



Design Standards and Standard Drawings

**UNDER THE AUTHORITY OF
THE CITY OF ESCONDIDO**

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BY RESOLUTION NO. 2014-08**

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PUBLIC WORKS DIRECTOR/CITY ENGINEER

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GENERAL DESIGN STANDARDS

1. City of Escondido Municipal Code requires that any applicant who constructs or enlarges a building or subdivides property shall dedicate right-of-way and construct public improvements including but not limited to street, drainage and utilities in accordance with the City's Design Standards and Standard Drawings subject to individualized determination of the City Engineer.
2. Project owners are required to construct improvements on all streets and roadways fronting the development and construct offsite improvements in accordance with these standards and as required by the City Engineer.
3. Project owners shall be responsible for design of improvements, post securities for improvements and construction of improvements in accordance with the most recent adopted edition of the following: City of Escondido Design Standards and Standard Drawings, City of Escondido bonding policy, County of San Diego Regional Standard Drawings (SDRSD), Caltrans Standards, American Association of State Highway and Transportation Officials (AASHTO), Manual for Uniform Traffic Control Devices (MUTCD), American Water Works Association (A.W.W.A.) and other Federal and State published engineering manuals approved by the City Engineer.
4. Deviation from these standards requires approval of the City Engineer and/or Utility Engineer.

ENGINEERING PLANS AND REPORTS

1. Final improvement and grading plans shall be prepared using black waterproof ink on standard size (24" x 36") mylar or photomylar sheets with standard City of Escondido title blocks. Photomyllars shall be erasable and legible. The engineer of work shall sign the photomylar with waterproof ink. All lettering shall be 1/8 inch or larger.
2. All mylar title sheets shall have an index or key map clearly indicating the sheet numbers issued. All index maps shall show overall layout of the water, sewer, storm drain, fire hydrants, and street lighting systems.
3. All revisions to approved plans shall conform to current City policy. Revisions made after original approval by the City Engineer shall be initialed by a California Registered Civil Engineer and submitted to the City Engineer for approval. In the event an Engineer, other than the engineer of record revises a plan; a separate title block and signature are required.
4. The engineer of work shall include and sign on the improvement plans a declaration of responsible charge statement, stating they have reviewed the plan(s) and are accepting responsible charge over the design of the project as defined in section 6703 of the business and professional code, and that the design is consistent with current standards.
5. Profiles shall be shown on the top of sheets. Vertical curves shall show curve length, P.I. elevation, and design speed in M.P.H. for the stopping sight distance provided. Normal stationing, elevations and longitudinal grade in percent shall also be shown.

6. All street plans shall extend design a minimum of 200 feet beyond property line to demonstrate the constructability of future extensions. Longer extensions may be required because of flat grades, design of vertical curves at sags or crests, transitions, or other design problems, as deemed necessary by the City Engineer.
7. Normally the scales for improvement plans shall be 1" = 40' for the horizontal and 1" = 4' for the vertical scale. A scale of 1" = 8' or other appropriate scale may be used where grades are steep. For complex plans, the scale shall be 1" = 20', or larger as necessary for clarity. Horizontal scale shall be a graphic bar type scale, ¼ inch wide and 4 inches long to accommodate future plan reduction.
8. Improvements and Grading plans shall consist of City's notes and Declaration of Responsible Charge as indicated on the Title Sheet provided by the City without inclusion of additional notes.
9. Prior to final project approval, "Record Drawings" shall be prepared for all public and private improvement plans submitted to the City of Escondido. All "Record Drawings" shall be prepared by a Registered Civil Engineer. The improvement plans shall be marked "Record" and shall be submitted to the City. Public and private Improvements will not be final and improvement security shall not be released until "Record Drawings" have been prepared on the original mylars to the satisfaction of the City Engineer.

RECORD DRAWINGS

ITEMS TO BE INCLUDED ON "RECORD DRAWINGS"

1. Include any and all field changes to the approved grading, improvement and traffic signal Plans, based on a site review by the Registered Civil Engineer.
2. Include any revisions from field notes prepared by the Engineering Field Inspector.
3. Revise any elevations and stations controlled by alignment and profile that differ by more than 0.1 feet from the improvement plans.
4. Revise plan view locations of sewer and water service laterals, driveways, street furniture and other appurtenances that differ by more than 1.0 foot from the improvement plans.
5. Show all dry utilities (SDG&E, Telco and Cable TV), including underground, at grade and above grade facilities, on the improvement plans.
6. Note any changes in the type of pipe material and strength classification used for all storm drains.
7. Show all street lighting conduits and pull boxes on the plans. Show the power source for the street lighting system.
8. Note "R" values, the traffic index and structural sections for all streets.
9. Note areas that were over-excavated because of unsuitable sub-base material.
10. Show all details of any sub-drain systems installed for groundwater control.

11. Verify that all public utilities fall within existing easements or within the public right-of-way.
12. Add the Map or Document No. and the Recording Date of all easements and dedication.
13. Indicate the locations and type of all street survey monuments on the plans. A Corner Record or Certificate of Correction may need to be filed with the County prior to final acceptance of the project.
14. Complete the "Construction Record" box in the lower left-hand corner of improvement plans.
15. Add an initialed and dated "Record Drawing" entry to the Revision Box for final approval by the City Engineer.
16. Note "Record Drawings" on all sheets of plans followed by the signature, seal and date of the Registered Civil Engineer.
17. A final copy of the recorded Covenants, Conditions and Restrictions (CC&R's) as accepted and approved by the Director of Community Development and Public Works Director. Add the recorded data on the cover sheet on the improvement plans.

STREET - DESIGN STANDARDS

1. GENERAL REQUIREMENTS:

- A. All streets shall be designed in accordance with the classification in the latest adopted Circulation Element of the General Plan.
- B. Developments proposed on both sides of a street shall construct full-width street improvements in accordance with the designated street classification.
- C. Developments proposed on one side of a street are required to construct partial frontage improvements consisting of half-width (in accordance with the designated street classification) plus minimum 12 feet of paved travel lane on the other side of centerline. The minimum frontage street improvements shall be 28 feet in width for the Rural Residential streets, 30 feet in width for the Residential streets and 32 feet for Local Collector streets and above.
- D. Developments with multiple frontages are required to construct improvements along all frontages in accordance with these standards. A single family dwelling unit will be required to construct improvements to at least the frontage where the property driveway is located and other frontages if deemed necessary by the City Engineer. All projects shall dedicate right-of-ways along all frontages in accordance with the roadway classification.
- E. Developments with their primary access joining an existing street without adequate street width (half width plus 12 feet of travel lane) or pedestrian pathway will be required to construct offsite street improvements. Offsite street improvements shall include of a minimum 24 feet roadway width where no parking is allowed, subject to City Engineer and Fire Marshal approval. Off-site street improvements may

include a 5 feet wide sidewalk or pedestrian pathway based on proximity of the project to existing sidewalks, schools or other facilities that would demand pedestrian pathway connectivity as determined by the City Engineer.

- F. Where a subdivision, a commercial or an industrial project is fronting or joining an existing roadway with grades or curves that do not meet current standards and bringing existing improvements to current standards are found to create major impacts to the surrounding environment, a Specific Alignment Plan for improvements to maximum practical extent shall be prepared as part of the project application, subject to approval of the City Engineer.
- G. Where construction of a single family residence fronts or joins an existing roadway with grades or curves that do not meet current standards, the project improvements may join improvements without alignment alteration, and a Specific Alignment Plan will not be required.
- H. Intersections of Classified Streets (Local Collector Street and above) may require special design. The use of single and double left turn pockets, free right turn lanes, right turn islands, raised medians, larger curb return radii, etc., may be required, based upon traffic studies and requirements of the City Engineer.
- I. Emergency access road shall be provided when the length of any project cul-de-sac or single access route exceeds 800 feet. All surfacing, roadway widths and gates controlling emergency access routes shall be designed and constructed to the requirements of City Engineer and Fire Marshal. The minimum width for the emergency access road shall be 24 feet with a minimum structural section of 3 inches of asphalt concrete (A.C.) over 6 inches of aggregate base (A.B.) or 7½ inch thick reinforced concrete pavement.
- J. All private streets proposed with gated entrance gates, shall contain the following features:
 - (1) All gated entrances shall be subject to special design to meet the requirements of the Director of Community Development, City Engineer and Fire Marshal.
 - (2). A cul-de-sac turnaround shall be provided at the location of the gate for all public or private streets. The City Engineer shall approve the size and location of the said turnaround and gate.
 - (3) Speed bumps, humps, dips, and other roadway design features which may interfere with emergency apparatus responses will not be permitted on streets, fire access drives, driveways, and parking lots.

2. **WIDTHS**

- A. Street widths shall be in accordance with Figures No. 4 through No. 8 and Figures No. 19 and 20 of these Design Standards or an adopted Specific Alignment plan.

3. **GRADES**

- A. Vertical curves are required when grade breaks exceed 0.5% along center line and 1% along curb line of street.

- B. All vertical curves shall be in accordance with Caltrans Design Standards.
- C. Normal cross slope on A.C. pavement shall be 2%; minimum cross slope shall be 1%; maximum cross slope shall be 5%. Minimum cross slope shall be 2% where the profile grade is 1% or less.
- D. The maximum grade for a permanent cul-de-sac turning area is 5%. The maximum grade for a temporary cul-de-sac turning area shall be 8%.
- E. The street approach grade at any intersection shall be limited to 6% at the beginning of curb return (PCR).

4. **ALIGNMENT**

- A. Streets shall normally intersect at right angles. Local Collector streets shall have at least 50 feet of tangent adjacent to an intersection, measured from the B.C.R. Collectors, Industrial, and Commercial roads should have at least 100 feet. Major Roads and Prime Arterials will require special design. An angle of intersection more than 15° from a right angle shall not be used.
- B. Cul-de-sac streets shall be in conformance with Figures No. 9 and No. 13.
- C. When streets are temporarily dead-ended, a temporary cul-de-sac shall be constructed in conformance with Figure No. 10.
- D. Knuckles shall be provided per Figure No. 11 when any street makes a right angle turn.
- E. All curb returns shall have a minimum of 30 foot radius. A 40 foot radius may be required when truck turning is anticipated, as determined by the City Engineer.
- F. The minimum longitudinal transition length shall be 50 feet or based on the formulas $L=WS^2/60$ (40 mph or less) or $L = WS$ (45 mph or greater) where $L =$ transition length (feet), $W =$ offset distance (transition width) (feet), and $S =$ design speed (mph). A minimum transition of 100 feet shall be used for collector roads and above. The City Engineer may require a longer transition.
- G. Roadway alignments shall be designed to avoid the need for super-elevation. When necessary because of restricted geometrics and subject to the approval of the City Engineer, super-elevation shall conform to the Caltrans Design Manual. Special drainage design will be required whenever a super-elevation is used.

5. **STRUCTURAL SECTION**

- A. Design shall be in accordance with the California Department of Transportation stabilometer method No. 301, using the "R" value of native soil. The "R" value shall be determined from soil samples collected at street subgrade after rough grading and prior to paving. The structural section will then be determined by the use of Figure No. 3.
- B. Minimum thickness of pavement shall be 3 inch A.C. on 6 inch aggregate base, or 6 inch P.C.C. on 6 inch aggregate base. Add ½ inch of A.C. for each 2% or

fraction thereof in grade over 12% up to 15%; P.C.C. pavement is required for grades over 15%.

C A sub-drainage system shall be considered in all designs.

6. **CURBS AND GUTTERS**

- A. Curb and gutter shall be in accordance with the SDRSD G-2, Type G.
- B. Rolled type curb and gutter shall be used only on private residential and rural residential streets.
- C. All SDRSD G-6 median curbs shall have an 8 inch curb face.
 - (1) All street medians shall include a colored concrete decorative hardscape island. The decorative median hardscape pattern shall match the random sandstone groutable 34" x 34", with $\frac{5}{8}$ " x $\frac{5}{8}$ " deep grooves by Proline #RS100. The colored stamped concrete shall match the San Diego Buff color #5237 by Davis, or as approved by the Director of Community Development and City Engineer.
- D. Aggregate base shall be placed under all Portland cement concrete (P.C.C.) curb & gutters and median curbs with a thickness equal to the total roadway structural section minus 6 inches. The minimum base thickness under the curb and gutter shall be 6 inches.

7. **SIDEWALKS**

- A. P.C.C. sidewalks in conformance with SDRSD G-7 shall be required along both sides of all streets, with exception of certain rural residential, suburban residential and private residential streets.
- B. Minimum widths excluding top of curb:
 - (1) Standard sidewalk - 5 feet (no utilities will be allowed in the pedestrian path of travel).
 - (2) Commercial zone - 6 feet (no utilities will be allowed in the pedestrian path of travel).
 - (3) Rural road standard sidewalk - 4 feet (no utilities will be allowed in the pedestrian path of travel).
 - (4) Specific Plan Areas- based on Specific Plan Area guidelines.
 - (5) Commercial areas - 8 feet or full width of parkway.
 - (6) The widths may be revised by the City Engineer to match existing sidewalk.
- C. Sidewalk ramps shall be provided at all street intersections in accordance with the adopted SDRSD or the latest Caltrans' Standards. Truncated dome panels shall be colonial red in color and manufactured by Armor Tile or approved equal.
- D. Sidewalk cross slope shall be 1.5 % (absolute maximum 2%).

- E. Non-contiguous sidewalks require 12 foot minimum parkway and 6 foot minimum distance from the curb to the front edge of sidewalk, except rural residential and suburban residential streets.
- F. New sidewalk construction within the defined historic neighborhoods shall be non-contiguous and incorporate the square scoring pattern of the historic surrounding or adjacent sidewalk path. The proper scoring is achieved by creating a tooled joint in the wet cement. These joints shall be narrow and similar to the historic sidewalk pattern.

8. **HISTORIC DISTRICT**

- A. Historic street corner names and horse hitching-rings.
 - (1) All historic street corner names stamped in the existing sidewalks and all hitching-rings anchored in concrete curbs, shall be preserved and protected in place where possible, unless otherwise approved by the City Engineer and Director of Community Development.
 - (2) Any street name panel requiring adjustment or relocation, due to reconstruction of the pedestrian ramps or sidewalks, shall be carefully sawcut, removed and reset in one piece on the periphery of each newly constructed pedestrian ramp or as part of the new sidewalk. Street name panels shall be located as close as possible to the original location, consistent with City of Escondido Ordinance No. 88-57 and Zoning Code section 33-805.
 - (3) Where reconstruction of street names is required by the City Engineer, a quality impression of the same name from one of the other corners shall be used to recreate the street name imprint, being careful to replicate the right historic name on the appropriate corner.
- B. Standards for construction and maintenance for the Old Escondido Neighborhood (O.E.N.) Historic District as shown in the boundary map per Ordinance No. 91-58.
 - (1) Curb: Damaged curb or curb being replaced shall be removed and constructed per Figure No. 21. Transitions to adjacent curb improvements with differing heights shall be made at 1 inch per foot minimum, and finishing on a score line unless otherwise directed by the Field Engineering Inspector. Hitch rings, property tags and offset markers, and street names encountered in sidewalk or curb areas to be demolished shall be preserved and replaced in newly constructed curb, in the same location, unless otherwise directed by the Field Engineering Inspector.
 - (2) Sidewalk: Damaged or replaced sidewalk shall be constructed using a 4 foot width, and a 2 foot square score pattern, with medium broom finish perpendicular to the curb. Weakened Plane joints shall be at 12 foot intervals, and expansion joints shall not exceed 48 foot intervals. Sidewalk score lines shall be tooled or stamped grooves only, with a ¼ inch radius to a depth of ¼ inch. Finish quality and workmanship shall be per staff provided reference area and City recognized standards. The Field Engineering Inspector shall be the final determinant of approval. Refer to SDRSD G-7 for

additional construction requirements not specified herein. Figure No. 22 shall be reviewed for scoring and joint locations in lieu of the specified SDRSD G-9. Transitioning to adjacent sidewalk improvements with differing widths shall be made at a minimum distance of 2 feet, and as required to finish on a score line, unless otherwise directed by the Field Engineering Inspector.

- (3) Pedestrian Ramps: The appropriate pedestrian ramp shall be identified for construction to best match existing conditions. With exception of the curb, construction of the ramp shall comply with Curb Ramp Details per Caltrans Standard Plan A88A. Required truncated domes shall be Colonial Red in color. Curb and gutter for replacement or newly installed ramps shall be constructed in accordance with Figure No. 21.
- (4) Driveways: Newly installed or replaced driveways shall be constructed to current minimum width requirements of 12' for residential and 24' for commercial. Developer requests to match an existing or smaller driveway opening will be reviewed for approval by the Field Engineering Inspector on a case by case basis. Residential driveways shall be installed per modified SDRSD G-14A or G-14B, using the detail best matching existing conditions. The modification to the selected detail is to provide a 6 inch vertical curb with a minimum 3 foot radius matching that used in SDRSD G-17. After the curb turns perpendicular to the street along the edge of the driveway apron, the curb shall transition in height to meet flush with the adjacent sidewalk. Commercial driveways shall be constructed per SDRSD G-14A or G-14B, using the detail best matching the existing conditions. Sidewalk removed and replaced as part of driveway improvements shall comply with the detail used to construct said improvements and Item 2 above, however scoring shall not extend into the driveway apron. Driveway curb shall be constructed in accordance with Figure No. 21.
- (5) Alley Aprons: Damaged or replaced aprons shall be removed and constructed using SDRSD G-17, except curbing for the apron shall be constructed in accordance with Figure No. 21. No score lines are allowed within the apron.
- (6) Removal of existing curb and gutter or sidewalk shall comply with SDRSD G-11 requirements except, removal shall be adequate to provide scoring for each type of improvement as required in Items 1 and 2 above.

9. SIGHT DISTANCE

All sight distances, including intersection and stopping sight distance, shall be in accordance with the Caltrans Design Manual and Figure No. 14.

10. CROSS-GUTTERS

All cross-gutters shall be 10 feet minimum width and conform to SDRSD G-12 or G-13.

11. STREET LIGHTS

Ornamental street lights per Escondido Standard Drawings shall be installed on all public and private streets in accordance with the designated spacing specified in the Summary of Minimum Street Design Standards, and as required by the City Engineer.

12. TRAFFIC SIGNALS AND SIGNAL DETECTION SYSTEMS

Design of new traffic signal or modification of an existing traffic signal shall meet the City's Traffic Signal Design Policy, and the most current California Manual of Uniform Traffic Control Devices (M.U.T.C.D). New signals shall be interconnected with the existing traffic signal systems along the same corridor to the requirements of the City Engineer.

Detection loops that may be affected by any proposed construction or conduit work shall be replaced with video camera detection subject to approval by the City Engineer. Signal plans shall be modified and contractor shall first coordinate and install the video camera detection system per City's specifications and requirements prior to the disturbance and destruction of the existing traffic detection signal devices.

13. STREET STRIPING SPECIFICATIONS

- A. Pavement marking and raised pavement markers shall be in conformance with the criteria as presented in the M.U.T.C.D.
- B. Where required by the City Engineer, signing and striping plans prepared by a Registered Engineer shall be submitted with the project's improvement plans.
- C. All new striping, raised pavement markers and removal of redundant striping shall be done by the contractor. Striping shall be removed by water blast striping removal system and/or grinding and then skin patch the affected area with hot mix asphalt per the City Engineer.
- D. Pavement striping application rate shall conform to state of CALTRANS Standards, under no circumstance will the asphalt be visible through the paint. All Paint shall be quick dry water base traffic paint.
- E. Appropriate cure time shall be provided before striping newly placed pavement as required by the City Engineer. Temporary tabs shall be maintained prior to striping. A minimum of two coats shall be provided for all striping.
- F. Striping speed shall be between 5-9 miles per hour using 535 Graco Reversible Spray Tips or approved equal.
- G. Non thermoplastic striping shall be applied by using 419 to 421 Graco Reversible Spray Tips, or approved equal. The area painted shall not show base surface asphalt.
- H. Red Curb is sprayed using 319 Graco Reversible Tip, or approved equal. The painted base surface shall not be visible beneath the red curb.

- I. Glass Beads shall be "Potters Highway Safety Spheres #1" or approved equal. All lane lines shall have glass beads simultaneously applied to their surface. Traffic stripes and pavement markings shall be applied in conformance to Section 84 of the Caltrans' Standard Specifications, most recently adopted edition.
- J. Thermoplastic shall be used where specified and shall be applied according to manufacturer and State of California CALTRANS requirements.
- K. New STOP, YIELD, pavement legends, crosswalks and limit lines shall be installed using white thermoplastic material.
- L. The following paints are acceptable for use: California Standard Specification traffic paint from Vista Paints (839-9420); Traffic Control Services traffic paint (480-6042); or Ennis traffic paint from Will Moon Sales (310-540-2768) or approved equal.

14. STREET NAMES AND TRAFFIC SIGNS

- A. Prior to any occupancy, the developer shall install street name signs and other traffic related signs as required by the approved plans, the MUTCD and as required by the City Engineer.
- B. Signs shall be installed per the most recent MUTCD and all signs shall conform to the standards regarding size and reflectivity (prismatic standard for reflectivity). When installing in concrete or asphalt, 1¾ inch telspar shall be used with a 2 inch double-wall base, 18 inches long. The base shall be taped to prevent concrete from entering the pre-drill holes. The base shall extend 3 inches above the pavement or concrete. Telspar posts shall be secured in the base with two rivets placed in the second from the top hole. For installations in turf or dirt, a 2⅝ inch o.d. 0.153 gauge round galvanized pipe shall be used, placed at least 2 feet in the ground, and shall be secured with 60-lbs of concrete and a rod or bolt protruding out of the pipe added to keep the pole from spinning in the concrete. The length of the pole shall be determined by the signs installed.
- C. Single sign packages shall be mounted 7 feet to the bottom of the sign and multiple sign packages shall be 6½ feet to the bottom of the sign package. Street name signs shall always be placed on top of the pole and shall not be a part of a multiple sign package.
- D. Nine (9) inch green street name signs shall be used on all roadways with Collector classification and below per Figure No. 15. Twelve (12) inch green street name signs on all roadways with Major classification and above per Figure No. 16. Any deviations will require prior written approval from the Traffic Engineer.
- E. Private street name signs shall use nine (9) inch signs, as applicable, with black letters on white prismatic sheeting, and follow the same lettering differentiation as the public nine (9) inch signs, see Figure No. 15.
- F. All street name signs shall be No.125 and all other traffic signs shall be No.080 gauge aluminum with 3M #1160 anti-graffiti sheeting, unless otherwise specified.

- G. Two street name signs are required at every intersection. All signs on the same pole shall be in accordance with the sign requirements for the street with higher classification.
- (1) All signs shall be per the M.U.T.C.D. standards section 2A.07 and 2A.08. Vertical clearance shall be seven (7) feet minimum to bottom of sign. Horizontal clearance shall be two (2) feet minimum from all obstructions.
 - (2) Posts:
 - a. Round pipe to be used with non-contiguous sidewalk shall be 2 inch I.D., 2³/₈ inch O.D., and No. 14 gauge galvanized steel. Use aluminum two piece "C" clamp to attach sign. Sign post shall be located 18 inches minimum (adjusted for sign size being installed) behind curb face.
 - b. Telespar or approved equal 10 feet (min.) post to be used with contiguous sidewalk shall be No. 14 gauge galvanized steel, 1³/₄ inch square mounted into a double wall anchor sleeve, 2 inch, 2¹/₄ inch and 18 inches long. Rivet sign to post. Sign post shall be located 18 inches behind curb face, with one 60 lbs. sack of cement used for the footing.
 - (3) The background color shall be 3M #1177 green electrocuttable sheeting or approved equal, with 3M graffiti barrier #1160 or approved equal applied to sign face.
 - (4) Letters and numbers shall be 3M #3930 white prismatic reflective sheeting, with font type Federal Highway Administration (F.H.W.A.) normally found in public street signs company.
 - (5) All post-mounted street name signs shall have one (1) inch spacing on the ends and be centered on the sign blank. One (1) inch right side with gap after name and one (1) inch left side. For Overhead street name signs, the spacing shall be two (2) inches.
 - (6) Twelve (12) inch signs are required for Major roadway classification and above, see Figure No 16.
 - a. Eight (8) inch upper-case letters with six (6) inch lower-case letters for the street name. Letters shall be type "C" font unless otherwise required for fit.
 - b. Four (4) inch letters and numbers for the block numbers and "street, road, way, etc." designation. Letters and numbers shall be type "D" font unless otherwise required for fit.
 - c. Aluminum blanks shall be a thickness of 0.125 inch with ³/₄ inch radius corners with no holes drilled.
 - (7) Nine (9) inch signs are required for Collector roadway classification and below, see Figure No. 15.
 - a. Six (6) inch upper-case letter with four and one-half (4¹/₂) inch lower case letters for the street name. Letters shall be type "C" font unless otherwise required for fit.

- b. Three (3) inch letters and numbers for the block numbers and “street, road, way, etc.” designation. Letters and numbers shall be type “D” font unless otherwise required for fit.
 - c. Aluminum blanks shall be a thickness of 0.125 gauge with ½ inch radius corners, with no holes drilled.
- (8) At signalized and other major intersections, twenty one (21) inch overhead street name signs shall be installed wherever extra visibility is needed, see Figure No. 17.
- a. Twelve (12) inch upper-case letter with nine (9) inch lower case letters for the street name. Letters shall be type “C” font unless otherwise required for fit.
 - b. Aluminum blanks shall be a thickness of 0.125 inch with 1 inch radius corners with no holes drilled.
 - c. Twenty one (21) inch overhead signs shall also have a one (1) inch white border.
- H. “Stop” signs shall be installed at Local Collector intersections and above, or where required by the City Engineer. “Stop” signs shall be prismatic sheeting with 3M graffiti barrier #1160 or approved equal applied to sign face.
- I. “No Outlet” signs shall be installed when the end of the street cannot be seen.

15. **BUS STOPS**

The developer shall install bus shelters, concrete pads and bench, bus lanes, and bus stop turn-outs at locations required by the North County Transit District, and per the design criteria as outlined by Resolution No. 2004-176, and the requirements of the City Engineer.

Bus stop turnouts and lanes shall be paved with 8 inch minimum PCC of 560-C-400 or 560-C-4000P, with glass mesh or synthetic micro fiber mesh reinforcement and #5 rebar reinforcement at 18 inches on center both ways placed in the slab 3 inches from the bottom. The steel reinforcement shall be 60,000 psi minimum strength per green book section 201-2 on 12 inch class II aggregate base minimum. Expansion joints shall be constructed at 50 feet on center per SDRSD G-10. Weakened joints shall be saw cut straight with a minimum of ¼ inch width x 2 inch depth at 10 feet on center and within 24 hours of the concrete pour.

Bus stops concrete pad dimension shall be a minimum of 150 feet long by 15 feet wide or as required by the City Engineer.

16. **STREET TREES**

Street trees, of the variety approved by the City, shall be planted with an average spacing of approximately 30 feet or grouped with Planning’s approval, in conformance with City Standard Drawings. Setbacks of 15 feet before and after intersections, street lights and other appurtenances noted on City’s Standard Drawing L-1-E and L-2-E shall be observed to ensure visibility.

Arrangements shall be made for the irrigation of street trees and parkway landscaping by the fronting property owner, association, or the landscape maintenance district.

17. GUARDRAILS AND FENCES

- A. Guardrail shall be included in project design in accordance with the requirements of Caltrans and AASHTO.
- B. Fence at least five feet (5') high shall be constructed per SDRSD M-5 and M-6 at the top of any bridge, retaining wall, slope or a drainage structure as required by the City Engineer.

18. DRIVEWAY APPROACHES WITHIN PUBLIC RIGHT-OF-WAY

<u>Land Use</u>	<u>Maximum Width*</u>	<u>Minimum Width*</u>	<u>Maximum Frontage**</u>	<u>Section</u>
Commercial, industrial, or multi-family residential	42 feet ***	24 feet (two way) 18 feet (one way)	60%	5 1/2" to 7" PCC
Residential (serving 1 single family dwelling)	24 feet	16 feet	40%	5 1/2" PCC
Residential (serving 2 single family dwellings or a duplex)	24 feet	20 feet	40%	5 1/2" PCC
Residential (serving more than 2 single family dwellings or a triplex)	36 feet	24 feet	40%	5 1/2" PCC

* Clear width is measured at the bottom of curb cut, not including wings.

** Not applicable to panhandle lots or lots fronting on a cul-de-sac.

*** Wider driveways may be permitted or required by the City Engineer depending on the development type and other factors.

- A. Minimum clear distance between driveways - 6 feet.
- B. Driveways shall be set back from intersections to allow for the following length of full-height curb between the street curb return and driveway:

Prime Arterial and Major Road.....	120'
Collector, Commercial and Industrial Road.....	90'
Local Collector and Frontage Road.....	60'
Residential Street.....	30'

Existing lots with inadequate frontage to meet the designated set back shall locate driveways as far as possible from the intersection as required by the City Engineer.

Note: All setbacks in Items A and B are to bottom of curb cut.

- C. Minimum distance from fire hydrant, utility pole, street lights, traffic signal or any other permanent obstruction - 5 feet.
- D. Residential driveway grades shall be in accordance with Figure No. 12.
- E. All driveways over 150 feet in length shall be designed with maximum 20 percent grade, fire truck turn around, and adequate structural section (Minimum 7½ inch thick reinforced P.C.C. for grades over 15%)
- F. P.C.C. driveways shall extend from curb face to property line where P.C.C. curb and gutters are used.
- G. Driveways shall be P.C.C. and shall have a minimum thickness as follows: 5½ inch at standard driveways and 7½ inch for fire access driveways.
- H. Alley type driveways, per City's G-5-E, shall be constructed for commercial, industrial, multi-family residential projects.
- I. Standard driveway width is measured at bottom of curb cut, not including wings.
- J. Alley-Type driveway width is measured at right-of-way.
- K. Parking lots for new or redevelopment projects shall be designed with no parking spaces along the project entrances, within 20 feet from the ultimate back of sidewalk.
- L. Redevelopment projects with more than one driveway entrance along each street frontage may be required to merge driveways and replace with Alley Type as determined by the City Engineer.
- M. Special parking entrance design is required for high use driveways on Collector Street and above as determined by the City Engineer.

19. PRIVATE EASEMENT ROADS

Private access easement roads are permitted for onsite access within new parcel map (4 lots or less) projects and for the offsite access to a single family lot or residential parcel map development (4 lots or less) project with an existing private access easement as the primary access to a public street.

The following minimum standards shall be applied for design and construction of private easement roads:

- A. The minimum width of the onsite private easement roads for parcel maps shall be according to the following:

- (1) 24 feet wide paved roadway with no parking may be allowed where each lot within the project could accommodate for 6 onsite parking spaces.
 - (2) 30 feet wide paved roadway width with parking on one side, for a single loaded development (lots located on one side of the road).
 - (3) 36 feet wide paved roadway width with parking on both sides, for double loaded development lots located on both sides of the road).
 - (4) The minimum offsite paved access easement road width shall be 24 feet.
- B. Private access easement width shall be minimum 2 feet greater than the required easement road width. Additional easement width may be required by the City Engineer as needed to accommodate for slope setbacks, utility meters, fire hydrants, etc.
- C. Minimum roadway grade shall be 1% if an A.C. swale or A.C. berm is used and 0.5% if a concrete valley gutter or concrete curb and gutter is used.
- D. Maximum grade for A.C. pavement is 15% and maximum grade for P.C.C. pavement is 20%.
- E. Minimum thickness of pavement shall be 3 inch A.C. on 6 inch aggregate base, or 7½ inch P.C.C. reinforced with #4 rebar @ 18 inch o.c. both ways on 6 inch aggregate base. Add ½ inch of A.C. for each 2% or fraction thereof in grade over 12% up to 15%; P.C.C. pavement is required for over 15% grade.
- F. Two types of typical sections may be used as follows:
- (1) Centerline crowned section with 6 inch A.C. berm or concrete curbs on both sides. (Similar to Figure No. 6, residential streets)
 - (2) Straight grade to one side with a concrete curb & gutter, 6 inch A.C. berm or bio-swale on the lower side and concrete curb, 6 inch A.C. berm or 2" x 6" redwood header on higher side.
- G. If public utilities such as sewer and water are required within the private easement road, then a public utility and access easement shall be provided over the full width of the private road easement.
- H. A cul-de-sac or hammerhead turnaround shall be provided at the terminus of the private easement road. Specific design details shall be per Figure No. 9 or No. 10 or to the satisfaction of the Fire Marshal and the City Engineer.

SUMMARY OF MINIMUM STREET DESIGN STANDARDS

Design Criteria	Prime Arterial	Major Road	Collector	Local Collector	Residential Street (Public)
1) Estimated Ultimate 24 Hr. Traffic (Volume)	28,000+	20,000 to 28,000	10,000 to 20,000	2,000 to 10,000	Less Than 2,000
2) Design Speed (MPH)	50	50	40	35	30
3) Spacing of Four-Way Intersections (Feet)	1,200	750	600	300	200
4) Spacing of Median Openings (Feet)	600	500	400	N/A	N/A
5) Right-of-Way (Feet)	136-126	110-102	84(80)***	66(62)***	56/(60)****
6) Access to Adjoining Property	Intersection Only	Intersection Only	Avoid (No Vehicle Backing)	Avoid (No Vehicle Backing)	OK
7) Curb to Curb (Feet)	116-106 14' Median	90-82 14' Median	64	42	36
8) Traffic Index	9	8.5	8	6	4.5
9) Min. Thickness of Pavement (Inches)	5AC/8AB	5AC/8AB	4AC/8AB	3AC/6AB*	3AC/6AB*
10) Stopping Sight Distance (Summits) (Feet)	430	430	300	250	200
11) Headlight Distance (Sags) (Feet)	430	430	300	250	200
12) Min. Horizontal Radius (Feet) for standard crown	1400	1400	825	610	435
13) Min. Tangent Between Reversing Horizontal Curves (Feet) (2 Sec. Recovery Time)	150	150	120	100	90
14) Maximum Grade (%)					
A.C.	7	7	7	12	15
P.C.C.	7	7	7	12	20
15) Minimum Grade (%)	0.5	0.5	0.5	0.5	0.5
16) Street Lights					
Min/Max (Lumens)	13600/ 18600	12600/ 17600	12600/ 16600	8600/ 12600	5600/ 8600
Spacing** (Feet)	180	200	300	400	440

* NOTE: Add ½" of AC for each 2% of fraction thereof in grade added over 12%, up to 15%.

** NOTE: Spacing intervals are staggered for Residential, Local Collector, Industrial, Commercial and Collector streets. Spacing intervals are on both sides for Major and Prime Arterial roadways. Additional lighting at intersections, high use driveways or other geometric features may be required by the City Engineer.

*** NOTE: Width identified in parentheses subject to approval by City Engineer.

**** NOTE: Non- Contiguous sidewalk.

SUMMARY OF MINIMUM STREET DESIGN STANDARDS

Design Criteria	Resi. Cul-de-Sac	Commer- cial Street	Indust. Street	Frontage Road	Private Access Easement	Alleys
1) Estimated Ultimate 24 Hr. Traffic (Volume)	Less Than 500	Less Than 10,000	Less Than 10,000	Less Than 5,000	Less Than 750	Less Than 500
2) Design Speed (MPH)	30	35	35	35	25	15
3) Spacing of Four-Way Intersections (Feet)	--	250	200	200	--	--
4) Spacing of Median Openings (Feet)	N/A	N/A	N/A	N/A	N/A	N/A
5) Right-of-Way (Feet)	56	72	72	50	--	24
6) Access to Adjoining Property	OK	OK	OK	OK	OK	OK
7) Curb to Curb (Feet)	36	52	52	34****	24/32/36***	24
8) Traffic Index	4	8	9	6	4	4
9) Min. Thickness of Pavement (Inches)	3AC/6AB*	4AC/8AB*	5AC/8AB	3AC/6AB*	3AC/6AB*	3AC/6AB*
10) Stopping Sight Distance (Summits) (Feet)	200	250	250	250	150	90
11) Headlight Distance (Sags) (Feet)	200	250	250	250	--	90
12) Min. Horizontal Radius (Feet)	435	610	610	610	200	100
13) Min. Tangent Between Reversing Horizontal Curves (Ft.) (Assumes 2 Sec. Recovery Time)	90	100	100	100	None	None
14) Maximum Grade (%)						
A.C.	15	12	12	12	15	15
P.C.C.	20	12	12	12	20	20
15) Minimum Grade (%)	0.5	0.5	0.5	0.5	0.5	0.5
16) Street Lights						
Min/Max (Lumens)	5600/ 8600	5600/ 8600	5600/ 8600	5600/ 8600	None	None
Spacing** (Feet)	440	440	440	220		

* NOTE: Add ½" of A.C. for each 2% of fraction thereof in grade added over 12%, up to 15%.

** NOTE: Spacing intervals are staggered for Residential, Local Collector, Industrial, Commercial and Collector streets. Spacing intervals are on both sides for Major and Prime Arterial roadways. Additional lighting at intersections, high use driveways or other geometric features may be required by the City Engineer.

*** NOTE: 24'- No Parking, 32'- Parking on one side, 36'- Parking on both sides.

**** NOTE: Parking on one side.

SUMMARY OF MINIMUM STREET DESIGN STANDARDS

Design Criteria	Residential Street (Private)	Rural Residential Street (Public or Private)	Suburban Residential Street (Public or Private)
1) Estimated Ultimate 24 Hr. Traffic (Volume)	Less Than 2,000	Less Than 2,000	Less Than 2000
2) Design Speed (MPH)	25	25	25
3) Spacing of Four-Way Intersections (Feet)	--	--	--
4) Spacing of Median Openings (Feet)	N/A	N/A	N/A
5) Right-of-Way (Feet)	56/52**(P.U.E)	43	48
6) Access to Adjoining Property	OK	OK	OK
7) Curb to Curb (Feet)	36/32**	28***	28***
8) Traffic Index	4	4	4
9) Min. Thickness of Pavement (Inches)	3AC/6AB*	3AC/6AB*	3AC/6AB*
10) Stopping Sight Distance (Summits) (Feet)	200	200	200
11) Headlight Distance (Sags) (Feet)	200	200	200
12) Min. Horizontal Radius (Feet)	300	300	300
13) Min. Tangent Between Reversing Horizontal Curves (Ft.) (Assumes 2 Sec. Recovery Time)	90	90	90
14) Maximum Grade (%)			
A.C.	15	15	15
P.C.C.	20	20	20
15) Minimum Grade (%)	0.5	0.5	0.5
16) Street Lights			
Min/Max (Lumens)	5600/ 8600	5600/ 8600	5600/ 8600
Spacing** (Feet)	440	750****	750****

* NOTE: Add ½" of A.C. for each 2% of fraction thereof in grade added over 12%, up to 15%.

** NOTE: 36'/56' may be reduced to 32'/52' (parking on one side) for planned developments with private streets within gated communities with approval of the City Engineer and Fire Marshal.

*** NOTE: 28' - Parking on one side.

**** NOTE: Additional lighting required at intersections, vertical and horizontal curves.

SURVEYING AND MAPPING

1. Basis of Bearings

- A. All subdivision and parcel maps shall be tied to the California Coordinate System of 1983 (CCS-83), Zone 6, based on the North American Datum of 1983 (NAD-83) geodetic datum.
- B. Two corners on the boundary of all maps shall be tied to at least two first-order survey monuments of record. In cases where the tie(s) to the nearest first-order monument(s) exceeds 0.5 mile, ties to second-order survey monuments of record will be allowed. In all cases the survey monuments of record tied to shall have known CCS-83, Zone 6 coordinates from the same epoch.

Note: Record of Survey 14236 is the most encompassing geodetic survey in the City of Escondido to date and all 1st and 2nd order monuments have been adopted by the City.

- C. The Basis of Bearing for all subdivision and parcel maps shall be a Grid Bearing based on the California Coordinate System of 1983 (CCS-83) as established by tying to the above referenced monuments and shall be clearly shown as part of the Procedure of Survey.
- D. The known Convergence Angle at the closest survey monument of record tied to shall be listed and shown graphically on the map. The combined scale factor at the same closest survey monument tied to shall be listed on the map also.
- E. All ties to the 1st and 2nd order monuments shall be shown as part of the Procedure of Survey and shall include grid and ground distances, and grid bearings between the two boundary corners and the survey monuments of record in a graphical traverse format.
- F. All surveys in connection with the preparation of Final Maps, Parcel Maps and Record of Surveys shall be made in accordance with standards practices and principals of land surveying. The minimum traverse closure of the boundaries of the subdivision and all lots and blocks shall be 1:10,000 and meet Third Order Class I requirements as prepared by the Federal Geometric Control Committee and published by the United States Department of Commerce.

2. Bench Marks

- A. All Grades and Elevations shown on Grading and Improvement Plans shall be developed from and based on a City of Escondido Bench Mark. The City Bench Mark used together with its complete description and elevation shall be identified on every Grading Plan and on each sheet of every Improvement Plan.
- B. The City of Escondido Bench Marks are based on the National Geodetic Vertical Datum of 1929.
- C. The developer shall be responsible for survey monuments and vertical control benchmarks which are disturbed or destroyed by construction. If any vertical control is to be disturbed or destroyed, the City of Escondido Field Survey section

shall be notified, in writing, at least 3 days prior to the construction. The developer will be responsible for the cost of replacing any vertical control benchmarks or other survey markers destroyed by the construction.

3. **Monumentation**

A. All monuments shall have the license number of the surveyor or engineer setting the monuments clearly stamped thereon and shall be of durable construction.

B. Street Monuments

(1) Centerline monuments shall be installed at the BC and EC (or PI) of all curves, at the centerline intersection of all streets and at the radius point of all cul-de-sacs. An offset may be used to avoid conflicts with manhole covers or other structures.

(2) All monuments shall be well monuments per SDRSD. Four tangent, lead and tack ties shall be set for each well monument. Centerline tie sheets shall be prepared by the surveyor or engineer and submitted to the City.

(3) All existing surveying monuments boundary or centerline that might possibly be destroyed during construction as determined by the City Engineer or Engineer/Surveyor of Record shall be tied out and a Corner Record filed. After construction is complete all destroyed monuments shall be reset and/or their position perpetuated by a Corner Record or Record of Survey.

C. Boundary Monuments (Final and Parcel Maps)

(1) The exterior boundary of the subdivision shall be monumented with an identifiable and durable tag or cap on an iron pipe with a diameter not smaller than two inches (2"), and at least twenty-four inches (24") long set at each corner and at intermediate points along the boundary not more than one thousand feet (1,000') apart and at the beginning and end points of all curves.

If any existing record and identified monument exists at any such corner or point and is in good condition, such monument shall be used in lieu of a new monument. Replacement of such a monument may be allowed at the discretion of the City Engineer where the record monument is likely to be destroyed by construction.

(2) Lot corner monuments: All lot corners, except when coincident with exterior boundary corner, shall have an identifiable and durable tag or cap and shall be monumented with permanent monuments of one of the following types:

a. Three-fourth inch ($\frac{3}{4}$ ") diameter iron pipe at least eighteen inches (18") long;

b. One-half inch ($\frac{1}{2}$ ") diameter or square steel rod at least twenty-four inches (24") long;

c. Lead plug and copper identification disks set in masonry wall foundations only. Copper disks shall not be set in concrete brow ditches, fence post foundations, or at offsets in the sidewalk.

D. Boundary Monuments (Commercial, Industrial, Multi-unit Residential)

- (1) The exterior boundary of all new commercial, industrial, multi-unit residential construction projects shall be monumented with an identifiable and durable tag or cap on an iron pipe with a diameter no smaller than two inches (2"), and at least twenty-four inches (24") long set at each corner and at intermediate points along the boundary not more than one thousand feet (1,000') apart and at the beginning and end points of all curves.

If any existing record and identified monument exists at any such corner or point and is in good condition, such monument shall be used in lieu of a new monument.

A Corner Record or Record of Survey will need to be filed and/or recorded prior to release of occupancy.

GRADING AND EROSION CONTROL STANDARDS

1. Soils Reports

Soils Reports are required for all projects that require Grading Plan and Grading Permit, subject to the discretion of the City Engineer. Reports over one year old at time of grading plan submittal (approval) and/or reports which reference a different grading proposal must be made current by an amendment or the soils engineer stating that the findings and conclusions of the previous report are current and valid. Soils Report will not be required for Drainage/Erosion Control plan or minor projects that do not trigger the requirement for Grading Permit. All Grading or Drainage/Erosion Control plans shall be designed by a Civil Engineer or a Licensed Architect.

2. Slopes

Cut and fill slopes heights, setbacks and inclination shall in accordance with the Grading Ordinance guidelines (Grading Ordinance Figure 33-1060).

3. Grading

- A. No person shall conduct any grading, clearing or grubbing on natural or existing grade without first having obtained a permit from the City Engineer. Grading Permit is required except as provided for in the City of Escondido Grading Ordinance per Article 55 of the Escondido Zoning Code. Any grading violation may be subject to fines and a building moratorium.
- B. Grading plans must show drainage being directed to a storm water treatment facility, the street or an approved drainage course. When discharging concentrated flows onto natural ground, the engineer of work shall provide appropriate calculations to determine the erosive effects at the point of discharge and immediately downstream from the discharge point. If erosive velocities occur downstream then an appropriately designed energy dissipater device shall be installed to mitigate the erosive effects. Riprap exposed to velocities under 12 fps shall be a minimum size of 5 feet wide, by 10 feet long, by 2 feet thick, with minimum 12 inch diameter rock. Higher velocities require ¼ ton or larger rock.

- C. A slope of two-percent (2%) is required from building pads to unpaved drainage swales adjacent to buildings. Graded building pads shall have a minimum slope of one-percent (1%) toward a storm water treatment facility, an adjoining street or an approved drainage course. A minimum slope of one-half percent may be used on portland cement concrete. See standard drawing M-2-E for additional information.
- D. Berms, concrete swales, earthen swales, or other drainage devices shall be provided at the top of cut and fill slopes to prevent surface waters from overflowing onto and damaging the slope face. Special drainage provisions shall be made where a building or structure exists within five feet of the top of a slope.

4. Erosion Control

- A. All projects shall be designed to implement Best Management Practices (BMP's) during all phases of project construction in accordance with the Erosion Control Plan, Storm Water Pollution Prevention Plan (If required) and CASQA requirements.
- B. An erosion control plan shall be a part of all grading, road construction, utilities and drainage plans. The erosion control plan shall be designed to minimize the loss of soil materials from the project site to the maximum extent practicable. Onsite pollution control measures are required for all projects.

5. Retaining Walls

- A. Retaining walls that are a part of, or are shown on the public improvement and grading plan, and not an extension of a building structure shall be reviewed and approved by the Engineering Division. The inspections of these retaining walls shall be performed by a Registered Civil or a Geotechnical Engineer. The engineer shall provide the Field Engineering Office all inspection reports and certifications during retaining wall construction.
- B. Retaining walls that are not part of a grading plan or public improvement plan, or are a part of the building will be reviewed, permitted and inspected by the Building Division of the Community Development Department.
- C. Any retaining wall supporting a surcharge, a live load, fencing, or is greater than four (4) feet in height measured from the bottom of the footing to the top of the wall will require a permit.

WATER SYSTEM - DESIGN STANDARDS

1. GENERAL

- A. All new or existing projects that require new water service or upgrading of an existing water service are responsible for design and construction of public water system improvements in accordance with City's Water Master Plan and to the satisfaction of the Utility Engineer.
- B. All new or existing projects that require connection to an existing public water system are responsible to extend public water mains across the full property frontages and to all property limits as necessary for future extensions as determined by the Utility Engineer.
- C. Deviations from these standards require special approval of the Utility Engineer.
- D. All materials to be used shall be per City of Escondido Utilities approved materials list.
- E. Calculations supporting network design shall be submitted when required by the City Engineer or Utility Engineer.
- F. Pipelines 24 inch in diameter and smaller, shall be constructed of polyvinyl chloride (PVC) pressure pipe manufactured per American Water Works Association (AWWA.) C900, or C905, class 235 minimum; steel pipe, cement mortar lined and coated; or Ductile Iron; in conformance with AWWA Standards.
- G. Pipelines larger than 24 inches shall be constructed of steel pipe, cement-mortar lined and coated; or cement-mortar-lined ductile iron pipe, in conformance with AWWA Standards.
- H. All mains shall be designed for at least 120% of the maximum hydrostatic pressure of the pressure zone's highest operating HGL. Pressure zone HGL elevation shall be noted on plan.
- I. Design shall conform to all requirements of the State of California Department of Public Health, including cross-connection control.
- J. All mains must adhere to the current disinfection, tie-in, and testing standards published on the City utilities website.
- K. Signed and Sealed "Record Drawing" plans are required for all new water installations, prior to acceptance by City. "Record Drawing" plans shall be submitted as: One set of corrected and signed Mylars, one .PDF file of the complete plan set, and all ACAD files used to create the drawings, on CD.
- L. Bonds shall not be released until "Record Drawing" plans are approved.

2. DEMANDS

A. Average Daily Domestic Demands:

- (1) For single family lots larger than 1 acre: 800 gallons per acre.
- (2) For single family lots between 7,000 sf. and 1 acre: 800 gallons per DU.
- (3) For single family lots smaller than 7,000 sf.: 500 gallons per DU.
- (4) For multi-family: 300 gallons per DU.
- (5) For typical light industrial and general commercial: 2,300 gallons per acre.
Non-typical uses, expected to have more than average demands, will be evaluated on an individual basis.
- (6) Landscaping, Parks and Agriculture: 3,000 gallons per acre.
- (7) Maximum Day = average daily demand x 1.8.
- (8) Peak Hour = Maximum Day x 2.7.

B. Fire demands:

TABLE W-1

LAND USE	DURATION	FIRE FLOW (GPM)
Single Family Residential (with fire sprinklers)	2 Hours	1,500
Multi-Family Residential	2 Hours	2,500
Commercial	2 Hours	2,500
Industrial	2 Hours	2,500
Wild land/Urban Interface areas	2 Hours	2,500
High-rise Structures	2 Hours	3,500

3. PRESSURES

- A. Minimum residual pressure at the building site shall be 20 PSI at design fire flow plus maximum day domestic demand, and 40 PSI at peak hour domestic demand, whichever is greater
- B. Maximum desirable static pressure shall be 110 PSI.
Maximum allowable static pressure shall be 150 PSI.
- C. When static pressures exceed 150 PSI, pressure-reducing valves shall be required.

4. MAINS

- A. Pipe Main Diameters shall conform to most recent Water Master Plan, or as required by Utility Engineer. Minimum diameter is 8 inches for single family residential, and 12 inches for multi-family, commercial or industrial zoning.
- B. The water line location shall be south or east of sewer and in compliance with State Department of Public Health Standards. One foot minimum vertical and 10 feet minimum horizontal clearance (outside to outside) shall be provided from the sewer mains. At least one foot vertical clearance shall be provided from all crossing utilities or storm drains. Water lines shall not cross under sewer mains, except with special construction, and only at the discretion of Utility Engineer, and with Health Department approval.
- C. Water lines within easements should be avoided. Where easements are necessary, the minimum width shall be 20 feet, with a 20 foot wide all-weather road surface, and fenced on both sides. Easement roads shall have a 25 foot minimum inside radius, 5% maximum cross-slope, and 15% maximum grade. Dead-end easements shall be provided with an equipment turn-around designed to the satisfaction of the Utility Engineer. Additional width will be required for multiple utilities or to facilitate access.
- D. Temporary dead-ends for future extensions are to be extended beyond pavement and capped. An air and vacuum release and/or blow-off valve per W-9-E, type "B," shall be installed.
- E. All lines are to be looped. Dead-end lines are not allowed, except at discretion of Utility Engineer.
- F. Depth of cover required:
 - (1) 36 inches minimum measured from finish surface to top-of-pipe for all water mains, or
 - (2) 24 inches minimum below structural section of roadway, whichever is deeper.
 - (3) Mains over 12 inches require special design, and may require increased depth of cover.
 - (4) Mains installed in unimproved right-of-way shall consider ultimate design grades.
- G. Design shall be based on maximum day requirements plus fire flow; or peak hour, whichever is greater. For water mains larger than 12 inches, design head loss shall not exceed 10 feet per 1,000 feet. For water mains 12 inches or smaller, design velocity shall not exceed 10 FPS.
- H. Thrust blocks shall be installed in accordance with San Diego Regional Standard Drawing WT-01. If not applicable, special design is required.
- I. All utilities shall be shown in plan and profile on Sewer and Water plans.

- J. Pipe deflections for short radius curves and angle points shall be accomplished by means of standard fittings, the location of which shall be detailed on the plans. Pulled joints shall deflect no more than 75% of the manufacturer's recommended maximum per joint. Deflection couplings are not allowed.
- K. All steel and ductile iron pipes shall have bonded joints for cathodic protection.

5. **VALVES**

- A. The maximum spacing of valves in mains shall be 1,000 feet.
- B. Valve locations:
 - (1) Install three (3) valves at all tees and four (4) valves at all crosses.
 - (2) Valves should be placed so at least half the fire hydrants can remain in service if a section of the system is shut down.
- C. Resilient wedge gate valves shall be used for mains 12 inches and smaller.
- D. Butterfly valves shall be used for mains larger than 12 inches. Static pressures in excess of 150 PSI require special design.
- E. All high points shall be equipped with air-and-vacuum release valves. All low points and dead-ends shall be equipped with blow-offs. All valves shall have air-and-vacuum release, and blow-off valves for both open and closed conditions.
- F. Blow-off assemblies shall be 4 inch minimum diameter for mains 12 inch diameter and smaller, and 6 inch minimum diameter for mains larger than 12 inch diameter, but smaller than 30 inch. 30 inch diameter and larger mains will require special design.
- G. Location of all appurtenances, valves, blow-off assemblies, air-release and vacuum-release valves shall be shown on the Sewer and Water plans.
- H. Pressure Reducing Valves will be installed above ground.

6. **FIRE HYDRANTS**

- A. Hydrant locations:
 - (1) Off largest main at intersection of mains.
 - (2) Behind the sidewalk.
 - (3) Residential type hydrants: maximum spacing is 250 feet on alternating sides of street for Collector Street and above.
 - (4) Industrial type hydrants: maximum spacing is 150 feet on alternating sides of street for Collector Street and above.
 - (5) Fire hydrant must be within 50 feet of the Fire Department Connection.
 - (6) Design will provide 3 feet minimum unobstructed clearance around all fire hydrants.

- (7) Any fire hydrant installed within 3 feet of a vehicle accessible surface shall have guard posts installed, per San Diego Regional Standard WF-04.
- B. Hydrants shall be installed in accordance with Escondido Standard Drawings. If not applicable, a special design is required, subject to the approval of the Utility Engineer and Fire Marshal.
- C. If a cul-de-sac or dead-end street is over 250 feet long, a fire hydrant is required at the BCR or ECR of the bulb of the cul-de-sac, or within 100 feet of the end of the dead-end street.
- D. An industrial-type fire hydrant with three outlets per W-3-E shall be used for apartment, multi-family, commercial or industrial area.

7. HOUSE SERVICES

- A. Each lot shall be serviced by an individual service as shown in standard drawing W-1-E. A "W" shall be stamped on the curb face at the lateral location.
- B. Minimum size service shall be 1 inch copper for $\frac{3}{4}$ inch and 1 inch meters. Minimum size shall be 2 inch copper for $1\frac{1}{2}$ inch and 2 inch meters
- C. Service laterals shall be at right angles to main, except at cul-de-sacs.
- D. Services shall be installed in accordance with City of Escondido Standard Drawing W-1-E or W-2-E. If not applicable, special design is required.
- E. No water meter shall be installed in a driveway.
- F. If fire sprinklers are used, minimum meter size is 1 inch. Meter must be sized to provide designed fire sprinkler flow plus 5 gpm domestic flow for each DU.
- G. If fire sprinklers are used, backflow prevention devices are required.
- H. Private pumps are not allowed without specific prior approval by the Utility Engineer. Under no circumstance will a private pump discharge into the City of Escondido water system. All private pump systems must have approved backflow prevention devices installed at the public meter.

8. PRESSURE BOOSTING STATIONS

Pressure boosting stations will be designed per Utility Department requirements.

9. RESERVOIR DESIGN CRITERIA

Reservoirs shall be designed per Utility Department requirements. Sizes will be determined by Master Plan and Utility Department operational requirements. Reservoirs will be designed as paired tanks to facilitate operation and maintenance.

SEWER - DESIGN STANDARDS

1. GENERAL

- A. All new or existing projects that are require to construct a new sewer system or upgrading of an existing sewer system are responsible for design and construction of sewer improvements in accordance with City's Wastewater Master Plan and to the requirements of the Utility Engineer.
- B. All new or existing projects that propose connection to an existing public sewer are responsible to extend public sewer mains across the full property frontage and to all property limits as necessary for future extensions as determined by the Utility Engineer.
- C. Deviations from these standards require special approval of the Utility Engineer.

2. MAINS

A. General

- (1) All materials used in sewer construction will be per the City of Escondido Utility Department approved material list.
- (2) All mains shall be sized in conformance with the City of Escondido Wastewater Master Plan, or at the direction of the Utility Engineer.
- (3) Minimum size shall be 8 inches.
- (4) Material for all pipelines in easements shall be PVC C-900 or C-905. No service lateral connections to sewers within easements are allowed without specific, prior approval by the Utility Engineer.
- (5) Minimum depth of cover is 5 feet, Cover less than 5 feet is only allowed with prior approval by Utility Engineer, and may require special design and construction.
- (6) Horizontal or vertical curves are not allowed, except by specific, prior approval of the Utility Engineer.
- (7) Design Criteria: For diameters less than 12 inches, depth of flow shall not exceed $\frac{1}{2}$ the diameter. For diameters 12 inch and larger, depth of flow shall not exceed $\frac{3}{4}$ the diameter. Depths will be calculated for the ultimate design peak flow rates.
- (8) All utilities shall be shown in plan and profile on the Sewer and Water plans.
- (9) No trees or deep rooted plants shall be planted within 15 feet of sewer mains.
- (10) All newly installed or repaired mains shall be CCTV inspected by City of Escondido Wastewater Collection maintenance personnel at contractor's expense. Utilities Field Inspector to coordinate this activity.
- (11) Signed and sealed "Record Drawing" plans are required for all new sewer installations, prior to acceptance by City. "Record Drawing" plans shall be submitted as: One set of corrected and signed Mylars, one .PDF file of the complete plan set, and all ACAD files used to create the drawings, on CD.

(12) Bonds shall not be released until "Record Drawing" plans are approved.

B. Locations

- (1) Private Streets and Alleys: Mains shall be offset 4 feet north or west of the street or alley centerline.
- (2) In the street: Sewer main location shall be at the centerline of the street.
- (3) Sewers within easements should be avoided. Where easements are necessary, the minimum easement width shall be 20 feet, with an all-weather road surface, and fenced on both sides. Easements with grades over 10% shall be paved with concrete. Easement roads shall have a 25 feet minimum inside radius, 5% maximum cross-slope, and 15% maximum grade. The centerline of the pipe shall be placed at six (6) feet from the north or west easement edge. Dead-end easements shall be provided with an equipment turn-around, designed to the satisfaction of the Utility Engineer.
- (4) Vertical clearance from storm drains shall be 1 foot minimum. Vertical clearance shall be at least 1 foot under water lines in conformance with State Department of Public Health Standards.

C. Minimum slopes shall be per Table S-1 below. Minimum velocity of 2 FPS must be maintained at average flow volume. Pipe sizes cannot be increased solely to reduce minimum slope.

TABLE S-1

SEWER DIAMETER, INCHES	MINIMUM SLOPE
8"	0.50%
12" and larger	0.30%

D. Design Criteria:

- (1) For average flows in residential areas, assume 200 gallons per day, per residential unit.
- (2) Industrial – for average flows, use 2000 gal/acre/day.
- (3) Commercial – for average flows, use 1500 gal/acre/day.
- (4) Maximum flows should be based on the following:
Maximum flow = average flow x Peak Factor per Table 3.1 of the 2012 Wastewater Master Plan.

3. MANHOLES

- A. Manholes are required at all changes of slope and at the discharge point of all force mains.
- B. Manholes are required for all changes in pipe size.
- C. Manholes are required at all changes of direction.
- D. Manholes are required at intersections of mains - match soffit elevations.

- E. Minimum invert slope through a manhole is 2%. In no case shall the manhole invert have a slope less than the upstream main.
- F. Manholes are required at permanent ends of lines. A cleanout may be used as a permanent end of line provided that the nearest downstream manhole is less than 200 feet away, and there is no change of direction, either horizontally or vertically, at that manhole.
- G. Maximum spacing between manholes is per Table S-2 below:

TABLE S-2

SLOPE	MAXIMUM DISTANCE BETWEEN MANHOLES (FEET)
3% or less	300
>3% - 5%	240
>5% - 7%	180
>7% - 9%	140
Above 9%	100

- H. All manholes shall be shown and numbered on the plans.
- I. Provide 5 feet minimum, capped stubs for future extension.
- J. All manholes shall be 60 inches inside diameter for mains 18 inches in diameter and smaller. Mains larger than 18 inches require special design.
- K. Manhole lids shall be 36 inch in diameter with 24 inch inset access lids; shallow manholes (per S-5-E) shall have a 48 inch removable lid with a 24 inch inset access lid.
- L. Manholes less than 5 feet deep (rim to invert) require special design and construction, to the satisfaction of the Utility Engineer. (See Standard Drawing No. S-5-E.)
- M. Manholes in streets classified as Collector or above shall be reinforced per Standard Drawing No. S-4-E.
- N. Extend mains through bottom and break out top. P.C.C. trough should not be formed.
- O. All Manholes shall be completely lined with Raven 405 epoxy, or approved equal. A pull test shall be required. The minimum lining thickness shall be 80 mils.
- P. Drop manholes are not permitted unless approved in writing by the Utility Engineer. (See Standard Drawing No. S-3-E)
- Q. Pipes larger than 12 inches require hydraulic flow design. For the hydraulic calculations use: a) uniform flow calculations for depth and velocity; and b) pressure momentum calculations for manhole junctions using City of Los Angeles formulas. Pipe smaller than 12 inches may require hydraulic design to verify velocities, at request of Utility Engineer.

4. LATERALS

A. Size

- (1) Only one lateral connection will be allowed for each legal lot. Each legal parcel must have its own lateral to the public main.
- (2) Single family and up to 4 attached residential units on the same legal lot - minimum 4" with 2% minimum slope.
- (3) All others - minimum 6 inch with 2% minimum slope,
- (4) Laterals 8 inch and larger shall be connected to the public sewer at a manhole. Sewer laterals less than 8 inch in diameter shall be connected to the sewer main with PVC mainline wye fittings or Inserta-Tees. Saddles or break-in taps shall not be used.

B. Location:

- (1) Perpendicular to main.
- (2) From the center of lot to 5 feet from downstream lot line (shown on plans).
- (3) A cleanout shall be located on private property within 18 inches of the Public Right of Way (see Standard Drawing S-2-E).
- (4) Sewer laterals shall not be located in the driveway, except in areas of limited frontage at the discretion of the Utility Engineer.
- (5) Provide a minimum of 5 feet horizontal clearance from other utilities and a minimum of 10 feet from trees or deep-rooted plantings.
- (6) A separate lateral shall be installed to each lot; an "S" shall be stamped on the curb face at the lateral location. Laterals shall be shown on Sewer and Water Improvement Plans.
- (7) A sewer lateral data table indicating length, slope, and elevation at the ROW, for each lateral shall be provided on the Sewer and Water Improvement Plans.
- (8) All new lateral connections will be inspected at the City main by the City Utilities Field Inspection personnel. Engineering Field Inspector will coordinate this activity.

C. Depth - 5 feet at property line.

D. Service lateral check valves or pop-up relief valves shall be installed by the owner on private property when the pad elevation of the building is lower than the rim elevation of the upstream manhole. Maintenance of the check or relief valve is the responsibility of the owner.

E. Private sewer pumps are not allowed unless reviewed and approved by the Utility Engineer. All maintenance and repair of private sewer pumps and appurtenances shall be the responsibility of the property owner.

5. LIFT STATIONS

- A. Private lift stations serving multiple lots will not be allowed.
- B. Public Lift stations shall be designed per Utility Department requirements

6. FORCE MAINS:

- A. Private force mains are not allowed within City Right-of-Ways, must be within recorded private easements when crossing other lots, and are the responsibility of the owner to maintain.
- B. Public Force Mains shall be designed per the Utility Department requirements.

7. INVERTED SIPHONS

- A. Inverted siphons shall be used only with specific, prior approval of the Utility Engineer.
- B. Siphons shall be designed with two barrels, with a gate system allowing flow to be directed toward either the primary or secondary barrel.
- C. A minimum velocity of 3 F.P.S. maintained for two hours a day is required.

RECYCLED WATER - DESIGN STANDARDS

Recycled Water systems shall be designed per the Utility Department requirements.

DRAINAGE - DESIGN STANDARDS

1. GENERAL

- A. All drainage design and requirements shall be in accordance with the City adopted SUSMP, the latest Drainage Master Plan, Flood Insurance Rate Maps; the City's Floodplain Ordinance, and/or the requirements of the City Engineer.
- B. All public and private drainage facilities shall be designed for a 50-year frequency storm, except that a 100-year frequency storm shall be used for all tributary areas over one square mile.
- C. The use of underground storm drain systems, in addition to standard curb and gutter, shall be required:
 - (1) When the depth of flow in a public street exceeds 5 inches or more than 16 feet of roadway is flooded in a 50-year frequency storm.
 - (2) When existing drainage facilities discharge into the proposed development.
 - (3) When the depth-velocity product of flow in the street (expressed in feet and feet per second) exceeds six.
 - (4) To minimize the installation of cross gutters.
- D. When the above conditions require an underground storm drain, the combined street and storm drain design shall be based on a 50-year frequency storm.
- E. Permanent open drainage ditches will not be permitted in the right-of-way of a public street.
- F. Open channels may be considered in lieu of underground systems when the design flow exceeds the capacity of a 48 inch diameter reinforced concrete pipe (R.C.P.)
- G. The Developer shall be responsible for accepting all drainage flows tributary to his property, and providing permanent drainage facilities in conformance with these standards and the requirements of the City Engineer through the limits of the development to a point of satisfactory disposal as approved by the City Engineer.
- H. Concentrated discharges into unimproved areas shall only be permitted into natural channels with "defined bed and banks". An energy dissipater shall be considered at these locations.
- I. The type of drainage facility shall be selected on the basis of physical adaptability to the proposed land use. Environmental channels are encouraged in areas where substantial open space can be preserved. A low-flow pipe or swale shall be included in the design of the channel. Maximum design velocity shall be 6 F.P.S. in the channel.
- J. Concentrated drainage over 10 C.F.S. shall not be discharged to city streets.

- K. The minimum freeboard for open channels shall be based on the following formula:

$$1+0.025 v d^{0.33}$$

v = normal velocity in feet per second

d = normal depth of flow in feet

- L. Improved open channels shall be fenced on both sides. Access roads shall be provided to the channel bottom at approximately 1500 foot intervals, or at each street intersection. The maximum slope of access roads shall be 10%. The minimum channel bottom width shall be 8 feet.

2. HYDROLOGY

- A. Off-site, use a copy print of the latest edition of the City's topographic maps. Show existing culverts, cross-gutters and drainage courses based on a field review. Indicate the direction of flow, clearly delineate each drainage basin showing the area and discharge and the point of concentration.
- B. On site, use the Grading Plan. If grading is not proposed, then use a 100-scale plan or greater enlargement. Show all proposed and existing drainage facilities and drainage courses. Indicate the direction of flow. Clearly delineate each drainage basin showing the area, discharge and the point of concentration.
- C. Use the charts in Figure No. 1 and No. 2 for finding the "T_c" and "I."
- D. Use the "C" Factor shown in Figure No. 1.
- E. Use the rational formula $Q = CIA$ for watersheds less than 0.5 square mile. For watersheds in excess of 0.5 square mile, the method of analysis shall be approved by the City Engineer prior to submitting calculations.

3. HYDRAULICS

- A. Street - Provide:
- (1) Depth of gutter flow calculations.
 - (2) Inlet calculations.
 - (3) Show gutter flow Q, inlet Q, and bypass Q on a plan of the street.
- B. Storm Drain pipes and Open Channels - Provide:
- (1) Hydraulic loss calculations for: entrance, friction, junction, manholes, bends, angles, reduction, and enlargement.
 - (2) Analyze existing conditions upstream and downstream from proposed system, to be determined by the City Engineer on a case-by-case basis.
 - (3) Calculate critical depth and normal depth for open channel flow conditions.
 - (4) Show the hydraulic grade line (H.G.L.) plotted on a scale drawing of the pipe or channel profile.

(5) Design for a non-silting velocity of 4 F.P.S. in a 2-year frequency storm.

4. **INLETS**

- A. Curb inlets at a sump condition should be designed for 2 C.F.S. per lineal foot of opening when headwater may rise to the top of curb.
- B. Curb inlets on a continuous grade for 100% interception should be designed based on the following equation:

$$Q = 0.7 L (a + y)^{3/2}$$

Where y = Depth of flow in approach gutter (feet)
 a = Depth of depression of F.L. at inlet (feet)
 L = Length of clear opening (feet)

Continuous grade inlets designed for partial interception should be based on Bureau of Public Roads Nomographs (now known as the Federal Highway Administration).

- C. Six inches of freeboard shall be provided for street inlets from the hydraulic grade line to the flow line of gutter.
- D. Grated inlets should be avoided when possible. When necessary, the design should be based on the Bureau of Public Roads Nomographs (now known as the Federal Highway Administration).
- E. Inlets shall be provided at superelevated roadway sections, both at the curb and in the median, as needed to avoid concentrated flows across the roadway.

5. **STORM DRAINS**

- A. Minimum pipe slope is 0.5%. A flatter slope may be approved based on topography.
- B. Minimum storm drain size shall be 18 inches in diameter.
- C. Provide cleanouts at 300 feet maximum spacing, at angle points exceeding 10%, and at breaks in grade. For pipes 48 inches in diameter and larger, a maximum spacing of 500 feet may be used.
- D. The material for storm drains shall be reinforced concrete.
- E. The pipe invert elevations, slope, length, material, and pipe profile shall be shown on the improvement plans.
- F. When "lugging" of pipes is allowed by the City Engineer, the connecting pipe shall be no more than $\frac{2}{3}$ the diameter of the larger pipe being lugged into.
- G. An inlet structure including headwalls and wingwalls and a paved inlet apron shall be provided at all inlets. In addition, chain link fencing and a protective barrier shall be provided when necessary for public safety.
- H. Access shall be available, or provided for maintenance of all drainage facilities.

- I. The strength classification of any pipe shall be shown on the plans.
- J. Special Design - For all drainage design not covered in these Standards, the current San Diego County Hydrology and Design and Procedure Manual shall be used.
- K. The minimum horizontal radius for any storm drain shall be 22½ feet. A maximum deflection angle of 10 degrees per bend shall be used for horizontal curves, and not to exceed manufactures recommendations.
- L. Where easements are necessary, the minimum width shall be 20 feet, surfaced and fenced on both sides. Easements with slopes over 10% shall be paved. All easements shall be accessible by City maintenance with standard maintenance equipment.

LIST OF REFERENCES

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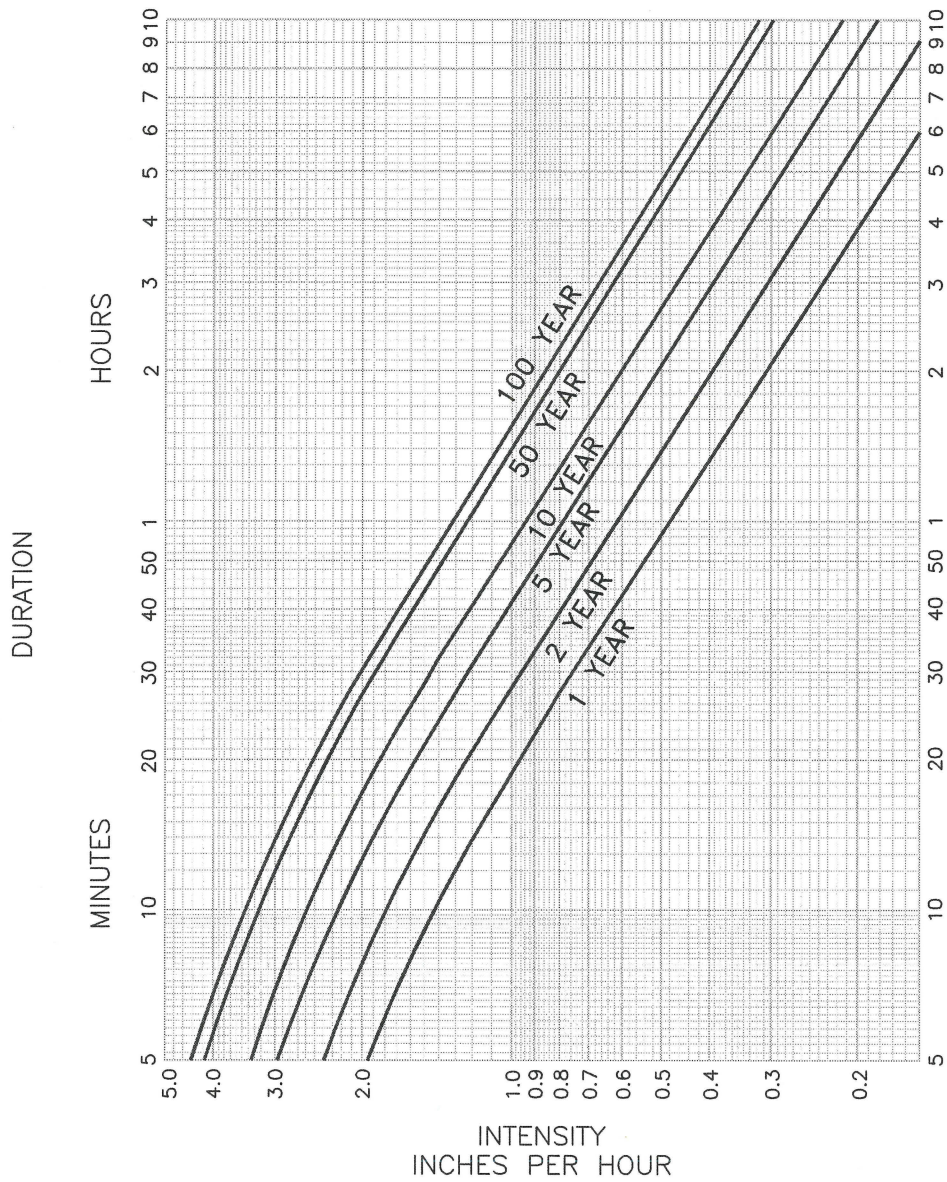
City of Escondido (March 2010) *City of Escondido SUSMP Standard Urban Stormwater Mitigation Plan Requirements for Development Projects*

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American Public Works Association (1994) *Standard Plans for Public Works construction*, BNI

Figures



ESCONDIDO RUNOFF COEFFICIENTS

PARKS, GOLF COURSES, CEMETERIES.	.25
UNDEVELOPED LAND, OPEN SPACE.	.35
RURAL - OVER 1/2 ACRE LOTS.	.45
SINGLE FAMILY.	.55
MOBILE HOME.	.65
MULTIPLE UNITS.	.70
COMMERCIAL.	.85
INDUSTRIAL.	.95

APPROVED: _____ DATE: 04-02-2014

P. W. Director
P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

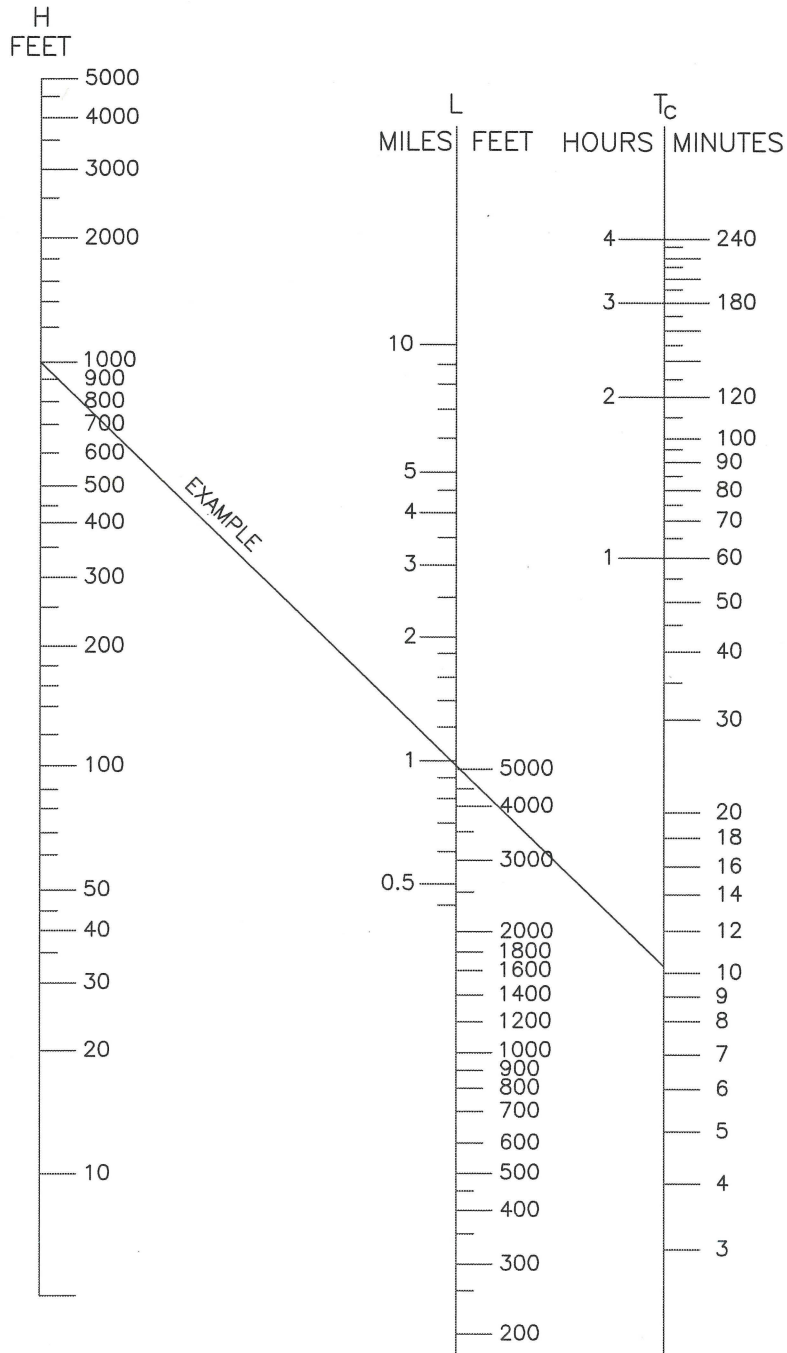
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**RUN-OFF INTENSITY
DURATION CURVE**

FIGURE NO.

1



NOTE:

THIS CHART SHALL BE USED FOR ALL BASINS WITHIN THE CITY OF ESCONDIDO LESS 0.5 SQUARE MILE. THE MINIMUM T_c TO BE USED IS 10 MINUTES

$$T_c = \left(\frac{11.9 L^3}{H} \right)^{.385}$$

T_c = TIME OF CONCENTRATION (HOURS)
 L = LENGTH OF DRAINAGE COURSE (MILES)
 H = DIFFERENCE IN ELEVATION FROM FURTHER MOST POINT OF DESIGN (FEET)

APPROVED: *Edwin. Dominguez* DATE: 04-02-2014
 P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
 DEPARTMENT OF PUBLIC WORKS



SCALE:
 NOT TO SCALE

REVISED	APPROVED

**RUNOFF
 TIME CHART**

FIGURE NO.

2

TRAFFIC INDEX 	4		4.5		6		8		8.5		9	
STREET CLASSIFICATION 	a. ALLEY b. RESIDENTIAL CUL-DE-SAC c. PRIVATE ST.		RESIDENTIAL		a. LOCAL COLLECTOR b. FRONTAGE ROAD		a. COLLECTOR b. COMMERCIAL ROAD		MAJOR ROAD		a. PRIME ARTERIAL b. INDUSTRIAL ROAD	
R VALUE OF SUBGRADE	A.C.	A.B.	A.C.	A.B.	A.C.	A.B.	A.C.	A.B.	A.C.	A.B.	A.C.	A.B.
10	3"	8"	3"	10"	3"	13"	4"	18"	5"	19"	5"	20"
12	3"	7"	3"	9"					5"	18"		
14					3"	12"	4"	17"	5"	17"	5"	19"
16											5"	18"
18			3"	8"	3"	11"	4"	16"	5"	16"		
20	3"	6"*									5"	17"
22					3"	10"	4"	15"	5"	15"	5"	16"
24			3"	7"			4"	14"	5"	14"		
26											5"	15"
28					3"	9"	4"	13"	5"	13"		
30			3"	6"*							5"	14"
32					3"	8"	4"	12"	5"	12"	5"	13"
34									5"	11"		
36							4"	11"			5"	12"
38					3"	7"			5"	10"	5"	11"
40							4"	10"				
42					3"	6"*	4"	9"	5"	9"	5"	10"
44											5"	9"
46							4"	8"*	5"	8"*		
48 AND GREATER											5"	8"*

* THIS IS THE MINIMUM STRUCTURAL SECTION FOR THIS CLASSIFICATION OF STREET

NOTES:

1. ASPHALT SHALL CONFORM WITH SECTION 201 OF THE STANDARD SPECIFICATIONS OF PUBLIC WORKS CONSTRUCTION.
2. A.B. IS AGGREGATE BASE, CONFORMING TO THE CLASS II REQUIREMENTS OF THE STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION SPECIFICATIONS MINIMUM R VALUE IS 78, MINIMUM S.E. IS 30.
3. RECYCLE CLASS 2 BASE SHALL BE PER SECTION 26 OF THE CURRENT CALTRANS STANDARD SPECIFICATIONS "AGGREGATE BASES", AND MEET THE QUALITY REQUIREMENTS IN SECTION 26-1.02A, "CLASS 2 AGGREGATE BASE", 3/4 INCH MAXIMUM.
4. TOP 1 1/2" AC SURFACE PAVING COURSE SHALL BE 1/2" AGGREGATE FOR ALL STREET CLASSIFICATIONS WITH TRAFFIC INDEX OF 6 AND BELOW.

APPROVED:  DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

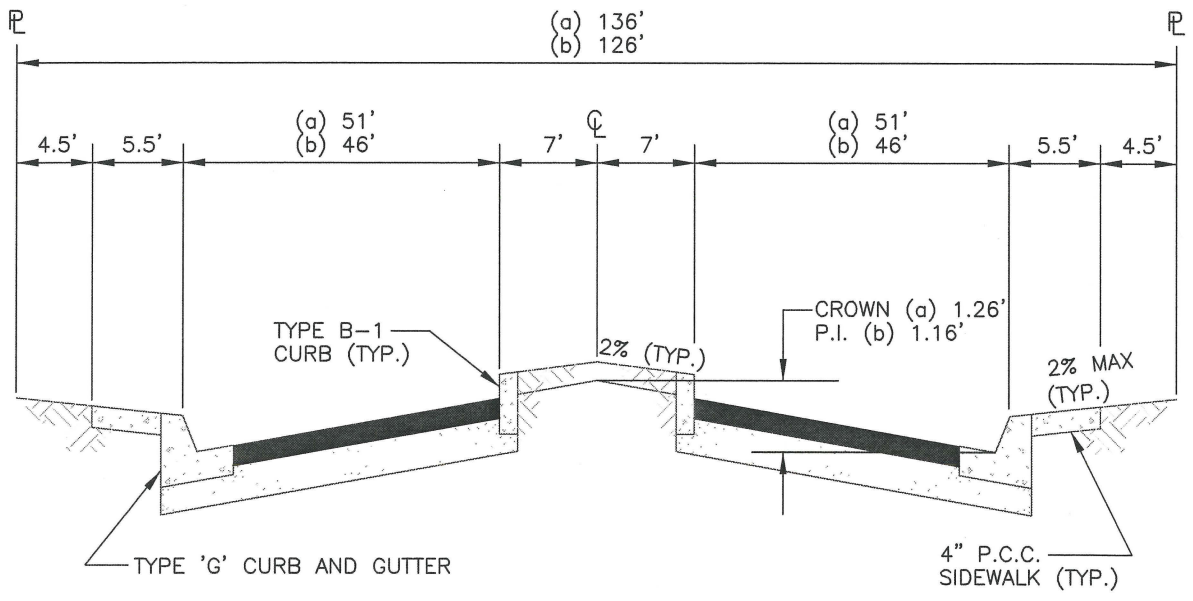
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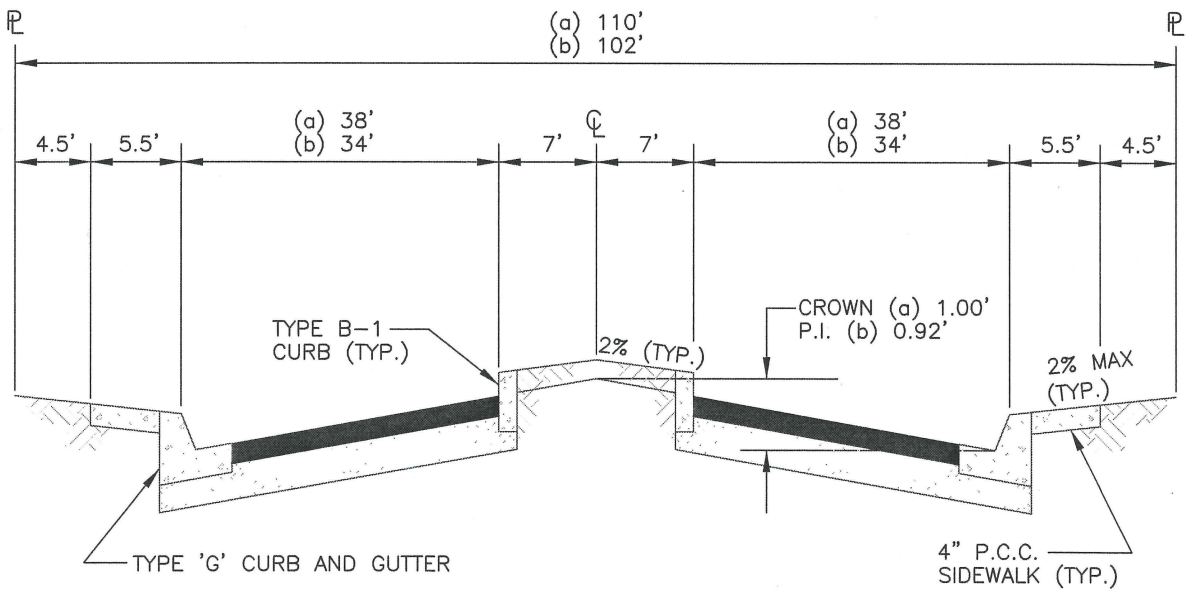
**STREET
STRUCTURAL SECTION**

FIGURE NO.

3



PRIME ARTERIAL



MAJOR ROAD

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTION.

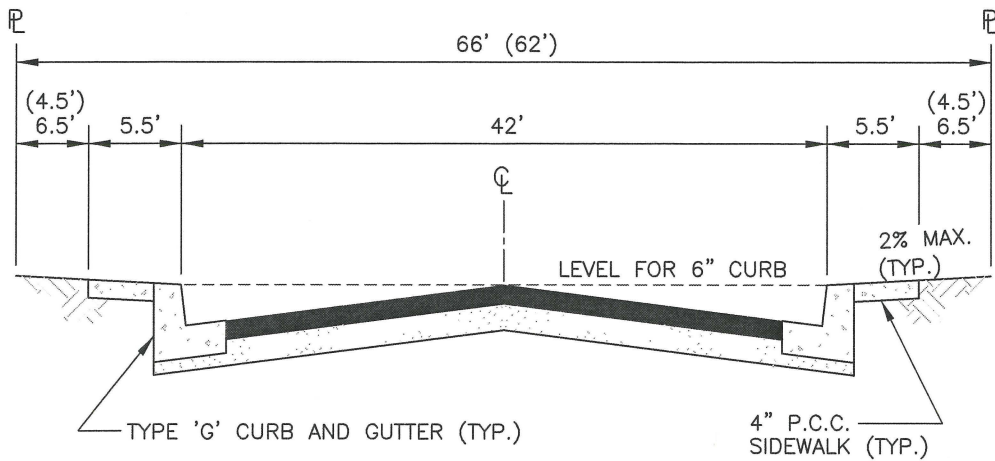
APPROVED:	DATE: 04-02-2014
<i>Edward N. Dominguez</i>	
P. W. DIRECTOR/CITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

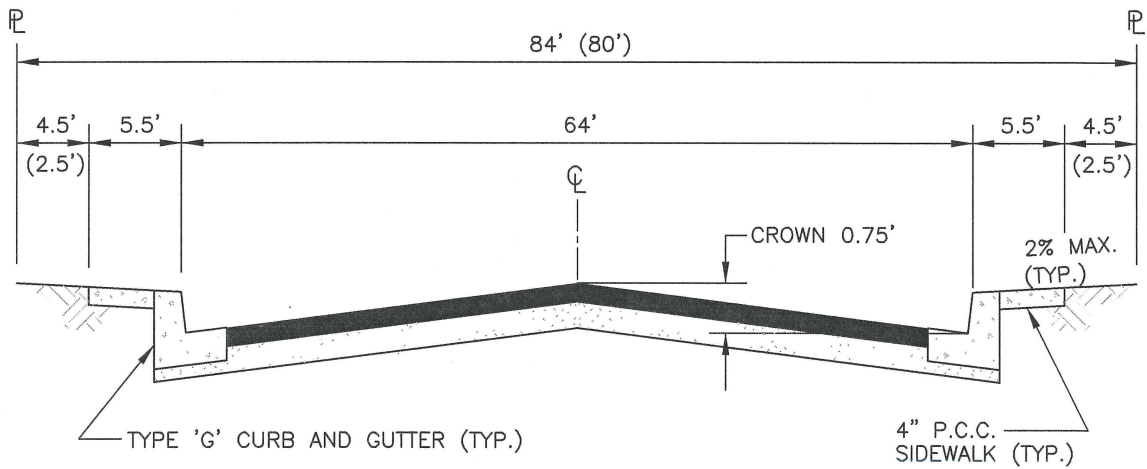
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**PRIME ARTERIAL &
MAJOR ROAD**

FIGURE NO.
4



LOCAL COLLECTOR STREET



COLLECTOR

() SUBJECT TO APPROVAL BY CITY ENGINEER

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTION.

APPROVED: *[Signature]* DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

REVISED APPROVED

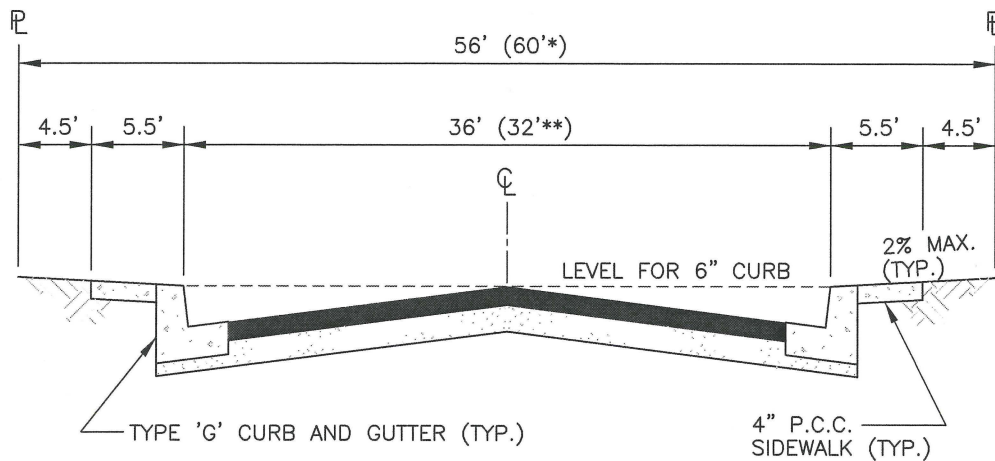
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DEPARTMENT OF PUBLIC WORKS

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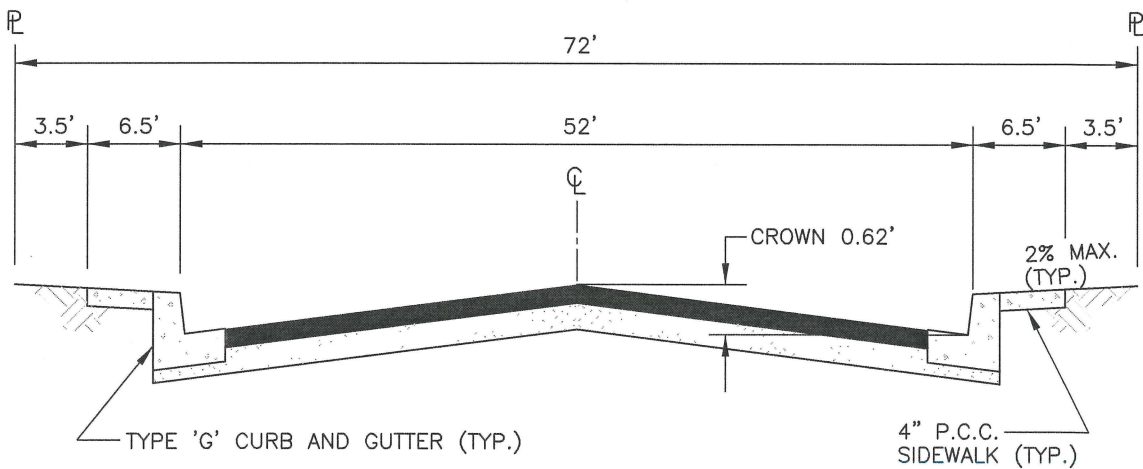
**LOCAL COLLECTOR STREET
& COLLECTOR ROAD**

FIGURE NO.

5



RESIDENTIAL STREET
(PUBLIC AND PRIVATE)



COMMERCIAL STREET

- * MINIMUM WIDTH FOR NON-CONTIGUOUS SIDEWALK
- ** REDUCED PRIVATE STREET, SUBJECT TO FIRE AND ENGINEERING APPROVAL.

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTIONS

APPROVED: _____ DATE: 04-02-2014

P. W. DIRECTOR / CITY ENGINEER

REVISED _____ APPROVED _____

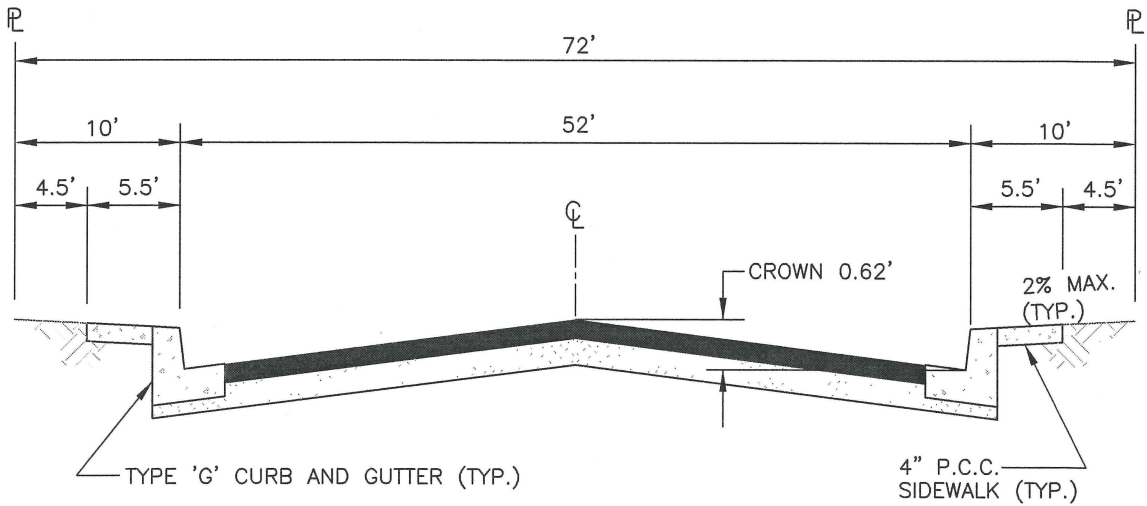
CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

**RESIDENTIAL STREET
& COMMERCIAL STREET**

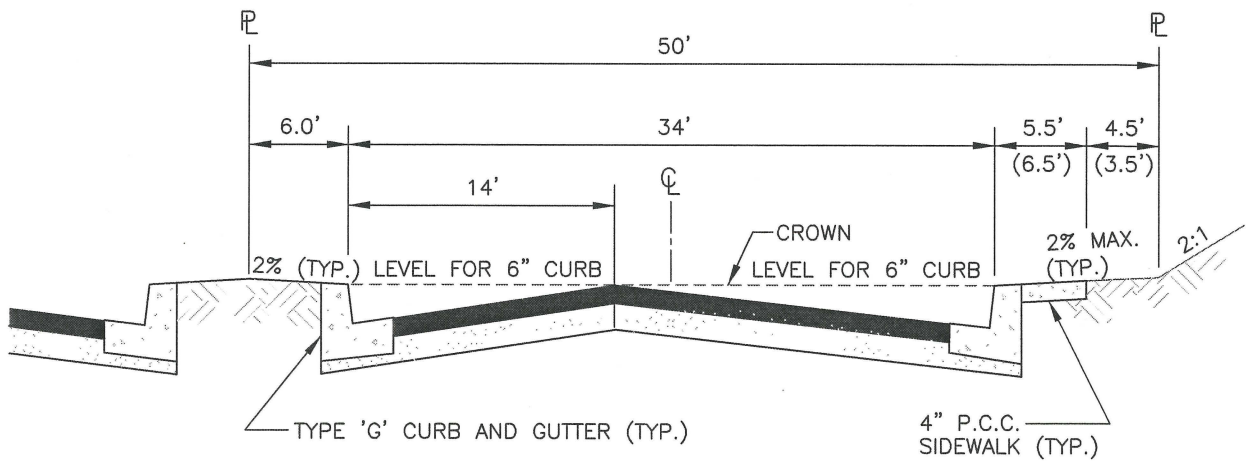
SCALE:
NOT TO SCALE

FIGURE NO.

6



INDUSTRIAL ROAD

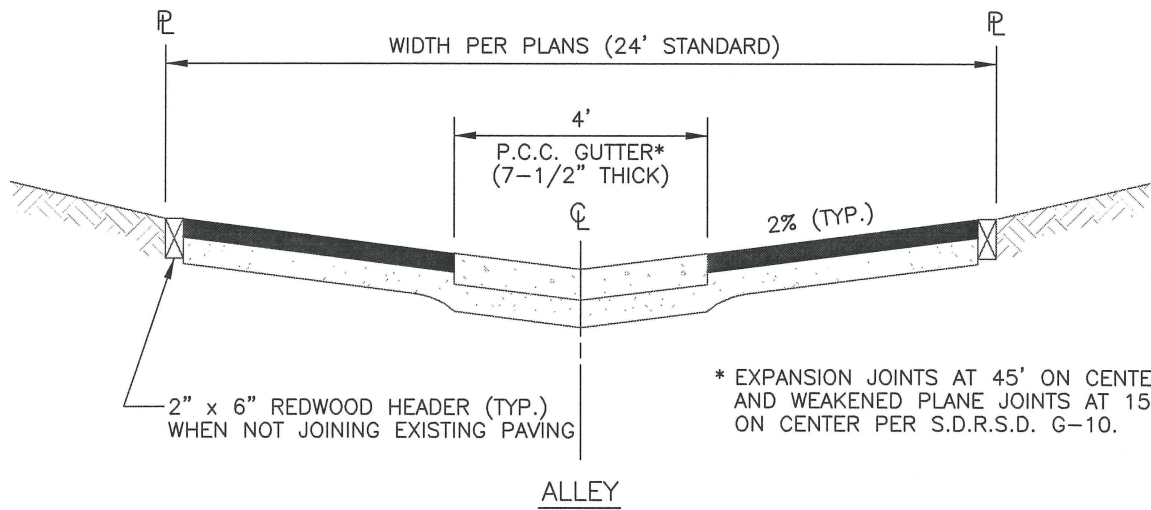


FRONTAGE ROAD

() INDICATES DIMENSIONS FOR COMMERCIAL ZONING

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTION

APPROVED: <i>Edward M. Doney</i> P. W. DIRECTOR/CITY ENGINEER	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISD	APPROVED		FIGURE NO. 7
		INDUSTRIAL ROAD & FRONTAGE ROAD	



NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTION

APPROVED: DATE: 04-02-2014

Edw. J. Dwyer
P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

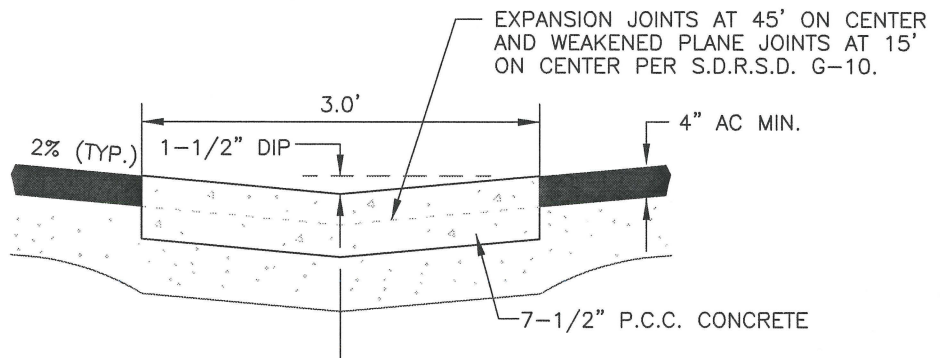
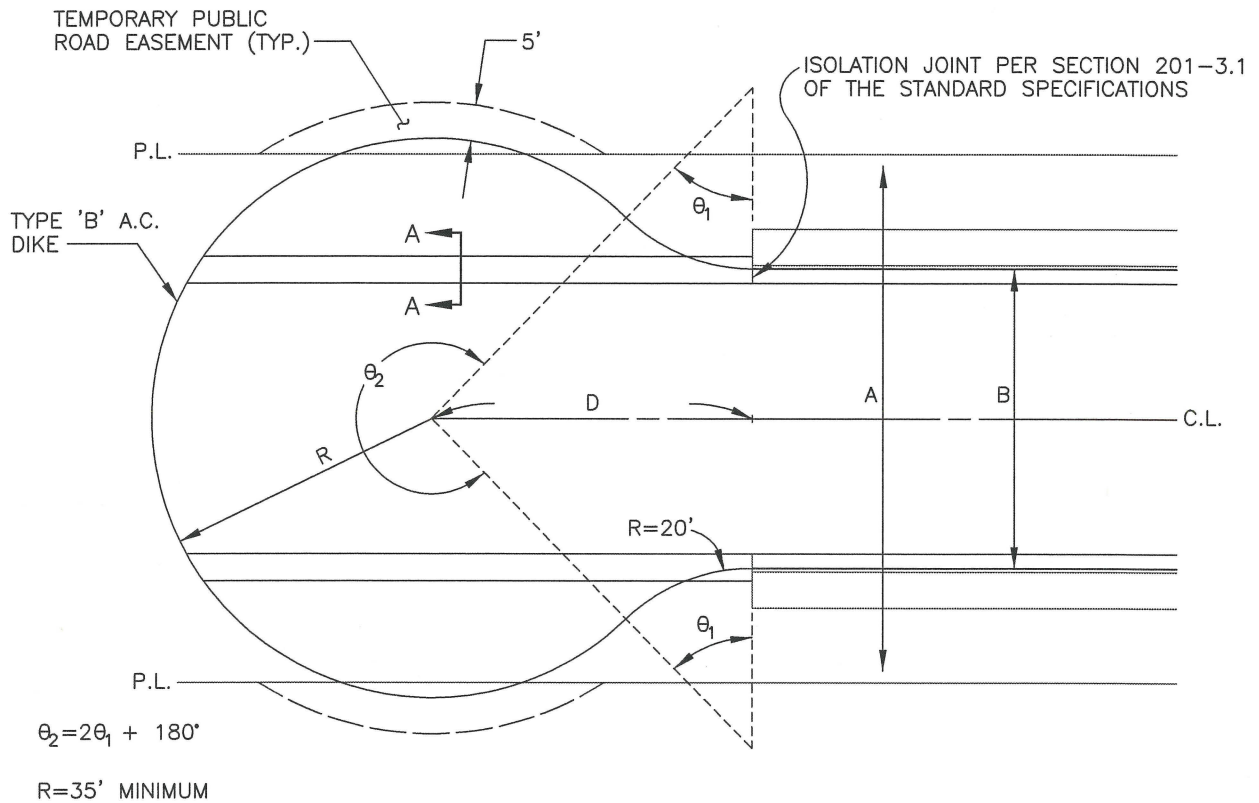
SCALE:
NOT TO SCALE

REVISED	APPROVED

ALLEY

FIGURE NO.

8



SECTION A-A

APPROVED: DATE: 04-02-2014

P. W. Director
P. W. DIRECTOR/CITY ENGINEER

REVISED

APPROVED

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SCALE:
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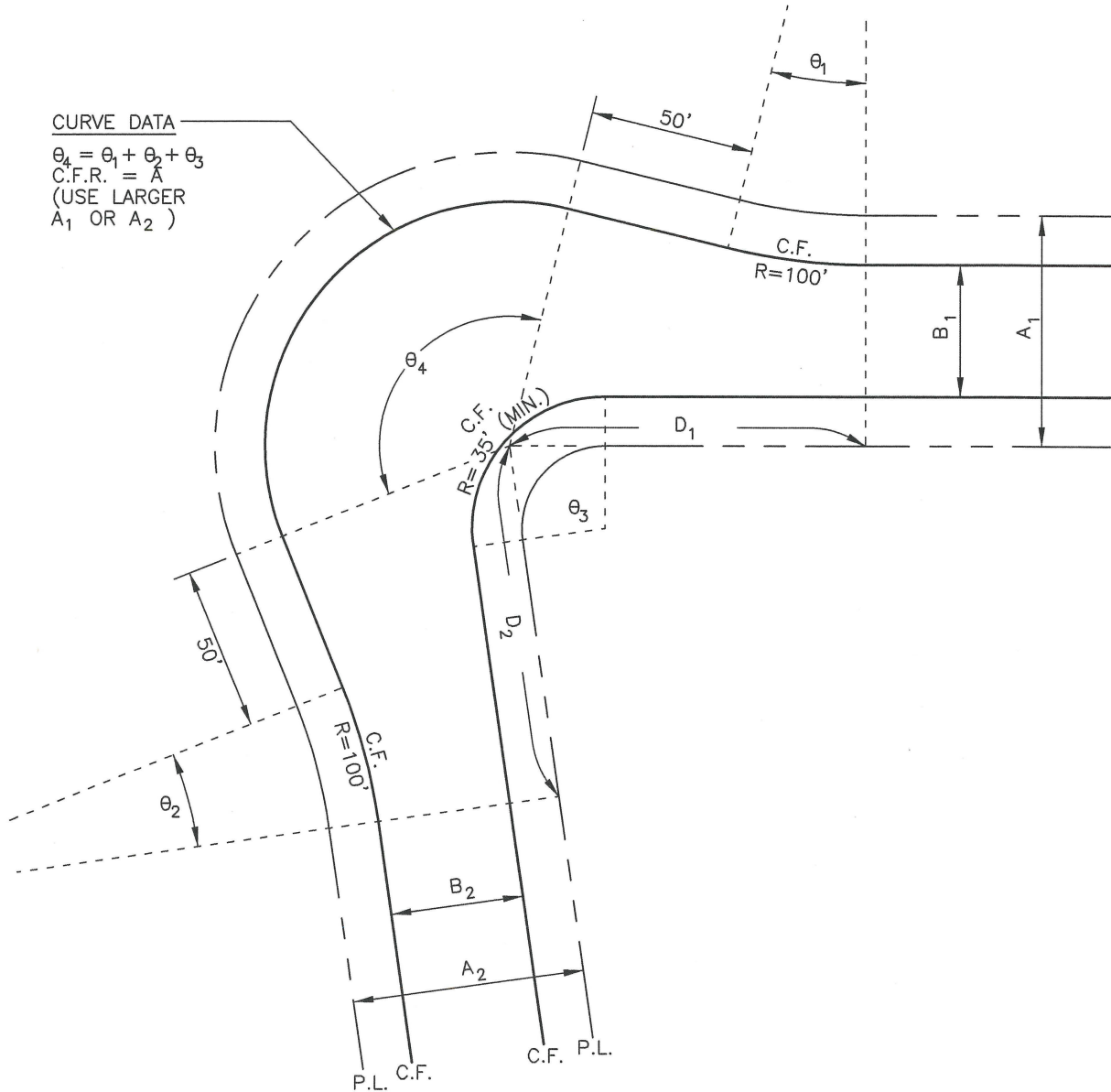
TEMPORARY
CUL-DE-SAC

FIGURE NO.

10

CURVE DATA

$\theta_4 = \theta_1 + \theta_2 + \theta_3$
 C.F.R. = \bar{A}
 (USE LARGER
 A_1 OR A_2)



APPROVED: *Edward R. Dominguez* DATE: 04-02-2014
 P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
 DEPARTMENT OF PUBLIC WORKS

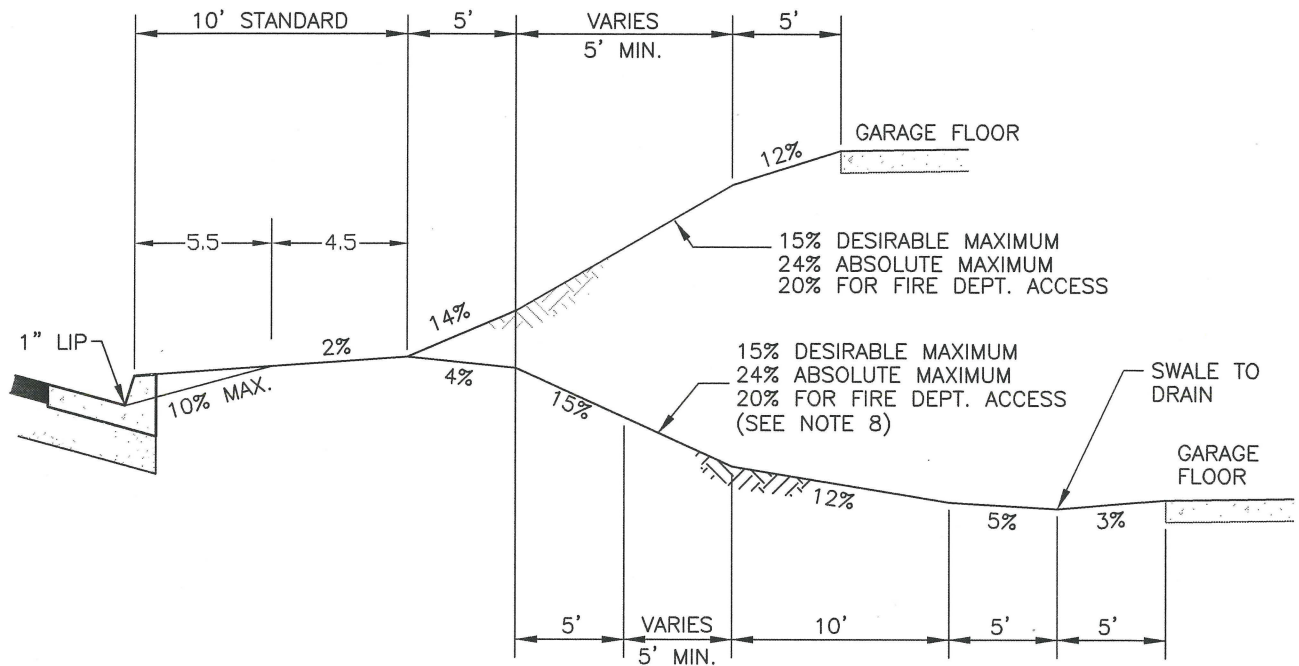
SCALE:
 NOT TO SCALE

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STANDARD KNUCKLE

FIGURE NO.

11



NOTES:

1. MAXIMUM GRADE BREAK IS 12%
2. MINIMUM ONSITE STRUCTURAL SECTION IS 5-1/2" P.C.C. OVER NATIVE OR 3" A.C. OVER 5-1/2" A.B. ADD 1/2" OF A.C. FOR EACH 2% OR FRACTION THEREOF IN GRADE OVER 12% UP TO 15%; P.C.C. PAVEMENT IS REQUIRED FOR OVER 15% GRADE.
3. FOR PLAN VIEW OF DRIVEWAY, SEE SAN DIEGO REGIONAL STD. DWG. NO. G-14A.
4. P.C.C. IS REQUIRED FOR ALL DRIVEWAYS EXCEEDING 15% SLOPE.
5. PROFILE IS LOCATED AT THE MAXIMUM SLOPE FOR ANY PORTION OF THE DRIVEWAY.
6. ALL ANGLE POINTS SHALL BE ROUNDED WITH A 5' LONG VERTICAL CURVE.
7. THIS DRAWING IS FOR SINGLE FAMILY RESIDENTIAL DRIVEWAYS ONLY AND SHALL NOT BE USED FOR PRIVATE EASEMENTS OR STREETS.
8. SLOPES OVER 15% REQUIRE AN ON-SITE TURNAROUND FOR GARAGES LOCATED BELOW THE STREET.
9. ALL DRIVEWAYS OVER 150' IN LENGTH SHALL BE PROVIDED WITH A FIRE DEPARTMENT TURN-AROUND AND SPECIAL STRUCTURAL SECTION (7 1/2" REINFORCED P.C.C.) FOR GRADES OVER 15% (NO PAVERS).

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P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

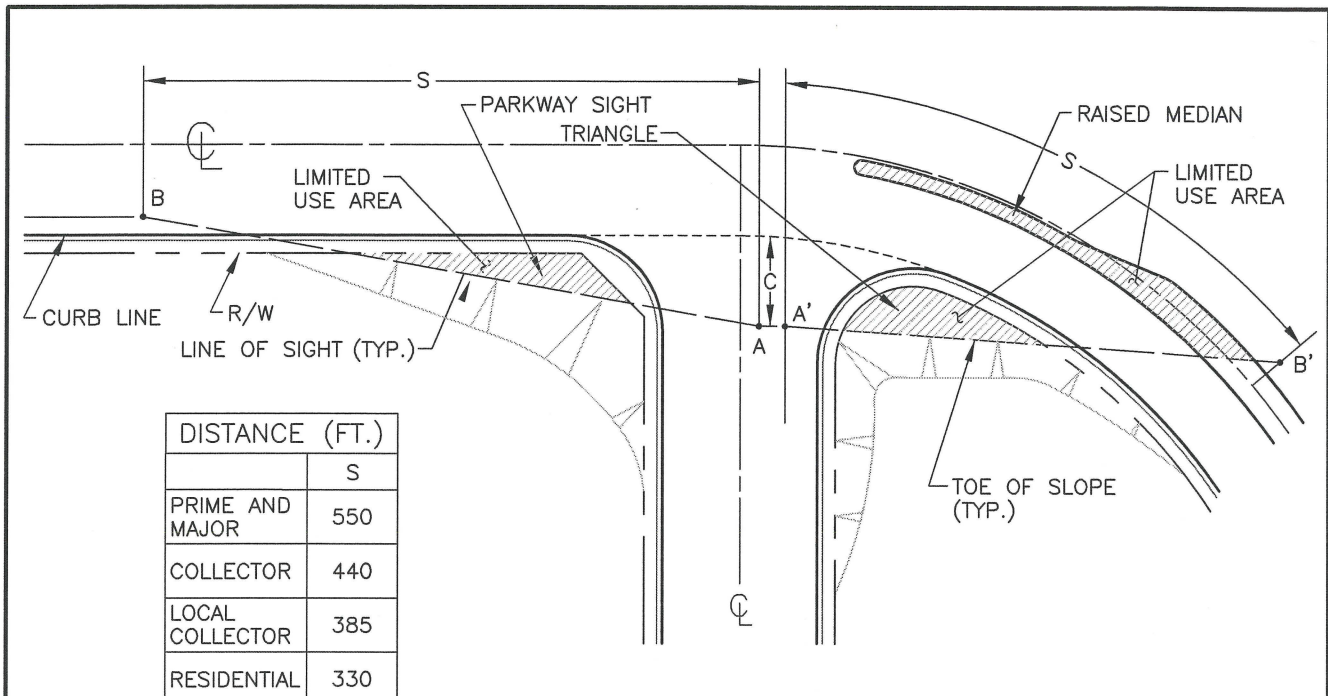
SCALE:
NOT TO SCALE

REVISED	APPROVED

DRIVEWAY PROFILE

FIGURE NO.

12



NOTES:

1. THE LIMITED USE AREA IS DETERMINED BY THE GRAPHICAL METHOD USING THE APPROPRIATE DISTANCES GIVEN IN THE ABOVE TABLE. IT SHALL BE USED FOR THE PURPOSE OF PROHIBITING OR CLEARING OBSTRUCTIONS IN ORDER TO MAINTAIN ADEQUATE SIGHT DISTANCE AT INTERSECTIONS. VERTICAL CURVE OR STEEP SLOPES ON THE STREETS MAY REQUIRE CHANGES TO THE SIGHT DISTANCE RESTRICTIONS.
2. THE LINE OF SIGHT SHALL BE SHOWN AT INTERSECTIONS ON ALL LANDSCAPING PLANS, PLOT PLANS, GRADING PLANS AND TENTATIVE TRACT PLANS WHERE SIGHT DISTANCE IS QUESTIONABLE. IN CASES WHERE AN INTERSECTION IS LOCATED ON A VERTICAL CURVE, A PROFILE OF LOCATED ON A VERTICAL CURVE, A PROFILE OF THE SIGHT LINE MAY BE REQUIRED.
3. WALLS, SIGNS, SLOPES, OR ANY OTHER OBSTRUCTIONS THAT COULD RESTRICT THE VIEW WITHIN THE LIMITED USE AREA SHALL NOT BE PERMITTED.
4. THE LIMITED USE AREA SHALL BE AS NEAR LEVEL AS POSSIBLE YET MAINTAIN PROPER DRAINAGE.
5. PLANTS AND SHRUBS SHALL BE OF THE TYPE THAT WILL GROW NO HIGHER THAN 24 INCHES ABOVE THE GROUND SHALL NOT BE PERMITTED.
6. POINTS A AND A' ARE THE LOCATIONS OF A DRIVER'S LINE OF SIGHT WHILE IN A VEHICLE AT AN INTERSECTION 15 FEET OR MORE BACK FROM THE PROJECTION OF THE CURB LINE. ON MULTILANE CROSSROADS, A IS THE MID-POINT OF THE INSIDE TRAVEL LANE AND A' IS THE MID-POINT OF THE OUTSIDE TRAVEL LANE (ON TWO LANE CROSSROADS A AND A' ARE THE SAME).
7. DISTANCE C, WHICH IS THE SETBACK FOR THE DRIVER OF THE VEHICLE ON THE CROSSROAD, SHALL BE A MINIMUM OF 10 FEET PLUS THE SHOULDER WIDTH OF THE MAJOR ROAD, BUT NOT LESS THAN 15 FEET.
8. THE DISTANCE S REPRESENTS THE STOPPING SIGHT DISTANCE MEASURED ALONG THE CENTERLINE OF THE ROAD.
9. POINTS B AND B' ARE LOCATIONS WHERE THE DRIVER OF A VEHICLE, TRAVELING AT A GIVEN SPEED, HAS THE MINIMUM STOPPING SIGHT DISTANCE REQUIRED TO BRING HIS VEHICLE TO A SAFE STOP. ON MULTILANE MAJOR ROADS B IS THE MID-POINT OF THE OUTSIDE TRAVEL LANE AND B' IS THE MID-POINT OF THE INSIDE TRAVEL LANE.
10. THE PARKWAY SIGHT TRIANGLE SHALL BE DEDICATED TO THE CITY AS SIGHT DISTANCE EASEMENT BY THE PROPOSED DEVELOPMENTS.
11. TREES THAT ARE OF THE SIZE AND SPACING THAT WILL NOT CONFLICT WITH THE SIGHT DISTANCE WILL BE ALLOWED ON A CASE BY CASE BASIS.
12. THIS SIGHT DISTANCE DETAIL APPLIES TO INTERSECTIONS WITHOUT TRAFFIC SIGNALS OR WITHOUT FOUR WAY STOP SIGNS. MINIMUM STOPPING DISTANCE PER LATEST VERSION OF HIGHWAY DESIGN MANUAL SHALL ALWAYS BE MET UNDER ANY CONDITION.
13. USE THIS SIGHT DISTANCE STANDARDS ON PUBLIC AND PRIVATE ROADS.
14. LATEST VERSION OF HIGHWAY DESIGN MANUAL SHALL BE USED ON DOWNGRADES STEEPER THAN 3 PERCENT, WHERE THERE ARE HIGH TRUCK VOLUMES ON THE CROSSROAD AND SUBSTANTIALLY SKEWED INTERSECTIONS.
15. UNDER SPECIAL CIRCUMSTANCES WHERE THE GIVEN MINIMUM SIGHT DISTANCE MIGHT NOT BE ACHIEVABLE DUE TO RESTRICTIVE CONDITIONS, MINIMUM STOPPING SIGHT DISTANCE PER THE LATEST VERSION OF HIGHWAY DESIGN MANUAL SHALL BE USED UPON CITY ENGINEERS APPROVAL.

APPROVED: *[Signature]* DATE: 04-02-2014
 P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
 DEPARTMENT OF PUBLIC WORKS

SCALE:
 NOT TO SCALE

REVISED	APPROVED

**SIGHT DISTANCE
 DETAIL**

FIGURE NO.
14



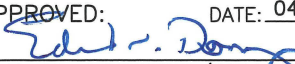
9IN. X 18IN., 24IN., 30IN., 36IN., 42IN., OR 48IN. BLANKS.

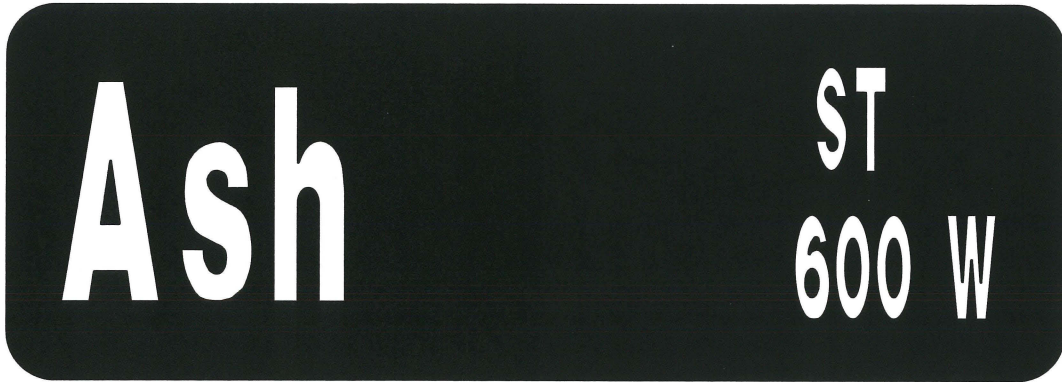
STREET NAMES SHALL BE 6 IN. UPPERCASE FOLLOWED BY 4.5 IN. LOWERCASE FHWA SERIES C2000EX. ALL OTHER LETTERING SHALL BE 3 IN. FHWA SERIES D2000EX.

STREET NAME AND ADDRESS 1 IN. SPACE FROM EACH END. STREET NAME 1.5 IN. SPACE TOP AND BOTTOM.

STREET ADDRESS AND STREET DESIGNATION 1 IN. TOP AND BOTTOM.

LETTERING SHALL BE WHITE PRISMATIC (3M 3930), BACKGROUND SHALL BE ELECTRO CUTTABLE (3M 1177C). WITH 1/2 IN. CORNER ROUNDING.

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P. W. DIRECTOR/CITY ENGINEER			FIGURE NO.
REVISED	APPROVED	9 INCH STREET NAME SIGNS	15



12IN. X 18IN., 24IN., 30IN., 36IN., 42IN. OR 48IN. BLANKS.

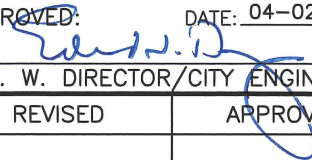
STREET NAMES SHALL BE 8 IN. FHWA SERIES C2000EX CAPS FOLLOWED BY 6 IN. LOWERCASE

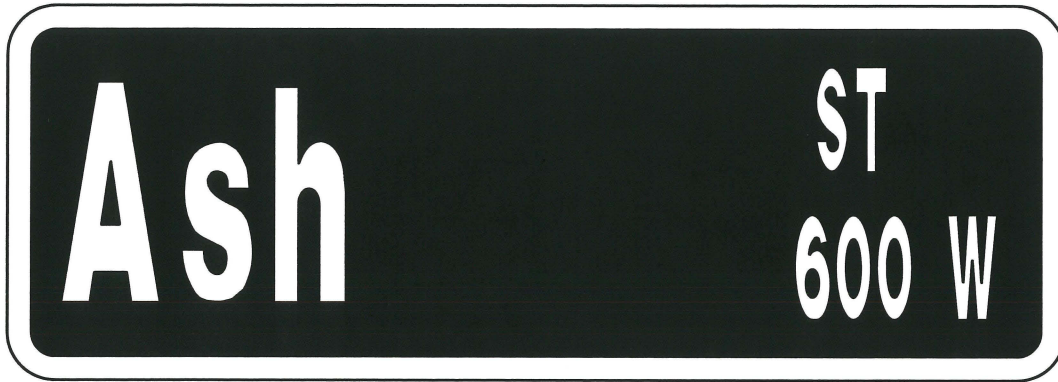
ALL OTHER LETTERING SHALL BE 4 IN. FHWA SERIES D2000EX CAPS.

STREET NAME AND ADDRESS 1IN. SPACE FROM INSIDE BORDER EDGE

STREET NAME VERTICALLY CENTERED, ADDRESS AND STREET DESIGNATION OFFSET 1-3/4 IN., TOP AND BOTTOM.

LETTERING SHALL BE WHITE PRISMATIC (3M 3930), BACKGROUND SHALL BE GREEN ELECTRO CUTTABLE (3M 1175C) WITH 3/4 IN. CORNER ROUNDING.

APPROVED: 		CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE:
DATE: 04-02-2014			NOT TO SCALE
P. W. DIRECTOR/CITY ENGINEER		12 INCH STREET NAME SIGNS	FIGURE NO.
REVISED	APPROVED		16



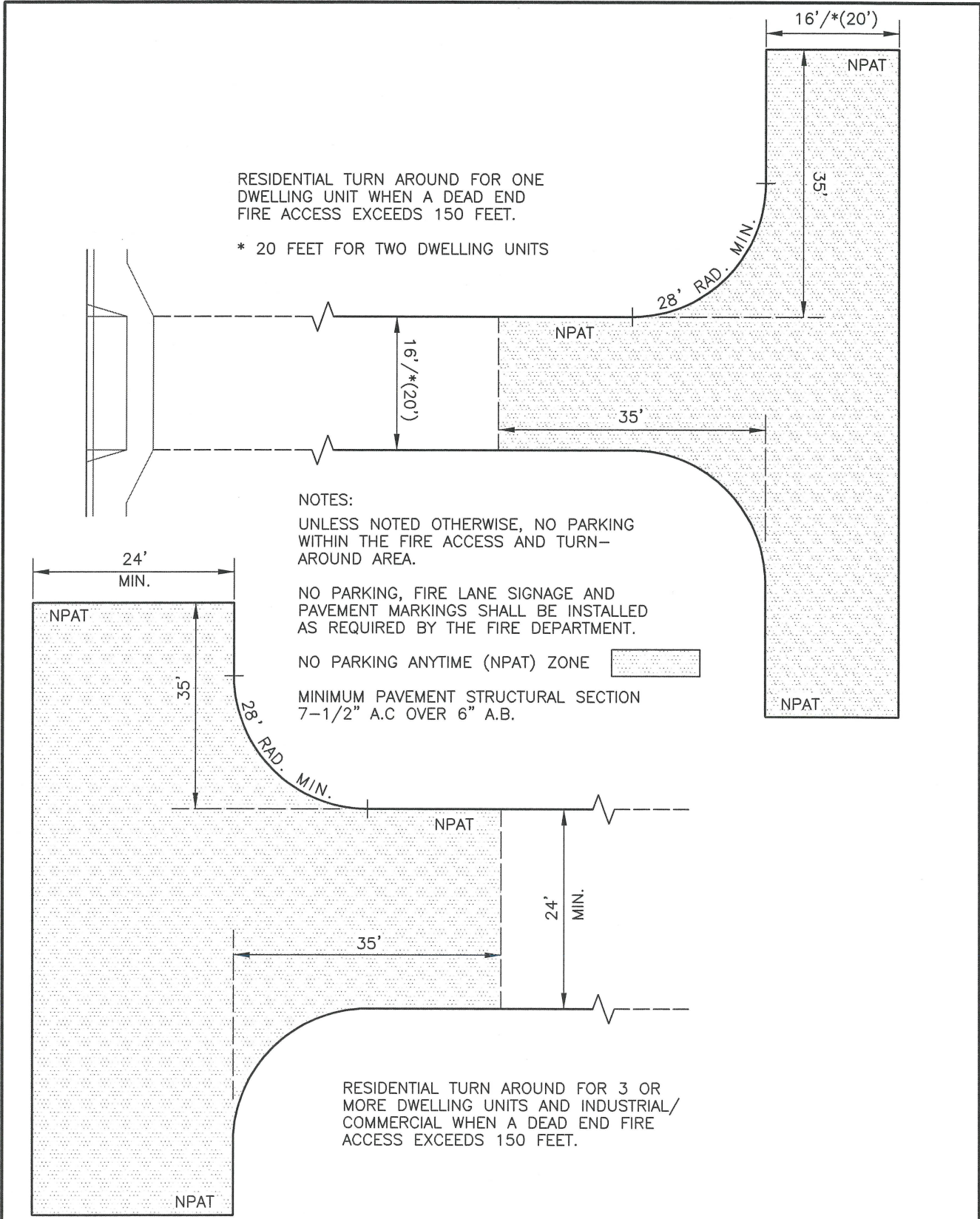
21 IN. X 24IN., 30IN., 36IN., 42IN. OR 48IN. BLANKS.

STREET NAMES SHALL BE 12 IN. FHWA SERIES C2000EX CAPS FOLLOWED BY 9 IN. LOWERCASE STREET NAME AND ADDRESS 2 IN. SPACE FROM INSIDE BORDER EDGE.

STREET NAME VERTICALLY CENTERED, ADDRESS AND STREET DESIGNATION OFFSET 1IN., TOP AND BOTTOM.

LETTERING SHALL BE WHITE PRISMATIC (3M 3930), BACKGROUND SHALL BE GREEN ELECTRO CUTTABLE (3M 1175C) WITH A 1 IN. BORDER AND 1 IN. CORNER ROUNDING.

APPROVED: 	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
P. W. DIRECTOR/CITY ENGINEER			FIGURE NO. 17
REVISED	APPROVED	21 INCH OVERHEAD STREET NAME SIGNS	



APPROVED: *Edw. N. Donny* DATE: 04-02-2014
 P. W. DIRECTOR/CITY ENGINEER

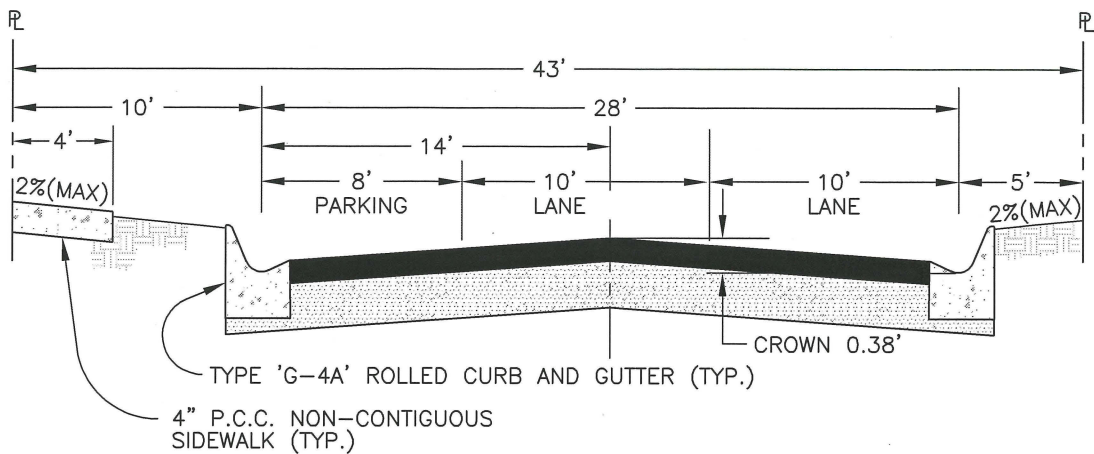
CITY OF ESCONDIDO
 DEPARTMENT OF PUBLIC WORKS

SCALE:
 NOT TO SCALE

REVISED	APPROVED

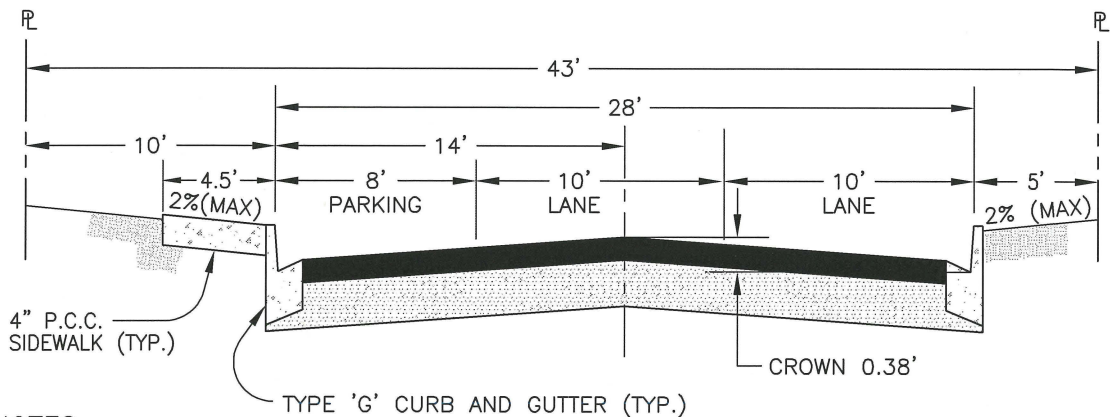
**FIRE APPARATUS
 TURN AROUND**

FIGURE NO.
18



NOTES:

1. APPLIES TO RESIDENTIAL STREETS WITH MAXIMUM 2,000 A.D.T. WHERE MAINTENANCE OF PARKWAY LANDSCAPING IS ENSURED.
2. APPLIES TO RURAL AREAS WITH 20,000 S.F. MINIMUM LOT SIZES AND A 40' GARAGE SETBACK OR CIRCULAR DRIVEWAY PROVIDING A MINIMUM OF 6 PARKING SPACES.
3. PARKING ON ONE SIDE OF STREET
4. DOES NOT APPLY TO SAFE ROUTES TO SCHOOL OR DESIGNATED TRAIL/BIKE ROUTES.
5. SIDEWALKS MAY BE MEANDERING AND/OR TAN-COLORED PER APPROVED PLAN.
6. SIDEWALKS MAY BE ELIMINATED UPON APPROVAL ON CUL DE SAC STREETS WITH 20-LOTS OR FEWER AND 200 A.D.T. OR LESS.
7. STREET TREES SHALL BE LOCATED ON PRIVATE PROPERTY, OUTSIDE OF THE RIGHT OF WAY.

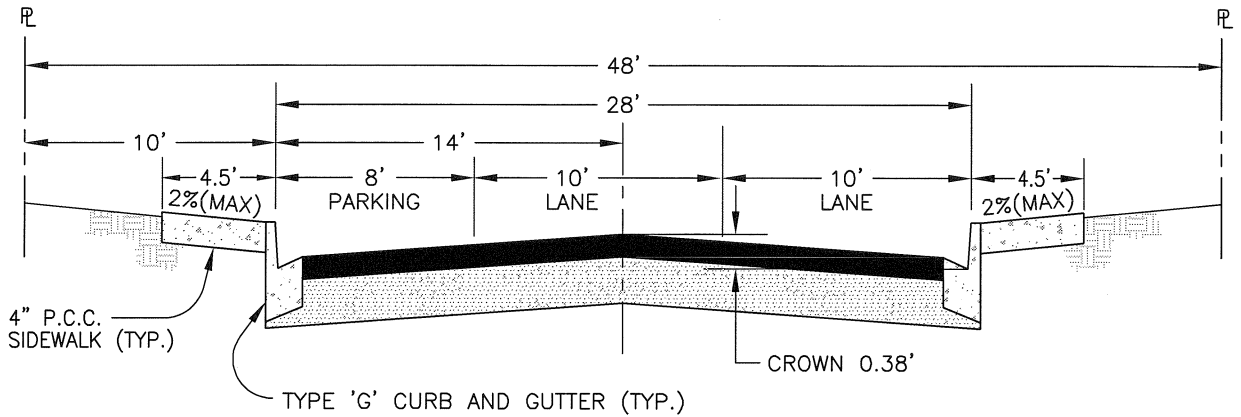


NOTES:

1. APPLIES TO RESIDENTIAL STREETS WITH MAXIMUM 2,000 A.D.T.
2. APPLIES TO RURAL AREAS WITH 20,000 S.F. MINIMUM LOT SIZES AND A 40' GARAGE SETBACK OR CIRCULAR DRIVEWAY PROVIDING A MINIMUM OF 6 PARKING SPACES.
3. PARKING ON ONE SIDE OF STREET
4. DOES NOT APPLY TO SAFE ROUTES TO SCHOOL OR DESIGNATED TRAIL/BIKE ROUTES.
5. SIDEWALKS MAY BE MEANDERING AND/OR TAN-COLORED PER APPROVED PLAN.
6. SIDEWALKS MAY BE ELIMINATED UPON APPROVAL ON CUL DE SAC STREETS WITH 20-LOTS OR FEWER AND 200 A.D.T. OR LESS.
7. STREET TREES SHALL BE LOCATED ON PRIVATE PROPERTY, OUTSIDE OF THE RIGHT OF WAY.

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTIONS

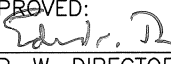
APPROVED: <i>Edward J. Dwyer</i> DATE: 04-02-2014 P. W. DIRECTOR/CITY ENGINEER		CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE:
			NOT TO SCALE
REVISED	APPROVED	RURAL RESIDENTIAL ROAD	FIGURE NO.
			19

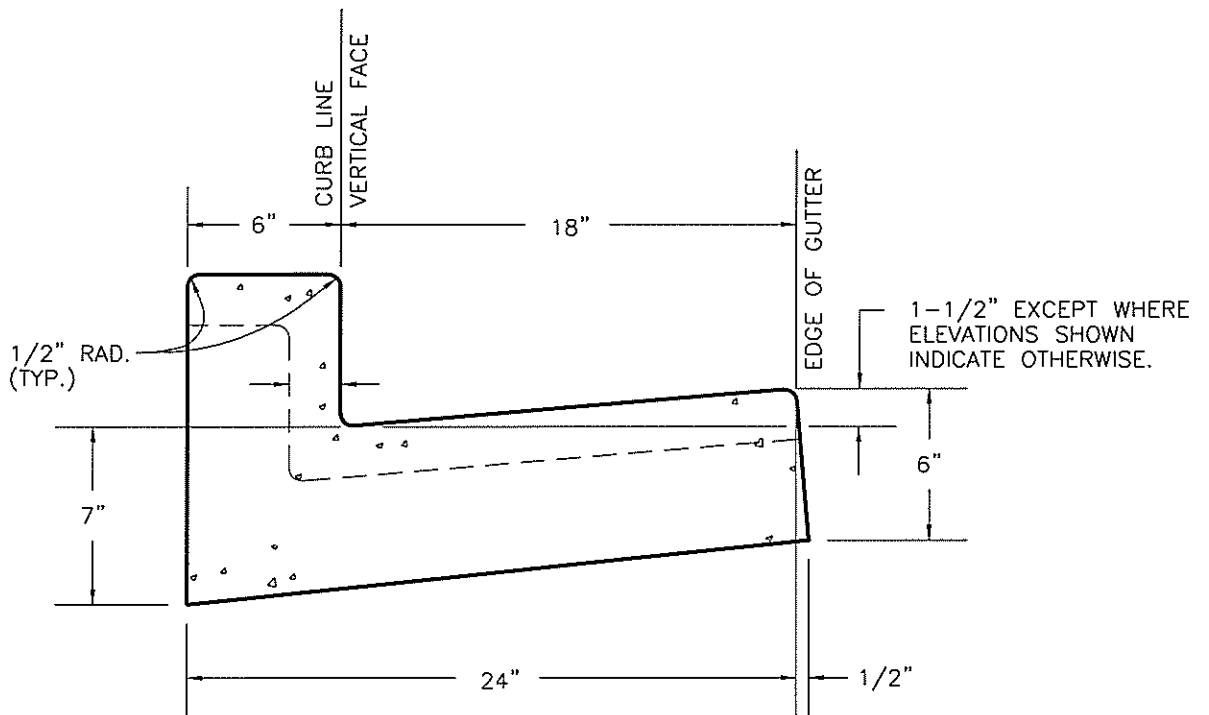


NOTES:

1. APPLIES TO RESIDENTIAL STREETS WITH MAXIMUM 2,000 A.D.T.
2. APPLIES TO AREAS WITH 10,000 S.F. MINIMUM LOT SIZES PROVIDING A MINIMUM OF 6 PARKING SPACES.
3. PARKING ON ONE SIDE OF STREET.
4. DOES NOT APPLY TO SAFE ROUTES TO SCHOOL OR DESIGNATED TRAIL/BIKE ROUTES.
5. SIDEWALKS MAY BE MEANDERING AND/OR TAN-COLORED PER APPROVED PLAN.
6. SIDEWALKS MAY BE LIMITED TO ONE SIDE OF STREET UPON APPROVAL ON CUL DE SAC STREETS.
7. PARKING PLAN THAT DEMONSTRATES 1.5 ON-STREET SPACES PER UNIT PROXIMATE TO RESIDENCES SHALL BE REVIEWED AND APPROVED BY THE CITY ENGINEER.

NOTE: REFER TO FIGURE 3 FOR STRUCTURAL SECTIONS

APPROVED:  DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
P. W. DIRECTOR/CITY ENGINEER		FIGURE NO. 20
REVISED	APPROVED	



NOTES:

1. CONCRETE SHALL BE 520-C2500. MEDIUM BROOM FINISH. COLOR - SANDSTONE (DAVIS COLOR # 5237).
2. SEE FIGURE NO. 22 AND S.D.R.S.D. G-10 FOR JOINT DETAILS.
3. SLOPE TOP OF CURB 2% MAX. TOWARD GUTTER.
4. SCORE TOP OF CURB AND CURB FACE @ 24" O.C. WITH 1/4" RADIUS TO A DEPTH OF 1/4".

LEGEND ON PLANS

AREA = 1.32 S.F.

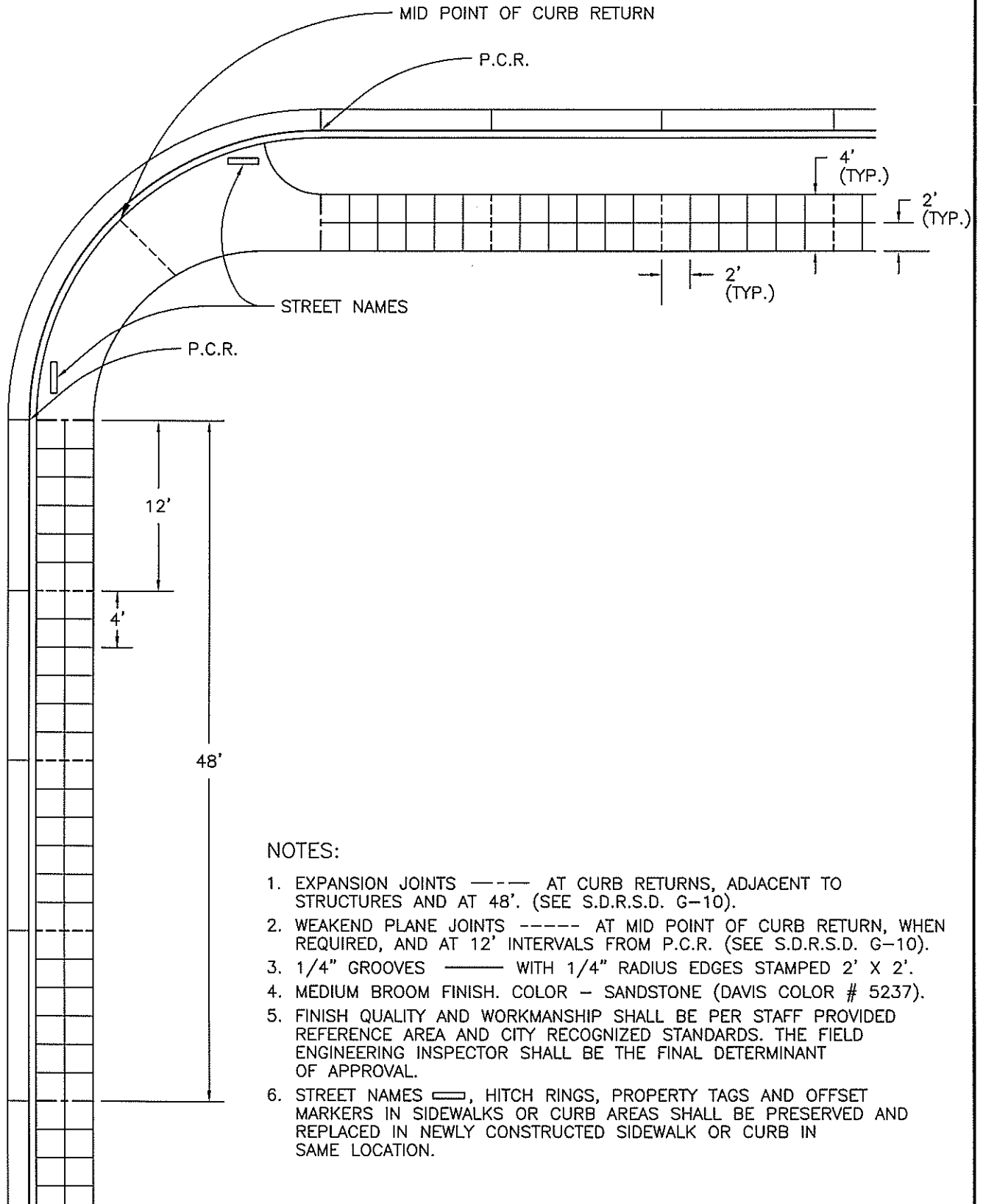
APPROVED: <i>[Signature]</i> DATE: 05-09-2018	
CITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
NOT TO SCALE

CURB and GUTTER - COMBINED
(O.E.N. HISTORIC DISTRICT)

FIGURE NO.
21



NOTES:

1. EXPANSION JOINTS - - - - AT CURB RETURNS, ADJACENT TO STRUCTURES AND AT 48'. (SEE S.D.R.S.D. G-10).
2. WEAKEND PLANE JOINTS - - - - AT MID POINT OF CURB RETURN, WHEN REQUIRED, AND AT 12' INTERVALS FROM P.C.R. (SEE S.D.R.S.D. G-10).
3. 1/4" GROOVES - - - - WITH 1/4" RADIUS EDGES STAMPED 2' X 2'.
4. MEDIUM BROOM FINISH. COLOR - SANDSTONE (DAVIS COLOR # 5237).
5. FINISH QUALITY AND WORKMANSHIP SHALL BE PER STAFF PROVIDED REFERENCE AREA AND CITY RECOGNIZED STANDARDS. THE FIELD ENGINEERING INSPECTOR SHALL BE THE FINAL DETERMINANT OF APPROVAL.
6. STREET NAMES , HITCH RINGS, PROPERTY TAGS AND OFFSET MARKERS IN SIDEWALKS OR CURB AREAS SHALL BE PRESERVED AND REPLACED IN NEWLY CONSTRUCTED SIDEWALK OR CURB IN SAME LOCATION.

APPROVED: DATE: 05-09-2018
CITY ENGINEER(R)

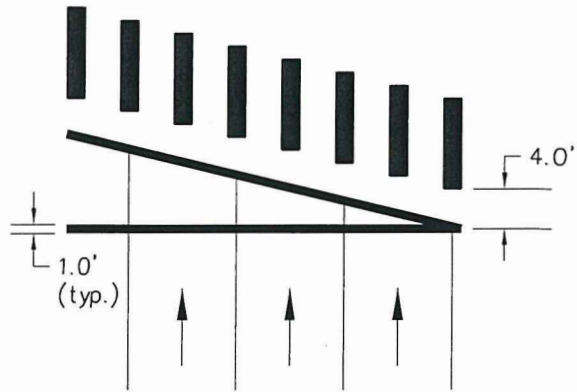
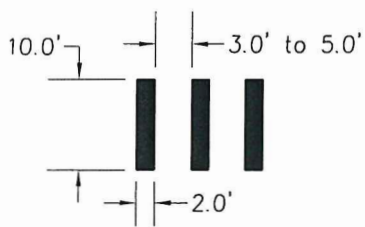
CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
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REVISED	APPROVED

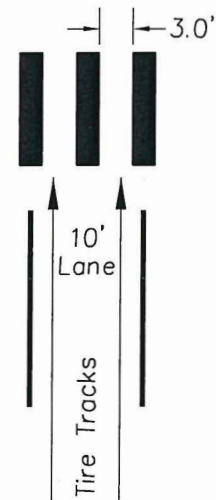
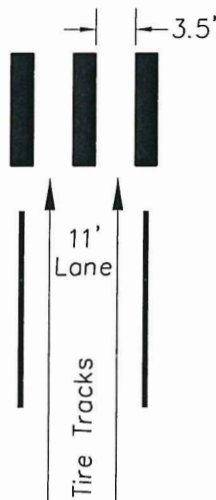
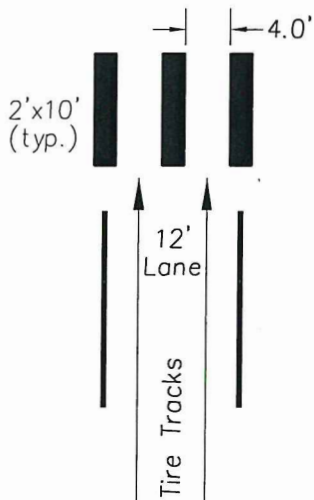
SIDEWALK JOINT LOCATIONS
(O.E.N. HISTORIC DISTRICT)

FIGURE NO.
22



Notes:

1. High Visibility Markings shall be aligned parallel to the direction of vehicular travel. Spaces between markings must be placed in the wheel tracks of each lane.
2. Crosswalk centerline shall intersect the center of each crosswalk markings and midpoint of the Curb Ramps.
3. Marking layout will vary depending on the angle of the travel way to the cross-street and the offset between the Curb Ramps.
4. Limit line may be parallel to the crosswalk or perpendicular to the travel way (staggered or straight).
5. All crosswalk markings must be white, except those near schools must be yellow. All Crosswalk markings and Limit lines to be thermoplastic.



APPROVED:	DATE: 5/11/2021
<i>[Signature]</i>	
DIR. of ENG. SVS./CITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

**HIGH VISIBILITY
CROSSWALKS**

SCALE: NOT TO SCALE
FIGURE NO. 24

Standard Drawings

LONG LIFE L.E.D. PHOTO CELL
INSTALL FACING NORTH

L.E.D. LUMINAIRE

MAST ARM 8' MAX.
CURB OVERHANG 1' MIN.

MOUNTING HEIGHT
42" ± 1"

LIGHT STANDARD

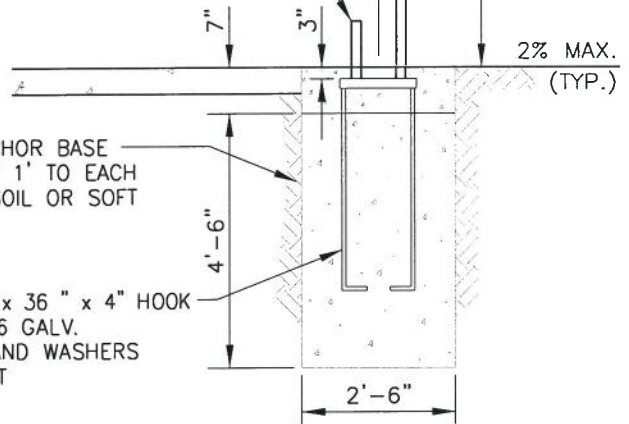
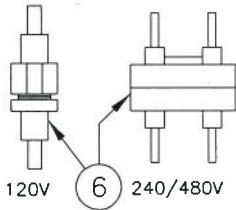
POLE HEIGHT - 26' - 7"
ALL ROAD CLASSIFICATIONS

NOTE

- 1 PHOTO CELL, AT SIGNALIZED INTERSECTIONS, ON TRAFFIC SIGNAL POLE CLOSEST TO THE METER PEDESTAL. THE LUMINAIRE SHALL HAVE LOW PROFILE SHORTING CAPS (SUN SWITCH SHORT CAPS (6005) BY RIPLEY PHOTOCONTROLS)

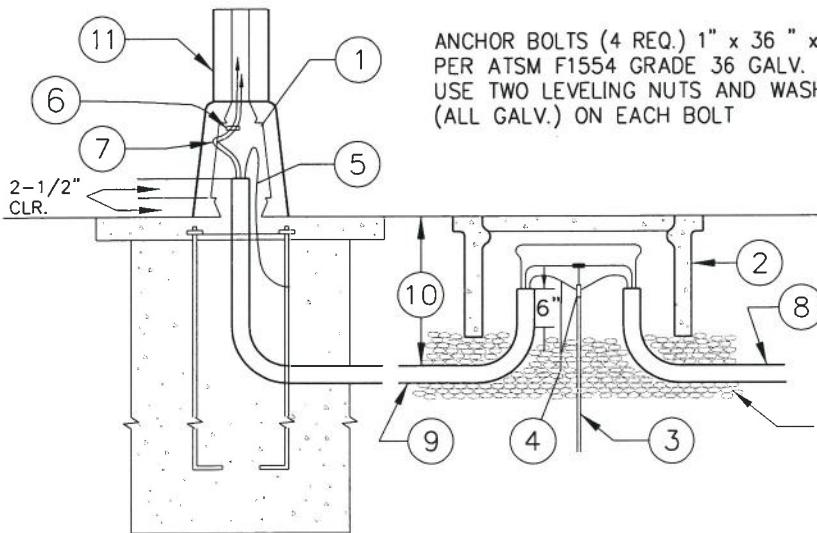
ANCHOR BASE FOUNDATION

REFER TO AMERON DWG NO. 1603-024 FOR INSTALLATION DETAILS.



560-C-3250 P.C.C. ANCHOR BASE
SQUARE OR ROUND, ADD 1' TO EACH
DIMENSION FOR LOOSE SOIL OR SOFT
CLAY CONDITIONS

ANCHOR BOLTS (4 REQ.) 1" x 36" x 4" HOOK
PER ATSM F1554 GRADE 36 GALV.
USE TWO LEVELING NUTS AND WASHERS
(ALL GALV.) ON EACH BOLT



THE BOTTOM OF THE PULL BOX
SHALL REST FIRMLY ON A 6"
THICK BED OF 1" CRUSHED
ROCK EXTENDING 6" BEYOND
THE EDGES OF THE PULL BOX
WITH 1/2" GALV. HARDWARE
CLOTH LAID ON TOP OF THE
CRUSHED ROCK.

THIS DRAWING REPLACES SAN DIEGO REGIONAL STANDARD DWG. E-1 AND E-2

APPROVED: *Chloe Rowland* DATE: 07-20-2018
CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
NOT TO SCALE

REVISED	APPROVED

**ORNAMENTAL STREET
LIGHT**

STANDARD DRAWING NO.
E-1-E
SHEET 1 OF 2

SPECIFICATIONS AND NOTES FOR L.E.D.

HAND HOLE

- ① MIN. CLEARANCE FROM BOTTOM OF HAND HOLE TO FINISHED GRADE SHALL BE 2-1/2". ACCESS PLATE SHALL HAVE STAINLESS STEEL FASTENERS.

PULL BOX

- ② INSTALL A 3-1/2 (OR EQUAL SIZE) CHRISTY CONCRETE PEDESTRIAN RATED BOX WITH A F-SERIES COMPOSITE LID WITH PENTA BOLT LOCKING SYSTEM (TWO PER LID) LIDS SHALL BE MARKED "STREET LIGHTING". PULL BOX LOCATION SHALL BE A MAX. 4'± FROM POLE; ADJACENT TO SIDEWALK OR WHERE DIRECTED; SET BOX 3" ABOVE GRADE IN PLANTER OR DIRT AREAS; PULL BOXES ARE REQUIRED AT 150' INTERVALS AND ADJACENT TO CONDUIT STREET CROSSINGS; INSTALL AN ADDITIONAL 3-1/2 (OR EQUAL SIZE) PULL BOX ADJACENT TO THE S.D.G.&E. SERVICE POINT. PULL BOX LID SHALL BE LOCKED DOWN BEFORE FINAL ACCEPTANCE.

GROUNDING

- ③ ROD: INSTALL 5/8" x 8' COPPER CLAD GROUND ROD IN PULL BOX.
 ④ MIN. #8 BARE STRANDED COPPER GROUND WIRE SHALL SPLICE TO GROUND ROD WITH AN ACORN CLAMP AND CONNECTED TO NUTRAL(S) USING A U.L. APPROVED WATER PROOF SPLICE.
 ⑤ GROUND WIRE SHALL BE LOOPED THROUGH POLE BASE AND BONDED TO ANCHOR BOLT W/ APPROVED CLAMP.

FUSE

- ⑥ FUSE LINE VOLTAGE OR HOT LEG (120V. SYSTEM) WITH FUSETRON 10 AMP MIDGET FUSE IN BUSSMAN TRON HOLDER HEB-AA (120V.) OR BUSSMAN TRON DUAL FUSE HOLDER, HEX-AA (240/480V). WRAP CRIMPED ENDS WITH ELECTRICAL TAPE AND APPLY SCOTCHKOTE TYPE SEALER OR WITH A TB HS 16-12-L,4,25 SHRINK TUBE (FUSE HOLDER LOCATED IN BASE OF STANDARD). FUSES SHALL BE IN POLE BASE HAND HOLE LOCATION. IF INSTALLED, VIDEO CAMERAS SHALL BE INDIVIDUALLY FUSED.

CONDUCTORS

NEUTRAL SHALL BE WHITE OR GRAY. LINE VOLTAGE SHALL NOT BE WHITE, GRAY OR GREEN. NO TAPING OF WIRE TO ALTER COLOR SHALL BE PERMITTED.

- ⑦ LOAD SIDE CONDUCTORS SHALL BE MIN. #10 THWN COPPER STRANDED: LEAVE SLACK FOR WIRE TO EXTEND 12" MIN. OUT OF HAND HOLE.
 ⑧ SERVICE OR FEEDER CONDUCTORS SHALL BE MIN. #8 THWN COPPER STRANDED. LEAVE 2' SLACK FOR EACH LINE WITHIN EACH PULL BOX. ALL SPLICES SHALL BE WATER PROOF, 3M SCOTCHCAST (3570 G-N) OR TB SHRINK TUBE ARE ACCEPTABLE WATER PROOFING METHODS.

CONDUIT

- ⑨ CONDUIT SHALL BE 1" P.V.C. SCH. 40 UNLESS OTHERWISE SPECIFIED. FOR OVERHEAD SERVICE SOURCES, CONTRACTOR SHALL FURNISH 2" SCH. 40 CONDUIT TO LOCAL ELECTRIC COMPANY TO REACH FROM THE CLOSEST HANDHOLE TO CROSS ARM OF POWER POLE.
 ⑩ CONDUIT DEPTH SHALL BE 24" MIN. UNDER STREETS AND ALLEYS AND 18" MIN. BEHIND CURB. ALL STREET CROSSINGS SHALL BE MADE PERPENDICULAR TO THE ROADWAY.

POLE AND ANCHOR BOLTS

- ⑪ POLE TYPE: AMERON 2B226 WITH 8' SINGLE ARM
 ANCHOR BOLT TYPE: PER POLE MANUFACTURE RECOMMENDATIONS (1"x36"x4" MIN. ALL GALVANIZED)

LUMINAIRES AND LAMP REQUIREMENTS

STREET LIGHTS - ROADWAYS			SAFETY LIGHTS - INTERSECTIONS		
ROAD CLASSIFICATION	FIXTURE - TYPE I	WATTS/LUMENS	ROAD CLASSIFICATION	FIXTURE - TYPE II	WATTS/LUMENS
RESIDENTIAL	GE EVOLVE ERL1004B330AGRAYR	31/3900	RESIDENTIAL	GE EVOLVE ERL1004D330AGRAYR	31/3900
LOCAL COLLECTOR	GE EVOLVE ERL1007C330AGRAYR	58/6800	LOCAL COLLECTOR	GE EVOLVE ERL1007D330AGRAYR	58/6800
COLLECTOR	GE EVOLVE ERLH010C330AGRAYR	82/9600	COLLECTOR	GE EVOLVE ERLH010D330AGRAYR	82/9600
MAJOR	GE EVOLVE ERLH010C330AGRAYR	82/9600	MAJOR	GE EVOLVE ERLH013D330AGRAYR	111/12500
PRIME ARTERIAL	GE EVOLVE ERLH013C330AGRAYR	111/12500	PRIME ARTERIAL	GE EVOLVE ERL2018D330AGRAYR	140/17300

AT SIGNALIZED INTERSECTIONS, THE HIGHER CLASSIFIED ROAD SAFETY LIGHTING FIXTURE SHALL BE USED.

NO LUMINAIRE WITH A CORRELATED COLOR TEMPERATURE (CCT) OVER 3000K SHALL BE USED. ALL FIXTURES SHALL HAVE THE FIXTURE SEAL OF APPROVAL (FSA) FROM THE INTERNATIONAL DARK-SKY ASSOCIATION (IDA). ANY PROPOSED EQUAL FIXTURE SHALL BE CHECKED WITH THE LATEST VERSION OF "AGI32" SOFTWARE TO ASSURE COMPLIANCE WITH THE LATEST ANSI RP-8 MINIMUM LIGHTING REQUIREMENTS FOR THE INTENDED ROADWAY CLASSIFICATION.

ALL EQUIPMENT SHALL BE STANDARD AND IN COMPLIANCE WITH ANSI C136 SERIES.

SERVICE POINT

DEVELOPER / CONTRACTOR SHALL MAKE ARRANGEMENTS WITH S.D.G.&E. FOR A SERVICE POINT WITHIN THE PUBLIC RIGHT-OF-WAY AND COMPLY WITH S.D.G.&E. REQUIREMENTS FOR CONSTRUCTION METHODS AND AS-BUILT DRAWINGS.

LOCATION


LOCATION SHALL BE PER APPROVED PLAN OR APPROVED BY CITY ENGINEER. STANDARD LOCATIONS DEPEND ON SIDEWALK LOCATION:
 FOR NON-CONTIGUOUS SIDEWALK BETWEEN CURB AND SIDEWALK, PER PLAN OR 21" FROM CURB FACE TO POLE CENTERLINE.
 FOR ALL CONTIGUOUS SIDEWALK, 84" (±) FROM CURB FACE TO POLE CENTERLINE.

SPACING

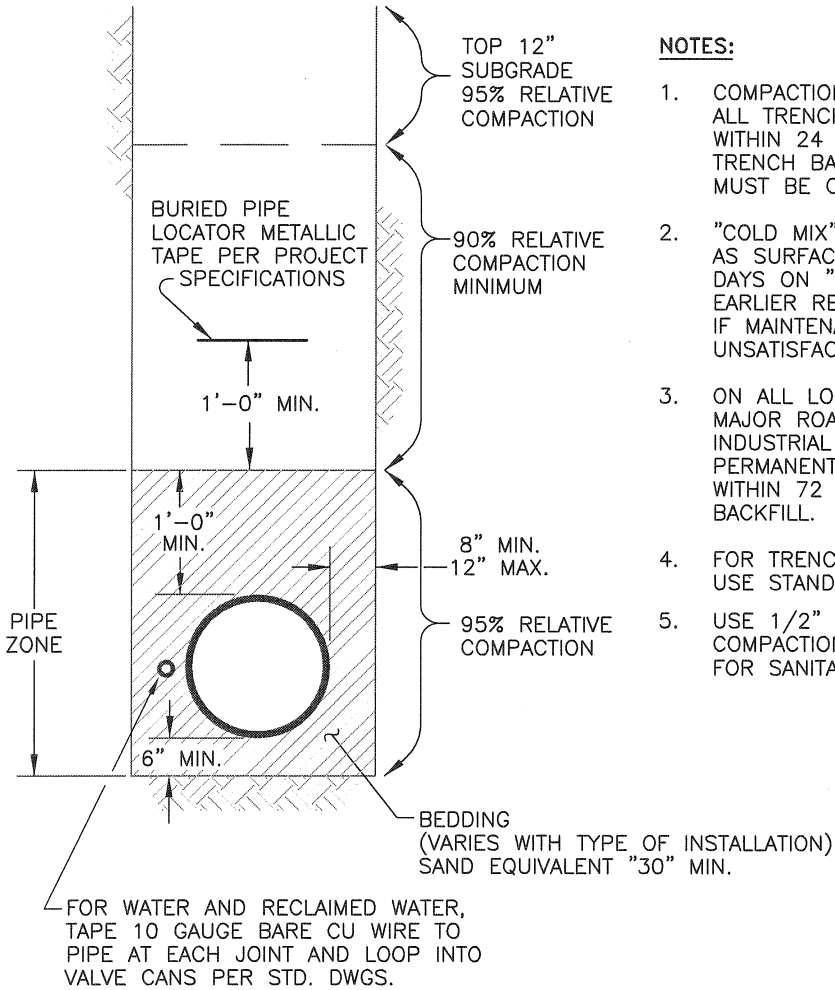
THE SPACING OF ORNAMENTAL STREET LIGHTS SHALL BE AS SPECIFIED BY THE "SUMMARY OF MINIMUM STREET DESIGN STANDARDS".

NOTE

- WHEN MANUFACTURER OR PRODUCT NUMBER IS SPECIFIED, EQUAL PRODUCTS CAN BE USED WITH ADVANCED APPROVAL OF THE CITY ENGINEER.
- ALL LIGHT FIXTURES SHALL INCLUDE LONG LIFE L.E.D. PHOTO CELLS (DLL 127-1.5 JU)

APPROVED:  DATE: 07-20-2018	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED	STANDARD DRAWING NO.
		E-1-E
	ORNAMENTAL STREET LIGHT	SHEET 2 OF 2

SEE G-3-E & G-4-E FOR
TEMPORARY AND PERMANENT
ROADWAY REPAIR

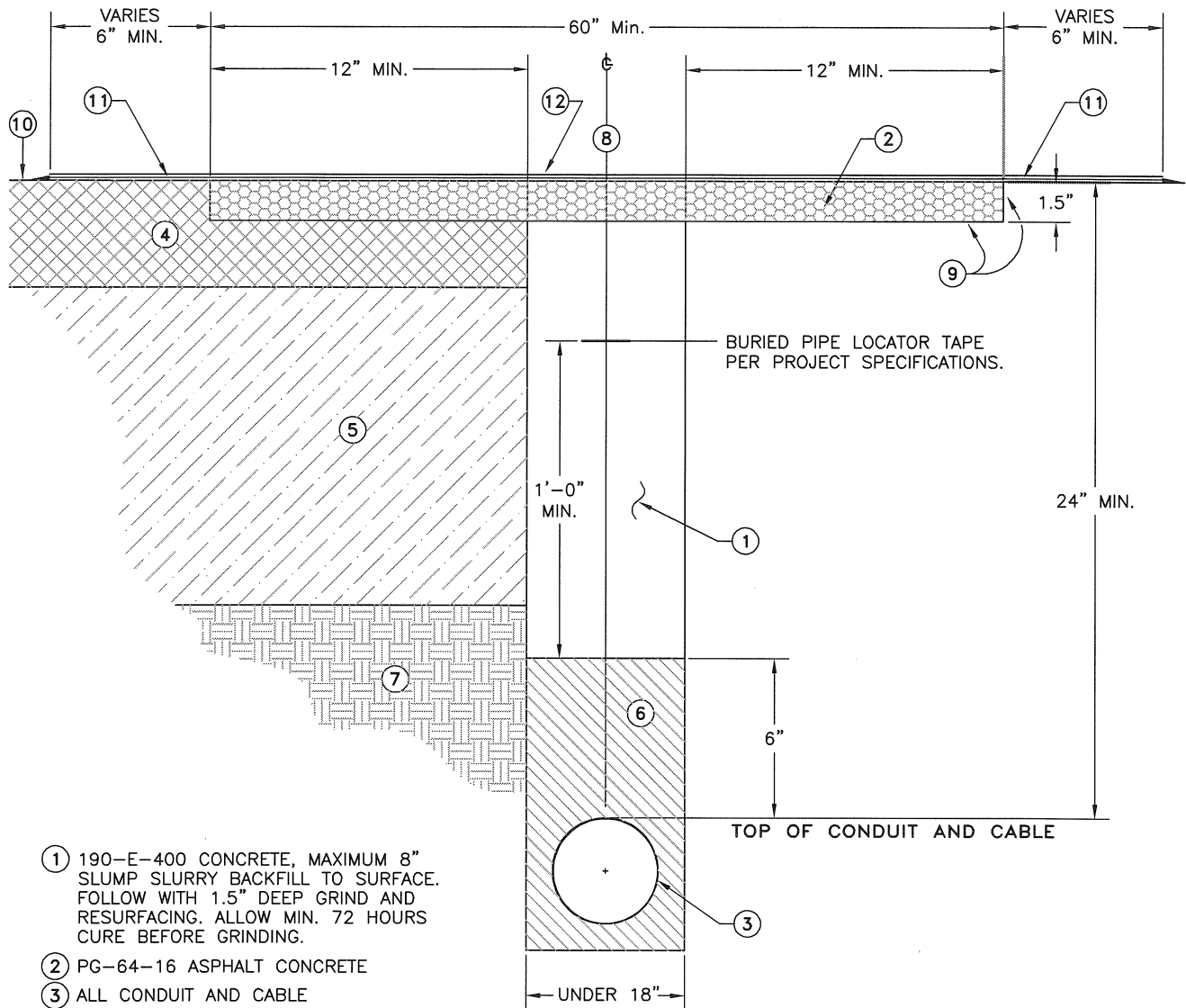


NOTES:

1. COMPACTION TESTS ARE REQUIRED ON ALL TRENCHES AND MUST BE PERFORMED WITHIN 24 HRS. OF COMPLETION OF TRENCH BACKFILL. COMPACTION FAILURE MUST BE CORRECTED IMMEDIATELY.
2. "COLD MIX" WILL BE ALLOWED TO REMAIN AS SURFACING FOR A MAXIMUM OF 30 DAYS ON "RESIDENTIAL" STREETS. EARLIER REPLACEMENT WILL BE REQUIRED IF MAINTENANCE OF THE SURFACING IS UNSATISFACTORY.
3. ON ALL LOCAL COLLECTORS, COLLECTORS, MAJOR ROADS, PRIME ARTERIALS, INDUSTRIAL AND COMMERCIAL STREETS PERMANENT RESURFACING IS REQUIRED WITHIN 72 HRS. OF COMPLETION OF BACKFILL.
4. FOR TRENCH CUTS LESS THAN 18" IN WIDTH, USE STANDARD DRAWING G-2-E
5. USE 1/2" TO 1" GRAVEL BACKFILL IN 95% COMPACTION ZONE WHEN PVC PIPE IS USED FOR SANITARY SEWERS.

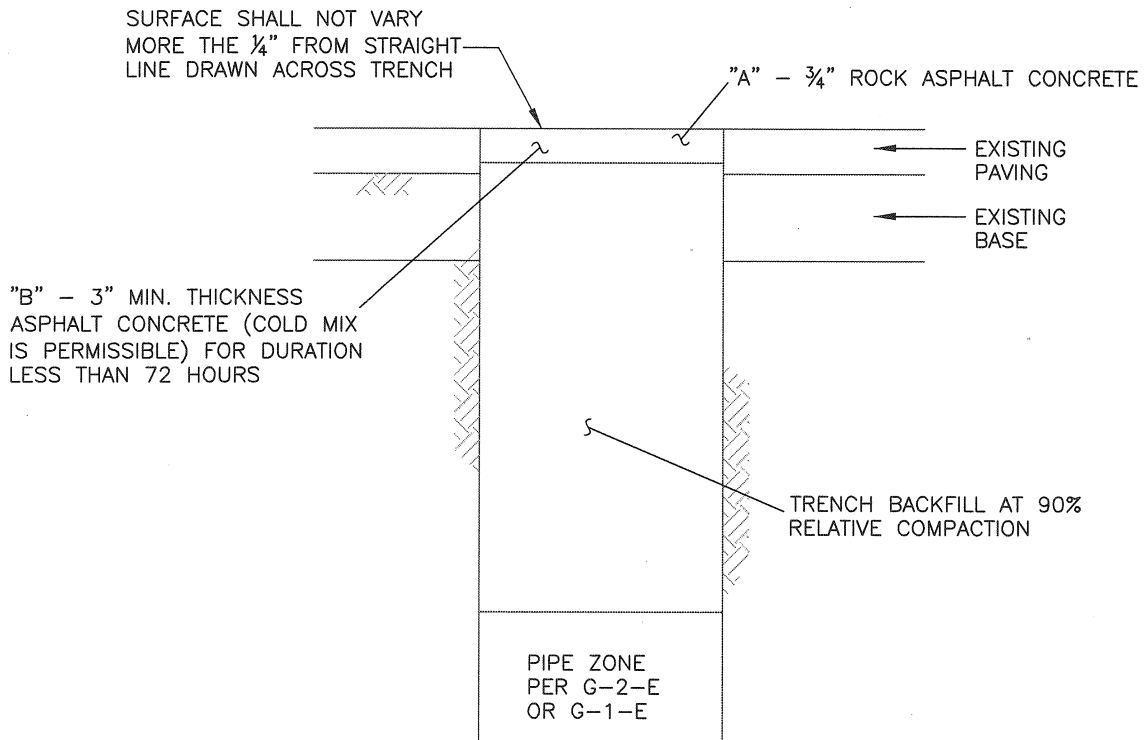
THIS DRAWING REPLACES SAN DIEGO REGIONAL STANDARD DWG. WP-02, SP-02, AND D-60.

APPROVED:  P. W. DIRECTOR/CITY ENGINEER	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED 		STANDARD DRAWING NO. G-1-E
		STANDARD TRENCHES 18" & OVER IN WIDTH	



- ① 190-E-400 CONCRETE, MAXIMUM 8" SLUMP SLURRY BACKFILL TO SURFACE. FOLLOW WITH 1.5" DEEP GRIND AND RESURFACING. ALLOW MIN. 72 HOURS CURE BEFORE GRINDING.
- ② PG-64-16 ASPHALT CONCRETE
- ③ ALL CONDUIT AND CABLE
- ④ EXISTING A.C. PAVEMENT
- ⑤ EXISTING BASE MATERIAL
- ⑥ MORTAR SAND COMPACTED TO 95% RELATIVE DENSITY.
- ⑦ UNDISTURBED SOIL.
- ⑧ SYMMETRICAL ABOUT CENTERLINE OF TRENCH.
- ⑨ GRADE SS-1h EMULSIFIED ASPHALT APPLIED AT 0.15 GALLON PER SQUARE YARD.
- ⑩ EXIST. ASPHALT PAVEMENT FINISHED GRADE. SMOOTHNESS & COMPACTION OF RESURFACING SHALL MEET THE REQUIREMENTS OF SEC 302-5.6.2 SSPWC EXCEPT THAT THE SMOOTHNESS SHALL BE DETERMINED OVER THE LENGTH & WIDTH OF PAVEMENT AREAS DISTURBED BY THE CONTRACTOR'S/ PERMITEE'S OPERATIONS.
- ⑪ RESPRAY GRADE SS-1h EMULSIFIED ASPHALT AT 0.15 GALLON PER SQUARE YARD 6" WIDE, CENTERED ON EDGE LINE OF GRIND AFTER PLACING A.C. & BEFORE SURFACE TREATMENT.
- ⑫ SURFACE TREATMENT TO MATCH EXISTING PAVEMENT (E.G. SEAL COAT, CHIP SEAL)
- ⑬ WHEN THE EDGE OF THE GRIND LINE IS WITHIN 30" OF EDGE OF PAVEMENT, ANY STRUCTURE, AN ADJACENT TRENCH PATCH OR ANY OTHER PAVING JOIN LINE, THE 1.5" DEEP GRIND SHALL BE EXTENDED TO THE FAR EDGE OF ALL ITEMS LISTED.

APPROVED: <i>Richard N. Dancy</i> P. W. DIRECTOR/CITY ENGINEER	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED		NARROW TRENCH BACKFILL UNDER 18" IN WIDTH



Section	Roadway Classification		
	Residential	Local Collector	Prime Arterial
"A" - Asphalt Material - B-PG-64-16	3"	4"	5"
"B" - Cold Mix Asphalt	3"	3"	3"

NOTES:

- (1) - The TEMPORARY Repair detail is intended for use on Utility Projects. This repair detail is intended to provide a durable, smooth and safe roadway repair to accommodate the work and time needed for pipeline testing, any leak repairs, other remedial work that may be required, and utility tie-ins. After successful completion of testing and tie-ins are completed, this repair will be cold-planned and overlaid as indicated in Escondido Standard Drawing G-6-E.
- (2) - The TEMPORARY Repair detail is required within 72 hours on all streets.
- (4) - The CONTRACTOR shall continually maintain the surface of this repair flush with the existing roadway so that the surface of the repair shall not vary more than 1/4" from the existing roadway when measured from a 10' straight edge.
- (5) - Valve cans and manholes shall be accessible at all times if connected to existing systems.
- (6) - The CONTRACTOR shall re-stripe any stop bar or lane delineation that has been removed or degraded by the work immediately or shall install and maintain temporary chip seal markers.
- (7) - When pipeline is at minimum 36" cover in Local Collector and Prime Arterial Roads, the Class II base material section shall be extended from the asphalt section to the bedding material.
- (8) - Payment for all work described on this standard drawing for Capital Improvement Contracts directly with the City Of Escondido is paid for and included in the lineal foot price payment of the associated pipeline item.
- (9) - Written approval is required in advance for all trenches in the public right-of-way that cannot be properly completed within a workday, shall be protected by steel plate covers. Steel plate covers shall be in accordance with the requirements of the "Greenbook", Standard Specifications for Public Works Construction, Section 7-10.5.3.

APPROVED: _____ DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
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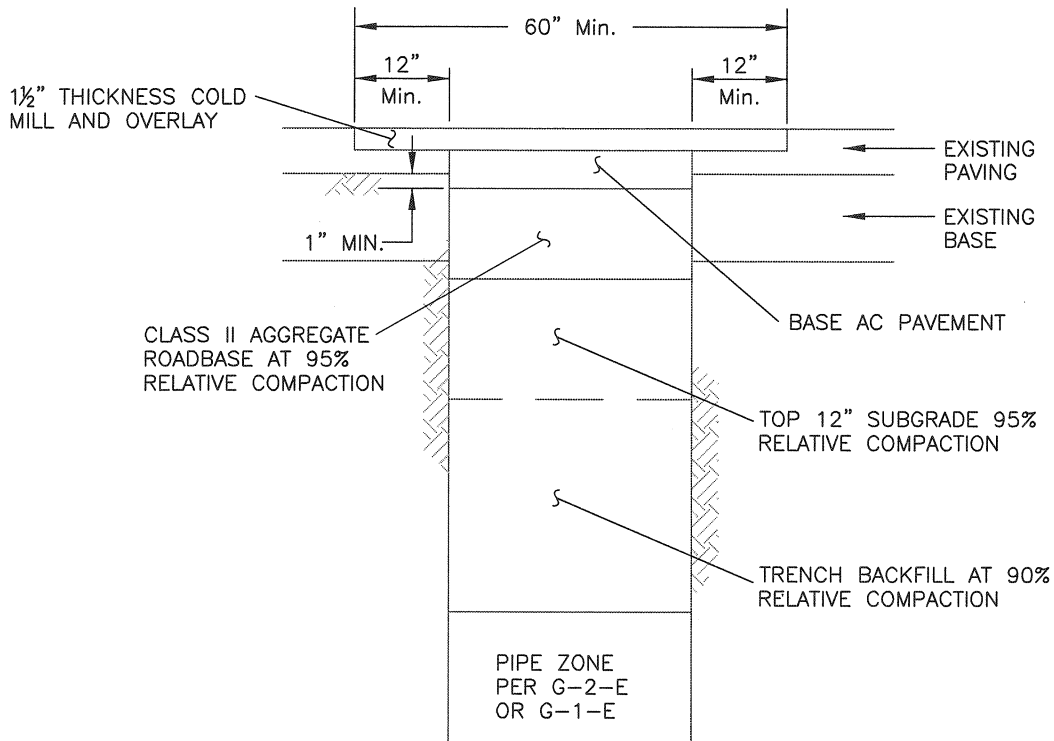
REVISED

APPROVED

**TEMPORARY ROADWAY
REPAIR**

STANDARD DRAWING NO.

G-3-E



NOTES:

- (1) - Upon approval of all pipeline testing and tie-ins from the City of Escondido, the CONTRACTOR shall cold mill the trench repair to a depth of 1 1/2", one foot wider than the trench width on both sides. When edge of cold mill or grind line is within 30" off edge of pavement, any structure, an adjacent trench patch or any other paving join line the 1 1/2" deep grind shall be extended to the far edge of all items listed.
- (2) - Cold Milling shall be done as per Section 302-5.2 & 302-5.2.3 SSPWC (Green Book).
- (3) - Paving shall be performed the same day that cold milling is done. All vertical joints shall be delineated with traffic control devices. No portion of trench repair shall be cold milled that can not be paved back the same day. The cold milling machine may be required to standby or re-mobilize to meet this requirement. Valves & manholes shall be raised ASAP.
- (4) - The pavement repair shall be true to grade and cross-section as described in Section 302-5.6.2 SSPWC (Green Book).
- (5) - The asphalt cap shall be "C2-PG-64-16" (SSPWC).
- (6) - The cap shall be sprayed with "SS-1H Emulsified Asphalt", applied at the rate of 0.15 Gallon/Square Yard.
- (7) - The joint seam to the existing roadway, shall be sealed with a 6" wide seal of "SS-1H Emulsified Asphalt", centered on the joint.
- (8) - The surface of the roadway repair shall be additionally treated to match the surface treatment of the existing roadway. The minimum surface treatment shall be sand seal.
- (9) - The CONTRACTOR shall re-stripe any stop bar or lane delineation that has been removed or degraded by the work immediately or shall install and maintain temporary chip seal markers until striping is placed. All Raised Pavement Markers (RPMs) shall be replaced after striping.
- (10) - Payment for all work described on this standard drawing for Capital Improvement Contracts directly with the City Of Escondido, is paid for and included in the lineal foot price payment of the associated pipeline item.

APPROVED: _____ DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
NOT TO SCALE

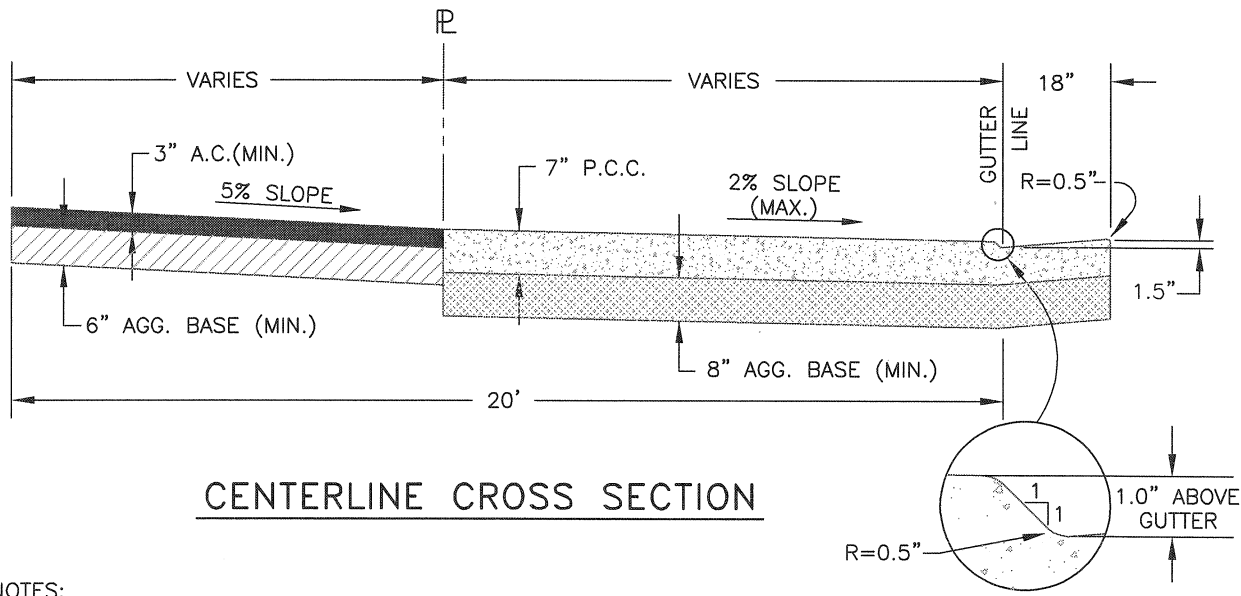
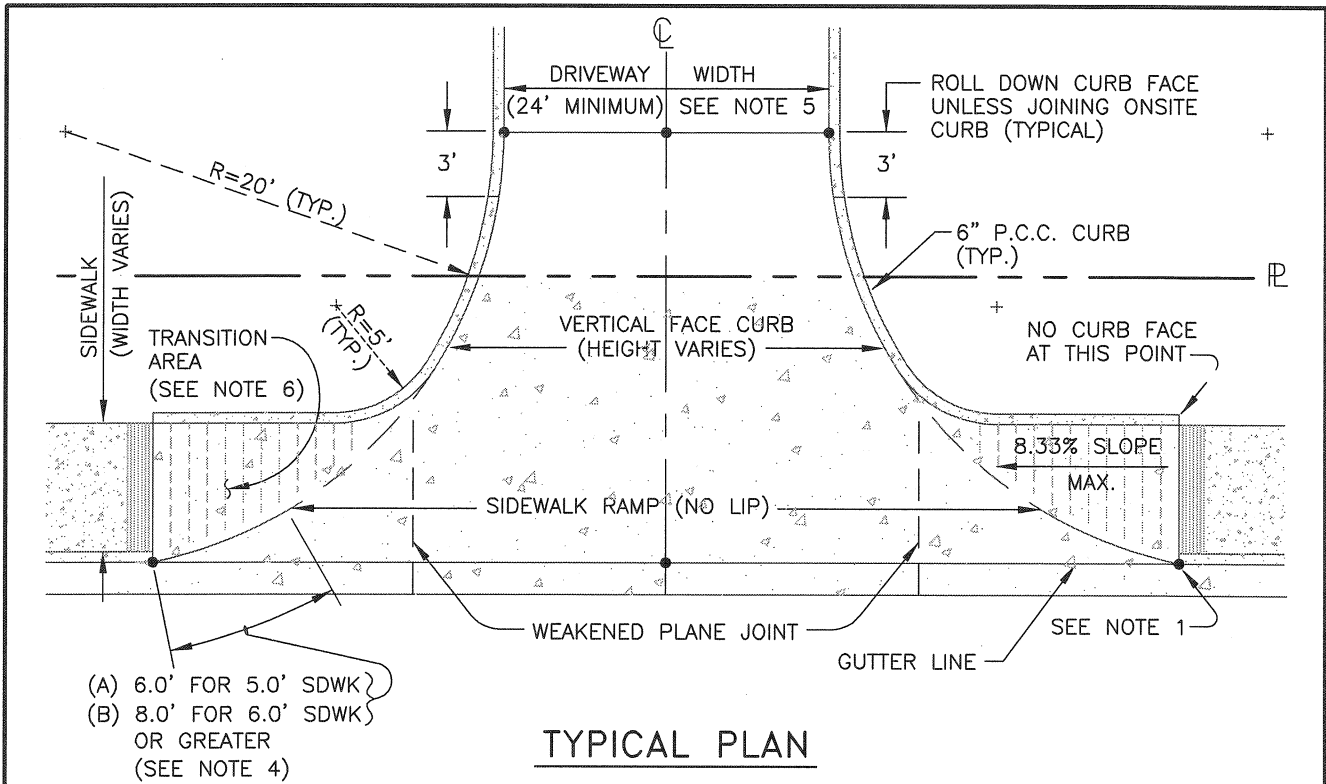
REVISED

APPROVED

**PERMANENT ROADWAY
REPAIR**

STANDARD DRAWING NO.

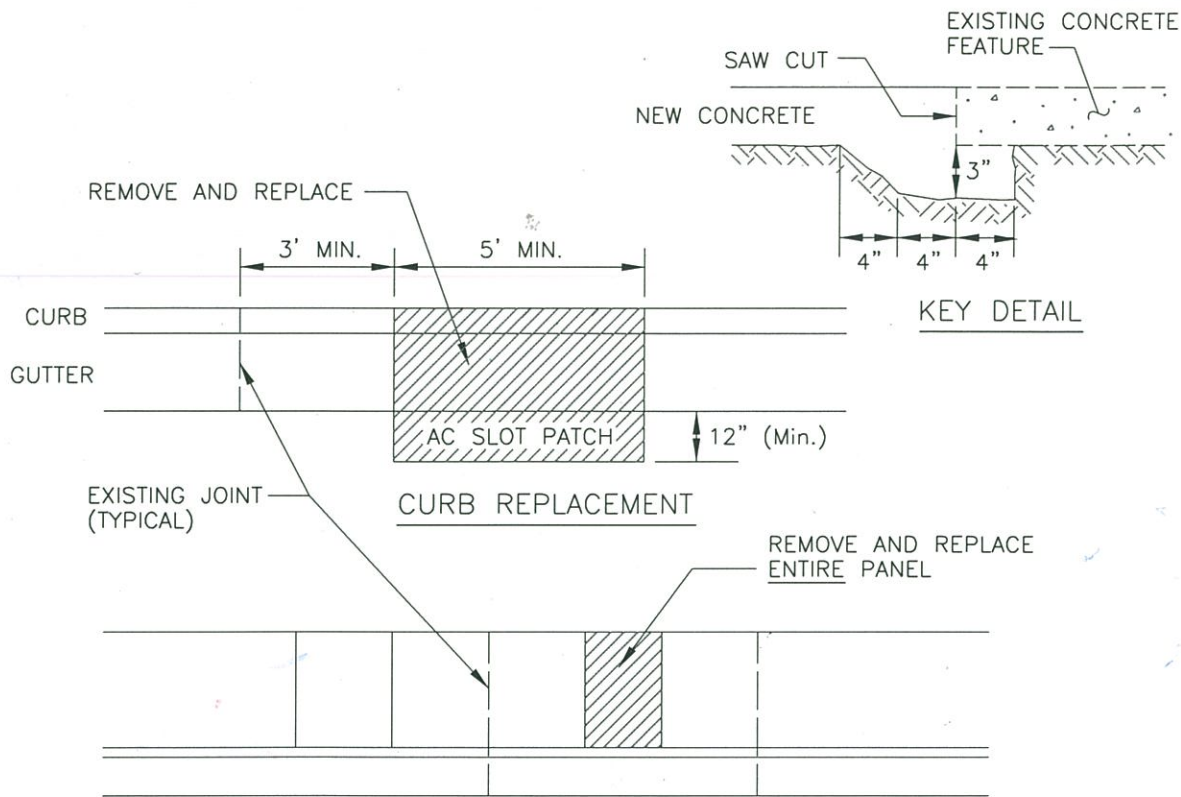
G-4-E



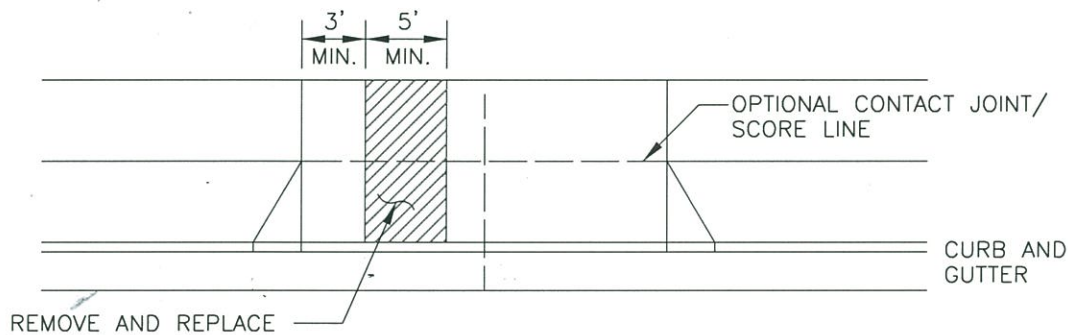
NOTES:

1. THE RAMP SHALL HAVE A 12" WIDE BORDER WITH 1/4" DEEP SCORE LINES AND 1/8" RADIUS. THE SPACING SHALL BE APPROXIMATELY 3/4" O.C.
2. ● = ELEVATION SHOWN ON PLANS (TOP OF CURB AND GUTTER ELEVATION)
3. ALL CONCRETE SHALL BE 560-C-3250 AND INSTALLED IN A SINGLE POUR (MONOLITHIC)
4. TRANSITION FROM FULL HEIGHT CURB TO NO CURB
5. OR AS REQUIRED BY CITY ENGINEER
6. TRANSITION AREA SHALL HAVE A MEDIUM TO HEAVY BROOM FINISH, PERPENDICULAR TO THE AXIS OF THE RAMP.

APPROVED: P. W. DIRECTOR/CITY ENGINEER	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED 	ALLEY - TYPE DRIVEWAY	STANDARD DRAWING NO. G-5-E



SIDEWALK REPLACEMENT



DRIVEWAY REPLACEMENT

NOTES:

1. WHEN POSSIBLE, SAW CUTS SHALL BE MADE AT EXISTING JOINT LINES. FINAL REMOVAL AND REPLACEMENT LIMITS DETERMINATION TO BE MADE BY CITY ENGINEER REPRESENTATIVE.
2. ALL CONCRETE SHALL BE KEYED INTO EXISTING STRUCTURES.
3. IF MINIMUM DISTANCE FROM JOINT TO SAW CUT LINE CANNOT BE OBTAINED, REMOVE AND REPLACE TO JOINT.
4. ALL BASE OR SUB-BASE SHALL BE COMPACTED PER THE STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
5. ALL CURB AND GUTTER REPLACEMENT MUST HAVE A MIN. 12" SLOT NEXT TO THE LIP OF GUTTER FOR MECHANICAL COMPACTION. MATCH EXISTING A.C. PAVEMENT THICKNESS.

THIS DRAWING REPLACES SAN DIEGO COUNTY REGIONAL STANDARD DWG. G-11

APPROVED: *[Signature]* DATE: 04-24-2018
CITY ENGINEER

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

SCALE:
NOT TO SCALE

REVISED	APPROVED

**CURB, GUTTER, SIDEWALK
& DRIVEWAY REPLACEMENT**

STANDARD DRAWING NO.
G-6-E

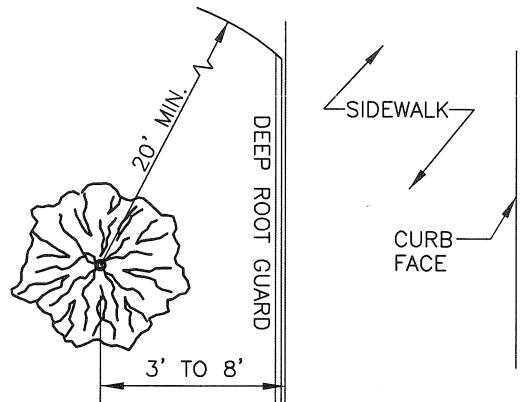
2 STAKES AND 2 TIES.
TIE TREE TRUNK 6"
ABOVE BENDING
MOMENT OF TREE. TIE
SHOULD PROVIDE
FLEXIBILITY OF TRUNK
BUT NOT ALLOW
RUBBING OF TRUNK
AGAINST STAKE. CUT
STAKES OFF 6" ABOVE
TIES.

LODGEPOLE PINE STAKE
2" DIAM x 10'

DIKE—RETAIN UNTIL TREE
IS ESTABLISHED

BACKFILL MIX
(2/3 NATIVE SOIL
1/3 HUMUS)

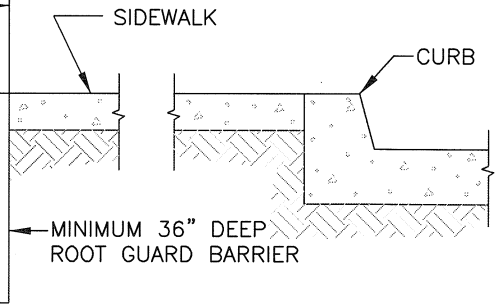
HOLE SIZE—
ONE & ONE-HALF TIMES
WIDTH OF BALLROOT



PLANTING SPECIFICATIONS

- A) MINIMUM 6' TALL — 15 GALLON CONTAINER WITH ONE INCH CALIPER.
- B) 30' FROM CURB RETURNS
- C) 15' FROM STREET LIGHTS & STREET SIGNS
- D) 10' FROM FIRE HYDRANTS
- E) 15' FROM SEWER AND WATER LINES
- F) 8' FROM DRIVEWAYS
- G) 35' FROM DRIVEWAYS ON CLASSIFIED CIRCULATION STREETS IN THE DIRECTION OF APPROACHING TRAFFIC (FOR OTHER DIRECTION SEE "F")
- H) TREES SHOULD BE PLANTED TO MINIMIZE FUTURE DAMAGE CAUSED BY ROOT SYSTEMS. ROOT CONTROL BARRIERS REQUIRED FOR ALL TREES 5' AND CLOSER TO PAVED SURFACES

3' MIN. TO 8' MAX.



ONE TREE PER 30' OF STREET FRONTAGE LOCATED 3' TO 8' BEHIND THE SIDEWALK. IN AREAS WHERE THE SIDEWALK EXTENDS FROM CURB TO PROPERTY LINE, STREET TREES SHALL BE PLANTED ON PRIVATE PROPERTY OR IN 3' x 3' PLANTERS AT THE BACK OF THE SIDEWALK. WATERED AT TIME OF PLANTING AND ONCE A WEEK DURING THE NEXT SIX MONTHS.

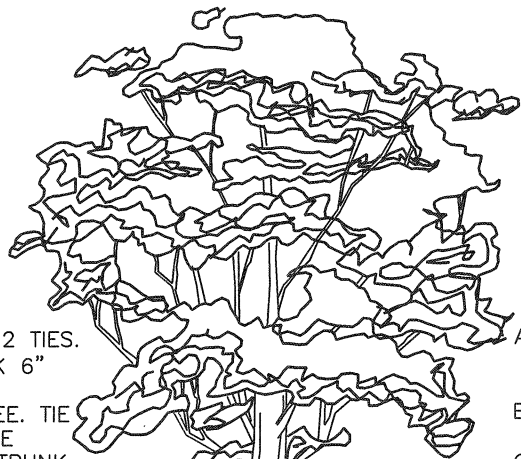
THIS DRAWING REPLACES SAN DIEGO REGIONAL STANDARD DWG. L-1 & L-2

APPROVED:	DATE: 04-02-2014
P. W. DIRECTOR/CITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

**TREE PLANTING
BEHIND SIDEWALK**

SCALE: NOT TO SCALE
STANDARD DRAWING NO. L-1-E



2 STAKES AND 2 TIES.
TIE TREE TRUNK 6"
ABOVE BENDING
MOMENT OF TREE. TIE
SHOULD PROVIDE
FLEXIBILITY OF TRUNK
BUT NOT ALLOW
RUBBING OF TRUNK
AGAINST STAKE. CUT
STAKES OFF 6" ABOVE
TIES.

LODGE POLE PINE STAKE
2" DIA. x 10'

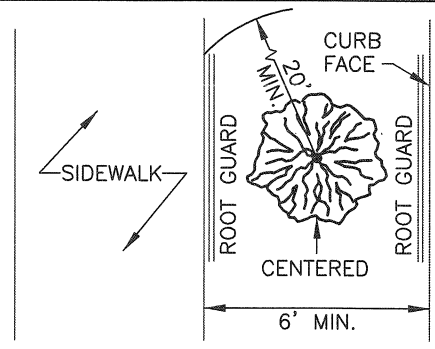
DIKE—RETAIN UNTIL TREE
IS ESTABLISHED

SIDEWALK

24" DEEP
ROOT GUARD

BACK FILL MIX
(2/3 NATIVE SOIL
1/3 HUMUS)

HOLE SIZE—
ONE AND ONE HALF
TIMES WIDTH OF
ROOT BALL



PLANTING SPECIFICATIONS

- A) MINIMUM 6' TALL – 15 GALLON CONTAINER WITH ONE INCH CALIPER.
- B) 30' FROM CURB RETURNS
- C) 15' FROM STREET LIGHTS & STREET SIGNS
- D) 10' FROM FIRE HYDRANTS
- E) 15' FROM SEWER AND WATER LINES
- F) 8' FROM DRIVEWAYS
- G) 35' FROM DRIVEWAYS ON CLASSIFIED CIRCULATION STREETS IN THE DIRECTION OF APPROACHING TRAFFIC (FOR OTHER DIRECTION SEE "F")
- H) THIS DRAWING SHALL NOT BE USED FOR NEWLY CONSTRUCTED CLASSIFIED CIRCULATION STREETS.
- I) ROOT CONTROL BARRIERS REQUIRED FOR ALL TREES 5' AND CLOSER TO PAVED SURFACES

CURB

MINIMUM 36" DEEP
ROOT GUARD BARRIER

ONE TREE PER 30' OF STREET FRONTAGE,
CENTERED BETWEEN CURB AND SIDEWALK.
WATERED DURING TIME OF PLANTING AND
ONCE A WEEK DURING THE NEXT SIX MONTHS.

THIS DRAWING REPLACES SAN DIEGO REGIONAL STANDARD DWG. L-1 & L-2

APPROVED: DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

REVISED

APPROVED

CITY OF ESCONDIDO

DEPARTMENT OF PUBLIC WORKS

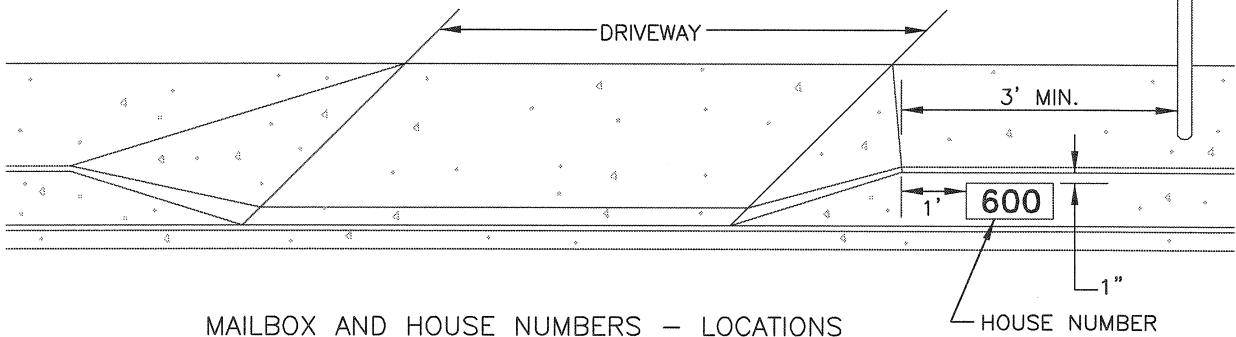
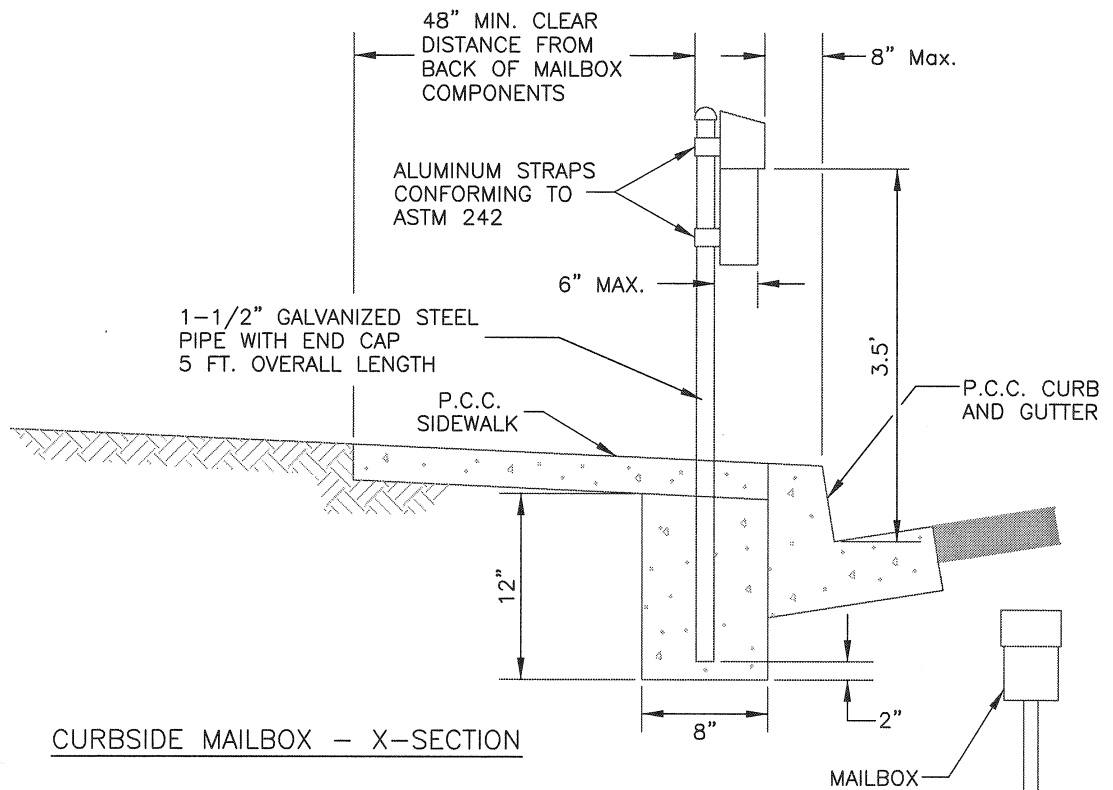
**TREE PLANTING
IN PARKWAY**

SCALE:

NOT TO SCALE

STANDARD DRAWING NO.

L-2-E



- NOTES:
- 1) HOUSE NUMBERS SHALL BE 3" MINIMUM HEIGHT AND BLACK IN COLOR ON A WHITE RECTANGULAR BACKGROUND.
 - 2) IF THE MAILBOX IS NOT LOCATED WITHIN THE SIDEWALK, A RURAL-TYPE MAILBOX WITH A DEPTH GREATER THAN 6" MAY BE USED.
 - 3) THE DEVELOPER SHALL INSTALL THE STEEL PIPE CONFORMING TO ASTMA 120 ALONG WITH SIDEWALK CONSTRUCTION. THE HOMEOWNER SHALL INSTALL THE MAILBOX.
 - 4) AN ALTERNATE MAILBOX DESIGN MAY BE APPROVED BY THE CITY ENGINEER AND THE POSTMASTER GENERAL.
 - 5) COMBINED MAILBOXES ARE ENCOURAGED BY THE CITY. CONTACT THE U.S. POSTAL SERVICE FOR DETAILS.

APPROVED: *Edward J. Dwyer* DATE: 04-02-2014

P. W. DIRECTOR/CITY ENGINEER

REVISED

APPROVED

CITY OF ESCONDIDO

DEPARTMENT OF PUBLIC WORKS

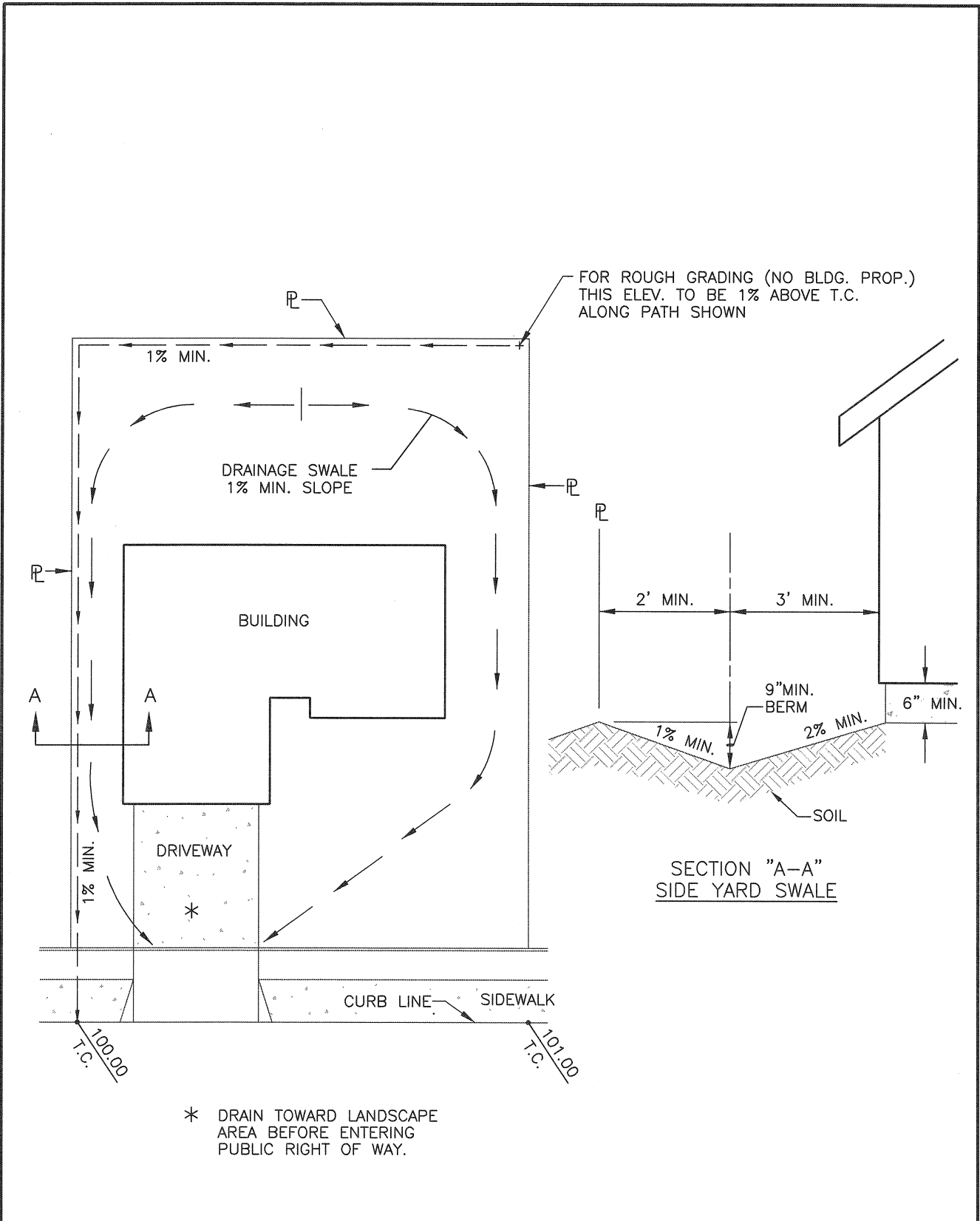
**CURBSIDE MAILBOX
AND HOUSE NUMBERS**

SCALE:

NOT TO SCALE

STANDARD DRAWING NO.

M-1-E

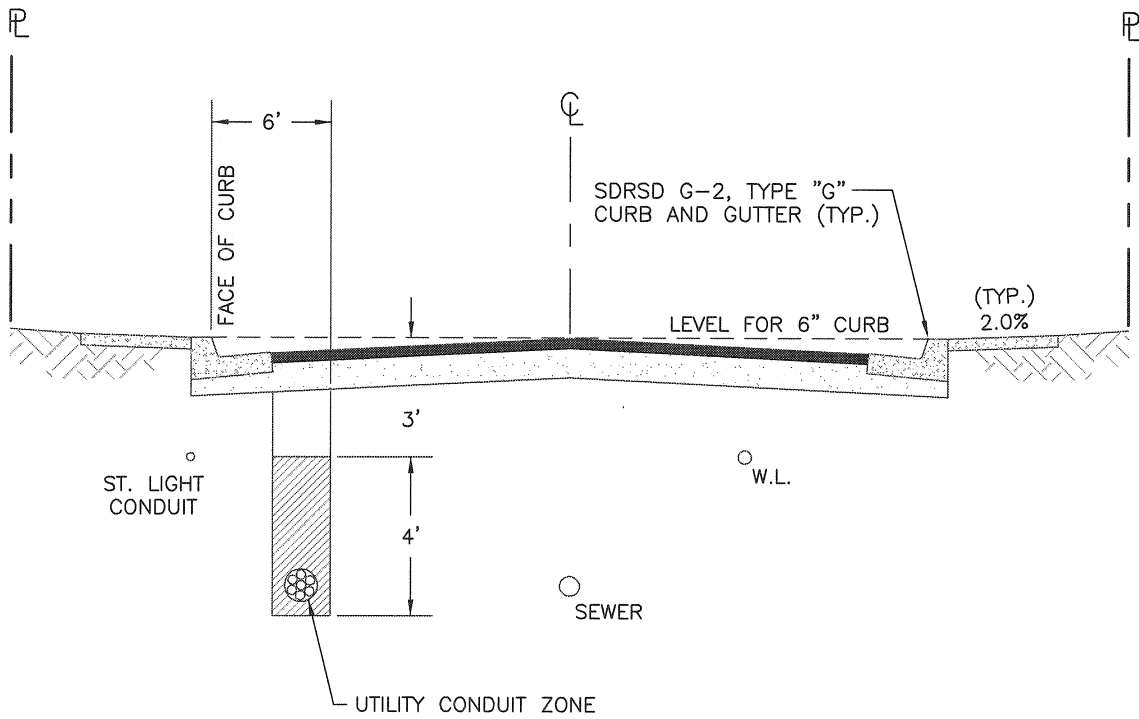


APPROVED:	DATE: 04-02-2014
<i>[Signature]</i>	
P. W. DIRECTOR/CITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
DEPARTMENT OF PUBLIC WORKS

TYPICAL LOT GRADING

SCALE:
NOT TO SCALE
STANDARD DRAWING NO.
M-2-E



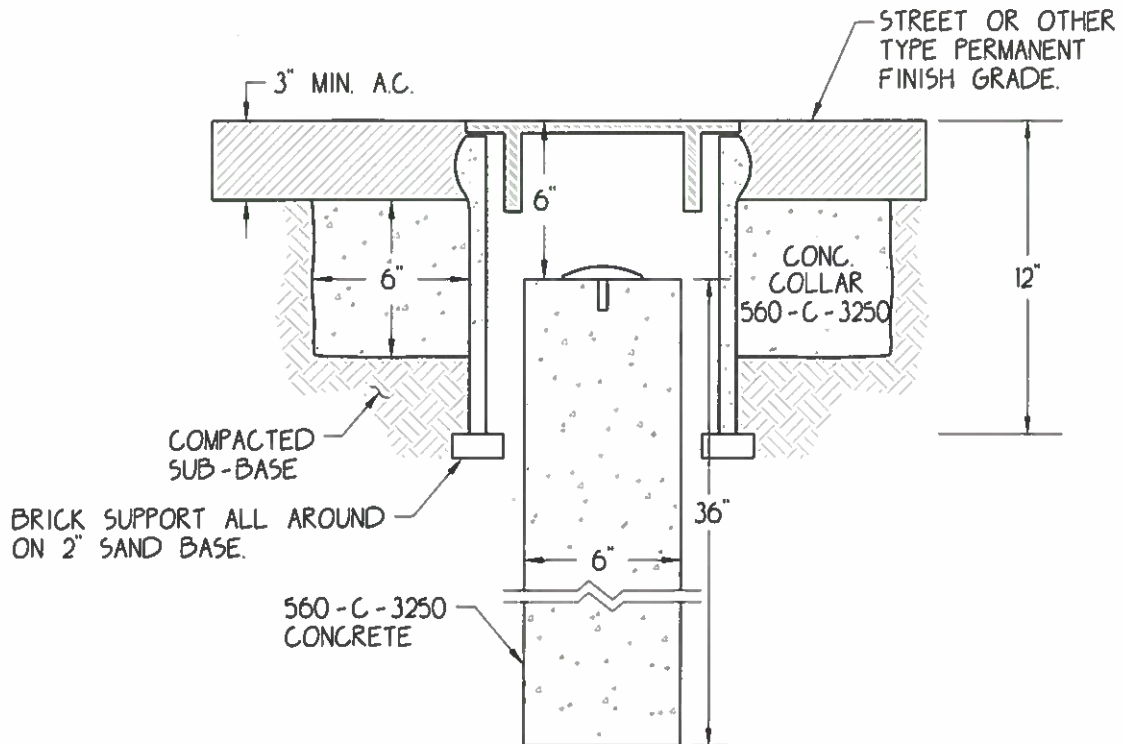
NOTE:

REFER TO STANDARD DRAWING G-2-E (NARROW TRENCH BACKFILL).

JACK AND BORE SHALL BE 3 FEET BELOW ANY EXISTING AND/OR FUTURE WATER, SEWER AND STORM DRAIN CONDUITS.

IF THE PERMIT APPLICANT DETERMINES THAT CONDUIT INSTALLATION WILL BE BY THE BORING MACHINE METHOD, THE TRENCH PATCH FOR THE UTILITY OBSERVATION EXCAVATIONS WILL BE THE SAME AS FOR OPEN TRENCH EXCAVATION METHOD, REFER TO G-2-E. THIS WILL PROVIDE A SINGLE CONTINUOUS SURFACE RESTORATION ELIMINATING THE MULTIPLE PENETRATIONS INTO THE PUBLIC ROADWAY.

APPROVED: <i>[Signature]</i> P. W. DIRECTOR/CITY ENGINEER	DATE: 04-02-2014	CITY OF ESCONDIDO DEPARTMENT OF PUBLIC WORKS	SCALE: NOT TO SCALE
REVISED	APPROVED <i>[Signature]</i>		STANDARD DRAWING NO. M-3-E
FIBER OPTICS CONDUIT ZONE			



NOTES:

- COVER AND FRAME TO BE BROOKS PRODUCTS 1-RT, J + R CONCRETE PRODUCTS V3-RT OR APPROVED EQUAL.
2. MONUMENT BASE SHALL BE 6" DIA. CAST IN PLACE OR PRECAST. (PRECAST SHALL BE SAND BACKFILL).
 3. MONUMENT MARKER SHALL BE A DOMED BRASS, 3" IN DIAMETER.
 4. MONUMENT LOCATIONS:
 - A. SET ON ALL CENTERLINE INTERSECTIONS UNLESS ACTUAL LOCATION LANDS ON A MANHOLE.
 - B. SET ON CENTERLINE AT POINTS OF CURVATURE.
 - C. SET ON CENTER POINT OF CUL-DE-SACS.
 - D. SET ON CENTERLINE WHEN CENTER POINT OF CUL-DE-SAC IS OFFSET FROM CENTERLINE.
 - E. SET ONE MONUMENT ON THE "POINT OF INTERSECTION" AS SUBSTITUTION FOR MONUMENTS AT THE "BEGINNING OF CURVE" AND THE "ENDING OF CURVE" WHEN THE "POINT OF INTERSECTION" FALLS WITHIN THE PAVEMENT AREA.

APPROVED: *Julie Prouty* DATE: 04-14-2017
CITY ENGINEER

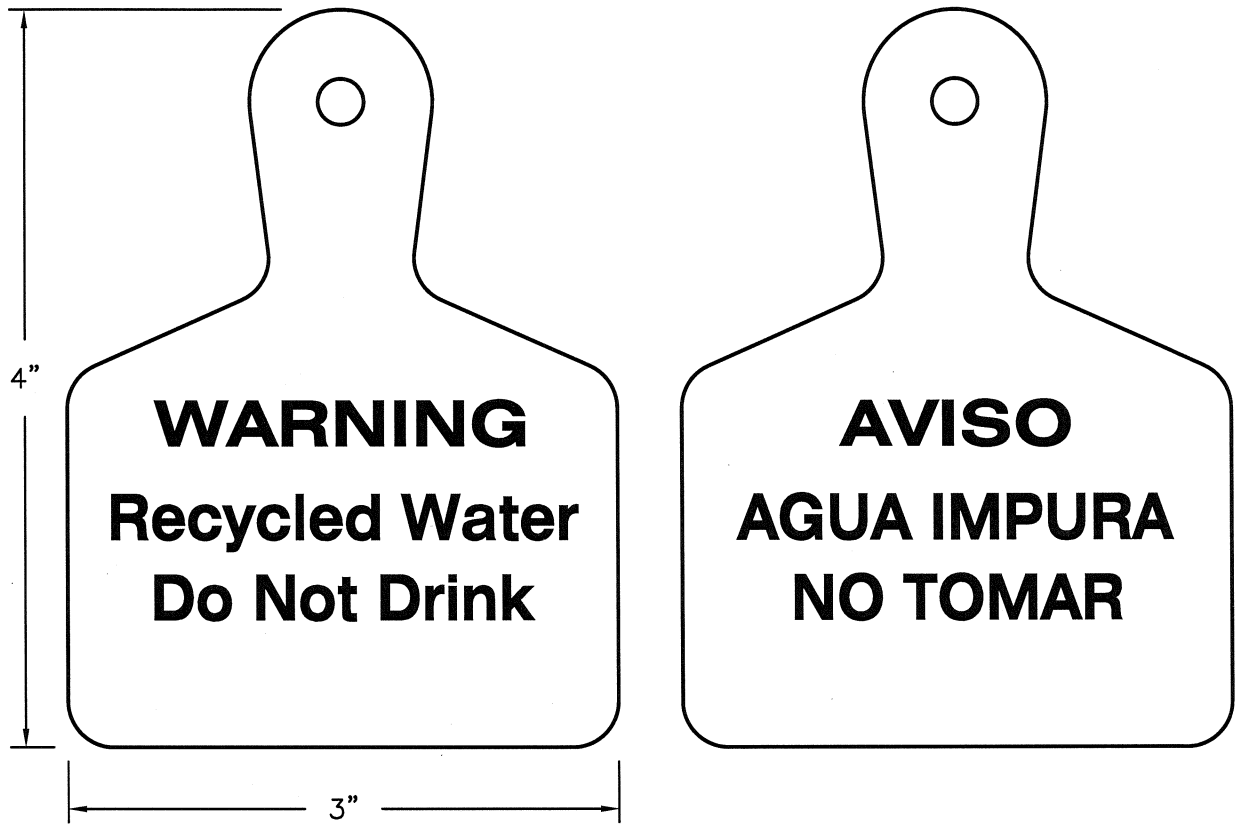
CITY OF ESCONDIDO
ENGINEERING SERVICES

SCALE:
NOT TO SCALE

REVISED	APPROVED

STREET SURVEY
MONUMENT

STANDARD DRAWING NO.
M-4-E




FRONT

BACK

NOTES:

1. TAG WILL BE MANUFACTURED FROM POLYURETHANE BEHR DESOPAN, INCORPORATING AN INTEGRAL ATTACHMENT NECK AND REINFORCED ATTACHMENT HOLE AND WILL BE CAPABLE OF WITHSTANDING 180 LBS. PULL FORCE.
2. THE TAG COLOR WILL BE OSHA SAFETY PURPLE WITH BLACK LETTERS.
3. ATTACH TAG WITH NYLON TIE.

APPROVED:  DATE: <u>4-2-2014</u> UTILITY ENGINEER		CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
REVIS	APPROVED		STANDARD DRAWING NO. RW-1-E
RECYCLED WATER STANDARD TAG			

1. Pipe Identification (mutually exclusive choices)

- a. All new buried PVC pressure pipes for recycled water shall be OSHA safety purple in color and marked on opposite sides to read "CAUTION - RECYCLED WATER – DO NOT DRINK" in intervals not to exceed 5' with 3/8" high letters. The recycled water PVC piping shall be installed with detectable tape.
- b. All new buried recycled water pipe that is not PVC shall be installed with warning tape. The plastic warning tape shall be an inert plastic film specifically formulated for prolonged underground use and shall be prepared with black printing on a OSHA safety purple field having the words "CAUTION – RECYCLED WATER" in 1" high letters. The minimum thickness shall be 4 mils and the overall width of the tape shall be 12".

Warning tape shall be installed directly on the top of the pipe longitudinally and shall be centered. The warning tape shall be installed continuously for the entire length of the pipe and shall be fastened to each pipe length by plastic adhesive tape banded around the pipe and warning tape at no more than 5' intervals. Taping attached to the sections of pipe before laying in the trench shall have 5' minimum overlap for continuous coverage.


- c. All exposed recycled water piping which is above ground or in vaults shall be primed and painted with two coats of OSHA safety purple rust proof paint and shall be marked with tagging, warning tape or painted letters stating "CAUTION: RECYCLED WATER – DO NOT DRINK." Ultra-violet protection of PVC pipe must be provided.

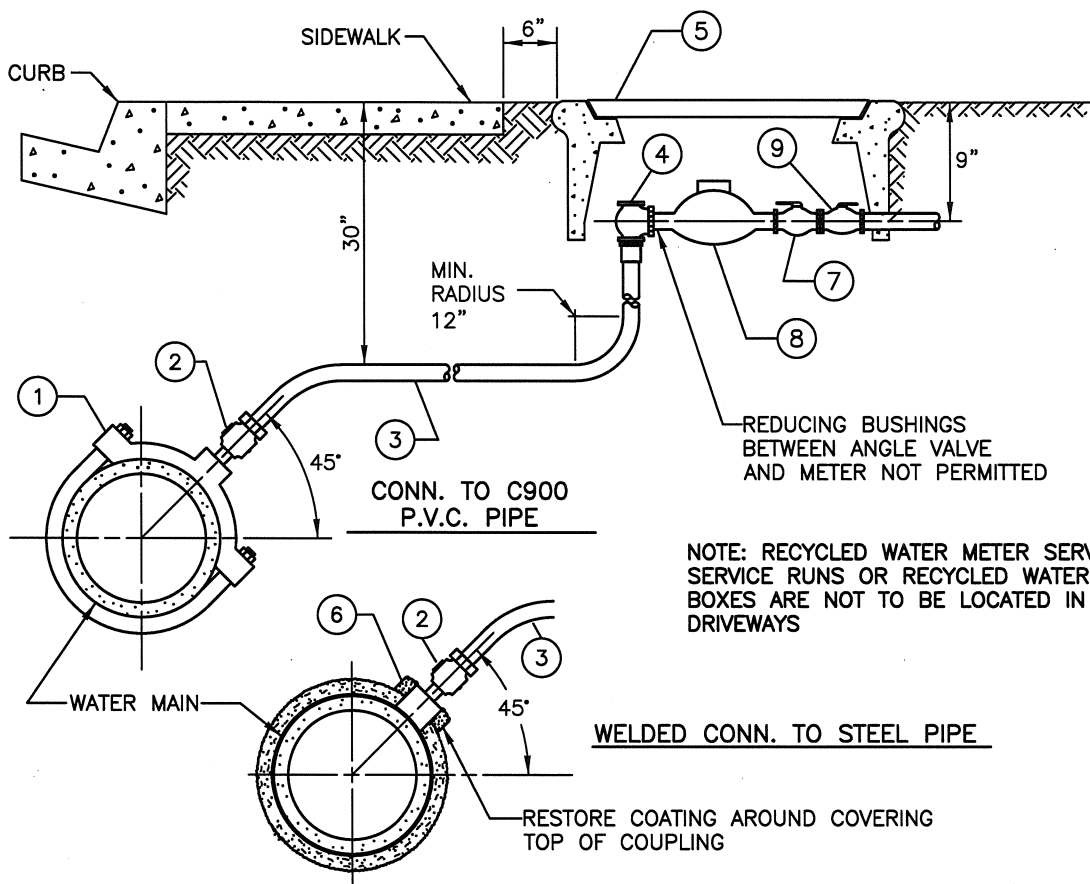
If materials and warning tape are not available, other methods of identification may be approved the City of Escondido upon approval from the San Diego County Department of Health Services.

2. Magnetic Warning/Locating Tape

This tape is to be placed longitudinally and centered above all buried pressurized PVC recycled water pipe, approximately 24" directly above the top of the pipe. The fastening tape shall be wrapped/tied tightly around the pipe and loosely around the magnetic tape. Other means of attaching the tape to the pipe during backfill of trench may be used if suitable for the job as determined by the agency of the inspector. The minimum tape width shall be 6".

The tape must be printed with the following words: "CAUTION: RECYCLED WATER – DO NOT DRINK"

APPROVED: 		DATE: <u>4-2-2014</u>	CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
UTILITY ENGINEER				RECYCLED WATER PIPE IDENTIFICATION & WARNINGS
REVISED	APPROVED			



NOTE: RECYCLED WATER METER SERVICE SERVICE RUNS OR RECYCLED WATER METER BOXES ARE NOT TO BE LOCATED IN DRIVEWAYS

WELDED CONN. TO STEEL PIPE

RESTORE COATING AROUND COVERING TOP OF COUPLING

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE. SEE THE CITY OF ESCONDIDO'S "RULES AND REGULATION FOR RECYCLED WATER" FOR COMPLETE DETAILS ALL COMPONENTS SHALL BE COLORED OSHA SAFETY PURPLE OR LABELED "RECYCLED"

LEGEND ON PLANS



ITEM NO.	DESCRIPTION	MATERIAL SPECIFICATIONS	REMARKS
1	DOUBLE STRAP SADDLE AWWA TAPER THREAD CC OR CS CORPORATION STOP MALE AWWA TAPER THREAD CC OR CS X PACK JOINT (1" ONLY)		FLAT STRAPS
2	REQ'D TUBING, COPPER SERVICE SIZE (1" ONLY) INSTALL WARNING TAPE PER RW-2-E, 1.b.	TYPE 'K' SOFT	
3	ANGLE BALL VALVE WITH LOCK WING COMPRESSION NUT. WITH A 5/8" X 3/4" METER, THE REDUCTION SHALL BE IN THE ANGLE VALVE. TAG ANGLE VALVE PER RW-1-E.		
4	METER BOX - #4 1/2 - OSHA SAFETY PURPLE POLYMER/COMPOSITE - IMPRINTED "RECYCLED WATER" TO BE SUPPLIED BY CITY.	PLASTIC/CONCRETE	1 PIECE LID
5	HIGH PRESSURE FORGED STEEL COUPLING (1" ONLY)	3,000 PSI	WELD TO PIPE
6	BALL VALVE - SUPPLIED BY CITY		NO SUBSTITUTIONS
7	METER TO BE PAINTED OSHA SAFETY PURPLE - TO BE PURCHASED FROM CITY.		
8	TEST COCK - BRASS BALL VALVE, 1/4" - 1"		

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

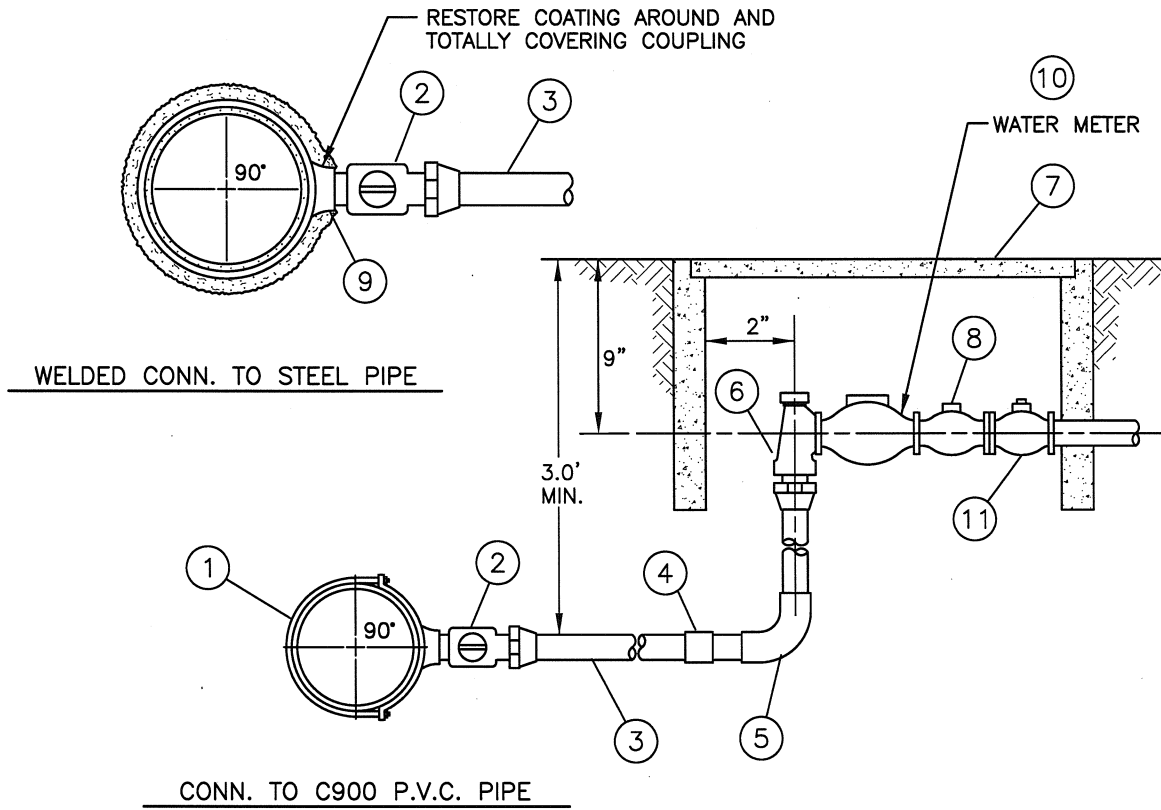
SCALE:
NOT TO SCALE

REVISED APPROVED

1" RECYCLED WATER SERVICE
FOR 3/4" AND 1" METERS

STANDARD DRAWING NO.

RW-3-E




FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.
 SEE THE CITY OF ESCONDIDO'S "RULES AND REGULATION FOR RECYCLED WATER" FOR COMPLETE DETAILS ALL COMPONENTS SHALL BE COLORED OSHA SAFETY PURPLE OR LABELED "RECYCLED"

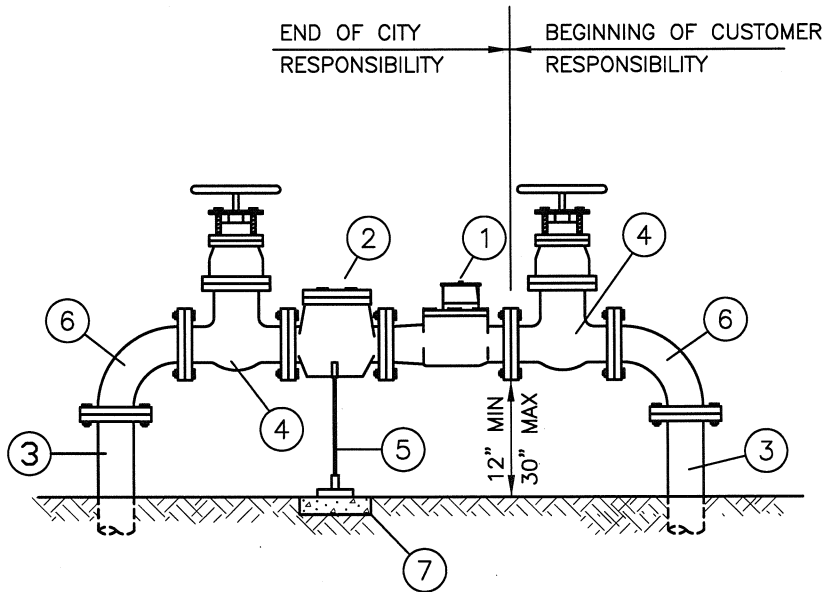
LEGEND ON PLANS



ITEM NO.	DESCRIPTION	REMARKS
①	SERVICE CLAMP (2" ONLY)	FLAT STRAPS 1 PIECE LID NO SUBSTITUTIONS 3,000 PSI STEEL
②	CORPORATION STOP - INSTALL WITH KEY ON SIDE AND OPEN TAP (2" ONLY)	
③	COPPER TUBING - TYPE 'K' SOFT (2" ONLY). INSTALL WARNING TAPE PER RW-2-E, 1.b.	
④	COPPER COUPLING WHEN SERVICE IS OVER 20' - SILVER SOLDER (2" ONLY)	
⑤	COPPER 90° SLIP FITTING (SILVER SOLDER ONLY)	
⑥	ANGLE BALL VALVE WITH LOCK WING. INLET COMP/OUTLET METER FLANGE - TAG ANGLE VALVE PER RW-1-E.	
⑦	METER BOX - BROOKS #6 - OSHA SAFETY PURPLE POLYMER/COMPOSITE - REFER TO S.D.R.S.D WS-03 FOR LOCATION - LID TO BE IMPRINTED "RECYCLED WATER" - SUPPLIED BY CITY	
⑧	BALL VALVE - SUPPLIED BY CITY	
⑨	HIGH PRESSURE FORGED STEEL COUPLING 2" F.I.P., WELDED TO PIPE	
⑩	METER TO BE PAINTED OSHA SAFETY PURPLE - TO BE PURCHASED FROM CITY	
⑪	TEST COCK - BRASS BALL VALVE	

APPROVED: 	DATE: 4-2-2014	CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
REVISOR: _____	APPROVED: _____		STANDARD DRAWING NO. RW-4-E

**2" RECYCLED WATER SERVICE
FOR 1 1/2" AND 2" METERS**




- ① WATER METER – METER SHALL BE PURCHASED FROM THE CITY. METER AND STRAINER SHALL BE TYPE AND SIZE APPROVED BY THE CITY. THE CITY SHALL PROVIDE, INSTALL AND MAINTAIN METER AND STRAINER.
- ② STRAINER – SHALL BE TYPE AND SIZE APPROVED BY THE CITY AND BE SUPPLIED BY THE CITY.
- ③ RISER SPOOLS – SHALL BE CEMENT LINED & COATED STEEL WITH WELD ON RAISED FACE FLANGES OR DUCTILE IRON SPOOLS
- ④ FLANGED GATE VALVE (HUB OR HANDWHEEL) PER STANDARD DRAWING RW-8-E
- ⑤ VALVE SUPPORT STAND
- ⑥ 90-DEGREE CAST IRON ELBOW
- ⑦ CONCRETE PAD – 12" X 12" X 3 ½"

NOTES:

- A. SEE THE CITY OF ESCONDIDO'S "RULES AND REGULATIONS FOR RECYCLED WATER" FOR COMPLETE DETAILS
- B. THE VALVES AND METER TO BE TAGGED PER RW-1-E
- C. THE ASSEMBLY WILL BE PRIMED AND PAINTED PER RW-2-E, 1.c.
- D. ALL INSTALLATIONS SHALL BE ABOVE GROUND
- E. FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

LEGEND ON PLANS



APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

REVISED	APPROVED

**RECYCLED WATER
METER, 3" AND LARGER**

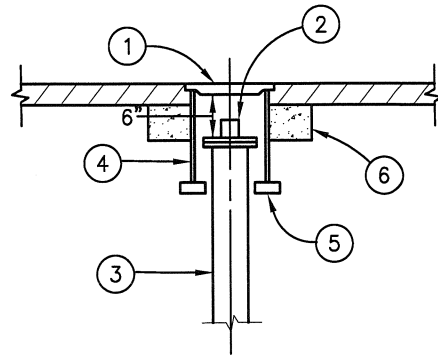
STANDARD DRAWING NO.
RW-5-E

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APPROVED:	DATE: <u>4-2-2014</u>	CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
UTILITY ENGINEER			STANDARD DRAWING NO. RW-6-E
REVISED	APPROVED		

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

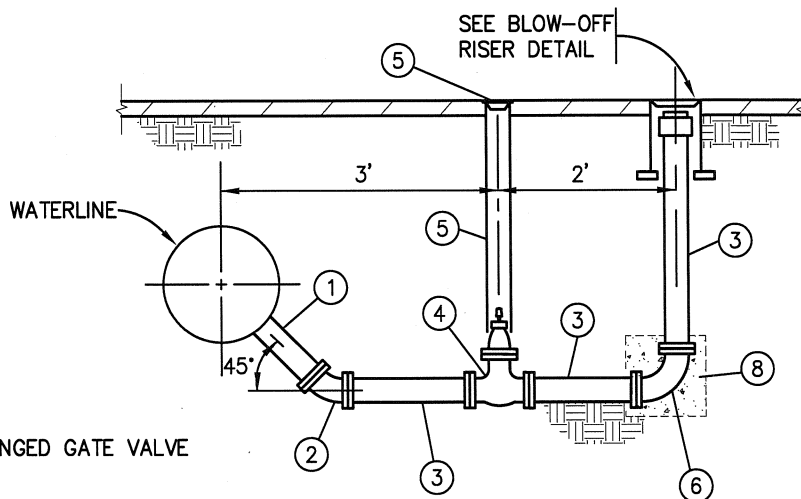
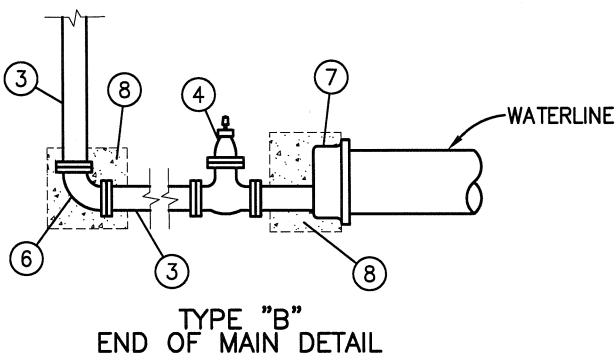
- ① SET 12" O.D. C.I. GATE WELL CAP MARKED "RECYLED WATER"
- ② SET 4"X4" FEMALE FACED COMPANION FLANGE WITH 4" ABS PLASTIC PLUG
- ③ 4" DUCTILE IRON PIPE
- ④ C900 PVC PIPE CL235
- ⑤ CONC. BLOCKS.
- ⑥ 6" x 6" X-SECT. CONC. COLLAR.



BLOW-OFF RISER DETAIL

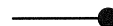
NOTES

ALL COMPONENTS SHALL BE COLORED OSHA SAFETY PURPLE OR LABELED "RECYCLED"



- ① FLANGED TEE (LINE SIZE X 4")
- ② SHORT RADIUS 45° FLANGED BEND (SAME MATERIAL AS ITEM 3)
- ③ 4" FLANGED DUCTILE IRON PIPE
- ④ 4" RESILIENT SEATED 200 PSI FLANGED GATE VALVE PER W-4-E
- ⑤ VALVE WELL PER W-4-E
- ⑥ 90° FLANGED BEND (SAME MATERIAL AS ITEM 3)
- ⑦ DUCTILE IRON LINE SIZE P.O. X 4" FLANGE REDUCER
- ⑧ CONCRETE THRUST BLOCK PER SDRSD WT-01

LEGEND ON PLANS



APPROVED:  DATE: 4-2-2014

UTILITY ENGINEER

REVISED

APPROVED

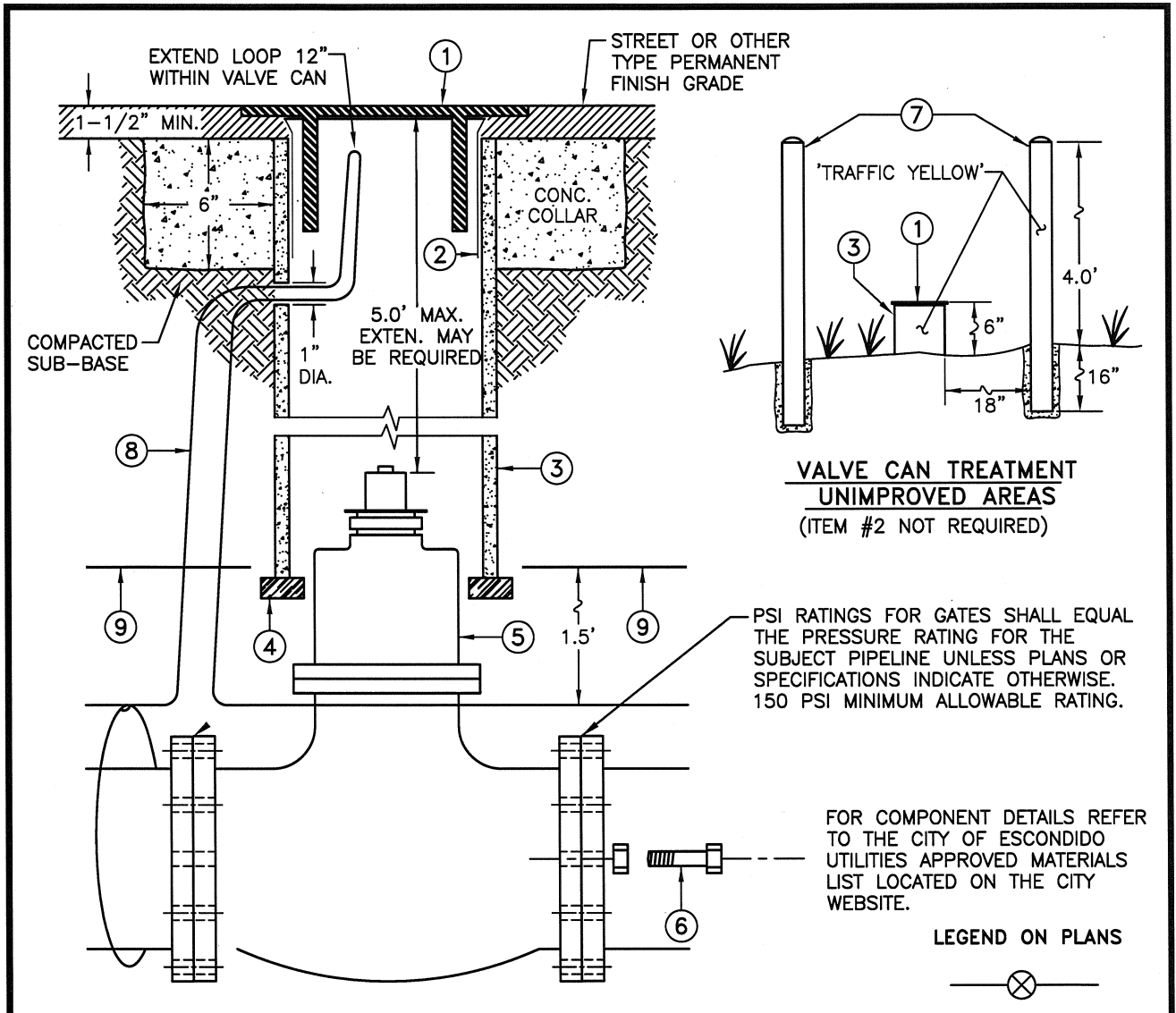
CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE


STANDARD DRAWING NO.

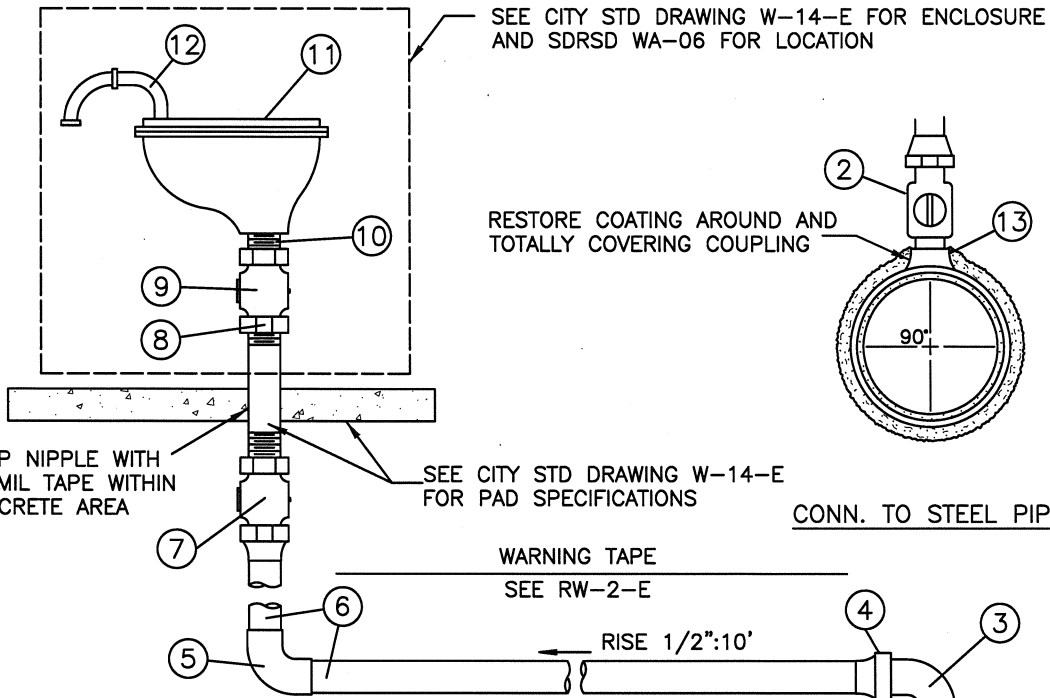
4" RECYCLED WATER
BLOW-OFF ASSEMBLY

RW-7-E



ITEM NO.	SIZE & DESCRIPTION	REMARKS
①	8" CAST IRON VALVE CAN COVER MARKED 'RECYCLED WATER'	LONG SKIRT
②	8"x12" GALVANIZED METAL SLIP CAN (W/ VERTICAL SPLIT)	20 GAUGE
③	8"x REQUIRED LENGTH UN-REINFORCED CONCRETE PIPE OR C-900 PVC PIPE	
④	2"x4" REDWOOD BLOCKS	
⑤	GATE VALVE. ALL GATES TO CONFORM TO LATEST AWWA C-509 SPECIFICATIONS. ALL GATES TO BE FLANGE x FLANGE, NON-RISING STEM. VALVES SHALL OPEN COUNTER-CLOCKWISE.	
⑥	HEXAGONAL BOLT & NUT, TYPE 316 STAINLESS STEEL	
⑦	VALVE MARKER POST, 4" STEEL PIPE CONCRETE FILLED & ANCHORED	
⑧	#10 SOFT BARE CONTINUOUS COPPER WIRE	
⑨	6" WIDE STRIP OF OSHA SAFETY PURPLE MAGNETIC WARNING TAPE LAID 2' OVER PVC PIPE OR INSTALL WARNING TAPE PER RW-2-E, 1.b., ON PIPE THAT IS NOT PVC.	

APPROVED: 	DATE: 4-2-2014	CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
REVISOR: _____	APPROVED: _____		STANDARD DRAWING NO. RW-8-E
RECYCLED WATER GATE VALVE & VALVE CAN			



SEE CITY STD DRAWING W-14-E FOR ENCLOSURE AND SDRSD WA-06 FOR LOCATION

RESTORE COATING AROUND AND TOTALLY COVERING COUPLING

WRAP NIPPLE WITH 10-MIL TAPE WITHIN CONCRETE AREA

SEE CITY STD DRAWING W-14-E FOR PAD SPECIFICATIONS

CONN. TO STEEL PIPE

WARNING TAPE
SEE RW-2-E

RISE 1/2":10'

- ① CONNECTION TO MAIN AS IN STANDARD DRAWINGS RW-3-E FOR 1" AND RW-4-E FOR 2". CONNECTION TO BE MADE VERTICALLY
- ② CORPORATION STOP: MIP X MIP
- ③ 90 ELL: FIP X FIP.
- ④ ADAPTER: MIP X COMPRESSION
- ⑤ 2" AIR VALVE SERVICE USE 90° COPPER ELL (SILVER SOLDER ONLY) 1" SWEEP OK.
- ⑥ TYPE "K" SOFT COPPER.
- ⑦ BALL VALVE: FIP X FLARE WITH HANDLE.
- ⑧ BRASS NIPPLE MALE IRON PIPE THREADS, MINIMUM LENGTH 6", MAX 12".
- ⑨ BALL VALVE: FIP X FIP WITH HANDLE.
- ⑩ BRASS NIPPLE MALE IRON PIPE THREADS.
- ⑪ COMBINATION AIR VALVE ASSEMBLY
- ⑫ 2-90° ELLS (STAINLESS STEEL SCREEN ON OUTLET END).
- ⑬ HIGH PRESSURE FORGED STEEL COUPLING (WELDED TO PIPE). 3000 PSI STEEL

RECYCLED WATER MAIN

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

NOTES:

- A. ITEM ⑪ & ENCLOSURE (SEE CITY STD. DRAWING W-14-E) TO BE PRIMED & PAINTED WITH 2 COATS OF OSHA SAFETY PURPLE RUST PROOF PAINT. LABEL WITH WORDS "RECYCLED WATER" PAINTED IN WHITE LETTERS 1 1/2" HIGH
- B. ITEM ⑪ TO BE TAGGED PER RW-1-E
- C. ITEM ⑥, INSTALL WARNING TAPE PER RW-2-E, 1.b.
- D. COPPER COUPLING (SILVER SOLDER ONLY) SERVICES OVER 100 FEET AND 2" SERVICE OVER 20 FEET

LEGEND ON PLANS

APPROVED: DATE: 4-2-2014

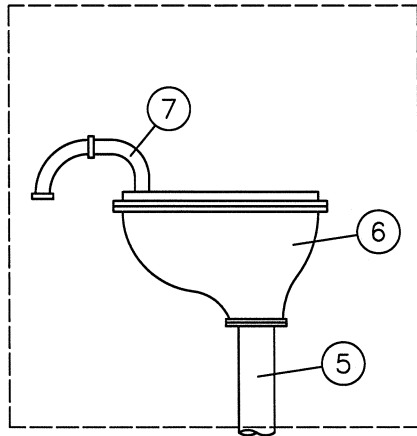
CITY OF ESCONDIDO
UTILITY DEPARTMENT

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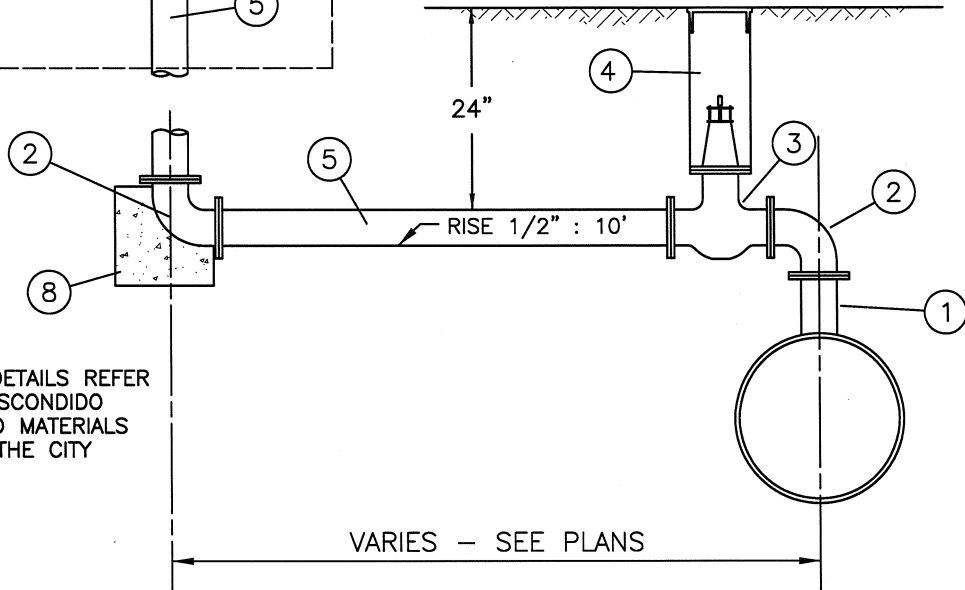
REVISED	APPROVED

RECYCLED WATER
COMBINATION AIR VALVE
1" & 2"

STANDARD DRAWING NO.
RW-9-E



SEE CITY STD DRAWING W-14-E FOR ENCLOSURE AND SDRSD WA-06 FOR LOCATION



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

- 1 FLANGED OUTLET, CEMENT LINED AND COATED STEEL
- 2 FLANGED, 90° ELL, CEMENT LINED AND COATED STEEL OR CEMENT LINED DUCTILE IRON
- 3 VALVE (SEE STD. DWG. RW-8-E)
- 4 VALVE WELL AND CAP (SEE STD. DWG. RW-8-E)
- 5 STEEL PIPE, CEMENT LINED AND COATED
- 6 COMBINATION AIR VALVE
- 7 2 - 90° ELLS (SCREENED ON THE OUTLET END)
- 8 CONCRETE THRUST BLOCK PER SDRSD WT-01

NOTES:

- A. PRIME & PAINT ENCLOSURE AND VALVE WITH 2 COATS OF OSHA SAFETY PURPLE RUST PROOF PAINT. LABEL WITH WORDS "RECYCLED WATER" PAINTED IN WHITE LETTERS 1½" HIGH.
- B. THE AV VALVE TO BE TAGGED PER RW-1-E

LEGEND ON PLANS

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

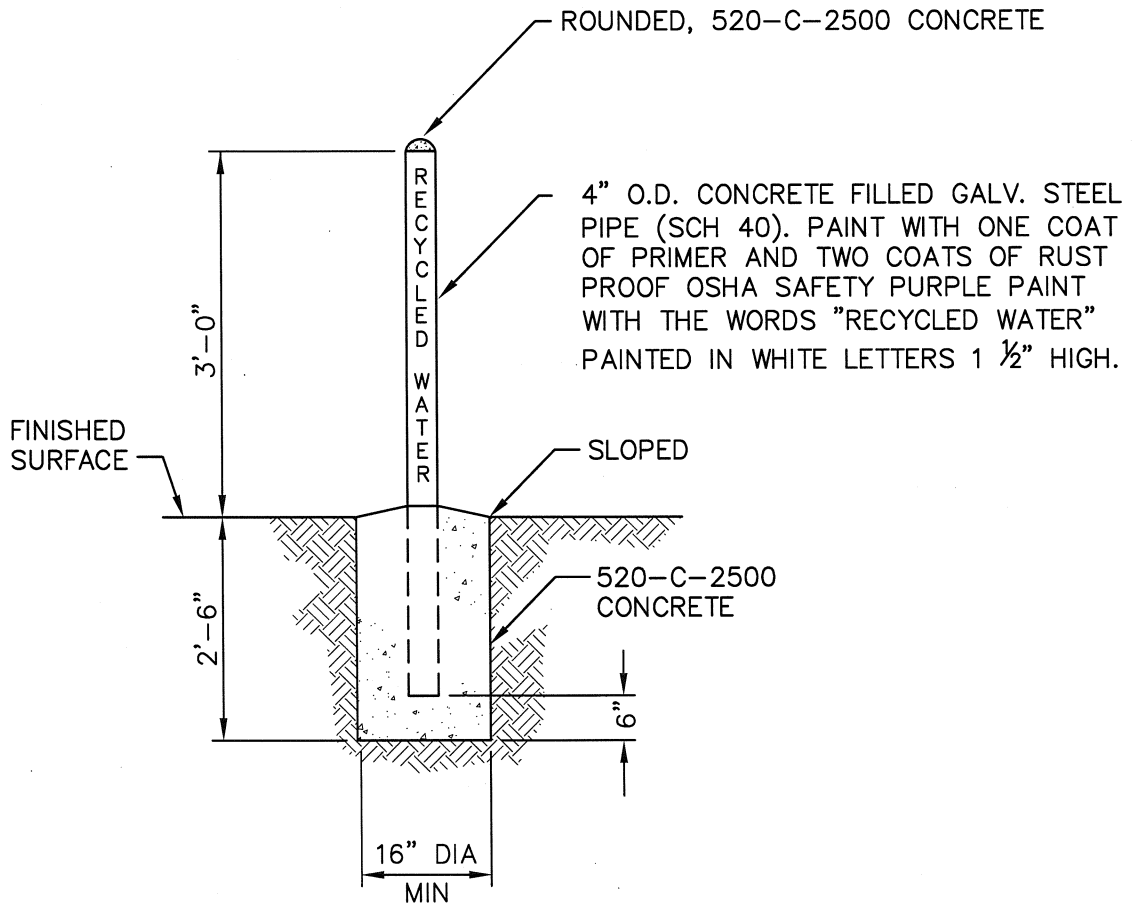
CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

REVISED	APPROVED

RECYCLED WATER
4" COMBINATION AIR VALVE

STANDARD DRAWING NO.
RW-10-E



APPROVED:  DATE: 4-2-2014

UTILITY ENGINEER

REVISED

APPROVED

CITY OF ESCONDIDO

UTILITY DEPARTMENT

SCALE:

NOT TO SCALE

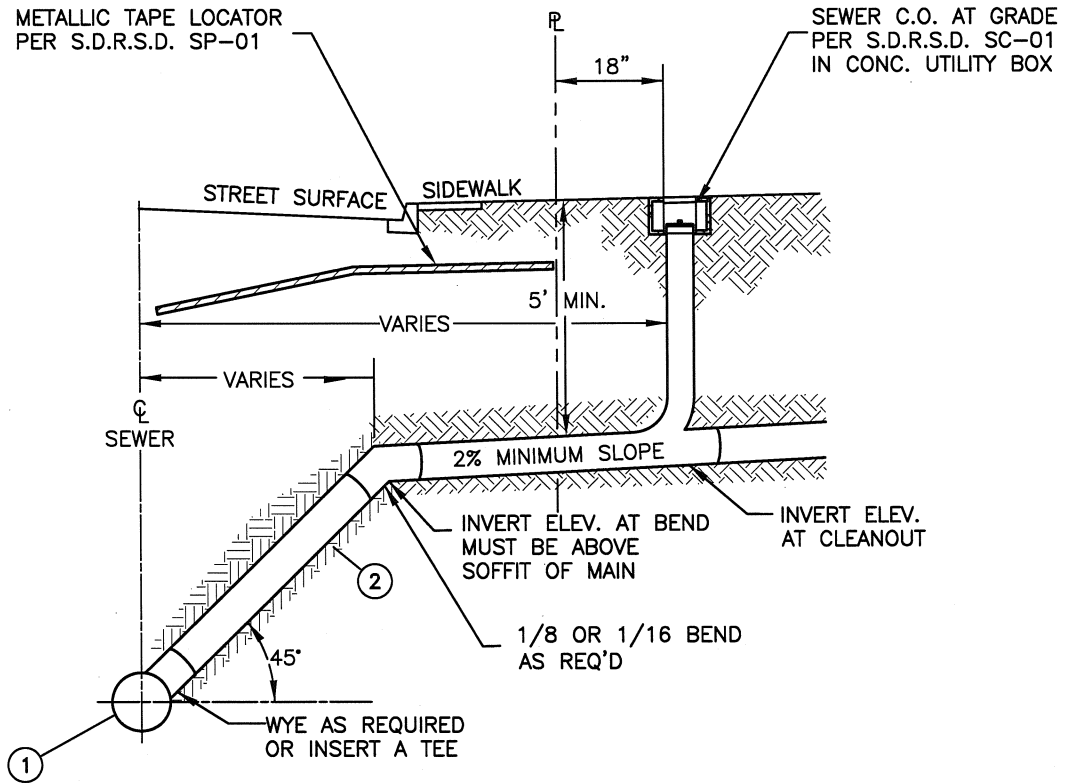
RECYCLED WATER
GUARD POST

STANDARD DRAWING NO.

RW-11-E

NOTES:

* REPLACES S.D.R.S.D. SS-01.




① SEWER MAIN

② BEDDING PER G-2-E

STAMP OR CHISEL A 3" HIGH "S" IN CURB FACE AT THE SEWER LATERAL * LOCATION

LEGEND ON PLANS — (S)

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

REVISED	APPROVED

4" & 6"
SEWER LATERAL

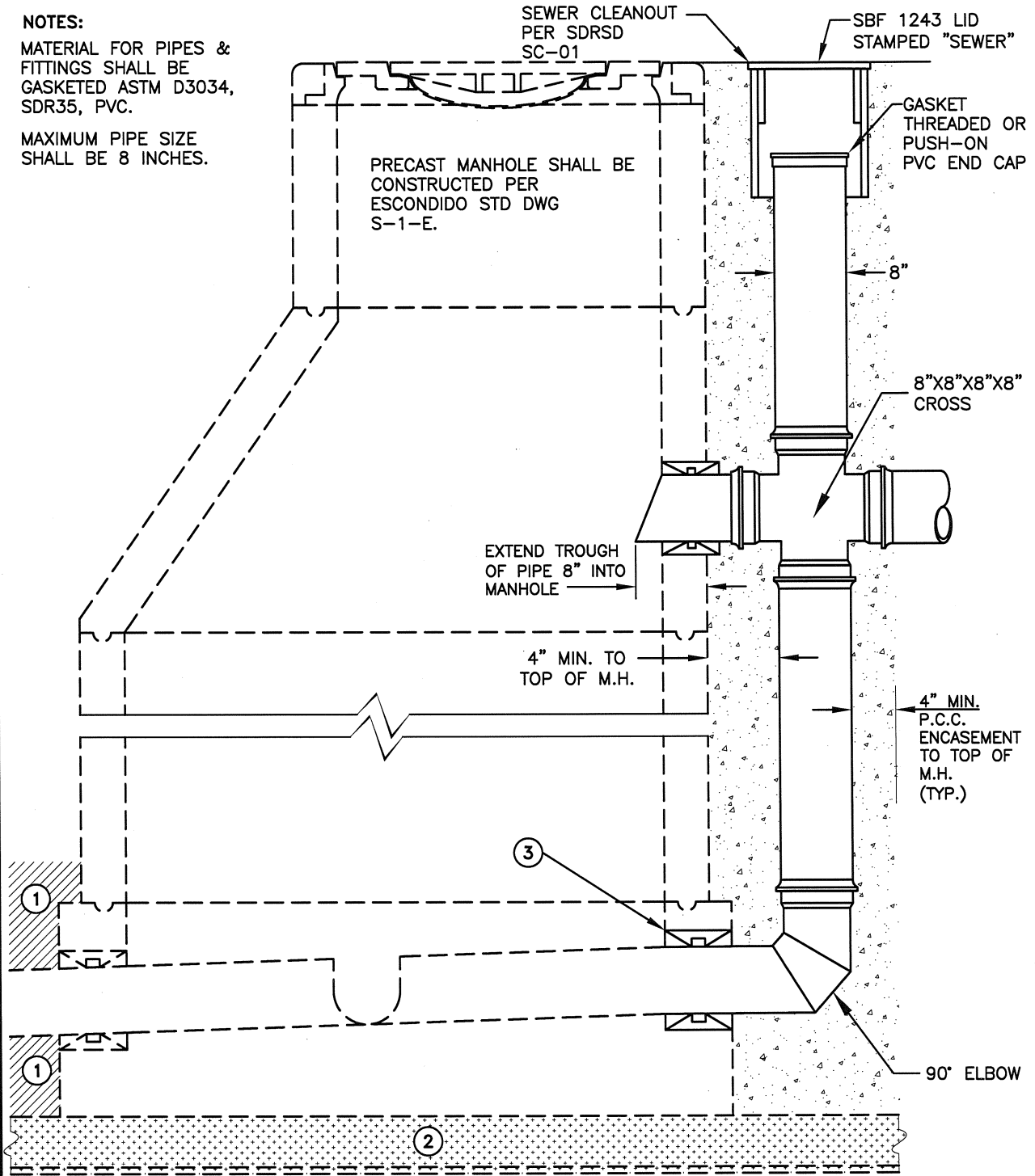
STANDARD DRAWING NO.
S-2-E

NOTES:

MATERIAL FOR PIPES & FITTINGS SHALL BE GASKETED ASTM D3034, SDR35, PVC.

MAXIMUM PIPE SIZE SHALL BE 8 INCHES.

PRECAST MANHOLE SHALL BE CONSTRUCTED PER ESCONDIDO STD DWG S-1-E.



- ① PIPE BEDDING PER ESCONDIDO STD DWG G-1-E (TYP. ALL PIPES)
- ② PER ITEM ⑫ & ⑬ ON ESCONDIDO STD DWG S-1-E
- ③ MANHOLE ADAPTER PER SECTION 208-6 OF THE STANDARD SPECIFICATIONS.

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

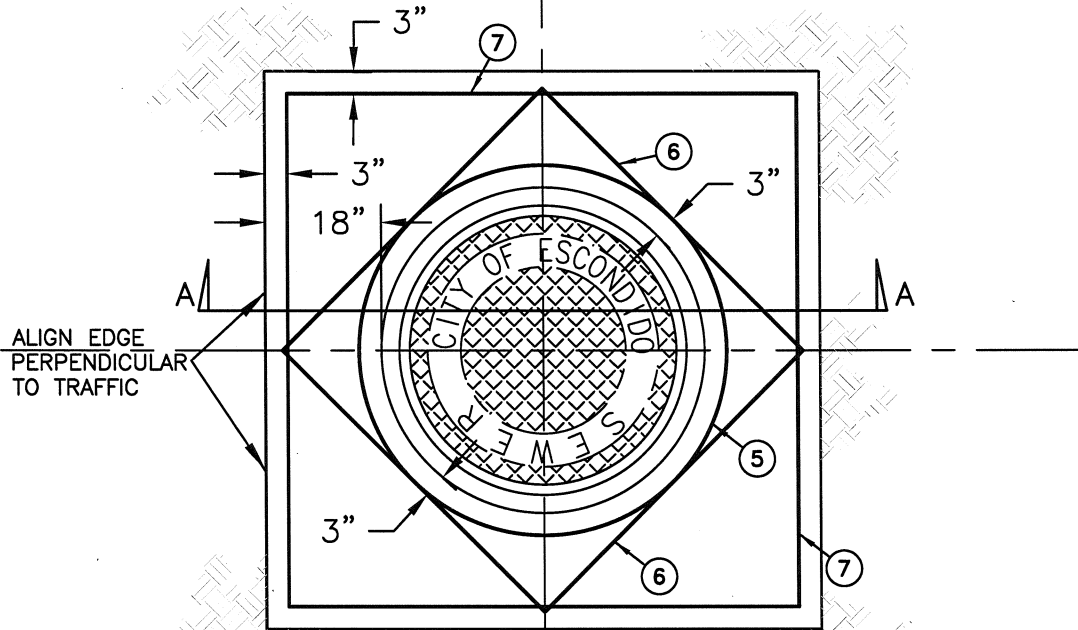
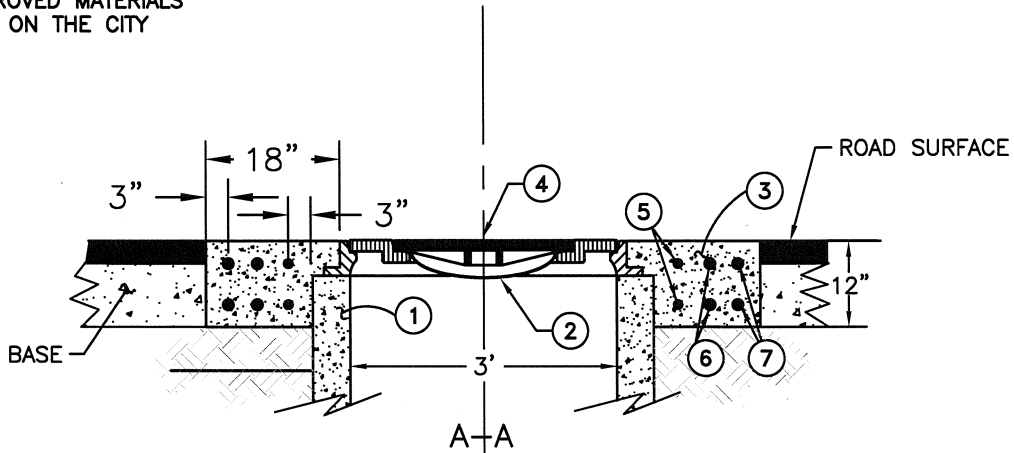
REVISED	APPROVED

DROP MANHOLE

STANDARD DRAWING NO.
S-3-E

NOTES:

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.



- ① PRECAST GRADE RING 3'x18" MAXIMUM, ASTM C-478.
- ② 24" DIAMETER INFLOW PROTECTOR COVER - FRW OR EQUAL.
- ③ CONCRETE COLLAR MIN. 12" THK W/INTEGRAL COLOR (BLACK) PER SPECS.
- ④ CAST IRON MANHOLE FRAME & COVER. SEE SDRSD M-3. CAULK SPACE BETWEEN FRAME & OUTER COVER PIECE FOR WATER TIGHT SEAL.
- ⑤ 2 #4 FULL CIRCLE HOOPS, T & B MIN. 20" SPLICE
- ⑥ #6 DIAGONAL REINFORCEMENT, T & B
- ⑦ #6 CORNER REINFORCEMENT, "FULL SQUARE" T & B, 30" MINIMUM SPLICE

LEGEND ON PLANS

APPROVED: _____ DATE: 4-2-2014

UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

REVISED APPROVED

SEWER MANHOLE REINFORCEMENT

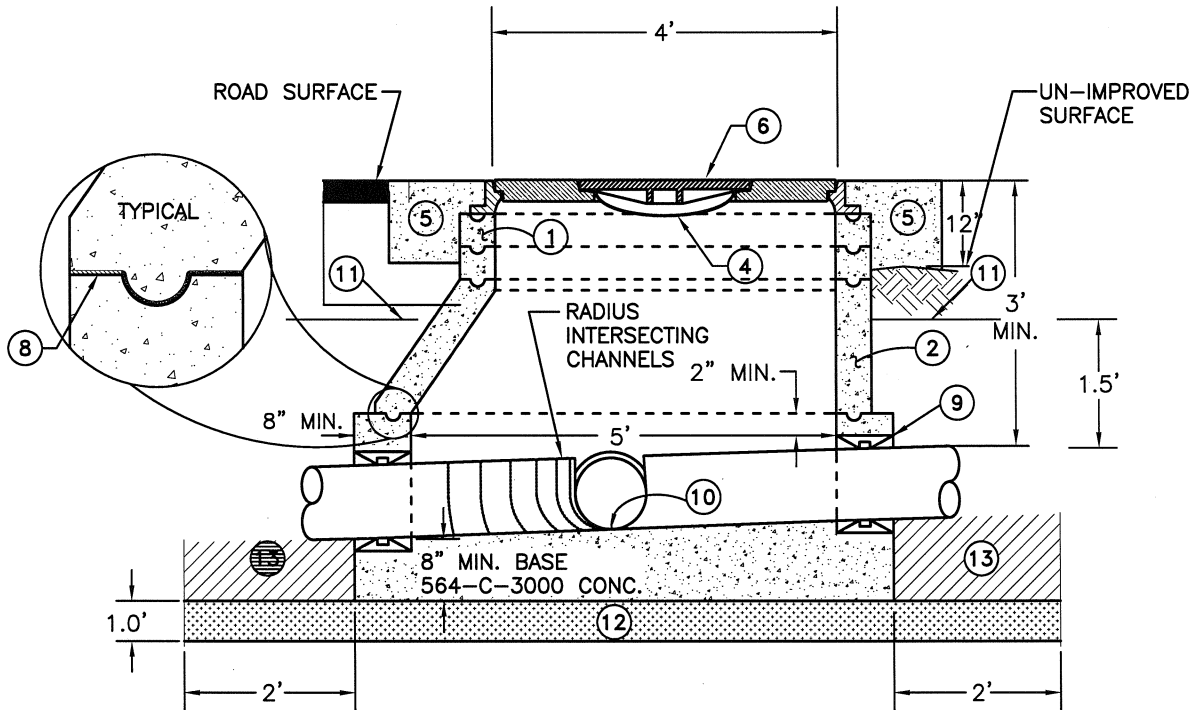
STANDARD DRAWING NO.

S-4-E

NOTES:

ALL EXPOSED SURFACES ON INSIDE OF MANHOLE TO BE COATED WITH RAVEN 405 EPOXY OR APPROVED EQUIVALENT.

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.



- ① PRECAST GRADE RINGS 12" MAXIMUM HEIGHT, ASTM C-478.
- ② 60" x 48" PRECAST CONE PER ASTM C-478. VERTICAL SIDE SHALL BE ON THE UPSTREAM SIDE.
- ③ PRECAST MANHOLE SECTION PER ASTM C-478
- ④ 24" DIAMETER INFLOW PROTECTOR COVER - FRW OR EQUAL.
- ⑤ REINFORCED CONCRETE COLLAR PER S-4-E
- ⑥ CAST IRON MANHOLE FRAME & COVER. SEE SDRSD M-3. CAULK SPACE BETWEEN FRAME & OUTER COVER PIECE FOR WATER TIGHT SEAL.
- ⑦ NOT USED
- ⑧ ROPE MYSTIK SEALANT. USE KWIKSET BRAND "KWIKSEAL" 3/4" OR EQUIVALENT.
- ⑨ MANHOLE ADAPTER PER SPECIFICATIONS.
- ⑩ CHANNEL DEPTH = I.D. OF PIPE. CHANNELS TO BE "U" SHAPED. ALL CHANNEL BOTTOMS TO HAVE RADIUS OF PIPE.
- ⑪ 6" STRIP OF GREEN NONMETALLIC DETECTION TAPE.
- ⑫ 3/4" GRADED CRUSHED ROCK BEDDING. 12" MIN. THICKNESS EXTENDED 2' BEYOND CONC. MANHOLE BASE.
- ⑬ PIPE BEDDING AND SHADING PER SPECIFICATIONS.

LEGEND ON PLANS 

APPROVED:  DATE: 4-2-2014

UTILITY ENGINEER

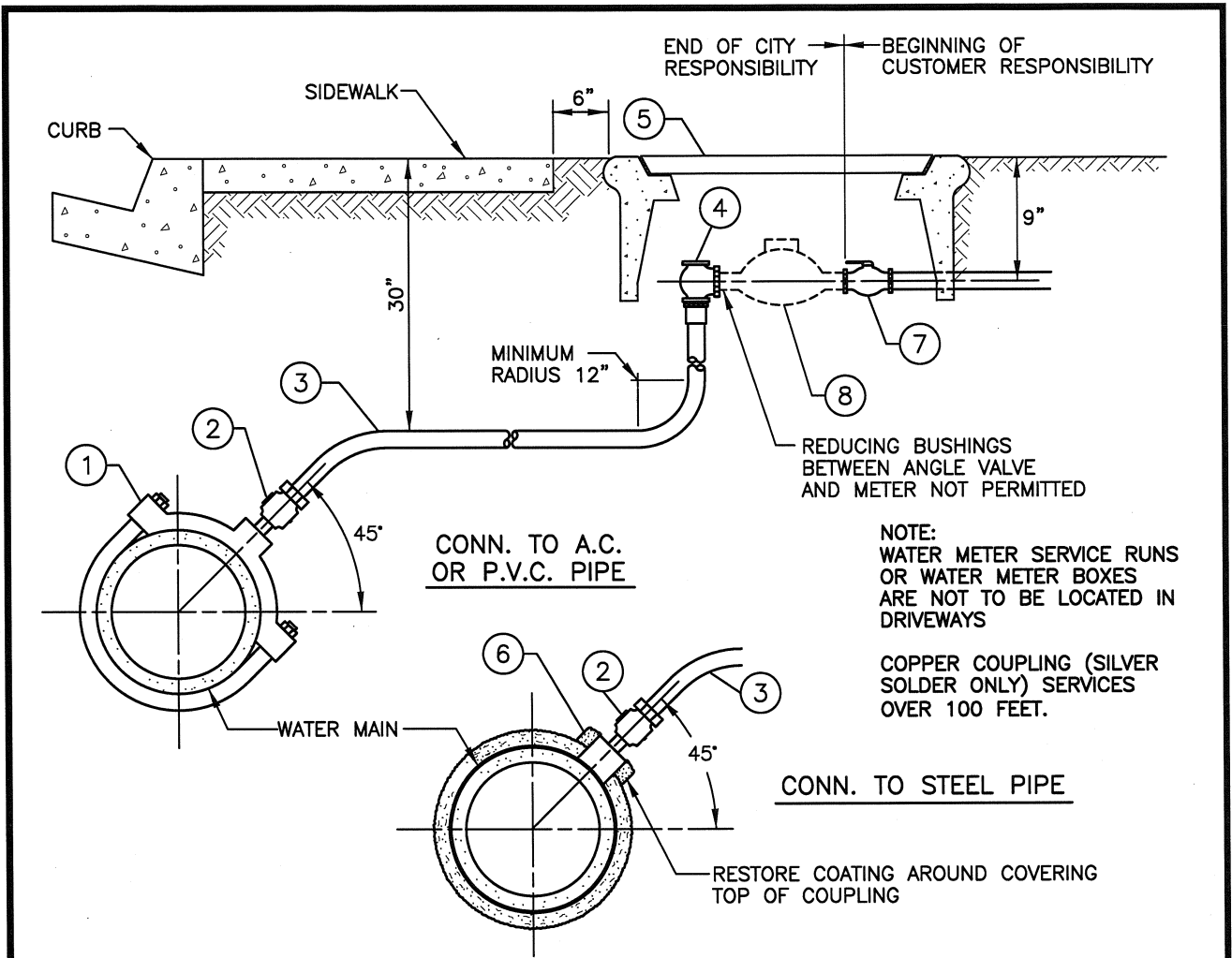
REVISED	APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

SHALLOW
SEWER MANHOLE

STANDARD DRAWING NO.
S-5-E



CONN. TO A.C.
OR P.V.C. PIPE

NOTE:
WATER METER SERVICE RUNS
OR WATER METER BOXES
ARE NOT TO BE LOCATED IN
DRIVEWAYS

COPPER COUPLING (SILVER
SOLDER ONLY) SERVICES
OVER 100 FEET.

CONN. TO STEEL PIPE

RESTORE COATING AROUND COVERING
TOP OF COUPLING

LEGEND ON PLANS —

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO
UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE

ITEM NO.	REPLACES SAN DIEGO REGIONAL STD. DWG. WS-01 SIZE & DESCRIPTION	MATERIAL SPECIFICATIONS	REMARKS
1.	DOUBLE STRAP BRASS SADDLE W/STAINLESS STRAPS, AND FEMALE IRON PIPE THREADS		FLAT STRAPS
2.	BRASS CORPORATION STOP: MALE IRON PIPE X COMPRESSION		
3.	REQUIRED TUBING, COPPER SERVICE SIZE (1" ONLY)	TYPE 'K' SOFT	
4.	BRASS ANGLE BALL VALVE W/LOCK WING. COMPRESSION NUT. WITH 3/4" METER THE REDUCTION SHALL BE IN THE ANGLE METER VALVE		
5.	METER BOX #4-1/2 WITH OUTER COVER, AND READ LID TO BE SUPPLIED BY CITY	CONCRETE & PLASTIC	1 PIECE LID
6.	HIGH PRESSURE FORGED STEEL COUPLING (1" ONLY)	3,000 PSI	WELD TO PIPE NO SUBSTITUTIONS
7.	BALL VALVE SUPPLIED BY THE CITY.		
8.	WATER METER TO BE PURCHASED FROM CITY		

APPROVED: DATE: 4-2-2014
UTILITY ENGINEER

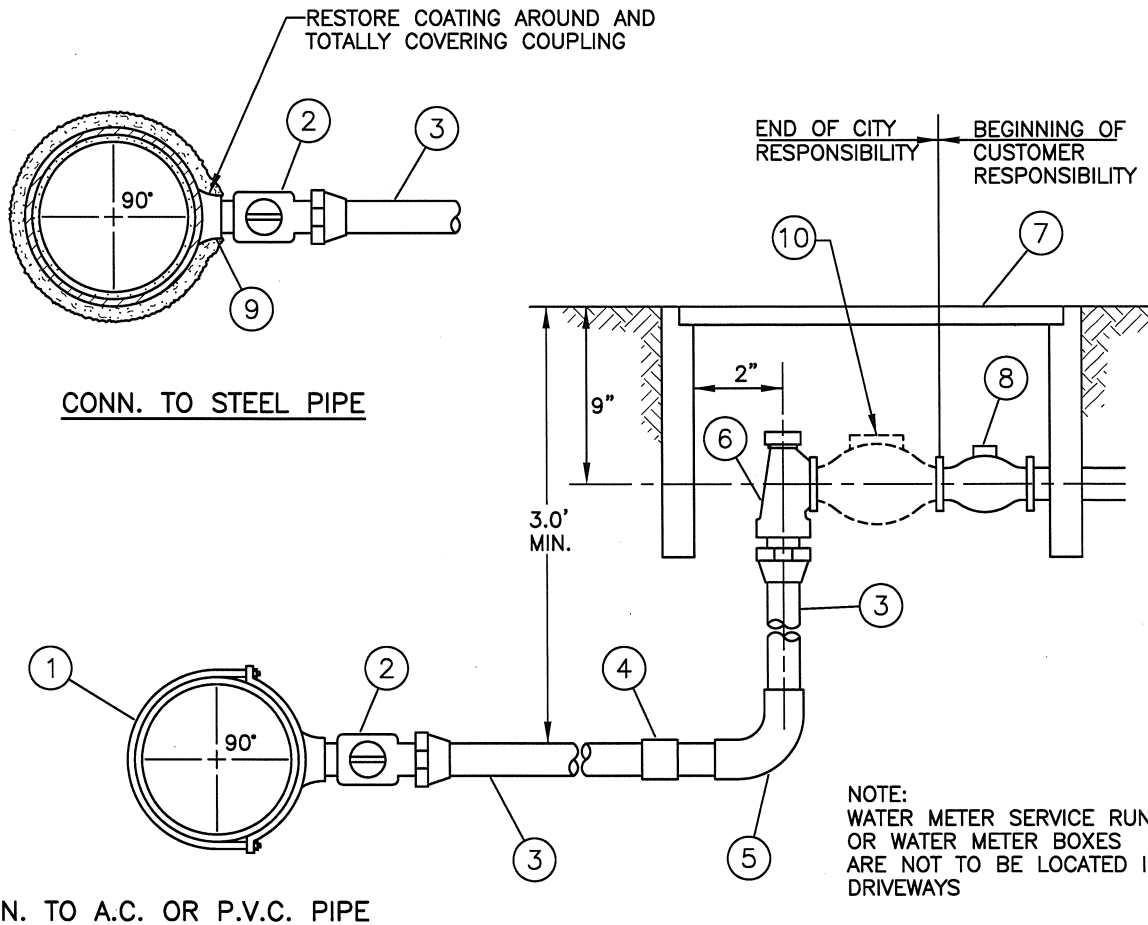
CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

REVISED	APPROVED

1" WATER SERVICE
FOR 3/4" AND 1" METERS

STANDARD DRAWING NO.
W-1-E



NOTE:
WATER METER SERVICE RUNS
OR WATER METER BOXES
ARE NOT TO BE LOCATED IN
DRIVEWAYS

LEGEND ON PLANS —

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO
UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

ITEM NO.	REPLACES SAN DIEGO REGIONAL STD. DWG. WS-02 SIZE AND DESCRIPTION	REMARKS
1	DOUBLE STRAP SADDLE WITH STAINLESS STRAPS, AND FEMALE IRON PIPE THREADS	FLAT STRAPS
2	CORPORATION STOP: MALE IRON PIPE X COMPRESSION FORD FB 1100-7-Q-NL	TYPE "K" SOFT
3	REQUIRED TUBING, COPPER SERVICE SIZE (2" ONLY)	
4	COPPER COUPLING, COPPER SLIP FITTING WHEN SERVICE IS OVER 20' (SILVER SOLDER ONLY)	
5	COPPER 90° SLIP FITTING (SILVER SOLDER ONLY)	
6	ANGLE BALL VALVE WITH LOCK WING. INLET COMPRESSION/OUTLET METER FLANGE	
7	METER BOX #6 OUTER COVER, READ LID -REFER TO SDRD WS-03 FOR LOCATION- TO BE SUPPLIED BY CITY.	NO SUBSTITUTIONS
8	BALL VALVE - TO BE SUPPLIED BY CITY	NO SUBSTITUTIONS 3,000 PSI STEEL
9	HIGH PRESSURE FORGED STEEL COUPLING 2" F.I.P. (WELDED TO PIPE)	
10	WATER METER TO BE PURCHASED FROM CITY	

APPROVED: DATE: 4-2-2014
UTILITY ENGINEER

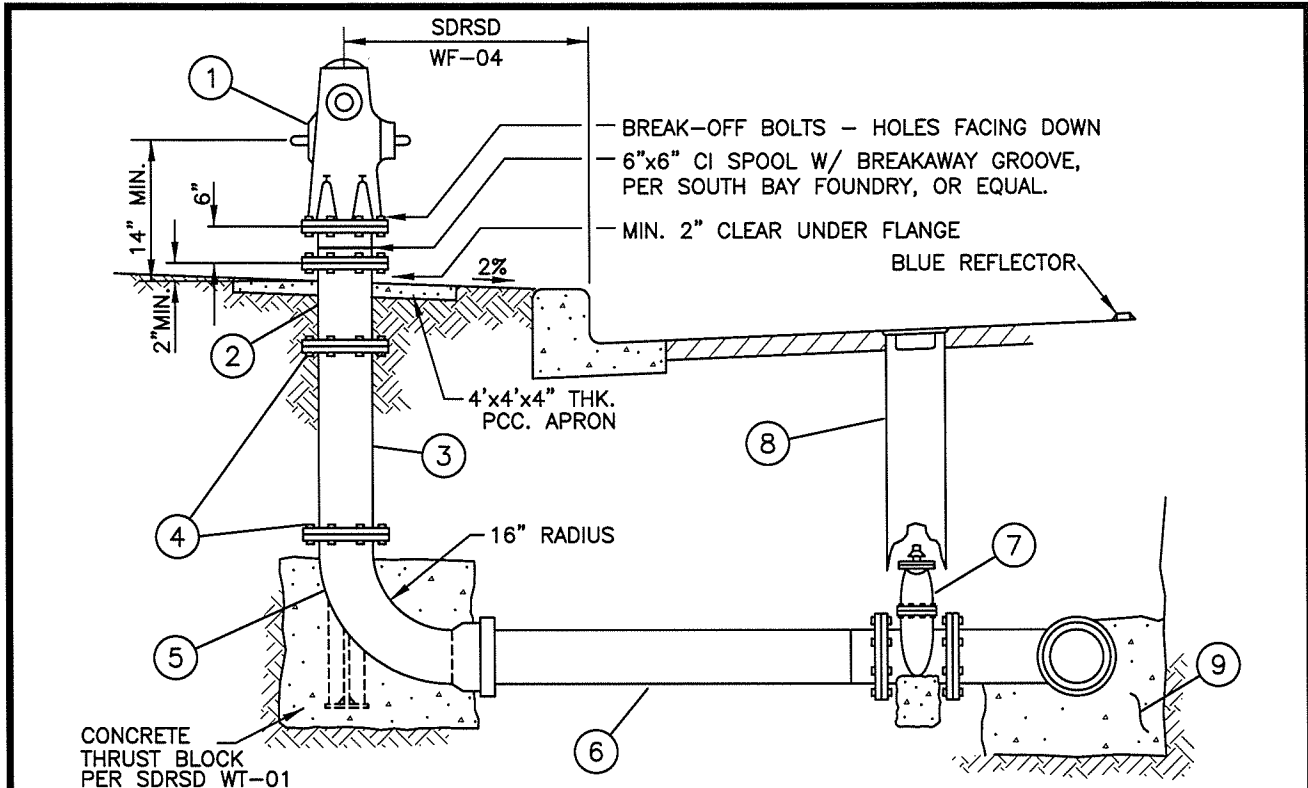
CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

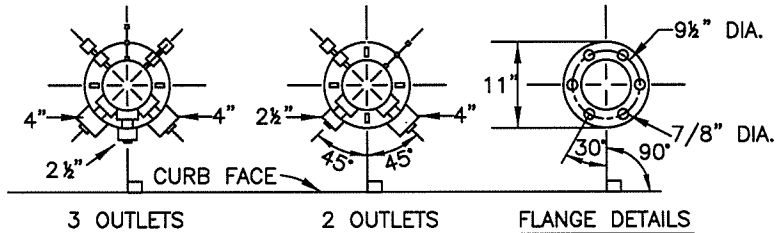
REVISED	APPROVED

2" WATER SERVICE
FOR 1 1/2" AND 2" METERS

STANDARD DRAWING NO.
W-2-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

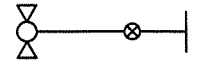



THIS DRAWING REPLACES SAN DIEGO REGIONAL STD. DWG. WF-01

NOTES:

- 1) HYDRANT HEAD: PER A.W.W.A. C-503 OR LATEST REVISION, PAINTED BASE YELLOW**
 - 2) 12" LONG EXTENSION SPOOL (CAST IRON/CEMENT LINED)
 - 3) EXTENSION SPOOL
 - 4) 3/4" x 3" HEX. HEAD MACHINE BOLTS AND NUTS, TYPE 316 STAINLESS STEEL
 - 5) HYDRANT ELL CAST IRON/CEMENT LINED
 - 6) P.V.C., STEEL PIPE OR APPROVED EQUIVALENT
 - 7) 6" GATE VALVE (W-4-E)
 - 8) VALVE WELL INSTALLATION (SEE STANDARD DRAWING W-4-E)
 - 9) CONCRETE THRUST BLOCK PER S.D.R.S.D. WT-01
- a) ITEM 6 MAY BE CEMENT LINED AND COATED FLANGED STEEL PIPE WHERE PERMITTED BY CITY.
 - b) RUN FROM MAIN TO HYDRANT TO BE HORIZONTAL & AT RIGHT ANGLE TO WM.
 - c) INSTALL LENGTH OF RISER TO OBTAIN CORRECT HEIGHT OF HYDRANT AS NECESSARY.
 - d) LENGTH OF EXTENSION SPOOL VARIABLE.
 - e) INSTALL BREAK-OFF BOLTS WITH NUTS ON BOTTOM OF FLANGE.
 - f) SURFACE OF FINISHED PAD SHALL CONFORM WITH FINISHED PARKWAY GRADE.

LEGEND ON PLANS

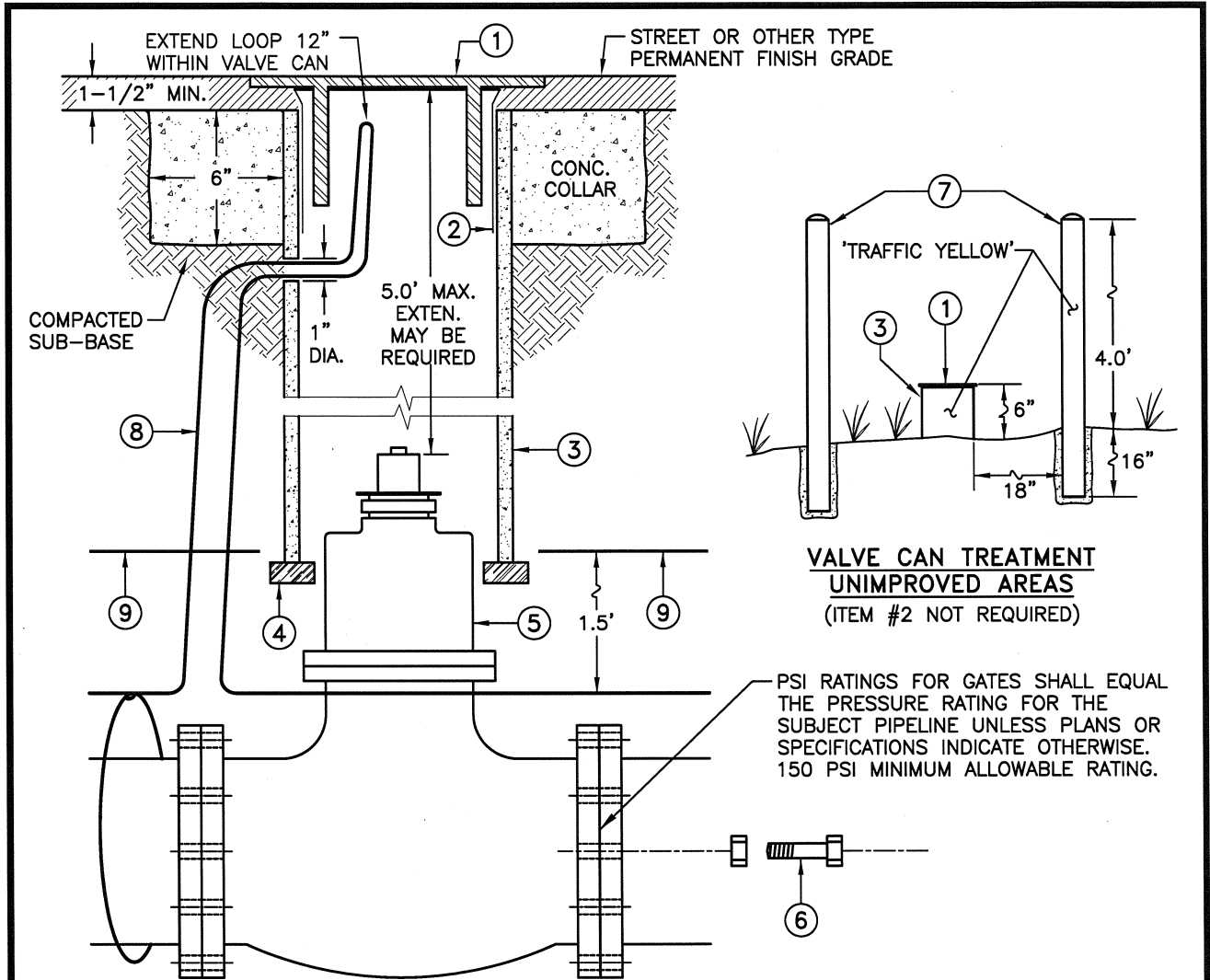


APPROVED: 	DATE: 4-2-2014
UTILITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

6" FIRE HYDRANT

SCALE: NOT TO SCALE
STANDARD DRAWING NO. W-3-E



**VALVE CAN TREATMENT
UNIMPROVED AREAS**
(ITEM #2 NOT REQUIRED)


FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

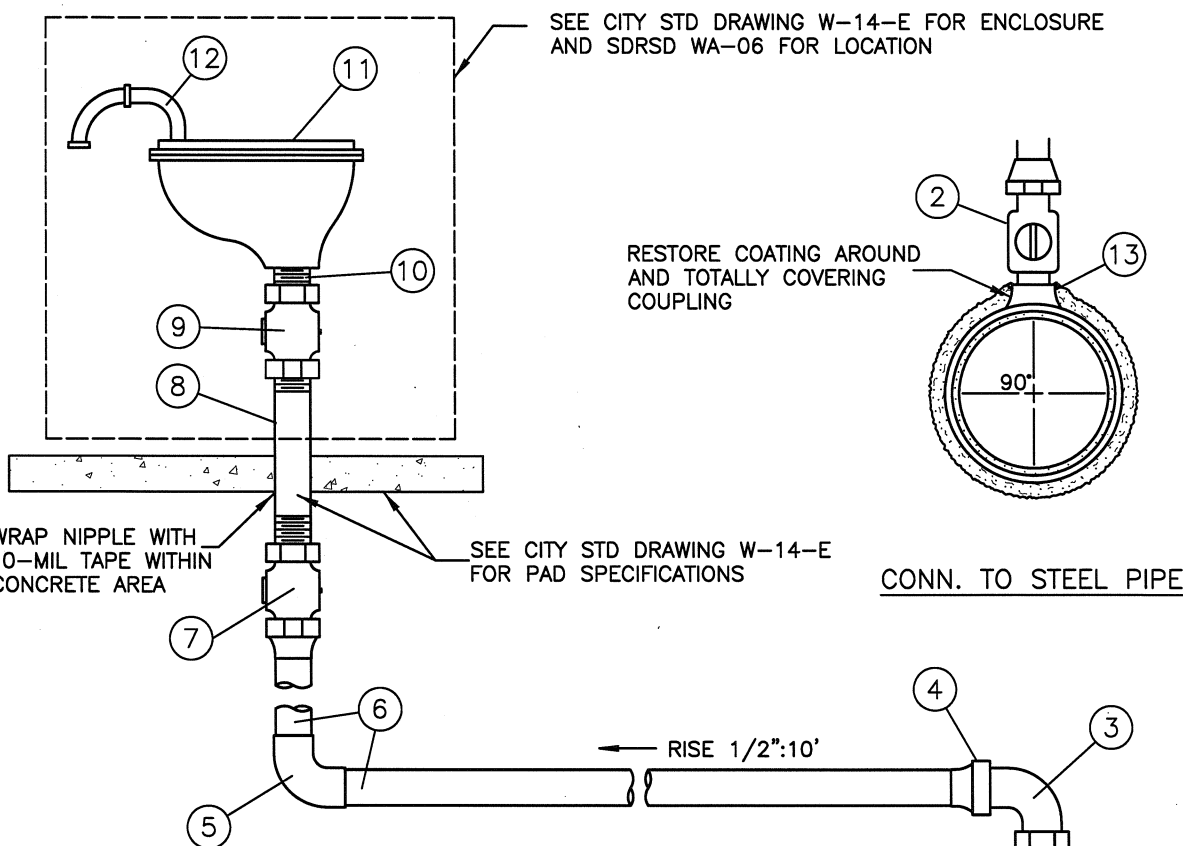
REPLACES SAN DIEGO REGIONAL STD. DWG. WV-01 & WV-02

- ① 8" LONG SKIRT CAST IRON VALVE CAN COVER MARKED 'WATER'
- ② 8"x12" 20 GAUGE GALVANIZED METAL SLIP CAN (W/ VERTICAL SPLIT)
- ③ 8"x REQUIRED LENGTH UN-REINFORCED CONCRETE PIPE OR C-900 PVC PIPE
- ④ 2"x4" REDWOOD BLOCKS
- ⑤ GATE VALVE. ALL GATES TO CONFORM TO LATEST AWWA C-509 SPECIFICATIONS ALL GATES TO BE FLANGE x FLANGE, NON-RISING STEM. VALVES SHALL OPEN COUNTER-CLOCKWISE.
- ⑥ HEXAGONAL BOLT & NUT, TYPE 316 STAINLESS STEEL
- ⑦ VALVE MARKER POST, 4" STEEL PIPE CONCRETE FILLED & ANCHORED
- ⑧ #10 SOFT BARE CONTINUOUS COPPER WIRE
- ⑨ 6" WIDE STRIP OF POLYETHYLENE BLUE NONMETALLIC DETECTION TAPE.

LEGEND ON PLANS



APPROVED: 	DATE: 4-2-2014	CITY OF ESCONDIDO UTILITY DEPARTMENT	SCALE: NOT TO SCALE
REVISOR: _____	APPROVED: _____		STANDARD DRAWING NO. W-4-E



WRAP NIPPLE WITH 10-MIL TAPE WITHIN CONCRETE AREA

SEE CITY STD DRAWING W-14-E FOR PAD SPECIFICATIONS

RESTORE COATING AROUND AND TOTALLY COVERING COUPLING

CONN. TO STEEL PIPE

RISE 1/2":10'

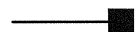
FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

- ① DOUBLE STRAP SADDLE W/STAINLESS STRAPS, AND FEMALE IRON PIPE THREADS
- ② CORPORATION STOP: MIP X MIP
- ③ 90 ELL: FIP X FIP.
- ④ ADAPTER: MIP X COMPRESSION
- ⑤ 2" AIR VALVE SERVICE USE 90° COPPER ELL (SILVER SOLDER ONLY) 1" SWEEP OK.
- ⑥ TYPE "K" SOFT COPPER.
- ⑦ BALL VALVE: FIP X FLARE WITH HANDLE
- ⑧ NO LEAD-BRASS NIPPLE MALE IRON PIPE THREADS, MINIMUM LENGTH 6", MAX 12".
- ⑨ BALL VALVE: FIP X FIP FORD B11-XXX-W-NL
- ⑩ NO LEAD-BRASS NIPPLE MALE IRON PIPE THREADS.
- ⑪ COMBINATION AIR VALVE ASSEMBLY
- ⑫ 2-90° ELLS (STAINLESS STEEL SCREEN ON OUTLET END).
- ⑬ HIGH PRESSURE FORGED STEEL COUPLING (WELDED TO PIPE). 3000 PSI STEEL

WATER MAIN

NOTE:
COPPER COUPLING (SILVER SOLDER ONLY) SERVICES OVER 100 FEET AND 2" SERVICE OVER 20 FEET

LEGEND ON PLANS



APPROVED:  DATE: 4-2-2014

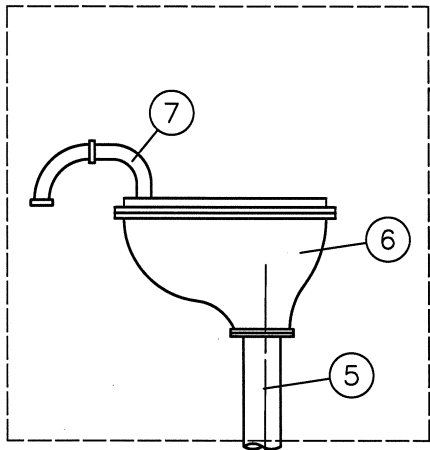
UTILITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

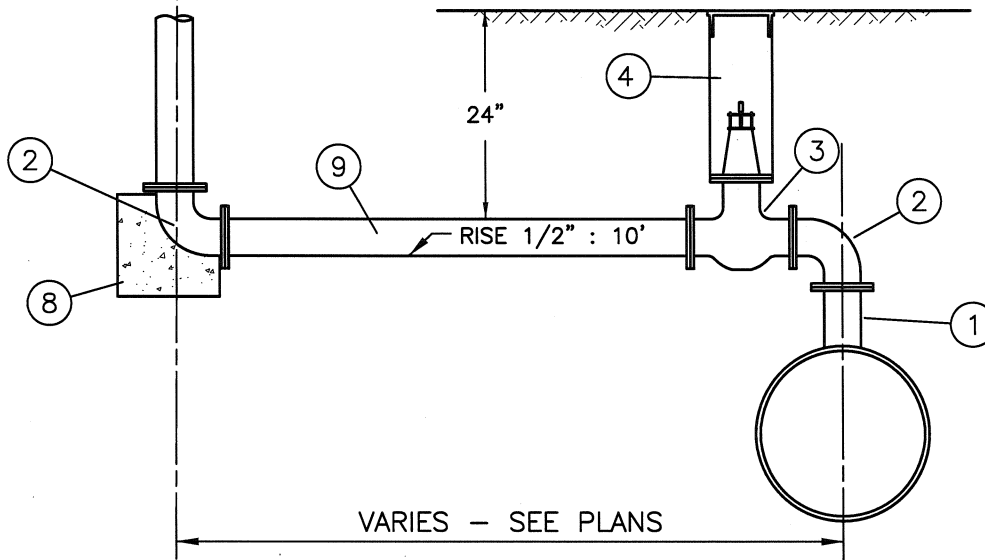
COMBINATION AIR VALVE
1" & 2"

STANDARD DRAWING NO.
W-5-E



SEE CITY STD DRAWING W-14-E FOR ENCLOSURE AND SDRSD WA-06 FOR LOCATION

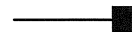
ALL BOLTS TO BE STAINLESS STEEL



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIAL LIST LOCATED ON THE CITY WEBSITE.

- ① FLANGED OUTLET, CEMENT LINED AND COATED STEEL
- ② FLANGED, 90° ELL, CEMENT LINED AND COATED STEEL OR CEMENT LINED DUCTILE IRON
- ③ VALVE (SEE STD. DWG. W-4-E)
- ④ VALVE WELL AND CAP (SEE STD. DWG. W-4-E)
- ⑤ STEEL PIPE, CEMENT LINED AND COATED
- ⑥ COMBINATION AIR VALVE
- ⑦ 2 - 90° ELLS (SCREENED ON THE OUTLET END)
- ⑧ CONCRETE THRUST BLOCK PER SDRSD WT-01
- ⑨ C-900 PVC

LEGEND ON PLANS



APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

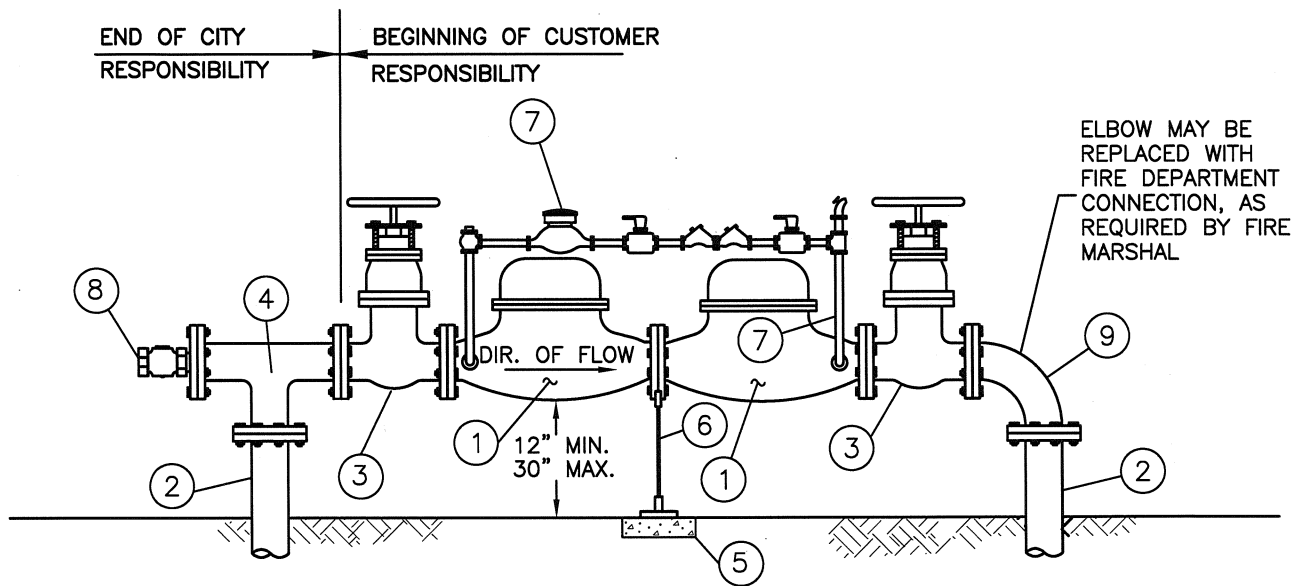
SCALE:
NOT TO SCALE

REVISED	APPROVED

COMBINATION AIR VALVE
4" & 6"

STANDARD DRAWING NO.

W-6-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

NOTES:

- A. BEFORE WATER SERVICE IS PROVIDED, DETECTOR CHECK SHALL BE TESTED BY CITY STAFF TO INSURE PROPER WORKING CONDITION.
- B. TYPE OF DETECTOR ASSEMBLY SHALL BE BASED ON THE DEGREE OF HAZARD.
- C. ALL BOLTS SHALL BE STAINLESS STEEL.

- 1) DETECTOR CHECK ASSEMBLY (SHALL BE SELECTED FROM THE APPROVED U.S.C. LIST ON FILE WITH THE CITY)
- 2) RISER SPOOLS - SHALL BE CEMENT LINED & COATED STEEL OR DUCTILE IRON SPOOLS, WITH WELD-ON RAISED FACE FLANGES
- 3) FLANGED GATE VALVE (HUB OR HAND-WHEEL) AS APPROVED BY THE CITY (SEE W-4-E)
- 4) CAST IRON TEE OR 90.
- 5) CONCRETE PAD - 18" x 18" x 3 1/2"
- 6) VALVE SUPPORT STAND
- 7) 5/8" x 3/4" WATER METER (METER MUST BE PURCHASED FROM CITY UTILITY BILLING PRIOR TO CONNECTION TO CITY WATER SYSTEM). THE CITY SHALL PROVIDE, INSTALL AND MAINTAIN METER.
- 8) 2" LOCKING BALL VALVE WITH 2 1/2" FIRE HOSE CONNECTION.
- 9) 90° CAST IRON ELBOW

LEGEND ON PLANS

— [DCA] —

APPROVED: _____ DATE: 4-2-2014

UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

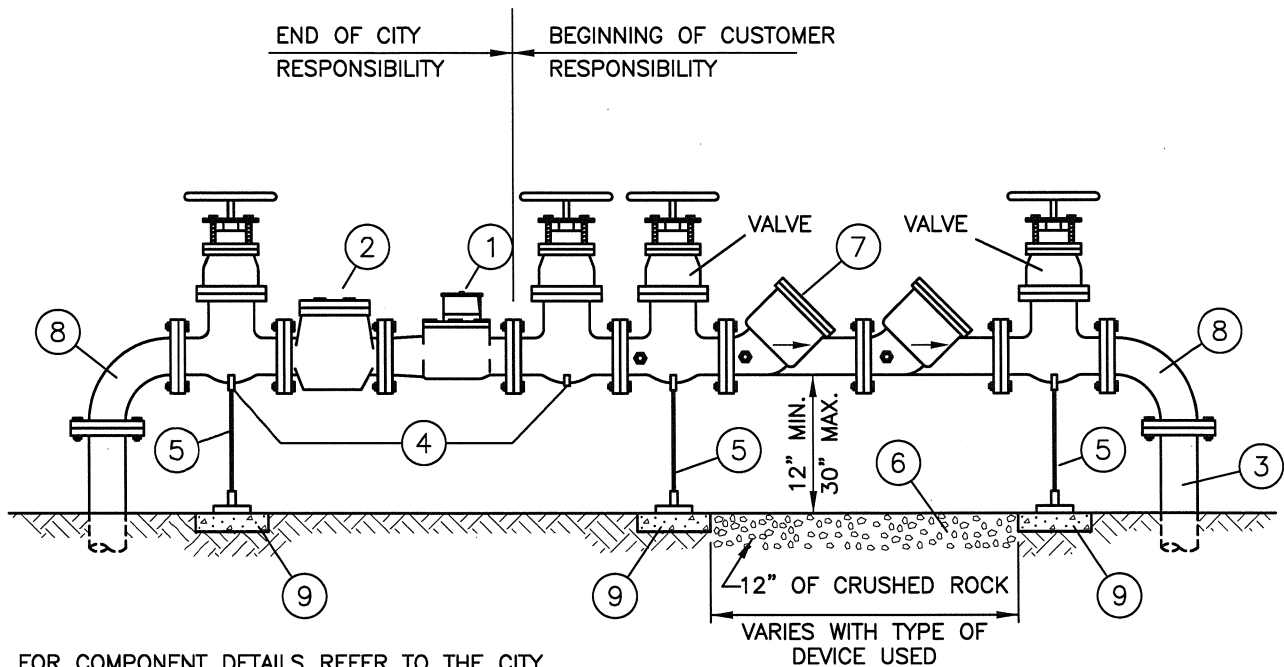
SCALE:
NOT TO SCALE

REVISED APPROVED

3", 4", 6", 8", & 10"
DETECTOR CHECK
ASSEMBLY

STANDARD DRAWING NO.

W-7-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

ALL BOLTS SHALL BE STAINLESS STEEL.


NOTES:

- ① WATER METER— METER SHALL BE PURCHASED FROM THE CITY. METER SHALL BE TYPE & SIZE APPROVED BY THE CITY. THE CITY SHALL PROVIDE, INSTALL AND MAINTAIN METER.
- ② STRAINER — SHALL BE TYPE & SIZE APPROVED BY THE CITY AND SHALL BE SUPPLIED BY THE CITY.
- ③ RISER SPOOLS — SHALL BE CEMENT LINED & COATED STEEL OR DUCTILE IRON, WITH WELD-ON RAISED FACE FLANGES.
- ④ FLANGED GATE VALVE (HUB OR HAND-WHEEL) PER STANDARD DRAWING W-4-E.
- ⑤ VALVE SUPPORT STAND
- ⑥ OPTIONAL ROCK BASE
- ⑦ BACKFLOW PREVENTION ASSEMBLY
- ⑧ 90° CAST IRON ELBOW
- ⑨ CONCRETE PAD — 18" X 18" X 3 1/2"

- A) ALL INSTALLATIONS SHALL BE ABOVE GROUND.
- B) ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE AS CLOSE TO THE WATER METER AS POSSIBLE.
- C) THE BACKFLOW PREVENTION ASSEMBLY SHALL BE SELECTED FROM THE APPROVED U.S.C. LIST ON FILE WITH THE CITY.
- D) NO CONNECTIONS SHALL BE MADE BETWEEN THE WATER METER AND THE BACKFLOW PREVENTION ASSEMBLY.
- E) TYPE OF BACKFLOW PREVENTION ASSEMBLY SHALL BE BASED ON THE DEGREE OF HAZARD.
- F) APPROPRIATE TEST COCKS SHALL BE IN PLACE AT ALL TIMES.
- G) CITY SHALL HAVE ACCESS TO BACKFLOW PREVENTION ASSEMBLY AT ALL TIMES.
- H) BACKFLOW PREVENTION ASSEMBLY SHALL HAVE AT LEAST THE SAME CROSS-SECTIONAL AREA AS THE WATER METER.
- I) BACKFLOW ASSEMBLY SHALL BE TESTED TO INSURE PROPER WORKING CONDITION BEFORE WATER IS PROVIDED, AND ANNUALLY THEREAFTER.

LEGEND ON PLANS

BFPD

APPROVED: 		DATE: 4-2-2014
UTILITY ENGINEER		
REVISED	APPROVED	

CITY OF ESCONDIDO
UTILITY DEPARTMENT

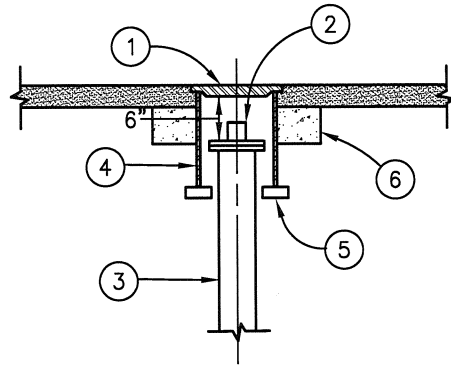
3", 4", 6", 8" & 10"
STANDARD METER ASSEMBLY
BACKFLOW PREVENTION
ASSEMBLY 3" & LARGER

SCALE:
NOT TO SCALE

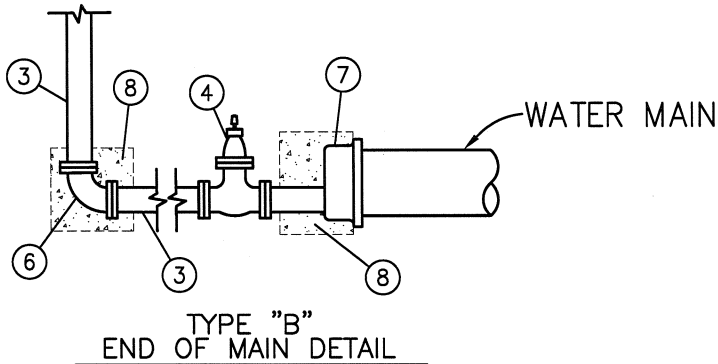
STANDARD DRAWING NO.
W-8-E

FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

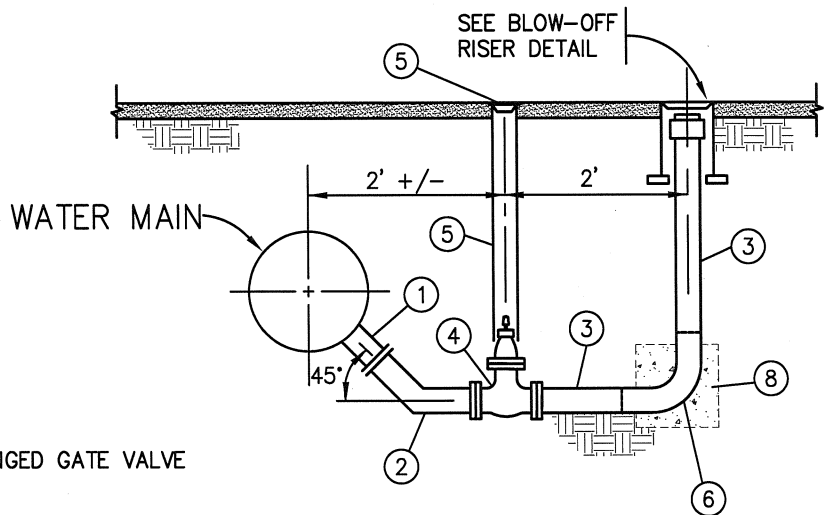
- ① SET 12" O.D. C.I. GATE WELL CAP MARKED "WATER"
- ② SET 4"X4" FEMALE FACED COMPANION FLANGE WITH 4" ABS PLASTIC PLUG.
- ③ 4" DUCTILE IRON PIPE.
- ④ 12" C900 PVC PIPE CL235
- ⑤ CONC. BLOCKS.
- ⑥ 6" x 6" X-SECT. CONC. COLLAR.



BLOW-OFF RISER DETAIL

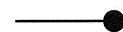


ALL BOLTS SHALL BE STAINLESS STEEL.



- ① FLANGED TEE (LINE SIZE X 4")
- ② SHORT RADIUS 45° FLANGED BEND (SAME MATERIAL AS ITEM 3)
- ③ 4" FLANGED DUCTILE IRON PIPE
- ④ 4" RESILIENT SEATED 200 PSI FLANGED GATE VALVE PER W-4-E
- ⑤ VALVE WELL PER W-4-E
- ⑥ 90° FLANGED BEND (SAME MATERIAL AS ITEM 3)
- ⑦ DUCTILE IRON LINE SIZE P.O. X 4" FLANGE REDUCER
- ⑧ CONCRETE THRUST BLOCK PER SDRSD WT-01

LEGEND ON PLANS



APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

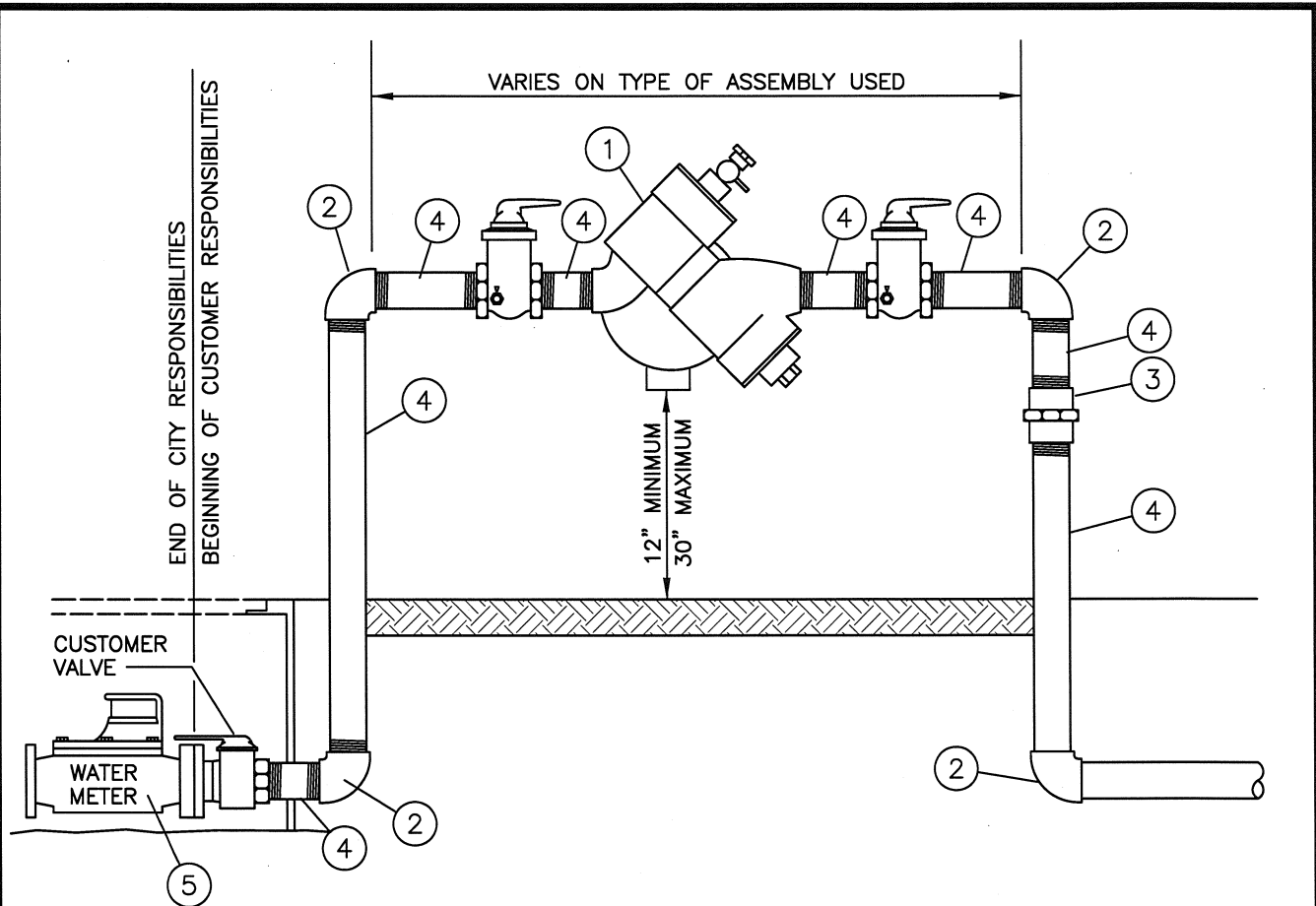
SCALE:
NOT TO SCALE

REVISED	APPROVED

4" BLOW-OFF ASSEMBLY

STANDARD DRAWING NO.

W-9-E




FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

- ① BACKFLOW PREVENTION ASSEMBLY
- ② 90° ELBOW (THREADED RED BRASS OR COPPER)
- ③ UNION (THREADED RED BRASS OR COPPER)
- ④ NIPPLE (THREADED RED BRASS, OR COPPER, VARIES IN LENGTH)
- ⑤ WATER METER STD. W-1-E OR W-2-E

NOTES:

- A) ALL INSTALLATIONS SHALL BE ABOVE GROUND.
- B) ALL BACKFLOW PREVENTION ASSEMBLIES SHALL BE AS CLOSE TO THE WATER METER AS POSSIBLE.
- C) THE BACKFLOW PREVENTION ASSEMBLY SHALL BE SELECTED FROM THE APPROVED U.S.C. LIST ON FILE WITH THE CITY.
- D) NO CONNECTIONS SHALL BE MADE BETWEEN THE WATER METER AND THE BACKFLOW PREVENTION DEVICE.
- E) TYPE OF BACKFLOW PREVENTION DEVICE SHALL BE BASED ON THE DEGREE OF HAZARD.
- F) CITY SHALL HAVE ACCESS TO BACKFLOW PREVENTION DEVICE AT ALL TIMES.
- G) REFER TO STANDARD DRAWINGS FOR INSTALLATION OF WATER METER & SERVICE. (W-1-E AND W-2-E)
- H) OPTIONAL: STRAINER LOCATED DOWNSTREAM OF ASSEMBLY.
- I) BACK FLOW PREVENTION ASSEMBLY SHALL HAVE AT LEAST THE SAME CROSS-SECTIONAL AREA AS THE WATER METER.
- J) BEFORE WATER SERVICE IS PROVIDED, BACKFLOW ASSEMBLY SHALL BE TESTED BY CITY STAFF TO INSURE PROPER WORKING CONDITION.

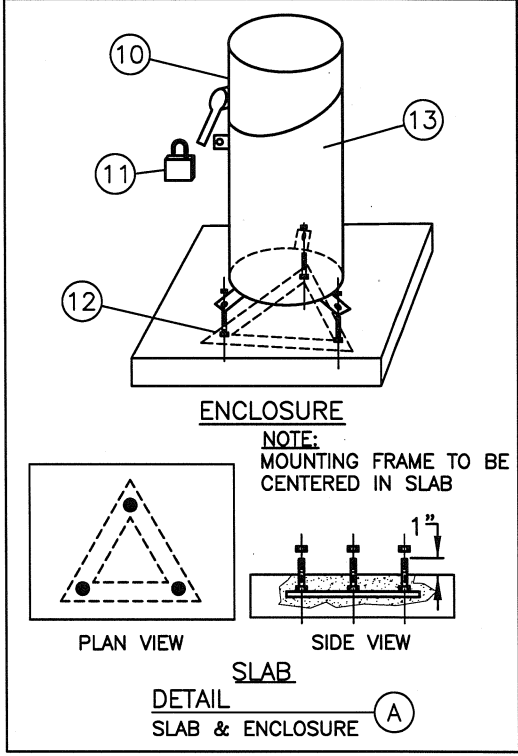
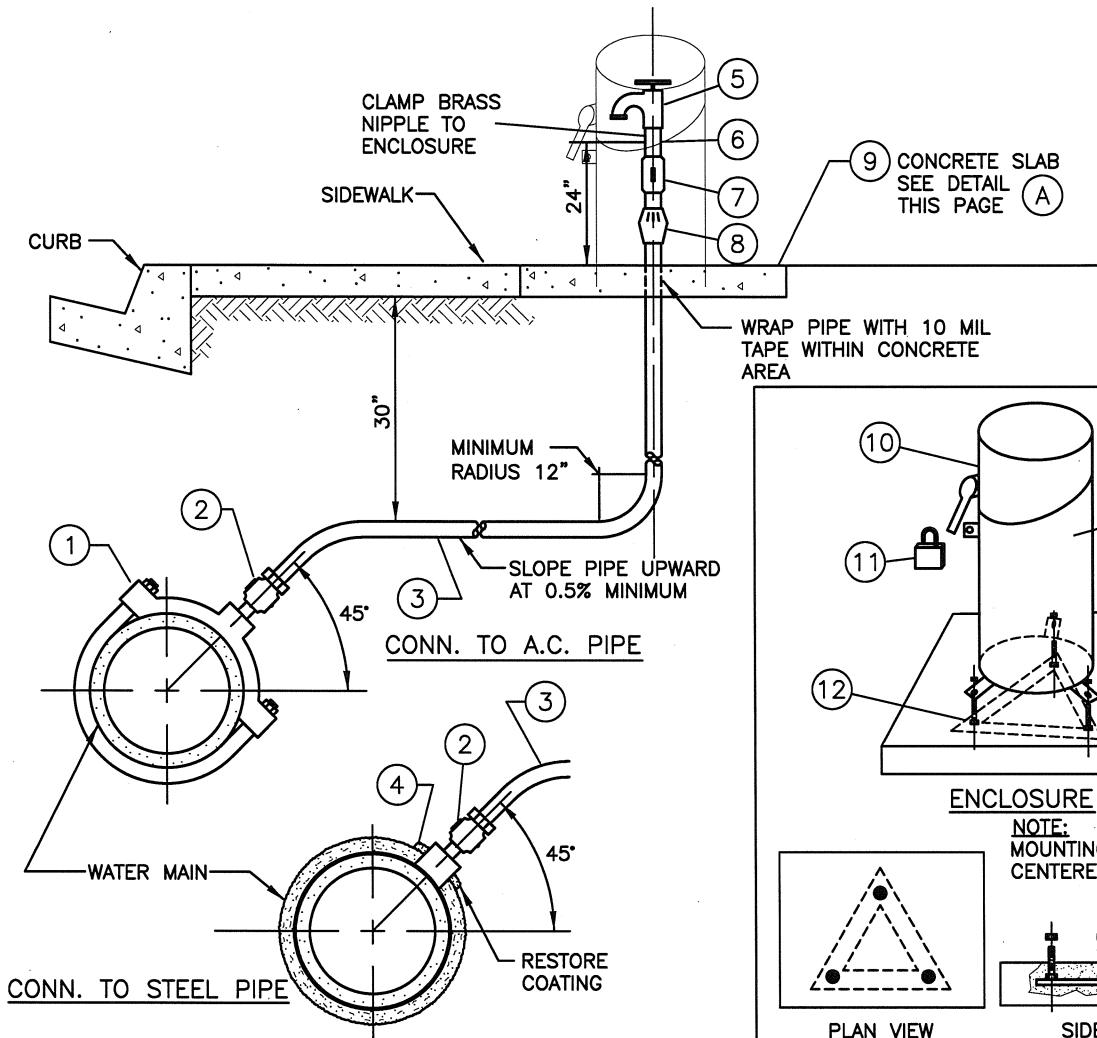
APPROVED: 	DATE: 4-2-2014
UTILITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE
STANDARD DRAWING NO.

BACKFLOW PREVENTION
ASSEMBLY 2" & SMALLER

W-10-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

- ① DOUBLE STRAP SADDLE (SEE W-1-E)
- ② CORPORATION STOP: MALE IRON PIPE X COMPRESSION
- ③ 1 INCH TYPE K SOFT COPPER
- ④ HIGH PRESSURE FORGED STEEL COUPLING 3000 P.S.I. RATED
- ⑤ BENT NOSE SPIGOT - NO LEAD
- ⑥ 3/4 IN. x 4 IN THREADED BRASS NIPPLE
- ⑦ BALL VALVE 1 IN. F.I.P. x F.I.P WITH 1 IN. X 3/4 IN. BUSHING.
- ⑧ STRAIGHT COUPLING M.I.P. x FLARE COPPER.
- ⑨ CONCRETE SLAB 2 FT. x 2 FT. SQ. x 3-1/2" THICK.
- ⑩ STEEL SAMPLE POINT ENCLOSURE (8 IN. x 30 IN.).
- ⑪ MASTER PADLOCK (SUPPLIED BY CITY).
- ⑫ TRIANGULAR MOUNTING FRAME WITH 3/8-16 x 3 IN. TYPE 316 S.S. BOLTS.
- ⑬ ENCLOSURE AND HARDWARE TO BE ZINC EPOXY POWDER PRIMER (2-3 MIL DRY FILM THICKNESS) AND APWA BLUE POLYESTER POWDER TOP COAT (2-3 MIL DRY FILM THICKNESS)

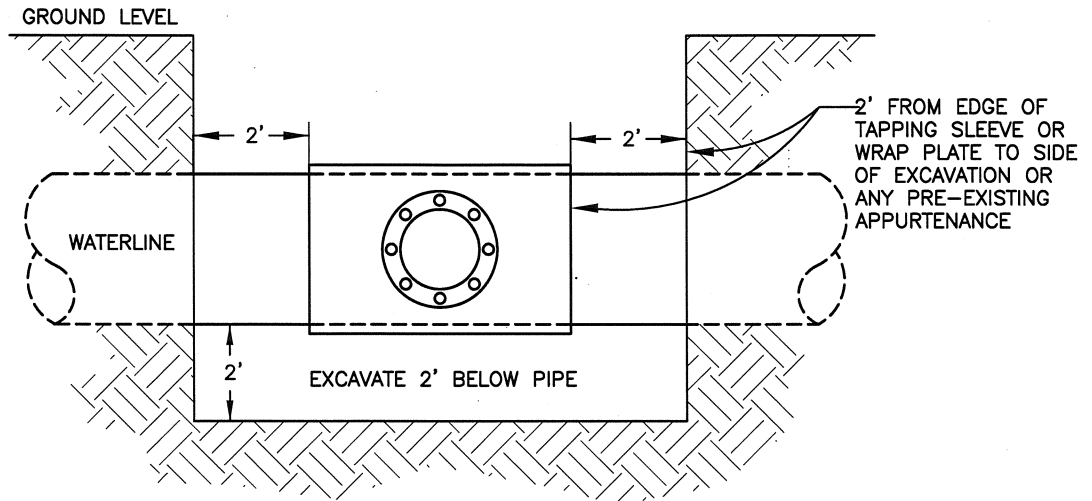
APPROVED:	DATE: 4-2-2014
UTILITY ENGINEER	
REVISED	APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

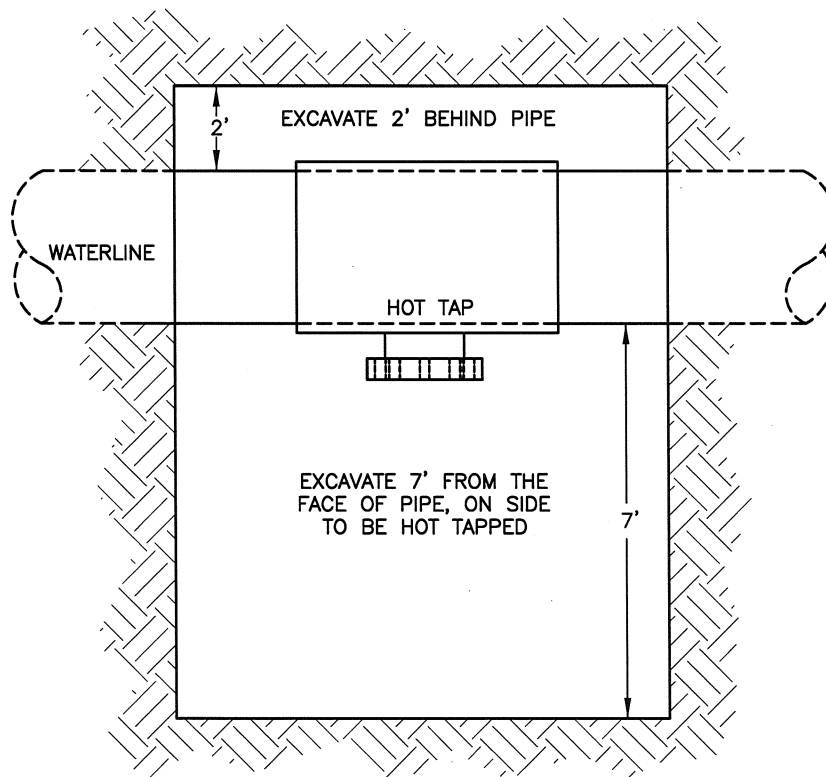
**WATER SERVICE
POINT & CAN**

SCALE:
NOT TO SCALE

STANDARD DRAWING NO.
W-11-E



SECTION VIEW - NOT TO SCALE



PLAN VIEW - NOT TO SCALE

NOTES:

1. BEFORE THE CITY OF ESCONDIDO WATER DEPARTMENT WILL TAP THE PIPE, A WATER DEPARTMENT SUPERVISOR WILL FIELD-VERIFY THAT THE EXCAVATION IS TO THE PROPER DIMENSIONS AND PROPERLY SHORED. IF ANY CORRECTIVE WORK IS NEEDED TO BRING THE EXCAVATION INTO COMPLIANCE, IT SHALL BE DONE BEFORE THE TAP CREWS ARRIVE ON SITE.
2. THE CONTRACTOR SHALL PROVIDE ALL MATERIAL REQUIRED FOR HOT TAP ON SITE FOR CITY CREW TO COMPLETE WORK.
3. THE CONTRACTOR SHALL REPAIR TRENCH AFTER COMPLETING HOT TAP BY THE CITY.

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

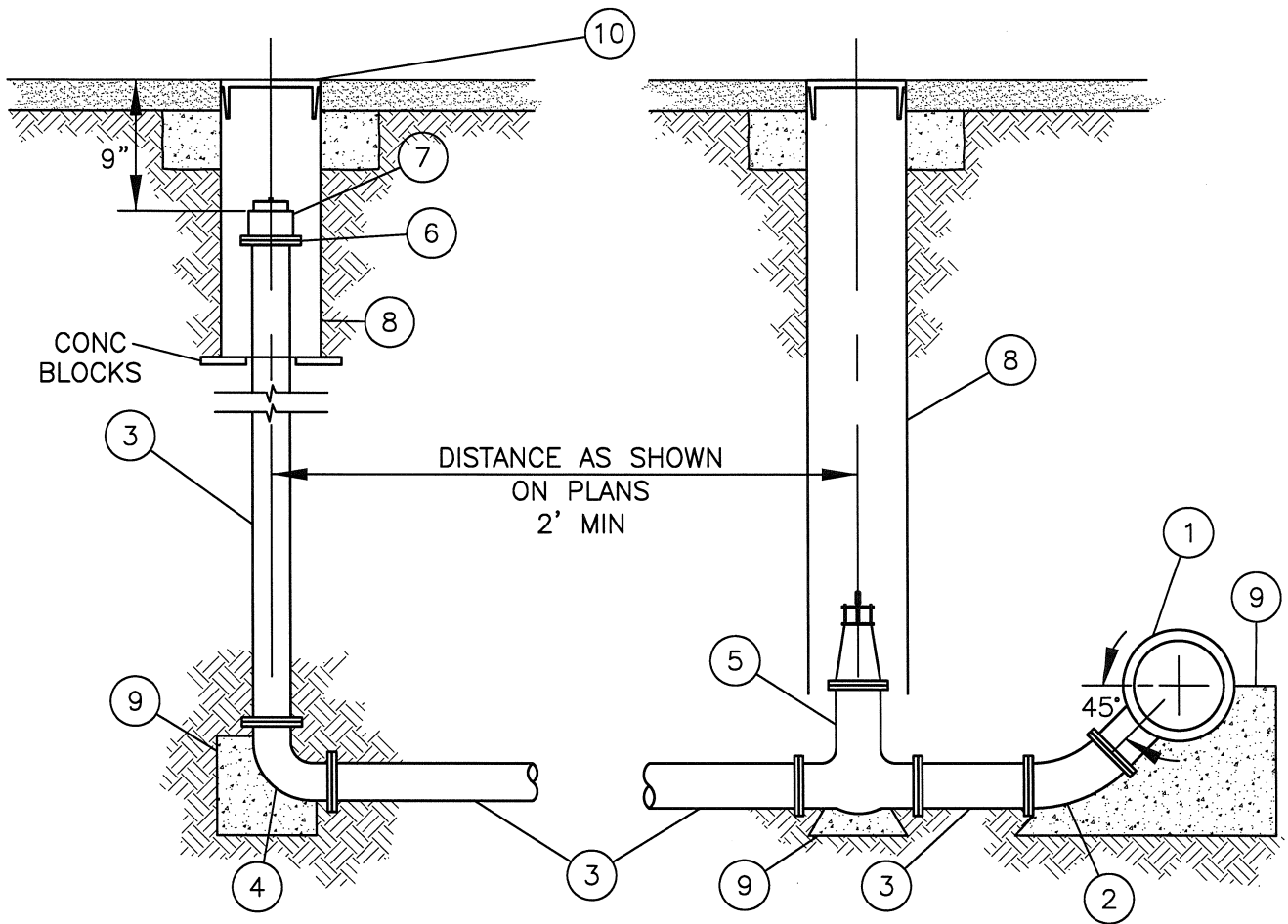
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REVISED	APPROVED

WATERLINE HOT-TAP
EXCAVATION

STANDARD DRAWING NO.

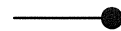
W-12-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

- ① MAIN SIZE X FLANGED OUTLET, CEMENT LINED AND COATED
- ② FLANGED 45° DUCTILE IRON ELL
- ③ 6" CML&C WELDED STEEL OR CONC LINED DUCTILE IRON PIPE
- ④ FLANGED 90° DUCTILE IRON BEND
- ⑤ FLANGED GATE VALVE (SEE W-4-E)
- ⑥ 6 X 6 COMPANION FLANGE
- ⑦ 6" ABS PLASTIC PLUG W/2" HUB NUT
- ⑧ VALVE WELL INSTALLATION, SEE W-4-E
- ⑨ CONCRETE THRUST BLOCK PER SDRSD WT-01
- ⑩ 12" GATE WELL CAP W/4" SKIRT

LEGEND ON PLANS



APPROVED: _____ DATE: 4-2-2014

UTILITY ENGINEER

CITY OF ESCONDIDO
UTILITY DEPARTMENT

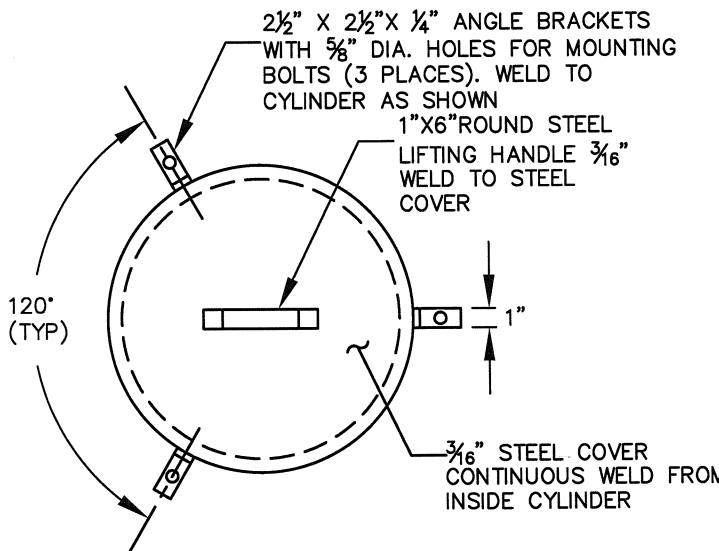
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REVISED APPROVED

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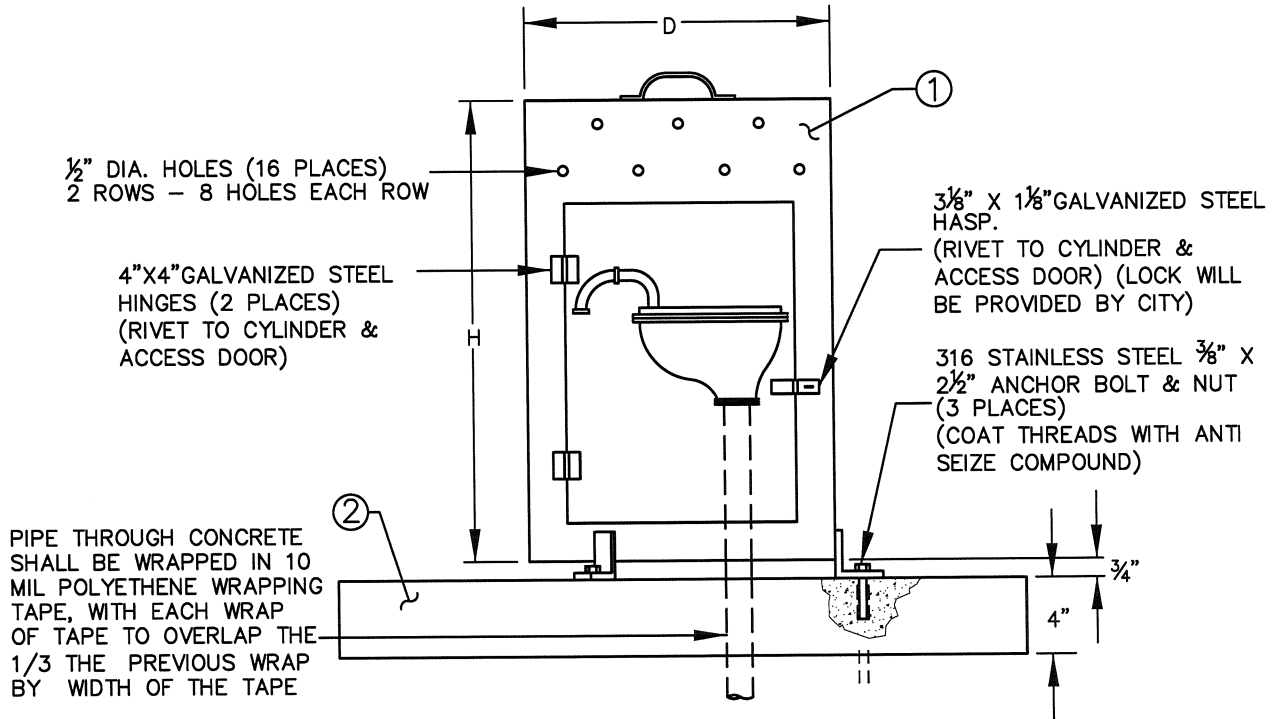
6" BLOW-OFF ASSEMBLY

W-13-E




NOTE:
SEE SDRSD WA-06 FOR LOCATION OF ENCLOSURE

VALVE SIZE	D	H
1" & 2"	16"	24"
4"	24"	30"
6"	30"	36"



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- ① 3/16 INCH STEEL ENCLOSURE WITH ACCESS DOOR, MISC. HARDWARE. CABINET AND HARDWARE SHOULD BE ZINC EPOXY POWDER PRIMER (2-3 MIL DRY FILM THICKNESS) AND APWA BLUE POLYESTER POWDER TOP COAT (2-3 MIL DRY FILM THICKNESS)
- ② 4 FT X 4 FT X 4 INCH CONCRETE PAD (520-C-2500 CONCRETE)

APPROVED:  DATE: 4-2-2014
UTILITY ENGINEER

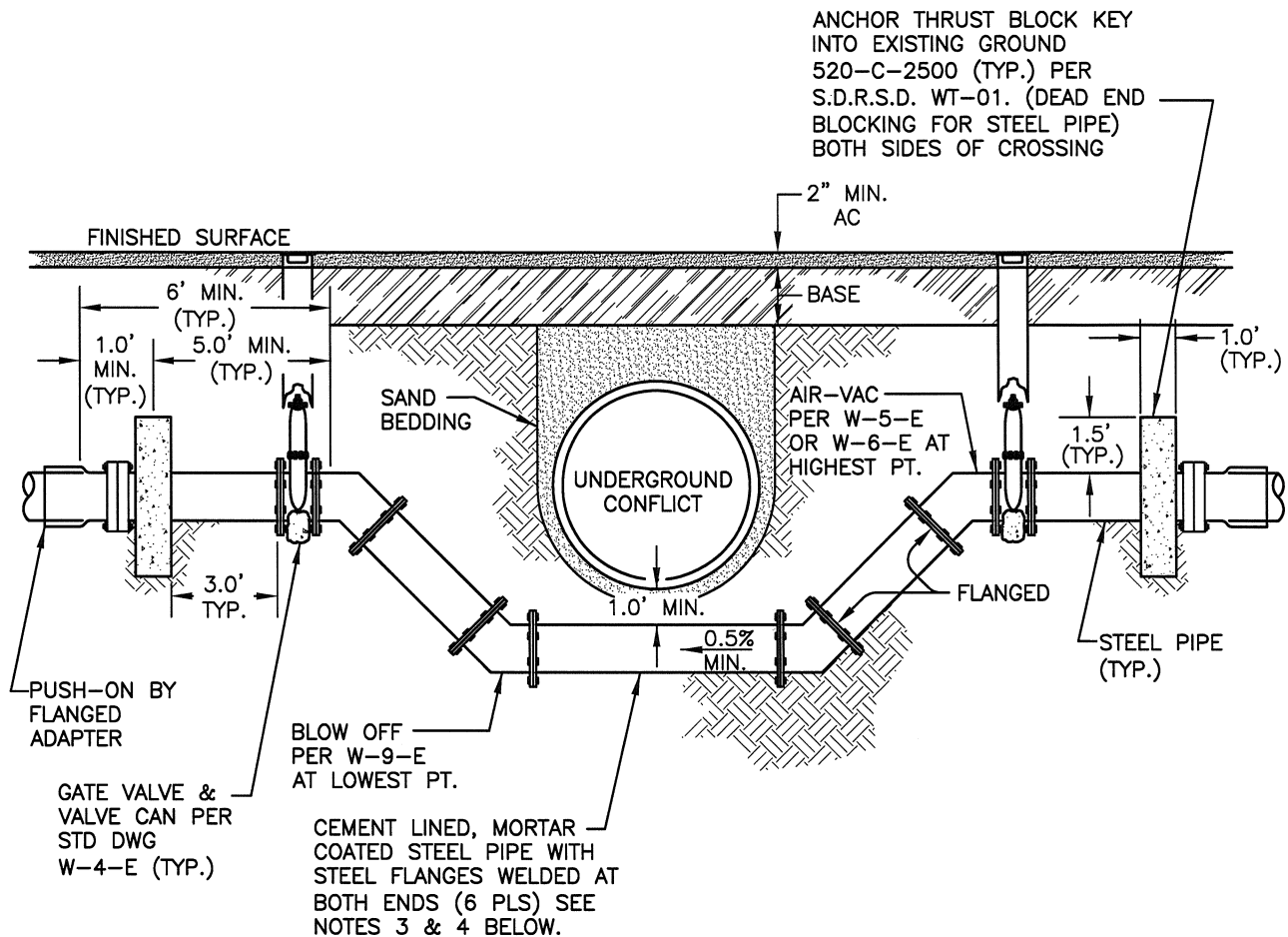
CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
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AIR AND VACUUM VALVE ENCLOSURE

STANDARD DRAWING NO.
W-14-E



FOR COMPONENT DETAILS REFER TO THE CITY OF ESCONDIDO UTILITIES APPROVED MATERIALS LIST LOCATED ON THE CITY WEBSITE.

NOTES:

1. THE STEEL PIPE SIPHON SECTION SHALL BE PREFABRICATED, PRESSURE TESTED AND DISINFECTED PRIOR TO INSTALLATION IN THE TRENCH.
2. THIS FIGURE REPRESENTS A GENERAL CONCEPT APPROVED BY THE CITY UTILITIES MANAGER AND REQUIRES AN INDIVIDUAL DESIGN FOR EACH PROJECT.
3. FOR CML&C PIPE LINE, CROSSING SHALL BE CML&C, W/WELDED FLANGES. USE 12 GAUGE STEEL PIPE MIN. USE 10 GAUGE STEEL FOR COVER LESS THAN 3 FEET.
4. RESTRAINED JOINT DUCTILE IRON FITTINGS WITH STAINLESS STEEL BOLTS, OR RESTRAINED JOINT PVC MAY BE USED FOR CROSSING WHERE MAIN PIPE LINE IS PVC.
5. THIS OPTION MAY ONLY BE UTILIZED WITH PRIOR APPROVAL OF THE UTILITIES MANAGER.

APPROVED: *[Signature]* DATE: 4-2-2014

UTILITY ENGINEER

REVISED

APPROVED

CITY OF ESCONDIDO
UTILITY DEPARTMENT

SCALE:
NOT TO SCALE

WATER MAIN
CONFLICT CROSSING

STANDARD DRAWING NO.

W-15-E