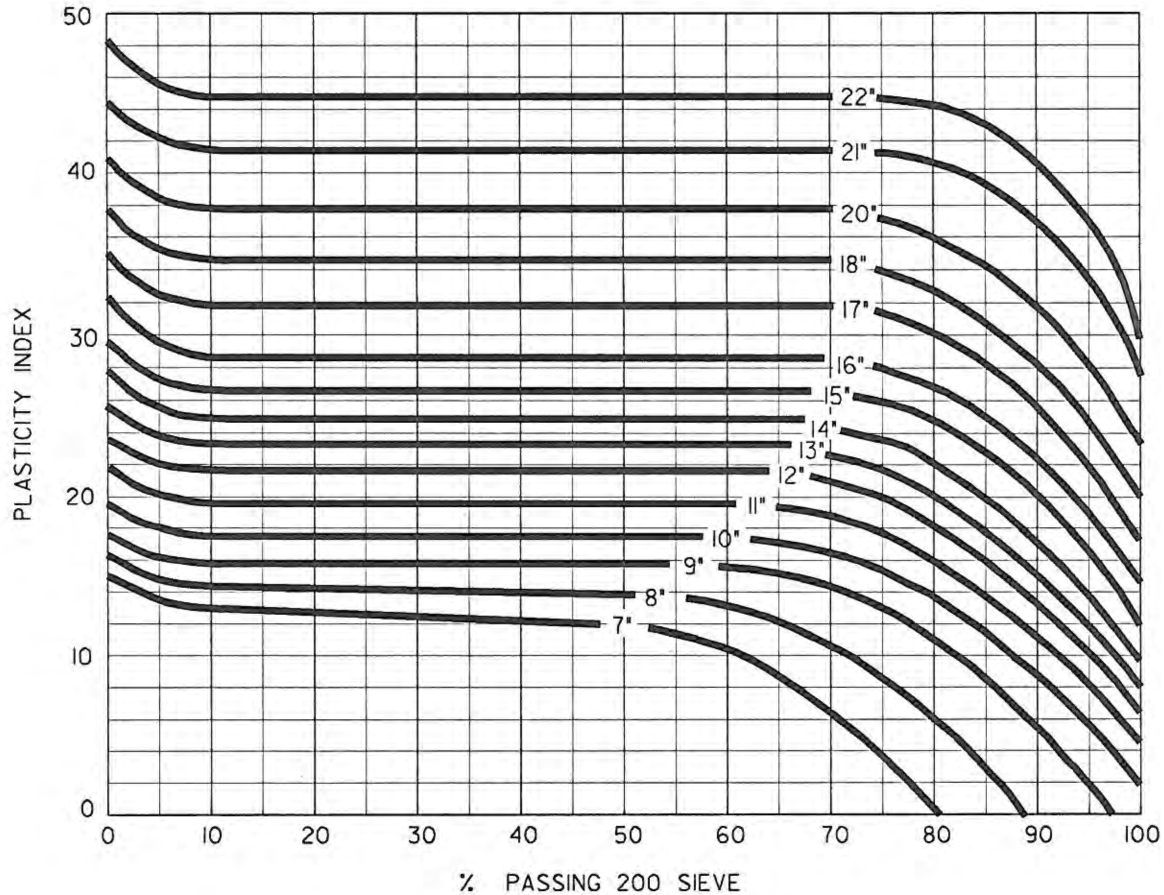


NOTES:

1. TOP 4" OF BASE SHALL BE A.B.C. BALANCE SHALL BE A.B.C. OR SELECT MATERIAL. MINIMUM-THICKNESS OF LIFT SHALL BE 4".
2. MINIMUM-DEPTH OF FLEXIBLE BASE COURSE REQUIRED UNDER 2" (MIN.) BITUMINOUS SURFACE.

APPROVED: Howard E. Haigh 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DEPTH OF BASE COURSE L-I STREETS	DETAIL T-303 REVISED 1998



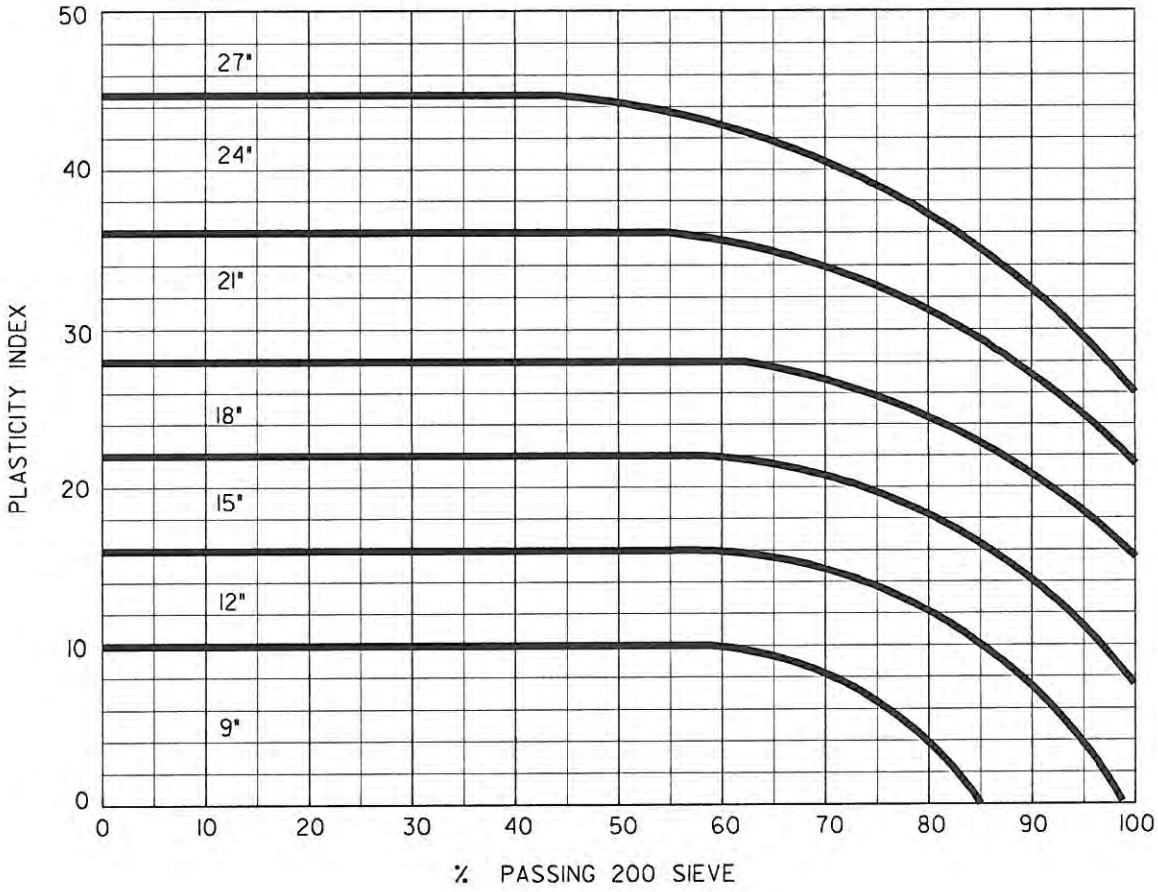
NOTES:

1. TOP 4" OF BASE SHALL BE A.B.C. BALANCE SHALL BE A.B.C. OR SELECT MATERIAL.
2. MINIMUM-DEPTH OF FLEXIBLE BASE COURSE REQUIRED UNDER 2" (MIN.) BITUMINOUS SURFACE.

APPROVED: [signature] 12/8/98

CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DEPTH OF BASE COURSE L-2 AND C-1 STREETS	DETAIL T-304 REVISED 1998

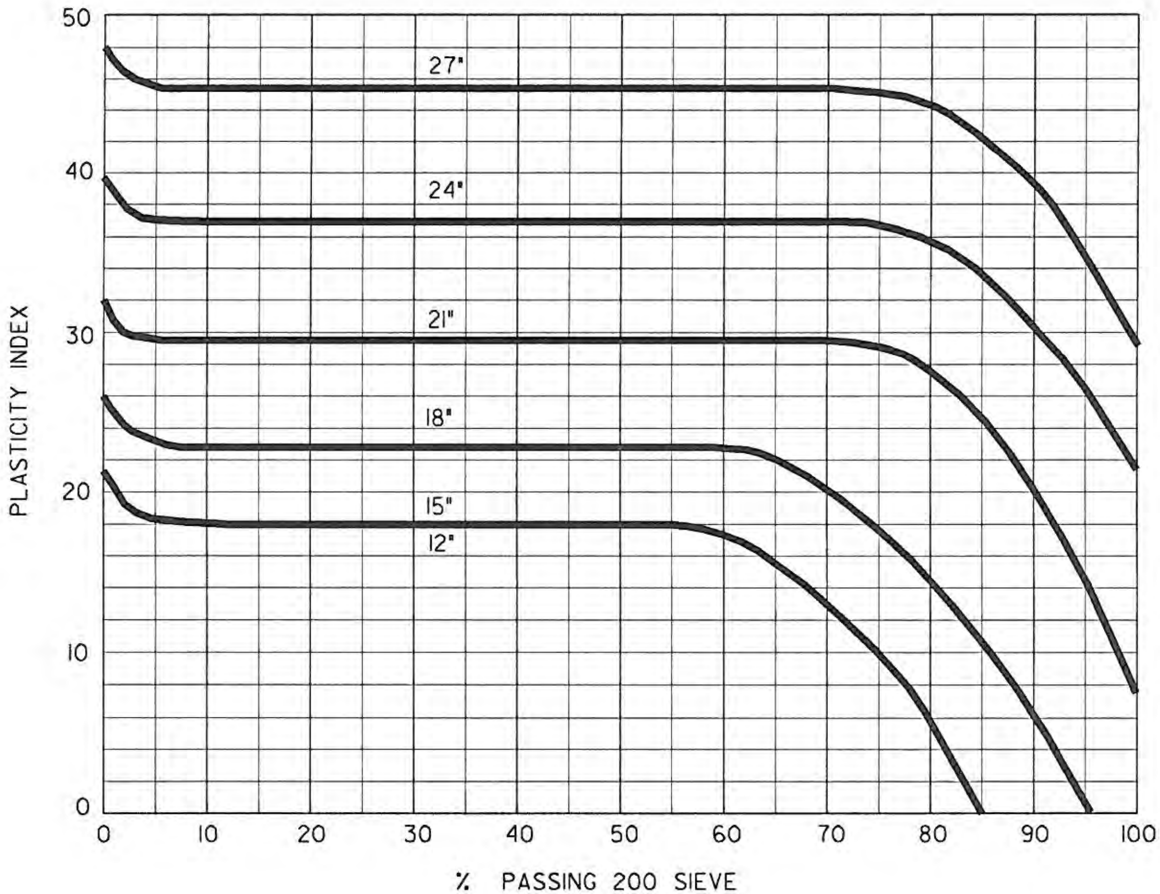


NOTES:

1. TOP 4" OF BASE SHALL BE A.B.C. BALANCE SHALL BE A.B.C. OR SELECT MATERIAL.
2. MINIMUM-DEPTH OF FLEXIBLE BASE COURSE REQUIRED UNDER 3" (MIN.) BITUMINOUS SURFACE.

APPROVED: Howard E. Krause 12/18/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DEPTH OF BASE COURSE C-2 STREETS	DETAIL T-305 REVISED 1998

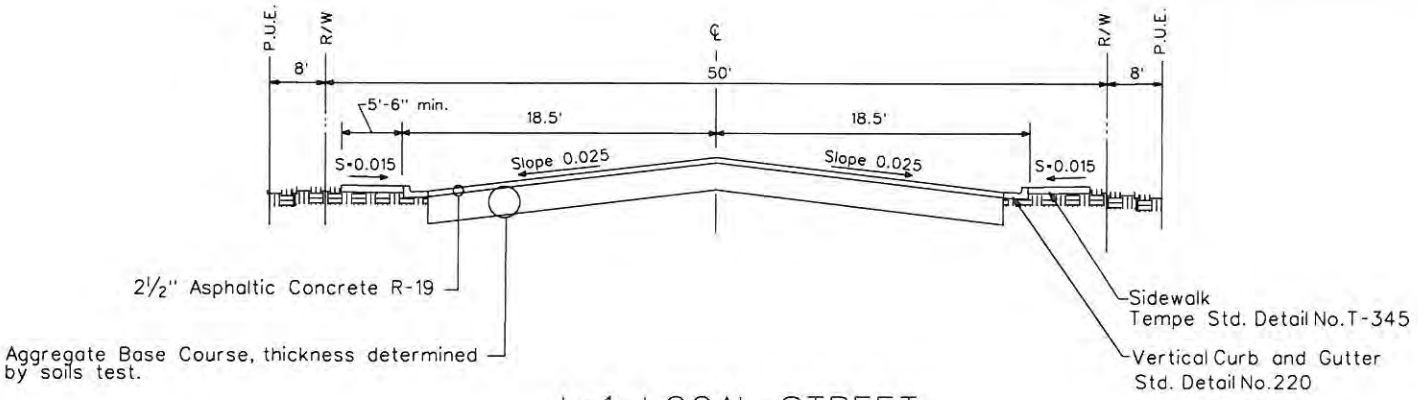


NOTES:

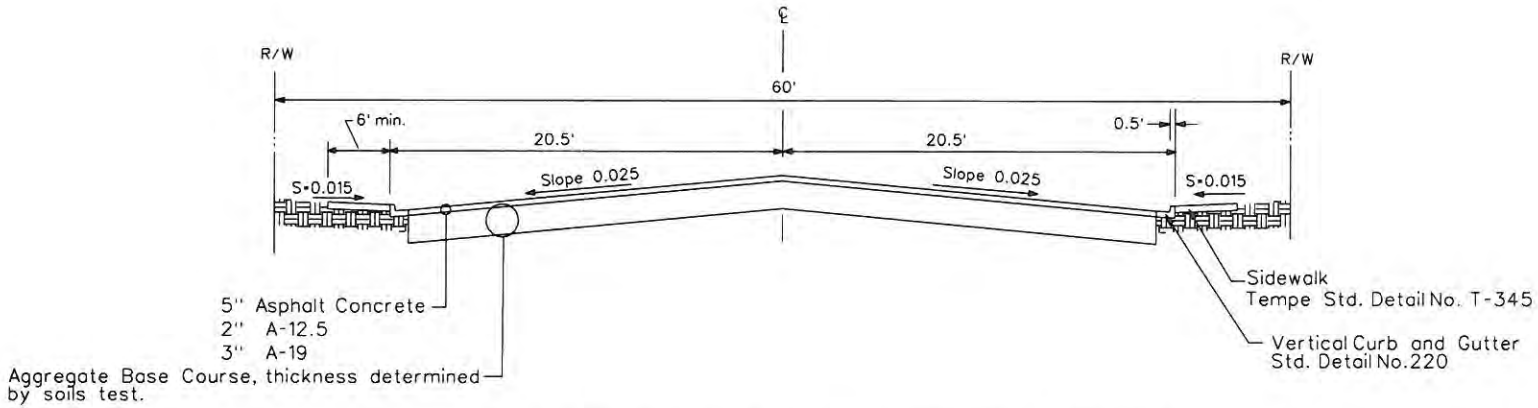
1. TOP 4" OF BASE SHALL BE A.B.C. BALANCE SHALL BE A.B.C. OR SELECT MATERIAL.
2. MINIMUM-DEPTH OF FLEXIBLE BASE COURSE REQUIRED UNDER 4" (MIN.) BITUMINOUS SURFACE.
3. CHART TO BE USED ONLY WHEN 'R' VALUES ARE NOT AVAILABLE.

APPROVED: [signature] 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DEPTH OF BASE COURSE (A-1,A-2 AND HEAVY INDUSTRIAL STREETS)	DETAIL T-306 REVISED 1998



L-1 LOCAL STREET



L-2 MULTI-FAMILY STREET STREET

NOTES:

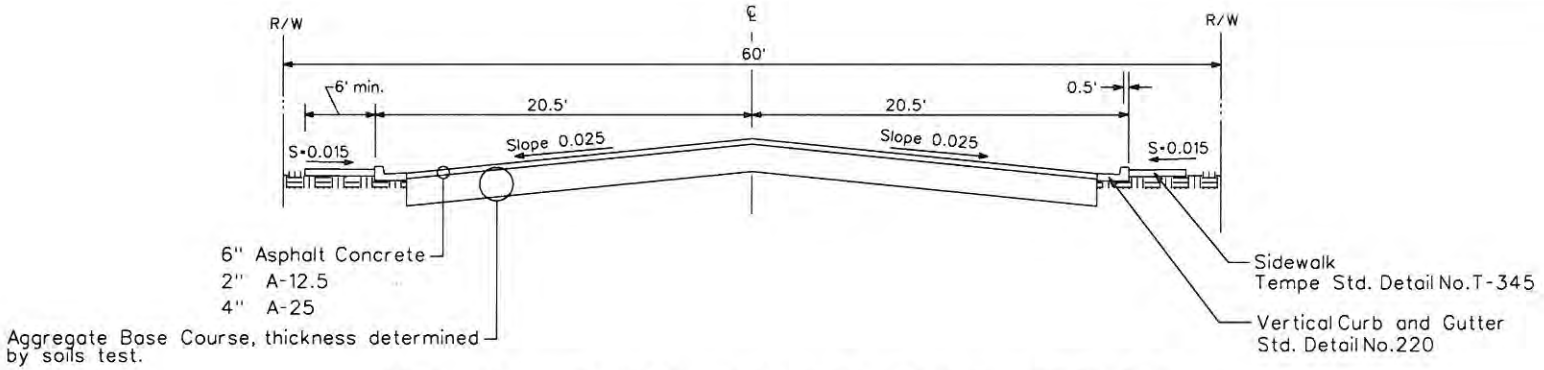
- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.

- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.

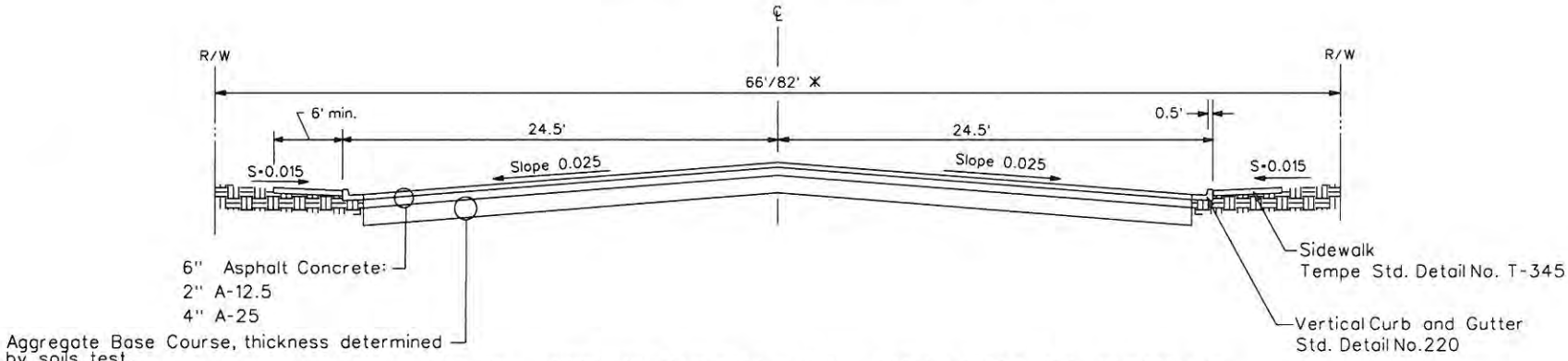
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

APPROVED: Andy 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREET CROSS-SECTIONS. (L-1,L-2)	DETAIL T-311 REVISED 4,2010



C-1 COLLECTOR AND INDUSTRIAL STREET
(OTHER THAN MIDSECTION LINE)



C-2 MID-SECTION LINE COLLECTOR STREET

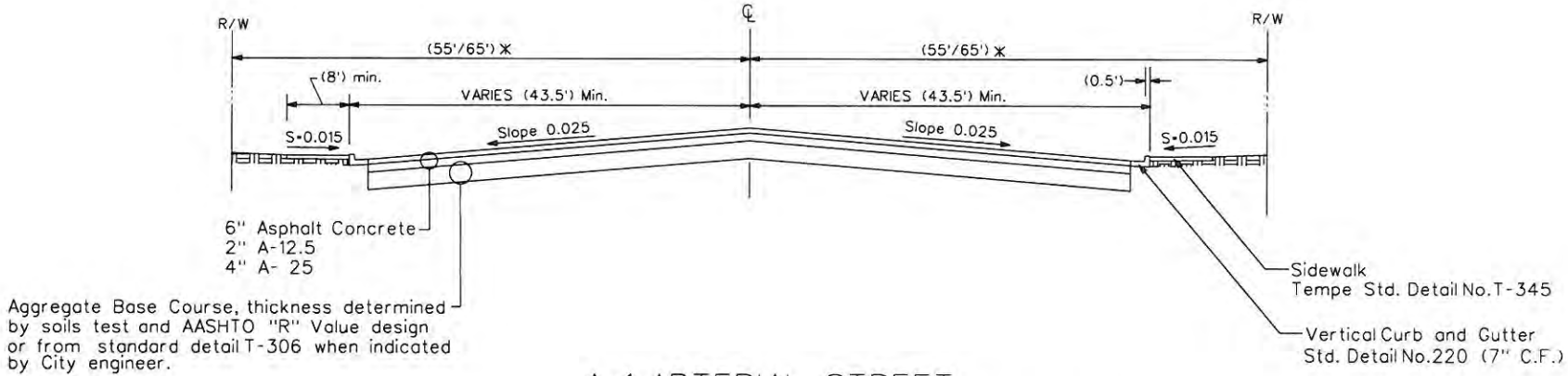
See Standard Detail T-314 for typical intersection with collector and arterial street.
* At Arterial/midsection Collector Intersection (+/_250' Before Curb Return)

NOTES:

- MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN ADJACENT DRIVEWAYS IS (3').
- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.
- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

APPROVED: Angelo 6/10/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	COLLECTOR STREET CROSS-SECTIONS. (C-1,C-2)	DETAIL T-312 REVISED 4,2010



A-1 ARTERIAL STREET

* At Arterial/Arterial Intersection (+/_300' Before Curb Return.)

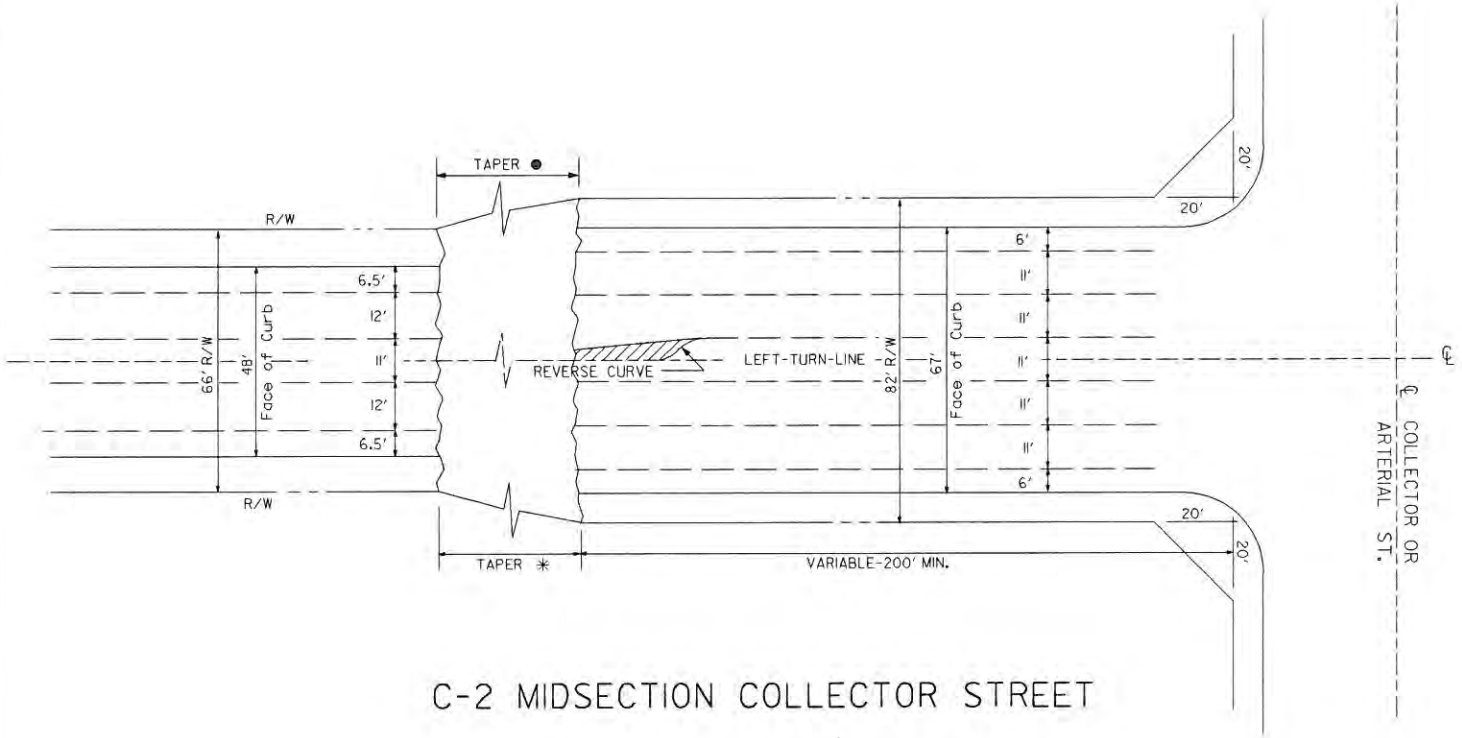
NOTES:

- MINIMUM LENGTH OF FULL HEIGHT CURB BETWEEN ADJACENT DRIVEWAYS IS (3').
- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.
- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

APPROVED: Andrea 6/11/10

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	ARTERIAL STREET CROSS-SECTION. (A-1)	DETAIL T-313 REVISED 4,2010



C-2 MIDSECTION COLLECTOR STREET

NOTES:

STORAGE LANES GREATER THAN THE MINIMUM SHALL BE DETERMINED BY TRAFFIC ENGINEER.

✳ TAPER= $\frac{S^2 \times W}{60}$

● TAPER= $S \times W$

WHERE

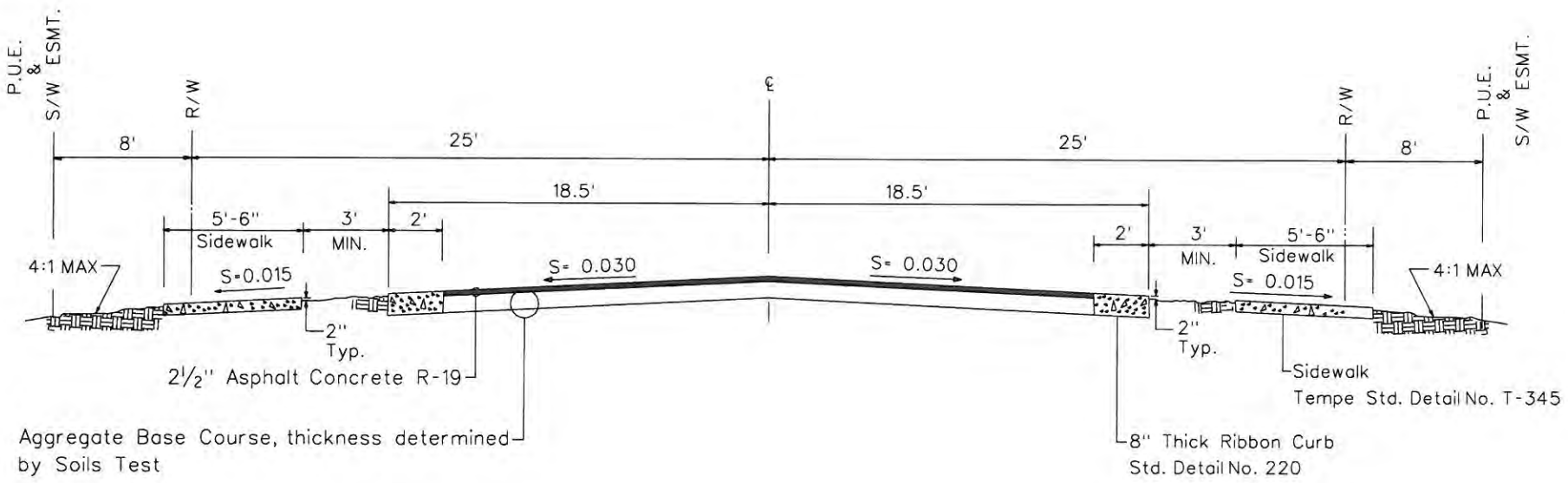
S= SPEED IN MILES PER HOUR

W= DISTANCE TRAFFIC IS MOVED LATERALLY

APPROVED: Howard C. Haigh 12/18/98

CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREET INTERSECTIONS	DETAIL T-314 REVISED 1998



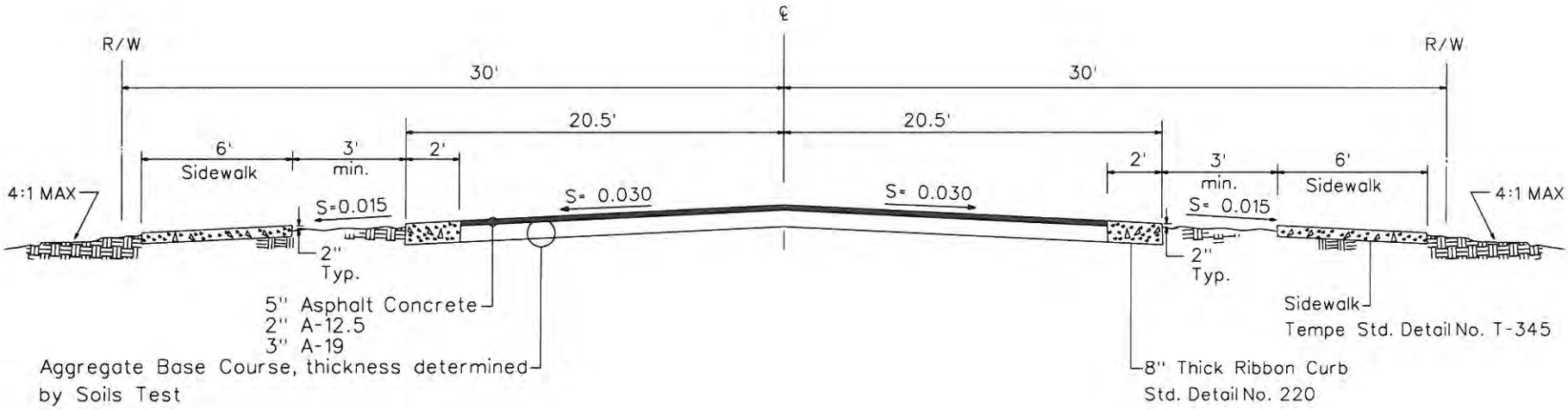
L-1 LOCAL STREET

NOTES:

- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.
- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREET CROSS-SECTION (RIBBON CURB)	DETAIL T-315 REVISED 4,2010



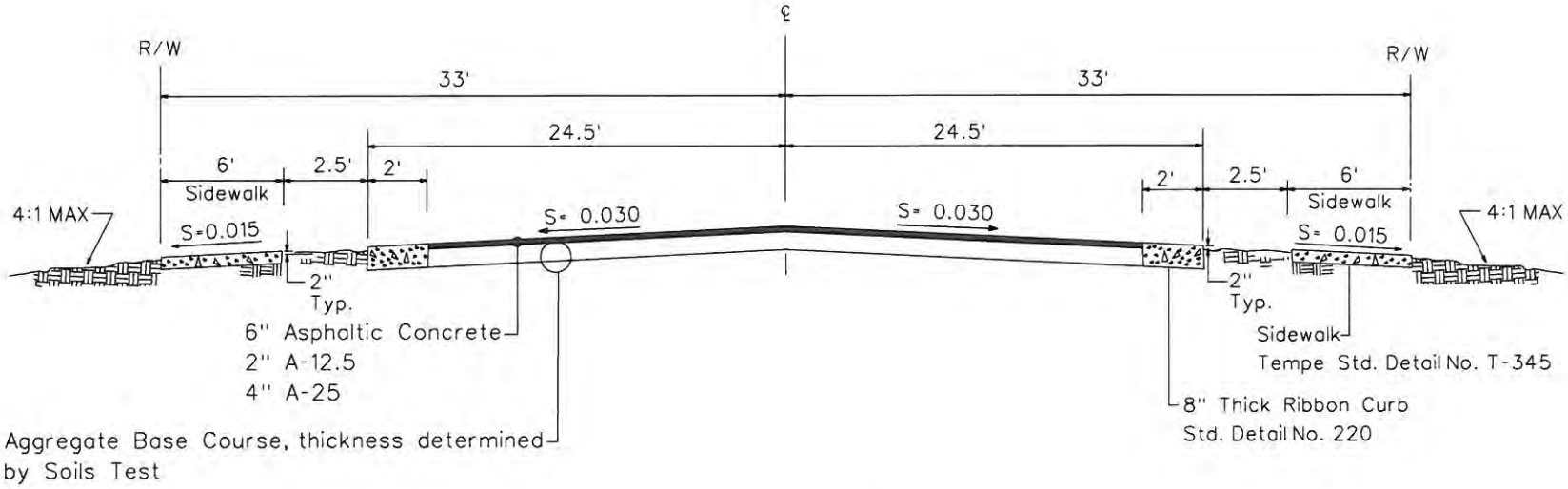
C-1 RESIDENTIAL COLLECTOR STREET (OTHER THAN MIDSECTION LINE)

NOTES:

- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE; ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.
- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

APPROVED: _____ 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREET CROSS-SECTION (RIBBON CURB)	DETAIL T-316 REVISED 4,2010



C-2 MIDSECTION LINE
COLLECTOR STREETS

NOTES:

- RESTORATION OF ANY DAMAGE PAVEMENT TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.
- ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.
- USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

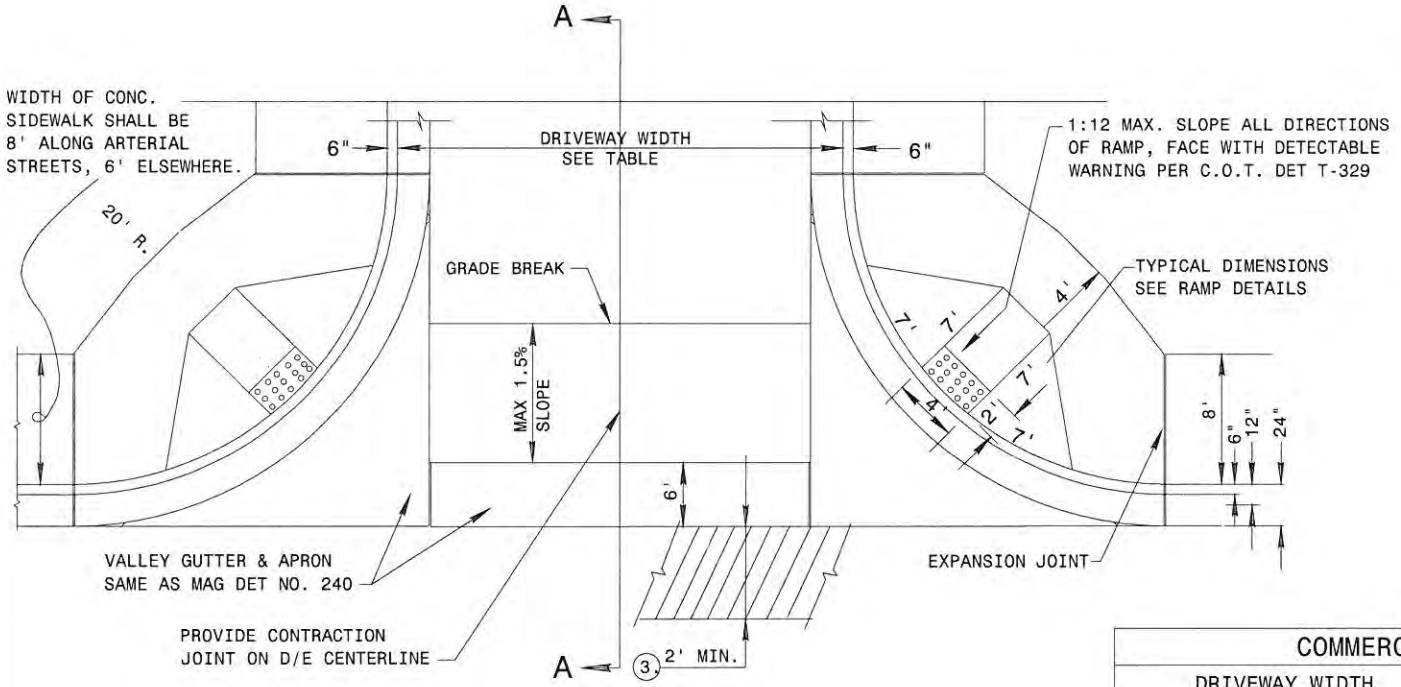
APPROVED: Andy 6/11/2010

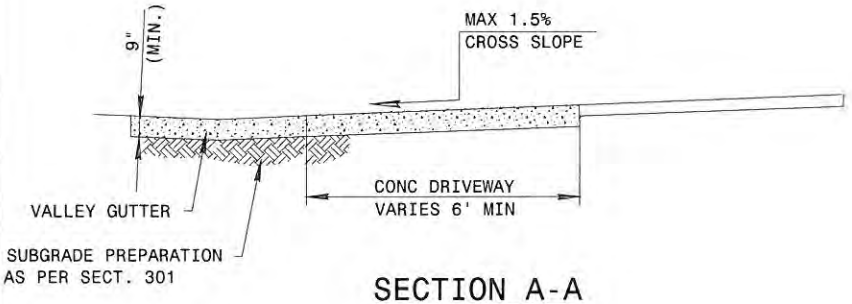
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREET CROSS-SECTION (RIBBON CURB)	DETAIL T-317 REVISED 4,2010

NOTES:

1. THIS TYPE DRIVEWAY TO BE USED ONLY UPON APPROVAL OF CITY OF TEMPE ENGINEERING DEPARTMENT.
2. CLASS 'A' CONCRETE CONSTRUCTION AS PER SECT. 725.
3. 2' MIN. SAWCUT & REMOVAL OF ASPHALT ON EXISTING STREETS, PAVEMENT REPLACEMENT SHALL PER C.O.T DETAIL T-311, T-312, T-313, T-315, T-316 OR T-317 ON 12" ABC ON MINIMUM 6" OF PREPARED SUBGRADE OR MATCH EXISTING (WHICHEVER IS GREATER).





SECTION A-A

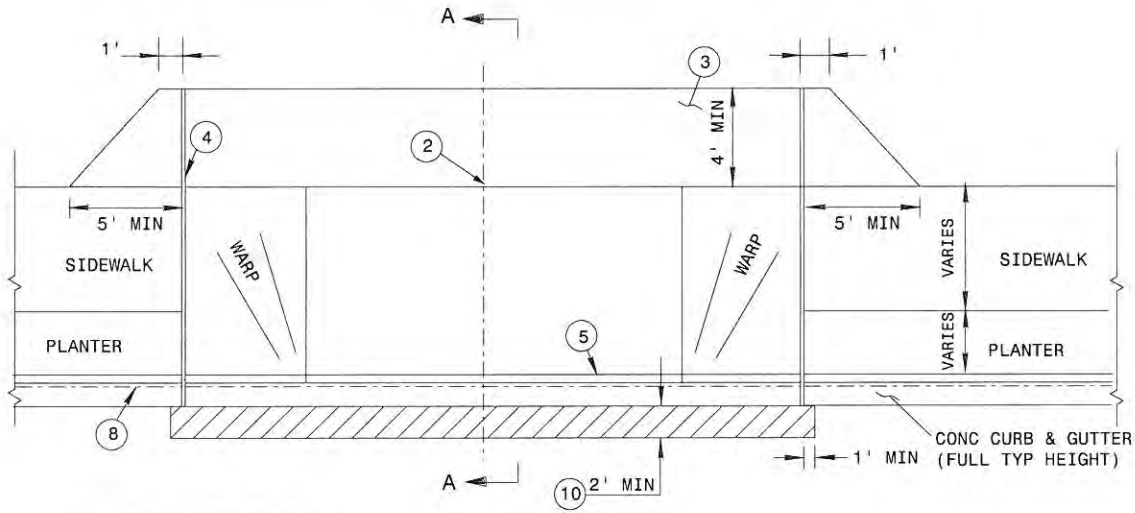
COMMERCIAL & INDUSTRIAL *				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH
MAJOR STREET	30'	40'	A	9"
INDUSTRIAL & COLLECTOR ST.	30'	40'	A	9"
RESIDENTIAL *				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH
MAJOR STREET	20'	30'	A	9"
COLLECTOR STREET	20'	30'	A	9"
LOCAL STREET	20'	30'	A	9"

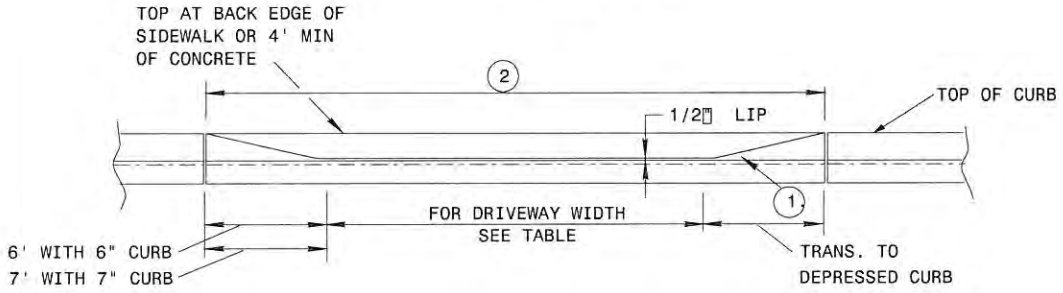
APPROVED: _____ 12-19-14
DEPUTY PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE

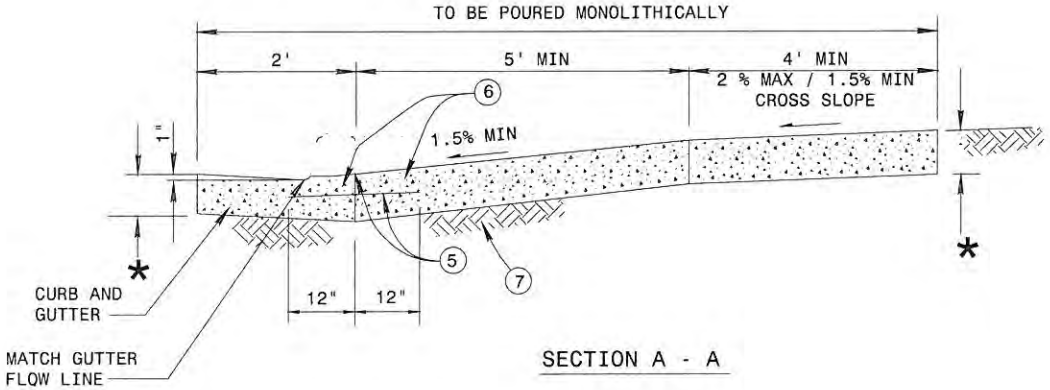
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

RETURN TYPE DRIVEWAYS

DETAIL T-319
REVISED 2014







SECTION A - A

NOTES

1. DEPRESSED CURB SHALL BE PAID FOR AT THE UNIT PRICE BID FOR THE TYPE OF CURB USED AT THAT LOCATION. WHEN WIDTH EXCEEDS 22' PROVIDE A CONTRACTION JOINT ON D/W CENTERLINE
2. WHEN WIDTH IS 30' OR LARGER DIVIDE INTO THREE EQUAL PARTS AND PROVIDE A CONTRACTION JOINT.
3. 4' MIN WIDTH OF EXTRA CONCRETE WITH 2% MAX./1.5% MIN CROSS SLOPE PAY FOR AS DRIVEWAY.
4. MASTIC EXPANSION JOINT THROUGH CURB & GUTTER. EXPANSION JOINT FILLER SHALL BE 1/2" BITUMINOUS TYPE PREFORMED EXPANSION JOINT FILLER ASTM D-1751.
5. BACK OF CURB. SCORE MARK IF POURED MONOLITHICALLY. IF NOT POURED MONOLITHICALLY INSTALL NO. 4 REBAR DOWELS AT 24" O.C.
6. CLASS 'B' CONCRETE, SECT. 725. DEPTH OF CURB AND GUTTER CONCRETE TO MATCH DRIVEWAY.
7. SUBGRADE PREPARATION, SECT. 301.
8. FLOW LINE OF GUTTER.
9. WATER SERVICE TAP, WATER METER, STREET LT. J-BOX OR ANY OTHER UTILITY BOX SHALL NOT BE INSTALLED WITHIN A DRIVEWAY ENTRANCE, EXISTING UTILITIES SHALL BE RELOCATED IF IN CONFLICT WITH NEW ENTRANCE.
10. 2' MIN SAWCUT & REMOVAL OF ASPHALT ON EXISTING STREETS. PAVEMENT REPLACEMENT SHALL PER C.O.T. DETAIL T-311, T-312, T-313, T-315,T-316 OR T-317 ON 12" ABC ON MINIMUM 6" OF PREPARED SUBGRADE OR MATCH EXISTING (WHICHEVER IS GREATER).

COMMERCIAL & INDUSTRIAL *				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH
MAJOR STREET	30'	40'	A	9"
INDUSTRIAL & COLLECTOR ST.	30'	40'	A	9"
RESIDENTIAL *				
DRIVEWAY WIDTH	MIN.	MAX.	CLASS	DEPTH
MAJOR STREET	20'	30'	B	6"
COLLECTOR STREET	20'	30'	B	6"
LOCAL STREET	20'	30'	B	6"
ALLEYS				
ALL	16'	20'	B	9"

APPROVED: Andrey Cr 12-19-14

DEPUTY PUBLIC WORKS DIRECTOR
CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

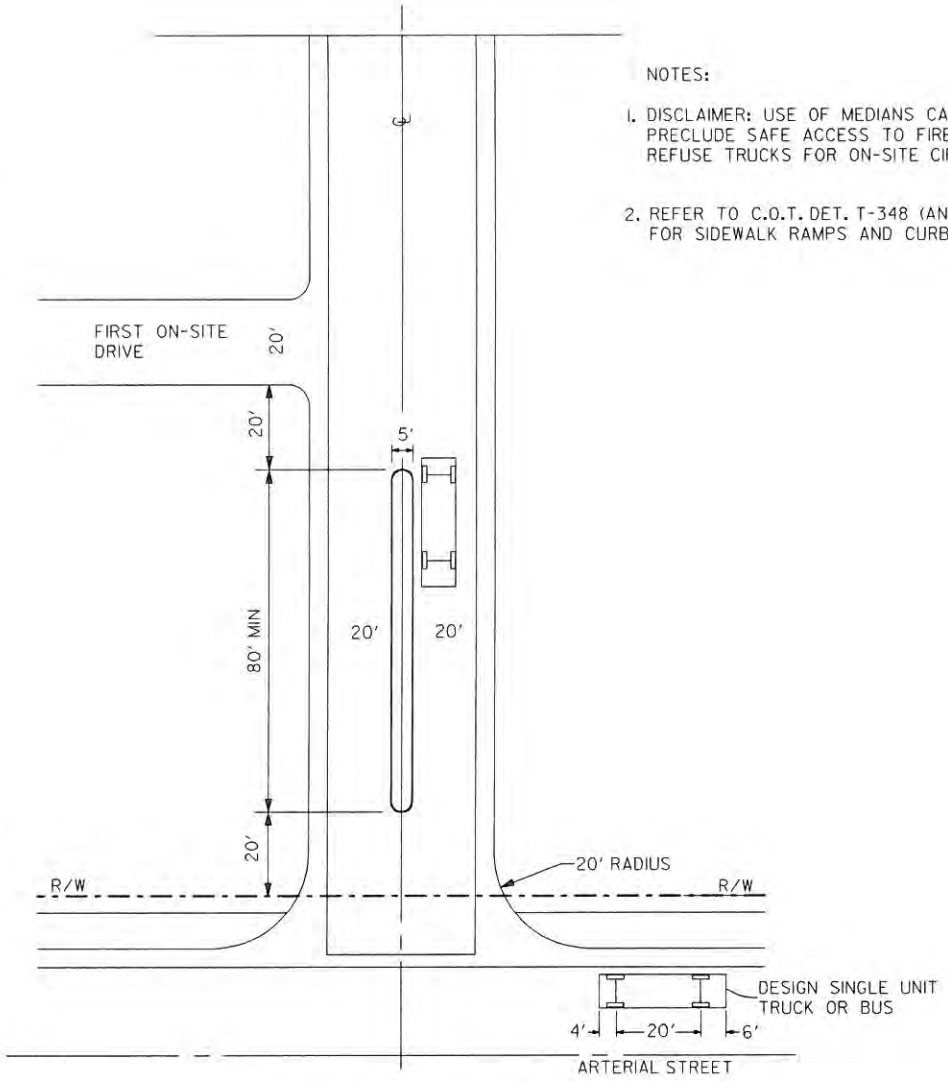
DRIVEWAY ENTRANCES

DETAIL T-320
REVISED 2014

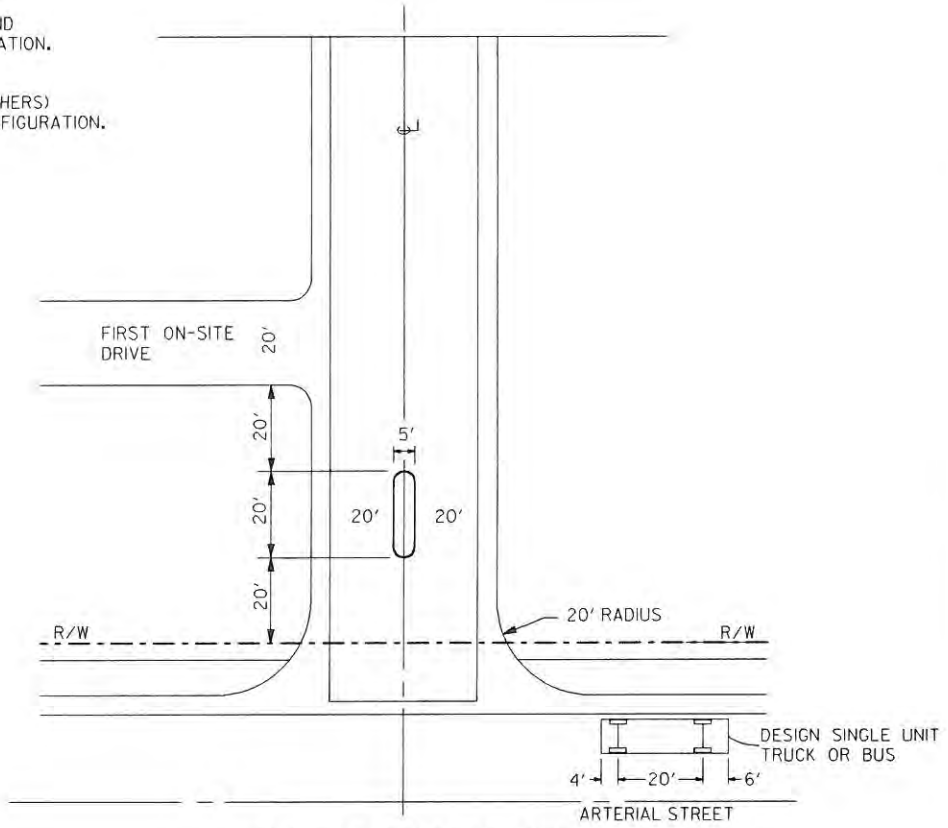
NOTES:

1. DISCLAIMER: USE OF MEDIANS CANNOT PRECLUDE SAFE ACCESS TO FIRE AND REFUSE TRUCKS FOR ON-SITE CIRCULATION.

2. REFER TO C.O.T. DET. T-348 (AND OTHERS) FOR SIDEWALK RAMPS AND CURB CONFIGURATION.



COMMERCIAL DRIVEWAY
ENTRANCE WITH MEDIAN



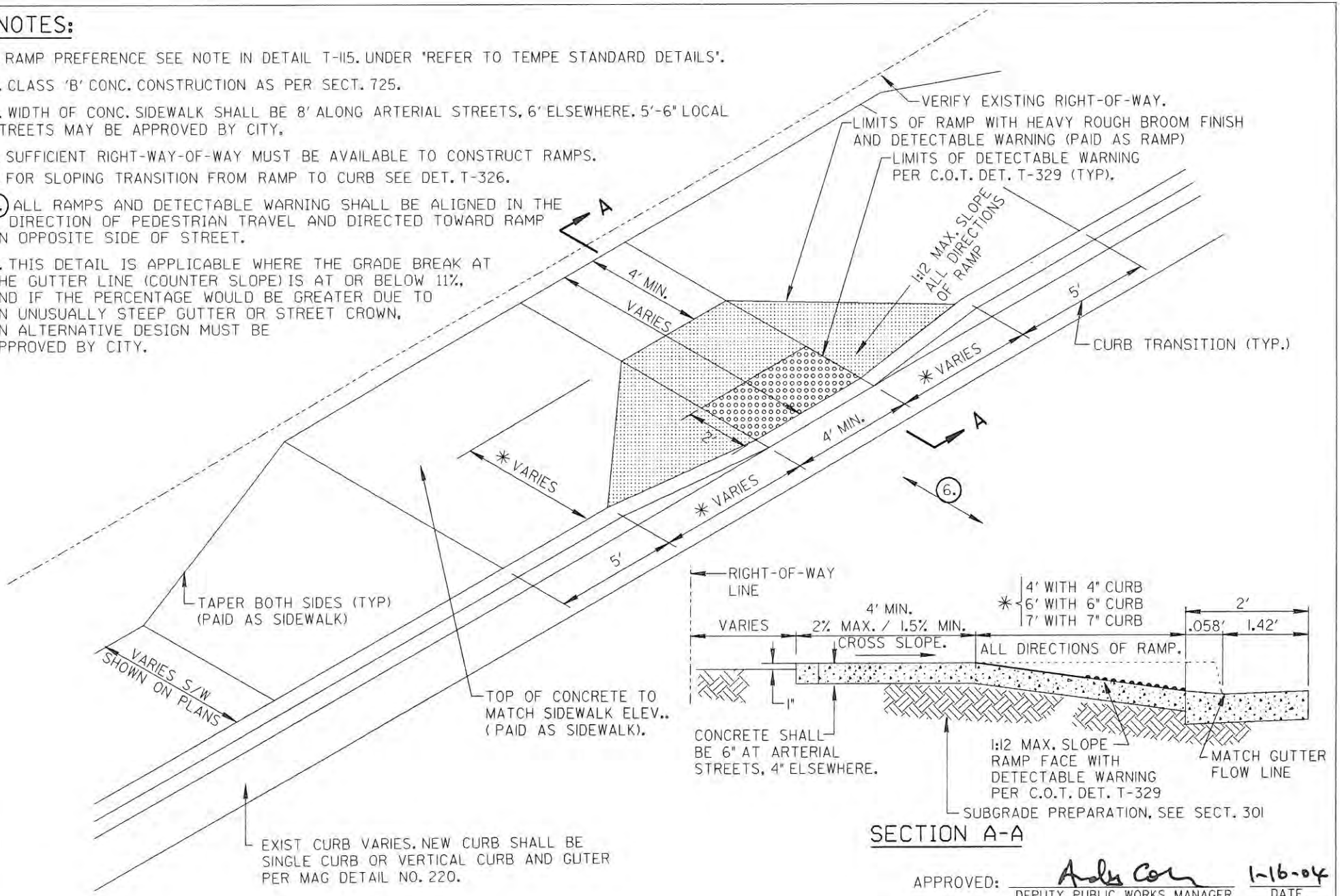
INDUSTRIAL/MULTI-FAMILY
DRIVEWAY ENTRANCE WITH MEDIAN

APPROVED: Andy Cox 1-16-04
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER
DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	PRIVATE ENTRANCE WITH MEDIAN ISLAND	DETAIL T-321 REVISED 2004

NOTES:

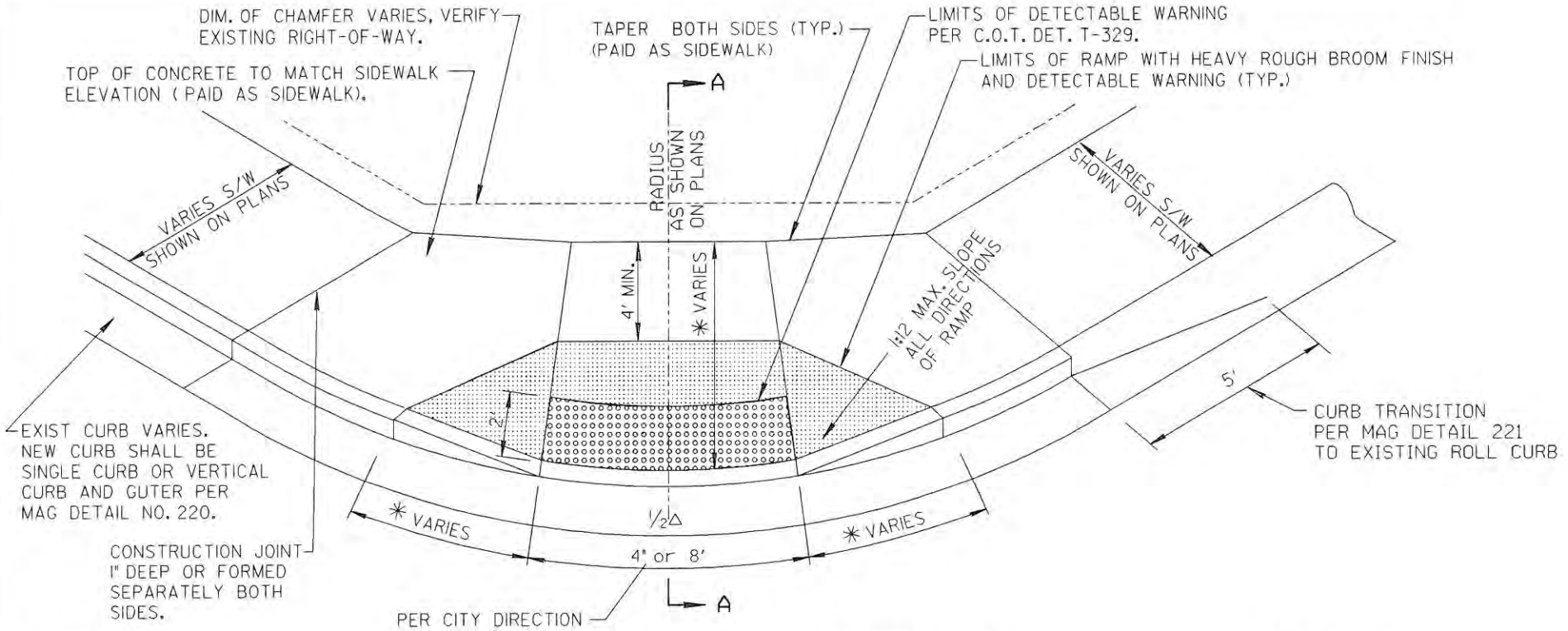
1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER 'REFER TO TEMPE STANDARD DETAILS'.
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. FOR SLOPING TRANSITION FROM RAMP TO CURB SEE DET. T-326.
6. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL AND DIRECTED TOWARD RAMP ON OPPOSITE SIDE OF STREET.
7. THIS DETAIL IS APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.



SECTION A-A

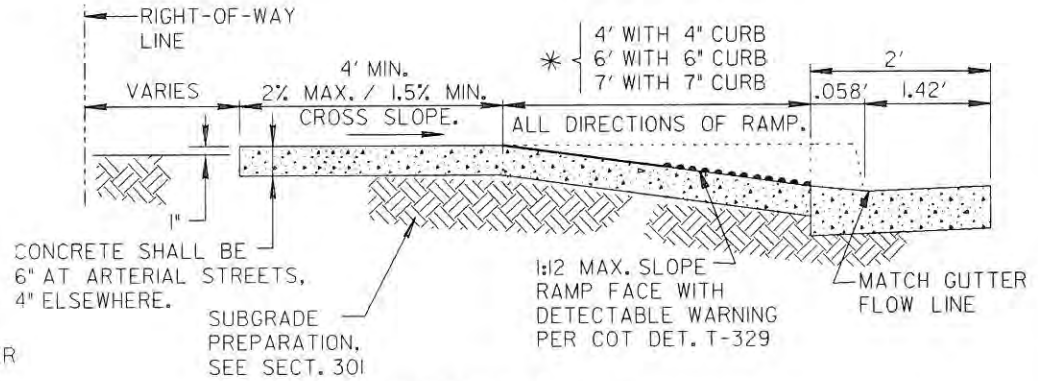
APPROVED: Andy Cor 1-16-04
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MID-BLOCK RAMP FOR 4",6" AND 7" CURB	DETAIL T-322 REVISED 2004



NOTES:

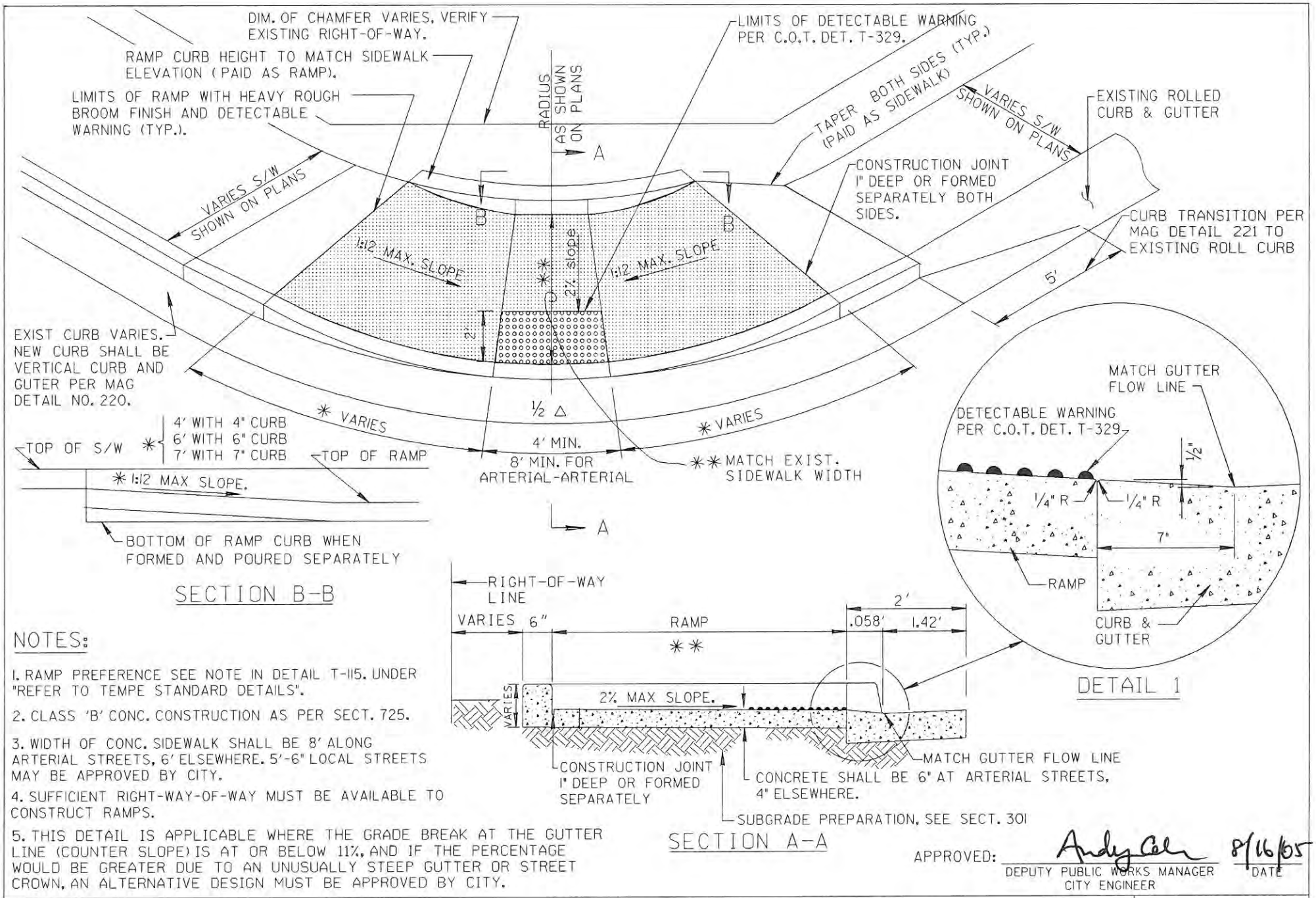
1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. FOR SLOPING TRANSITION FROM RAMP TO CURB SEE C.O.T. DET. T-326.
6. THIS DETAIL IS APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.



SECTION A-A

APPROVED: Andy Cole — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 8/16/05

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DIAGONAL RAMPS - TYPE 'A' NOT PREFERRED - USE ONLY WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE	DETAIL T-324 REVISED 2005

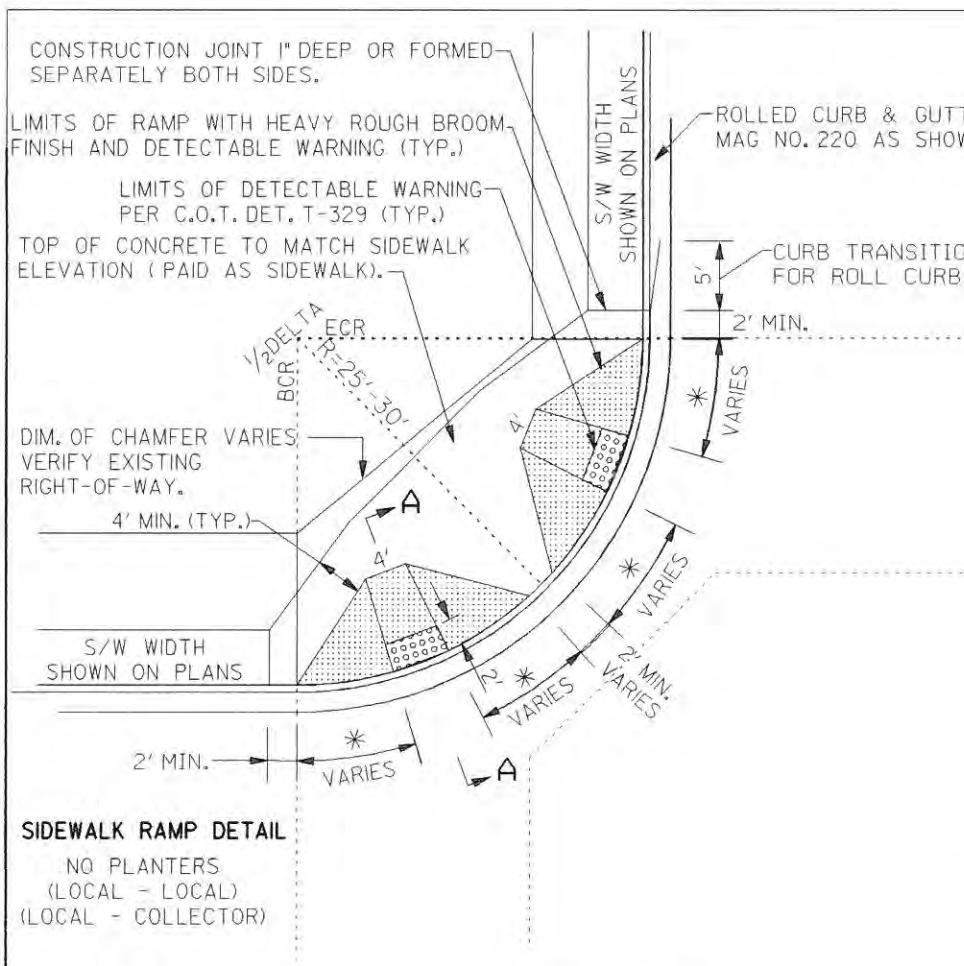


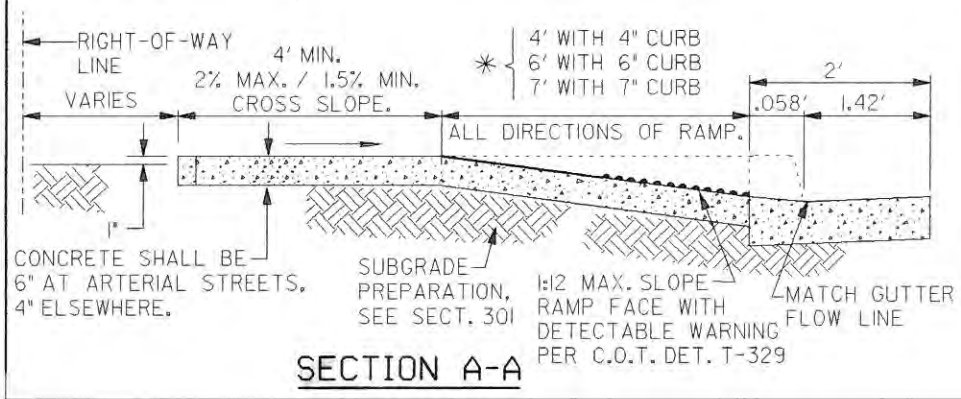
NOTES:

1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. THIS DETAIL IS APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.

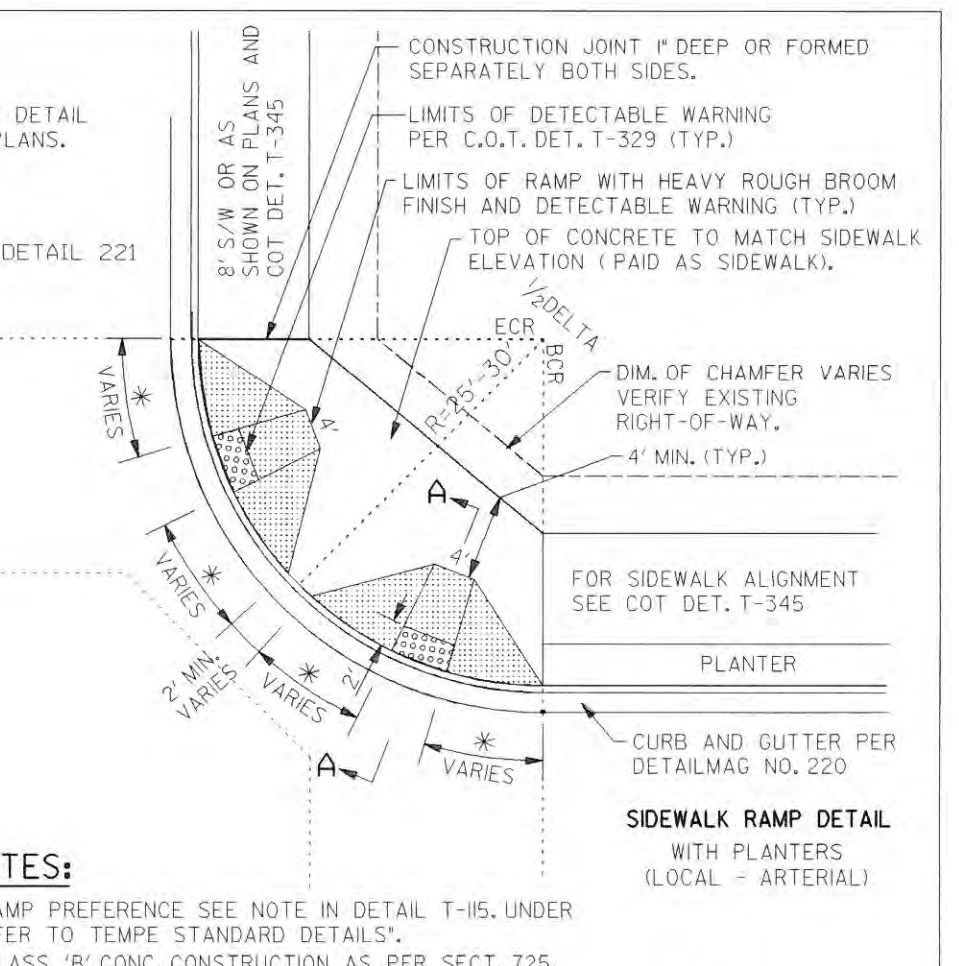
APPROVED: Andy Cole — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 8/16/05

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BLENDED TRANSITION RAMPS - TYPE 'B' NOT PREFERRED - USE ONLY WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE	DETAIL T-326 REVISED 2005





SECTION A-A

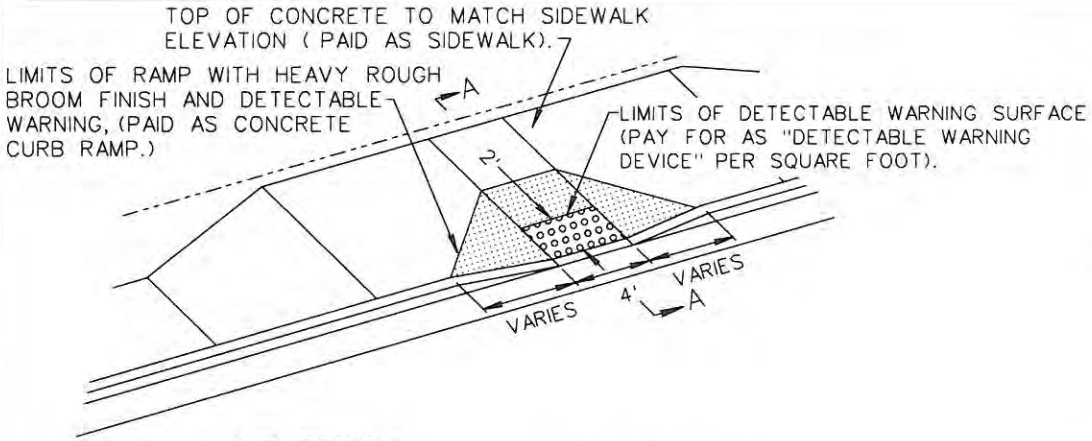


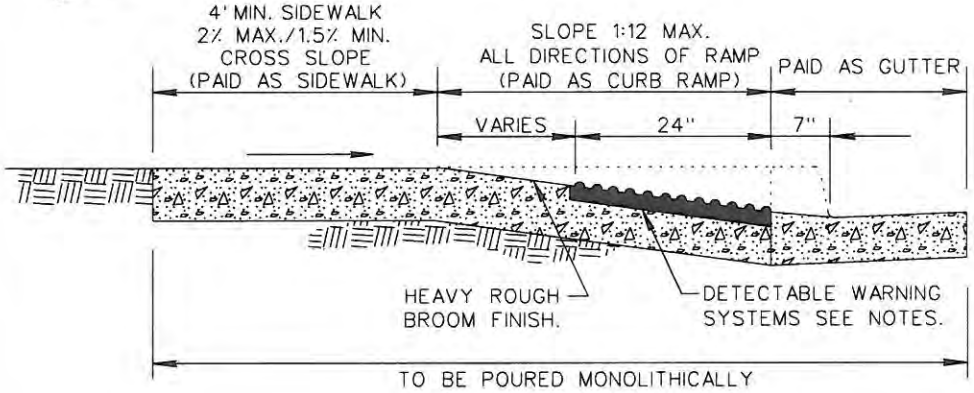
NOTES:

1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. FOR SLOPING TRANSITION FROM RAMP TO CURB SEE C.O.T. DET. T-326.
6. THIS DETAIL IS APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.

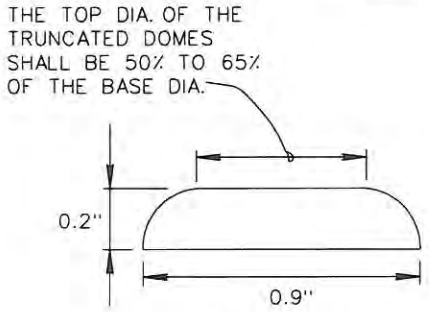
APPROVED: Andy [illegible] 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	PREFERRED - DIRECTIONAL SIDEWALK RAMPS DETAIL 25',30' RADIUS CURB RETURNS	DETAIL T-328 REVISED 2007

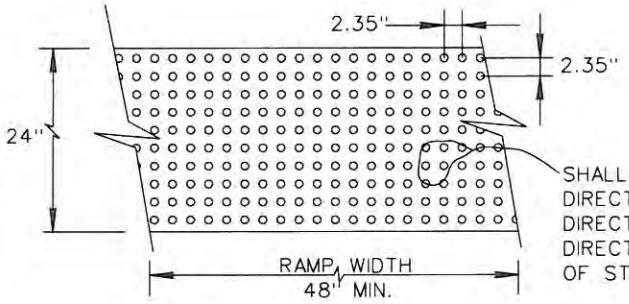




SECTION A - A



ELEVATION



PLAN VIEW

SHALL BE A SQUARE GRID, EQUAL IN BOTH DIRECTIONS. DOMES SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL AND DIRECTED TOWARD RAMP ON OPPOSITE SIDE OF STREET.

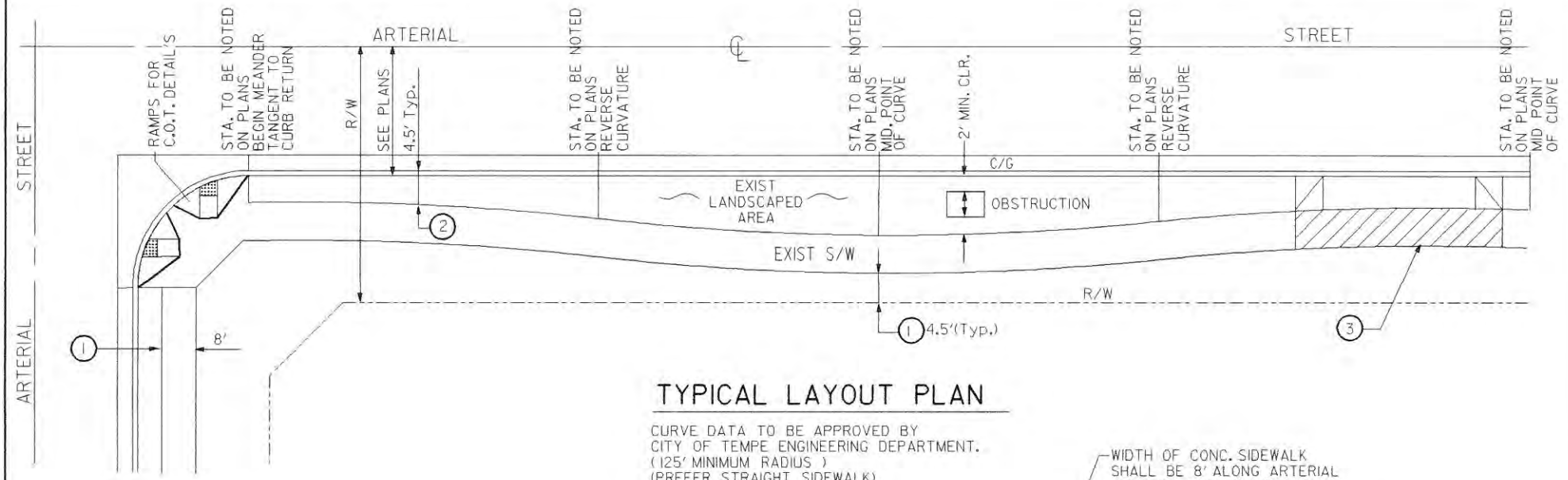
DOME DETECTABLE WARNING

NOTES

1. ALL RAMPS SHALL BE DIRECTIONAL TYPE RAMPS, PER C.O.T. DETAILS AND AS SHOWN ON PLANS.
2. ALL DETECTABLE WARNING SYSTEMS SHALL BE "WET-SET" OR "CAST-IN-PLACE" AND INSTALLED IN THE CONCRETE AT THE TIME OF THE CONCRETE POUR. ALL SURFACE MOUNTED APPLICATIONS MUST BE APPROVED BY THE CITY ENGINEER.
3. WET SET DETECTABLE WARNING SYSTEMS SHALL CONSIST OF RAISED TRUNCATED DOMES MANUFACTURED BY "ADA SOLUTIONS" AND CALLED "REPLACEABLE WET SET TRUNCATED DOME DETECTABLE WARNING SYSTEMS". AN ALTERNATIVE PRODUCT MANUFACTURED BY "STRONGO/TEK-WAY" CALLED "THATCHED FEDERAL YELLOW ANCHORED WET-SET" MAY ALSO BE USED.
4. ALL CITY ENGINEER APPROVED "RETROFITS" OR SURFACE MOUNTED DETECTABLE WARNING SYSTEM LOCATIONS SHALL BE MANUFACTURED BY ADA SOLUTIONS AND CALLED SURFACE APPLIED DETECTABLE WARNING SURFACE SYSTEM.
5. ALL DETECTABLE WARNING SYSTEMS SHALL BE INSTALLED PER MANUFACTURE'S SPECIFICATIONS AND INSTALLATION INSTRUCTIONS.
6. THE SMOOTH AND CLEAN CONCRETE UNDER DETECTABLE WARNING DEVICE AREA SHALL BE INCLUDED IN THE COST OF THE CONCRETE CURB RAMP. THE COST OF FURNISHING AND INSTALLING THE DETECTABLE WARNING DEVICE SHALL BE INCLUDED SEPARATELY AS "DETECTABLE WARNING DEVICE" PER SQUARE FOOT.
7. ALL DETECTABLE WARNING AREAS SHALL START AT BACK OF CURB, TO BE 24 INCHES IN DEPTH AND COVER THE COMPLETE WIDTH OF THE RAMP AREA (48 INCHES MIN.).
8. VISUAL CONTRAST SHALL BE OBTAINED BY COLOR, (SAFETY YELLOW). THE COLOR SHALL BE AN INTEGRAL PART OF THE DETECTABLE WARNING MATERIAL.

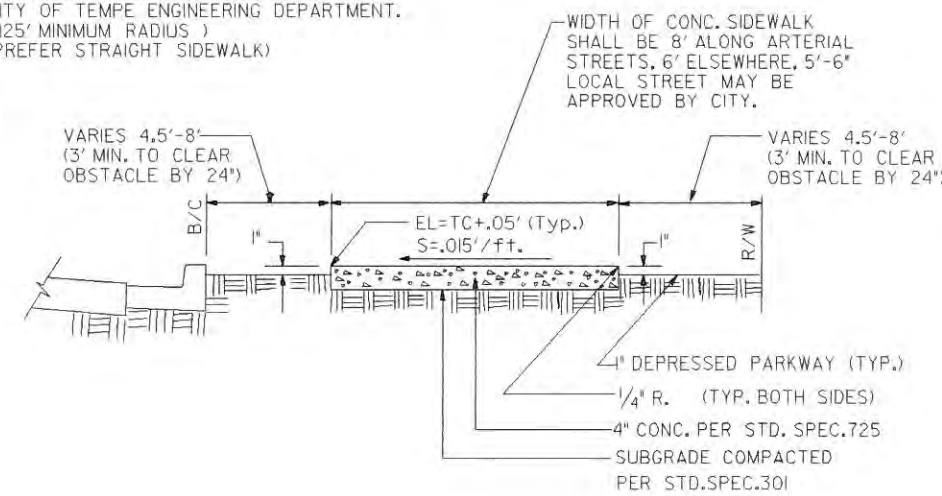
APPROVED: Andy Z — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE: 6/11/2010

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DETECTABLE WARNING	DETAIL T-329 REVISED 4. 2010



TYPICAL LAYOUT PLAN

CURVE DATA TO BE APPROVED BY CITY OF TEMPE ENGINEERING DEPARTMENT. (125' MINIMUM RADIUS) (PREFER STRAIGHT SIDEWALK)



TYPICAL CROSS SECTION

NOTES

1. SIDEWALK ALIGNMENT TO BE STRAIGHT UNLESS OTHERWISE APPROVED BY THE CITY OF TEMPE ENGINEERING DEPARTMENT (SEE CROSS SECTION DETAIL)
2. WHERE CONDITIONS PROHIBIT A STRAIGHT SIDEWALK, A MEANDERING 8' SIDEWALK MAY BE INSTALLED WITH APPROVAL OF CITY OF TEMPE ENGINEERING DEPARTMENT. (SUBMIT DESIGN TO C.O.T. ENGINEERING FOR APPROVAL.)
3. THICKEN SIDEWALK TO 9" BEHIND DRIVEWAYS AND ALLEY ENTRANCES
4. ALLEY ENTRANCES SHALL EXTEND A MINIMUM OF 8' BACK OF CURB.
5. MAINTAIN MINIMUM OF 24" HORIZONTAL CLEARANCE BETWEEN SIDEWALK AND EXISTING OBSTRUCTIONS. REMOVE AND/OR RELOCATE ALL OBSTRUCTIONS IN ALIGNMENT OF SIDEWALK.
6. ALTERNATE 2" DEEP CONTRACTION JOINT, AND 1/4" DEEP SCORE MARK EVERY 8', AND EXPANSION JOINT, EVERY 50' MAX. PER STD. SPEC. 729
7. TROWEL AND MEDIUM HAIR BROOM FINISH.

APPROVED: Andy Cr 7/2/07

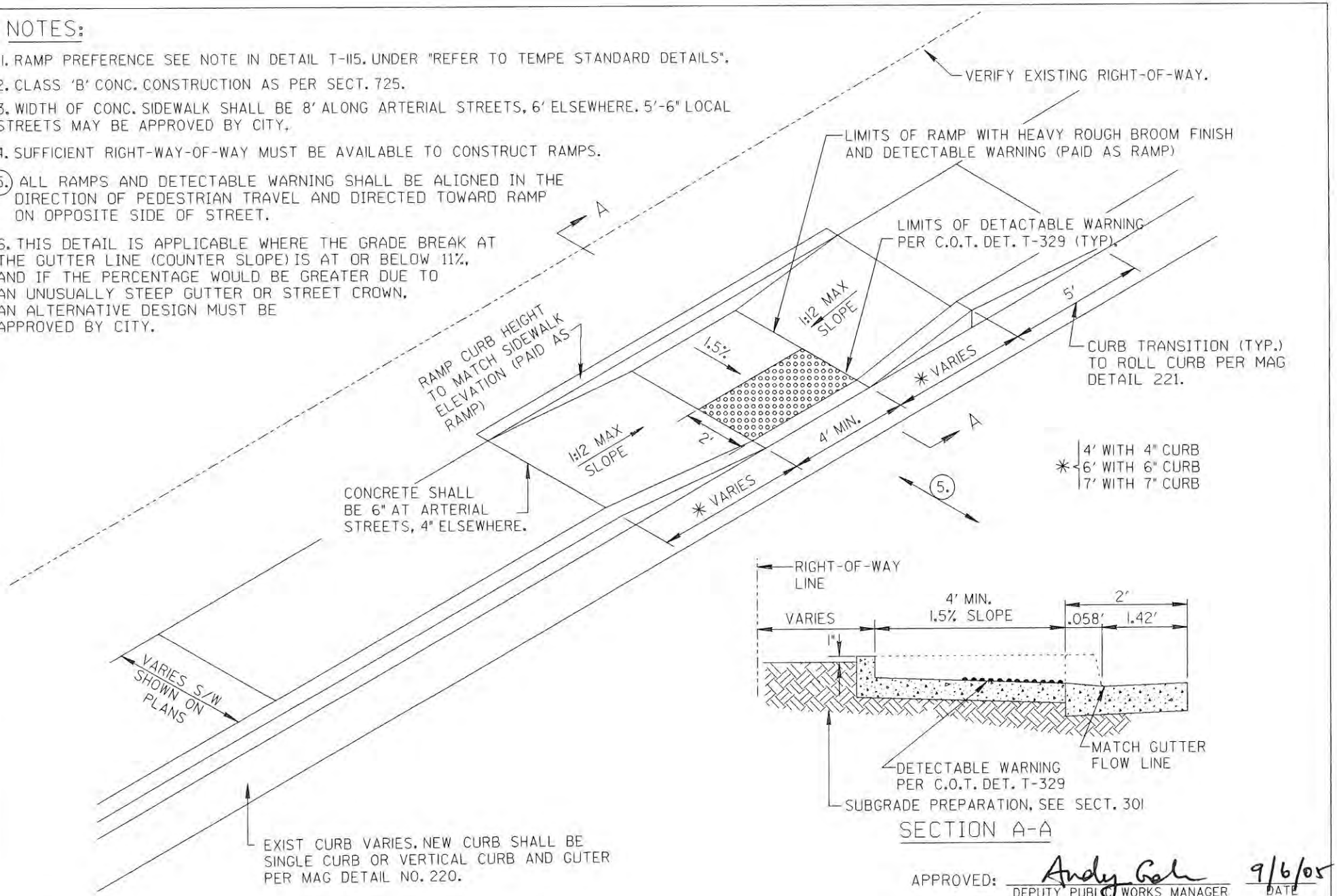
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER

DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TYPICAL SIDEWALK ALIGNMENT	DETAIL T-345 REVISED 2007

NOTES:

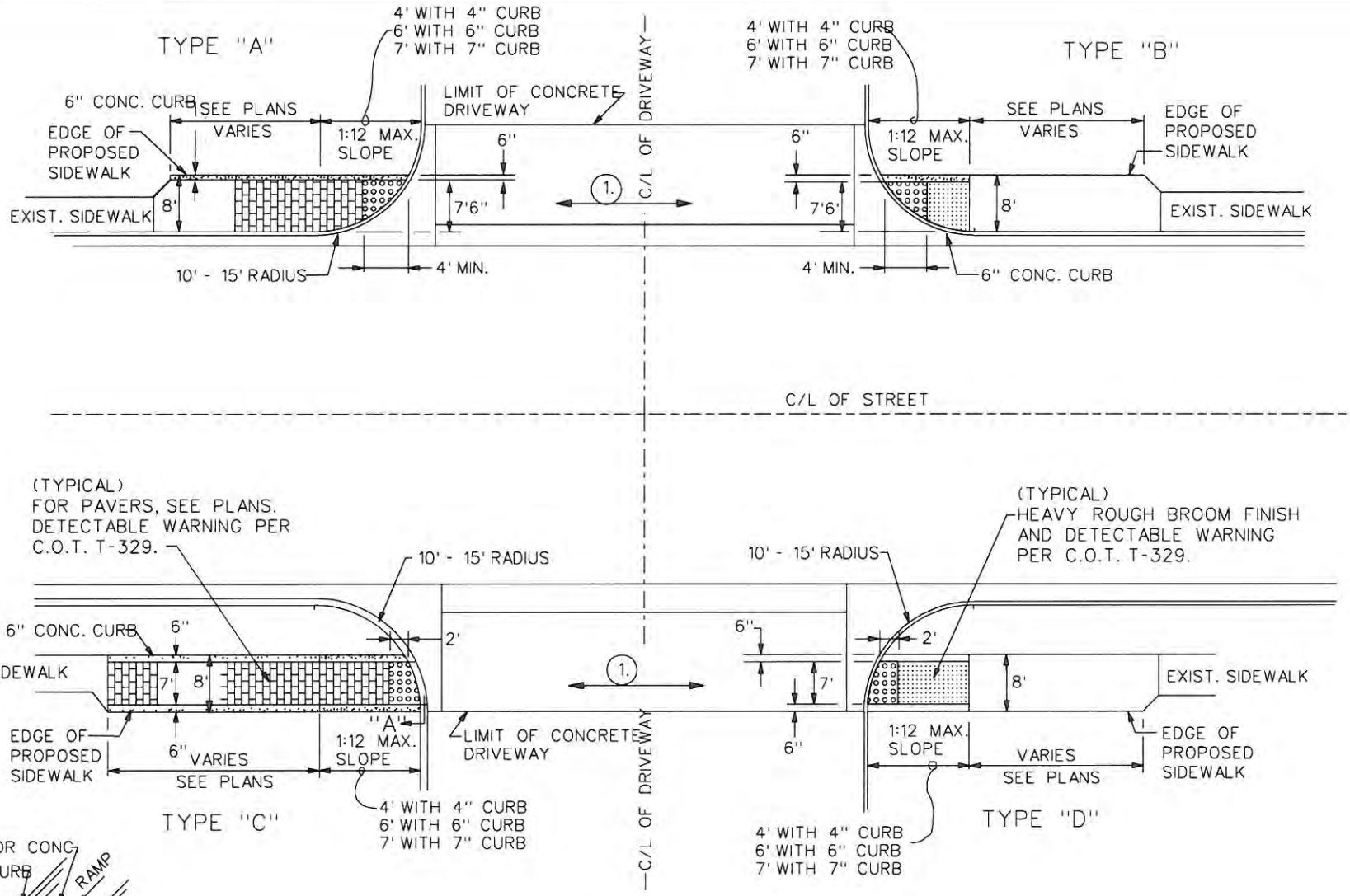
1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL AND DIRECTED TOWARD RAMP ON OPPOSITE SIDE OF STREET.
6. THIS DETAIL IS APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.

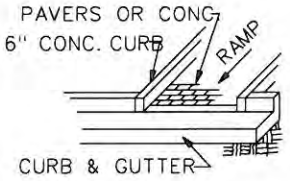


SECTION A-A

APPROVED: Andy Gah 9/6/05
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BLENDED MID-BLOCK RAMP FOR 4",6" AND 7" CURB	DETAIL T-347 2005





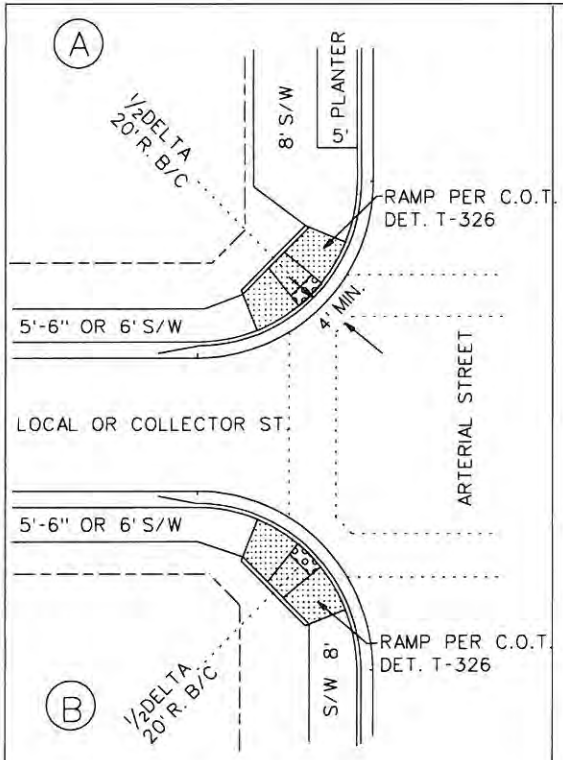
VIEW "A"
CONC. CURB
TYPICAL

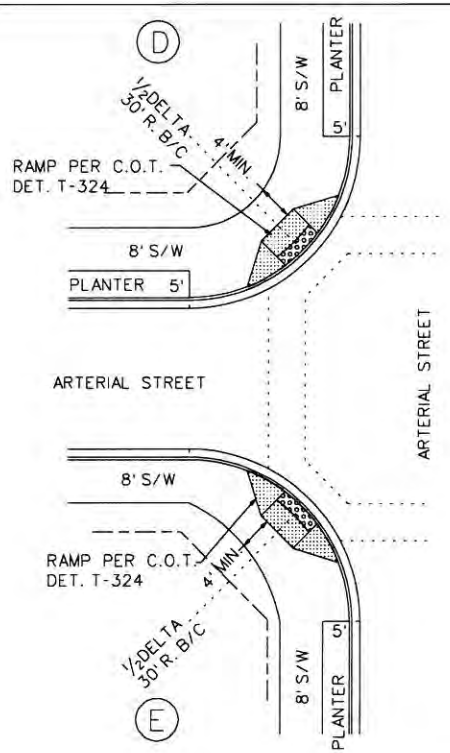
NOTES:

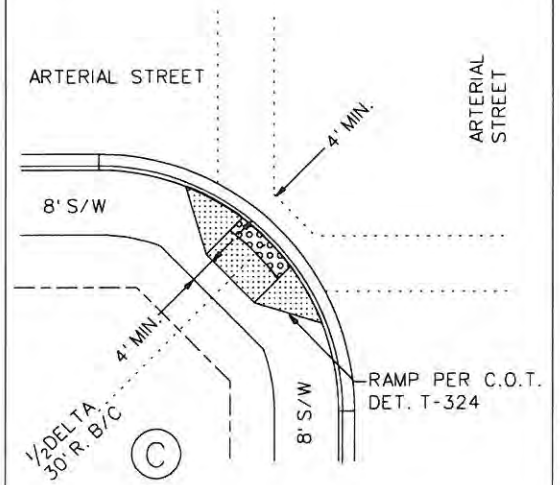
1. ALL RAMPS AND DETECTABLE WARNING SHALL BE ALIGNED IN THE DIRECTION OF PEDESTRIAN TRAVEL AND DIRECTED TOWARD RAMP ON OPPOSITE SIDE OF DRIVEWAY.
2. FOR DETECTABLE WARNING SEE C.O.T. DET. T-329, SLOPING TRANSITION FROM RAMP TO CURB SEE C.O.T. DET. T-326.
3. FOR INFORMATION OF DRIVEWAY SEE DETAIL NO. T-319

APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SIDEWALK SCOOP RAMP DETAIL FOR RETURN TYPE DRIVEWAY	DETAIL T-348 REVISED 4, 2010







NOTES:

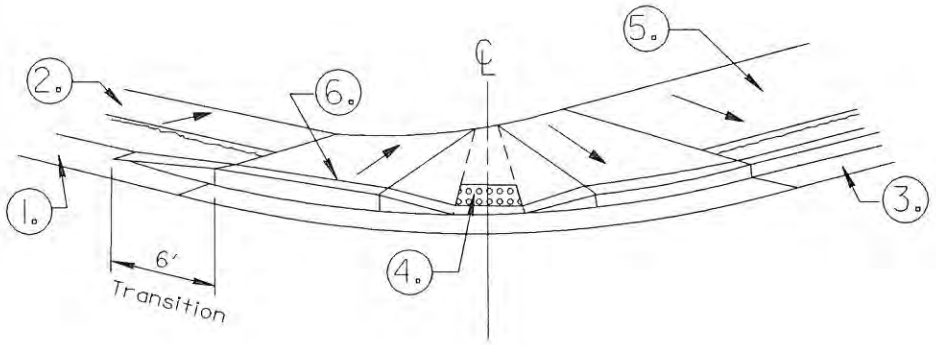
1. RAMP PREFERENCE SEE NOTE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
2. CLASS 'B' CONC. CONSTRUCTION AS PER SECT. 725.
3. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY.
4. SUFFICIENT RIGHT-WAY-OF-WAY MUST BE AVAILABLE TO CONSTRUCT RAMPS.
5. THESE DETAILS OF RAMPS ARE APPLICABLE WHERE THE GRADE BREAK AT THE GUTTER LINE (COUNTER SLOPE) IS AT OR BELOW 11%, AND IF THE PERCENTAGE WOULD BE GREATER DUE TO AN UNUSUALLY STEEP GUTTER OR STREET CROWN, AN ALTERNATIVE DESIGN MUST BE APPROVED BY CITY.
6. EXISTING CONDITIONS MAY REQUIRE MODIFICATION OF THE ABOVE ALTERNATES WITH APPROVAL OF THE CITY ENGINEER.
7. SEE STD. DETAIL T-345 FOR TYPICAL ALIGNMENT OF SIDEWALK APPROACHING INTERSECTION.
8. RAD. TO BACK OF CURB SHOWN ABOVE ARE TYPICAL BUT MAY VARY WHERE CURB RETURN EXISTS.
9. CENTER RAMP ON MID-RETURN UNLESS APPROVED OTHERWISE BY THE TRAFFIC ENGINEER.
10. ADDITIONAL S/W MAY BE REQUIRED TO PROVIDE FULL WIDTH S/W WHERE TRAFFIC FURNITURE OCCUPIES NORMAL S/W.
11. FOR TRAFFIC FURNITURE FOUNDATIONS SEE TRAFFIC SIGNAL FOUNDATIONS DETAILS.
12. 4' MIN. WIDTH OF CONCRETE AT BACK OF RAMP WITH 2% MAX. / 1.5 MIN. CROSS SLOPE.
13. FOR DETECTABLE WARNING SEE C.O.T. DET. T-329, SLOPING TRANSITION FROM RAMP TO CURB SEE C.O.T. DET. T-326.
14. CONCRETE OF RAMPS SHALL BE 6" AT ARTERIAL STREETS, 4" ELSEWHERE.

APPROVED: Andy Z 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

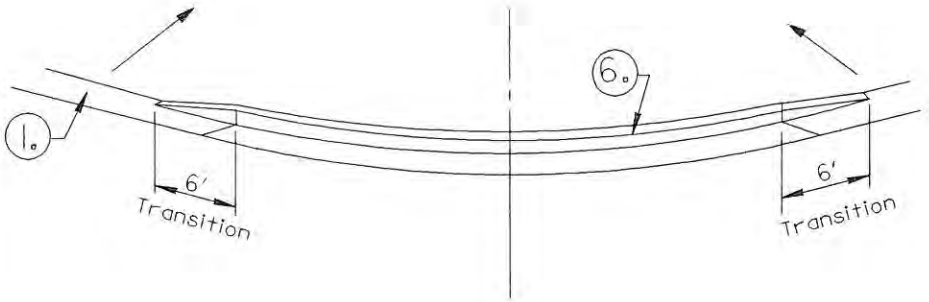
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

SIDEWALK AND RAMP AT STREET INTERSECTIONS WHERE DIRECTIONAL RAMPS ARE NOT POSSIBLE

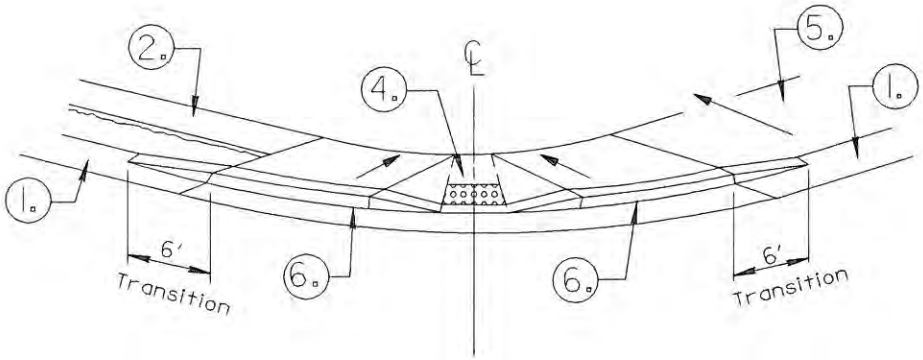
DETAIL T-349
REVISED 4, 2010



MID - SECTION COLLECTOR - ARTERIAL



NO SIDEWALK
LOCAL - LOCAL
LOCAL - COLLECTOR
COLLECTOR - COLLECTOR



LOCAL - LOCAL
MID - SECTION COLLECTOR - LOCAL
MID - SECTION COLLECTOR - COLLECTOR

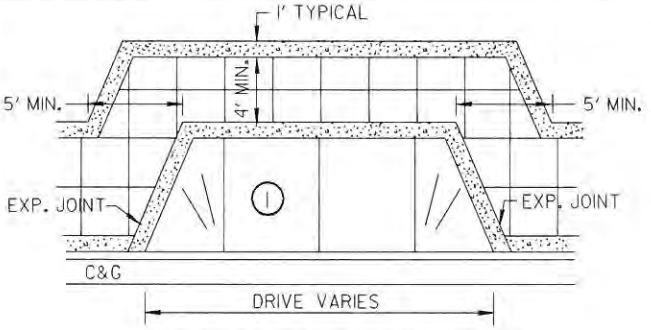
NOTES

← INDICATES DIRECTION OF DRAINAGE

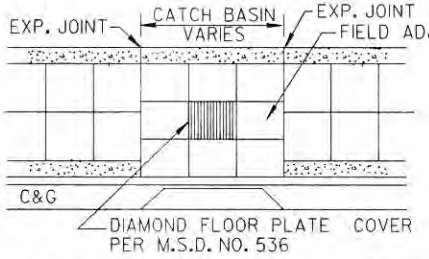
1. CONCRETE RIBBON CURB (PER MAG STD. DET. NO. 220-B)
2. WIDTH OF CONC. SIDEWALK SHALL BE 8' ALONG ARTERIAL STREETS, 6' ELSEWHERE. 5'-6" LOCAL STREETS MAY BE APPROVED BY CITY. (PER MAG DTD. DET. NO. 230)
3. CONCRETE VERT. CURB & GUTTER (PER MAG STD. DET. NO. 220-A, H=7")
4. CONCRETE SIDEWALK RAMPS SEE RAMP PREFERENCE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
5. CONCRETE SIDEWALK (PER C.O.T. DET T-345)
6. CONCRETE VERTICAL CURB & GUTTER (PER MAG STD. DET. NO. 220-A, H=4")

APPROVED: Andy Cole 1-16-04
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	VERTICAL CURB RETURNS ON RIBBON CURB STREETS	DETAIL T-350 REVISED 2004



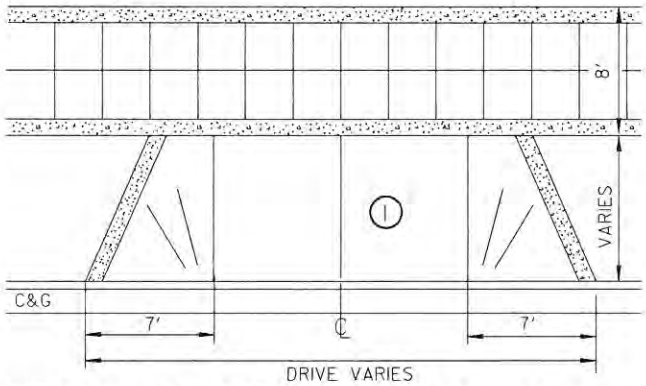
SIDEWALK AT ENTRY DRIVE



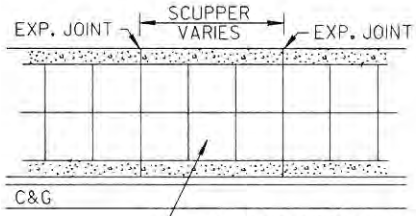
TREATMENT AT CATCH BASIN

NOTES:

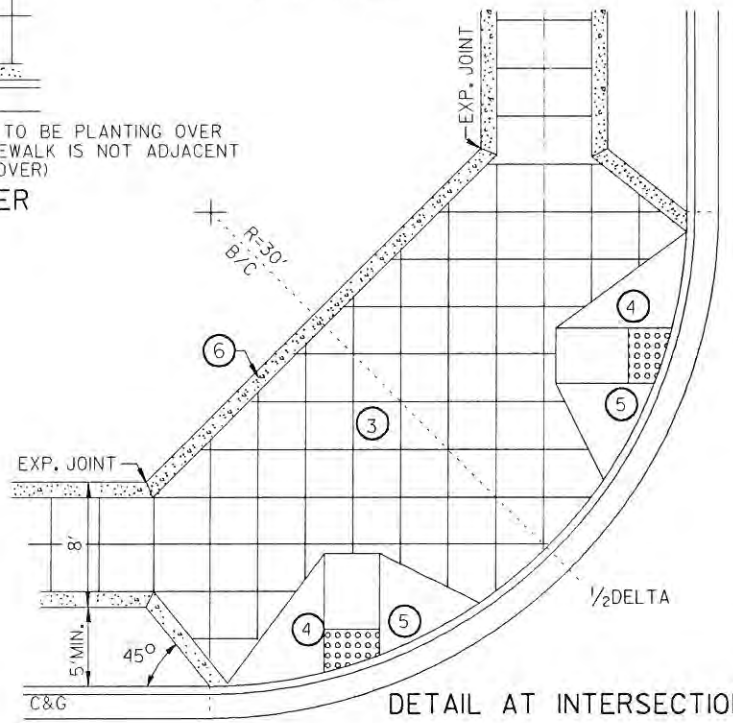
1. DRIVEWAY ENTRANCE PER M.S.D. NO. T-320.
2. SIDEWALK CONSTRUCTION SHALL CONFORM TO M.S.D. NO. 230 & T-345 CONCRETE MUST BE MONOLITHIC.
3. ENTIRE AREA COLORED AS MAJOR INTERSECTION (LANDERS-SIGEAL COLOR 213 GOLDENROD, 50 LB. PER CU. YD. OR APPROVED EQUAL)
4. CONCRETE SIDEWALK RAMPS SEE RAMP PREFERENCE IN DETAIL T-115. UNDER "REFER TO TEMPE STANDARD DETAILS".
5. DETECTABLE WARNING PER C.O.T. DET. T-329.
6. EXPOSED AGGREGATE SURFACE SHALL BE CONSTRUCTED BY MEANS OF AN APPROVED RETARDANT AND PRESSURE WASH. NO SAND BLASTING WILL BE ALLOWED WITHOUT PRIOR APPROVAL.



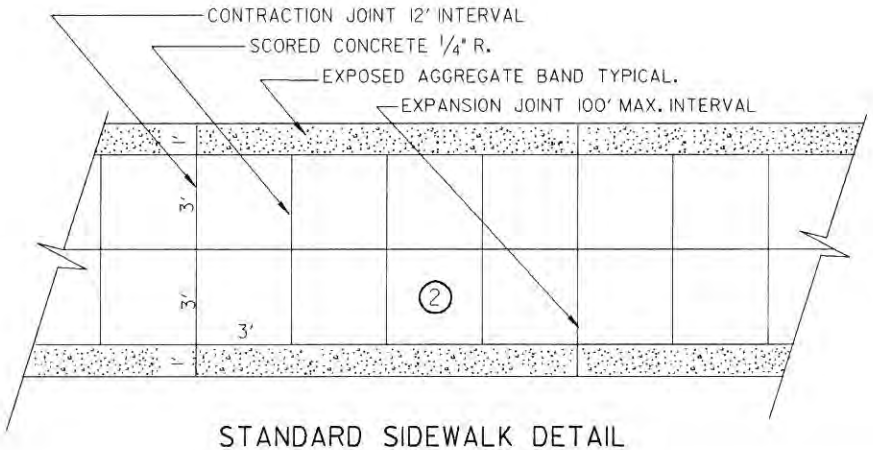
SIDEWALK AT ENTRY DRIVE (off of curb)



TREATMENT AT SCUPPER



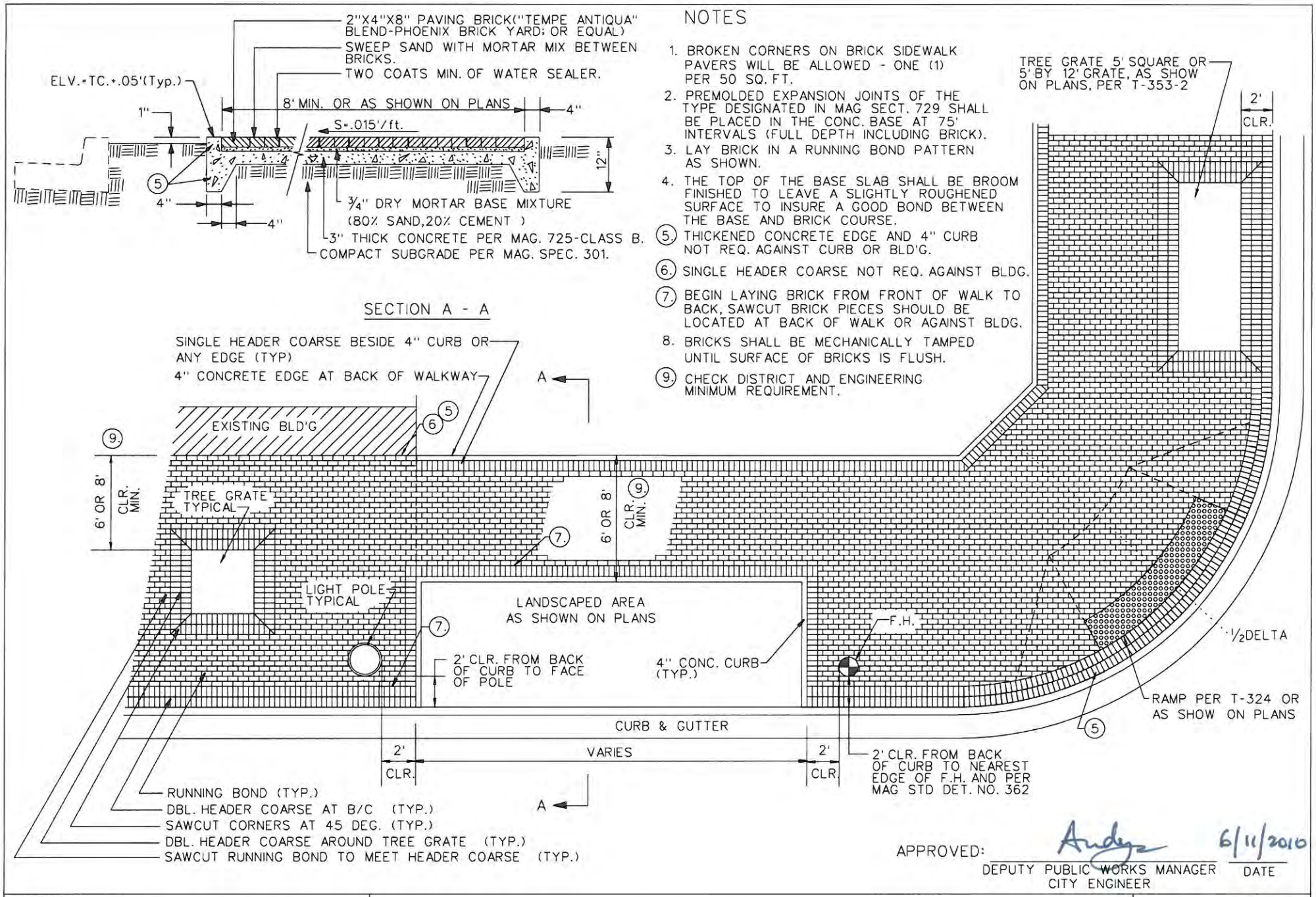
DETAIL AT INTERSECTION



STANDARD SIDEWALK DETAIL

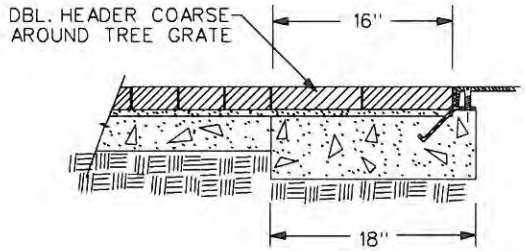
APPROVED: Andy Cook 8/16/05
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

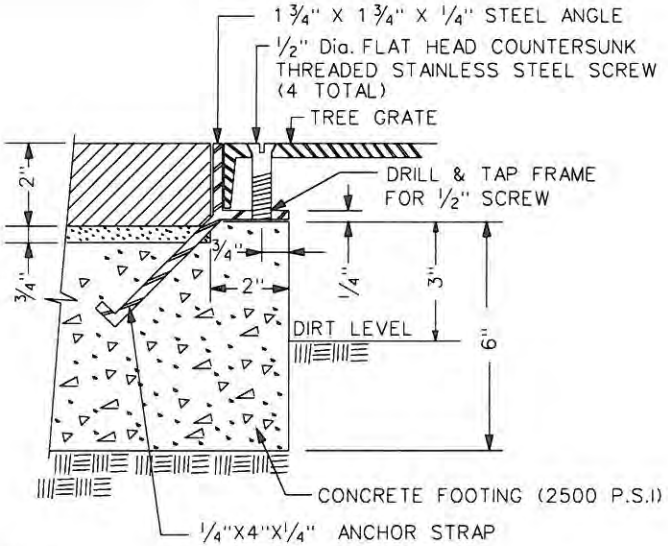
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SOUTH TEMPE OVERLAY DISTRICT SIDEWALK DETAILS	DETAIL T-351 REVISED 2005



APPROVED: Andy 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BRICK SIDEWALK	DETAIL T-353-1 SHEET 1 OF 3 Revised 4,2010





TREE GRATE / PAVER CONNECTION

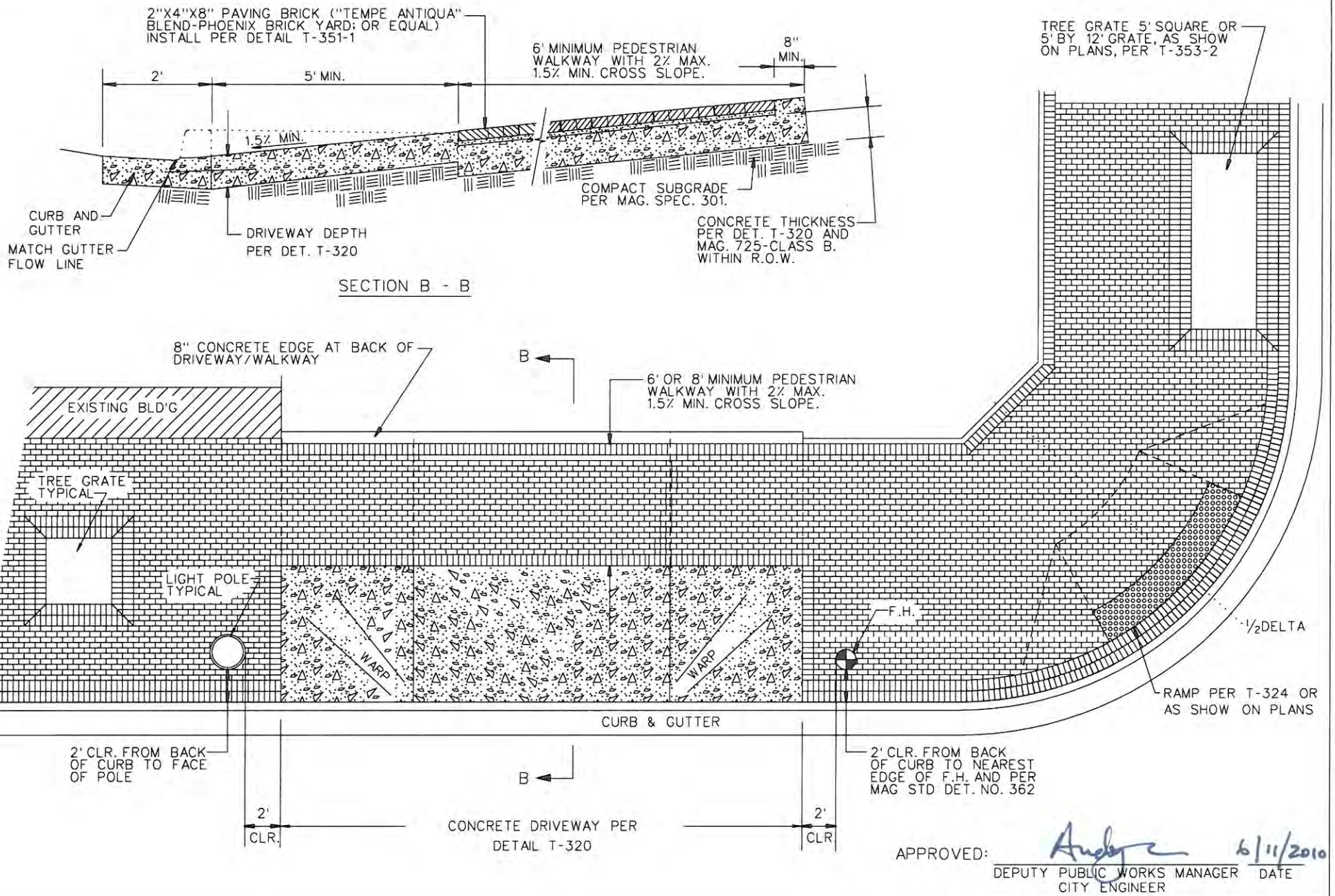
NOTES:

- FOUR PIECE GRATE WITH NARROW OPENINGS FOR PEDESTRIAN SAFETY AND A.D.A. COMPLIANCE. 4' BY 12' CAST IRON MADE BY NEENAH FOUNDRY MODEL R-8815 OR IRONSMITH INC. MODEL 14402-2 OR APPROVED EQUAL. SPECIAL APPROVAL REQUIRED BY CITY FOR USE OF TWO PIECE 5' BY 5' TREE GRATES; CAST IRON MADE BY NEENAH FOUNDRY MODEL R-8707 OR IRONSMITH INC. MODEL 6018-1 (OR APPROVED EQUAL).
- PRE-ASSEMBLED HALF SECTIONS BOLT TOGETHER W/SPLIT RINGS TO PREVENT UNAUTHORIZED REMOVAL.
- GRATE PAINT 5 MIL FINISH FLAT BLACK POWDER COAT
- PAINT STEEL FRAME ONE COAT PRIME AND TWO COATS FLAT BLACK ENAMEL.
- PROVIDE 2 SCREWS MIN. PER HALF SECTION OF GRATE.
- TREE GRATE FRAME WELD MITERED 4 CORNER JOINTS.
- PREASSEMBLE GRATE & FRAME AND ADJUST FRAME TO PREVENT GRATE WOBBLE.

APPROVED: Andy C 6/11/2010

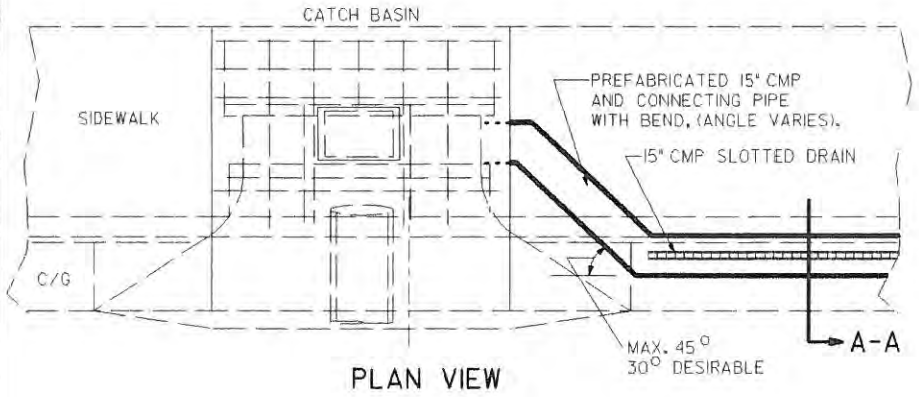
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TREE GRATE AT BRICK SIDEWALK	DETAIL T-353-2 SHEET 2 OF 3 REVISED 4-2010



APPROVED: _____ 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

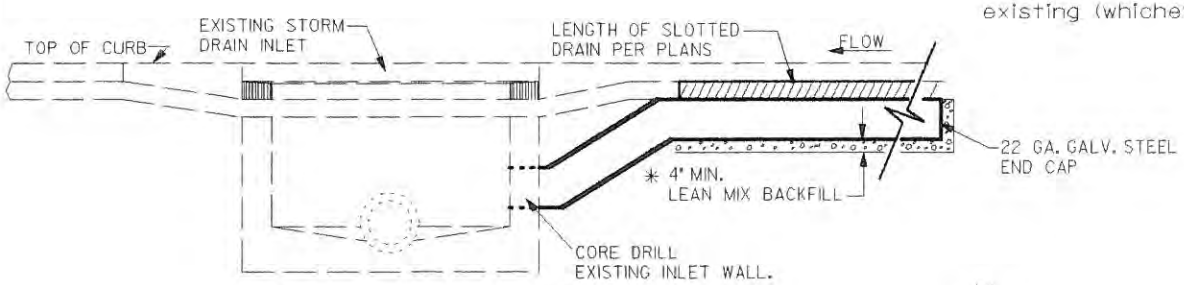
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	CONCRETE/BRICK DRIVEWAY AT BRICK SIDEWALK	DETAIL T-353-3 SHEET 3 OF 3 REVISED 4,2010



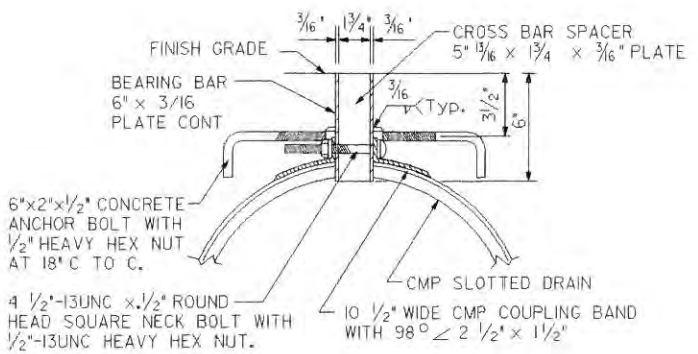
PLAN VIEW

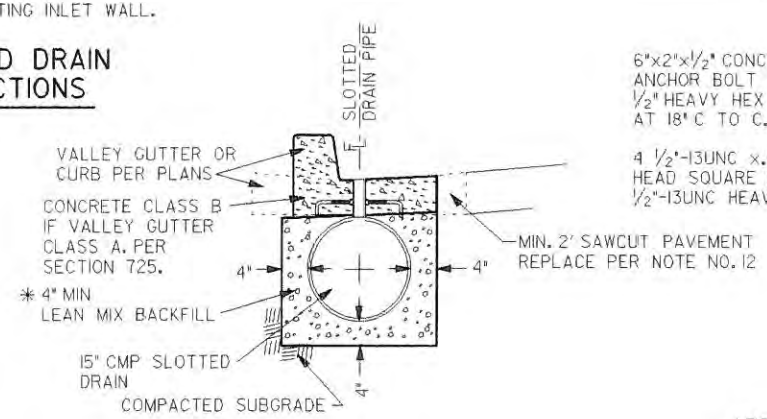
NOTES:

1. Slotted Drain Pipe Shall be 2½" x ½" Corrugated Steel Pipe with a Minimum Wall Thickness of 0.064" and Shall Conform to the Requirements AASHTO M36.
2. Slotted Drain Shall be with an Angled Slot Intercepting flow by Direction or Otherwise as shown on Plans.
3. Locations with Pedestrian Traffic shall be Installed with Heel Guard 6" Slot.
4. Slotted Drain Pipe and Installation shall conform to MAG Section 621 & 760.
5. All slotted Drain Pipe Hardware Except Anchor Bolts and Reinforcing Steel shall be Given Two Coats of Paint.
6. Reinforcing Steel shall Conform to 1003-1, 2, Grade 40.
7. Structural Steel shall Conform to ASTM A36.
8. Concrete anchors shall conform to ASTM A307 and Hex Nuts shall Conform to ASTM A563 Grade A.
9. Cover Slot During Construction with Removable tape or Other Acceptable Substitute. Prior to Concrete Pour and Keep Taped Until after Pour.
10. Slotted Drain Pipe shall be Clean at the Time of Final Acceptance.
11. All Concrete, Curb & Gutter, and Valley Gutter through the Slotted Drains shall be Paid for Under the Respective Concrete Item.
12. Pavement replacement shall be per C.O.T detail T-311, T-312, T-313, T-315, T-316 or T-317 on 12" ABC on minimum 6" of prepared subgrade, or match existing (whichever is greater).



TYPICAL INLET/SLOTTED DRAIN FOR OFFSET CONNECTIONS



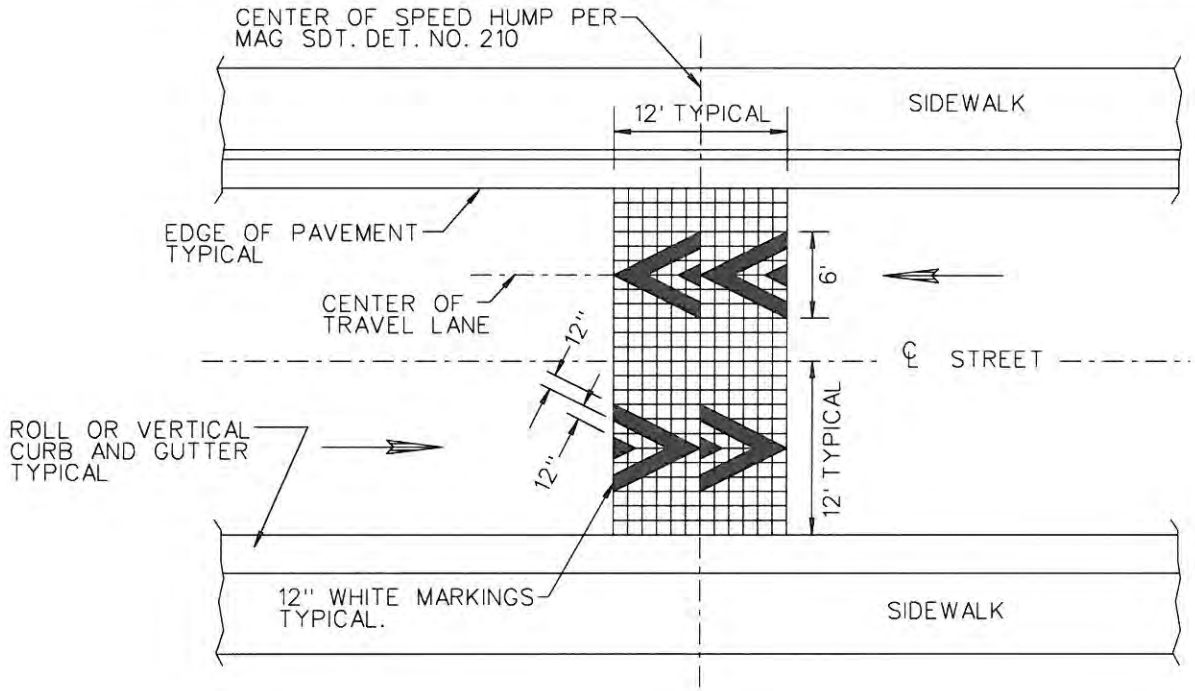


SECTION A-A

* LEAN MIX BACKFILL: PER YD. QNTY.
94 Lbs. - PORTLAND CEMENT
400 Lbs. - WATER
3547 Lbs. - ABC
APPROXIMATE PROPORTIONS OF:
55% COARSE AGGREGATE (ASTM-C-33 SIZE 57)
45% FINE AGGREGATE (CONFORM TO SEC. 701.3)

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SLOTTED DRAIN	DETAIL T-354 REVISED 2007



PLAN VIEW

LEGEND:

SPEED HUMP AREA TYPICAL

DIRECTION OF TRAVEL

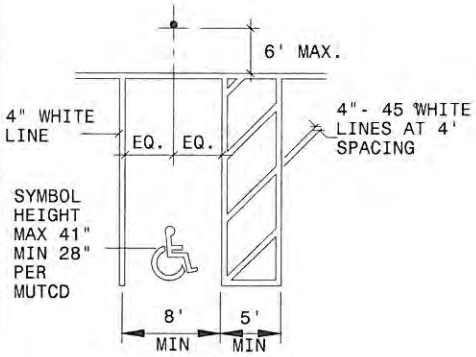
NOTES:

1. RESIDENTIAL SPEED HUMP MUST BE CONSTRUCTED PER MAG SDT. DET. NO. 210

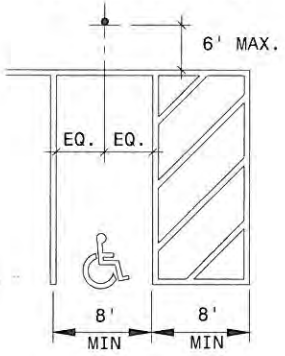
APPROVED: Andy 6/11/2010

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

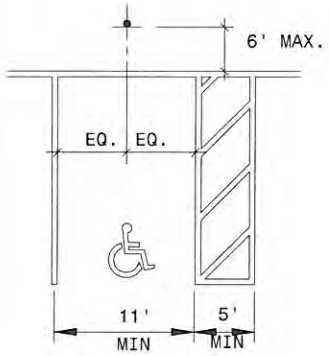
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STRIPING FOR RESIDENTIAL SPEED HUMP	DETAIL T-356 APRIL, 2010



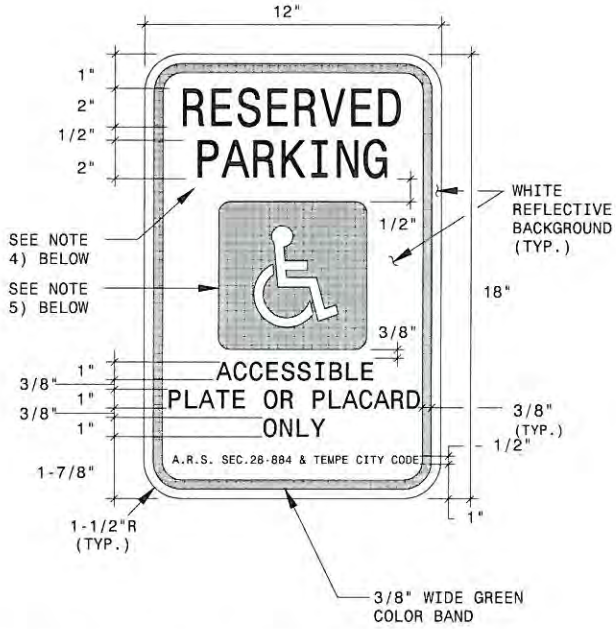
STANDARD SPACE



VAN ACCESSIBLE

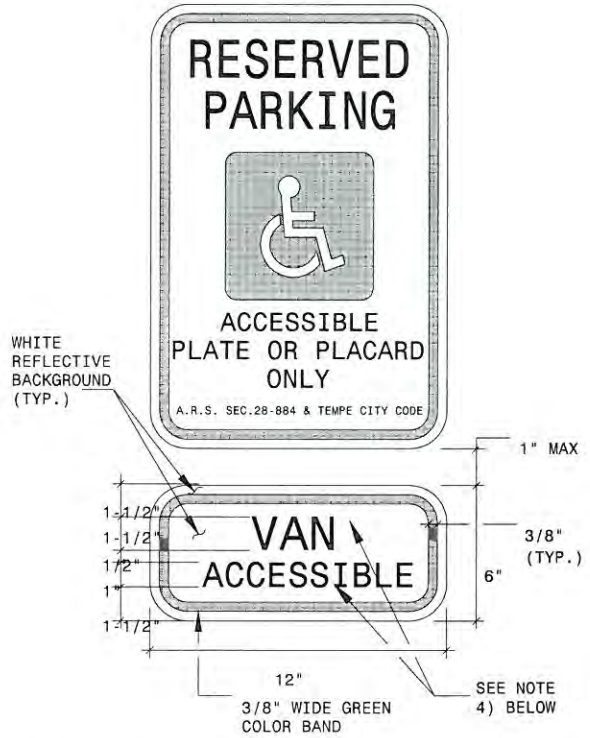


UNIVERSAL SPACE



NOTES FOR ACCESSIBLE PARKING SIGN & PARKING SPACE:

1) THE BOTTOM OF THE SIGN SHALL BE NO LESS THAN 60 INCHES AND NO MORE THAN 72 INCHES ABOVE FINISH GRADE (PER 2010 ADAAG 502.6).
2) SIGNS SHALL BE PROPERLY CENTERED ON THE PARKING SPACE.
3) THE SIGN FACE SHOULD BE LOCATED NO FARTHER THAN 6 FEET FROM THE FRONT OF EACH PARKING SPACE.
4) ALL LETTERING SERIES 'C' GREEN COLOR.
5) INTERNATIONAL SYMBOL OF ACCESSIBILITY ON PARKING SIGN SHOWN WHITE ON 6"X6" BLUE FIELD WITHINCH RADIUS CORNERS.
6) THE INTERNATIONAL SYMBOL OF ACCESSIBILITY PARKING SPACE MARKINGS SHALL BE PLACED IN EACH PARKING SPACE DESIGNATED FOR USE BY PERSONS WITH DISABILITIES. A BLUE BACKGROUND WITH WHITE BORDER MAY SUPPLEMENT THE WHEECHAIR SYMBOL.
7) ACCESSIBLE PARKING SIGN STANDARD AS DESINGATED BY THE CITY OF TEMPE CODE CHAPTER 19, SECTION 19-93.



NOTES FOR VAN ACCESSIBLE SIGN:

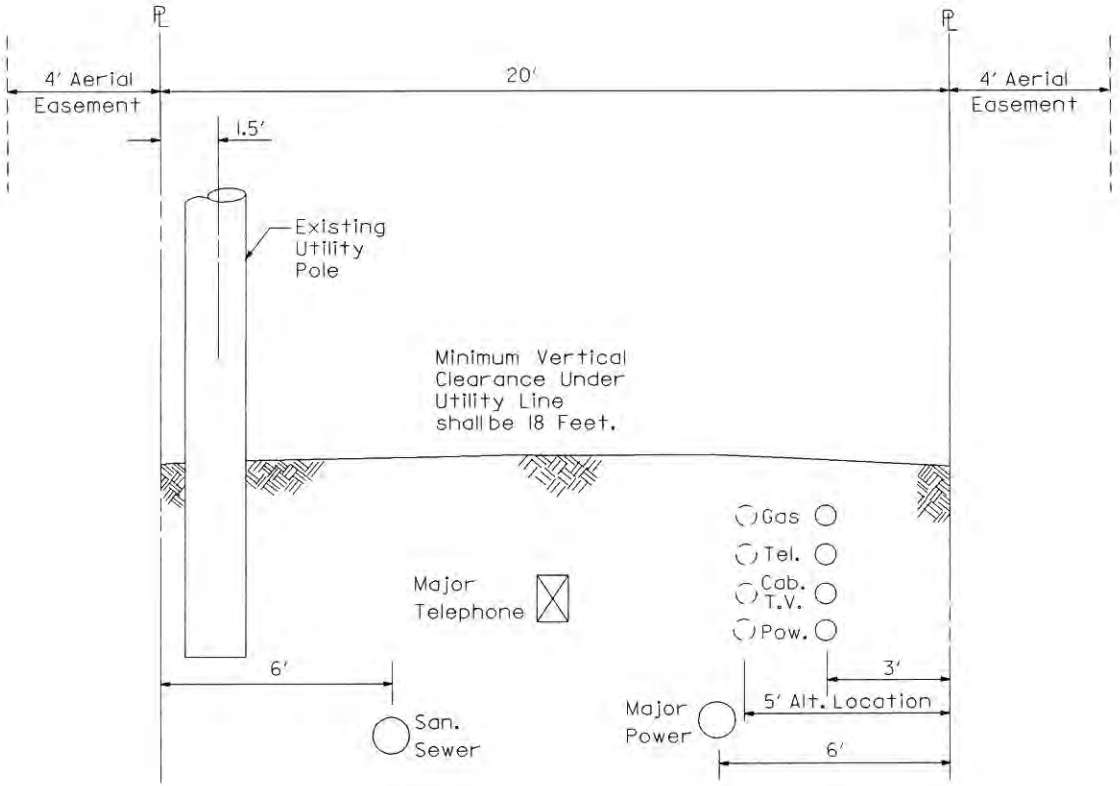
1) THE BOTTOM OF THE VAN ACCESSIBLE SIGN SHALL BE NO LESS THAN 36 INCHES ABOVE FINISH GRADE.
2) THE VAN ACCESSIBLE SIGN SHALL BE CENTERED UNDER THE ACCESSIBLE PARKING SIGN AS SHOWN.
3) FOR MORE INFORMATION ON RESERVED PARKING SIGN, SEE ACCESSIBLE PARKING SIGN DETAIL LEFT.
4) ALL LETTERING SERIES 'D' GREEN COLOR.

APPROVED: _____ 12-19-14
DEPUTY PUBLIC WORKS DIRECTOR / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

SIGNAGE/STRIPING FOR ADA ACCESSIBLE PARKING SPACES

DETAIL T-360
REVISED 2014

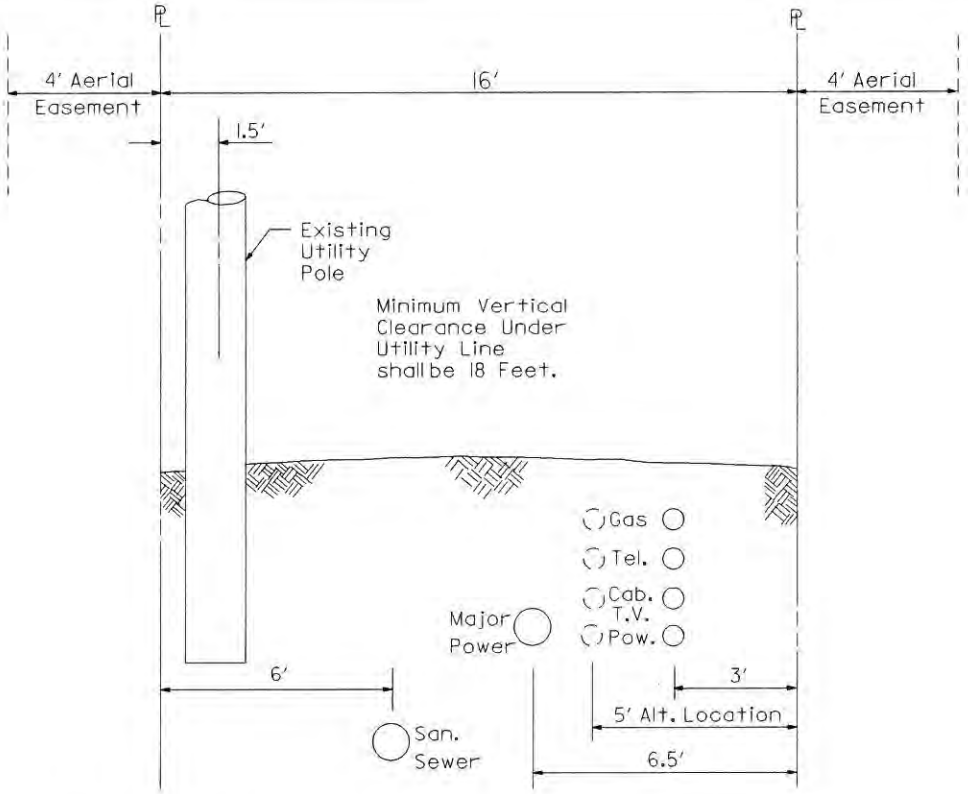


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: Howard C. Kays 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (20' Alley)	DETAIL T-431 REVISED 1998

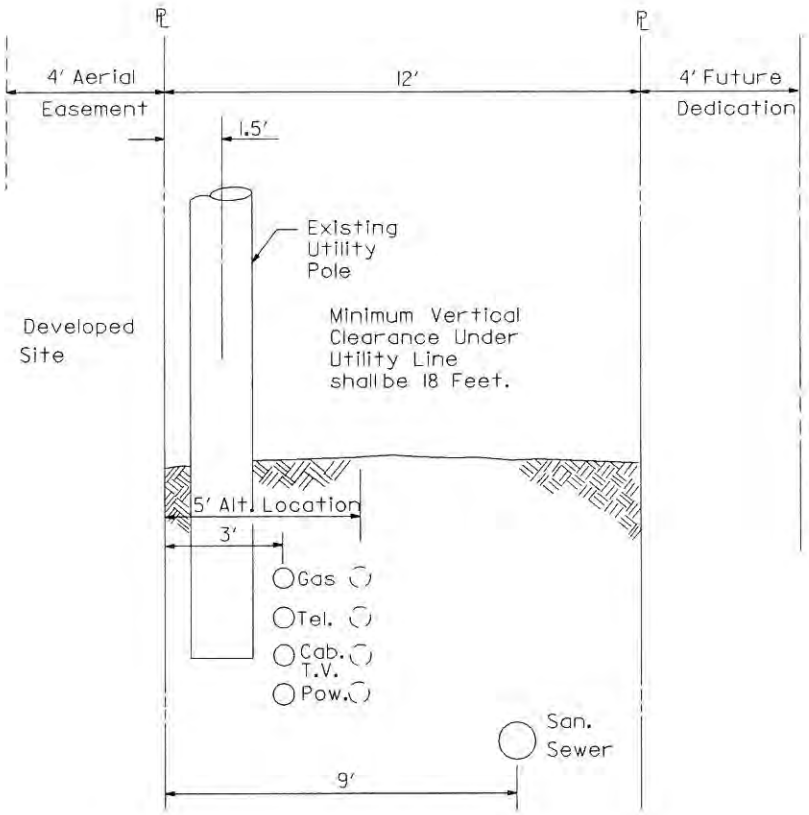


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: _____ 12/8/98
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (16' Alley)	DETAIL T-432 REVISED 1998

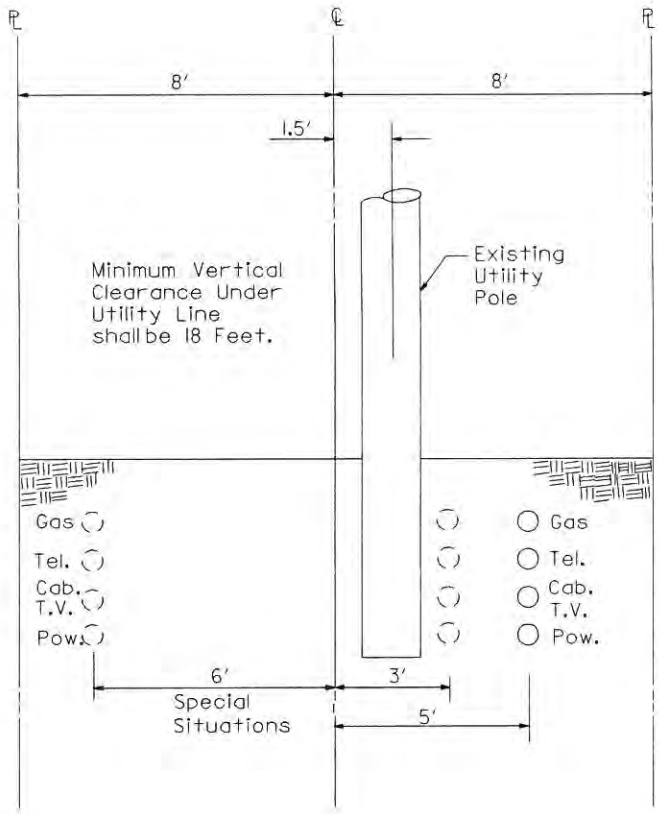


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: Howard C. Haigh 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (12' Alley)	DETAIL T-433 REVISED 1998

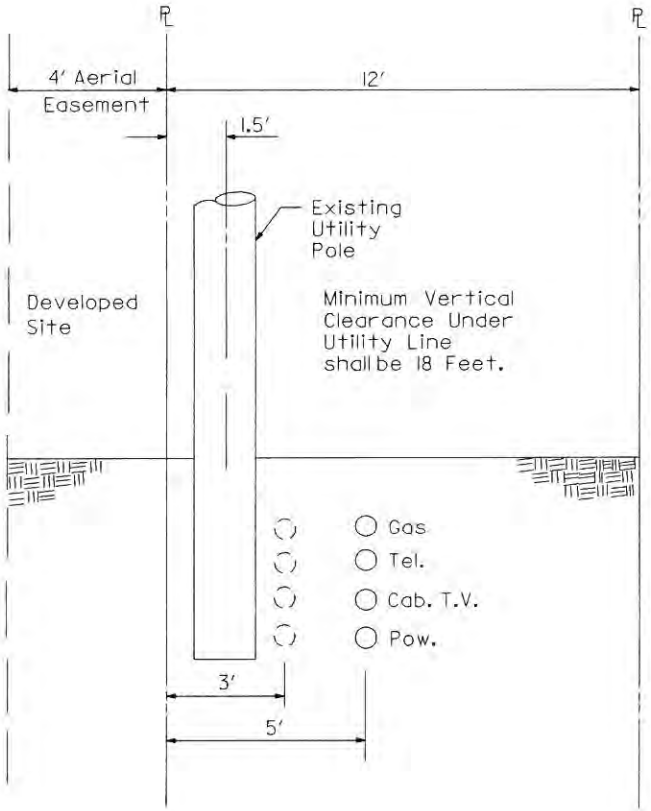


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: _____ 12/18/98
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (16′ EASEMENT)	DETAIL T-434 REVISED 1998

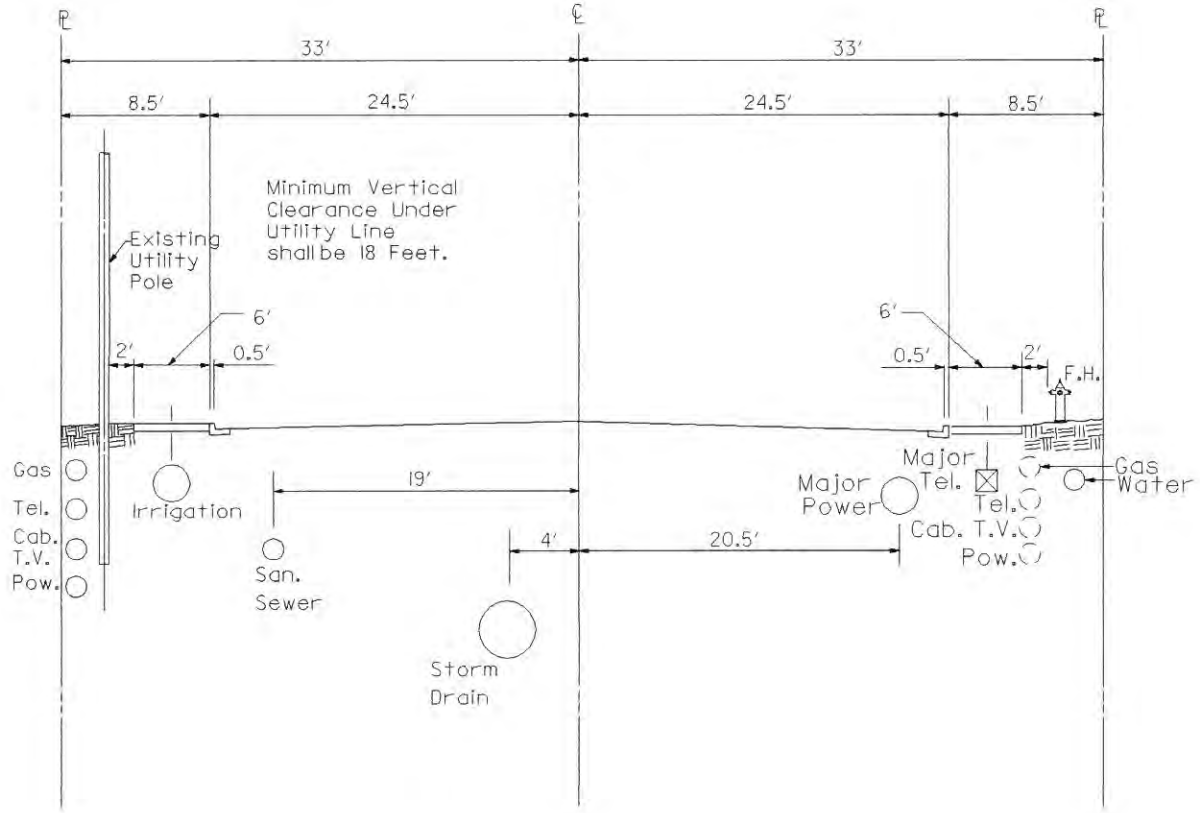


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: Howard C. Kays 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (12' EASEMENT)	DETAIL T-435 REVISED 1998

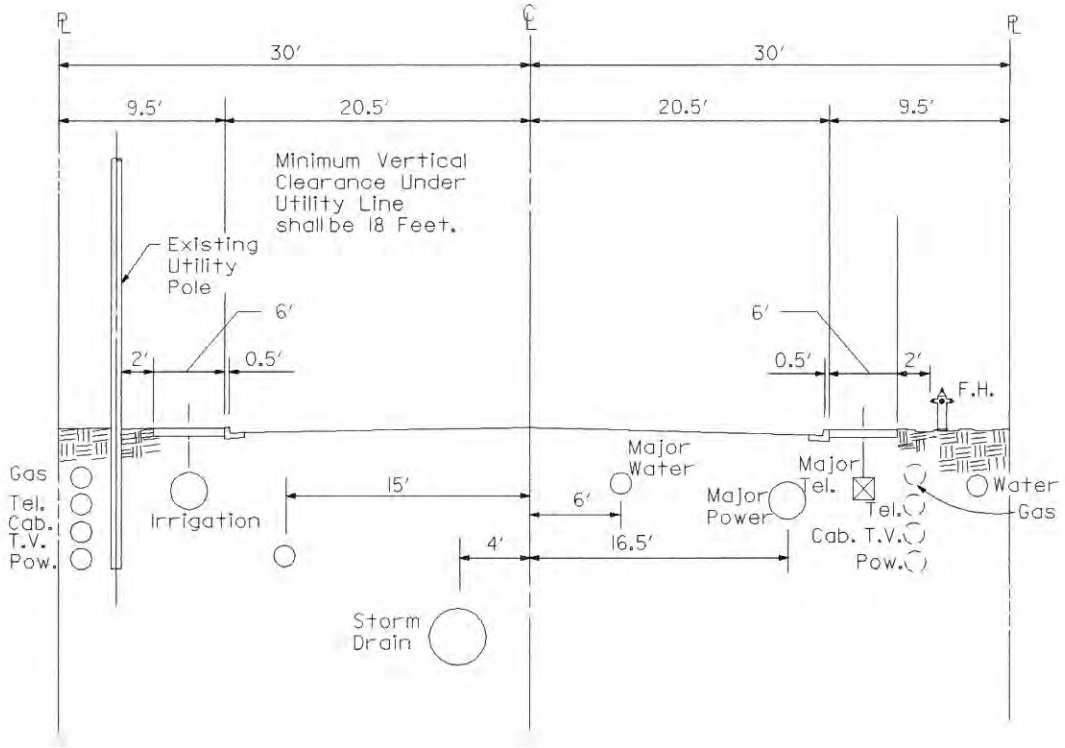


NOTES:

1. Poles to be Located with 2' of Clearance to sidewalk
2. Dashed Lines Indicate Alternate Locations.
3. Cross Section is as Viewed Looking North or West.
4. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
5. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: Andy C — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — 7/2/07 DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (C-2 COMMERICAL & MIDSECTION, COLLECTOR STREETS)	DETAIL T-436 REVISED 2007

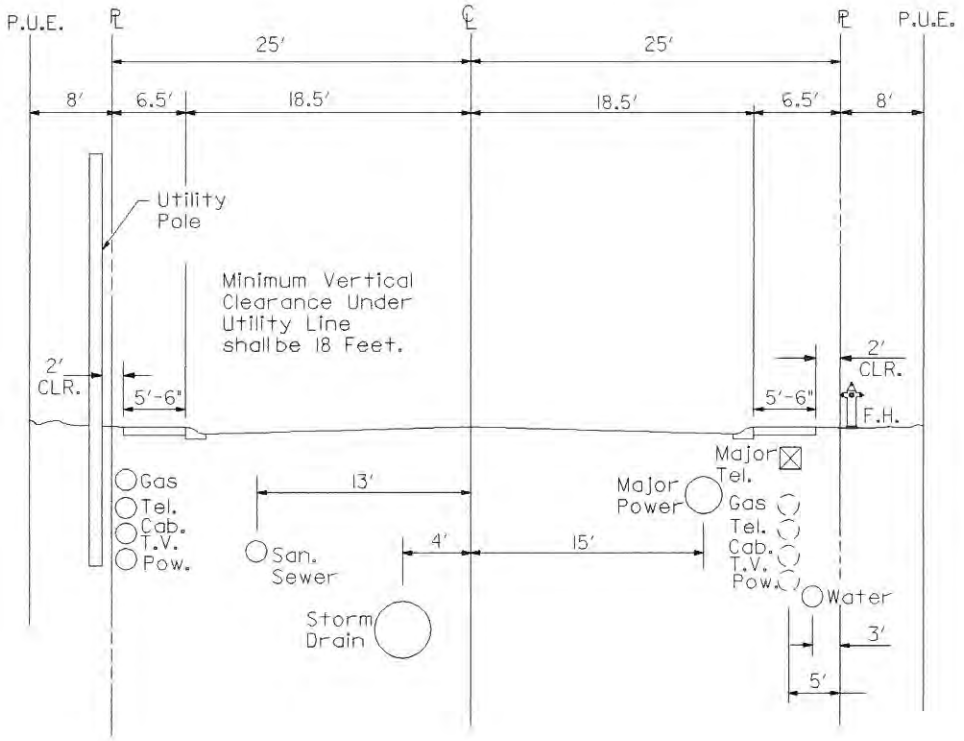


NOTES:

1. Poles to be Located with 2′ of Clearance to sidewalk
2. Dashed Lines Indicate Alternate Locations.
3. Cross Section is as Viewed Looking North or West.
4. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
5. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (C-1 RESIDENTAL COLLECTOR STREET)	DETAIL T-437 REVISED 2007

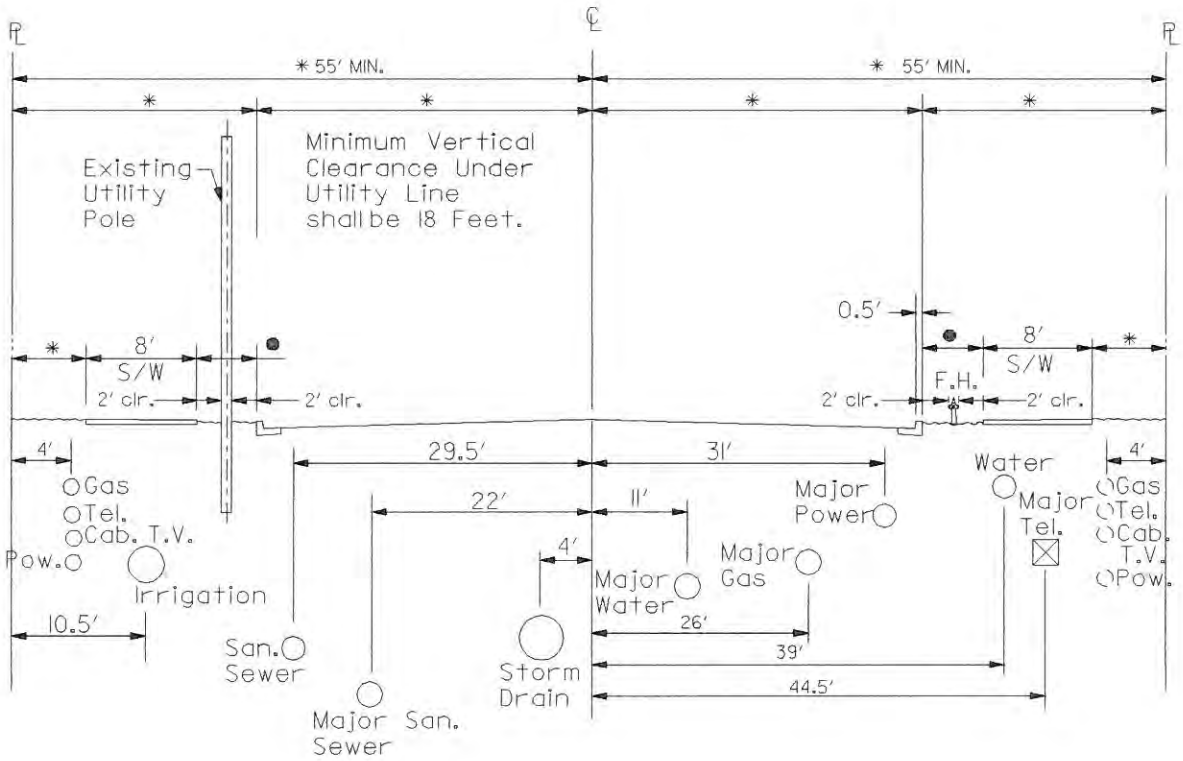


NOTES:

1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

APPROVED: Andy Cr 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (L-1 SINGLE LOCAL STREET)	DETAIL T-438 REVISED 2007



A-I ARTERIAL STREET WITH 8' SIDEWALK

NOT TO SCALE

NOTES:

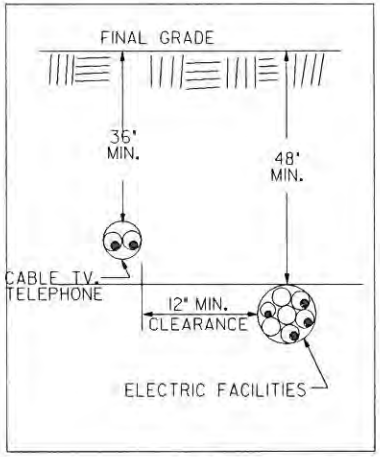
1. Cross Section is as Viewed Looking North or West.
2. Dashed Lines Indicate Alternate Locations.
3. No New Poles or Overhead Lines Allowed in Tempe per Tempe City Code No. 25.120.
4. Utilities shall be Placed in Conduits. See Detail T-115 General Notes.

* Varies

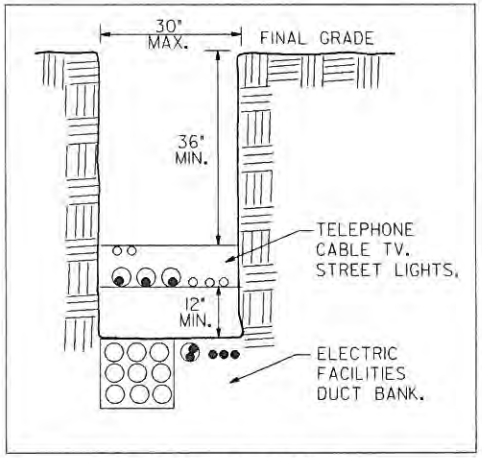
• See Typical Sidewalk Alignment Detail T-345

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

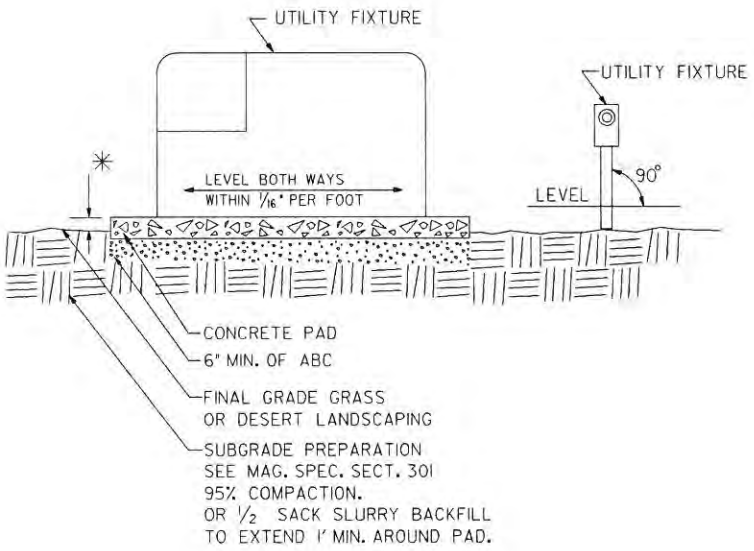
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD UTILITY LOCATION (A-I ARTERIAL STREET)	DETAIL T-439 REVISED 2007

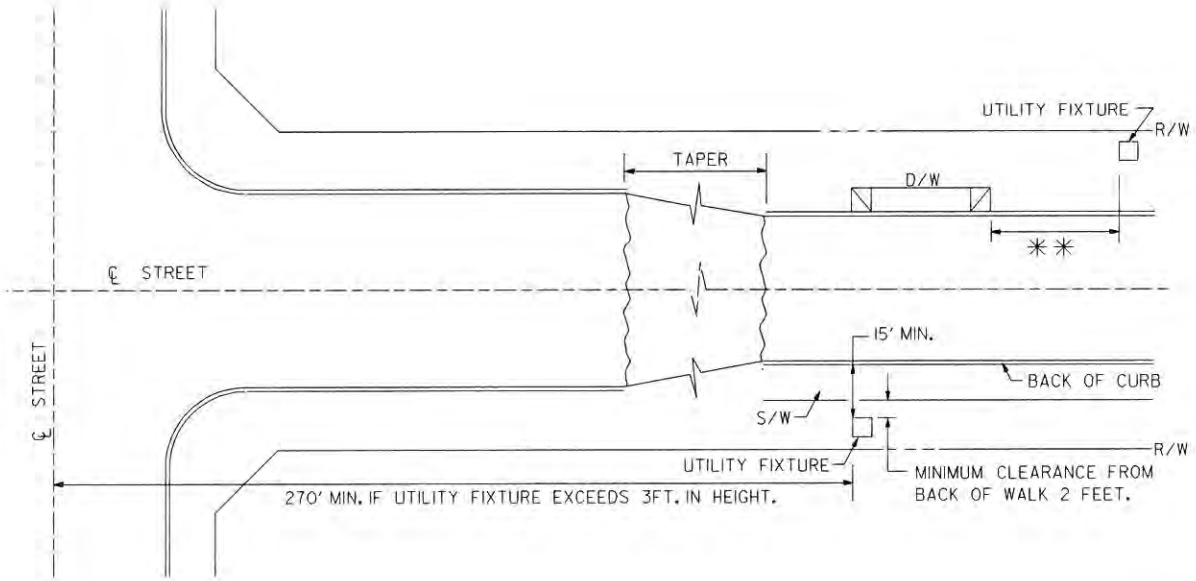


BORE



JOINT USE TRENCH





✳ TOP OF PAD SHALL:
MATCH EXISTING UTILITY PAD ELEV.
IF NO UTILITY PAD EXISTS THE NEW
PAD ELEV. SHALL BE AT LEAST 4"
ABOVE SIDEWALK OR TOP OF CURB
WHICHEVER IS GREATER.

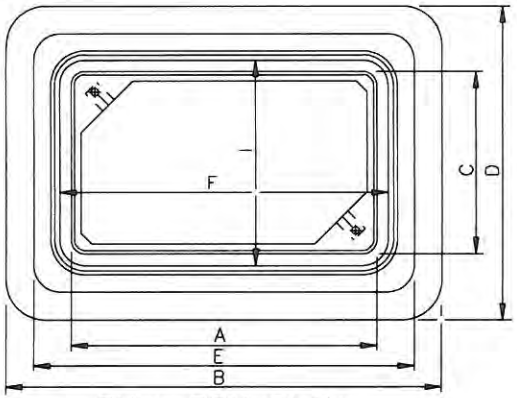
✳✳ 50' MIN. IF UTILITY FIXTURE
EXCEEDS 3FT. IN HEIGHT.

APPROVED: Howard A. Hargis 12/8/98
CITY ENGINEER DATE

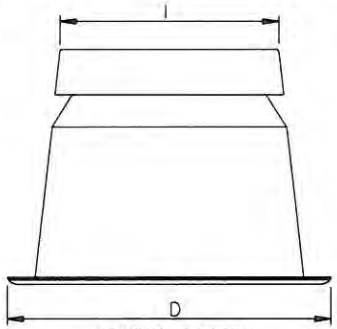
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

STANDARD UTILITY FIXTURE & CONDUIT PLACEMENT

DETAIL T-440
REVISED 1998



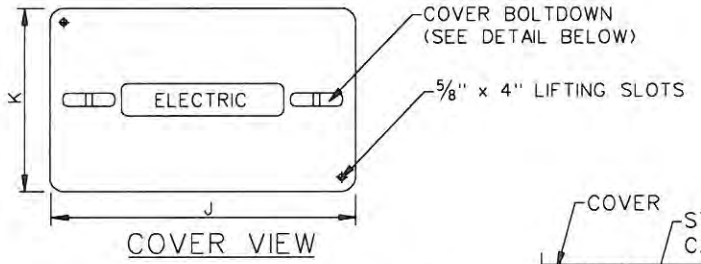
PULL BOX PLAN



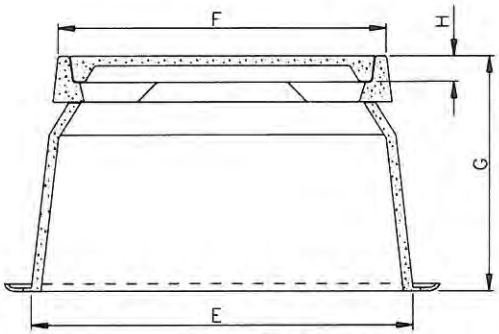
SIDE VIEW

GENERAL NOTES

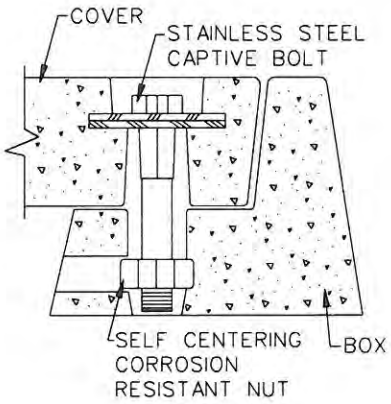
1. -BOX AND COVER SHALL BE CONCRETE OR COMPOSITE.
2. -COVERS SHALL BE SECURED WITH 3/8" BOLTS, NUTS & WASHERS, WHICH SHALL BE OF BRASS, STAINLESS STEEL OR OTHER CORROSION RESISTANT MATERIAL. STAINLESS STEEL SHALL HAVE A CHROMIUM CONTENT OF NOT LESS THAN 18 % AND A NICKEL CONTENT OF NOT LESS THAN 8 %, NUTS SHALL BE RECESSED BELOW TOP SURFACE OF COVER.
3. -COVER LETTERING SHALL BE 1/2" MINIMUM LETTERS CAST IN STANDARD MARKINGS: (ELECTRIC OR HIGH VOLTAGE AS REQUIRED).
4. -CONDUIT ENTERING THE BOX SHALL HAVE A 90 DEGREE LONG RADIUS SWEEP TERMINATING INSIDE THE BOX THE CONDUIT'S OPENING, INSIDE THE BOX, SHALL BE AT LEAST 4" BELOW THE LID, OPENING SHALL HAVE SMOOTH EDGE. IF THE CONDUIT IS P.V.C., A SLIP COUPLING SHALL BE USED. IF THE CONDUIT IS RIGID PIPE, A PROTECTIVE BUSHING SHALL BE USED.
5. -CONDUCTORS SHALL HAVE A MINIMUM OF 24" SLACK FROM CONDUIT BELL END.
6. -BACKFILL WITH GRANULAR MATERIAL AND THOROUGHLY COMPACT.
7. -GELCAP-SL-2/0-3 HOLE PRODUCT FOR POWER CABLE CONNECTORS RATED FOR BURIED OR SUBMERSED INSTALLATIONS.
8. -IN EXISTING PULL BOXES INSTALL A UNIDIRECTIONAL RED BALL MARKER, 4IN. BALL FOR LOCATING ELECTRIC STUBBED OUT CABLE OR EQUIPMENT, 1402 - 3M. OR APPROVED EQUAL.
9. -MARKER IN THE J-BOX LID OR RED BALL MARKER, SHALL BE COMPATIBLE WITH AGENCY LOCATING EQUIPMENT, COORDINATION WITH AGENCY IS REQUIRED.
10. -NEW JUNCTION BOXES SHALL HAVE A MARKER IN THE LID, AND SHALL BE LISTED BY NRTL (NATIONALLY RECOGNIZED TESTING LABORATORY). AND BOXES SHALL HAVE APPROPRIATE LOAD RATING CAPACITY.



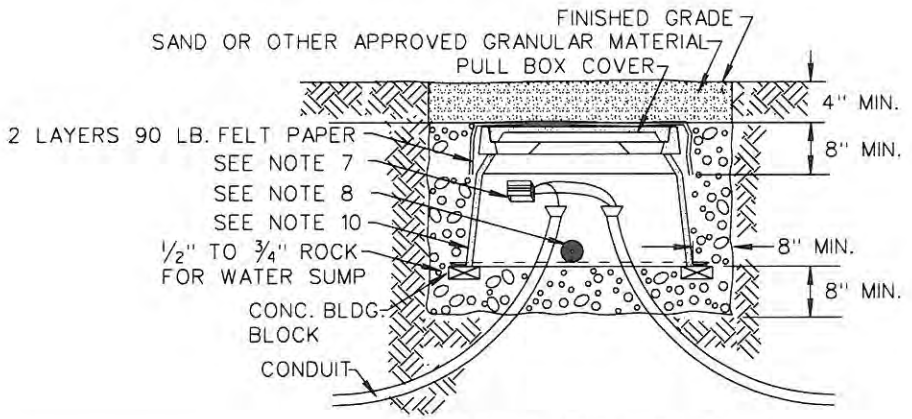
COVER VIEW



PULL BOX SECTION



BOLTDOWN DETAIL



INSTALLATION DETAIL

PULL BOX TYPE	A	B	C	D	E	F	G	H	I	J	K
3 1/2	15 9/16"	23 3/4"	10 5/16"	18 1/2"	21 1/4"	17 1/16"	12"	1 3/4"	11 13/16"	15 3/8"	10 1/8"
5	23 1/2"	33 1/2"	14"	24"	29 1/4"	25 1/4"	12"	2"	15 3/4"	23 1/4"	13 3/4"
7	30 3/4"	40 3/4"	17 3/4"	27 3/4"	36 3/4"	32 1/2"	12"	2"	19 1/2"	30 1/2"	17 1/2"

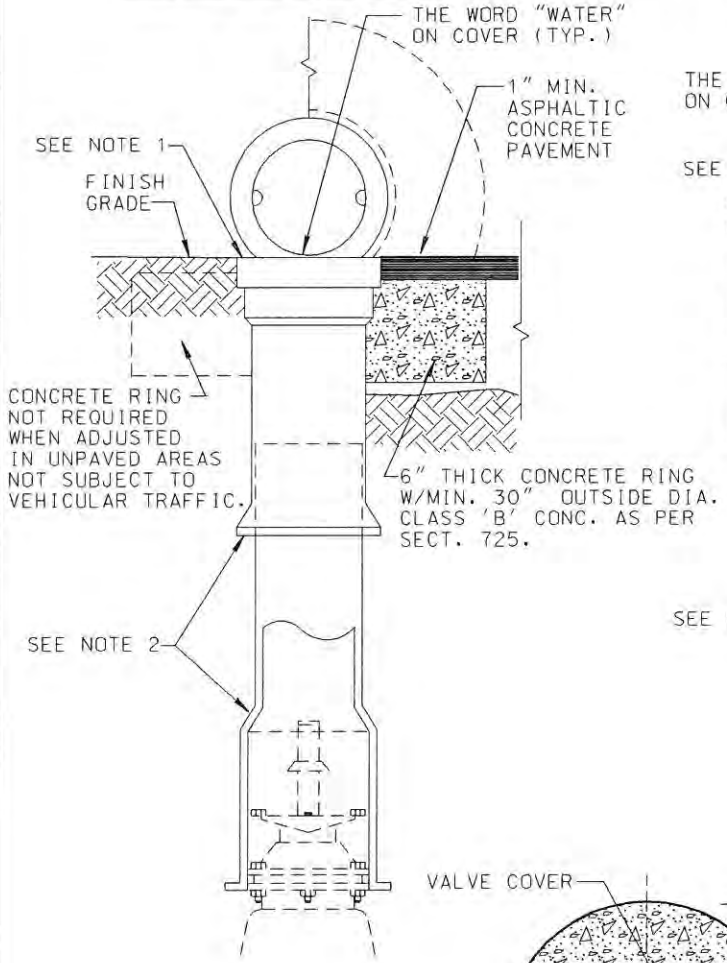
APPROVED: Andye 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

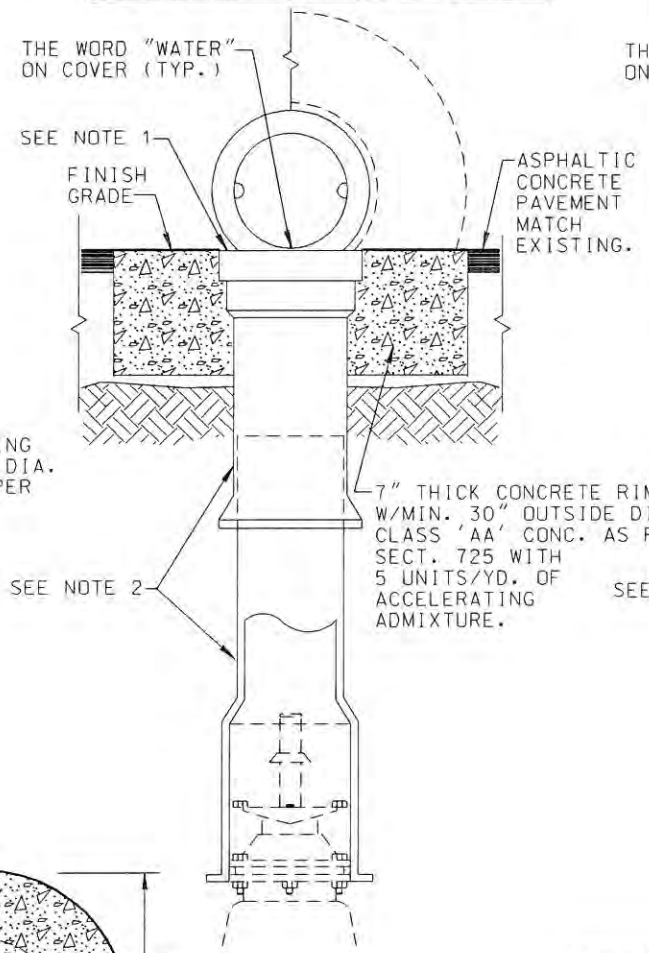
ELECTRIC UNDERGROUND JUNCTION BOX

DETAIL T-441
REVISED 4, 2010

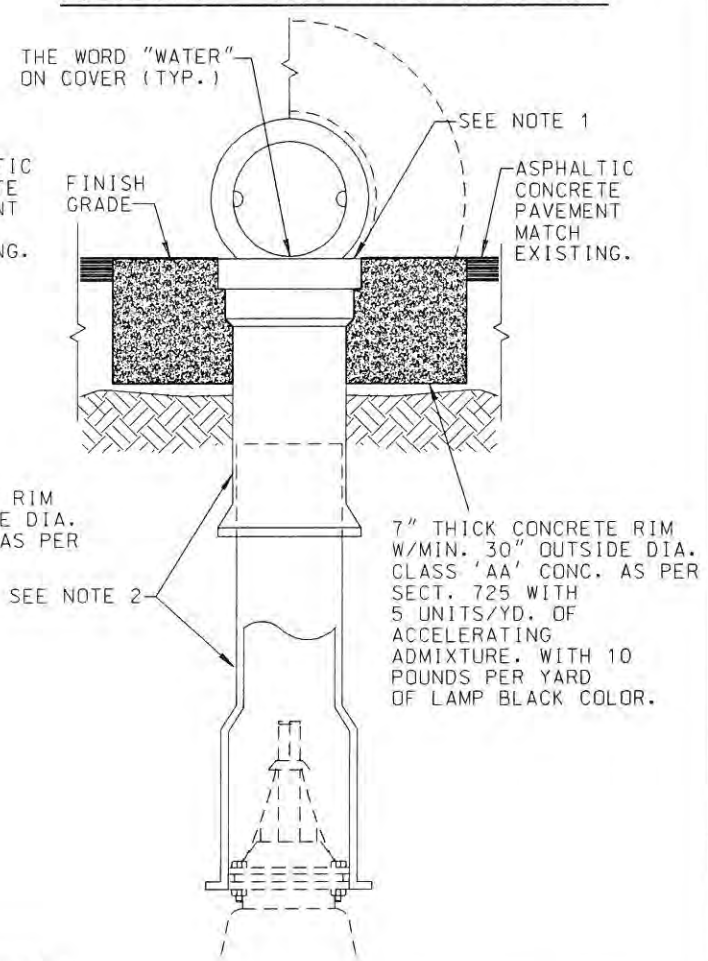
TYPE 'A' LOCAL STREETS

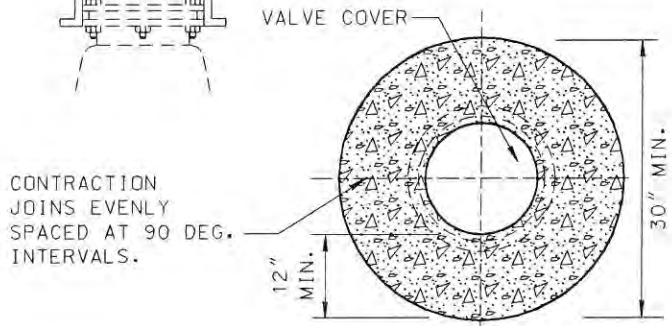


TYPE 'B' - ARTERIAL/MAJOR COLLECTOR - CITY UTILITIES



TYPE 'C' - ARTERIAL/MAJOR COLLECTOR - ALL OTHER UTILITIES





CONC. W/VALVE COVER
TYPICAL

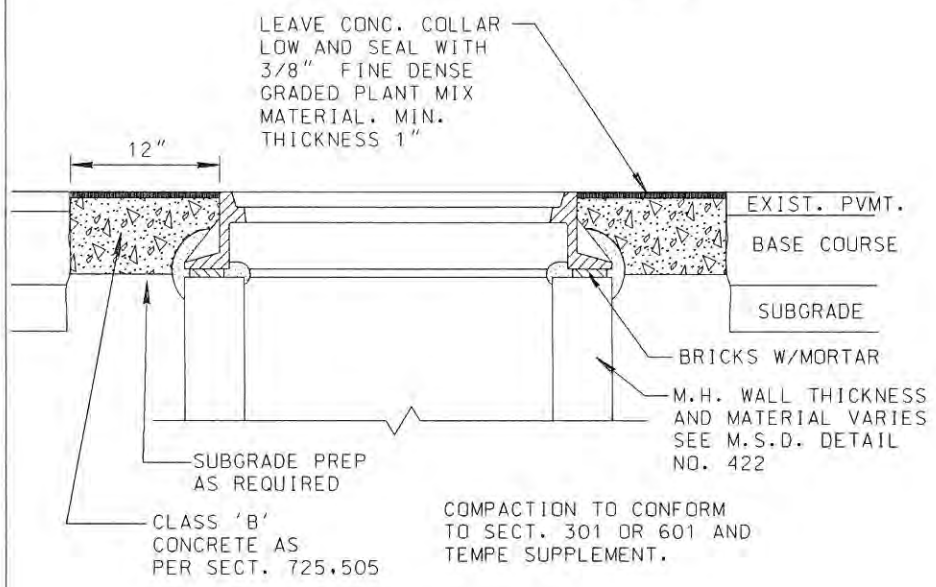
NOTES:

1. VALVE BOX SHALL BE ADJUSTED TO THE FINISHED GRADE PRIOR TO PLACING OF THE CONCRETE OR ASPHALTIC CONCRETE SURFACE.
2. FOR INSTALLATION AND ADJUSTMENT OF CAST IRON VALVE BOX, SEE M.A.G. DETAIL NO. 391-1, TYPE "C".

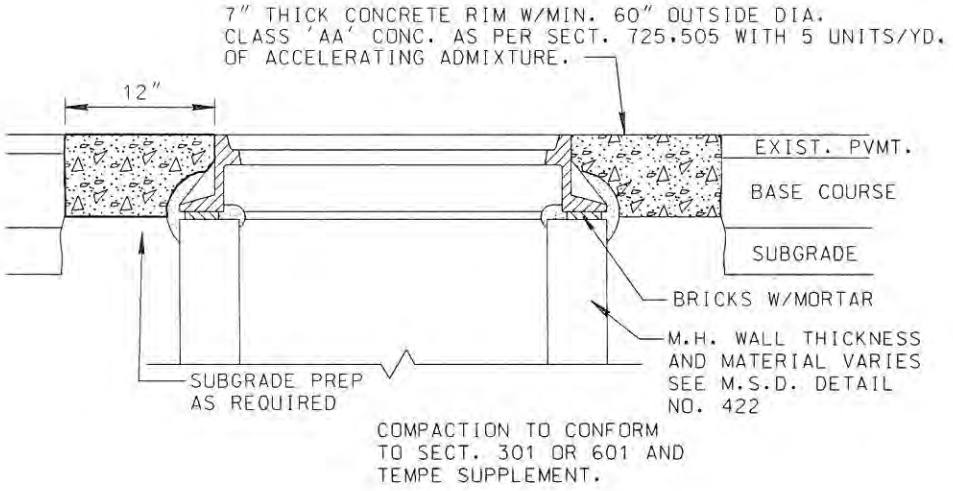
APPROVED: Neil Mann 7-16-01
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER
DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	VALVE GRADE ADJUSTMENT	DETAIL T-445 2001

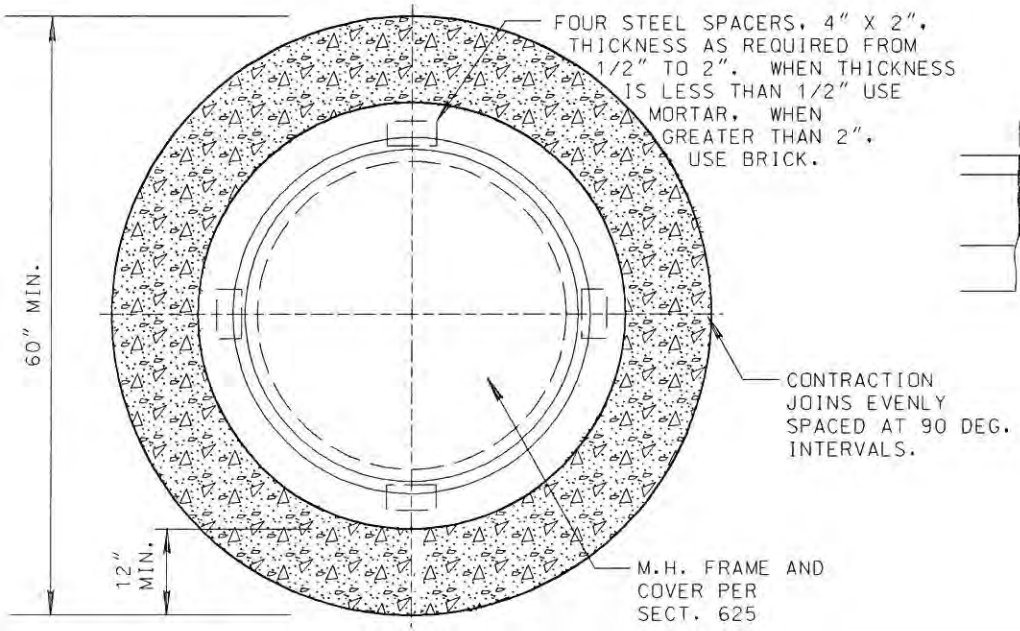
TYPE 'A' LOCAL STREETS

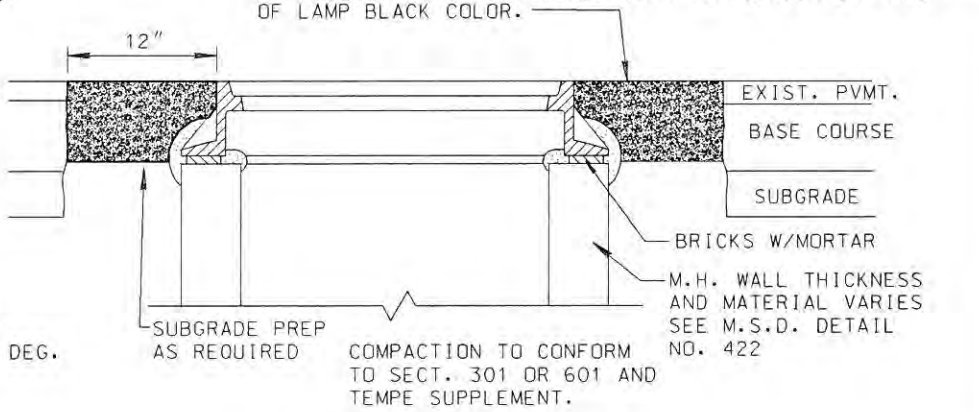


TYPE 'B' - ARTERIAL/MAJOR COLLECTOR - CITY UTILITIES



TYPE 'C' - ARTERIAL/MAJOR COLLECTOR - ALL OTHER UTILITIES





APPROVED: Neil Mann 7-16-01
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER
DATE

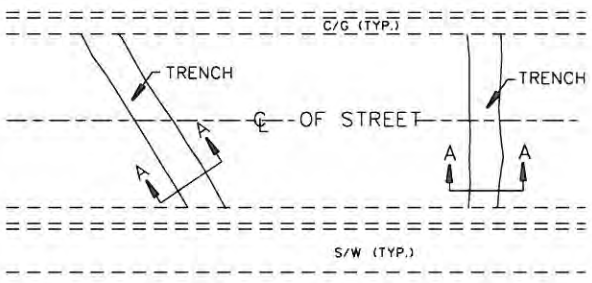
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

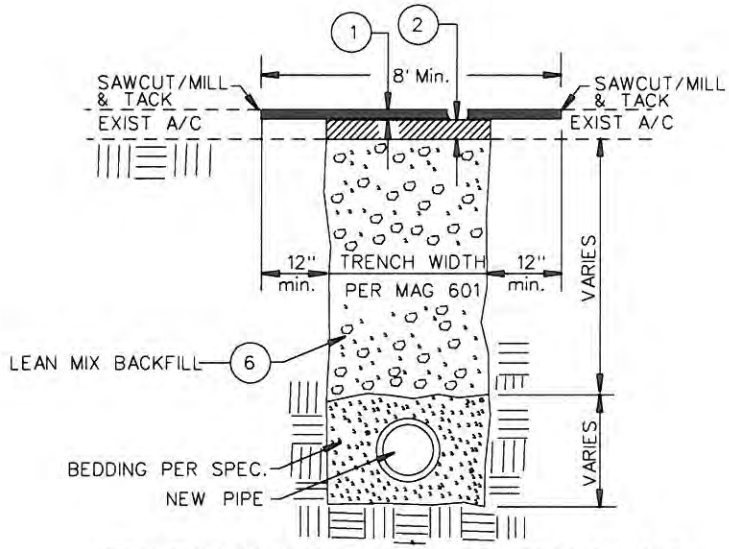
MANHOLE GRADE ADJUSTMENT

DETAIL T-446

2001

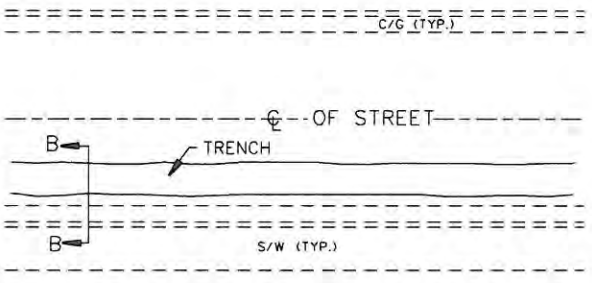
TRENCHES TRANSVERSE TO TRAFFIC

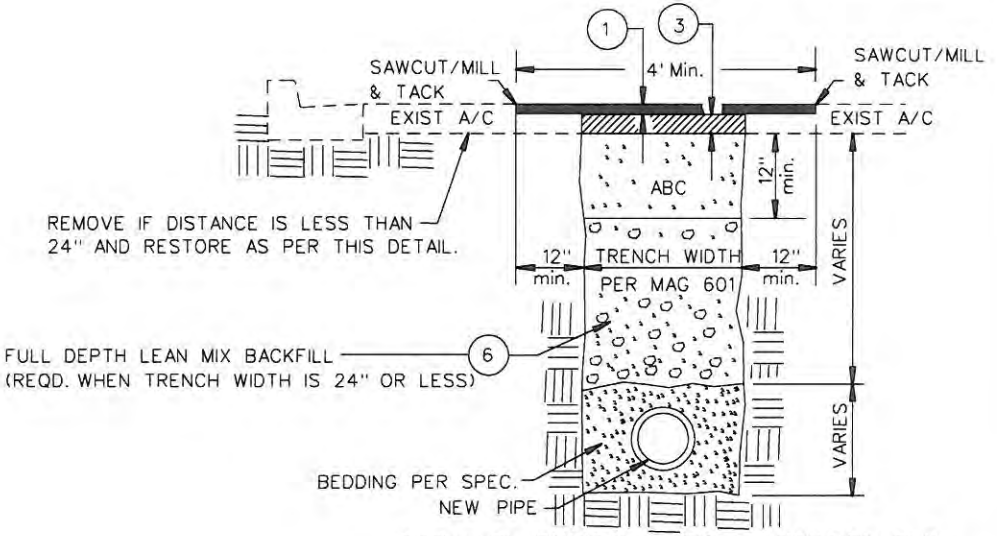




TRANSVERSE TYPICAL BACKFILL SECTION A-A

TRENCHES PARALLEL TO TRAFFIC





PARALLEL TYPICAL BACKFILL SECTION B-B

NOTES:

(1) LIMIT OF SURFACE COURSE ROTOMILL ASPHALT THICKNESS 2" S.C. A-12.5 TO BE PLACED BY LAYDOWN MACHINE. LOCATIONS WHERE EXISTING ASPHALT-RUBBER, THE SURFACE COURSE OF THE PAVEMENT REPLACEMENT TO MATCH THE EXISTING TYPE: ASPHALT RUBBER HOT MIX, ARAC, ULTRATHIN BONDED WEARING COURSE, OR AS DIRECTED BY THE CITY ENGINEER.

(2) PAVEMENT REPLACEMENT SHALL BE PER C.O.T. DETAIL T-311,T-312,T-313,T-315,T-316,OR T-317 ON LEAN MIX BACKFILL, OR MATCH EXISTING PVMT THICKNESS (WHICHEVER IS GREATER).

(3) PAVEMENT REPLACEMENT SHALL BE PER C.O.T. DETAIL T-311,T-312,T-313,T-315,T-316,OR T-317 ON 12" ABC ON MINIMUM 6" OF PREPARED SUBGRADE, OR MATCH EXISTING (WHICHEVER IS GREATER).

4 OVER (600') LENGTH PRE-COATED CHIP SEAL REQUIRED PER MAG SECTION 336.

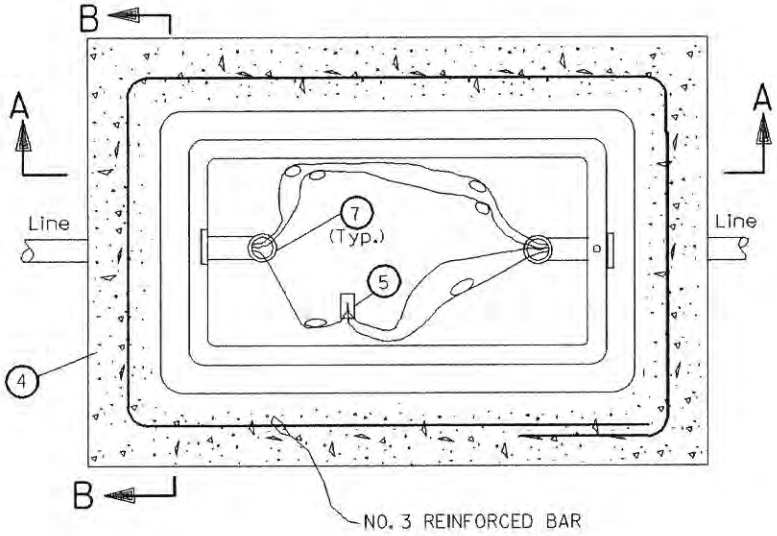
5 USE OF STEEL PLATES WILL NOT EXCEED SEVENTY-TWO (72) HOURS. PRIOR TO FINAL PATCH. PER MAG DETAIL NO. 211.

(6) LEAN MIX BACKFILL: PER YD. QNTY.
42Kg. (94 Lbs.) - PORTLAND CEMENT
180Kg. (400 Lbs.) - WATER
1596Kg. (3547 Lbs.) - ABC
APPROXIMATE PROPORTIONS OF:
55% COARSE AGGREGATE (ASTM-C-33 SIZE 57)
45% FINE AGGREGATE (CONFORM TO SEC. 701.3)

7 ALL JOINTS INCLUDING THE JOINT BETWEEN ANY CONCRETE NEED TO BE CRACK SEALED WITH A HOT APPLIED RUBBERIZED ASPHALT SEALANT SUCH AS POLYFLEX 3 BY CRAFCO OR APPROVED EQUAL.

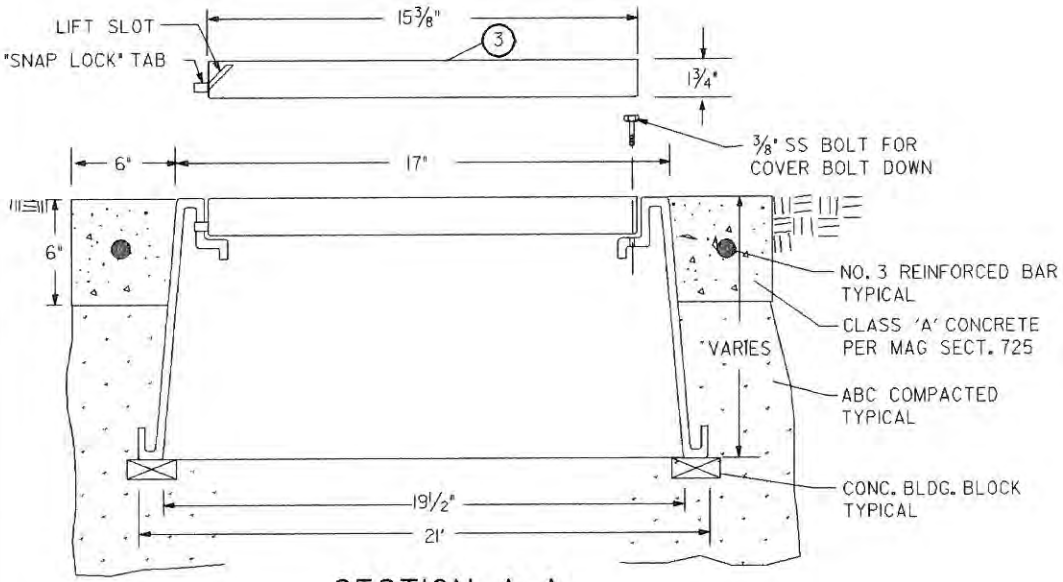
APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRENCH BACKFILL AND PAVEMENT REPLACEMENT	DETAIL T-450 REVISED 4,2010

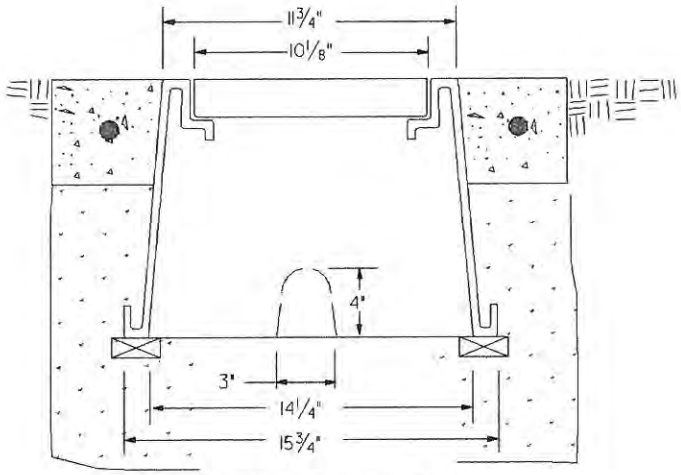


NOTES:

1. BOX SHALL BE CONCRETE OR COMPOSITE.
2. COVERS SHALL BE TRAFFIC PROVE SECURED WITH 3/8" BOLTS, NUTS AND WASHERS, WHICH SHALL BE OF BRASS, STAINLESS STEEL, OR OTHER CORROSION RESISTANT MATERIAL. STAINLESS STEEL SHALL HAVE A CHROMIUM CONTENT OF NOT LESS THAN 18% AND A NICKEL CONTENT OF NOT LESS THAN 8%. NUTS SHALL BE RECESSED BELOW TOP SURFACE OF COVER.
3. COVER LETTERING SHALL BE 1/2" MIN. LETTERS CAST IN STANDARD MARKINGS: (ELECTRICAL OR IRRIGATION)
4. CONCRETE APRON SHALL BE CLASS "A" (6" by 6")
5. ALL ELECTRICAL JUNCTIONS AND TERMINATIONS SHALL BE MADE IN A "CAST LOCK" EPOXY SEAL SYSTEM - (WATER PROOF).
6. THE BOX (WITH PROPERLY TERMINATED CONNECTIONS AND CONDUIT SEALANT) SHALL BE FILLED WITH SAND.
7. THE CONDUIT ENDS SHALL BE SEALED WITH SILICON SEALANT.
8. CONDUIT ENTERING THE BOX SHALL HAVE A 90 DEGREE LONG RADIUS BEND (INSIDE THE BOX). THE CONDUIT'S OPENING, INSIDE THE BOX, SHALL BE AT LEAST 4" BELOW THE LID, OPENING SHALL HAVE SMOOTH EDGE. IF THE CONDUIT IS PVC, A SLIP COUPLING MUST BE USED. IF THE CONDUIT IS RIGID PIPE, A PROTECTIVE BUSHING SHALL BE USED.
9. CONDUCTORS SHALL HAVE A MINIMUM OF 24" SLACK FROM CONDUIT BELL END.



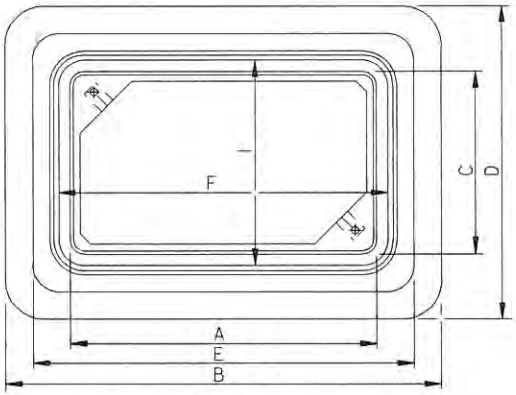
SECTION A-A



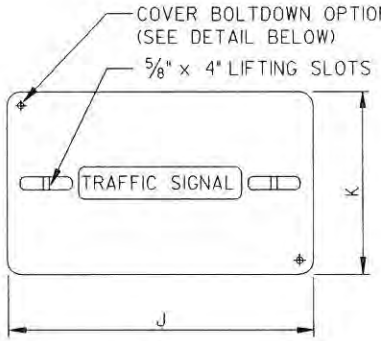
SECTION B-B

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	IN-GROUND REINFORCED ELECTRICAL, IRRIGATION PULL BOXES (PARKS)	DETAIL T-452 REVISED 2007

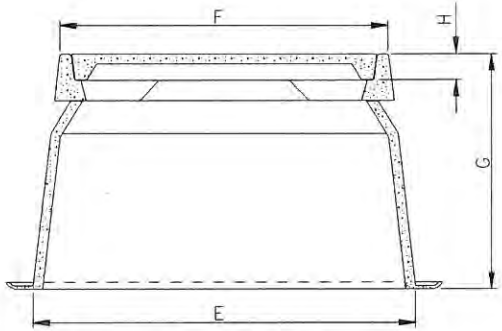


PULL BOX PLAN



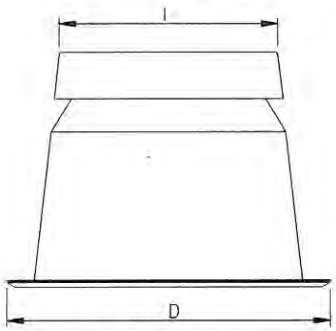
GENERAL NOTES

1. BOX AND COVER SHALL BE CONCRETE OR COMPOSITE.
2. COVERS SHALL BE SECURED WITH 3/8" BOLTS, NUTS & WASHERS, WHICH SHALL BE OF BRASS, STAINLESS STEEL OR OTHER CORROSION RESISTANT MATERIAL. STAINLESS STEEL SHALL HAVE A CHROMIUM CONTENT OF NOT LESS THAN 18 % AND A NICKEL CONTENT OF NOT LESS THAN 8 %. NUTS SHALL BE RECESSED BELOW TOP SURFACE OF COVER.
3. COVER LETTERING SHALL BE 1/2" MINIMUM LETTERS CAST IN STANDARD MARKINGS: (TRAFFIC SIGNAL).
4. CONDUIT ENTERING THE BOX SHALL HAVE A 90 DEGREE LONG RADIUS BEND (INSIDE THE BOX). THE CONDUIT'S OPENING, INSIDE THE BOX, SHALL BE AT LEAST 4" BELOW THE LID, OPENING SHALL HAVE SMOOTH EDGE. IF THE CONDUIT IS P.V.C., A SLIP COUPLING MUST BE USED. IF THE CONDUIT IS RIGID PIPE, A PROTECTIVE BUSHING SHALL BE USED.
5. CONDUCTORS SHALL HAVE A MINIMUM OF 24" SLACK FROM CONDUIT BELL END.
6. BACKFILL WITH EXCAVATED MATERIAL AND THOROUGHLY COMPACT.
7. WHERE PULLBOXES ARE INSTALLED IN CONCRETE AREAS, 1/2" PREMOLDED EXPANSION JOINT SHALL BE INSTALLED AROUND THE PULL BOX.

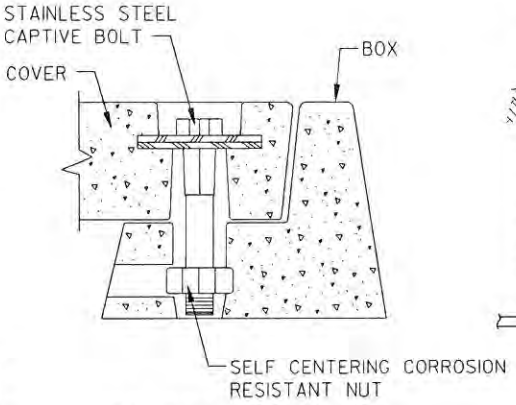


PULL BOX SECTION

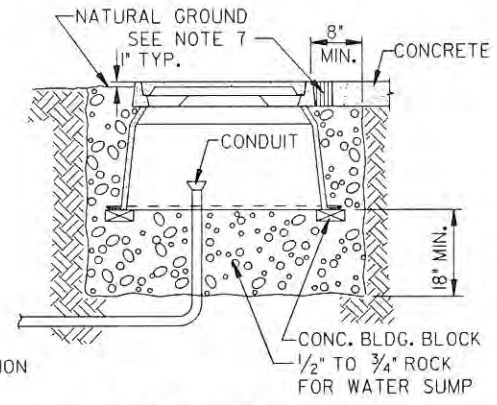
COVER VIEW



SIDE VIEW



BOLTDOWN DETAIL



INSTALLATION DETAIL

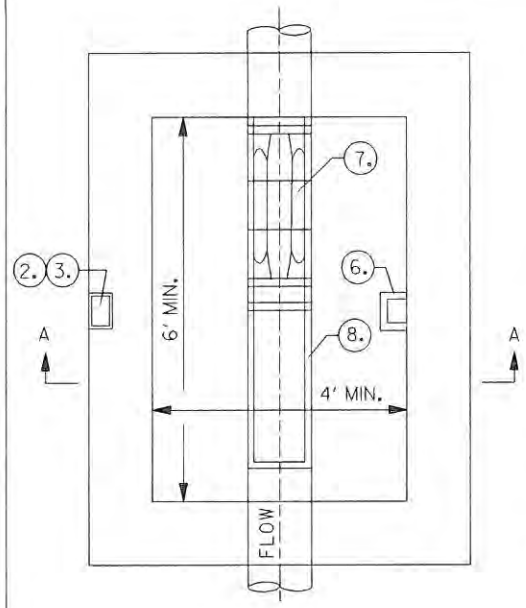
PULL BOX TYPE	A	B	C	D	E	F	G	H	I	J	K
3 1/2	15 9/16"	23 3/4"	10 5/16"	18 1/2"	21 1/4"	17 1/16"	12"	1 3/4"	11 13/16"	15 3/8"	10 1/8"
5	23 1/2"	33 1/2"	14"	24"	29 1/4"	25 1/4"	12"	2"	15 3/4"	23 1/4"	13 3/4"
7	30 3/4"	40 3/4"	17 3/4"	27 3/4"	36 3/4"	32 1/2"	12"	2"	19 1/2"	30 1/2"	17 1/2"

APPROVED: Howard A. Haigh 12/8/98
CITY ENGINEER DATE

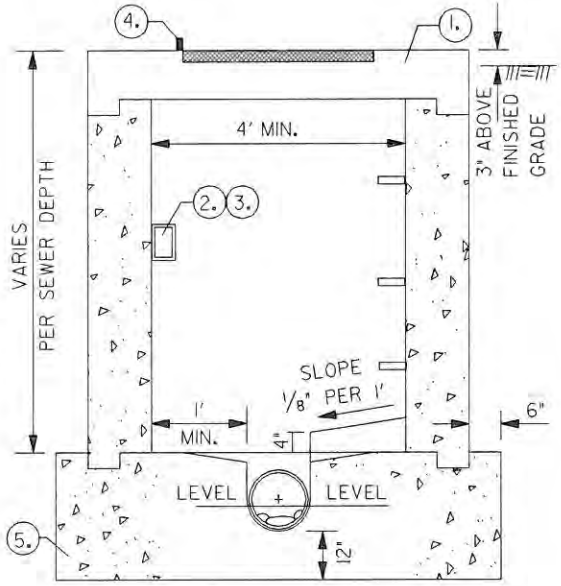
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

TRAFFIC SIGNAL PULL BOXES

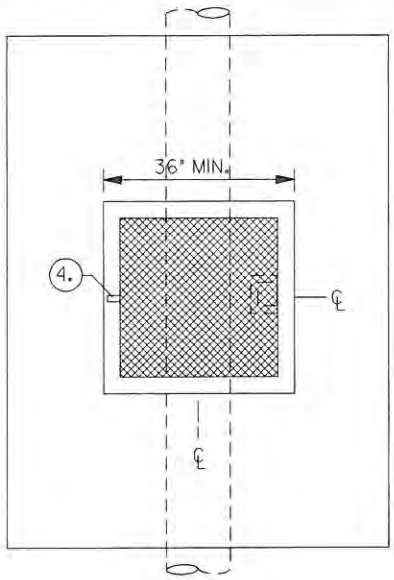
DETAIL T-453
REVISED 1998



PLAN VIEW



SECTION A-A



MANHOLE & COVER SLAB

MATERIALS LIST

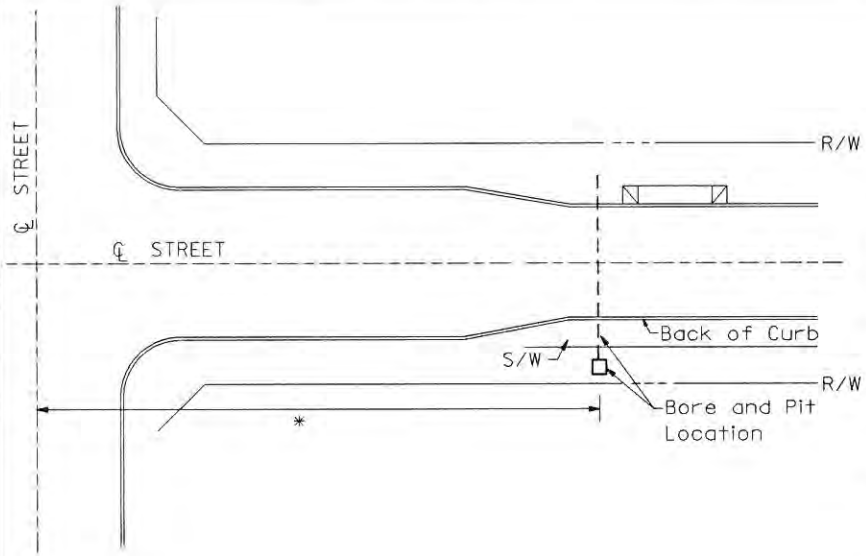
1. PRECAST CONCRETE VAULT AND COVER.
2. 110 VAC JUNCTION BOX (EXPLOSION PROOF).
3. JUNCTION BOX WITH AMHPENOL CONNECTOR FOR 4-20MA. OUTPUT OR PULSE OUTPUT.
4. LID MUST BE EQUIPPED WITH FACTORY INSTALLED LOCKING MECHANISUM.
5. CAST IN PLACE BASE CLASS B CONCRETE
6. M.H. STEPS PER MAG. STD. DET. NO. 428 AT CENTER.
7. PALMER BOWLUS OR PARSHALL STYLE FLUME OR APPROVED EQUAL.
8. ADDITIONAL BRACE AT MEASURING POINT.

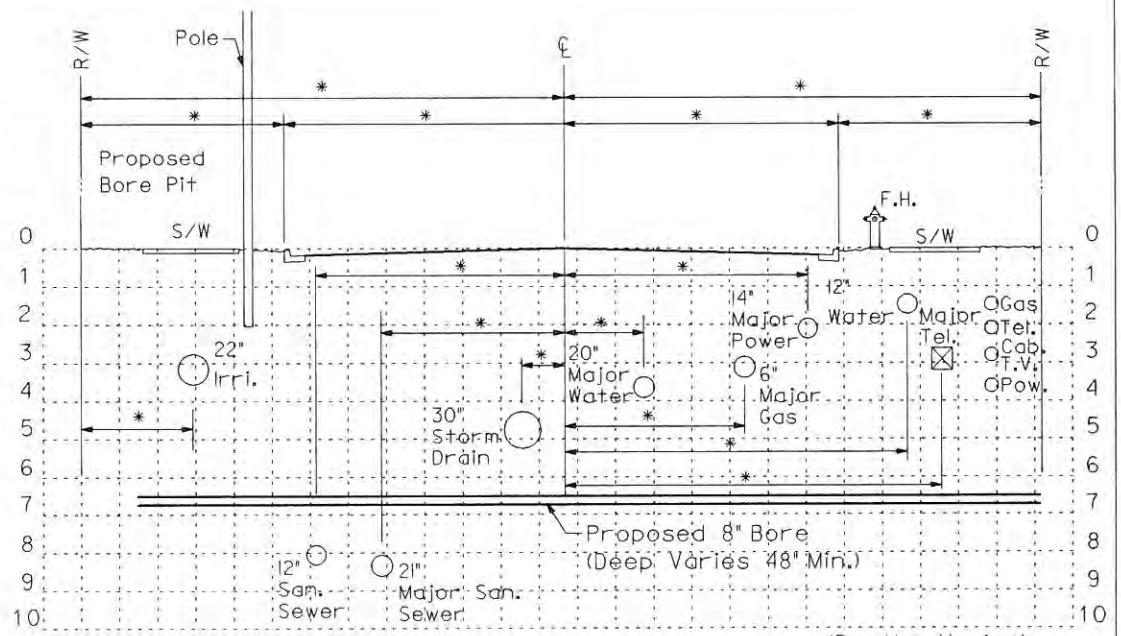
NOTES:

1. Invert Elevations shall be Provided for the Proposed flume. This shall include elevations for the entire run of piping to Which the Flume is to be connected.
2. Flow Calculations shall be Provided Indicating the Minimum, Maximum, and Average Flows to Be Discharged Through the Flume.
3. The Minimum Inside Dimensions Shall be (4') Four Feet by (6') Six Feet, with a Minimum Inside Height of (36") Thirty Six Inches from the top of the Flume. Any Alterations to These Requirements shall be Reviewed on a Case by Case Basis by the Environmental Division.
4. Access to the Vault shall be a Bilco Style Door with a Factory Installed Locking Mechanism. The Door shall be a Minmum Inside Opening Diameter of (29") Twenty Nine Inches and Place Over the Center of the Flume. A Double Hinged Style Door shall be Used when Posible. Load Specifications of the Door Reviewed Depending on the Placement of the Vault.
5. Vault shall be Constructed on a Straight run of the Building Sewer with (24) Twenty Four Hour Accessibility and Located on the Premises as Close as Possible to the Public Right of Way.
6. Top of Vault shall be a Minimum (3") three inches and a Maximum of (24") Inches Above Finished grade.
7. Vault shall be Supplied with 110 VAC in an Explosion Proof Box (Installed to Code).
8. Industry shall Install a Junction Box with an Amphenol Style Connector Call 350-2678 To Obtain Parts numbers.
9. A Palmer Bowlus, Parshall Style Flume or Approved Equal, shall be Installed per the Manufacturers Recommendations. Flume shall be Placed in the Center of the Vault.

APPROVED: Howard C. Kays 12/8/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	CONTROL SAMPLING VAULT	DETAIL T-454 REVISED 1998





Bore Profile
Typical Section

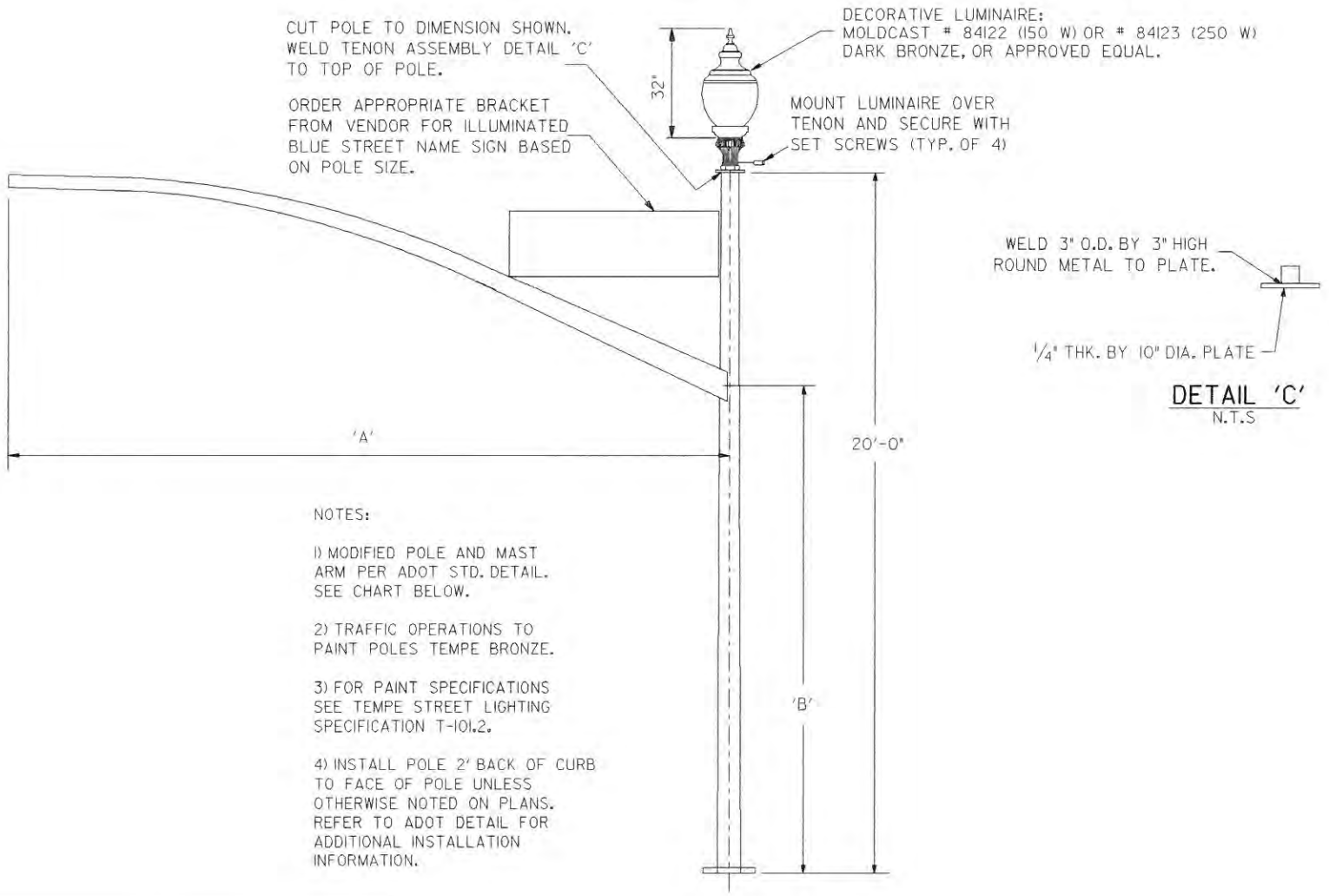
NOT TO SCALE

NOTES:

1. * Provide Proposed Location of Bore and All Utilities With Vertical & Horizontal Dimensions, as Well as Dimensions of Facilities To Be Crossed.
2. 12" by 12" Max. Size Potholes Allowed to Verify Unknown Utility Location and To Monitor Bores Passing Within 2' of Existing Utilities.
3. All Bores To Be Sleeved in Schedule 40 PVC or Better.
4. Bore Pit Over 20' Deep Requires Engineered Shoring.
5. Backfill Requirements of Pit Shall Be Per MAG Section 600
6. Jurisdiction Shall Be Notified If Obstructions are Encountered.
7. Guided Bore Required If Length is More than 45'.
8. The Contractor Shall Make Arrangements with the Owner of Any Damaged Facility For it's Repair or Replacement. Cost of Such Repairs Shall be in Compliance with M.A.G. or Special Agreements.
9. Replace or Repair Any Landscaping/Sprinkler Damaged During the course of the Work. Per MAG 107.9.
10. Permission Required from the City Prior to Removing or Trimming Any Landscaping.
11. 24" Min. Clearance shall be Provided Between C.O.T. and All Existing Utilities.

APPROVED: Andy Cole 1-16-04
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	ENGINEERED UTILITY BORE	DETAIL T-455 REVISED 2004



DETAIL 'C'
N.T.S

NOTES:

1) MODIFIED POLE AND MAST ARM PER ADOT STD. DETAIL. SEE CHART BELOW.

2) TRAFFIC OPERATIONS TO PAINT POLES TEMPE BRONZE.

3) FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATION T-101.2.

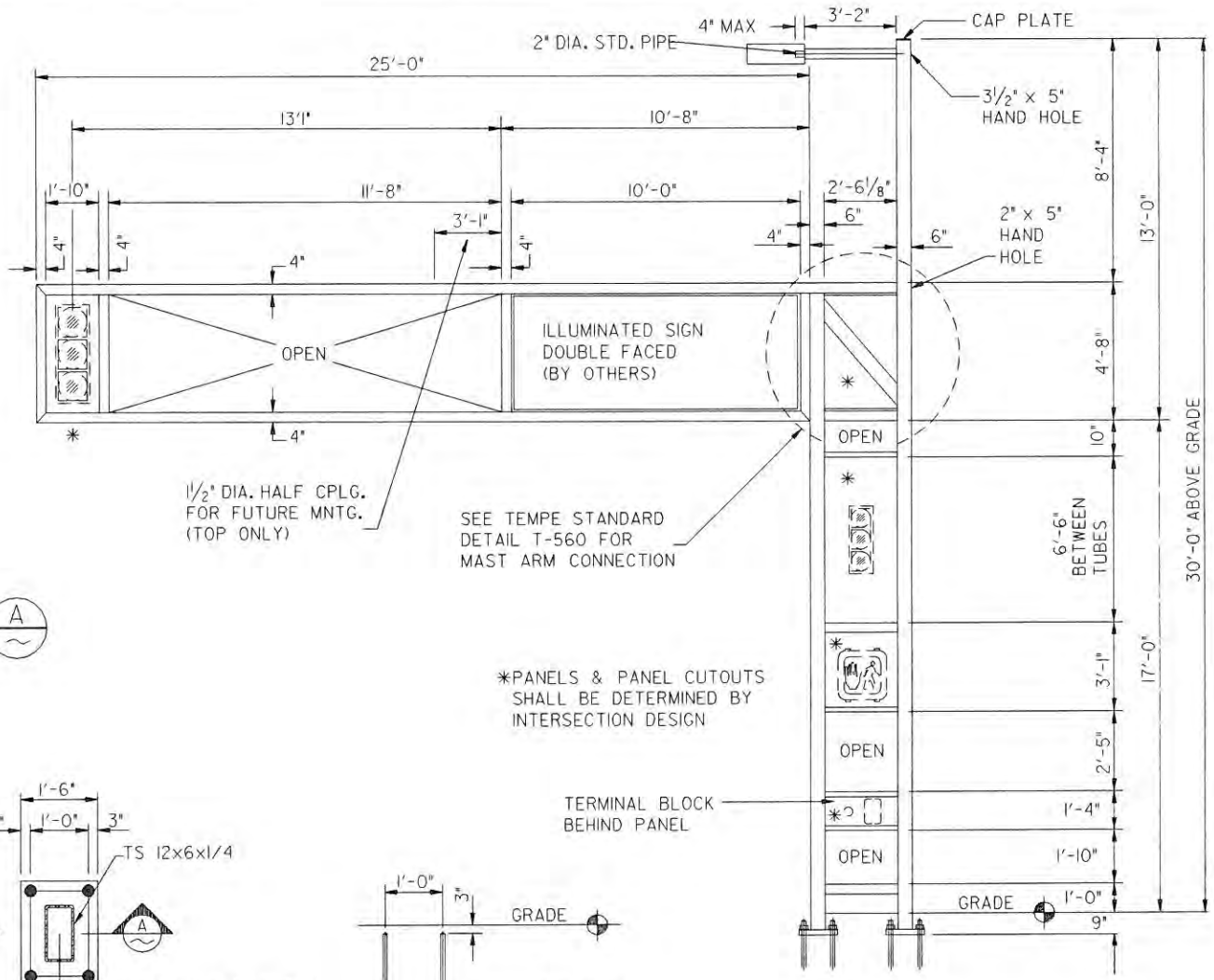
4) INSTALL POLE 2' BACK OF CURB TO FACE OF POLE UNLESS OTHERWISE NOTED ON PLANS. REFER TO ADOT DETAIL FOR ADDITIONAL INSTALLATION INFORMATION.

ADOT STANDARD DETAIL	MAST ARM LENGTH 'A'	HEIGHT TO MAST ARM 'B'
TS 4-6 'F' POLE	12-20'	15' 3"
TS 4-12 'Q' POLE	25-40'	14' 0"
TS 4-13 'R' POLE	45-55'	14' 0"

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER — DATE

APPROVED: _____ 6/26/07
TRAFFIC ENGINEER — DATE

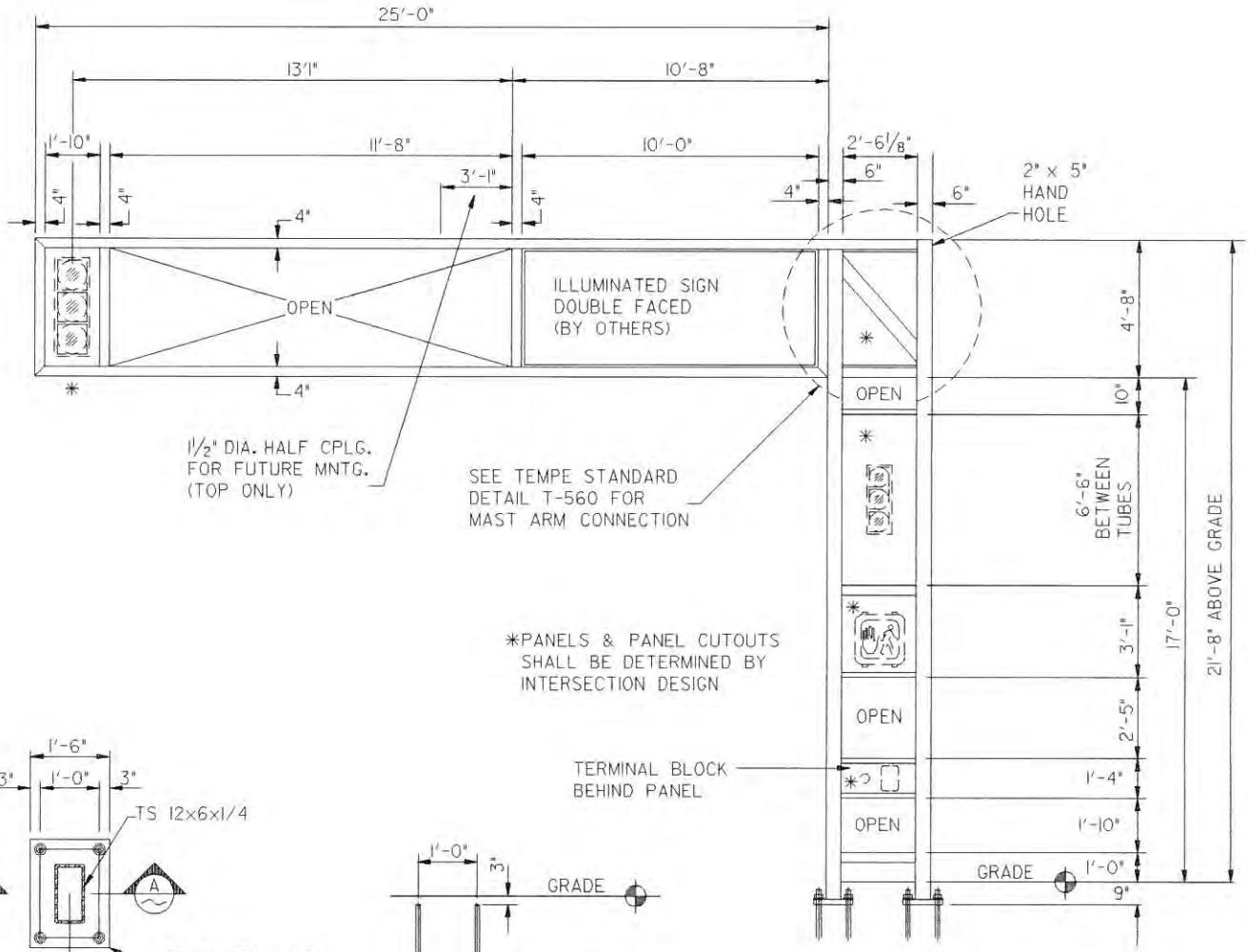
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODIFIED ADOT SIGNAL POLE AND MAST ARM WITH DECORATIVE LUMINAIR FOR DOWNTOWN INSTALLATION	DETAIL T-530 DRAWN 2007



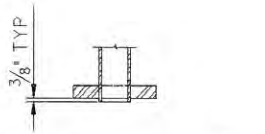
APPROVED: _____ 9/6/05
PUBLIC WORKS MANAGER — DATE

APPROVED: _____ 9/7/05
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER — DATE

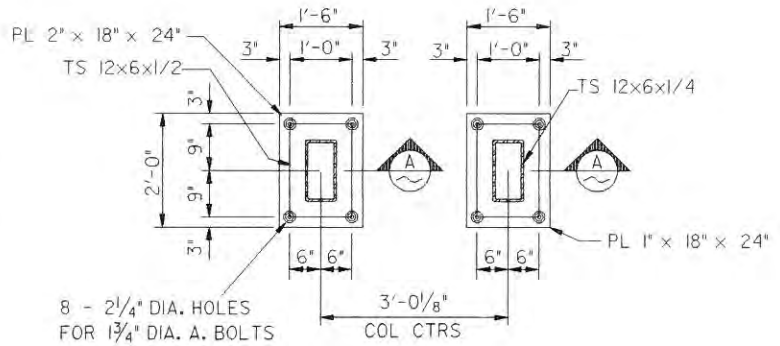
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 25' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-540 DRAWN 2005



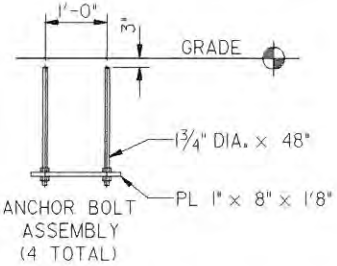
PROFILE



TYP. SECTION (A)



ANCHOR BOLT SETTING PLAN

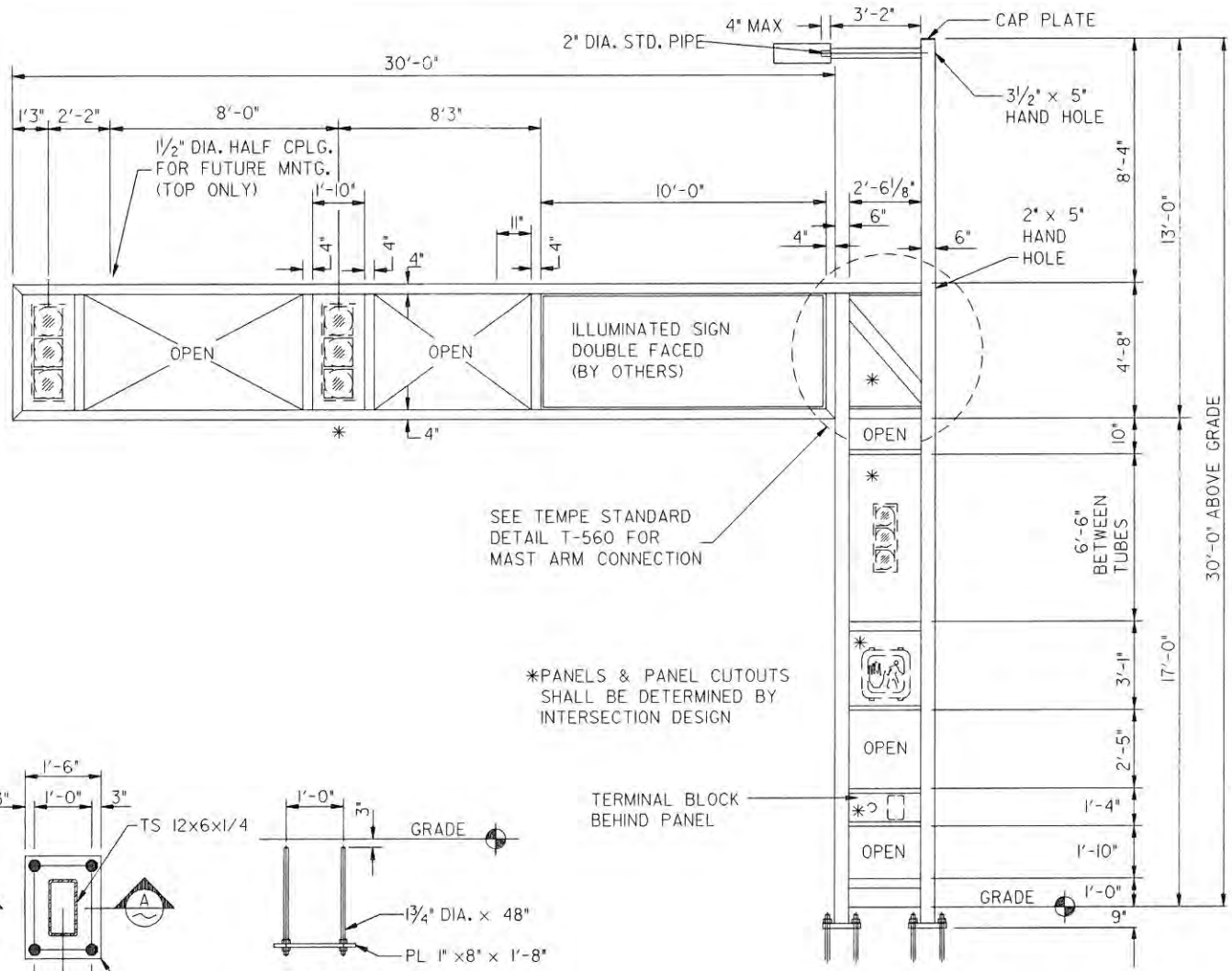


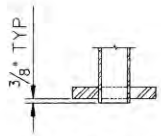
ANCHOR BOLT
ASSEMBLY
(4 TOTAL)

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER
DATE

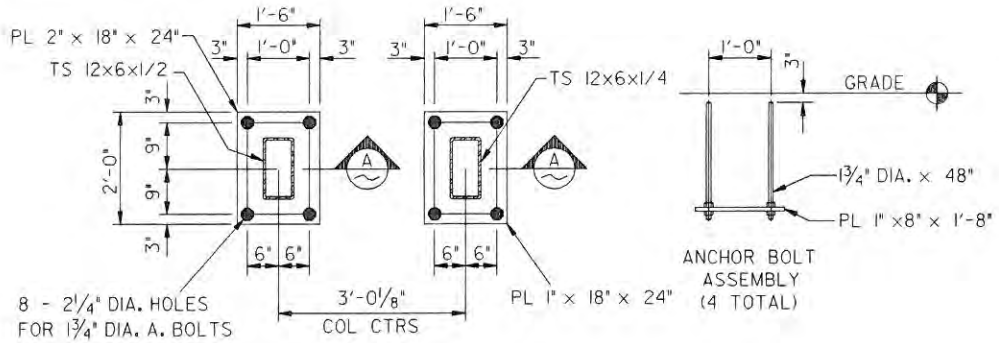
APPROVED: _____ 6/26/07
TRAFFIC ENGINEER
DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'J' - 25' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-541 DRAWN 2007





TYP. SECTION A

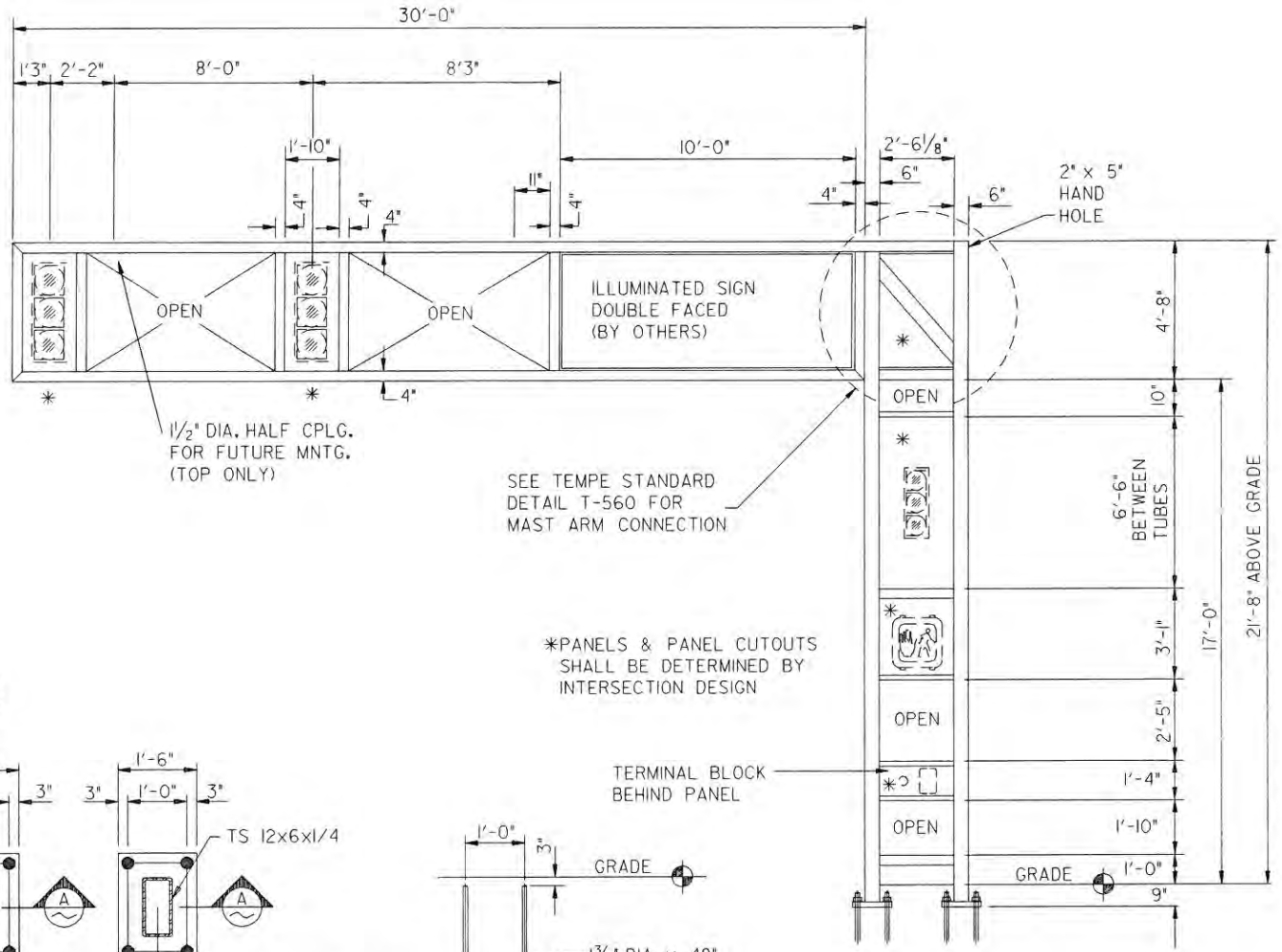


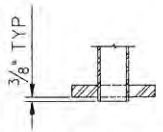
ANCHOR BOLT SETTING PLAN

APPROVED: Glenn Kephart PUBLIC WORKS MANAGER — DATE 9/9/05

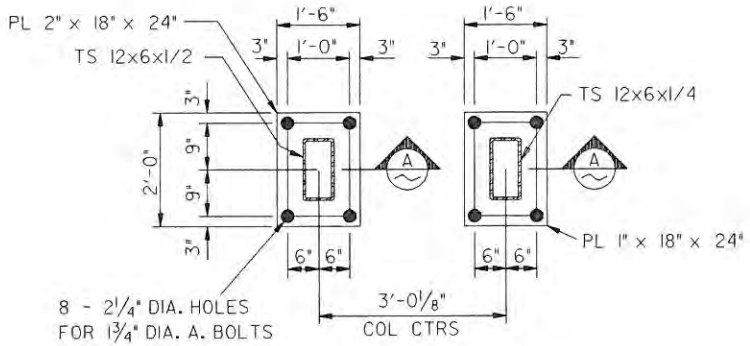
APPROVED: Andy Cole DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 9/7/05

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 30' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-544 DRAWN 2005

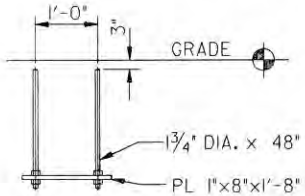




TYP. SECTION (A)



ANCHOR BOLT SETTING PLAN

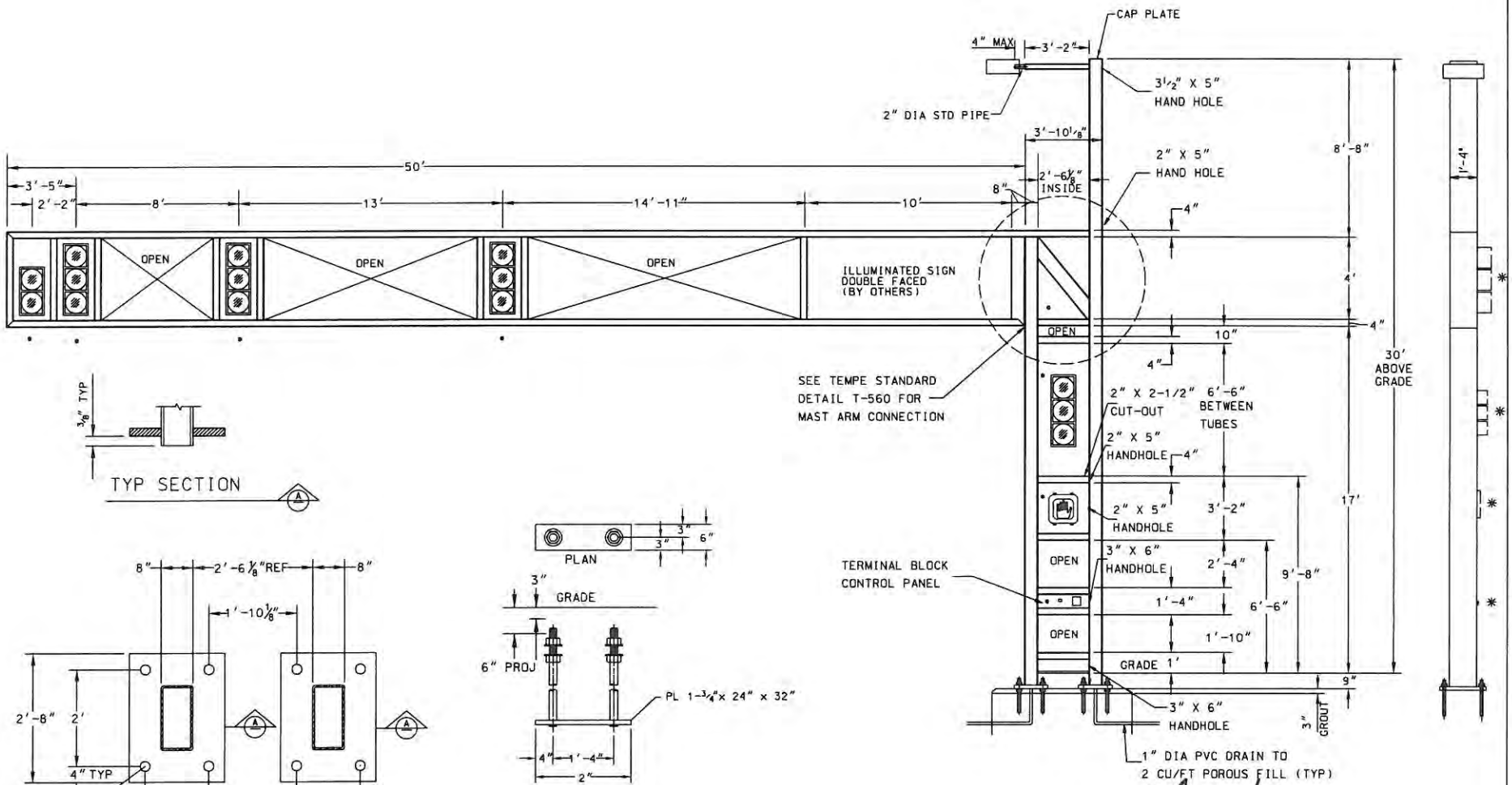


ANCHOR BOLT
ASSEMBLY
(4 TOTAL)

APPROVED: Glenn Kephart 9/9/05
PUBLIC WORKS MANAGER — DATE

APPROVED: Andy Cole 9/7/05
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'J' - 30' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-545 DRAWN 2005

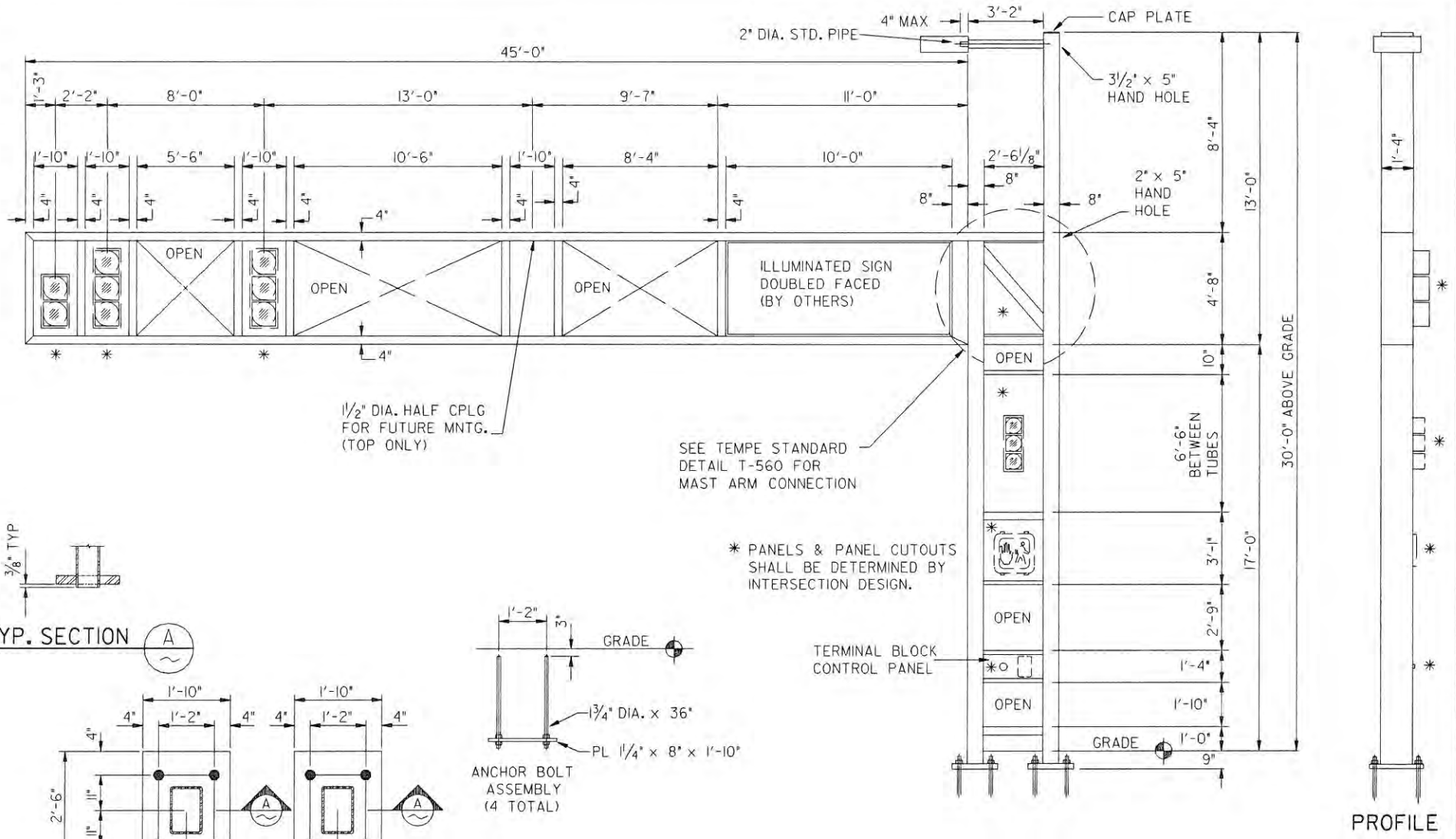


1. ALL TUBING WELDS SHOULD BE TURNED INSIDE.
*2. PANELS AND PANEL CUTOUTS SHALL BE DETERMINED BY INTERSECTION DESIGN.

APPROVED: _____ 3/14/05
PUBLIC WORKS MANAGER — DATE

APPROVED: _____ 2/15/05
DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 50' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-548 DRAWN 2004

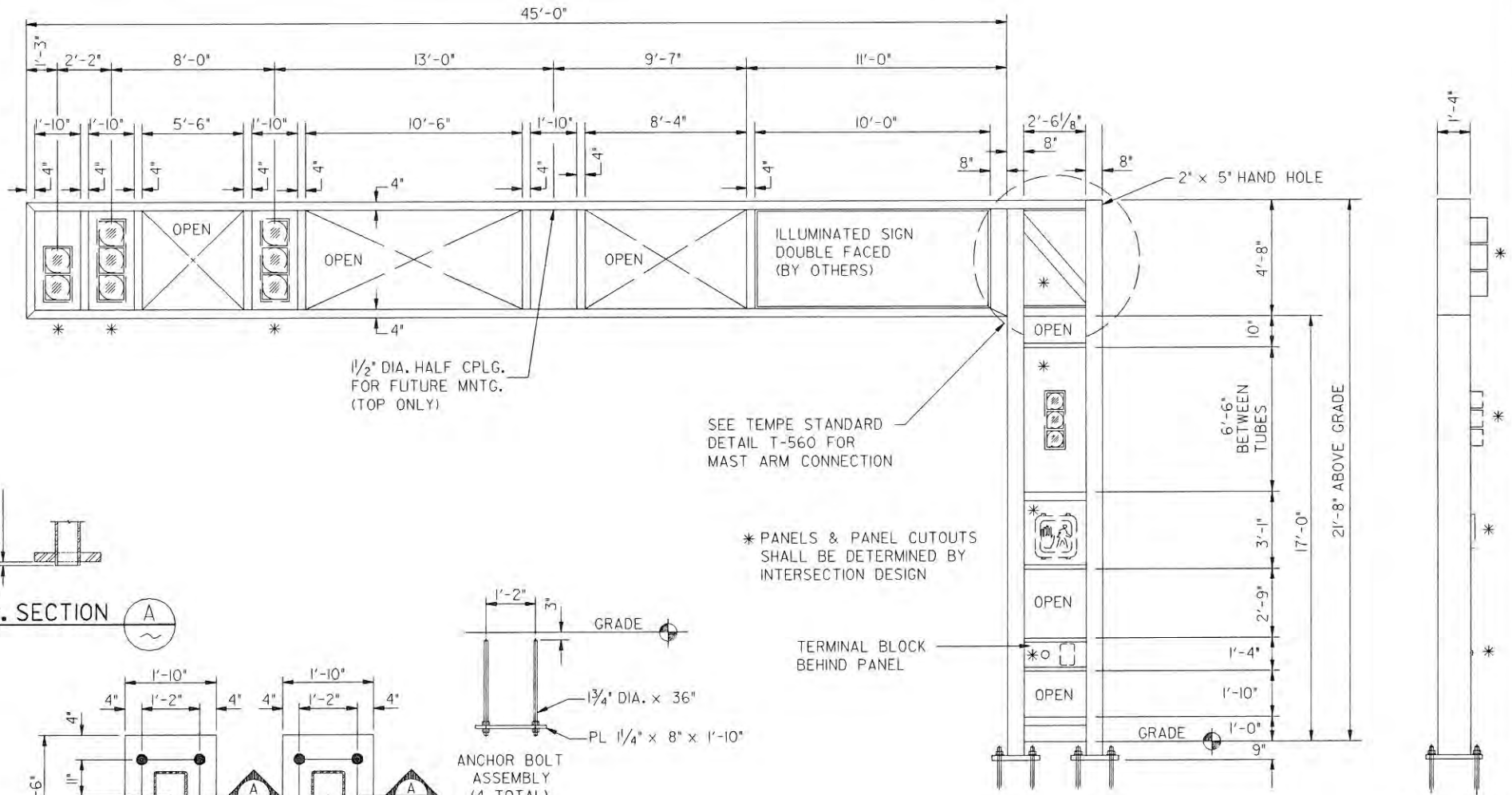


ANCHOR BOLT SETTING PLAN

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 45' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-550 REVISED 2001

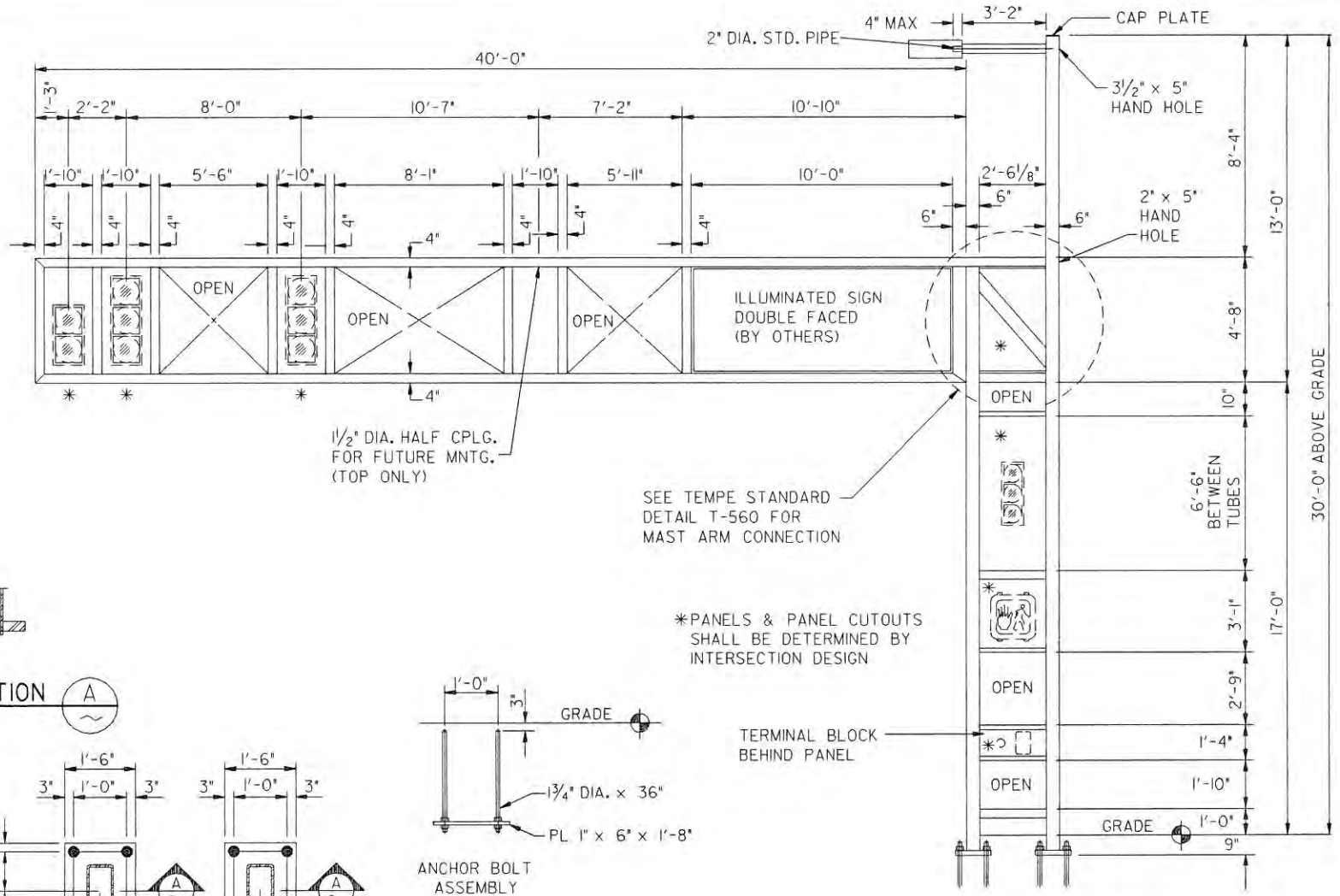


ANCHOR BOLT SETTING PLAN

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'J' - 45' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-551 REVISED 2001

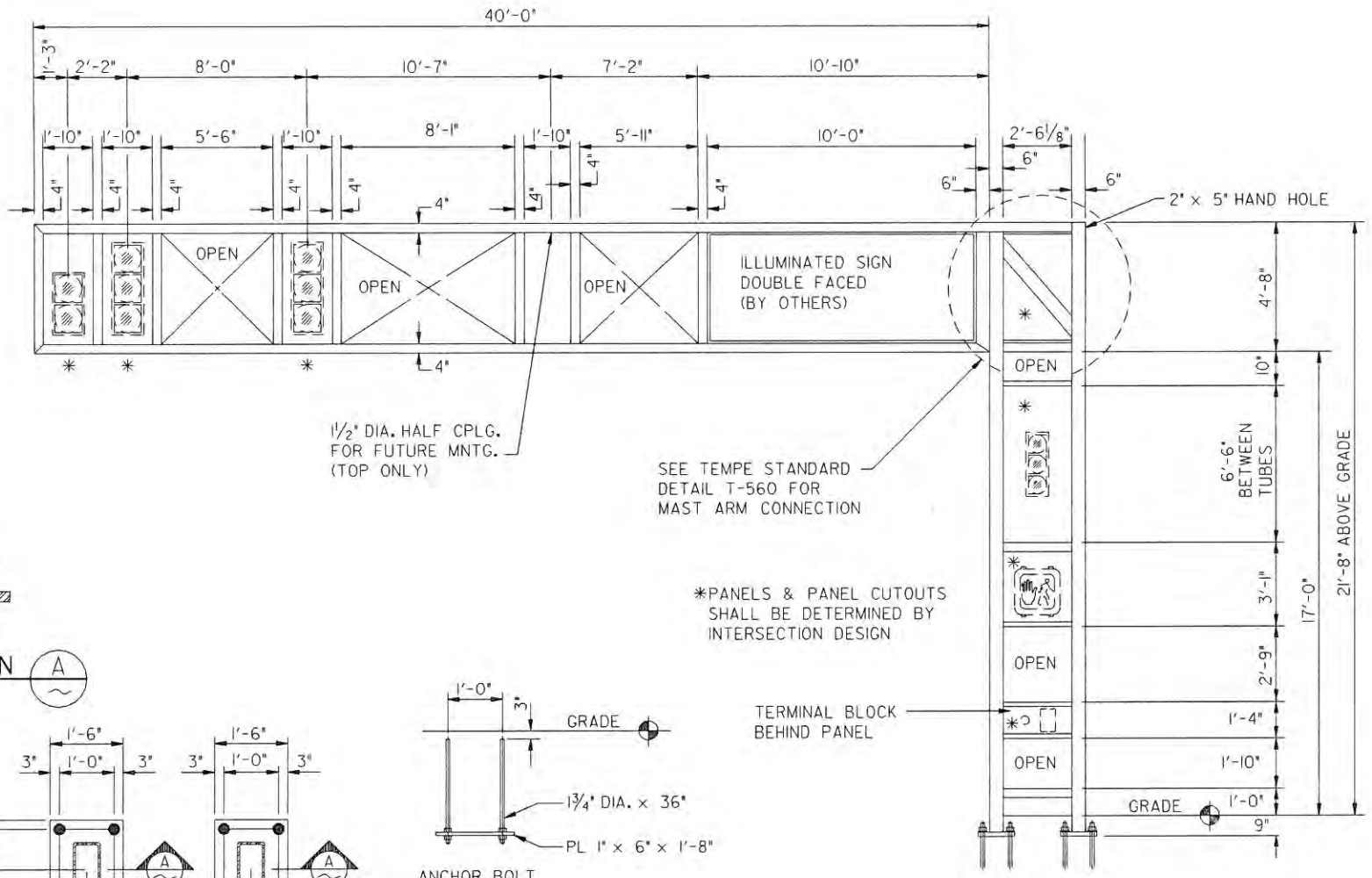


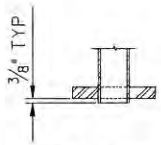
ANCHOR BOLT SETTING PLAN

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

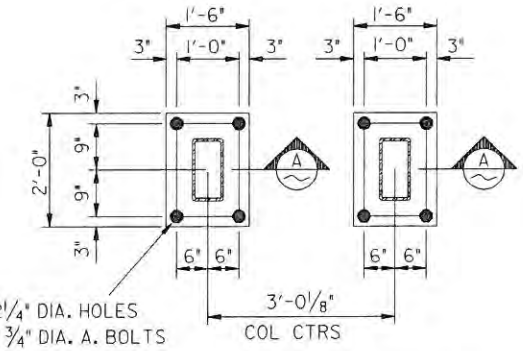
APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 40' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-552 REVISED 2001





TYP. SECTION (A)



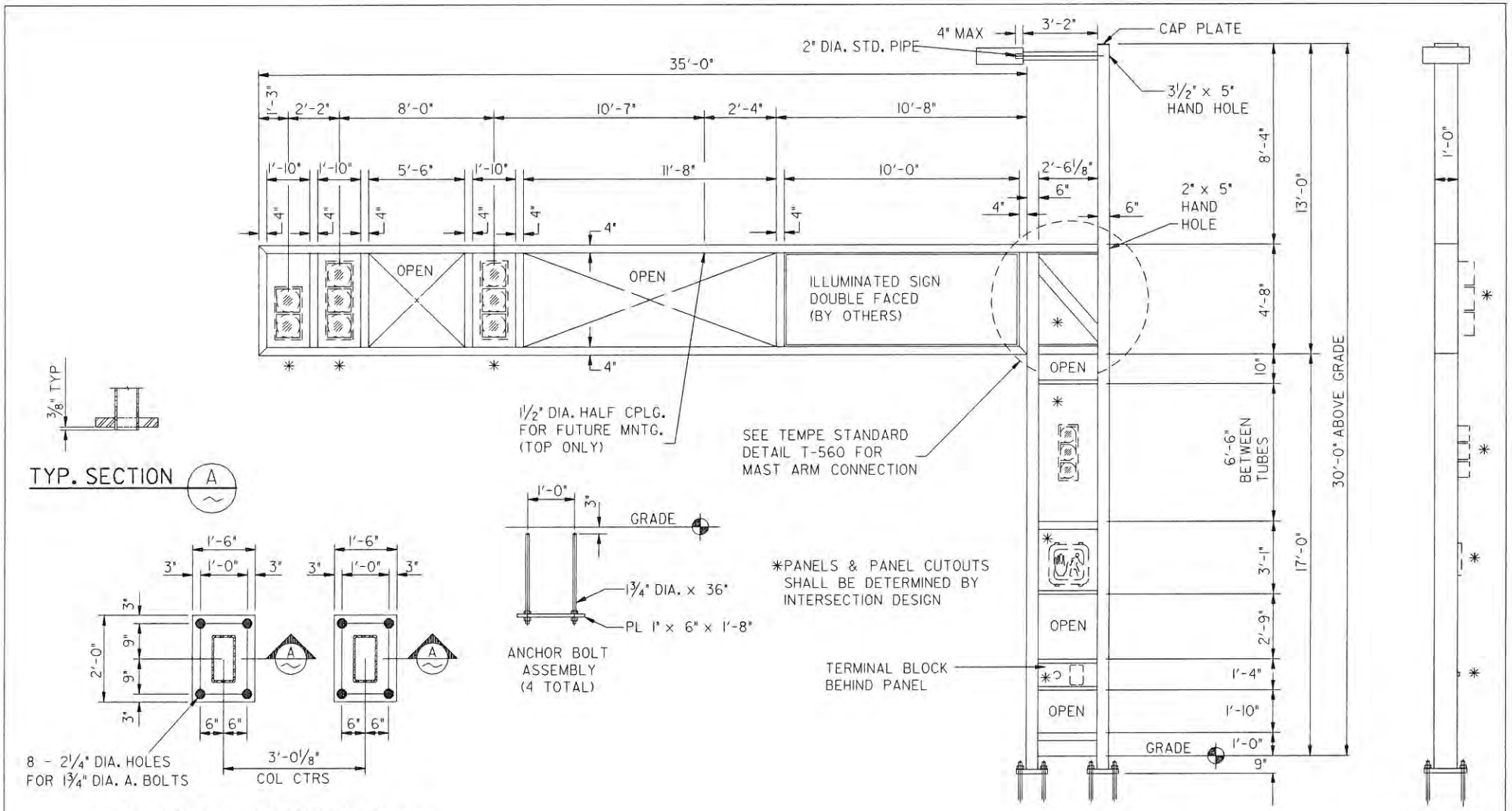
ANCHOR BOLT SETTING PLAN

ANCHOR BOLT
ASSEMBLY
(4 TOTAL)

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

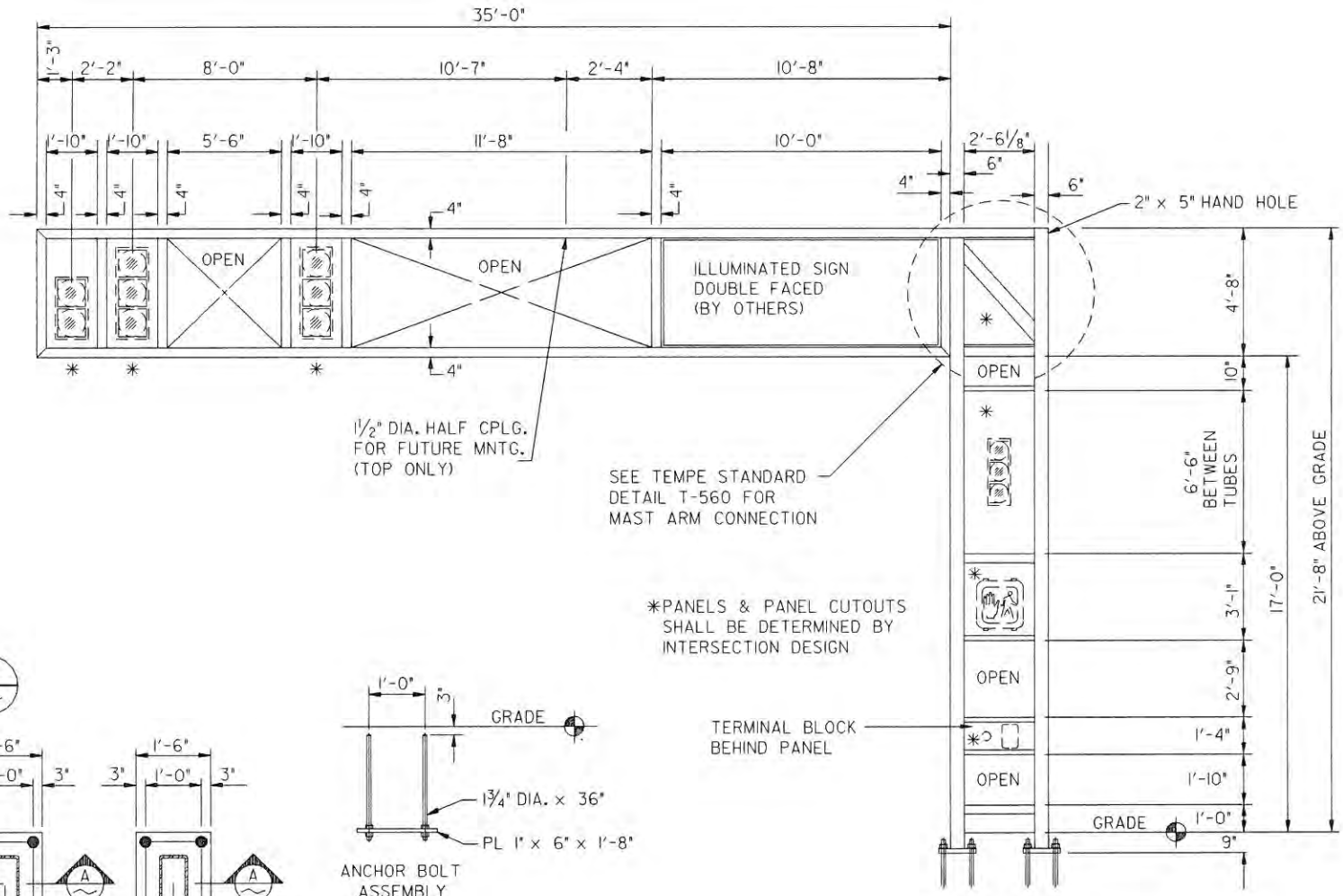
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'J' - 40' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-553 REVISED 2001



APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

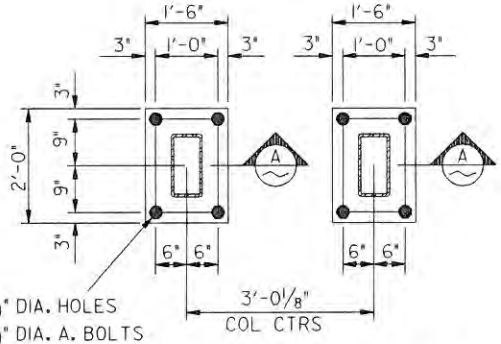
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'Q' - 35' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES. INC TUCSON, AZ	DETAIL T-554 REVISED 2001



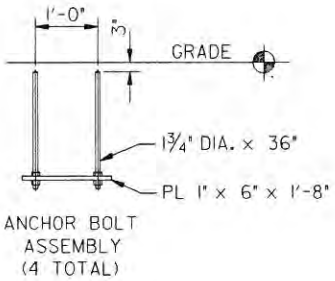
PROFILE

3/8" TYP

TYP. SECTION A



ANCHOR BOLT SETTING PLAN

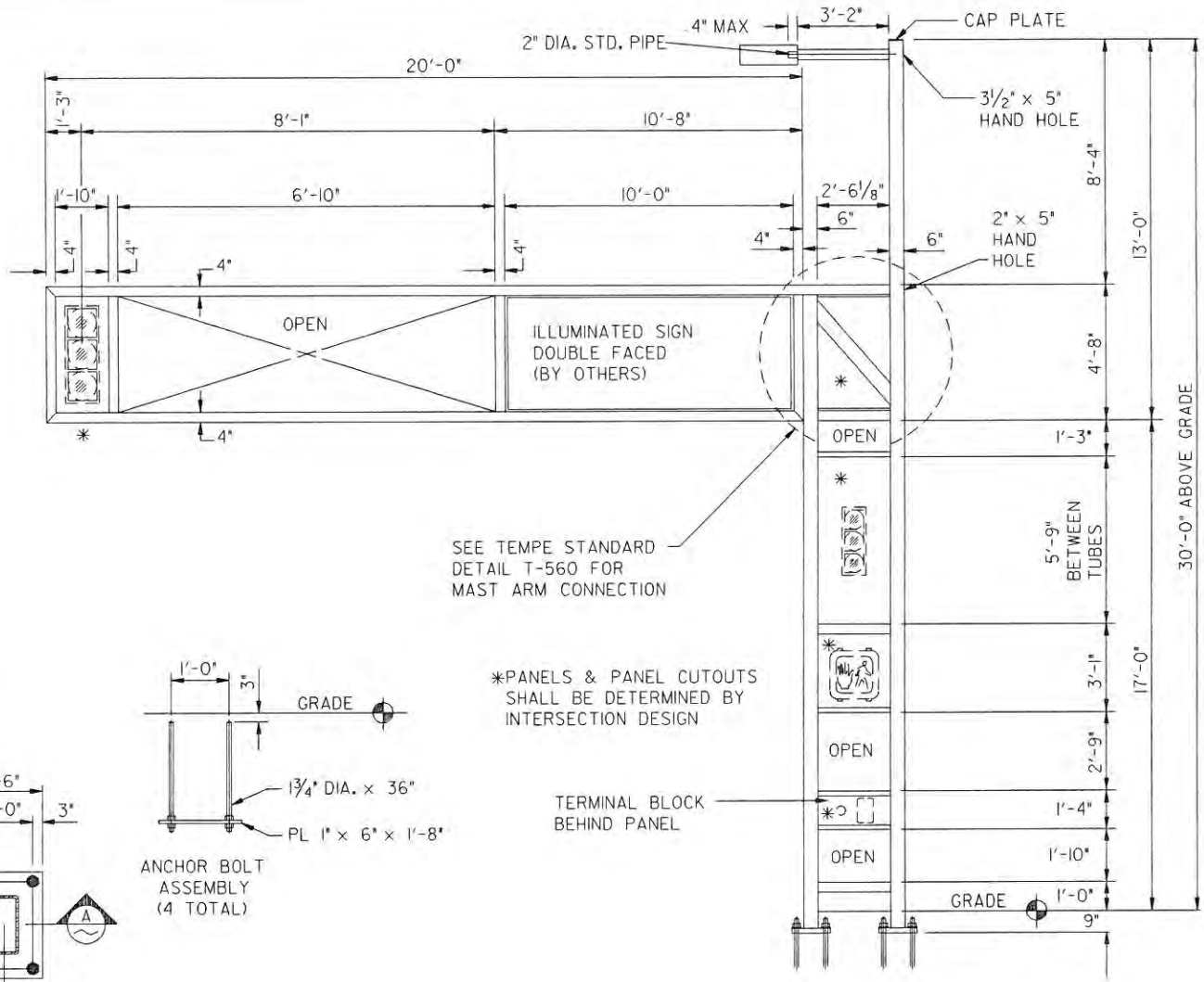


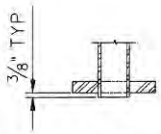
ANCHOR BOLT
ASSEMBLY
(4 TOTAL)

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'J' - 35' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-555 REVISED 2001

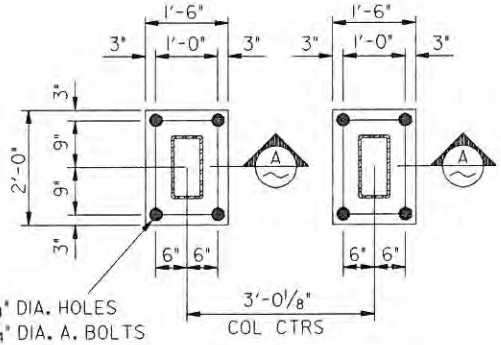




TYP. SECTION (A)

*PANELS & PANEL CUTOUTS SHALL BE DETERMINED BY INTERSECTION DESIGN

ANCHOR BOLT ASSEMBLY (4 TOTAL)

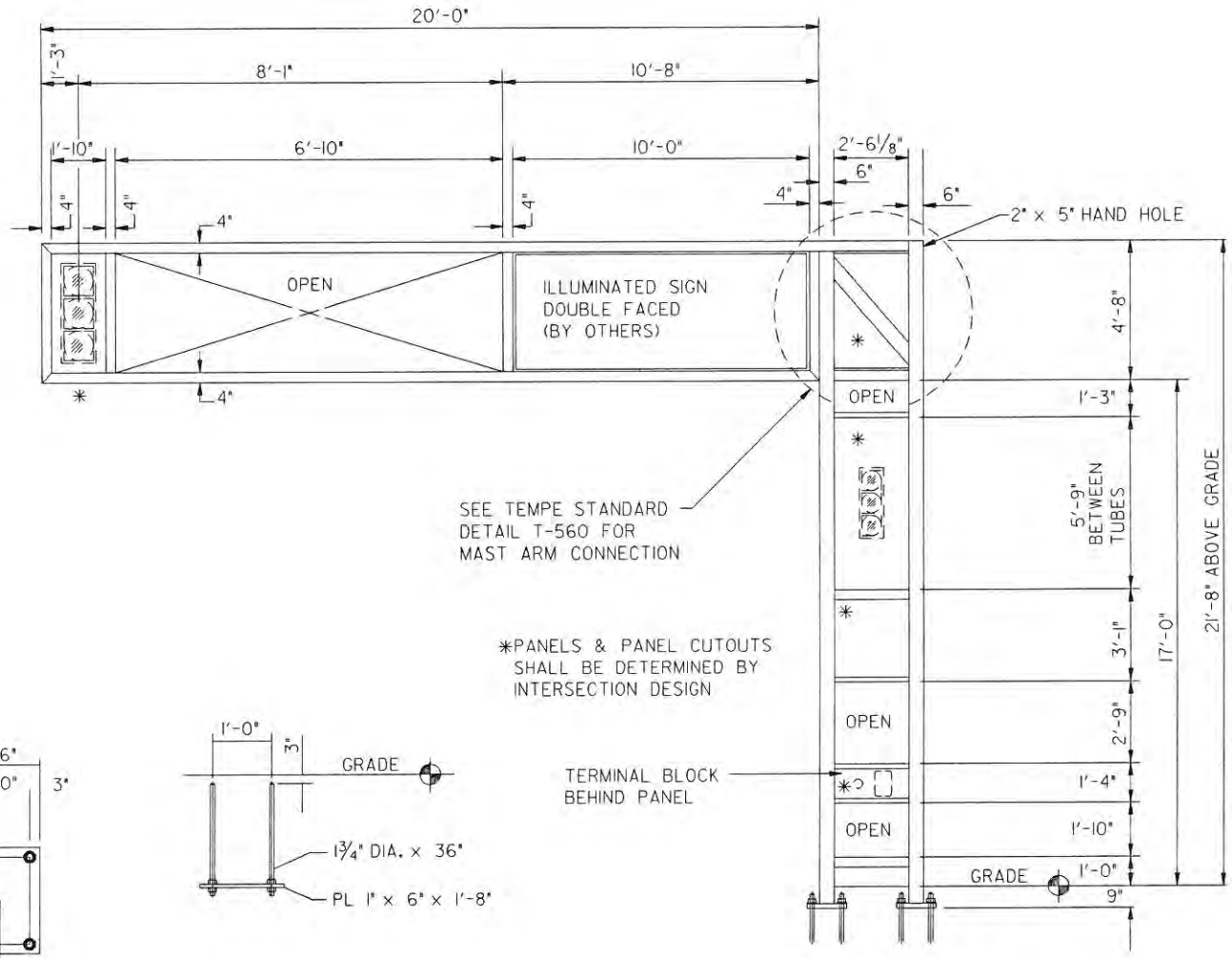


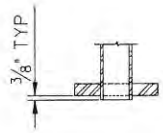
ANCHOR BOLT SETTING PLAN

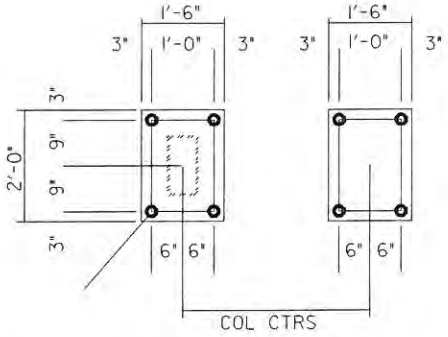
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

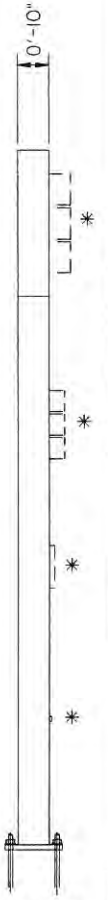
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'F' - 20' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-556 REVISED 2001







ANCHOR BOLT SETTING PLAN

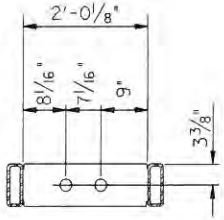


PROFILE

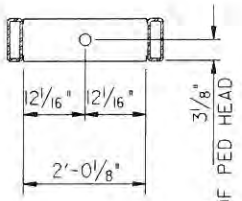
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

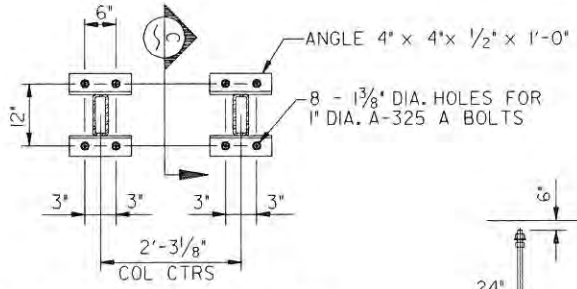
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'E' - 20' MAST ARM	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-557 REVISED 2001



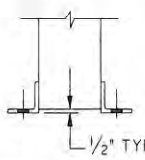
SECTION A



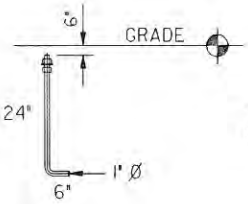
SECTION B



ANCHOR BOLT SETTING PLAN

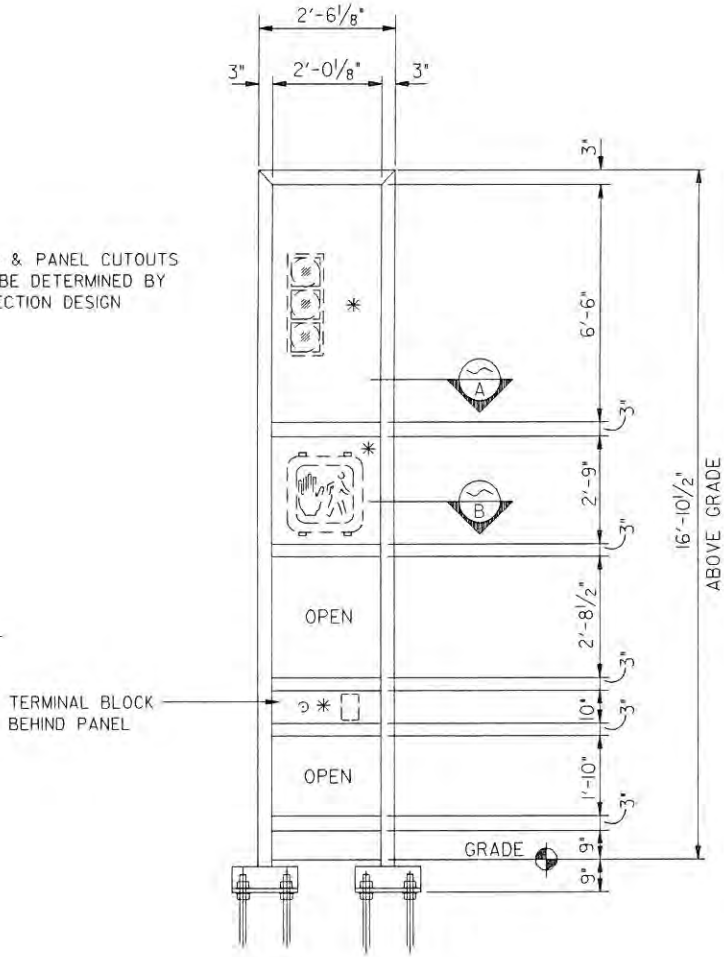


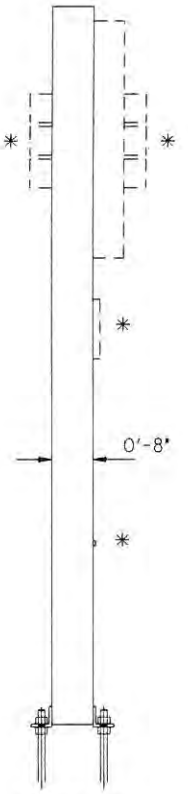
TYP SECTION C



ANCHOR BOLT WITH
NUTS & WASHERS
(8 TOTAL)

* PANELS & PANEL CUTOUTS SHALL BE DETERMINED BY INTERSECTION DESIGN



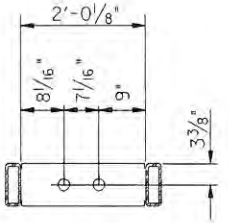


PROFILE

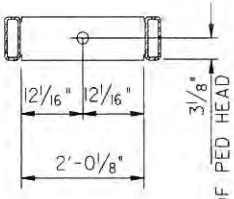
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

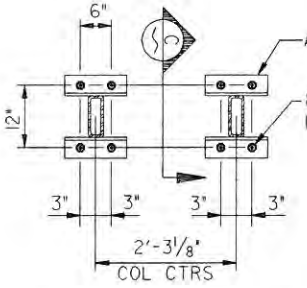
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'A-I'	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-558 REVISED 2001



SECTION A

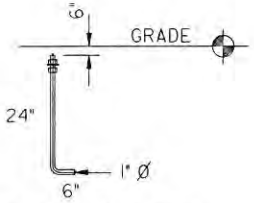


SECTION B

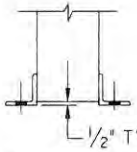


ANCHOR BOLT SETTING PLAN

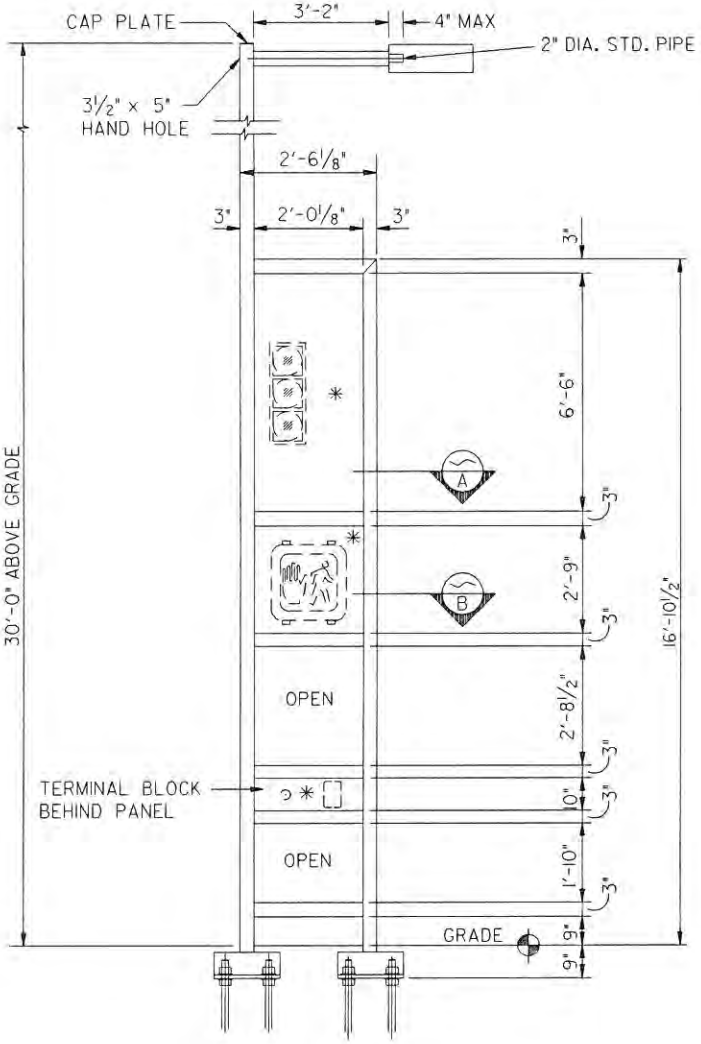
*PANELS & PANEL CUTOUTS SHALL BE DETERMINED BY INTERSECTION DESIGN

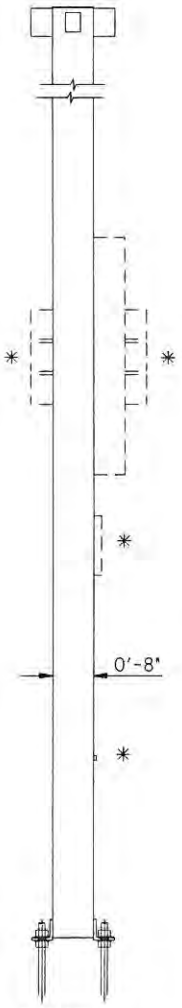


ANCHOR BOLT WITH NUTS & WASHERS (8 TOTAL)



TYP. SECTION C



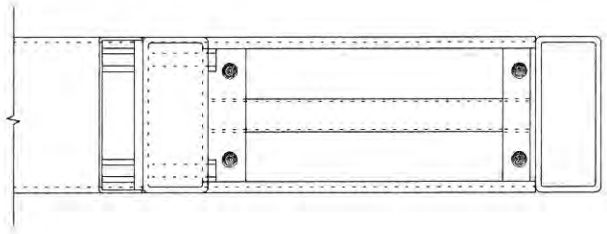


PROFILE

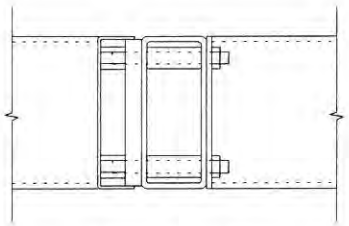
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

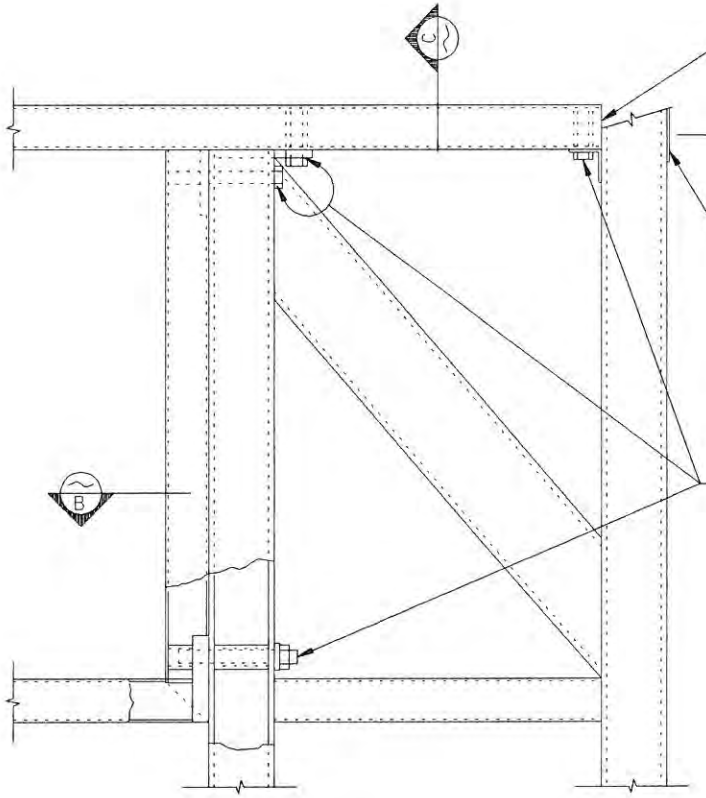
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE 'A-2'	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-559 REVISED 2001



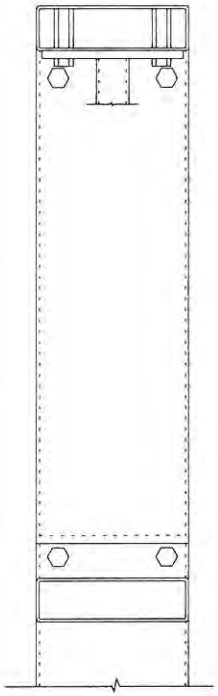
SECTION A



SECTION B



MAST ARM CONNECTION DETAIL

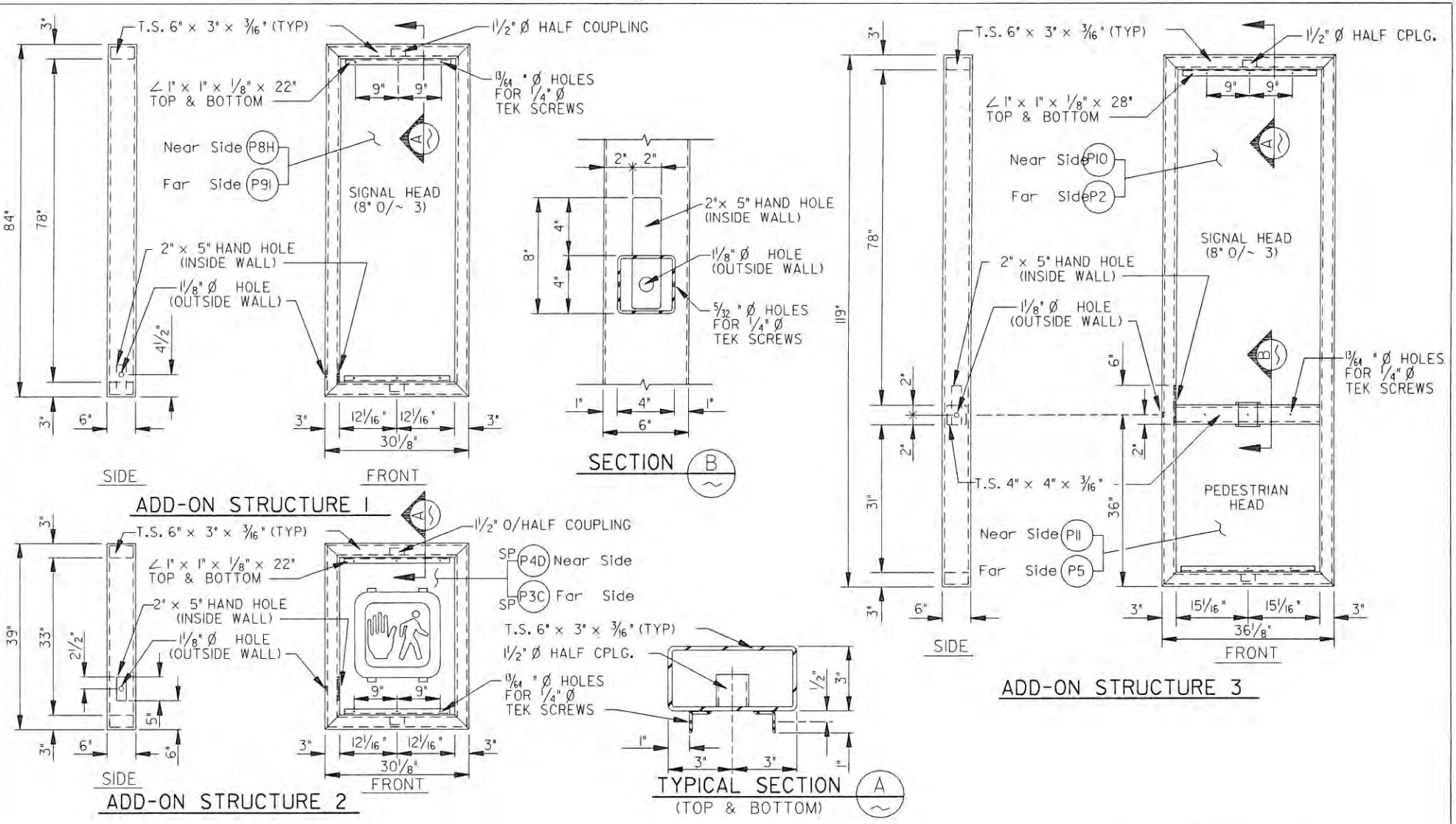


SECTION C

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — 6/27/01 DATE

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — 7-3-01 DATE

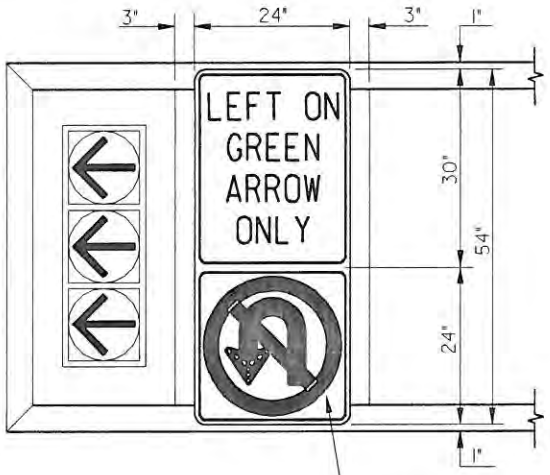
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR POLE MAST ARM CONNECTION	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-560 REVISED 2001



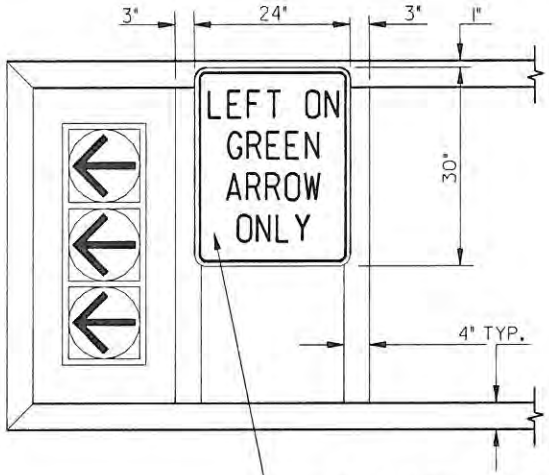
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

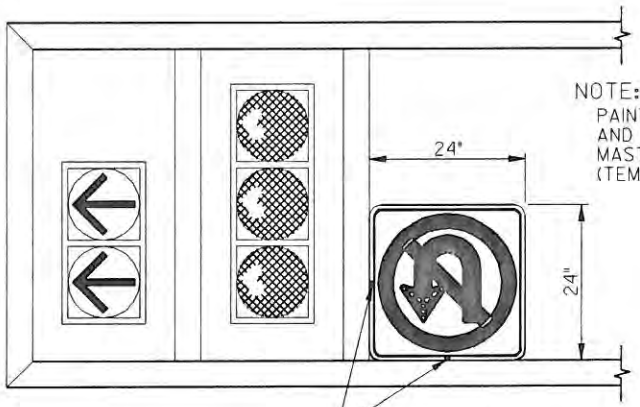
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR SIGNAL ADD-ON STRUCTURES	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-561 REVISED 2001



MOUNT DUAL SIGN ON SINGLE UNIT, CENTER OVER BLANK PANEL ON SIGNAL MAST ARM

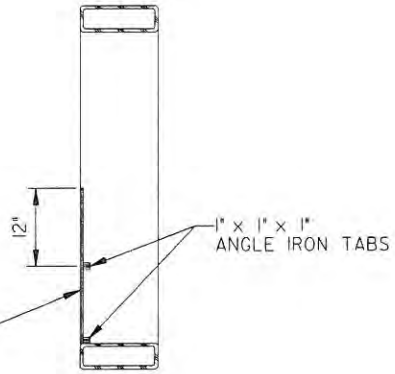


MOUNT SINGLE SIGN , CENTER OVER BLANK PANEL ON SIGNAL MAST ARM



NOTE:
PAINT BACK SIDES OF SIGN AND ANGLE IRON TO MATCH MAST ARM COLOR. (TEMPE BRONZE)

1" x 1" x 1" ANGLE IRON TABS WELDED TO MAST ARM FOR SIGN MOUNTING. (SIGN FACE TO BE FLUSH WITH APPROACH SIDE OF MAST ARM)



SECTION

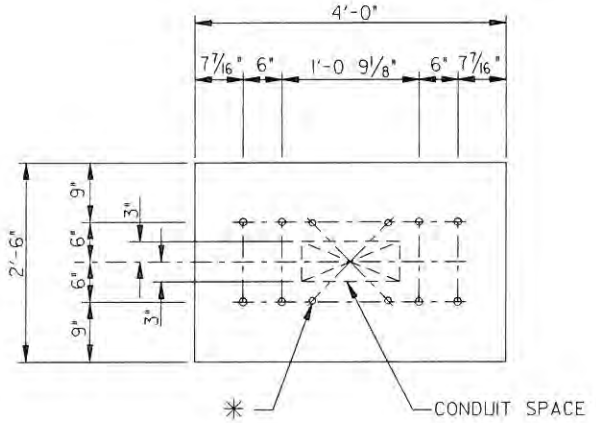
R10-5z

R3-4

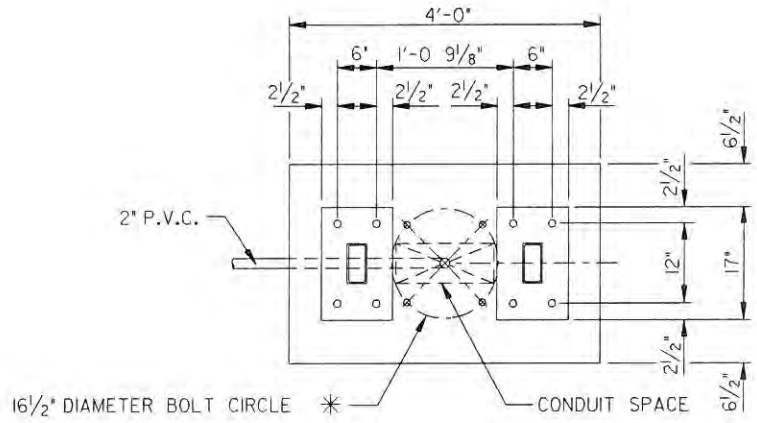
APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MODULAR SIGNAL MAST ARM SIGN MOUNTING STANDARDS	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-562 REVISED 2001



ANCHOR BOLT LAYOUT PLAN



BASE PLATE LAYOUT PLAN

✳ BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

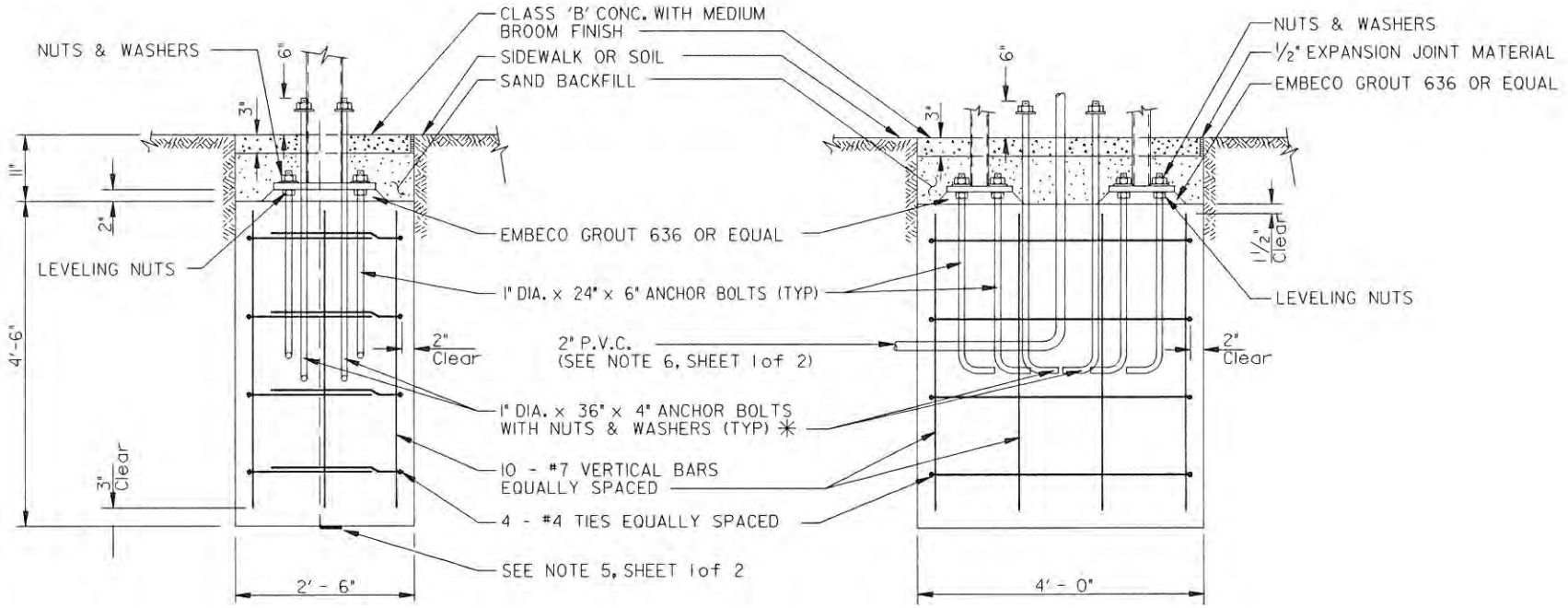
GENERAL NOTES

1. CONCRETE 4000 P.S.I. @ 28 DAYS
2. REBAR GRADE 60
3. ANCHOR BOLTS A-36 FULLY GALVANIZED
4. EXISTING SOIL CONDITIONS TO BE DETERMINED PRIOR TO FINAL FOUNDATION DESIGN.
5. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED.
6. ADDITIONAL 2" P.V.C. CONDUIT MAY BE REQUIRED FOR LOOPS, SEE SIGNAL PLAN.

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR TYPE "A" MODULAR (NO MAST ARM)	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-570 SHEET 1 OF 2 REVISED 2001



END VIEW SECTION

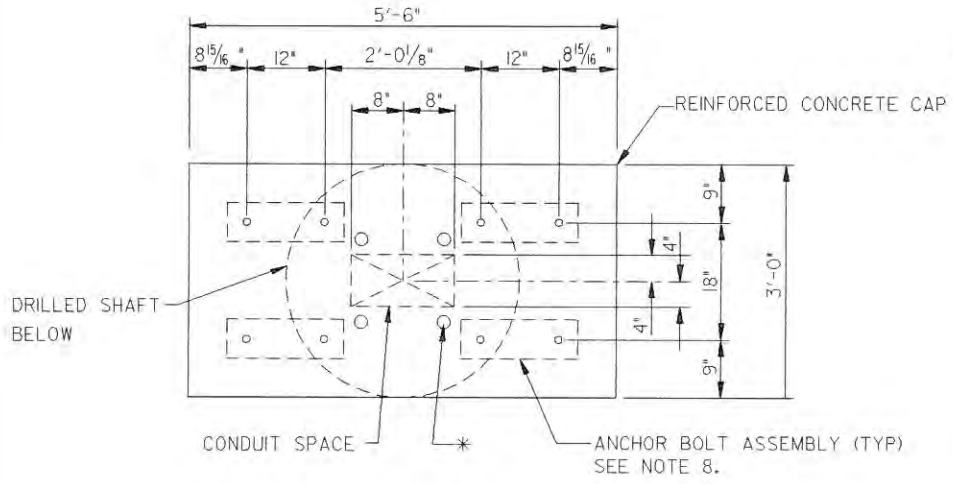
SIDE VIEW SECTION

✳ BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — 6/27/01 DATE

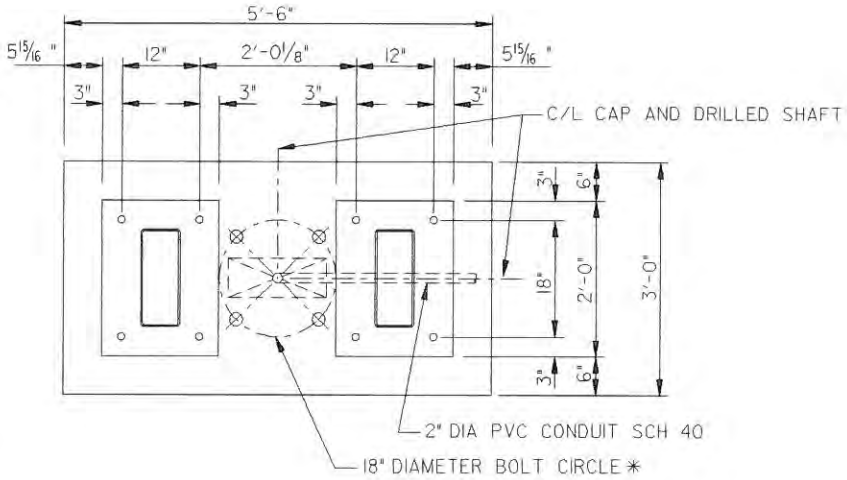
APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — 7-3-01 DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOUNDATION FOR TYPE "A" MOD. (NO MAST ARM)	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-570 SHEET 2 OF 2 REVISED 2001



ANCHOR BOLT LAYOUT PLAN

N.T.S.



BASE PLATE LAYOUT PLAN

N.T.S.

GENERAL NOTES

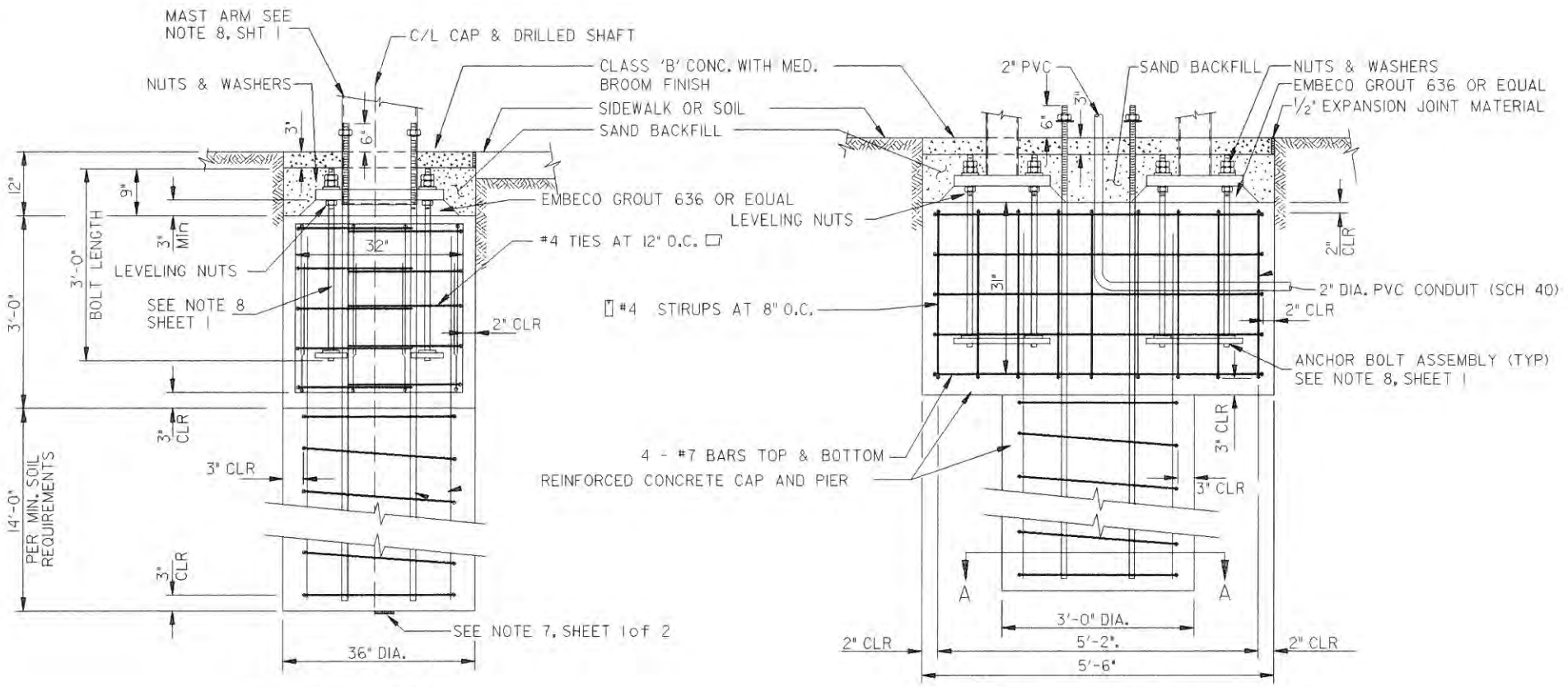
1. MINIMUM SOIL REQUIREMENTS:
   THIS FOUNDATION DESIGN IS BASED ON SOILS ABLE TO DEVELOP THE FOLLOWING VALUES FOR CONCRETE FILLED DRILLED IN PLACE PIERS, SKIN FRICTION AT 500 LBS/SQ. FT., LATERAL BEARING PRESSURE = 200 LBS/ SQ. FT. PER FOOT OF DEPTH.
2. EXISTING SOIL CONDITIONS TO BE DETERMINED PRIOR TO FINAL FOUNDATION DESIGN.
3. CONCRETE f'c 4000 P.S.I. AT 28 DAYS.
4. REBAR - ASTM 615 GRADE 60.
5. EMBEDDED PLATES - ASTM A-36.
6. ANCHOR BOLTS - A-36 FULLY GALVANIZED (ASTM 123)
7. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED.
8. THESE DETAILS TO BE USED WITH CITY OF TEMPE TRAFFIC STANDARDS. SEE COT DETAILS T-552 THROUGH T-557 FOR ADDITIONAL INFORMATION.

*BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

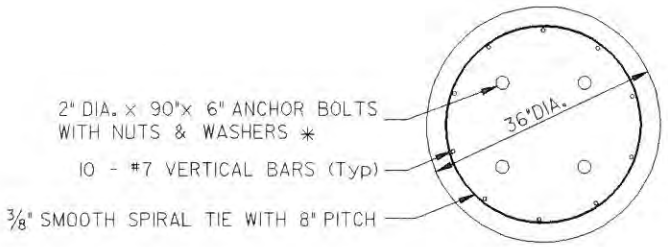
APPROVED: Shelly Seyler 6/26/07
TRAFFIC ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 20, 25, 30, 35, 40 MAST ARM STRUCTURES	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-571 SHEET 1 OF 2 REVISED 2007



END VIEW SECTION
N.T.S.

SIDE VIEW SECTION
N.T.S.



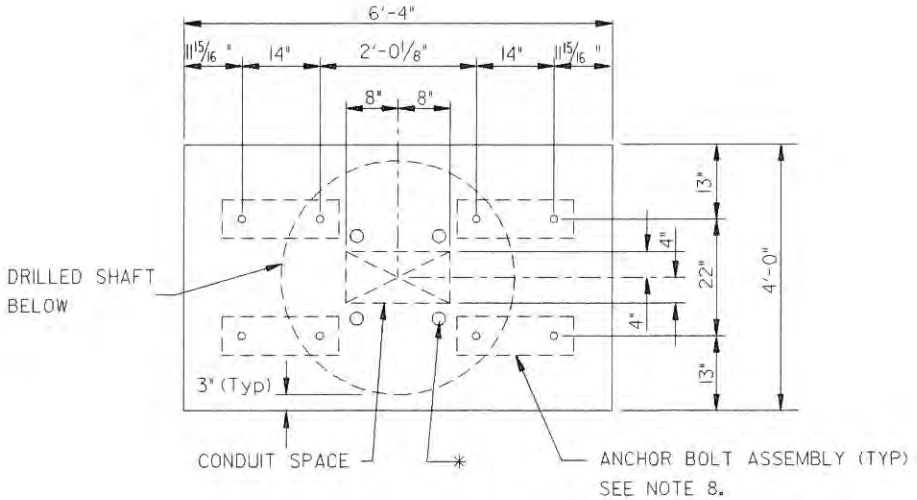
SECTION A - A
N.T.S.

* BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

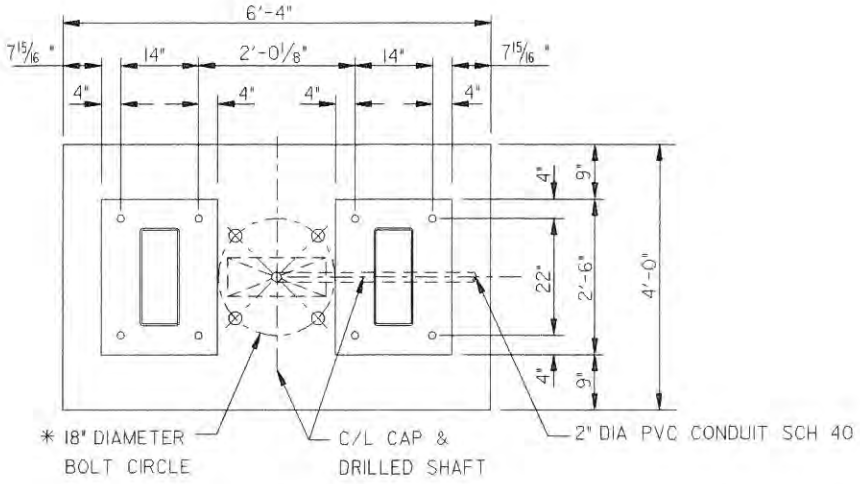
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 20, 25, 30, 35,40 MAST ARM STRUCTURES	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-571 SHEET 2 OF 2 REVISED 2007



ANCHOR BOLT LAYOUT PLAN

N.T.S.



BASE PLATE LAYOUT PLAN

N.T.S.

*BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

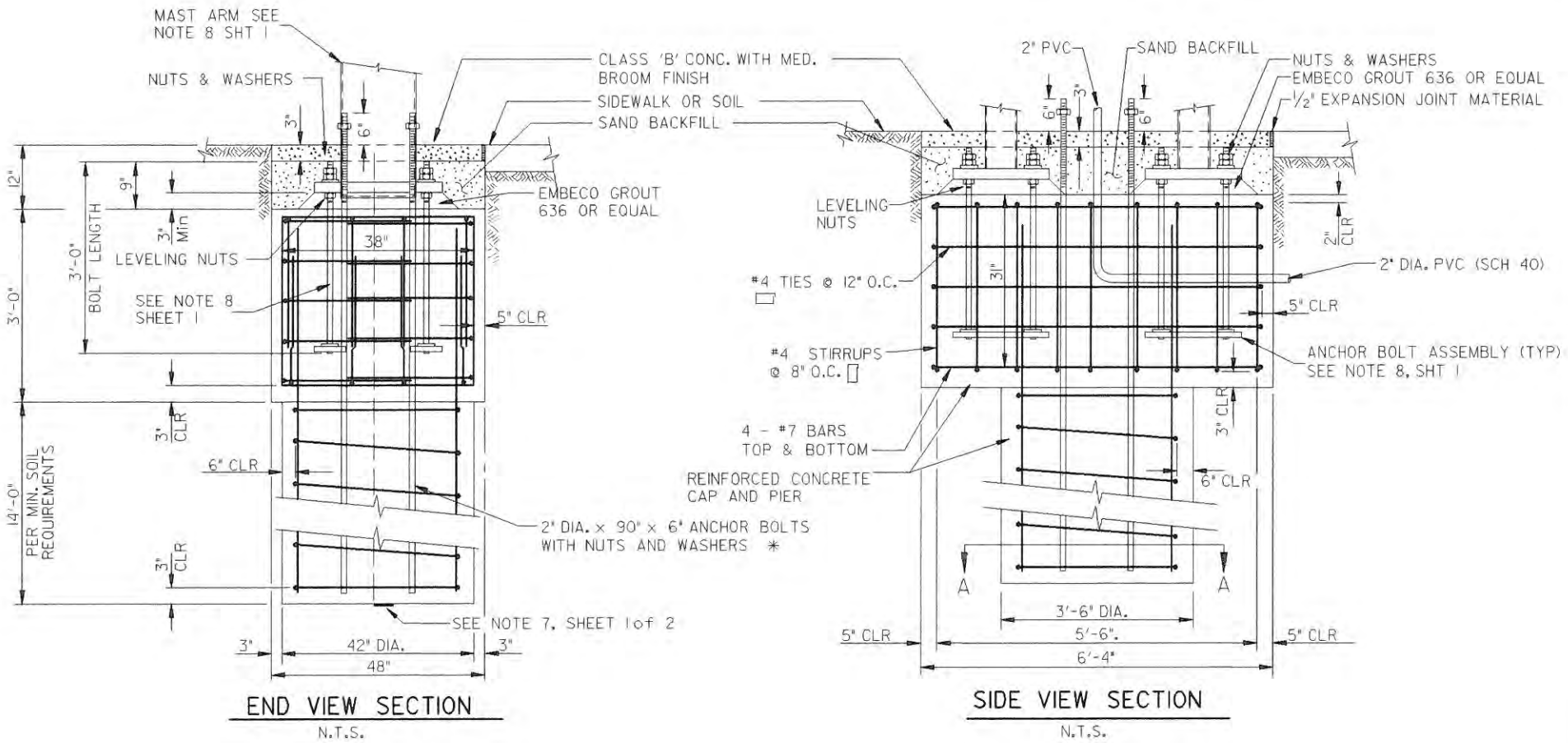
GENERAL NOTES

1. MINIMUM SOIL REQUIREMENTS:
   THIS FOUNDATION DESIGN IS BASED ON SOILS ABLE TO DEVELOP THE FOLLOWING VALUES FOR CONCRETE FILLED DRILLED IN PLACE PIERS. SKIN FRICTION AT 500 LBS/SQ. FT., LATERAL BEARING PRESSURE = 200 LBS/SQ. FT. PER FOOT OF DEPTH.
2. EXISTING SOIL CONDITIONS TO BE DETERMINED PRIOR TO FINAL FOUNDATION DESIGN.
3. CONCRETE f'c 4000 P.S.I. AT 28 DAYS.
4. REBAR ASTM-A615 GRADE 60.
5. EMBEDDED PLATES ASTM A-36.
6. ANCHOR BOLTS - A-36 FULLY GALVANIZED (ASTM 123)
7. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED.
8. THESE DETAILS TO BE USED WITH CITY OF TEMPE TRAFFIC STANDARDS. SEE COT DETAILS T-550 & T-551 FOR ADDITIONAL INFORMATION.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 45 MAST ARM STRUCTURE	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-572 SHEET 1 OF 2 REVISED 2007

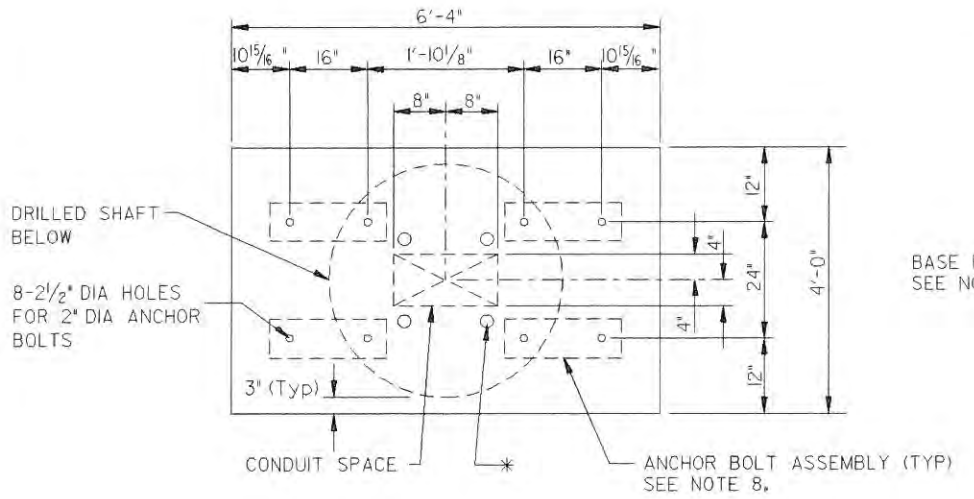


* BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

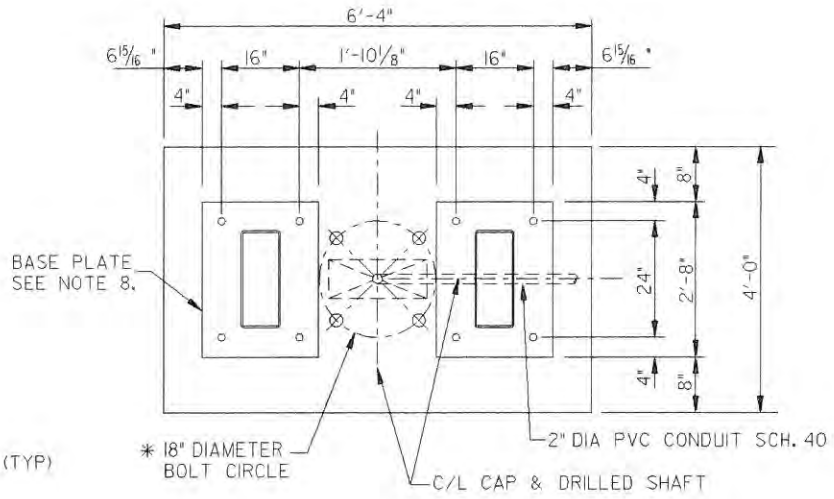
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 45 MAST ARM STRUCTURE	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-572 SHEET 2 OF 2 REVISED 2007



ANCHOR BOLT LAYOUT PLAN

N.T.S.



BASE PLATE LAYOUT PLAN

N.T.S.

*BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

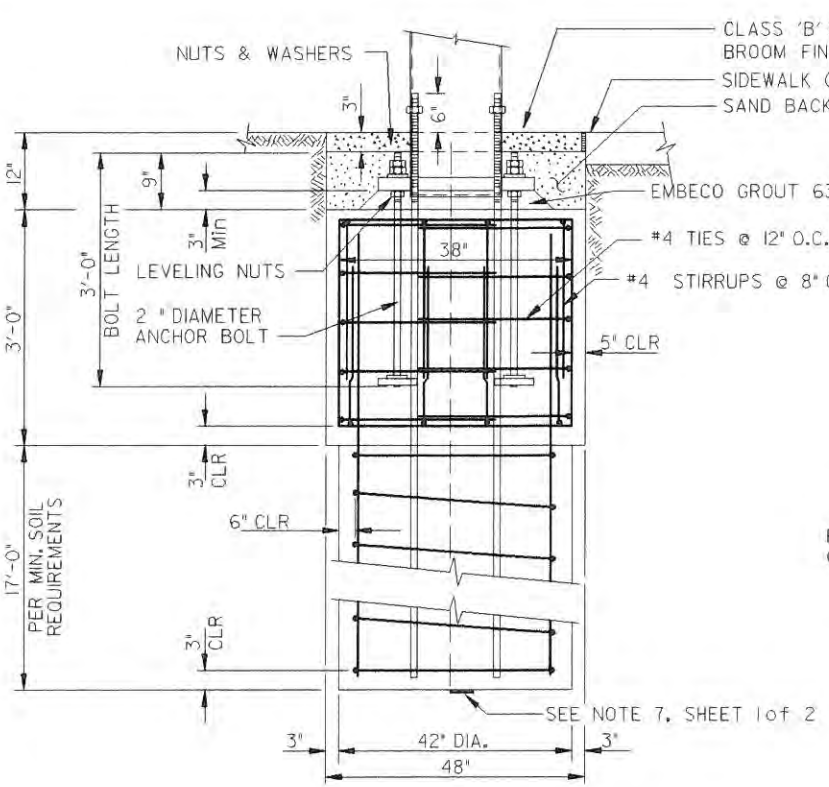
GENERAL NOTES

1. MINIMUM SOIL REQUIREMENTS:
   THIS FOUNDATION DESIGN IS BASED ON SOILS ABLE TO DEVELOP THE FOLLOWING VALUES FOR CONCRETE FILLED DRILLED IN PLACE PIERS. SKIN FRICTION AT 500 LBS/SQ. FT., LATERAL BEARING PRESSURE = 200 LBS/SQ. FT. PER FOOT OF DEPTH.
2. EXISTING SOIL CONDITIONS TO BE DETERMINED PRIOR TO FINAL FOUNDATION DESIGN.
3. CONCRETE f'c 4000 P.S.I. AT 28 DAYS.
4. REBAR - ASTM 615 GRADE 60.
5. EMBEDDED PLATES - ASTM A-36.
6. ANCHOR BOLTS - A-36 FULLY GALVANIZED (ASTM 123)
7. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED.
8. THESE DETAILS TO BE USED WITH CITY OF TEMPE TRAFFIC STANDARDS. SEE COT DETAIL T-548 FOR ADDITIONAL INFORMATION.

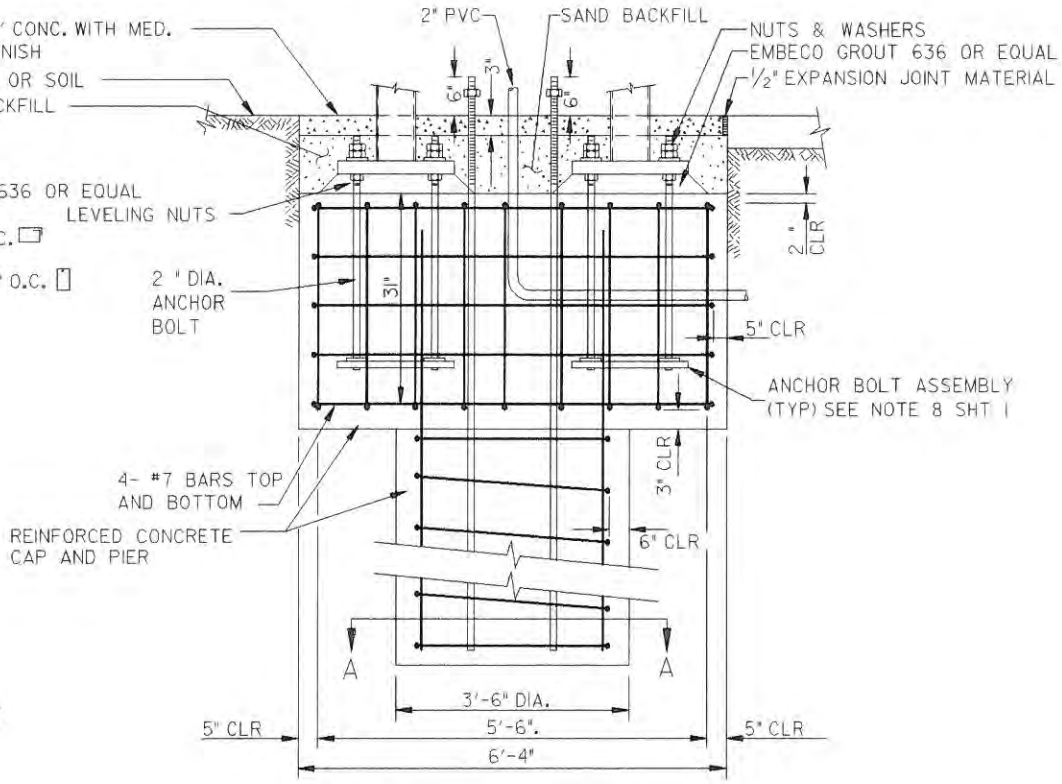
APPROVED: Andy Cr — DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

APPROVED: Shelley Seyler — TRAFFIC ENGINEER — DATE 6/26/07

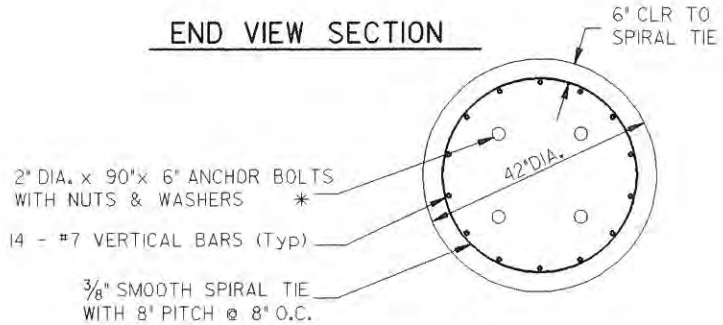
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 50 MAST ARM STRUCTURE	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-573 SHEET 1 OF 2 REVISED 2007



END VIEW SECTION



SIDE VIEW SECTION



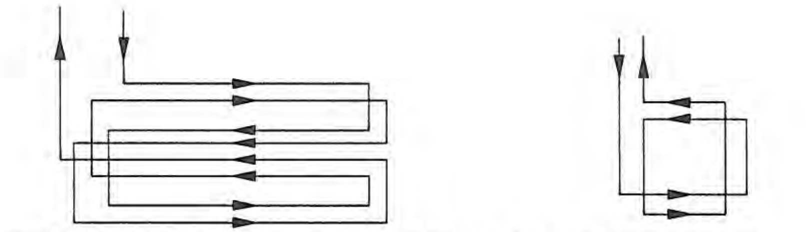
SECTION A - A

* BOLTS FOR INTERIM SIGNAL ERECTION MAY BE DELETED AT ENGINEER'S DIRECTION.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

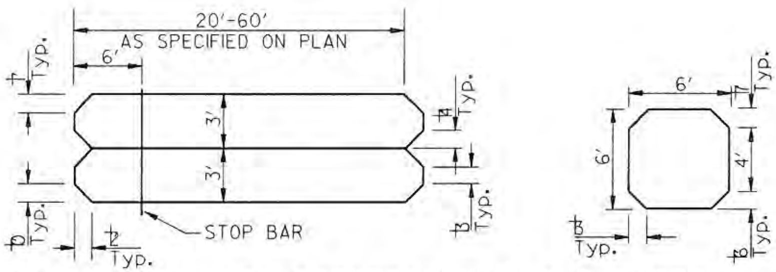
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC SIGNAL FOUNDATION DETAIL FOR MODULAR 50 MAST ARM STRUCTURE	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY T.A. CAID INDUSTRIES, INC TUCSON, AZ	DETAIL T-573 SHEET 2 OF 2 REVISED 2007



WIRING DIAGRAM FOR OCCUPANCY LOOP DETECTOR

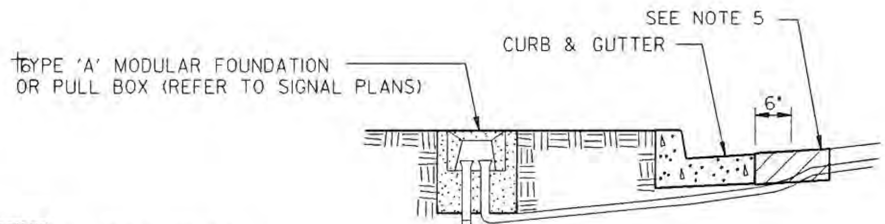
LOOP DUCT (ORANGE)



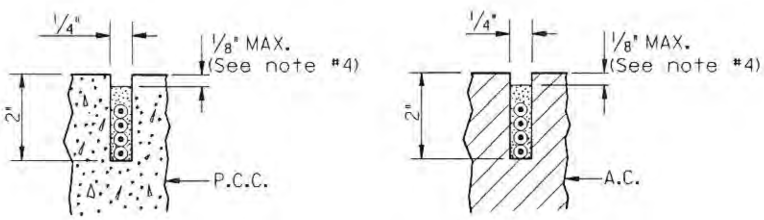
OCCUPANCY LOOP DETECTOR SAW CUT PATTERN

NOTES:

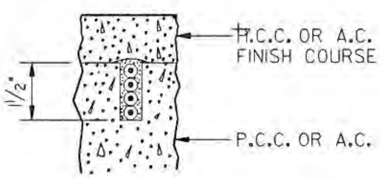
1. CUT THE DIAGONALS AS SHOWN TO PREVENT SHARP BENDS IN THE WIRE. OVERCUT THE DIAGONALS SO THAT THE CORNERS HAVE THE FULL DEPTH REQUIRED.
2. THE SAW CUT SHALL BE AS SHOWN UNLESS OTHERWISE NOTED.
3. BLOW OUT ALL SAW CUTS BEFORE INSERTING THE WIRES. WIRES SHALL BE INSERTED IN SUCH A MANNER THAT THE INSULATION SHALL NOT BE DAMAGED.
4. SAW CUTS SHALL BE FILLED WITH EPOXY LOOP SEALANT, OR EQUIVALENT SEALANT AS APPROVED BY CITY ENGINEER.
5. USE SAME MATERIAL (OR APPROVED EQUAL) FOR PATCHING EXISTING PAVEMENT. PATCH TO AT LEAST 1/4" HIGHER THAN SURFACE OF EXISTING PAVEMENT.
6. ALL DETECTOR LOOPS SHALL BE GIVEN A CONTINUITY AND INSULATION TEST BEFORE AND AFTER PLACING THE FINAL PAVING OR PLACING THE SEALER IN THE SAW CUTS.
7. LOOP DETECTORS SHALL BE LOCATED IN CENTER OF TRAVELED LANE UNLESS OTHERWISE NOTED ON PLANS AND SHALL BE APPROVED PRIOR TO SAW CUTTING.
8. LEFT-TURN LANE DETECTOR LEAD-IN SHALL BE INSTALLED IN A SEPARATE SAW CUT.
9. NO MORE THAN TWO ADJACENT DETECTOR LEAD-INS SHALL BE IN THE SAME SAW CUT.
10. DETECTOR LEAD-IN SAW CUTS SHALL BE 1' APART.



DETAIL "A"



LOOPS IN FINISH COURSE

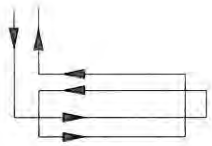


LOOPS IN SUB-BASE

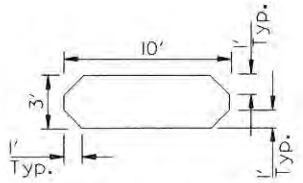
APPROVED: Harvey Friedson 9/23/98
DEPUTY PUBLIC WORKS DIRECTOR — DATE

APPROVED: [signature] 12/8/98
CITY ENGINEER — DATE

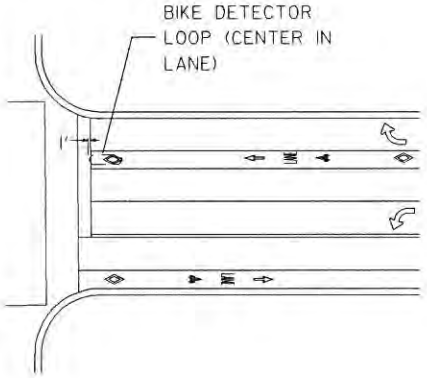
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TRAFFIC LOOP DETECTOR DETAIL	DETAIL T-575 REVISED 1998



WIRING DIAGRAM FOR
OCCUPANCY LOOP DETECTOR
LOOP DUCT (ORANGE)



OCCUPANCY LOOP DETECTOR
SAW CUT PATTERN



LOCATION MAP FOR
LOOP DETECTOR

NOTES:

1) CUT THE DIAGONALS AS SHOWN TO PREVENT SHARP BENDS IN THE WIRE. OVERCUT THE DIAGONALS SO THAT THE CORNERS HAVE THE FULL DEPTH REQUIRED.

2) THE SAW CUT SHALL BE AS SHOWN UNLESS OTHERWISE NOTED.

3) BLOW OUT ALL SAW CUTS BEFORE INSERTING THE WIRES. INSULATION SHALL BE INSERTED IN SUCH A MANNER THAT NSULATION SHALL NOT BE DAMAGED.

4) SAW CUTS SHALL BE FILLED WITH EPOXY LOOP SEALANT, OR EQUIVALENT SEALANT AS APPROVED BY CITY ENGINEER.

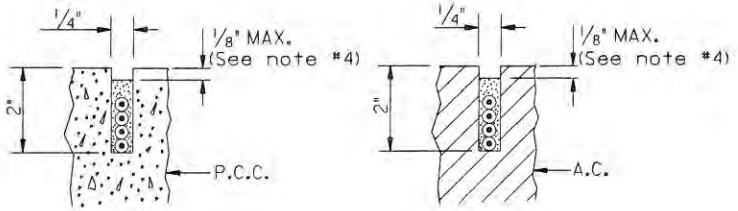
5) USE SAME MATERIAL (OR APPROVED EQUAL) FOR PATCHING EXISTING PAVEMENT. PATCH TO AT LEAST 1/4" HIGHER THAT SURFACE OF EXISTING PAVEMENT.

6) ALL DETECTOR LOOPS SHALL BE GIVEN A CONTINUITY AND INSULATION TEST BEFORE AND AFTER PLACING THE FINAL PAVING OR PLACING THE SEALER IN THE SAW CUTS.

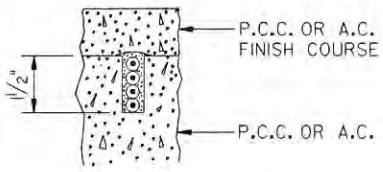
7) LOOP DETECTORS SHALL BE LOCATED IN CENTER OF TRAVELED BIKE LANE UNLESS OTHERWISE NOTED ON PLANS AND SHALL BE APPROVED PRIOR TO SAW CUTTING.

8) DETECTOR LEAD-IN SAW CUTS SHALL BE 1' APART. THE FULL DEPTH REQUIRED.

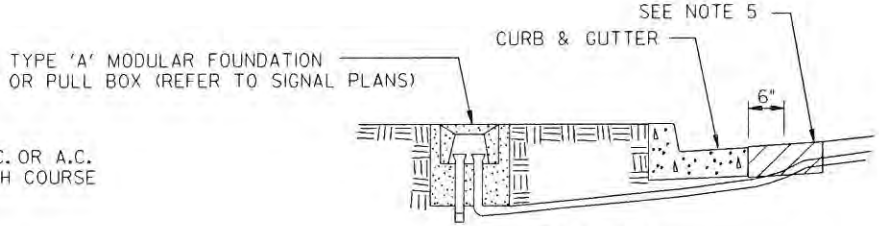
9. INSTALL LOOP DETECTORS IN ADVANCE OF STOP BAR AND CROSSWALK.



LOOPS IN FINISH COURSE



LOOPS IN SUB-BASE

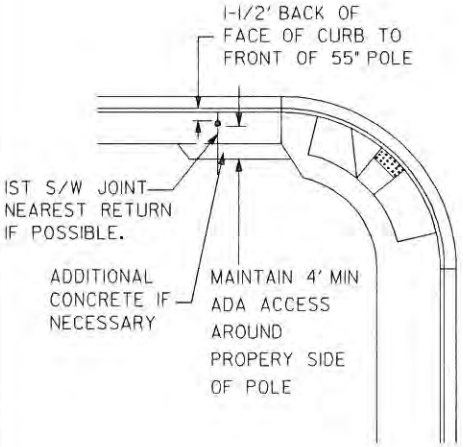


DETAIL "A"

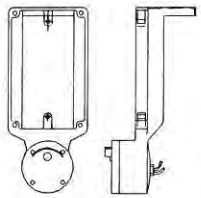
APPROVED: _____ DEPUTY PUBLIC WORKS DIRECTOR — DATE 2/4/00

APPROVED: _____ CITY ENGINEER — DATE 2/9/00

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BICYCLE LOOP DETECTOR DETAIL	DETAIL T-576 REVISED 2000

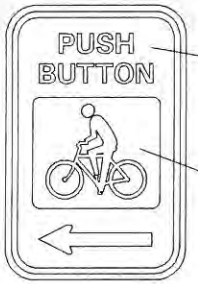


LOCATION MAP



TRAFFIC PARTS, INC., MODEL B-10
POST TOP MOUNT OR EQUIVALANT

PUSH BUTTON BODY

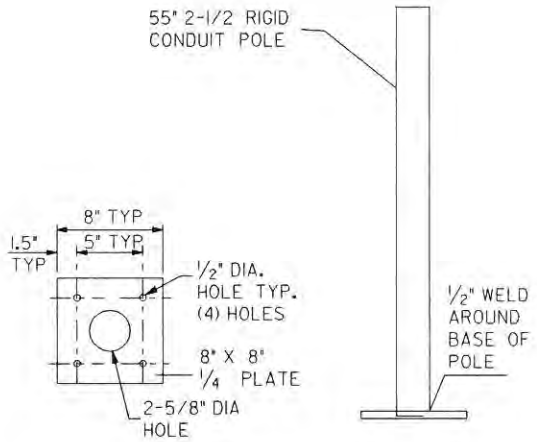


WHITE
BACKGROUND

BLACK
BACKGROUND

WHITE BICYCLIST & BICYCLE ON BLACK BACKGROUND.
BLACK TEXT AND BORDER. SIZE 6" X 9" WHITE ENGINEER
GRADE REFLECTIVE SHEETING.

BIKE PUSH BUTTON SIGN



55" POLE AND BOTTOM PLATE

NOTES:

1. EXISTING CONDITIONS MAY REQUIRE MODIFICATION OF THE ABOVE ALTERNATES WITH APPROVAL OF THE CITY ENGINEER.

2. IF NECESSARY, ADD ADDITONAL CONCRETE TO SIDEWALK ADJACENT TO POLE AS NEEDED TO MAINTAIN 4' ACCESS.

3. SECURE BASE AND 55" POLE TO CONCRETE WITH (4) 3/8" ANCHOR BOLTS.

4. INSTALL 55" POLES AT 1ST SIDEWALK JOINT BEYOND RETURN IF POSSIBLE.

APPROVED: _____ DEPUTY PUBLIC WORKS DIRECTOR — DATE 2/4/00

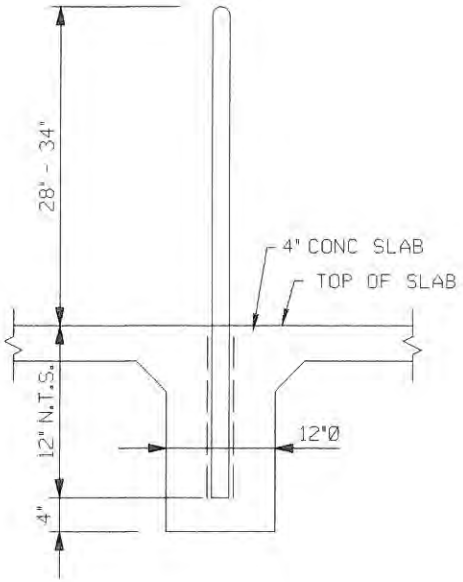
APPROVED: _____ CITY ENGINEER — DATE 2/9/00

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

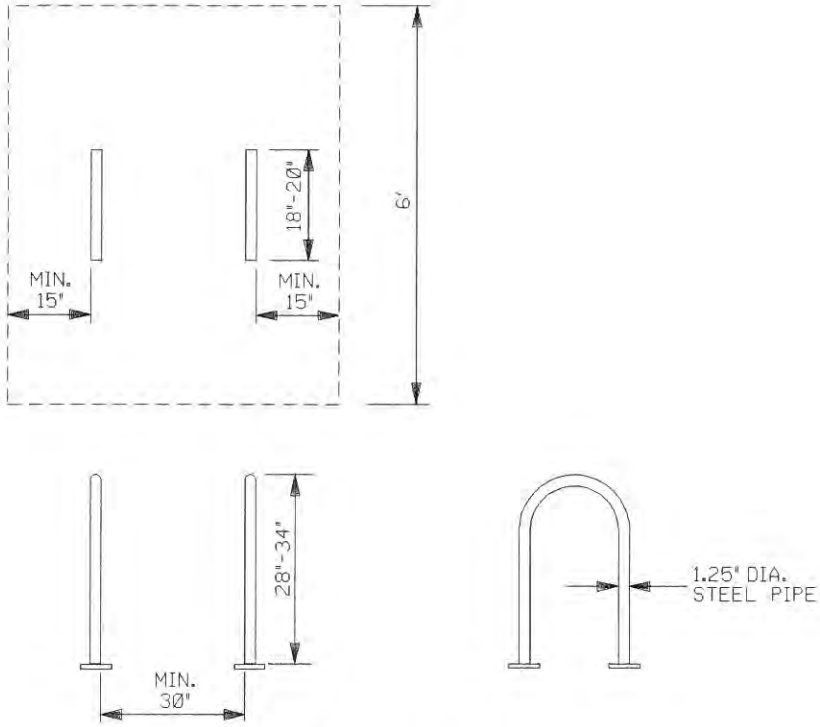
BICYCLE PUSH BUTTON AND POLE DETAIL

DETAIL T-577
1999

NOTE: ALTERNATIVE METHOD OF ANCHORING BIKE RACK IS SHOWN BELOW.



BICYCLE RACK
CONNECTION DETAIL



PREFERRED METHOD OF ANCHORING BIKE RACK IS TO ORDER BIKE RACK WITH STEEL FLANGE & RAMSET BOLTS TO CONCRETE SLAB PER MANUFATURER'S INSTRUCTIONS.

BICYCLE RACK

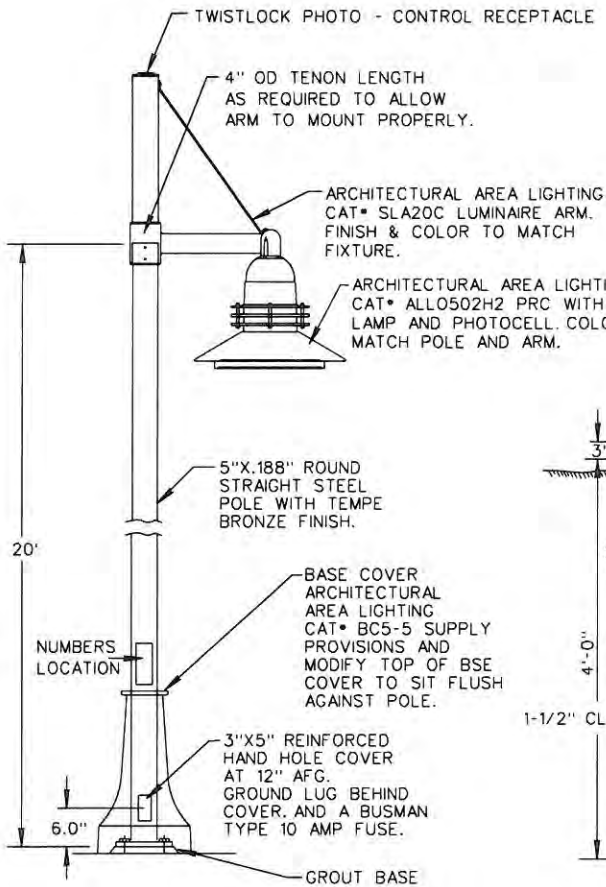
NOTE:

1. MAINTAIN 6' LONG USABLE SPACE FOR BICYCLE.
2. MAINTAIN 30" BETWEEN EACH RACK.
3. MAINTAIN 15" CLEAR DISTANCE BEYOND RACK.

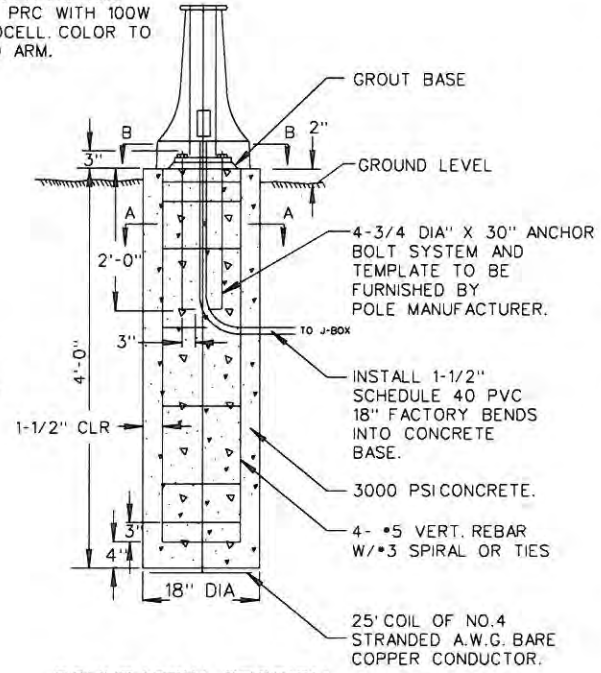
APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

APPROVED: Shelly Seyler TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	BICYCLE RACK DETAIL	DETAIL T-578 REVISED 2007



STREET LIGHT DETAIL SECTION



FOUNDATION SECTION

GENERAL NOTES

1. POLES ARE TO BE DESIGNED PER A.A.S.H.T.O SPECIFICATIONS.

2. ACCEPTED POLE MANUFACTURER: ARCHITECTURAL AREA LIGHTING OR APPROVED EQUAL.

3. ACCEPTED LUMINAIRE MANUFACTURER: ARCHITECTURAL AREA LIGHTING CAT•ALL0502H OR APPROVED EQUAL.

4. FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATIONS T-101.2.

5. DESIGN WIND LOAD = 70 MPH, CATAGORY 'C'

6. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.

7. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.

FOUNDATION NOTES

1. 3000 P.S.I. CLASS A CONCRETE PLACED NEXT TO UNDISTRUBED EARTH.

2. FOUR $\frac{3}{4}$" DIAMETER X 30" GALVANIZED ANCHOR BOLTS WITH LEVELING NUTS AND WASHERS. TACK WELD NUTS TO WASHERS AND WASHERS TO BASE PLATE AFTER TIGHTENING. (3" PROJECTION)

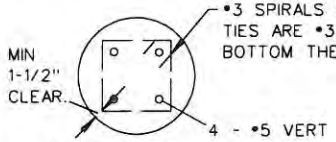
3. 1-1/2" THICK EMBECO NON-SHRINK GROUT •636 OR APPROVED EQUAL.

4. UNSTABLE SOILS AND/OR POLE HEIGHTS OVER 40' SHALL REQUIRE SPECIAL ENGINEERING DESIGN CALCULATIONS.

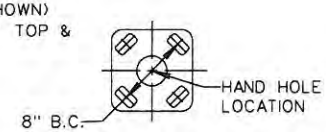
5. A 25' COIL OF NO.4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED. IT SHALL BE CONNECTED TO POLES GROUNDING SCREW IN THE BASE OF THE POLE.

6. ALL FINISHED POLE FOUNDATIONS SHALL BE CHAMFERED AND AT SIDEWALK GRADE UNLESS OTHERWISE NOTED.

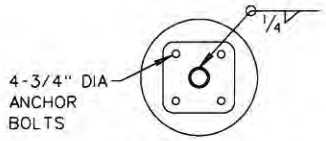
7. REINFORCING STEEL TO BE •5 & LARGER - ASTM A615 GRADE 60. BARS SMALLER THAN •5 MAY BE ASTM A615 - GRADE 40.



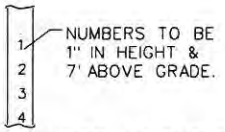
SECTION A - A



BASE PLATE SECTION



SECTION B - B

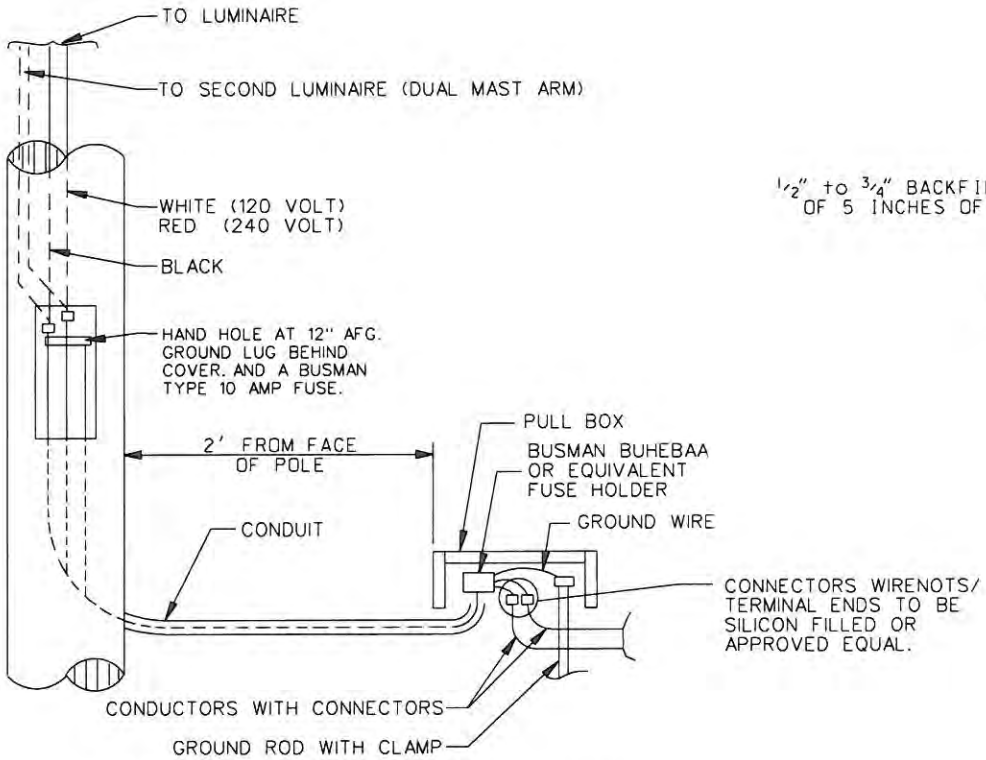


POLE NUMBER LOCATION

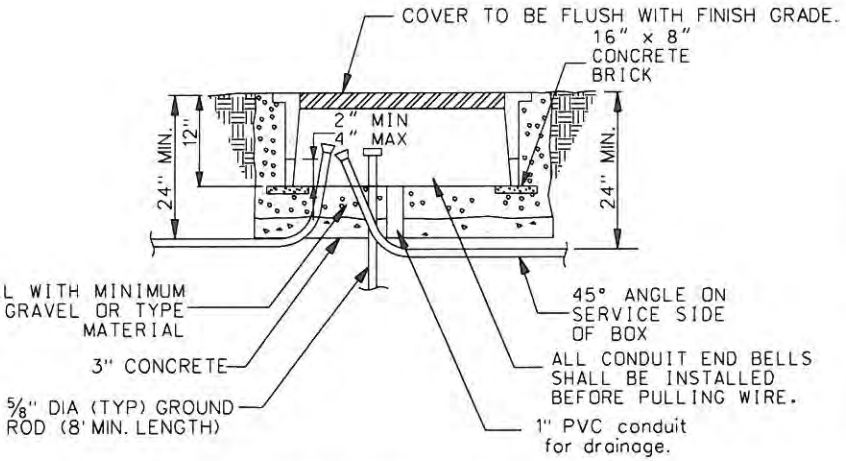
APPROVED: Andrea 6/11/2010

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

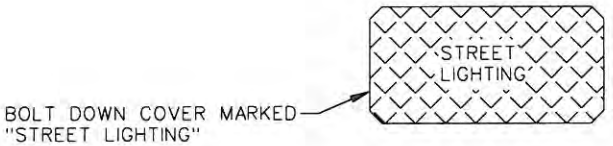
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	TEMPE SPECIAL DISTRICT LIGHTING	DETAIL T-645 REVISED 4, 2010



CONNECTION DETAIL



PULL BOX DETAIL



COVER DETAIL

LAMP	VOLTAGE	FUSE SIZE
100 WATTS 9,500 LUMENS	120 Volts	8 Amps
	240 Volts	5 Amps
250 WATTS 30,000 LUMENS	120 Volts	10 Amps
	240 Volts	5 Amps

NOTES:

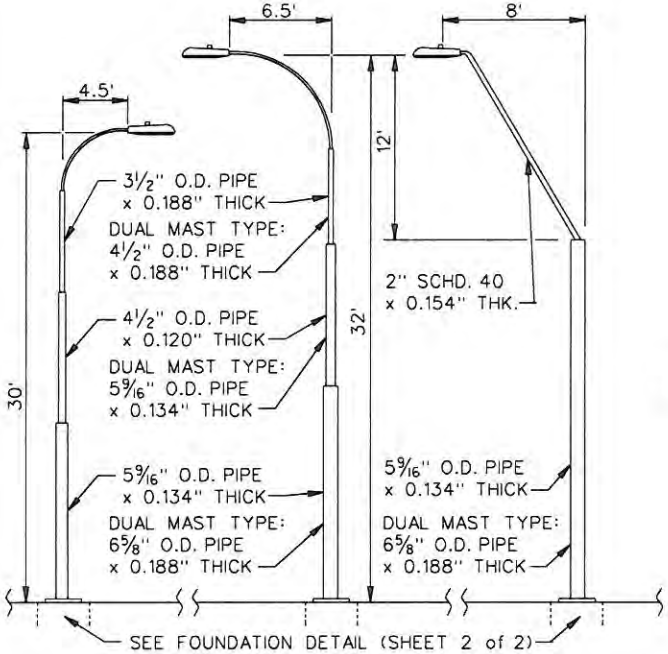
1. ALL PULL BOXES SHALL BE A.D.O.T. TYPE 3-1/2, OR APPROVED EQUAL.
2. ALL PULL BOXES SHALL BE PROVIDED OR APPROVED BY THE UTILITY COMPANY,
3. NO PULL BOXES SHALL BE INSTALLED IN SIDEWALK RAMPS.
4. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.
5. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.

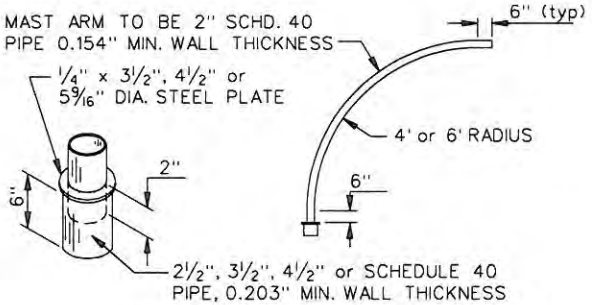
APPROVED: Andy 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

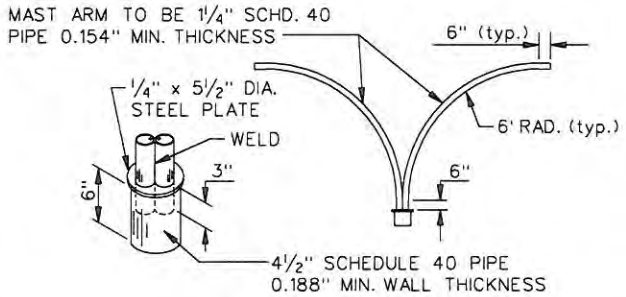
STREET LIGHT PULL BOX & CONNECTION DETAILS

DETAIL T-650
REVISED 4, 2010

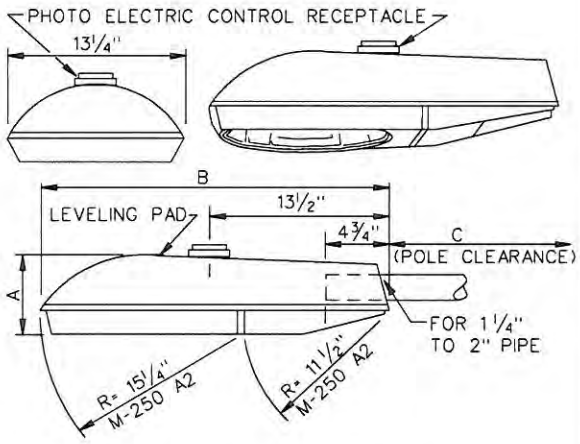




SINGLE MAST ARM



DUAL MAST ARM



ACCEPTED LUMINAIRE TYPES
(OR APPROVED EQUAL)

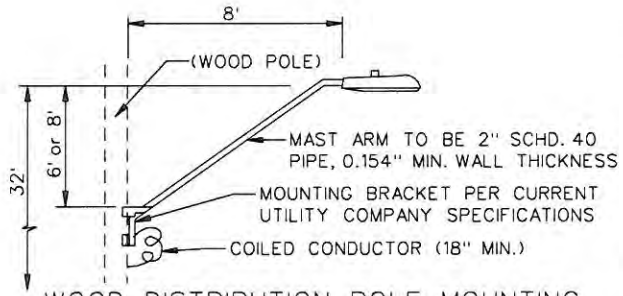
LUMINAIRE TYPE	A	B	C
M-250 A2 CUTOFF SERIES	6½"	27½"	12"
M-250 R2 CUTOFF SERIES	5¾"	26¼"	16"

	MNTG. HGT.	ARM	5⁹⁄₁₆" PIPE	4½" PIPE	3½" PIPE	POLE HEIGHT	LAMP
LOCAL/COLLECTOR	30'	4'-6"	10'-0"	7'-9"	7'-9"	25'-6"	100 WATT
ARTERIAL	32'	6'-6"	10'-0"	7'-9"	7'-9"	25'-6"	250 WATT

SPECIFICATION FEATURES:

1) POWER/MODULE BALLAST ASSEMBLY FOR M-256 A2 ONLY.
2) 1½" TO 2" FOUR- BOLT SLIPFITTER.
3) DIE-CAST ALUMINUM HOUSING WITH ELECTROCOAT GRAY PAINT FINISH.
4) ADJUSTABLE MOGUL BASE SOCKET.
5) ALGLAS FINISH ON REFLECTOR.
6) NO-TOOL PE RECEPTACLE.
7) PLUG-IN STARTING AID.
8) TRUE 90 DEGREE CUTOFF.
9) EXTERNAL STAINLESS STEEL BAIL LATCH.

NOTE:
FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATION T-101.2



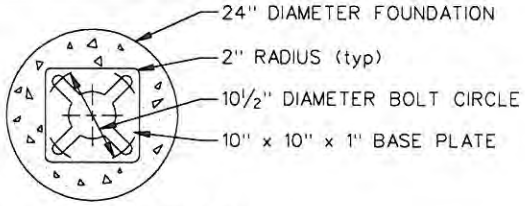
WOOD DISTRIBUTION POLE MOUNTING

APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER
DATE

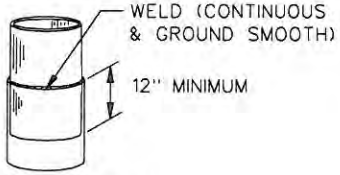
CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

STREAMLINE STEEL POLE DETAILS

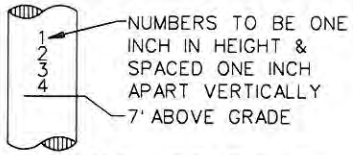
DETAIL T-651
SHEET 1 OF 2
REVISED 4,2010



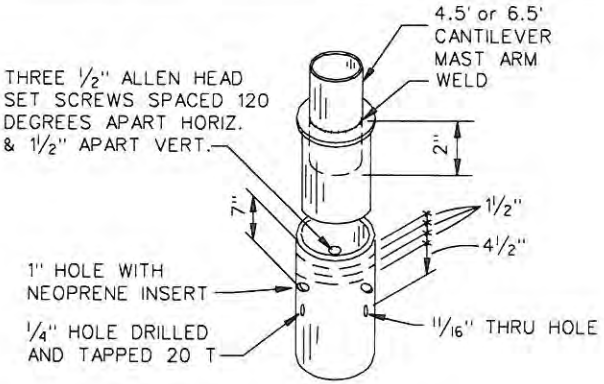
BASE PLATE SECTION



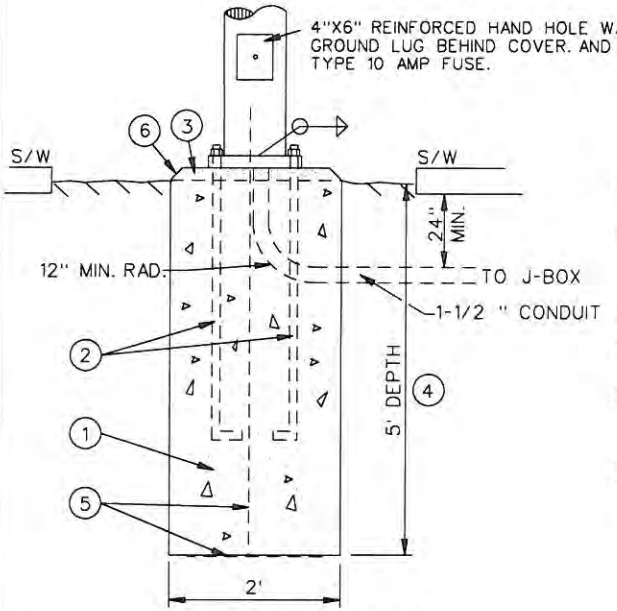
POLE JOINTS



POLE NUMBER LOCATIONS



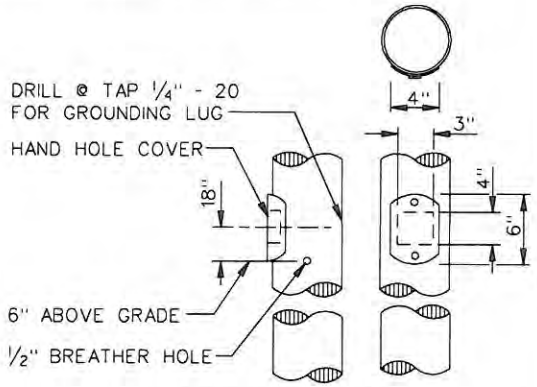
MAST ARM CONNECTION



FOUNDATION SECTION

FOUNDATION NOTES

1. 3000 P.S.I. CLASS A CONCRETE PLACED NEXT TO UNDISTURBED EARTH.
2. 4 - 1" x 36" GALVANIZED ANCHOR BOLTS WITH LEVELING NUTS & WASHERS. TACK WELD NUTS TO WASHERS AND WASHERS TO BASE PLATE AFTER TIGHTENING. (2½" PROJECTON)
3. 1½" THICK EMBECO GROUT #636 OR APPROVED EQUAL.
4. UNSTABLE SOILS, AND/OR POLE HEIGHTS OVER 40', SHALL REQUIRE SPECIAL ENGINEERING.
5. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED. IT SHALL BE CONNECTED TO POLE GROUNDING SCREW IN THE BASE OF THE POLE.
6. ALL FINISHED POLE FOUNDATIONS SHALL BE CHAMFERED, AND AT SIDEWALK GRADE UNLESS OTHERWISE NOTED.
7. THIS FOUNDATION MAY ALSO BE USED FOR DUAL MAST ARM POLES.



PENETRATIONS

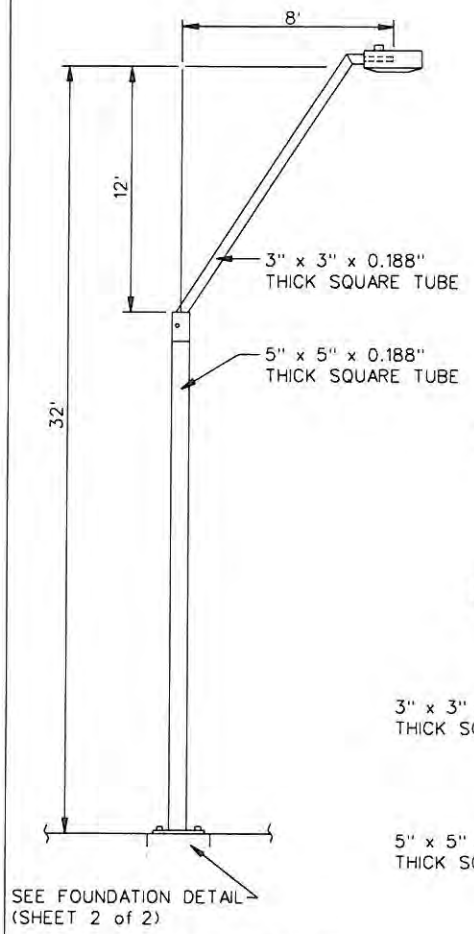
GENERAL NOTES

1. POLES ARE TO BE DESIGNED PER A.A.S.H.T.O. - 80 SPECIFICATIONS.
2. ALL TUBING IS TO BE A.S.T.M. A500 GRADE B (46,000 P.S.I. MIN. YIELD).
3. ACCEPTED POLE MANUFACTURER: CEM-TEC CORPORATION OR APPROVED EQUAL.
4. ACCEPTED LUMINAIRE MANUFACTURER: AMERICAN ELECTRIC SERIES 153/154 OR G.E. DECASHIELD III, OR APPROVED EQUAL.
5. FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATION T-101.2.
6. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.
7. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.

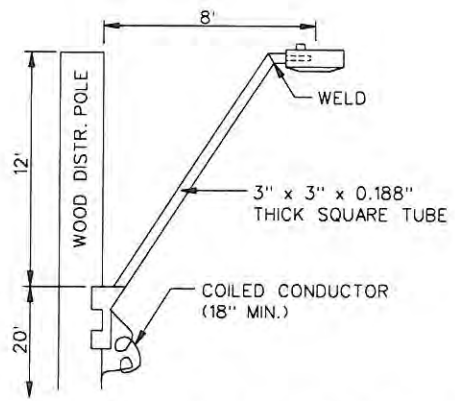
APPROVED: Andy Z 6/11/2010

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

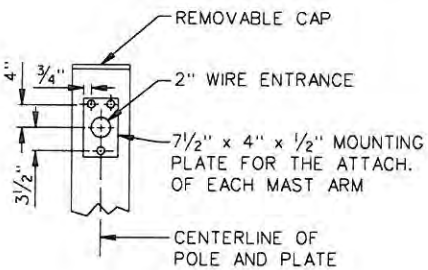
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STREAMLINE STEEL POLE DETAILS	DETAIL T-651 SHEET 2 OF 2 REVISED 4,2010



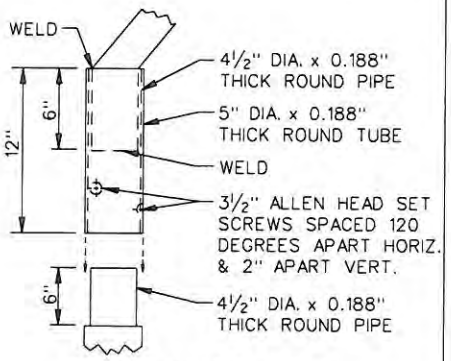
SINGLE MAST POLE



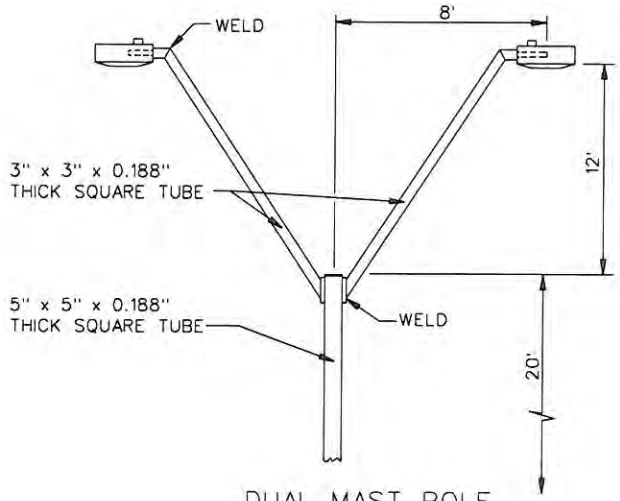
WOOD DISTRIBUTION POLE MOUNTING



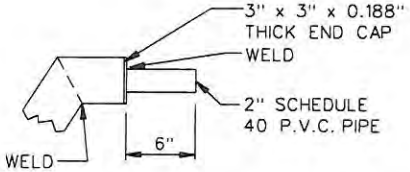
DUAL MAST ARM



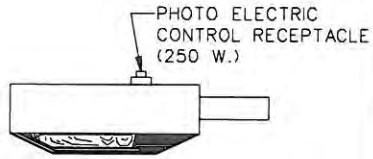
SINGLE MAST ARM



DUAL MAST POLE



LUMINAIRE CONNECTION



LUMINAIRE TYPE

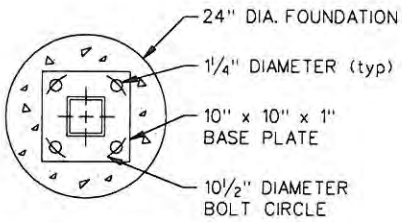
SPECIFICATION FEATURES:

1) HEAVY GAUGE FORMED ALUMINUM HOUSING.
2) SEPARATE SWING DOWN OPTICAL AND BALLAST DOOR ACCESS.
3) ALGLAS FINISH ON REFLECTOR.
4) HEAT AND IMPACT RESISTANT TEMPERED FLAT GLASS LENS.
5) DECORATIVE MOUNTING ARM STANDARD.
6) MOGUL BASE SOCKET.
7) MULTITAP BALLAST-120/208/240/277.

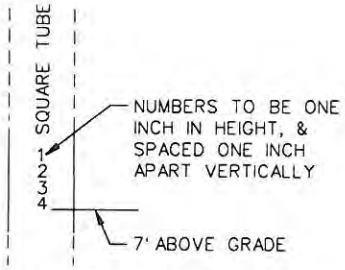
APPROVED: Andrea 6/11/2010

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	ARCHITECTURAL STREET LIGHT	DETAIL T-652 SHEET 1 OF 2 REVISED 4,2010



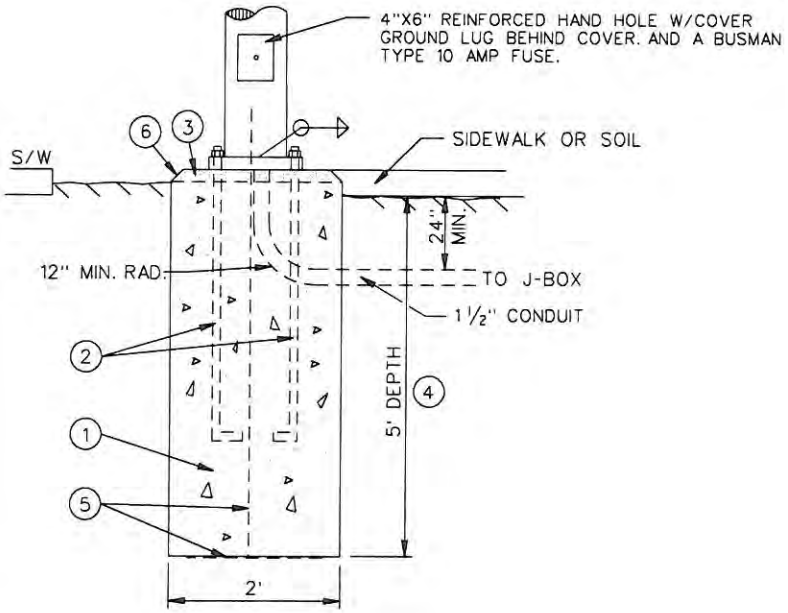
BASE PLATE SECTION



POLE NUMBER LOCATIONS

FOUNDATION NOTES

1. 3000 P.S.I. CLASS A CONCRETE PLACED NEXT TO UNDISTURBED EARTH.
2. 4 - 1" x 36" GALVANIZED ANCHOR BOLTS WITH LEVELING NUTS & WASHERS. TACK WELD NUTS TO WASHERS AND WASHERS TO BASE PLATE AFTER TIGHTENING. (2½" PROJECTON)
3. 1½" THICK EMBECO GROUT •636 OR APPROVED EQUAL.
4. UNSTABLE SOILS, AND/OR POLE HEIGHTS OVER 40', SHALL REQUIRE SPECIAL ENGINEERING.
5. A 25' COIL OF NO. 4 STRANDED A.W.G. BARE COPPER CONDUCTOR SHALL BE INSTALLED BEFORE THE CONCRETE IS POURED. IT SHALL BE CONNECTED TO POLE GROUNDING SCREW IN THE BASE OF THE POLE.
6. ALL FINISHED POLE FOUNDATIONS SHALL BE CHAMFERED, AND AT SIDEWALK GRADE UNLESS OTHERWISE NOTED.
7. THIS FOUNDATION MAY ALSO BE USED FOR DUAL MAST ARM POLES.



FOUNDATION SECTION

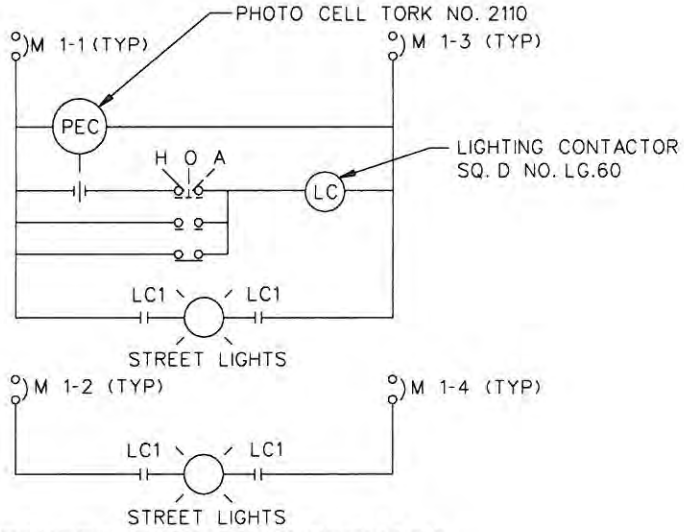
GENERAL NOTES

1. POLES ARE TO BE DESIGNED PER A.A.S.H.T.O. - 80 SPECIFICATIONS.
2. ALL TUBING IS TO BE A.S.T.M. A500 GRADE B (46,000 P.S.I. MIN. YIELD).
3. ACCEPTED POLE MANUFACTURER: CEM-TEC CORPORATION OR APPROVED EQUAL.
4. ACCEPTED LUMINAIRE MANUFACTURER: AMERICAN ELECTRIC SERIES 153/154 OR G.E. DECASHIELD III, OR APPROVED EQUAL.
5. FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATION T-101.2.
6. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.
7. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.

APPROVED: Andya 6/11/2010

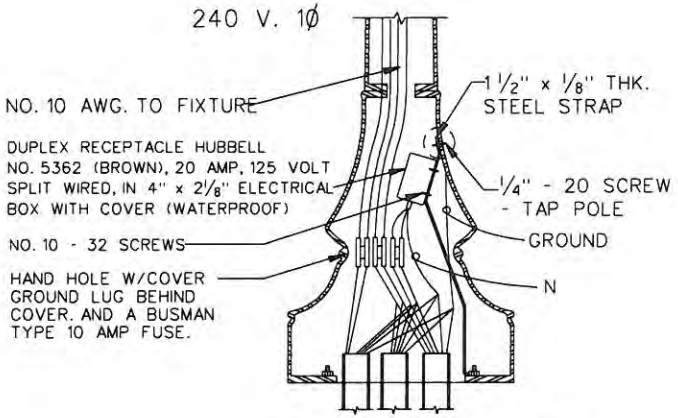
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	ARCHITECTURAL STREET LIGHT	DETAIL T-652 SHEET 2 OF 2 REVISED 4,2010



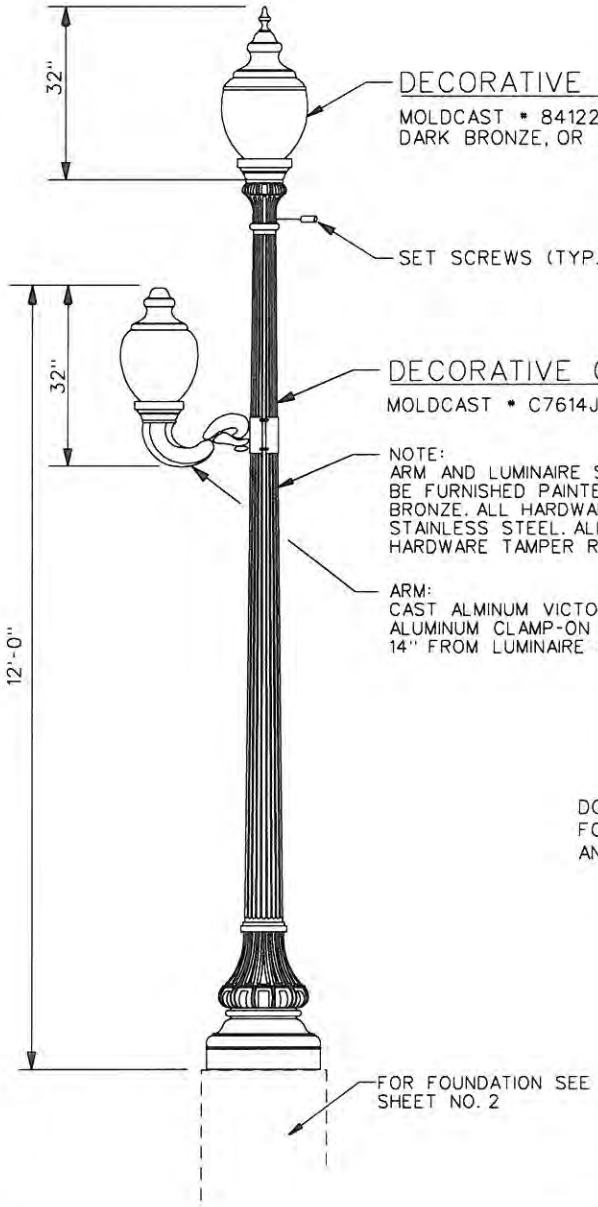
STREET LIGHTING SCHEMATIC

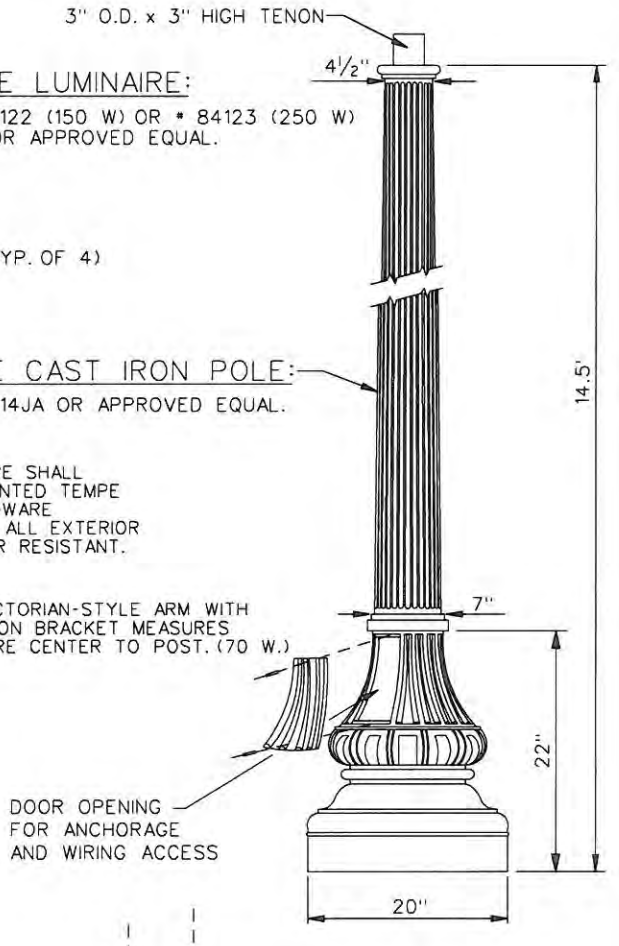
240 V. 1Ø

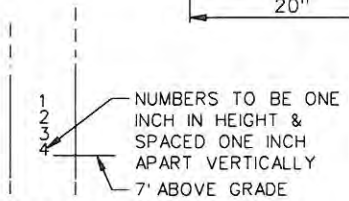


RECEPTACLE MOUNTING

(IF REQUIRED)







POLE NUMBER LOCATIONS

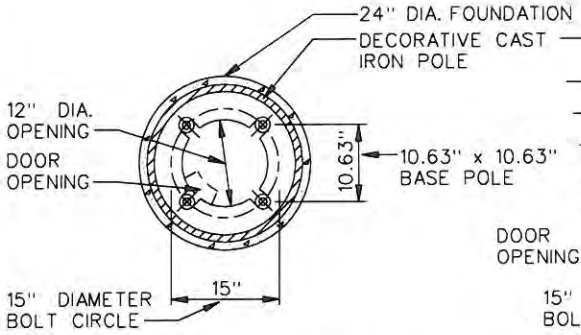
GENERAL NOTES

1. FOR PAINT SPECIFICATIONS SEE TEMPE STREET LIGHTING SPECIFICATION T-101.2.
2. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.
3. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.
4. INSTALL 2' BACK OF CURB TO FACE OF POLE UNLESS OTHERWISE NOTED ON PLANS.

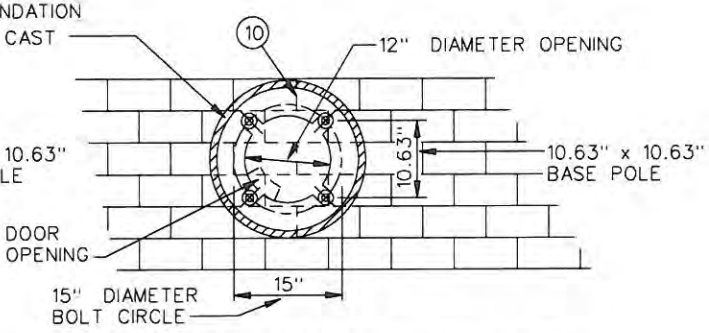
APPROVED: Andy 6/11/2010

DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SPECIAL DISTRICT STREET LIGHT	DETAIL T-653 SHEET 1 OF 2 REVISED 4, 2010



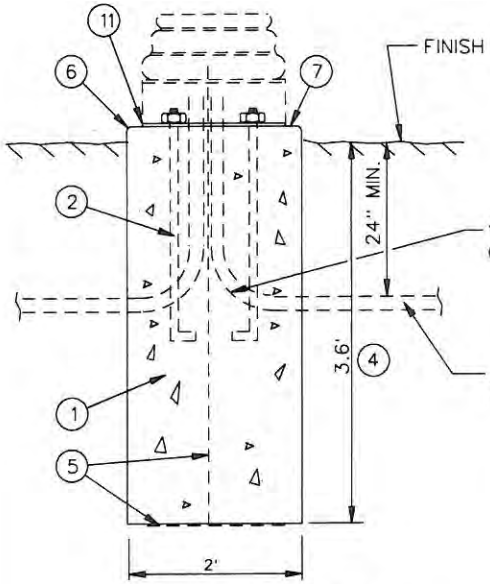
BASE PLATE SECTION



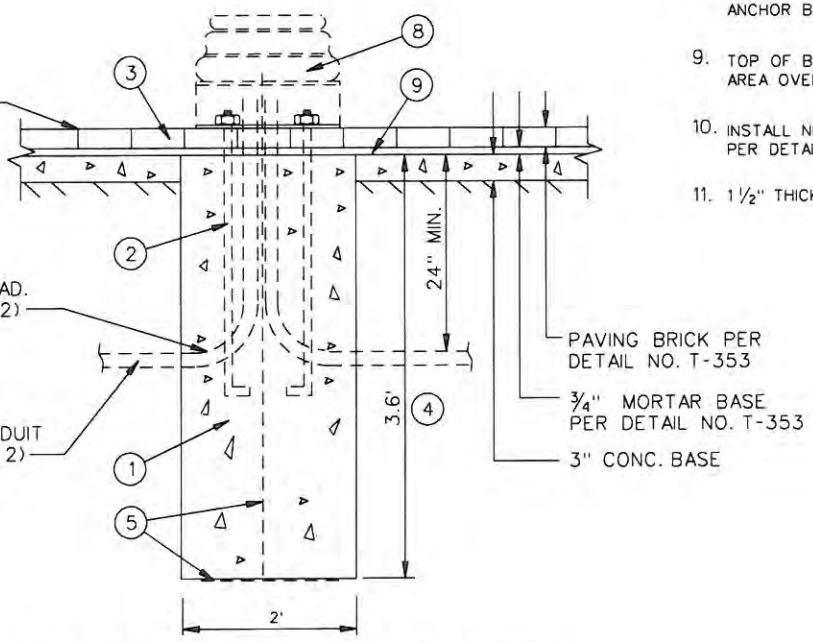
BASE PLATE SECTION WITH BRICK

FOUNDATION NOTES

1. 3000 P.S.I. CLASS A CONCRETE PLACED NEXT TO UNDISTURBED EARTH.
2. 4 - ¾" x 24" GALVANIZED ANCHOR BOLTS (3" PROJECTION) WITH LEVELING NUTS & WASHERS.
3. BRICKS ARE TO BE INSTALLED AFTER BASE AND CONDUIT ARE INSTALLED.
4. UNSTABLE SOILS, AND/OR POLE HEIGHTS CHANGE, SHALL REQUIRE SPECIAL ENGINEERING.
5. A 25' COIL OF NO. 4 A.W.G. BARE COPPER CONDUCTOR SHALL BE CONNECTED TO POLE GROUNDING SCREW IN THE BASE OF THE POLE.
6. ALL FINISHED POLE FOUNDATIONS SHALL BE CHAMFERED, AT SIDEWALK GRADE UNLESS OTHERWISE NOTED.
7. TOP OF BASE SHALL BE LEVEL AND ELEVATION OF TOP OF BASE SHALL EQUAL TOP OF CURB.
8. POLES ARE TO BE INSTALLED AFTER BRICKS HAVE BEEN LAID AROUND ANCHOR BOLTS AND CONDUIT.
9. TOP OF BASE SHALL BE LEVEL. BRICK LAYERS SHALL MAINTAIN LEVEL AREA OVER BASE.
10. INSTALL NEW RUNNING BOND PATTERN TO MATCH EXISTING, OR PER DETAIL T-353.
11. 1½" THICK EMBECO GROUT •636 OR APPROVED EQUAL.



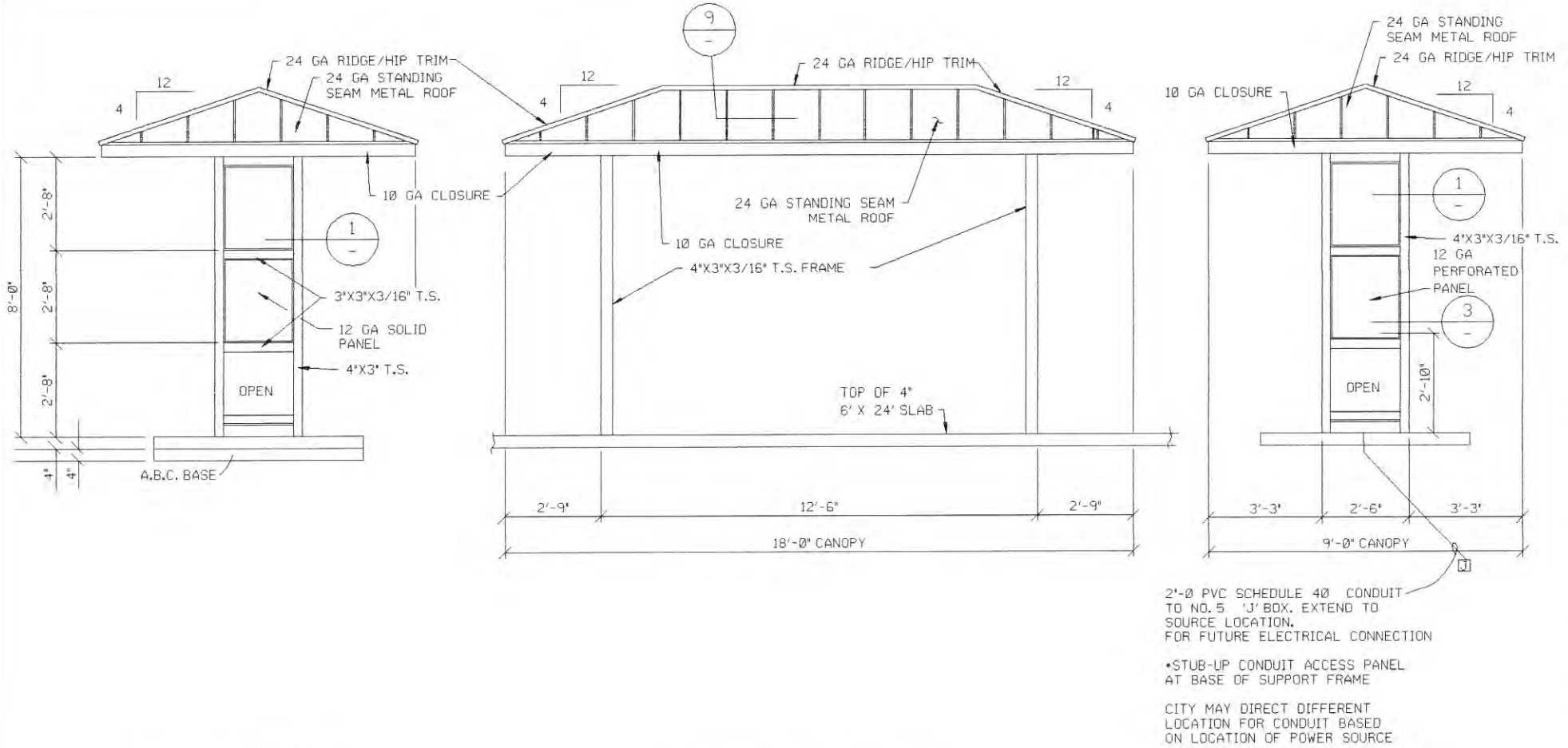
FOUNDATION SECTION



FOUNDATION SECTION WITH BRICK

APPROVED: Andy 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SPECIAL DISTRICT STREET LIGHT	DETAIL T-653 SHEET 2 OF 2 REVISED 4, 2010



LEFT ELEVATION

FRONT ELEVATION

RIGHT ELEVATION

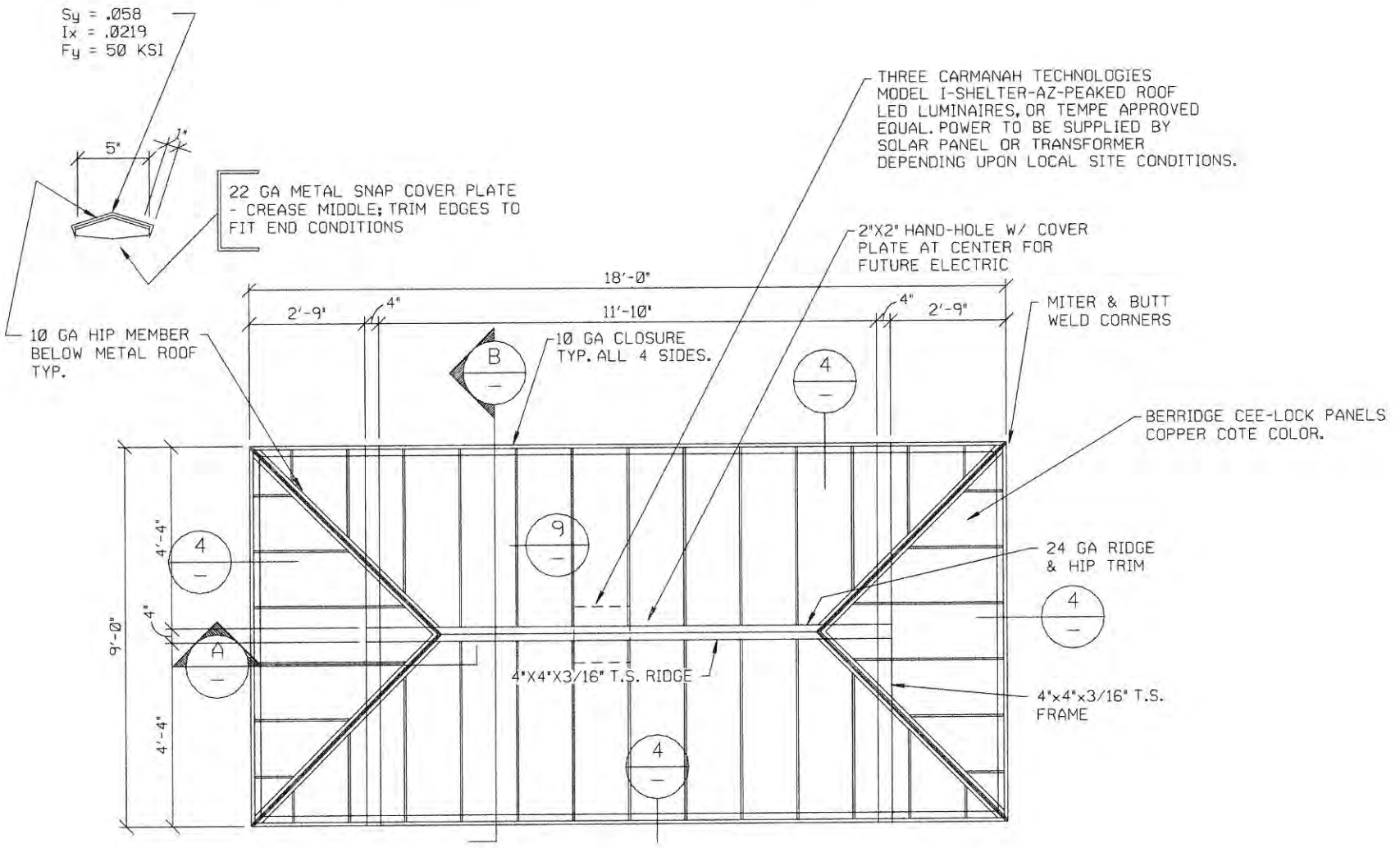
SPECIAL NOTES

1. SHELTER SHALL BE GROUNDED (SEE NOTE NO. 7 ON SHEET 11 OF 12).
2. LANDSCAPE REQUIREMENTS (SEE NOTE NO. 2 ON SHEET 11 OF 12)
3. ARTIST DESIGN SHELTER (SEE SPECIAL NOTE NO. 1 ON SHEET 11 OF 12)

APPROVED: _____ 7/2/07
DEPUTY PUBLIC WORKS MANAGER
CITY ENGINEER — DATE

APPROVED: _____ 6/26/07
TRAFFIC ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD BUS SHELTER - ELEVATIONS	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY REID & ASSOCIATES TEMPE, AZ	DETAIL T-654 1 OF 12 REVISED 2007



ROOF PLAN

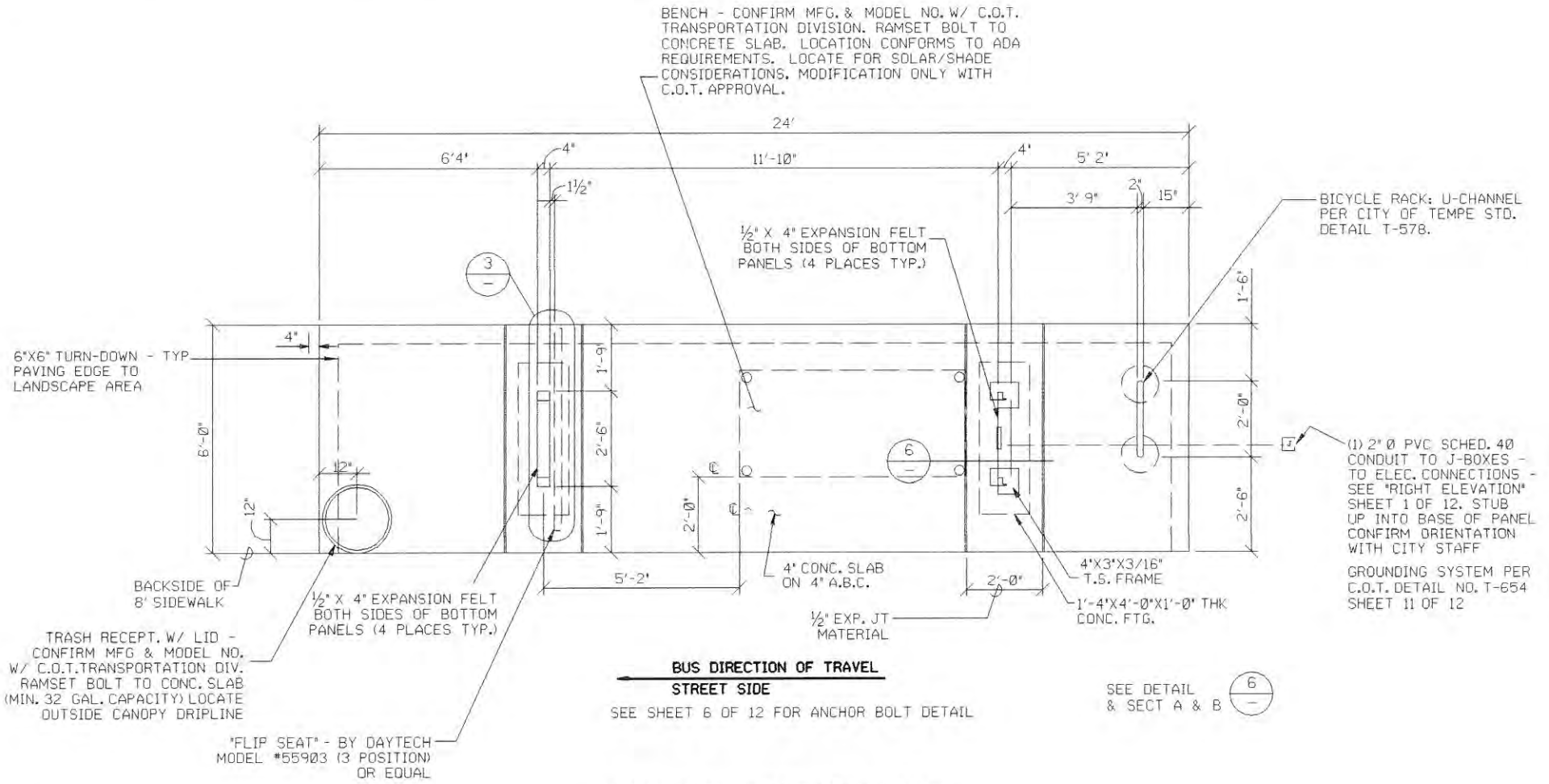
NOTE:

PAINT UNDERSIDE OF CEE-LOCK PANEL WHITE PRIOR TO INSTALLATION.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7/2/07

APPROVED: Shelby Seyler TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD BUS SHELTER ROOF PLAN	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY REID & ASSOCIATES TEMPE, AZ	DETAIL T-654 2 OF 12 REVISED 2007



FLOOR PLAN / FOUNDATION PLAN

*ALL T.S. FRAMES & INFILL PANELS TO BE PAINTED SHERWIN WILLIAMS - TEMPE BRONZE: #B66-T-104

NOTES:

1. SEE SPECIAL REQUIREMENTS (SEE SHEET 11 OF 12)

2. DEVELOPER OR DEVELOPER'S CONTRACTOR TO DETERMINE SOURCE OF FEED FOR ELECTRIC SUPPLY AND TELEPHONE SERVICE. THE 2" PVC CONDUIT SHALL EXTEND FROM THE UPRIGHT TO SERVICE SOURCE. CONTACT CITY STAFF TO CO-ORDINATE LOCATIONS.

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

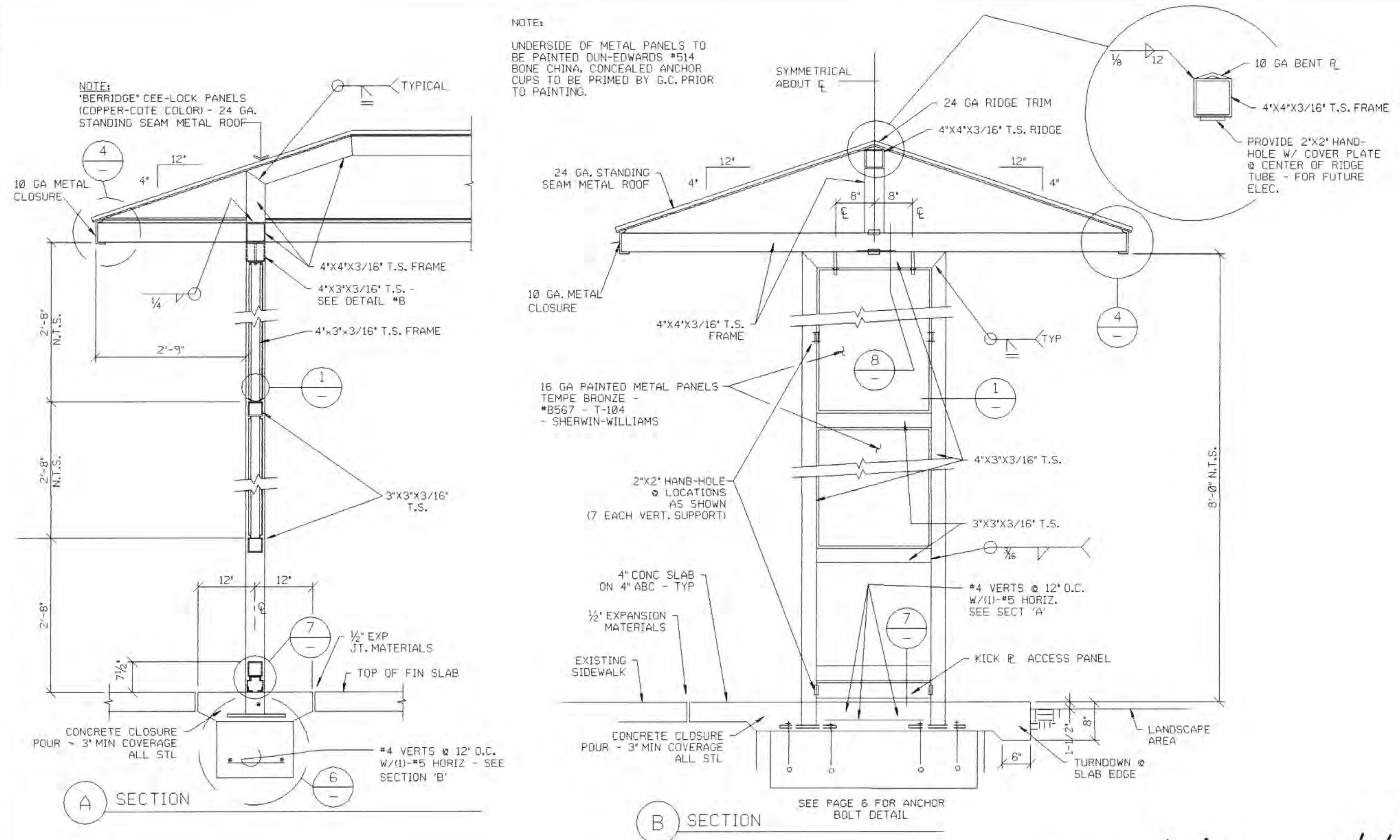
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

BUS SHELTER
FLOOR/FOUNDATION PLAN

ASSEMBLY DRAWING ONLY
SPECS AND DESIGN BY
REID & ASSOCIATES
TEMPE, AZ

DETAIL T-654
SHEET 3 OF 12
REVISED 2007

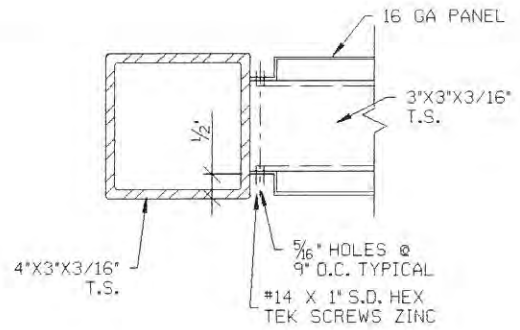


APPROVED: [signature] 7/2/07
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

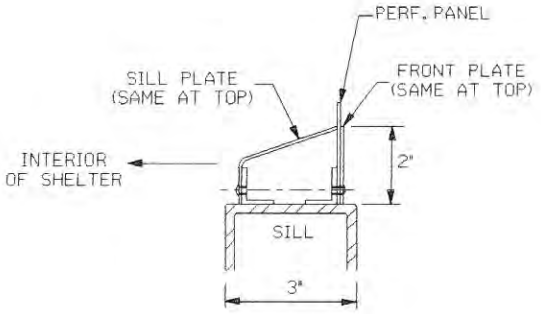
APPROVED: [signature] 6/26/07
TRAFFIC ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD BUS SHELTER ROOF SECTIONS	ASSEMBLY DRAWING ONLY SPECS AND DESIGN BY REID & ASSOCIATES TEMPE, AZ	DETAIL T-654 4 OF 12 REVISED 2007

GOVERNING CODE	1994 UBC
SEISMIC ZONE	2B
SOIL BEARING	1500 PSF
CONCRETE (ALL)	2500 PSI
METALS	
ROLLED SHAPES AND PLATES	Fy=36 KSI
PIPES	Fy=36 KSI
STRUCTURAL TUBING	Fy=46 KSI
10 GAGE BENT PLATE	Fy=50 KSI
CONSTRUCTION TYPE	II-N
OCCUPANCY	M1



1 PANEL TO FRAME CONNECTION



2 FOR FUTURE USE

3 PERFORATED PANEL TO FRAME

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

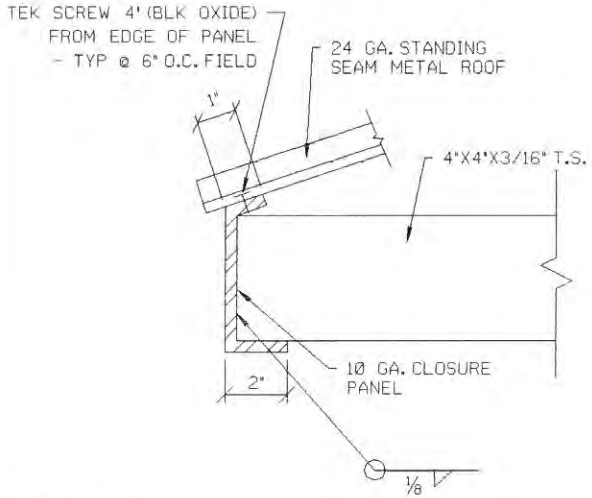
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

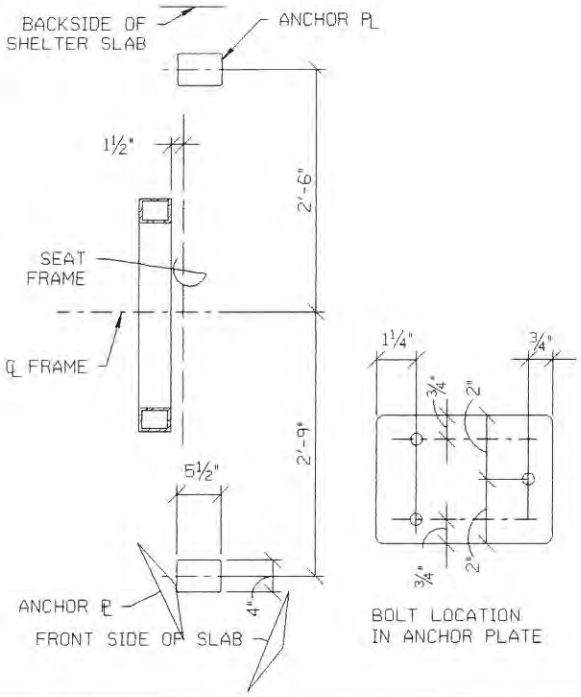
STANDARD BUS SHELTER
CONNECTION DETAILS 1-3

ASSEMBLY DRAWING ONLY
SPECS AND DESIGN BY
REID & ASSOCIATES
TEMPE, AZ

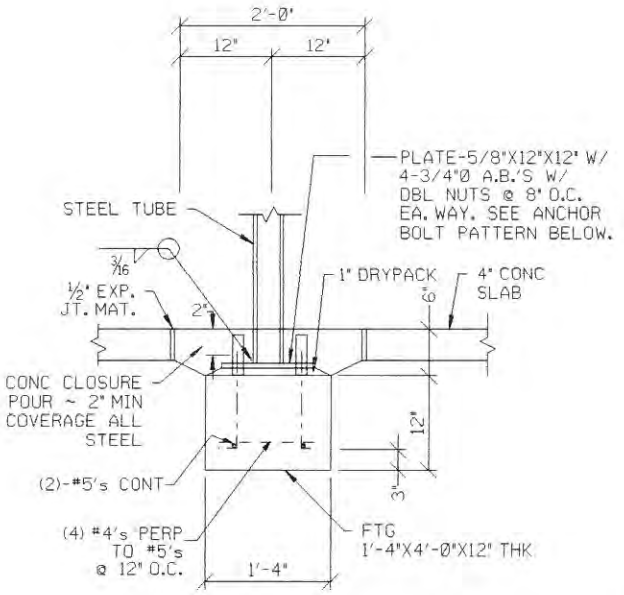
DETAIL T-654
5 OF 12
REVISED 2007



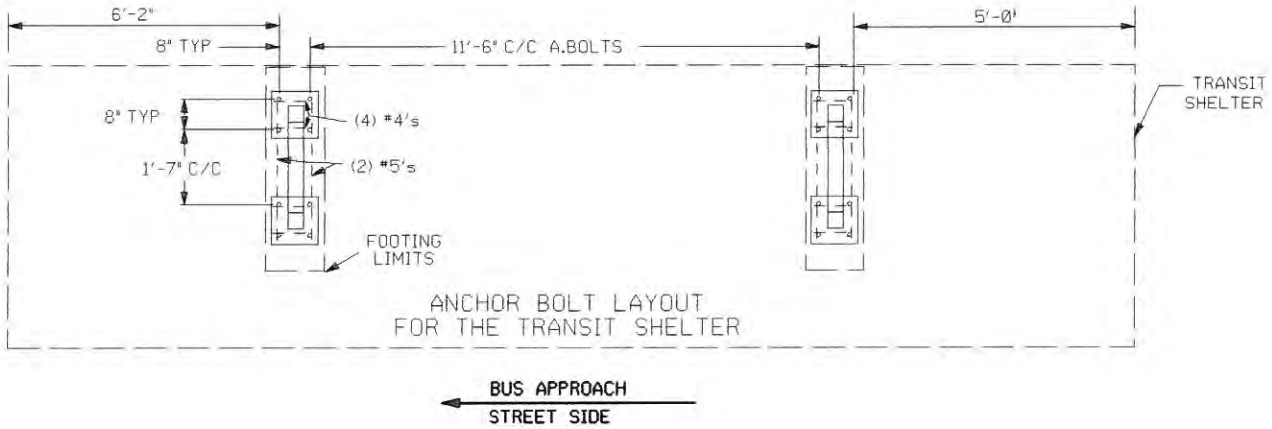
4 TYPICAL CLOSURE



5 FLIP SEAT ANCHOR PATTERN



6 FOOTING @ T.S. FRAME



APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

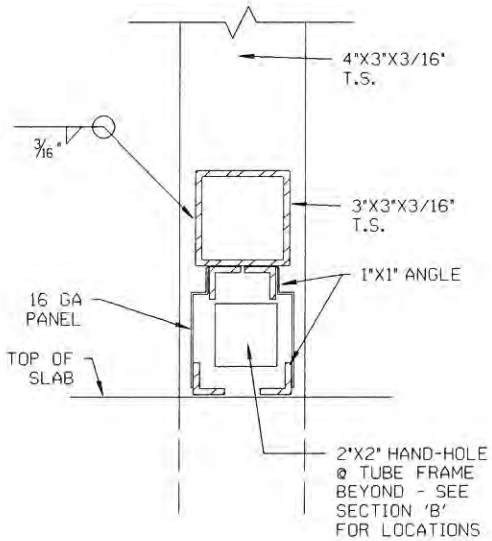
APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

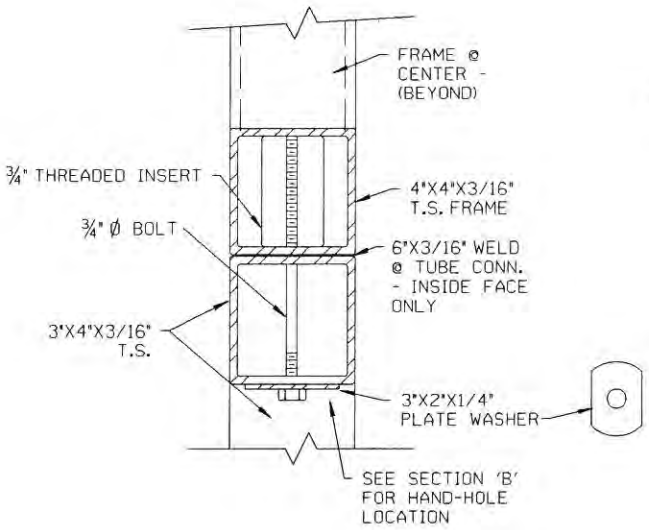
STANDARD BUS SHELTER
CONNECTION DETAILS 4-6

ASSEMBLY DRAWING ONLY
SPECS AND DESIGN BY
REID & ASSOCIATES
TEMPE, AZ

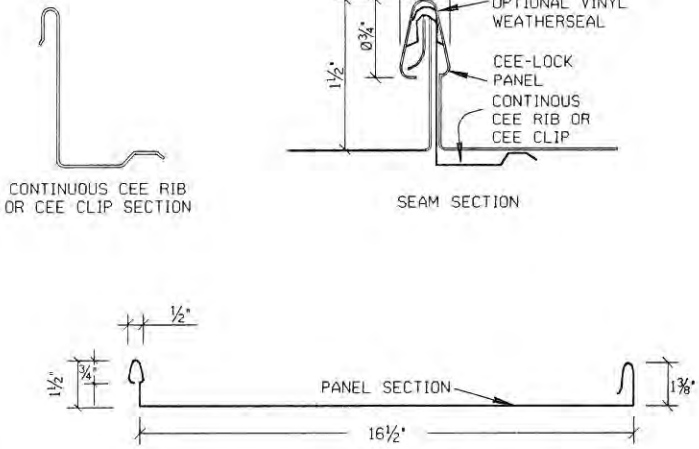
DETAIL T-654
6 OF 12
REVISED 2007



7 KICK PLATE ACCESS PANEL



8 CONNECTION @ ROOF STRUCTURE



9 CEE - LOCK ROOF PANEL N.T.S.

APPROVED: Glenn Kephart — DEPUTY PUBLIC WORKS MANAGER TRANSPORTATION — DATE 6/27/01

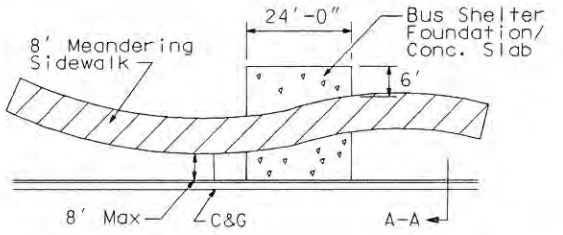
APPROVED: Neil Mann — DEPUTY PUBLIC WORKS MANAGER CITY ENGINEER — DATE 7-3-01

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

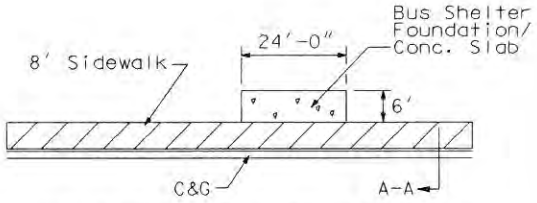
STANDARD BUS SHELTER
CONNECTION DETAILS 7-9

ASSEMBLY DRAWING ONLY
SPECS AND DESIGN BY
REID & ASSOCIATES
TEMPE, AZ

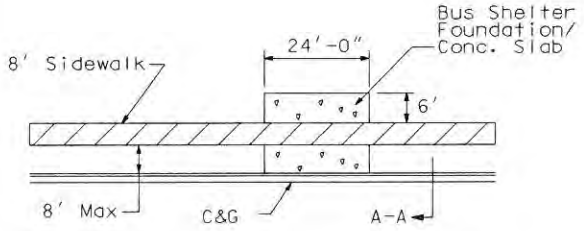
DETAIL T-654
7 OF 12
REVISED 2001



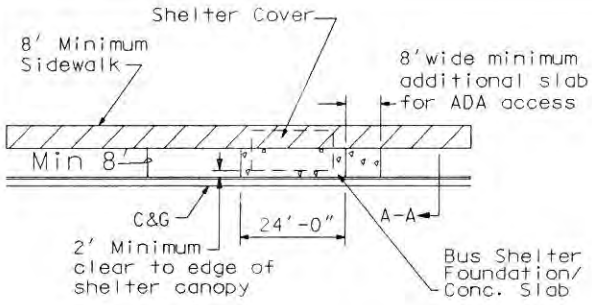
ADJACENT TO MEANDERING SIDEWALK



ADJACENT TO CURB SIDEWALK

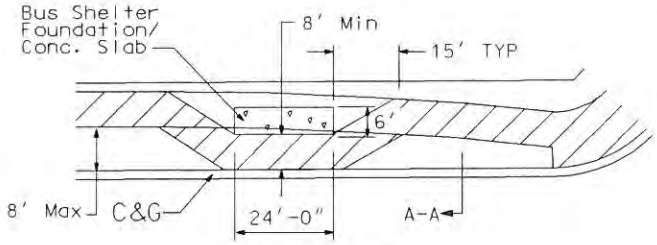


ADJACENT TO PARKWAY SIDEWALK



OVER PARKWAY AND SIDEWALK OR WITHIN THE PARKWAY

(See Transit for approval prior to use)

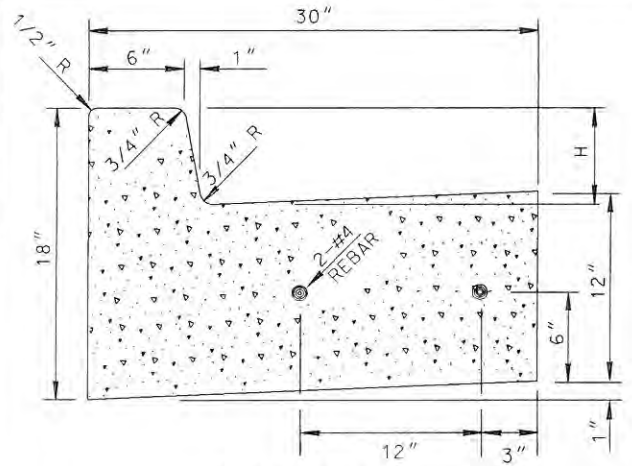


DIVERSION OF EXISTING SIDEWALK

(Diversion of sidewalk should be minimized)

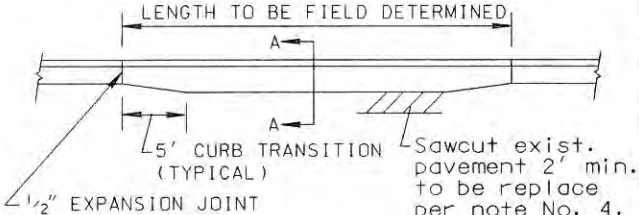
NOTE:

FOR BUS STOP SIGNS SEE SPECIAL NOTE NO. 5 ON SHEET 11 OF 11.



SECTION A-A

SPECIAL C&G ADJACENT TO BUS STOP.



CURB AND GUTTER TRANSITION

NOTES:

1. H=7" or match existing curb & gutter
2. Class "AA" concrete.
3. Same notes as MAG Det. No. 221
4. Pavement replacement shall be min. 3" thick per detail T-312 or T-313 on 12" ABC on minimum 6" of prepared subgrade, or match existing (whichever is greater).

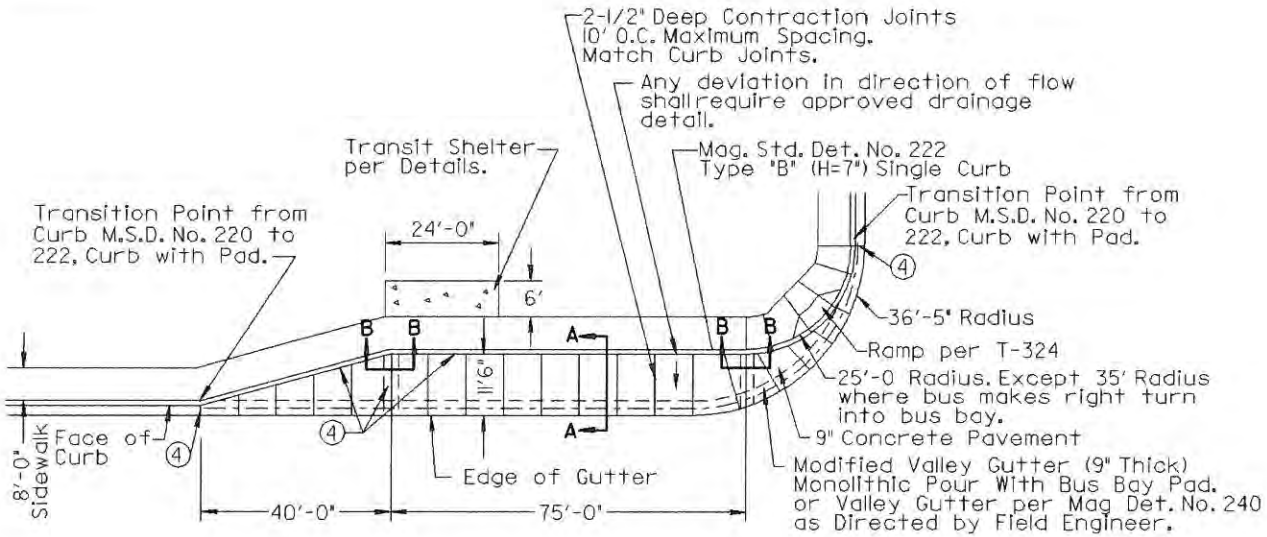
APPROVED: _____ 9/9/05
PUBLIC WORKS MANAGER — DATE

APPROVED: _____ 8/16/05
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

STANDARD BUS SHELTER FOUNDATION LOCATION OPTIONS AND SPECIAL CURB & GUTTER.

DETAIL T-654
9 OF 12
REVISED 2005



THROUGH TRAFFIC LANE

NOTES:

1. Driveways should be avoided within the bus bay. A driveway should not be placed within the transit/accessory pad area.

2. Concrete to be 9" in depth Class "A" per MAG Specs. with 6" x 6" 10/10 welded wire reinforce locate wire 3" above bottom of slab, use concrete chairs 18" O.C all directions

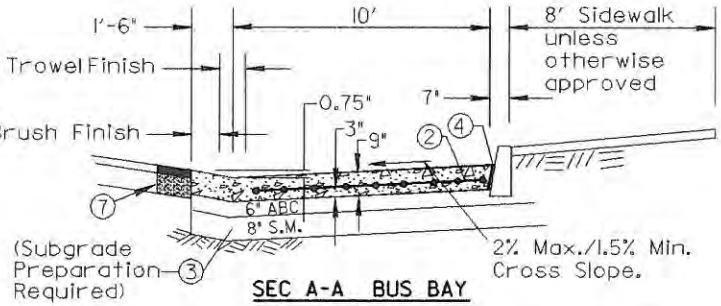
3. 6" ABC on 8" Select Material 95% Compaction Subgrade Preparation Required to meet MAG and City of Tempe soils requirements.

4. 1/2" Bituminous preformed expansion joint filler, A.S.T.M. D-1751.

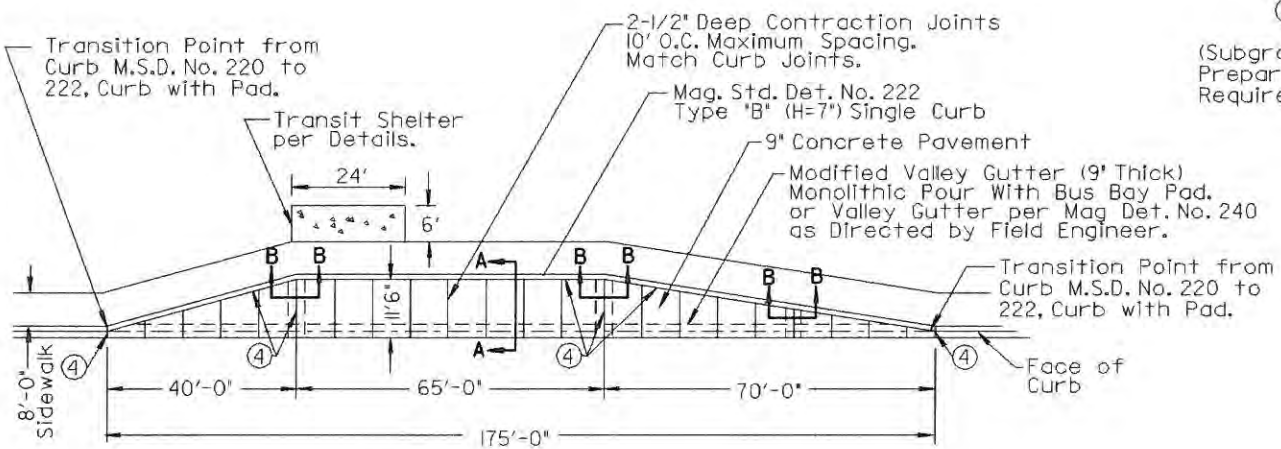
5. Concrete pad to be poured separately from concrete bus bay pavement. Bond breaker acceptable.

6. Incorporate required site landscaping to provide additional shade.

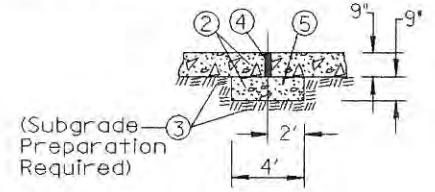
7. 2' Min. Sawcut and Removal of Existing Pavement, Replacement shall be per C.O.T. Detail T-311, T-312, T-313, T-315, T-316 or T-317 on 12" ABC on Min. 6" of Prepared Subgrade, or Match Existing (Whichever is Greater).



SEC A-A BUS BAY



THROUGH TRAFFIC LANE

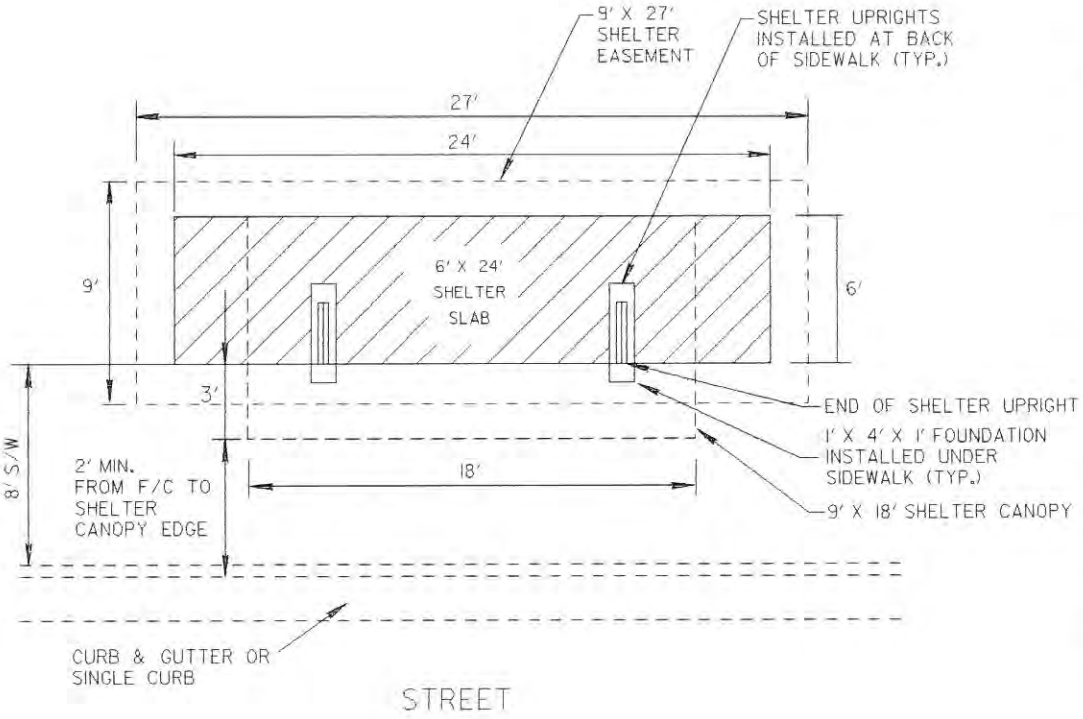


SEC B-B EXPANSION JOINT

APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

APPROVED: _____ TRAFFIC ENGINEER — DATE 6/27/07

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	STANDARD MID-BLOCK & FAR SIDE BUS PULLOUT	DETAIL T-654 10 OF 12 REVISED 2007



SPECIAL REQUIREMENTS:

1. AN ARTIST-DESIGNED SHELTER MAY BE SUBSTITUTED FOR STANDARD SHELTER
BY APPROVAL OF CITY OF TEMPE TRANSIT SECTION. HOWEVER, IT MUST INCORPORATE ALL THE FUNCTIONAL ELEMENTS INCLUDED IN THE STANDARD SHELTER. SEE TRANSIT & DESIGN REVIEW STAFF FOR DETAILS.

2. SITE'S LANDSCAPING THEME SHOULD PROVIDE APPROPRIATE TREES FOR A SHADE CANOPY NEAR OR AROUND SHELTER.

3. THREE CARMANAH TECHNOLOGIES MODEL I-SHELTER-AZ-PEAKED ROOF LED LUMINAIRES, OR TEMPE APPROVED EQUAL. POWER TO BE SUPPLIED BY SOLAR PANEL OR TRANSFORMER DEPENDING UPON LOCAL SITE CONDITIONS.

4. SITE-SPECIFIC STYLE OF FURNITURE WILL BE REQUIRED IN THE MILL AVE. DOWNTOWN AREA, ON APACHE BLVD., AND ON ART SHELTERS. CONTACT THE TRANSIT SECTION STAFF FOR DETAILS.

5. STANDARD BUS STOP SIGN LOCATION: NEW OR RELOCATED SIGNS SHALL BE APPROVED BY THE TRAFFIC/TRANSIT STAFF.

6. ADDITIONAL REQUIREMENTS MAY INCLUDE:
a) LEANING RAIL -- "LACOR" MODEL.....
b) LED REAL TIME BUS INFORMATION SIGN
c) BUS ROUTE/TRAFFIC INFORMATION KIOSKS
d) PEDESTRIAN RAILING AROUND THE BACK OF SHELTER ADJACENT TO STEEP SLOPES OR DROP-OFFS

7. CITY OF TEMPE TRANSIT (BUS SHELTERS) SHALL BE PROVIDED WITH A GROUNDING SYSTEM THAT MAY CONSIST OF ONE OF THE FOLLOWING METHODS:
a) 25 FEET OF #4 STRANDED COPPER (UNINSULATED) INSTALLED IN THE BASE OF ONE OF THE UPRIGHT FOUNDATIONS. THE GROUNDING CONDUCTOR WILL EXTEND OUT OF THE POURED CONCRETE FOUNDATION WITH A LENGTH NOT TO EXCEED 3 FEET. THE GROUNDING CONDUCTOR WILL BE WRAPPED IN A CLOCKWISE ROTATION, ONE WRAP, AROUND ONE OF THE UPRIGHT ANCHOR BOLTS. A FLAT FENDER WASHER WILL BE INSTALLED ON TOP OF THE CONDUCTOR WITH THE ANCHOR BOLT NUT ON TOP OF THE FLAT WASHER AND SECURED.

b) A SECOND METHOD WILL CONSIST OF A $\frac{5}{8}$"X 8' GROUND ROD DRIVEN IN THE ELECTRICAL PULLBOX ADJACENT TO THE BUS SHELTER. A GROUND ROD TERMINAL NUT (ACORN NUT) WILL BE INSTALLED ON TOP OF THE GROUND ROD SECURING A #8 AWG BARE SOLID COPPER WIRE. THE GROUND WIRE WILL BE INSTALLED FROM THE JUNCTION BOX, UNBROKEN AND UNSPLICED, TO THE BUS SHELTER UPRIGHT WHERE IT WILL BE TERMINATED. A SET-SCREW TERMIAL LUG WILL BE FASTENED TO THE STRUCTURE UPRIGHT UNDER THE BOTTOM KICKPANEL. THE AREA UNDER THE TERMINAL LUG WILL BE CLEANED OF ALL RUST, SCALE AND PAINT. THE #8 BARE BOND CONDUCTOR WILL BE TERMINATED IN THE SET-SCREW TERMINAL LUG.

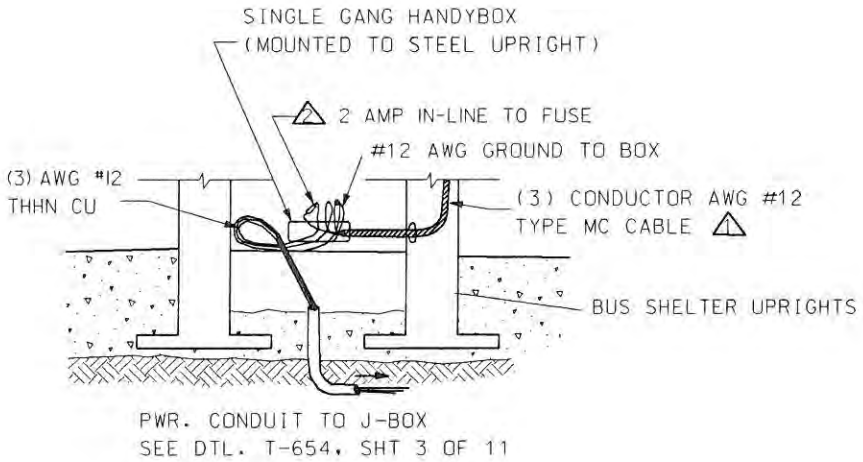
BOTH GROUNDING METHODS WILL BE DONE IN ACCORDANCE WITH ARTICLE 250 OF NATIONAL ELECTRICAL CODE.

8. SEE SHEET 12 OF 12 FOR BUS SHELTER POWER AND LIGHT DETAIL.

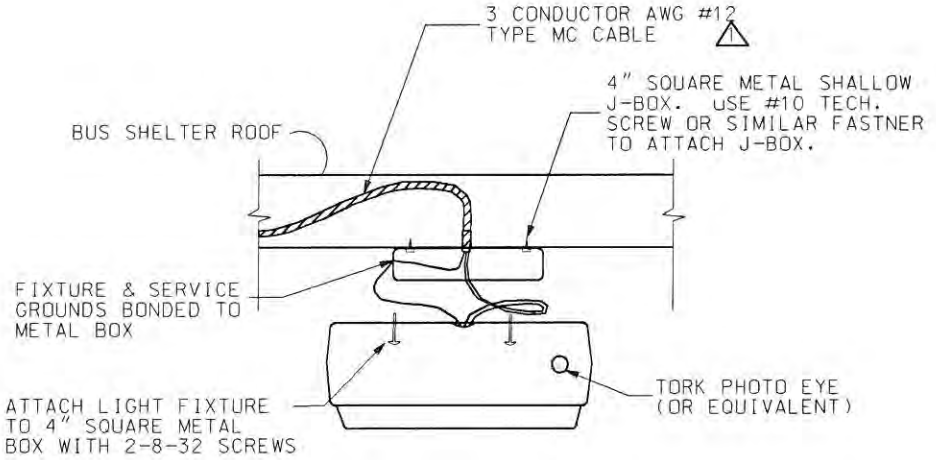
APPROVED: _____ DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE 7/2/07

APPROVED: _____ TRAFFIC ENGINEER — DATE 6/26/07

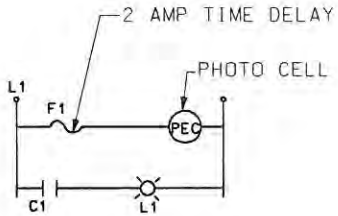
CITY OF TEMPE PUBLIC WORKS DEPARTMENT	SPECIAL NOTES AND SHELTER EASEMENT	DETAIL T-654 11 OF 12 REVISED 2007



LIGHTING POWER CONNECTION



LIGHTING FIXTURE CONNECTION



TRANSIT SHELTER
LIGHTING SCHEMATIC
120 V AC 1Ø

NOTES:

1. TYPE MC CABLE TO BE INSTALLED AS PER N.E.C. ARTICALE 334
2. (2) AMP, TIME DELAY, SINGLE TRIP FUSE. TYPE LITTLE FUSE LGR/LMF OR EQUIVALANT.
3. ALL GROUNDING WILL BE INSTALLED IN COMPLIANCE WITH ARTICLE 250 OF THE NATIONAL ELECTRICAL CODE.

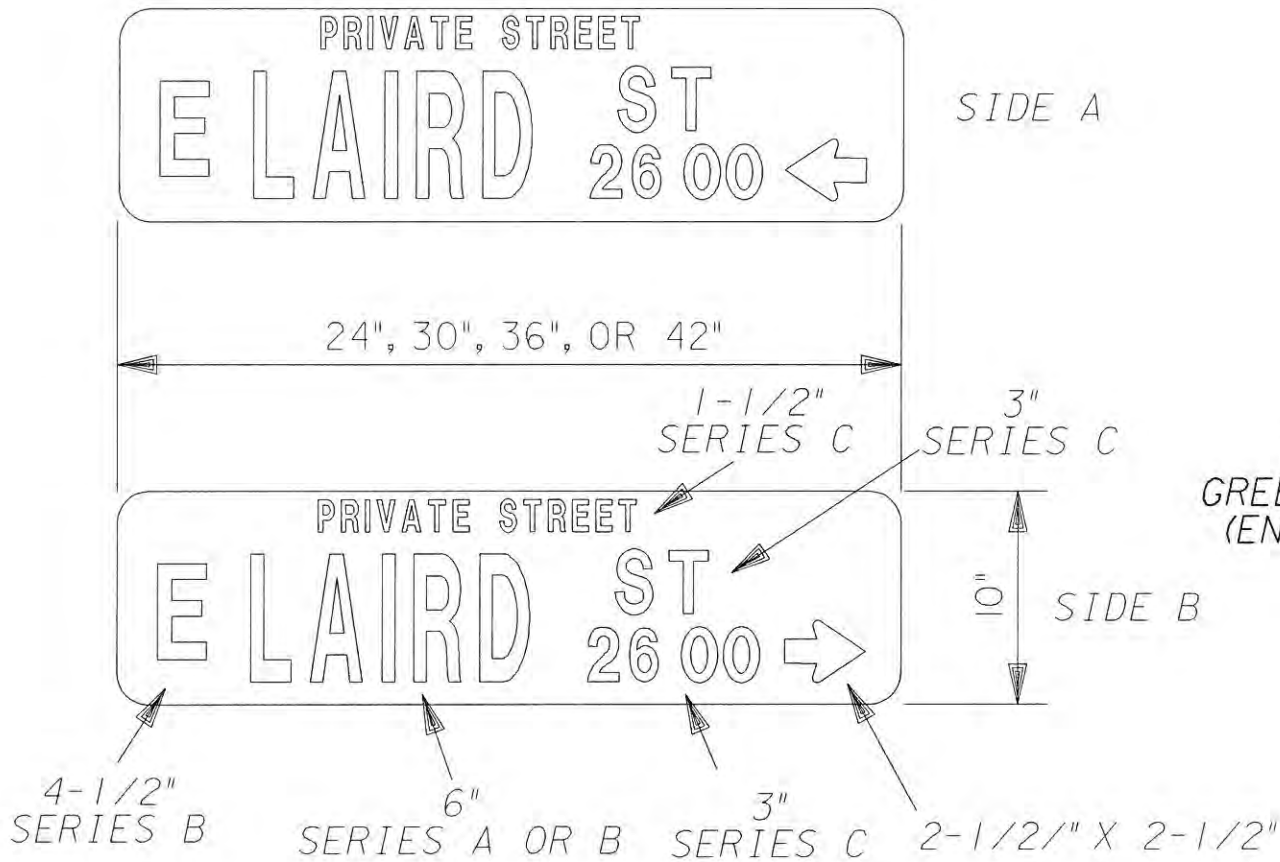
APPROVED: _____ DEPUTY PUBLIC WORKS DIRECTOR — DATE 2/4/00

APPROVED: _____ CITY ENGINEER — DATE 2/9/00

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

BUS SHELTER POWER AND LIGHT DETAIL

DETAIL T-654
12 OF 12
1999

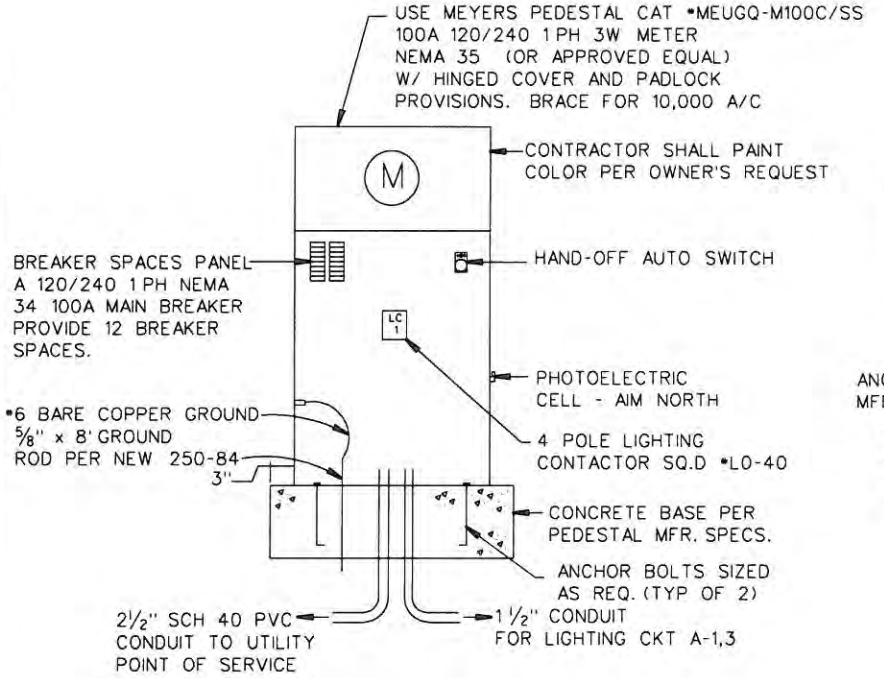


DOUBLE FACED WHITE REFLECTIVE LEGEND ON GREEN REFLECTIVE BACKGROUND (ENGINEER GRADE OR BETTER)

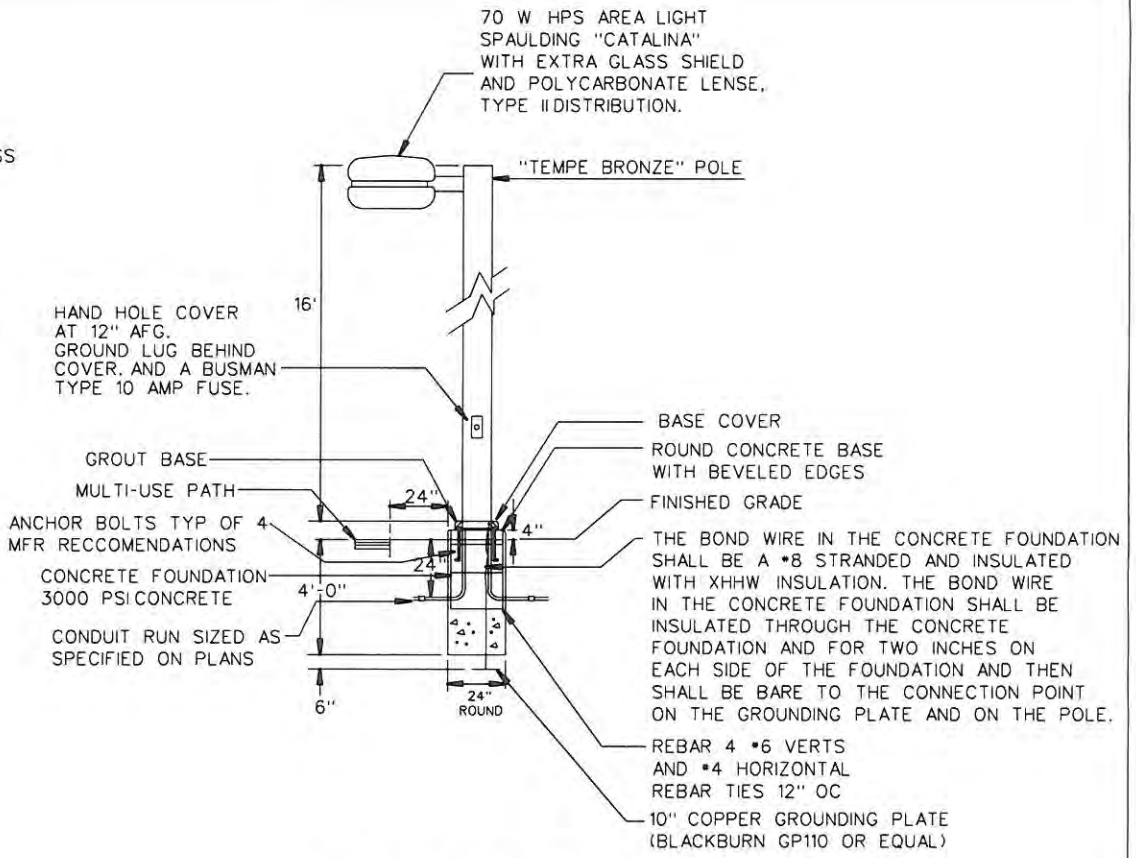
APPROVED: Harry Friedson ?/19/98
DEPUTY PUBLIC WORKS DIRECTOR — DATE

APPROVED: Howard C. Hargis 12/3/98
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	PRIVATE STREET NAME SIGN DIAGRAM	DETAIL T-655 REVISED 1998



ELECTRICAL SERVICE - PEDESTAL DETAIL
MEYERS #MEUGLD/S-M200/TB-AZ-24 CKT
OR APPROVED EQUAL



MULTI-USE PATH LIGHT DETAIL

GENERAL NOTES

1. MULTI-USE PATH LIGHT TO BE INSTALLED 2' BACK OF PATH TO FACE POLE UNLESS NOTED OTHERWISE ON PLANS

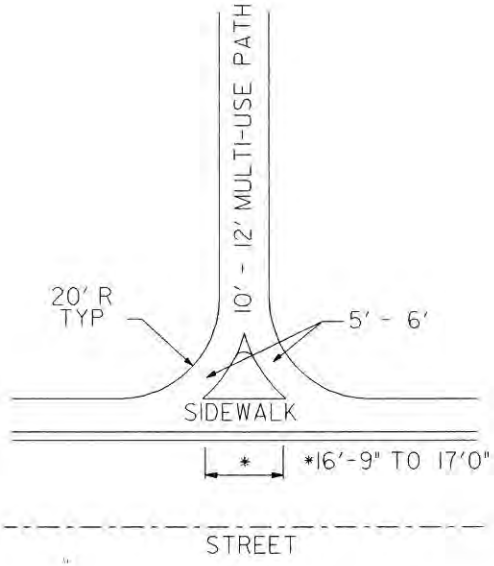
2. MULTI-USE PATH LIGTING WITHIN RIO SALADO OVERLAY DISTRICT SHALL FOLLOW THE RIO SALADO DESIGN GUIDELINES AND DETAILS

3. ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.

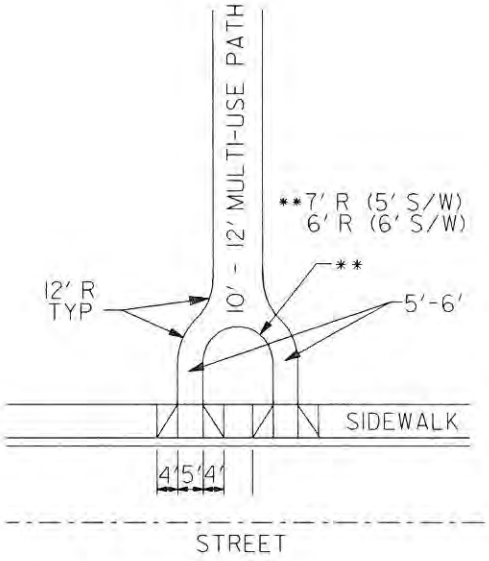
4. FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.

APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MULTI-USE PATH LIGHTING DETAILS	DETAIL T-656 1 OF 3 REVISED 4, 2010

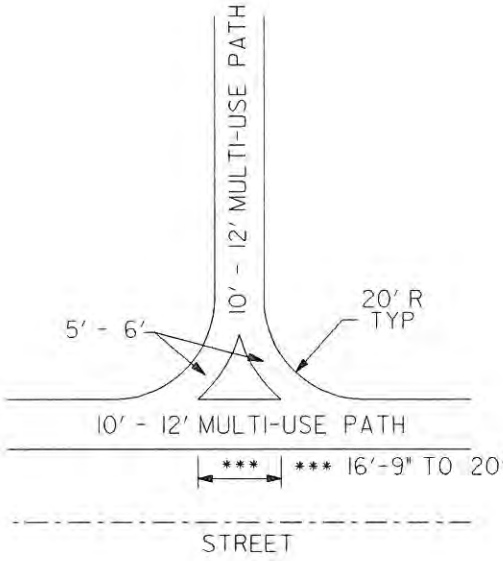


Example 'A'
MULTI-USE PATH INTERSECTION AT STREET WITHOUT A CROSSING



WING WIDTH
4" CURB = 4' WING
6" CURB = 6' WING
7" CURB = 7' WING

Example 'B'
MULTI-USE PATH INTERSECTION AT STREET WITH CROSSING

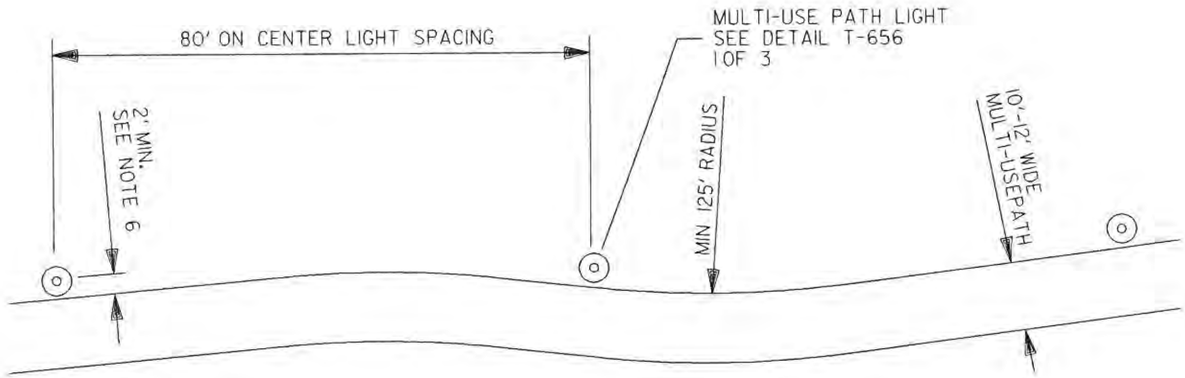


Example 'C'
MULTI-USE PATH AT MULTI-USE PATH INTERSECTION

APPROVED: Harry Trudeau 6/19/98
DEPUTY PUBLIC WORKS DIRECTOR DATE

APPROVED: Howard C. Hayes 12/3/98
CITY ENGINEER DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MULTI-USE PATH AT T-INTERSECTIONS	DETAIL T-656 2 OF 3 REVISED 1998



LIGHTING

1. LUMINAIRE FIXTURE SHALL BE SPAULDING "CATALINA" OR EQUAL.

2. LUMINAIRE SHALL BE 70 WATT HIGH PRESSURE SODIUM VAPOR, TYPE II DISTRIBUTION.

3. LUMINAIRE SHALL BE MOUNTED AT 16 FOOT MOUNTING HEIGHT ON POLES TO CONCRETE FOUNDATIONS PER MANUFACTURER'S SPECIFICATIONS.

4. POLES SHALL BE PLACED AT 80 FEET ON CENTER.

5. PROVIDE 1" CONDUIT SCHEDULE 40 FOR CONDUIT RUNS AND TO THE BASE OF THE POLE.

6. POLES SHALL BE 2 FEET FROM THE EDGE OF THE MULTI-USE FACILITY TO THE FACE OF POLE UNLESS NOTED OTHERWISE ON PLANS.

7. LUMINAIRES SHALL BE WIRED FOR 120/240 VOLT APPLICATION.

8. LIGHTING SYSTEMS SHALL BE METERED USING MEYERS 100 AMP 120/240 SINGLE PHASE 3W METER PEDESTAL. THIS INCLUDES A HAND-OFF-AUTO SWITCH, PHOTO ELECTRIC CELL AIMED NORTH, AND A 4 POLE LIGHTING CONTACTOR SQ. D# LO-40.

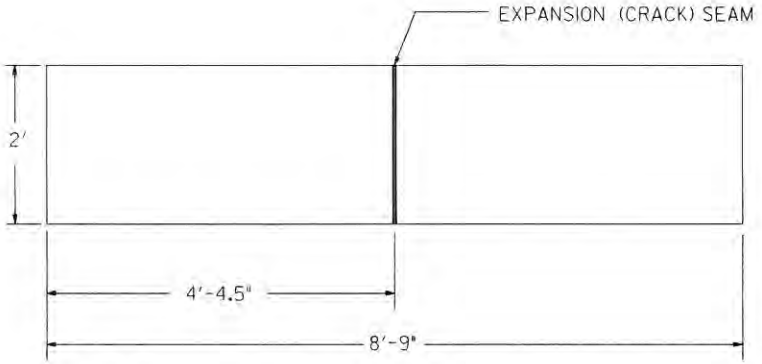
RECOMMENDED MULTI-USE PATH DESIGN CRITERIA	
DESIGN SPEED	20 MPH
MAXIMUM GRADE	5%
MINIMUM PATH WIDTH	10 FEET
RECOMMENDED PATH WIDTH	12 FEET
* MINIMUIM CURVE RADIUS	95 FEET
* RECOMMENDED CURVE RADIUS	125 FEET
HORIZONTAL CLEARANCE	2 FEET ON EACH SIDE OF MULTI-USE FACILITY
VERTICAL CLEARANCE	8 FEET FOR ANYTHING OVER MULTI-USE FACILITY
DIRECTIONAL DIVISIONS	MULTI-USE PATHS SHALL HAVE DIRECTIONAL DIVISIONS AT INTERSECTIONS WITH A STREET OR ANOTHER MULTI-USE PATH

*CURVELINEAR MULTIUSE PATHS NOT DESIRABLE, BUT WHEN UNAVOIDABLE, THESE RADII APPLY.

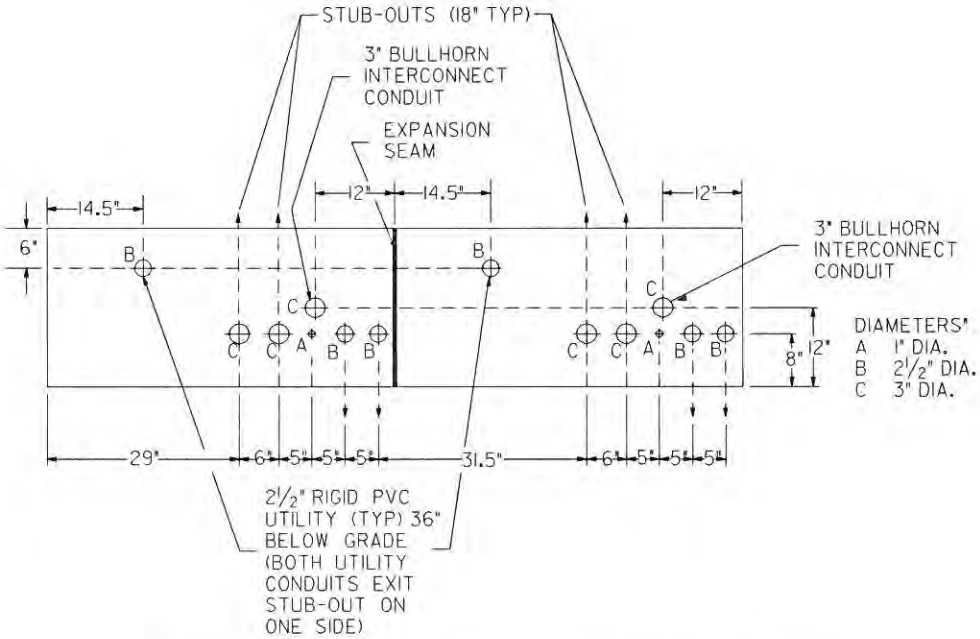
APPROVED: Harry Friedson 2/19/98
DEPUTY PUBLIC WORKS DIRECTOR — DATE

APPROVED: Howard C. Hargis 12/3/98
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	MULTI-USE PATH DESIGN AND LIGHTING DETAILS	DETAIL T-656 3 OF 3 REVISED 1998

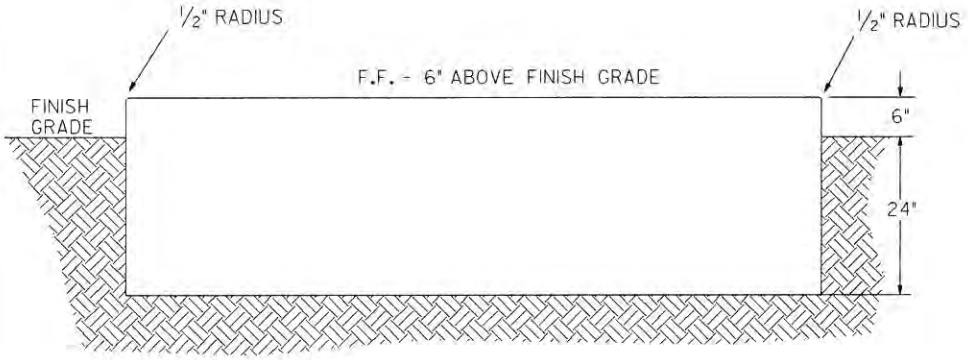


TOP VIEW



* 25' - AWG. #4 STRANDED C.U.-UFER GROUND IN EACH SECTION
* 1-1" PVC SLEEVE FOR GRND ROD STUBBED ON THROUGH FOUNDATON IN 2 PLACES

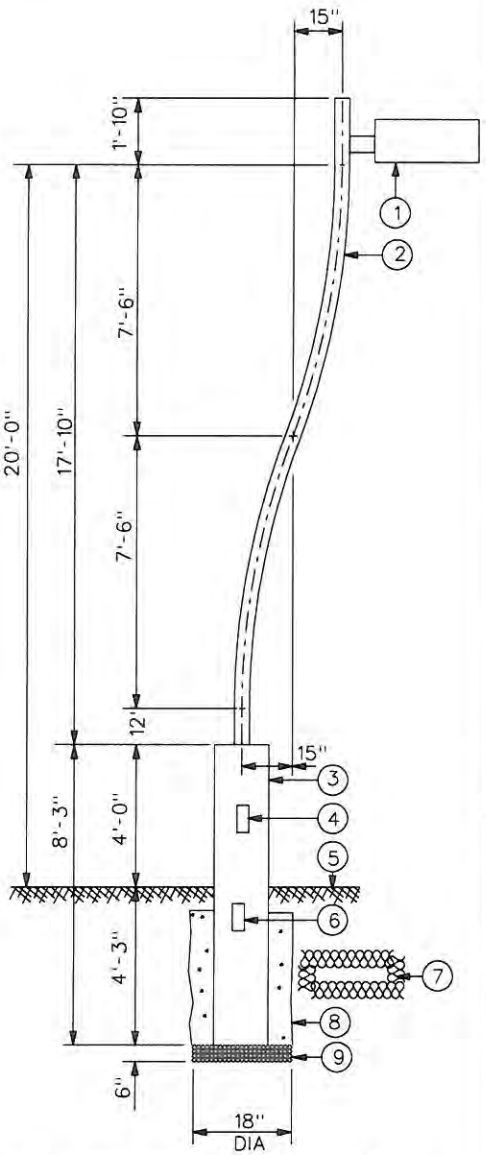
TOP VIEW OF CONDUIT LOCATIONS



APPROVED: Harvey Iverson 6/19/98
DEPUTY PUBLIC WORKS DIRECTOR — DATE

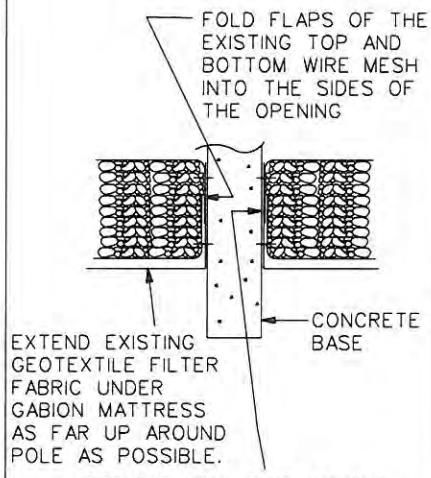
APPROVED: Howard C. Vogt 12/3/98
CITY ENGINEER — DATE

CITY OF TEMPE PUBLIC WORKS DEPARTMENT	DUAL LOAD CENTER FOUNDATION DETAIL	DETAIL T-657 1998



FIXTURE MOUNTING DETAIL

NOTE:
THE 'HOLE' IN THE GABION MATTRESS WIRE MESH CANNOT BE CUTOUT AND REMOVED. THE GABION MATTRESS WIRE SHALL BE CUT IN SUCH A WAY THAT IT REMAINS AN INTEGRAL PART OF THE MATTRESS WIRE MESH SO THAT IT CAN BE TURNED UP OR DOWN (BOTTOM OR TOP WIRE MESH) AND BE LACED AROUND THE VERTICAL EDGE OF THE OPENING WITH THE 'TURNED UP OR DOWN' MESH TO FORM A SECURE EDGING TO THE OPENING.



PROVIDE NEW 8X10 DOUBLE-TWISTED GAVANIZED WIRE MESH TO LINE THE PERIMETER OF THE OPENING. SECURE THE NEW MESH TO THE EXISTING TOP AND BOTTOM MESH WITH GALVANIZED LACING WIRE. NEW MESH AND LACING WIRE SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-975.

OPENING IN GABION

GENERAL NOTES:

① 150 WATT HIGH PRESSURE SODIUM AREA LIGHT WITH IES TYPE 2 DISTRIBUTION AND SEGMENTED ALUMINUM REFLECTOR-EQUAL TO KIM CURVILINEAR CUTOFF *CCS25A/150HPS240/CUSTOM/LS WITH GENERAL ELECTRIC *LU150/55 LAMP. FURNISH FIXTURE AND ARM WITH BRUSHED ALUMINUM FINISH TO MATCH BRUSHED ALUMINUM FINISH OF POLE. FURNISH 4.5' LONG ARM FOR FIXTURE MOUNTING.

② 5" ROUND NON-TAPERED ALUMINUM POLE WITH BRUSHED ALUMINUM FINISH. PROVIDE REMOVABLE ALUMINUM POLE TOP COVERPLATE. POLE MANUFACTURER TO BE RESPONSIBLE FOR THE ROLLING THE CURVES INDICATED ON THIS DRAWING. POLE MANUFACTURER TO COORDINATE MOUNTING DETAIL TO PRESTRESSED CONCRETE BASE WITH MANUFACTURER.

③ 10" DIAMETER ROUND NON-TAPERED PRESTRESSED COLORED CONCRETE BASE WITH EXPOSED AGGREGATE FINISH AND CLEAR GRAFFITICOATING. THE MANUFACTURER OF THE PRESTRESSED CONCRETE BASE SHALL SUBMIT SAMPLES OF TWO CEMENT COLORS AS FOLLOWS:
COLOR *1: DAVIS PLUM, 2LB. *1395/94 LB. BAG CEMENT. COLOR
COLOR *2: DAVIS LIGHT GRAY, ½LB. *8084/94 LB. BAG CEMENT. PROVIDE (6) 4X4 SAMPLES OF EACH COLOR AT TIME OF SHOP DRAWING REVIEW. PROVIDE ALL POLE MOUNTING DETAILS AND STRUCTURAL CALCULATION AT TIME OF SHOP DRAWING REVIEW.

④ INSTALL A FLUSH MOUNTED HANDHOLE WITH TAMPERPROOF SCREWS LOCATED ON THE SIDE OPPOSITE THE BIKE PATH. PROVIDE A GROUND WIRE IN THIS HANDHOLE WHICH IS BONDED TO THE STRUCTURAL STEEL IN THE CONCRETE FOOTING.

⑤ FINISHED GRADE.

⑥ 4" WIDE X 8" HIGH APERTURE IN CONCRETE BASE FOR CONDUIT ENTRY. INSTALL THIS APERTURE ON THE SIDE FACING THE BIKE PATH.

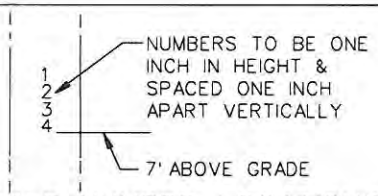
⑦ WHEN "GABION" MATTRESS FLOOD CONTROL STRUCTURAL SYSTEM" EXISTS, MAKE REPAIRS TO THE GABION MATTRESS AS SHOWN IN DETAIL TO THE LEFT. THE CONTRACTOR SHALL COORDINATE THE EXACT LOCATION OF ALL POLES WITH THE CITY INSPECTOR PRIOR TO INSTALLING UNDERGROUND CONDUIT.

⑧ AFTER INSTALLING AND LEVELING THE PRESTRESSED CONCRETE FOOTING, BACKFILL THE HOLE WITH GROUT MIX OR "CEMENTIOUS EARTH" (A MIXTURE OF 1 PART PORTLAND CEMENT AND 15 PARTS WASHED SAND).

⑨ WASHED RIVER ROCK.

⑩ ALL POLES TO BE FUSED USING WATERPROOF FUSE HOLDERS IN HAND HOLE AND IN J-BOX. BUSMAN BUHEBAA OR EQUIVALENT FUSE HOLDER.

⑪ FOR INSTALLATIONS IN APS AREA, A BUSMAN TYPE 15 AMP FUSE IS REQUIRED IN THE J-BOX AND A 10 AMP INLINE FUSE IN THE HANDHOLE.



POLE NUMBER LOCATIONS

APPROVED: Andrea 6/11/2010
DEPUTY PUBLIC WORKS MANAGER / CITY ENGINEER — DATE

CITY OF TEMPE
PUBLIC WORKS DEPARTMENT

SPECIAL RIO SALADO
MULTI-USE PATH LIGHTING FIXTURE

DETAIL T-658
REVISED 4, 2010