

CITY OF REDLANDS
MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT



**STANDARD SPECIFICATIONS
AND DETAIL DRAWINGS
FOR
DESIGN AND CONSTRUCTION OF
PUBLIC IMPROVEMENTS**

January 2023 Edition



TABLE OF CONTENTS

DIVISION I – DESIGN STANDARDS

SECTION 1 – STREET DESIGN STANDARDS.....	DS-1
SECTION 2 – STORM DRAIN DESIGN STANDARDS	DS-7
SECTION 3 – STREET LIGHT DESIGN STANDARDS	DS-9
SECTION 4 – TRAFFIC SIGNAL DESIGN STANDARDS.....	DS-11
SECTION 5 – GRADING PLAN DESIGN STANDARDS.....	DS-12
SECTION 6 – STREET TREE DESIGN STANDARDS	DS-14
SECTION 7 – EROSION CONTROL PLAN DESIGN STANDARDS	DS-16
SECTION 8 – PLAN SUBMITTAL STANDARDS.....	DS-19
SECTION 9 – DESIGN DETAIL DRAWINGS	DS-21

DIVISION II – CONSTRUCTION STANDARDS AMENDMENTS

PART 1 – GENERAL PROVISIONS.....	CS-1
SECTION 1 – GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS	CS-1
SECTION 2 - SCOPE OF THE WORK.....	CS-2
SECTION 3 - CONTROL OF THE WORK.....	CS-3
SECTION 4 - CONTROL OF MATERIALS.....	CS-7
SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES	CS-8
SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK	CS-29
SECTION 7 - MEASUREMENT AND PAYMENT	CS-31
SECTION 8 – FACILITIES FOR AGENCY PERSONNEL	CS-33
SECTION 9 – ASSIGNMENT OF UNFAIR BUSINESS PRACTICES CLAIMS	CS-33
SECTION 10 – TRENCHING AND EXCAVATION	CS-33
SECTION 11 – REMOVAL, RELOCATION OR PROTECTION OF EXISTING UTILITIES.....	CS-34
PART 2 – CONSTRUCTION MATERIALS.....	CS-35
SECTION 200 - ROCK MATERIALS.....	CS-35
SECTION 201 CONCRETE, MORTAR AND RELATED MATERIALS.....	CS-35

SECTION 203 - BITUMINOUS MATERIALS.....	CS-36
SECTION 206 - MISCELLANEOUS METAL ITEMS.....	CS-36
SECTION 207 – GRAVITY PIPE.....	CS-37
SECTION 211 - MATERIAL TESTS	CS-37
SECTION 214 - TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS	CS-37
PART 3 – CONSTRUCTION METHODS.....	CS-38
SECTION 300 – EARTHWORK.....	CS-38
SECTION 301 - SUBGRADE PREPARATION, TREATED MATERIALS & PLACEMENT OF BASE MATERIALS.....	CS-42
SECTION 302 - ROADWAY SURFACING	CS-47
SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION.....	CS-57
SECTION 304 - METAL FABRICATION AND CONSTRUCTION	CS-60
SECTION 314 - TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS	CS-61
PART 7 – STREET LIGHTING AND TRAFFIC SIGNAL SYSTEMS	CS-63
SECTION 700 – MATERIALS.....	CS-63

DIVISION III – STANDARD PLAN AMENDMENTS

STANDARD PLAN AMENDMENTS.....	SP-1
-------------------------------	------

DIVISION - I
DESIGN STANDARDS

THIS PAGE INTENTIONALLY LEFT BLANK

SECTION 1 – STREET DESIGN STANDARDS

GENERAL INFORMATION. All plans to be submitted to the Municipal Utilities and Engineering Department for review and approval shall be 24-inch x 36-inch in size with standard 1-inch border and title block per City Detail Drawing No. 720-0. The Mylar originals of the approved plans shall be 4 mil thick, drawn with indelible black ink and sealed and signed by a qualified licensed professional engineer in the State of California. Duplicate Mylar, 4 mil thick, produced by a photographic method to scale, can be used as originals if they are wet sealed and signed by a qualified licensed professional engineer in the State of California. Other types of duplicate Mylar shall not be accepted as originals.

PRECISE GRADING PLANS. All street grading plans shall be Precise Grading Plans and no rough grading plans shall be allowed for review or approval.

CROSS SECTIONS. Standard street widths shall conform to Detail Drawing No 701-0, for Right-of-way widths specified by the General Plan, except within the East Valley Corridor Specific Plan area and where specific plans have been established for individual streets. Standard cross sections shall be straight-graded from centerline to gutter lip at 2% unless otherwise shown on the specific plan or approved by the Engineer. The 1/4 crown shown in Detail Drawing No. 703-0 Type A shall not be used. Detail Drawing No. 703-0 Types B and C, shall not be used unless directed by the Engineer. Wherever possible, gutter lines on opposite sides of the street should be at the same elevation to provide a symmetrical crown. All streets shall have the indicated crown, except at street intersections or transitions between standard sections and superelevated sections.

GRADES. Longitudinal street grades shall be designed with a minimum slope of 0.50% and a maximum slope of 15%.

VERTICAL CURVES. Vertical curves shall be required when a grade change of 1.00% or greater occurs. Length of vertical curves shall be such that stopping sight distance limited by such vertical curves shall not be less than 600 feet on major and minor arterial streets and not less than 300 feet on collector and local streets. Length of curves shall be in the increments of 10 feet with a minimum length of 100 feet, unless otherwise approved by the Engineer.

HORIZONTAL CURVES. Minimum street centerline radii shall be: major arterial streets, 1,000 feet; minor arterial streets, 500 feet; collector streets, 300 feet; & local streets, 100 feet.

INTERSECTIONS. Intersecting streets and major driveways shall meet at an angle deviating from 90° by not more than 5°. The continuation of a street through an intersection shall be perfectly aligned across the intersection; or if this is not possible, centerlines shall be offset by not less than 150 feet.

Where no cross-gutters are to be constructed, the centerline grade will be laid tangent to a point on the crown section of the intersecting street. Where a minor street intersects a major street (4 traveled lanes), the standard crown on major street shall be maintained through the intersection and the minor street crown shall be adjusted as necessary to provide a smooth crown transition.

Where cross gutters are to be constructed, the centerline grade will be carried up from the lip of the gutter at a desirable rate of 1.5% or a maximum rate of 2% and joined to any desirable grade with a true vertical curve. The length of the vertical curve shall be designed so as to produce a minimum of perceptible vertical acceleration. A desirable length of the vertical curve can be obtained from the formula: $L = 1.2 AV$ where: L = length of vertical curve in feet; A = algebraic difference in grades in percent, plus 100; and V = design speed in miles per hour.

When following the above procedure to obtain full crown at the BCR is not possible or desirable, and the typical section does not apply, the designer shall show enough elevations on the plan to define the section.

CURBS AND GUTTERS. All curb and gutter shall conform to the dimensions shown on SPPWC Standard Plan Nos. 120-3 and 121-3. Curb height shall be 8 inches unless otherwise approved by the Engineer.

CURB RETURNS. The radius of curvature for curb returns of streets shall be: 25 feet for 'local to local' or 'local to collector' streets; 30 feet for 'collector to collector' or 'collector to minor arterial' streets; 35 feet for 'minor arterial to minor arterial' or 'minor arterial to major arterial' streets; 40 feet for 'major arterial to major arterial' or 'major arterial to highway' streets; and 40 feet for all curb returns within a Commercial/Industrial zone or anywhere heavy commercial truck traffic is anticipated. Curb return radius deviations shall be on a case-by-case basis, as approved by the Engineer.

Where cross-gutters are to be constructed, the curb return at the higher side of the cross-gutter shall be designed such that its profile will show the "low point" within the mid 1/3 section ($\Delta/3$) of the curb return.

The curb returns will be designed to fall into the plane of the intersecting streets, and on a smooth grade. Reverse vertical curves through returns are not allowed.

CROSS GUTTERS. Cross gutters shall not be less than 8 inches thick and shall not be less than 6 feet in width, as shown on SPPWC Standard Plan No. 122-3. A 10 foot wide cross gutter may be required at the direction of the Engineer. Cross gutters shall be installed wherever gutter flows are intended to continue across an intersection. The spandrels and gutters within the curb return shall not be less than 8 inches thick.

SIDEWALKS. Sidewalks shall be not less than 4 inches thick, except that sidewalk installed across driveways shall be not less than 6 inches thick. Sidewalk widths shall be as shown on Detail Drawing No. 701-0, and shall be not less than 5 feet in width. In commercial and industrial zones, as indicated on the Master Plan, sidewalks shall lie in a plane sloping up from the top of the curb at a rate of one-fourth inch per foot measured at right angles to the curb. The back of the sidewalk shall be 2 inches from the street Right-of-Way line unless otherwise specified by the Engineer. Intersection design shall conform to the typical design requirements as shown on SPPWC Standard Plan Nos. 101-3 and 112-2, and Detail Drawing No. 705-0, and shall contain curb ramps conforming to the requirements of the Americans with Disabilities Act.

CATCH BASINS. See Section 2.

CURB OUTLET BOXES. See Section 2.

SUBGRADES. Subgrade will be considered as that portion of the roadbed surface that has been prepared, as specified, and upon which a layer of specified roadbed material, surfacing or pavement is to be placed, including sidewalks, curbs and gutters.

The depth and type of subgrade material shall be shown on the plans. The designer shall, utilizing soils tests taken at the site, design the street structural section to meet the specified Traffic Index. Samples will be taken of the native and proposed subgrade materials and tests for R-value, soil classification and grading will be made by a certified soils laboratory. A copy of the results of these tests and structural section calculations will be forwarded to the office of the Engineer. All costs of such testing shall be borne by the Owner or Contractor.

PAVEMENTS. The pavement structural section shall be recommended by a licensed geotechnical engineer after the roadway sections has been graded to subgrade and R-value tests are conducted. The Engineer shall review the recommendation of the geotechnical engineer for approval. In no case shall the pavement structural section be less than 3 inches of dense graded asphalt concrete pavement (AC) over 4 inches of Crushed Aggregate Base (CAB), Crushed Miscellaneous Base (CMB), or Pulverized Miscellaneous Base (PMB).

TRENCH PATCHES. Existing pavement shall be "T" cut extending a minimum of 18 inches beyond the edge of trench on both sides. The replacement pavement section shall be a minimum of 3 inches of dense graded asphalt concrete pavement (AC) over 4 inches of Crushed Aggregate Base (CAB), Crushed Miscellaneous Base (CMB), or Pulverized Miscellaneous Base (PMB). If the edge of trench is located within 5 feet of the gutter lip or pavement edge, that portion of existing pavement between the edge of trench and gutter lip or pavement edge shall be replaced in total with a full pavement section (3 inches AC over 4 inches CAB, CMB, or PMB minimum).

CUL-DE-SACS. Streets whose design precludes future extension shall terminate in a cul-de-sac in accordance with Detail Drawing No. 702-0.

EXTENDABLE STREETS. Streets whose design permits future extension shall terminate at the development limit in accordance with Detail Drawing No. 149-0.

TRANSITIONS INTO SUB-STANDARD SECTIONS. Streets whose standard traveled way width reduces into a sub-standard width shall transition in accordance with Detail Drawing No. 148-0.

ALLEYS. Alleys shall not be less than 20 feet in width, and shall conform to standards applied to streets with respect to pavement thickness and grade, as shown on SPPWC Standard Plan Nos. 110-2 and 130-2, and Detail Drawing No. 118-0. Alleys shall be paved to the full 20 foot width, unless otherwise approved by the Engineer.

DRIVEWAY APPROACHES. Driveway approaches shall be not less than 6 inches in thickness, and shall extend from the curb line to the rear edge of sidewalk, or if sidewalk is not installed, to within 2 inches of the Right-of-way line. Driveway approaches shall be constructed to the dimensions shown on SPPWC Standard Plan No. 110-2. Driveway approaches shall be one slope on a straight grade to meet the grade of the edge of sidewalk nearest the street. If sidewalk is not installed, the driveway approach shall be constructed to meet sidewalk grade requirements as specified above in the areas in which the sidewalk would be if it were in place. If a combination sidewalk is installed, the driveway approach shall be constructed to meet the sidewalk grade at the side nearest the property line. Where grade conditions are considered by the Engineer to be excessive, a break in driveway approach grades may be permitted, but in no case shall the slope of the approach exceed 12%.

No portion of the driveway approach shall be constructed within 5 feet of the beginning or ending of the curb return of any street. Driveway approaches shall not be located where only partial ingress of vehicles onto private property is possible.

Driveway approaches shall be located so as to not cross a lot line extended or within 5 feet of a fire hydrant, street light or any other obstructions or curb grade items.

Where no curb exists, asphalt driveway approaches will be permitted. Asphalt driveway approaches, where allowed by the Engineer, shall be a minimum of 2-1/2, inches thick, dense graded asphaltic concrete.

No curb opening will be permitted without the installation of an appropriate driveway approach.

In commercial areas where grass parkways exist, a residential driveway approach may be used in lieu of a commercial driveway approach.

In residential areas where sidewalks and curbs are contiguous, a commercial driveway approach may be used in lieu of a residential approach.

WIDE PARKWAY DRIVEWAY APPROACHES. Where the parkway area exceeds 15 feet in width, the Contractor shall have the option of extending the wing section from the curb to any point from 5 feet behind the curb to the sidewalk. The Contractor shall contact the Engineer prior to construction.

DRIVEWAY APPROACHES THROUGH EXISTING CURB AND GUTTER. The Contractor shall conform to one of the following options:

1. Standard curb and gutter, providing gutter is not broken or otherwise damaged, a curb cutter may be used to cut curb only.
2. Standard curb and gutter found to be broken or damaged, upon inspection, shall have the entire section removed and replaced, including asphalt match-up paving of the asphalt removed to install form.

GENERAL NOTES. The following general notes shall be shown on the Title Sheet (first sheet) of every set of street improvement plans submitted:

1. All work shall conform to the "Standard Specifications for Public Works Construction (Greenbook)," latest edition including the latest supplemental amendments thereto, the "Standard Plans for Public Works Construction," latest edition including the latest supplemental amendments thereto, and the "City of Redlands Municipal Utilities and Engineering Department Standard Specifications and Detail Drawings", latest edition including the latest supplemental amendments thereto. All work shall be completed to the satisfaction of the Engineer or appointed representative.
2. The approximate locations of known existing underground utilities are shown on this plan. The utilities are plotted from record and field data. The Engineer assumes no liability as to the exact location of said lines whether shown or not shown on the plans. The Contractor is to notify all utility companies prior to work or excavation to determine the exact locations of underground lines.
3. Streets may be required to have a seal coat applied at the option of the Engineer or appointed representative. Type of seal coat is to be determined by the Engineer or appointed representative.
4. Resurface existing roadway, as directed by the Engineer or appointed representative, due to utility installations and construction damage.
5. Existing striping shall be removed and replaced as necessary. New striping and pavement markings shall be installed in accordance with the striping plan approved by the Engineer or appointed representative.
6. Curb installations at less than 0.50% grade shall have construction stakes set at 12.5 foot maximum intervals and all curb forms shall be checked for grade compliance prior to concrete pour. Maximum deviation from design profile grade at any location shall be 0.01 foot.
7. Section 4216/4217 of the Government Code requires a Dig Alert Identification Number be issued before the "Encroachment Permit" will be valid. For your Dig Alert ID Number, call Underground Service Alert at 811 or (toll free) at 1 -800-422-4133, two working days before you dig.
8. Soils report with laboratory tests of the "R" value and Soils Engineer's street structural section recommendation shall be reviewed and approved by the City prior to approval of street plans and issuance of the Encroachment Permit.
9. Asphalt concrete pavement sections on new streets greater than 3 inches thick shall be placed in a minimum of two lifts with the last lift being delayed until 95% of all developer construction has been completed.

10. The final pavement or surface layer of asphaltic concrete roadway pavement shall not be placed until all utilities and utility laterals within the roadway have been installed, compacted, tested and accepted by the City, all on-site improvements including all grading have been completed and all unacceptable parkway and roadway improvements are removed and replaced to the satisfaction of the City.
11. Prior to road construction, survey monuments shall be referenced out and Corner Records filed with the County Surveyor. Survey points destroyed during construction shall be reset, and a second Corner Record filed for those points prior to completion and acceptance of the project.

SECTION 2 – STORM DRAIN DESIGN STANDARDS

RUNOFF COMPUTATIONS. Quantities of flow to be provided for shall be computed using the Rational Method, the formula being $Q = CIA$, as described in Section D of the San Bernardino County Hydrology Manual.

During a 10-year storm, the storm runoff shall be contained within the street area between curbs while maintaining the required minimum 12 foot wide "dry" lane(s) for vehicular travel. For a two lane street, a minimum of one "dry" lane shall be required, and for a four lane street or wider, a minimum of two "dry" lanes shall be required.

All drainage facilities shall be designed to carry away all runoff from the maximum 100-year storm. The water surface elevation during the 100-year storm shall not exceed the street parkway elevation along the right-of-way line.

The design of storm drain systems for 10 year and 100 year storm event runoffs shall ignore the effects on the design storm runoffs due to the installation of any onsite retention, detention, infiltration basins, dry wells, etc., for water quality purposes.

The coefficient of runoff "C" shall be construed to be 0.80 for residential areas, 0.50 for parklands, and 1.00 for commercial or industrial areas, as defined in the San Bernardino County Hydrology Manual.

STORM DRAIN DESIGNS. All storm drainage structures, with the exception of standard gutters, shall be enclosed and shall be constructed of reinforced concrete. Grades shall be adjusted so that velocities shall not be less than 2 feet per second using Manning's Formula. Manholes shall be precast reinforced concrete, conforming to SPPWC Standard Plan Nos. 320-2 and 321-2 and shall be spaced at intervals as follows:

1. Less than 36 inch diameter storm drain - 300 feet;
2. 36 inch to 60 inch diameter storm drain - 500 feet; and
3. Greater than 60 inch diameter storm drain - 700 feet.

In addition, a manhole shall be placed at either the B.C. or E.C. of all horizontal curves and at vertical grade breaks in the storm drain system.

Existing storm drains to be covered, shall be covered with an adequate structural material. Computations for cover design in street areas shall assume an H20-S 16-44 loading, as described in the American Association of State Highway and Transportation Officials (AASHTO), standard specifications for highway bridges, with no bearing allowed on existing drain walls. Channel bottoms shall be covered with a minimum 2 inches of concrete to improve hydraulic characteristics. Channels in good condition may be retained as long as the original channel shape is undisturbed. Channels in poor condition shall be replaced according to adequate structural design allowing for a hydraulic capacity at least equal to the channel previously

existing, or the expected 50-year frequency storm, whichever is greater.

STORM DRAIN PIPES. Reinforced Concrete Pipe (RCP) with a minimum "D" load of 1,350 shall be required for all storm drain pipes, unless otherwise approved by the Engineer. The minimum size for RCP shall be 18 inches, unless otherwise approved by the Engineer.

INLET TIMES. In computing flow to any given inlet, the minimum time of concentrations shall be 10 minutes and the "n" value for flow in gutters shall be 0.016.

INTENSITY - DURATION CURVES. Rainfall intensity "I" shall be determined using intensity duration curves provided in the San Bernardino County Hydrology Manual, and that the slope of the intensity duration curve shall be assumed to be 0.65.

STORM WATER TREATMENT. The City of Redlands Storm Water Program requires that storm water discharges from new and redevelopment projects be treated for pollutants before they are discharged into the City storm drain system, including gutters. The submittal, review and approval of a Water Quality Management Plan are required. The storm water discharges are to be treated "on site" on private property before they are discharged into the City system. The "on site" treatment facility is to be maintained and operated by the property owner on which the facility or project is located. All treatment devices shall be approved by the Engineer.

CATCH BASINS. Curb opening catch basins shall conform to the dimensions, grades, lines and shall be constructed of the materials as shown in SPPWC Standard Plan No. 300-4. The minimum inlet opening size shall be 4 feet. The use of grated catch basins in the street shall not be allowed.

CURB OUTLET BOXES. Curb outlet boxes shall conform to the dimensions, grades, lines and shall be constructed of the materials as shown in Detail Drawing No. 159-0. The size of window openings shall be as required by the storm drain design.

SIDEWALK CULVERTS. Sidewalk culverts shall conform to the design as shown in SPPWC Standard Plan No. 150-4 for curb drains or Standard Plan No. 151-3 for reinforced concrete decks.

STRUCTURES. Junction structures, transition structures, and storm drain manholes needed within the drainage system are to be SPPWC Standard, unless otherwise approved by the Engineer.

SECTION 3 – STREET LIGHT DESIGN STANDARDS

STREET LIGHT PLAN. A separate, standalone street light plan shall be required for all street lights to be installed. The plan shall include the general notes, locations of street lights identified by street stations, conduit runs and sizes, service point locations, service pedestals, locations of any existing street lights and all existing and proposed street trees, traffic signal poles, overhead utility poles, and underground utilities.

STREET LIGHTS. Street lights shall be designed and constructed in accordance with Detail Drawing No. 459-1. Any deviation in height of the street light standard shall be approved by the Engineer and constructed in accordance with Detail Drawing No. 459-1. Required permits shall be obtained prior to street light installation.

SERVICE AND FEED POINTS. It shall be the responsibility of the design engineer to propose a location for each power feed point for street lights or traffic signals to the Southern California Edison Company (SCE) Service Planner and obtain approval from SCE.

All feed points to street lights shall be from an electrical pedestal. Connections to feed points shall be shown on the project plans.

The Contractor shall furnish and install all appurtenances at the feed points as necessary or required by SCE for completion of the power supply, all as specified in the Construction Standards.

SPACING OF STREET LIGHT STANDARDS. Spacing of street lights standards shall be as follows:

1. Roadway width of 40 feet or less - street light standards shall be placed on one side of the street to match adjacent conditions, if any, and be spaced at 240 feet, plus or minus 15 feet. 100 watt luminaires shall be installed;
2. Roadway width of 41 feet to 64 feet - street light standards shall be placed on one side of the street to match adjacent conditions, if any, and be spaced at 265 feet, plus or minus 15 feet. 150 watt luminaires shall be installed; and
3. Roadway width of 65 feet or greater - street light standards shall be spaced at 215 feet, plus or minus 15 feet, on both sides of the street diagonally from one another. 150 watt luminaires shall be installed.

Street light standards shall be placed diagonally opposed at intersections involving two 64 foot or wider streets.

Spacing of street light standards may be modified at the option of the Engineer or appointed representative.

GENERAL NOTES. The following general notes shall be shown on the Title Sheet (first sheet) of every set of plans submitted to the Municipal Utilities and Engineering Department:

1. All work shall conform to the "Standard Specifications for Public Works Construction (Greenbook)," latest edition including the latest supplemental amendments thereto, the "Standard Plans for Public Works Construction," latest edition including the latest supplemental amendments thereto, and the City of Redlands Municipal Utilities and Engineering Department Standard Specifications and Detail Drawings, latest edition including the latest supplemental amendments thereto. All work shall be completed to the satisfaction of the Municipal Utilities and Engineering Department Director or appointed representative.
2. The approximate locations of known existing underground utilities and overhead utilities and lines are shown on this plan. The utilities are plotted from record and field data. The Engineer assumes no liability as to the exact location of said lines whether shown or not shown on the plans. The Contractor is to notify all utility companies prior to work or excavation to determine the exact locations of underground lines.
3. Section 4216/4217 of the Government Code requires a Dig Alert Identification Number be issued before the "Encroachment Permit" will be valid. For your Dig Alert ID Number, call Underground Service Alert at 811 or (toll free) at 1-800-422-4133, two working days before you dig.
4. Street lights shall be designed and constructed in accordance with Detail Drawing No. 459-1. Any deviation in height of the street light standard shall be approved by the Engineer. Required permits shall be obtained prior to street light installation.
5. All feed points to street lights shall be from an electrical pedestal. Connections to feed points shall be shown on the plans. No more than ten (10) street lights, in series, will be allowed from a pedestal.
6. It shall be the responsibility of the design engineer to propose a location for each power feed point for street lights to the Southern California Edison Company (SCE) Service Planner and obtain approval from SCE.
7. Street lights shall be installed by a licensed contractor as stipulated in the Technical Provisions.
8. The Contractor shall furnish and install all appurtenances at the feed points as necessary or required by SCE for completion of the power supply, all as specified.
9. Install LED street light(s) General Electric ERL1-0-04-D5-30-A-GRAY, ERL1-0-06-D5-30-A-GRAY, ERL1-0-11-D5-30-A-GRAY with the equivalent illumination of a 100, 150 or 200 watt sodium vapor street light respectively as noted in the conditions of approval.

SECTION 4 – TRAFFIC SIGNAL DESIGN STANDARDS

TRAFFIC SIGNALS. All traffic signal systems shall be video detection system type, unless otherwise approved by the Engineer.

Conduit size shall be 3.85 times the size of wire(s) in the conduit and at no time shall be less than 1-1/2, inches in diameter. Wire shall be cable type.

Controller shall be "Eagle Traffic Control System" and cabinet shall be "Synchronex NEMA Cabinet, Size P" or approved equals.

Each traffic signal system shall be provided with an "Uninterruptible Power Supply" (UPS) system as manufactured by Clary Corporation, or approved equal.

All signal heads shall be 12-inch (305 mm) LED type.

Pedestrian signals, 200-watt luminaries, and mast arm mounted street name signs are required.

All traffic signal plans shall include a phase diagram, conductor and conduit schedule, pole and equipment schedule, construction notes and details, as a minimum.

Striping plans shall be prepared for the intersection in accordance with the Caltrans Traffic Manual. All striping shall be accomplished with paint and no thermoplastic shall be used, unless otherwise approved by the Engineer.

SECTION 5 – GRADING PLAN DESIGN STANDARDS

GRADING PLAN GENERAL NOTES

1. All grading and on-site construction shall meet the minimum requirements of the latest edition of the California Building Code. These codes are amended in the City of Redlands Municipal Code. If contradictions arise between provisions in these plans from those in the various codes, the most restrictive provisions will govern.
2. After the grading permit has been issued, the project manager shall convene an on-site preconstruction meeting with the City of Redlands Inspector, the engineer of record, the geotechnical engineer and the grading contractor. At this meeting, the project superintendent shall be identified and an emergency contact person shall be identified to the Inspector.
3. Use Best Management Practices (BMPs) to prevent and contain illegal discharges within the project boundary. This will be in effect for the entire duration of the project construction to its completion.
4. Building permits shall not be issued until the project site has been graded and the engineer of record has certified to the satisfaction of the Engineer that the site has been prepared according to the recommendations of the soils report(s) and to the specifications of the approved grading plans. In addition, a final compaction report shall be submitted to both the Inspector and the Building Official for approval.
5. A written report by a geotechnical engineer is to be furnished to both the City's Municipal Utilities and Engineering Department and Building and Safety Division, to certify that all fill material and material upon which fill is to be placed is adequate to support the loads of the proposed development. This report shall include soil test data on all fills of two feet or more.
6. Preparation of the site shall be accomplished in accordance with the instructions of a geotechnical engineer and all fills will be made under his direction.
7. In no case is any slope to exceed a gradient of two horizontal to one vertical (2:1).
8. The engineer of record assumes no liability for the existence and locations of underground utility lines, structures or irrigation lines. The contractor is to make an on-site inspection and notify all utility and irrigation companies prior to work or excavation to determine the exact location of any and all underground facilities.
9. The contractor shall be familiar with and responsible for clearing the site in preparation for construction.
10. The engineer's estimate is _____cy of excavation and _____cy of embankment for the site grading. These are raw quantities without allowances for loss, shrinkage or compaction.

11. Install fire hydrants as required prior to the delivery of any building material to the site.
12. Benchmark: Enter project specific data here. Elevation:
13. All slopes three feet or greater must be landscaped and irrigated prior to occupancy.
14. Acreage of the project is: acre(s).
15. Approval of this plan does not constitute approval for the construction of any walls, sidewalks, slabs, paving, etc. to be constructed on-site as shown hereon. A separate permit is required from the Building and Safety Division for the construction of these on-site items.
16. All earthwork shall conform to the preliminary geotechnical and/or geologic investigation report for _____ prepared by _____, dated _____ .
17. The engineer of record must set grade stakes for all drainage devices.
18. The contractor shall obtain all necessary inspections prior to pouring any concrete.

SECTION 6 – STREET TREE DESIGN STANDARDS

STREET TREE PLAN. A separate, standalone street tree plan shall be required for all street trees to be installed. The plan shall include the general notes, locations of street trees identified by street stations, locations of all existing and proposed street lights, traffic signal poles, overhead utility poles, and underground utilities.

SPACING. Street trees shall be planted every 40 feet, except as required by a Specific Plan. Location may vary 5 feet to avoid underground utility locations. It is the developer's responsibility to locate trees to avoid conflicts with underground utility locations. Trees shall be planted so as not to block any visibility of traffic signage (permanent or temporary) to be posted on the project.

TYPES OF TREE. Street tree types shall be as determined by the Engineer on a street by street basis. Tree types shall be as listed on the City's approved Primary Street Tree List.

PLANTING. All planting of street trees shall be in accordance with the Standard Specifications, Standard Plans and SPPWC Standard Plan Nos. 518-4 and 520-5, if applicable. Only approved trees shall be planted within City right-of-way or on City property. All street trees shall be maintained by the City and trees on private property shall be maintained by the property owner. A separate Street Tree Permit issued by the Municipal Utilities and Engineering Department or Facilities and Community Services Department shall be required prior to the installation of street trees.

GENERAL NOTES. The following general notes shall be shown on the Title Sheet (first sheet) of every set of plans submitted to the Municipal Utilities and Engineering Department:

1. All work shall conform to the "Standard Specifications for Public Works Construction (Greenbook)," latest edition including the latest supplemental amendments thereto, the "Standard Plans for Public Works Construction," latest edition including the latest supplemental amendments thereto, and the City of Redlands Municipal Utilities and Engineering Works Department Standard Specifications and Detail Drawings, latest edition including the latest supplemental amendments thereto. All work shall be completed to the satisfaction of the Municipal Utilities and Engineering Department Director or appointed representative.
2. The approximate locations of known existing underground utilities and overhead utilities and lines are shown on this plan. The utilities are plotted from record and field data. The engineer assumes no liability as to the exact location of said lines whether shown or not shown on the plans. The Contractor is to notify all utility companies prior to work or excavation to determine the exact locations of underground lines.
3. Section 4216/4217 of the Government Code requires a Dig Alert Identification Number be issued before the "Encroachment Permit" will be valid. For your Dig Alert ID Number, call Underground Service Alert at 811 or (toll free) at 1-800-422-4133, two working days before you dig.

4. Street trees shall be planted every 40 feet, unless otherwise required by a Specific Plan. Location may vary 5 feet to avoid underground or overhead utility locations. It is the developer's responsibility to locate trees to avoid conflicts with underground or overhead utility locations. Trees shall be planted so as not to block any visibility of traffic signage (permanent or temporary) to be posted on the project.
5. Street tree types shall be determined by the Engineer on a street by street basis. Tree types shall be as listed on the City's approved Primary Street Tree List.
6. All planting of street trees shall be in accordance with the Standard Specifications, Standard Plans, and SPPWC Standard Plan Nos. 518-4 and 520-5, if applicable. Only approved trees shall be planted within City right-of-way or on City property. All street trees shall be maintained by City and trees on private property shall be maintained by the property owner.
7. Prior to the installation of street trees, a "Public Tree Encroachment Permit" must be obtained from the City.

SECTION 7 – EROSION CONTROL PLAN DESIGN STANDARDS

EROSION CONTROL PLAN GENERAL NOTES

1. A standby crew for emergency work shall be available at all times during the rainy season. Necessary materials shall be available on site and stockpiled at convenient locations to facilitate rapid construction of temporary erosion control devices or to repair any damaged erosion control measures, especially when rain event is imminent.
2. Device shall not be moved or modified without the approval of the City inspector.
3. All protective devices shown shall be in place at the end of each work day as well as through weekends and holidays.
4. After a rain storm, all silt and debris shall be removed from check berms, desilting basins and other erosion control devices.
5. Any graded slope surface protection measure damaged during a rain storm shall be repaired immediately.
6. Fill slopes at construction site perimeter must drain away from the top of the slopes at the end of each work day.
7. A copy of the project's Stormwater Pollution Prevention Plan (SWPPP) shall be maintained at the construction site and be always available for review.
8. Protect all storm drainage structures from sediment clogging by providing inlet protection at all openings.
9. Avoid conducting construction work during wet weather.
10. Store construction related materials away from drainage courses to prevent contact with storm water.
11. Place drip pans or absorbent materials under construction equipment when not in use.
12. Clean up leaks and spills immediately using absorbent materials and dispose of properly.
13. Collect and remove all broken asphalt from the site. Removed asphalt must be disposed of properly.
14. Keep work site clean and orderly on daily basis.
15. Properly store paints and solvents.
16. Permanently mark storm drain structures in a manner approved by the City construction

inspector to minimize inadvertent disposal of residual paints, solvents or any other pollutants.

17. Allow construction related material delivery and storage only in designated areas and avoid transport near drainage paths and waterways.
18. Minimize the use of hazardous material on site.
19. WDID No. _____.
20. Use watertight dumpsters for trash and construction waste.
21. Collect site trash as needed, especially during rainy or windy conditions. Arrange for regular waste collection before containers overflow.
22. Paint brushes or containers are to be cleaned out only at the designated area, which provides for the full containment of paint laden liquid and residue for proper disposal.
23. Perform washout of concrete trucks in designated areas only. Washout areas shall be located away from storm drains, open ditches, streets or any drainage course.
24. Temporary sanitation facilities shall be maintained in good working order by a licensed maintenance service provider.
25. Contractor shall be responsible for updating this plan throughout construction and indicate any and all revisions/updates on this plan.
26. Contractor shall conduct his operations in a manner that stormwater will be contained within the project area or channeled into storm drain system provided that drainage is free of pollutants, sediments and debris.
27. City approval of plans does not relieve the developer from correcting errors or omissions discovered during construction. Conformance with the requirements of this plan shall in no way relieve the developer from his/her responsibilities to the site and adjacent properties.
28. Temporary erosion control shall consist of, but not limited to, constructing such facilities and taking such measures as are necessary to prevent, control and abate water, mud and erosion damage to public and private property as a result of the construction on this property.
29. Clearing and grubbing should be limited to areas that will receive immediate grading. Erosion control measure shall be implemented to protect areas which have been cleared and grubbed. These measures may include but shall not be limited to; graded ditches, sand or gravel bags, barriers and silt fencing. Care shall be exercised to preserve vegetation beyond limits of grading and prevent sediment discharge while construction is in progress in the area.

30. Sediment control shall be used at the toe of any erodible slope.
31. Contractor shall immediately restore any damaged erosion control measure in the area disturbed by construction activities.
32. Faces of finished cut and fill slopes shall be prepared and maintained to control against erosion. These permanent erosion control measures may consist of adequate seeding, planting and jute matting. The protection for the slopes shall be installed as soon as practicable and prior to calling for final approval.
33. The permittee and contractor shall be responsible and take necessary precautions to prevent public trespass onto areas where impounded water creates a hazardous condition.
34. Contractor/subcontractor shall be familiar with and trained in sediment and erosion control in accordance with the California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook.

SECTION 8 – PLAN SUBMITTAL REQUIREMENTS

Developer shall submit plans on separate sheets for the following work:

1. Cover sheet(s) - showing area map, vicinity map, general notes, construction notes, engineer's estimated quantities, benchmark data, etc.
2. Street Improvement sheet(s) - showing plan and profile views and all necessary information for street construction including necessary overlay data for other work on the project.
3. Storm Drain Improvement sheet(s) - showing plan and profile views and all necessary information for storm drain construction including necessary overlay data for other work on the project.
4. Street Light Improvement sheet(s) - showing all necessary information for street light construction including necessary overlay data for other work on the project. This plan shall show all underground and overhead utilities and lines.
5. Street Tree Planting sheet(s) - showing all necessary information for street tree location and planting construction including necessary overlay data for other work on the project. This plan shall show all underground and overhead utilities and lines.
6. Traffic Signal Improvement sheet(s)- showing all necessary information for traffic signal construction including necessary overlay data for other work on the project. This plan shall show all underground and overhead utilities and lines.
7. Striping sheet(s) - showing all necessary information for installation of striping and/or re-striping.
8. Grading Plan sheet(s) - showing all necessary information for construction of grading including necessary overlay data for other work on the project. The grading plan set shall include a separate sheet for the Storm Water Pollution Prevention Plan.
9. Sewer System Improvement sheet(s) - showing all necessary information for sewer system construction including necessary overlay data for other work on the project. This plan shall show all underground utilities and lines.
10. Water System Improvement sheet(s) - showing all necessary information for potable water system construction including necessary overlay data for other work on the project. This plan shall show all underground utilities and lines.
11. Irrigation and Non-Potable Water System Improvement sheet(s) - showing all necessary information for irrigation and non-potable water system construction including necessary overlay data for other work on the project. This plan shall show all underground utilities and lines.

12. Plans shall be numbered by the design engineer, before final submittal, as follows:

A. City staff will assign the drawing number to be placed within the Title Block as shown and specified in these Design Standards. The numbering sequence for plans shall be "#### - XX - # / #" where:

1. #### is the numeric drawing number assigned by City staff.
2. XX is an alpha designation for the type of plan:
 - (a) ST shall designate Street Improvement sheet(s);
 - (b) SD shall designate Storm Drain Improvement sheet(s);
 - (c) SL shall designate Street Light Improvement sheet(s);
 - (d) TP shall designate Street Tree Planting sheet(s);
 - (e) TS shall designate Traffic Signal and Striping Plan Improvement sheet(s);
 - (f) IS shall designate Irrigation Water System Improvement sheet(s);
 - (g) GP shall designate Rough Grading Plan sheet(s);
 - (h) PG shall designate Precise Grading Plan sheet(s);
 - (i) SP shall designate Storm Water Pollution Prevention Plan sheet(s);
and
 - (j) When Water System Improvement sheet(s), Sewer System Improvement sheet(s) and Non-Potable Water System Improvement sheet(s) are to be included as a part of the project, the design engineer shall contact the Municipal Utilities Department for drawing numbers.
3. # / # is the numeric sheet number for each set contained in "A" above. The first number is the sheet number for a particular sheet and the second number is the total number of sheets in that set.

B. For example:

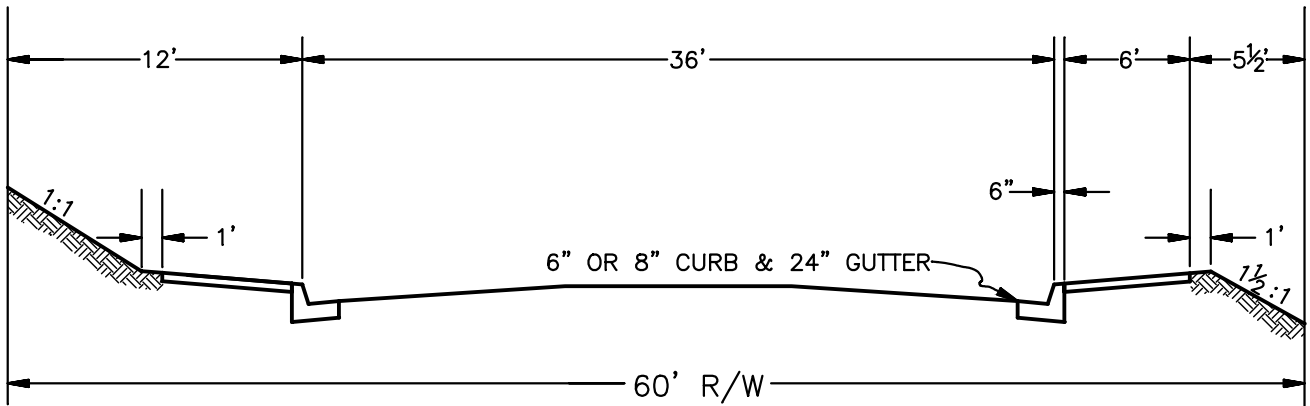
1. 1234 - ST - 1 / 5 indicates the following: 1234 shall be the City assigned drawing number and shall remain the same for all subsections of "A-2" above for a specific project; ST designates the drawings as street improvement plans; and 1 / 5 indicates the particular sheet is sheet one of five drawings of street improvement plans.
2. 1234 - SD - 3 / 4 indicates the following: 1234 indicates it is a part of the specific project assigned 1234 by the City; SD designates the drawings as storm drain improvement plans; and 3 / 4 indicates the particular sheet is sheet three of four drawings of storm drain improvement plans.

SECTION 9 – DESIGN DETAIL DRAWINGS

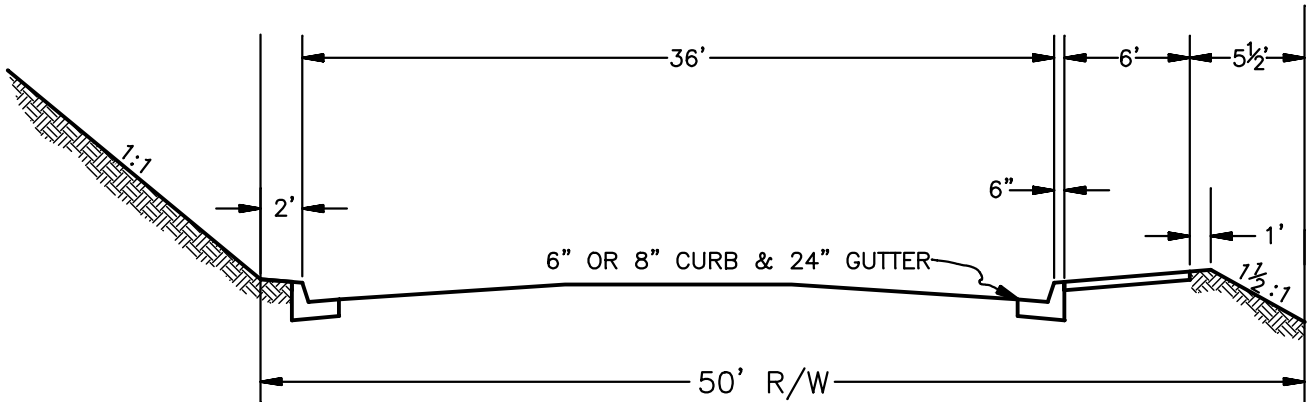
All design detail drawings are in English units. Design engineer shall be responsible for conversions to metric units as necessary to meet dimensions shown.

<u>Std. Dwg. Number</u>	<u>Description</u>
701-0	Standard Street Width
702-0	Cul-de-sac Street Width
703-0	Typical Street Cross Section
704-0	Right Angle Turn
705-0	Typical Sidewalk Intersection
720-0	Standard Title and Revision Block

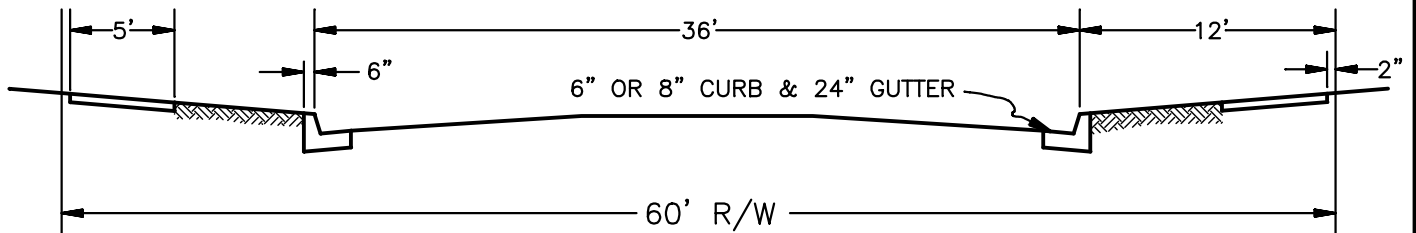
THIS PAGE INTENTIONALLY LEFT BLANK



HILLSIDE



HILLSIDE



RESIDENTIAL

NOTE: STREET DIMENSIONS TO TOP OF CURB FACE.
TRAFFIC INDEX - 4.5 UNLESS OTHERWISE SPECIFIED.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

STANDARD STREET WIDTHS
FOR LOCAL STREETS

STD. DWG. NUMBER

701-0

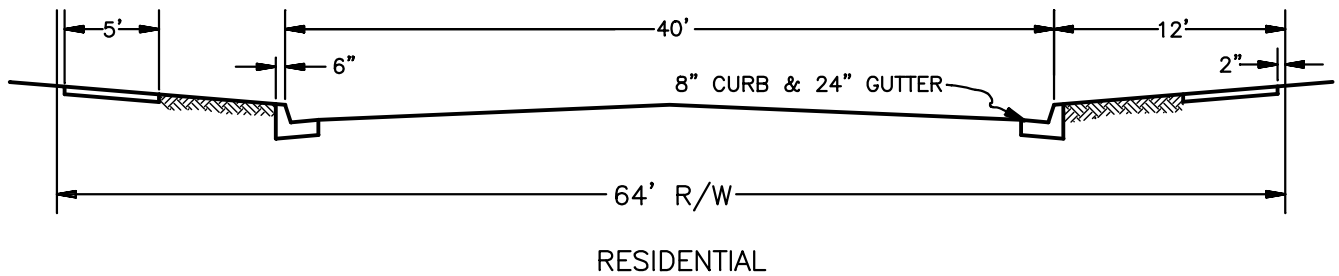
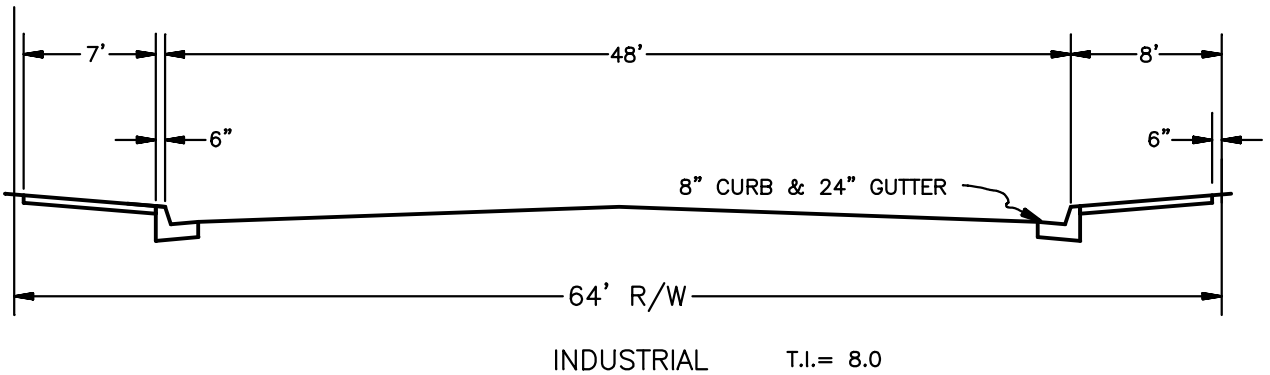
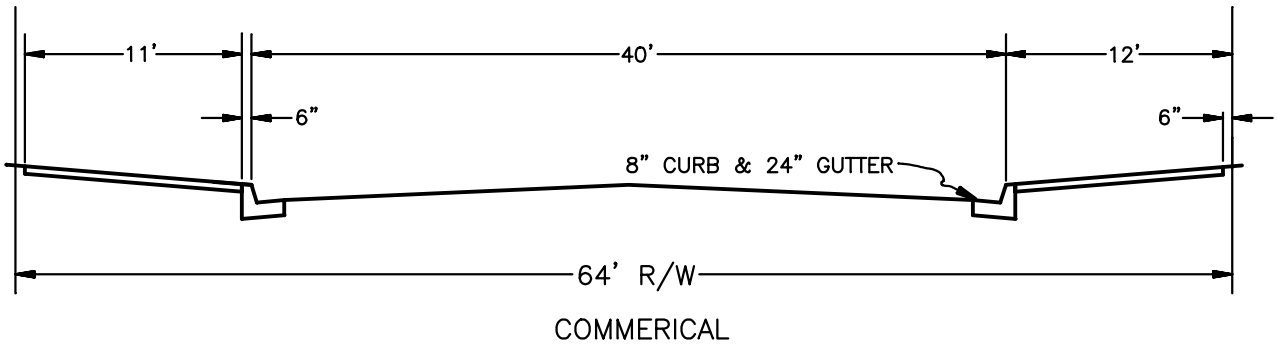
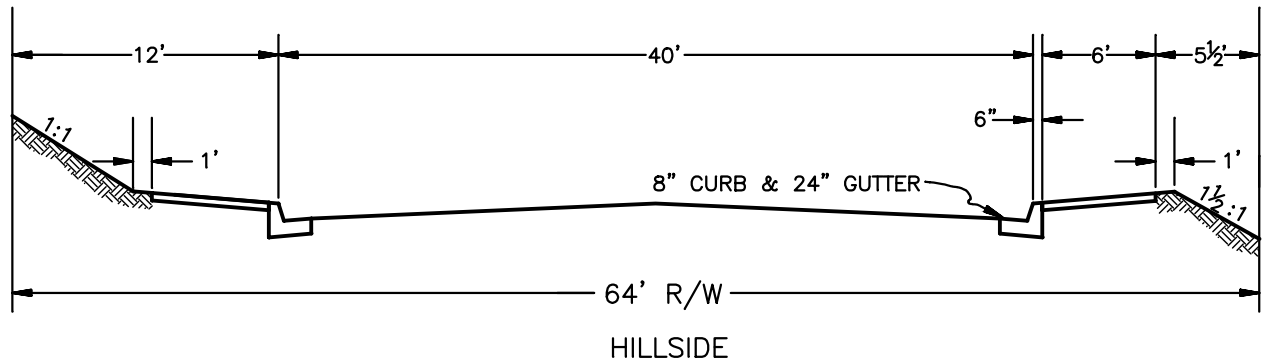
APPROVED:

DATE: 01/03/2023

Goutam K. Dobby, City Engineer RCE 75646

SHEET 1 OF 4

REV.	BY	DATE



NOTE: STREET DIMENSIONS TO TOP OF CURB FACE.
TRAFFIC INDEX - 5.5 UNLESS OTHERWISE SPECIFIED.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**STANDARD STREET WIDTHS
FOR LOCAL STREETS**

STD. DWG.
NUMBER

701-0

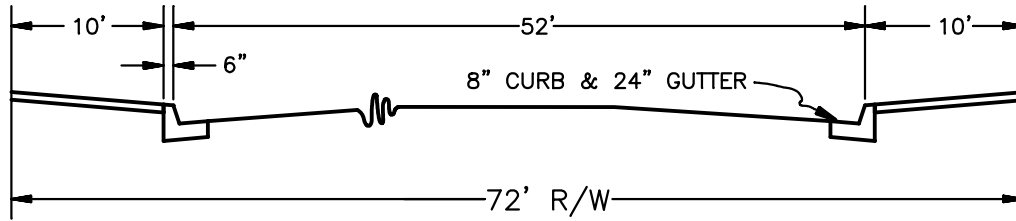
APPROVED:

DATE: 01/03/2023

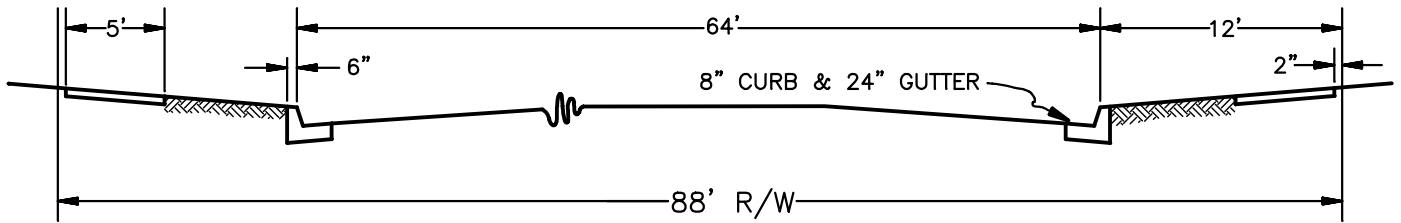
Goutam K. Dobby, City Engineer RCE 75646

SHEET 2 OF 4

REV.	BY	DATE



2 LANES AND LEFT TURN



4 LANES UNDIVIDED

NOTE: STREET DIMENSIONS TO TOP OF CURB FACE.
TRAFFIC INDEX - 7.0 TO 9.0 AS SPECIFIED.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

STANDARD STREET WIDTHS

MINOR ARTERIAL

STD. DWG. NUMBER

701-0

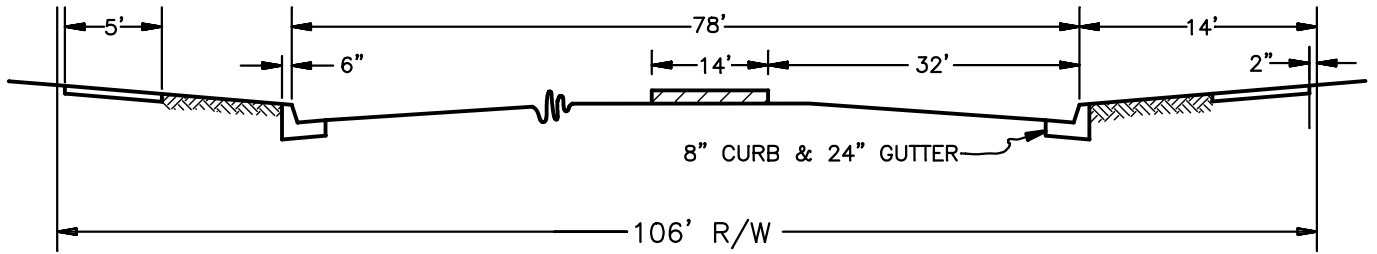
APPROVED:

DATE: 01/03/2023

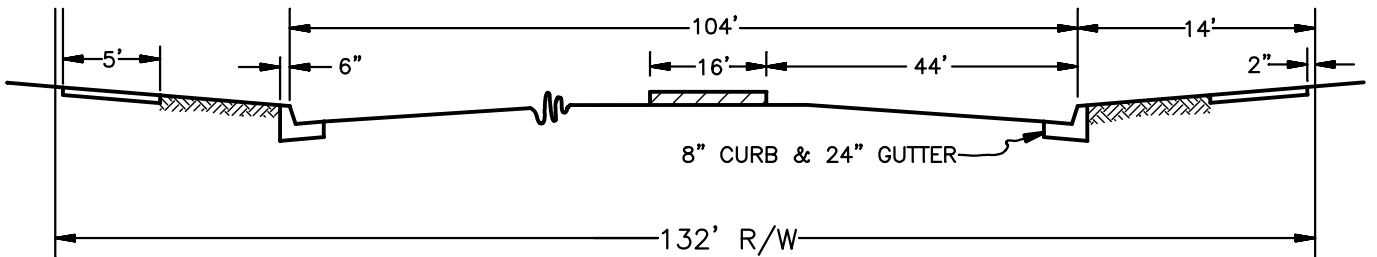
Goutam K. Dobey, City Engineer RCE 75646

SHEET 3 OF 4

REV.	BY	DATE



4 LANES DIVIDED



6 LANES DIVIDED

NOTE: STREET DIMENSIONS TO TOP OF CURB FACE.
TRAFFIC INDEX - 7.0 TO 9.0 AS SPECIFIED.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

STANDARD STREET WIDTHS

MAJOR ARTERIAL

STD. DWG. NUMBER

701-0

APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 4 OF 4

REV.	BY	DATE

TYPICAL INSTALLATION OF
RESIDENTIAL DRIVEWAY
APPROACH

PROPERTY LINE

SIDEWALK

CURB DATA:
 $\Delta = 263^{\circ}18'58''$
 $R = 40.00'$

90°

$R = 40'$

$R = 52'$

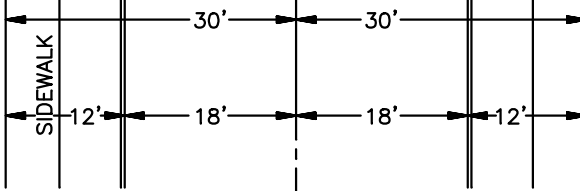
$R = 47'$

CURB DATA:
 $\Delta = 41^{\circ}39'29''$
 $T = 17.88'$
 $R = 47.00'$

$R = 35'$

57.83'

90°



PLAN VIEW

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

"CUL-DE-SAC" FOR 60' STREET

STD. DWG.
NUMBER

702-0

APPROVED:

DATE: 01/03/2023

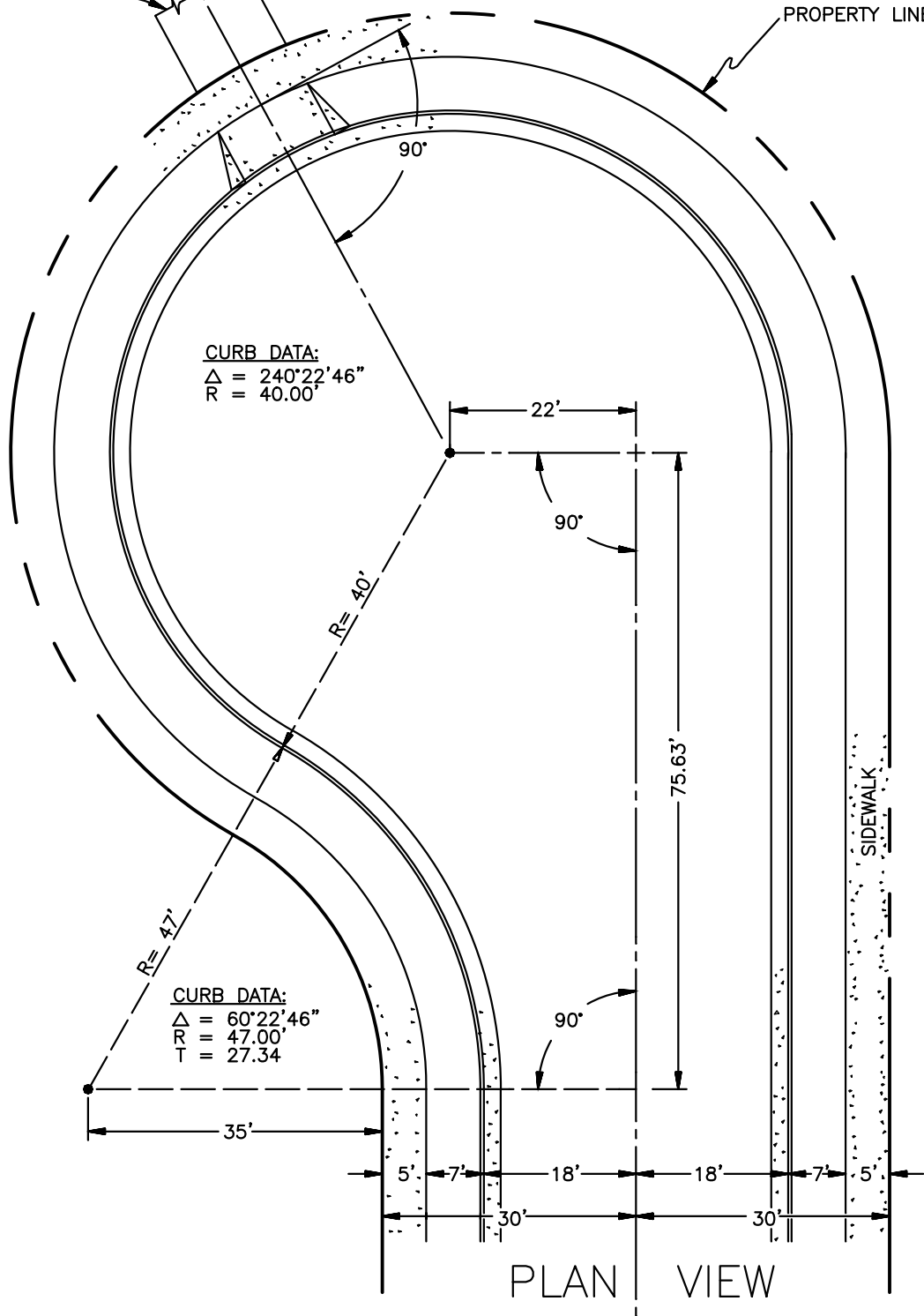
Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 2

REV.	BY	DATE

TYPICAL INSTALLATION
OF RESIDENTIAL DRIVE-
WAY APPROACH

PROPERTY LINE



CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

OFFSET "CUL-DE-SAC" FOR 60' STREET

STD. DWG.
NUMBER

702-0

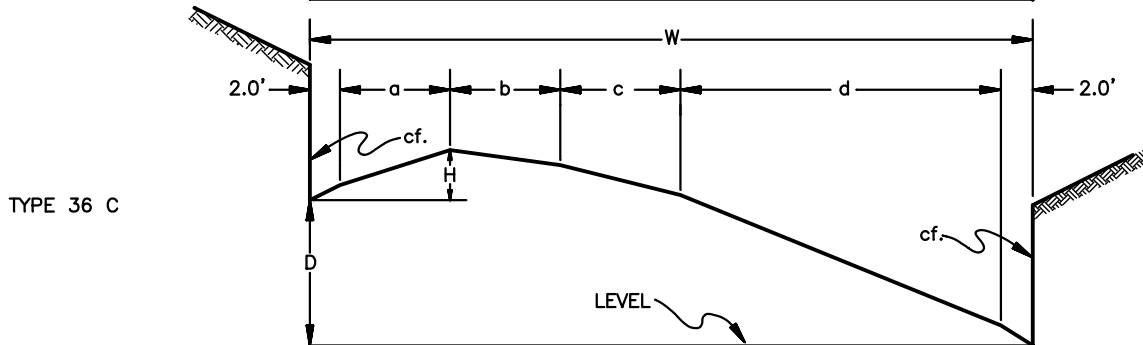
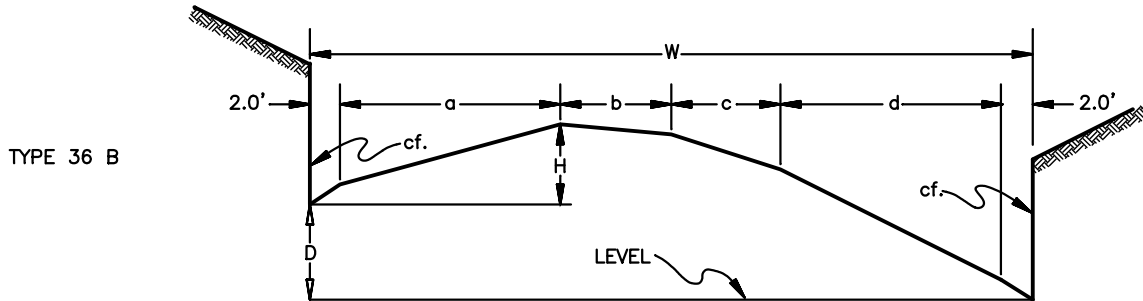
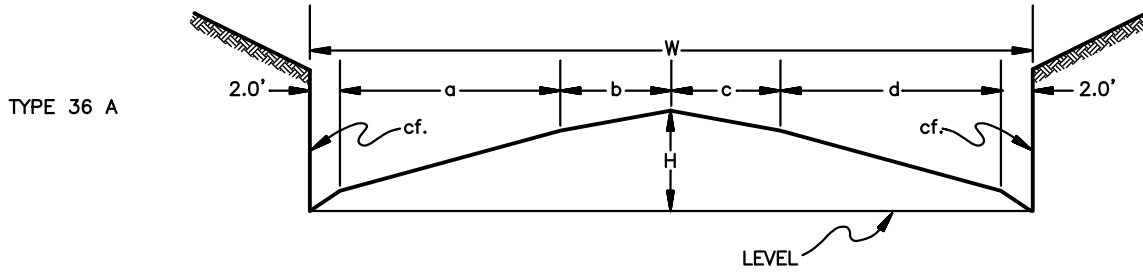
APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 2 OF 2

REV.	BY	DATE



TYPE	W	D	H	a		b		c		d	
				%	W	%	W	%	W	%	W
36 A	36'	0	0.47'	2.57	10.5'	1.50	5.5'	1.50	5.5'	2.57	10.5'
36 B	36'	0.50'	0.42'	2.86	10.5'	1.00	5'	3.00	6'	5.43	10.5'
36 C	36'	0.75'	0.27'	3.33	4.5'	1.00	6'	2.50	6'	4.45	15.5'

NOTE: c.f. = CURB FACE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL
STREET CROSS SECTIONS

STD. DWG.
NUMBER

703-0

APPROVED:

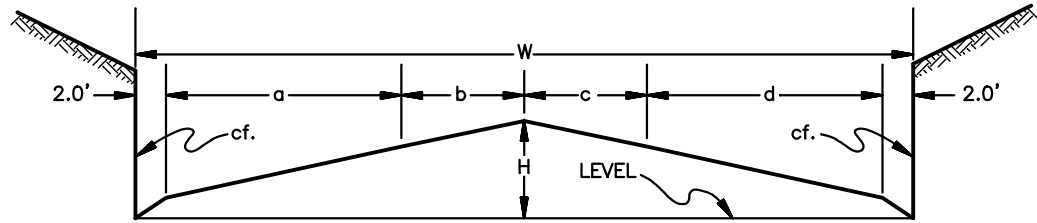
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

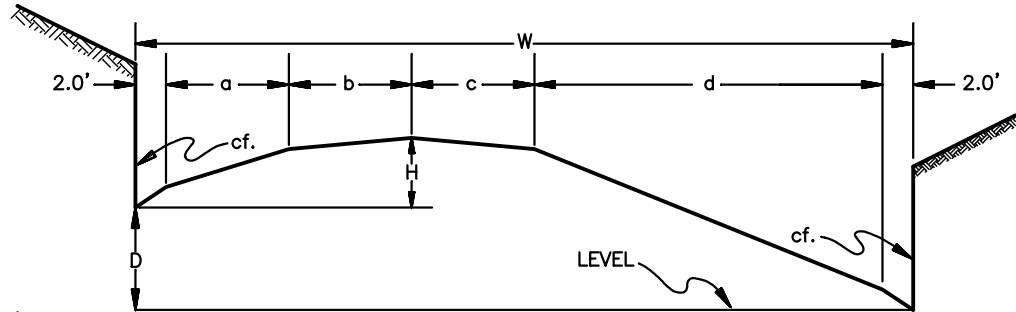
SHEET 1 OF 5

REV.	BY	DATE

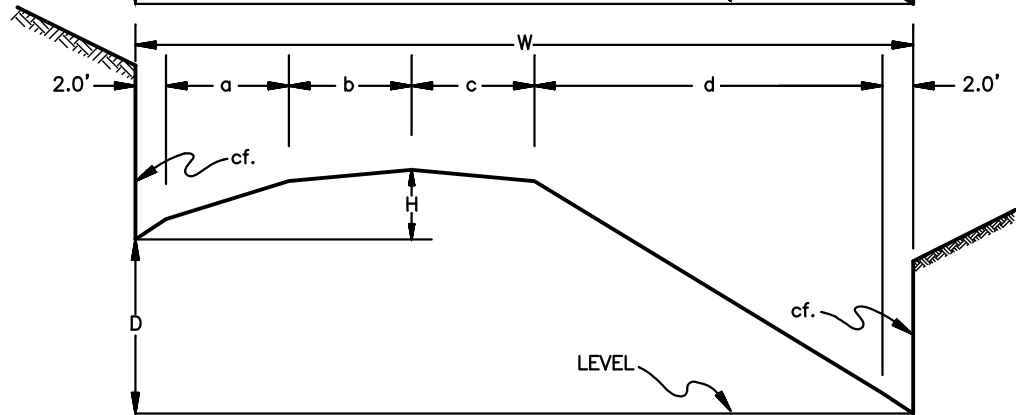
TYPE 40 A



TYPE 40 B



TYPE 40 C



TYPE	W	D	H	a		b		c		d	
				%	W	%	W	%	W	%	W
40 A	40'	0	0.47'	2.08	12'	1.50	6'	1.50	6'	2.08	12'
40 B	40'	0.50'	0.34'	2.50	6'	1.00	6'	1.00	6'	3.61	18'
40 C	40'	0.83'	0.34'	2.50	6'	1.00	6'	2.00	6'	5.11	18'

NOTE: c.f. = CURB FACE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL
STREET CROSS SECTIONS

STD. DWG.
NUMBER

703-0

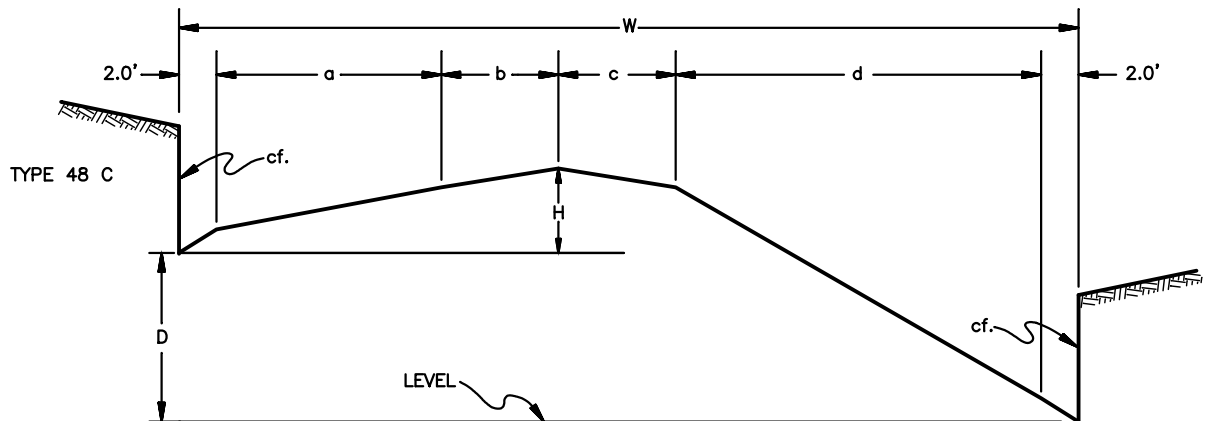
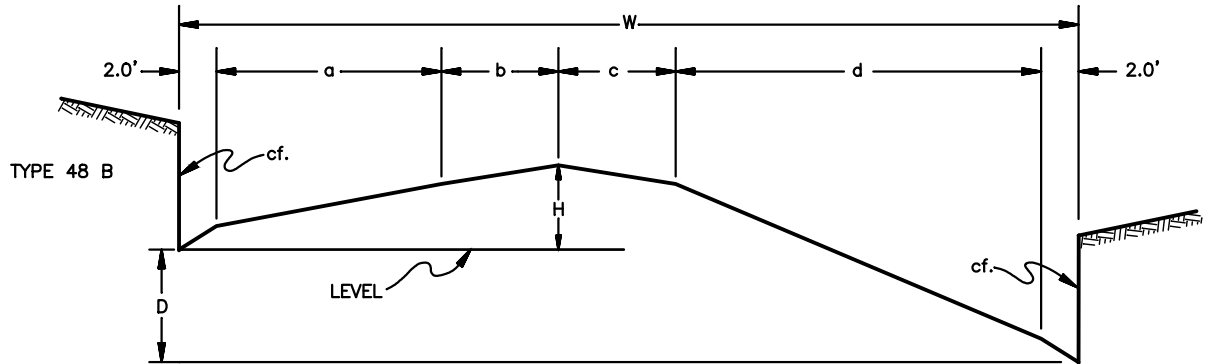
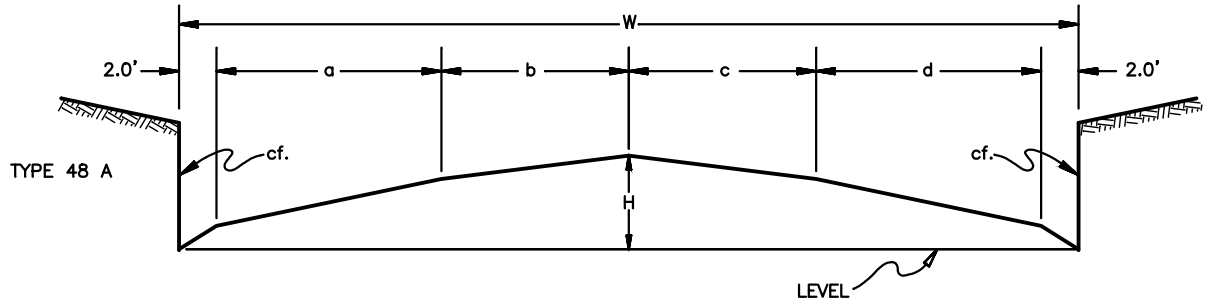
APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 2 OF 5

REV.	BY	DATE



TYPE	W	D	H	a		b		c		d	
				%	W	%	W	%	W	%	W
48 A	48'	0	0.49'	2.00	12'	1.25	10'	1.25	10'	2.00	12'
48 B	48'	0.6'	0.45'	2.12	12'	1.00	6'	1.50	6'	4.15	20'
48 C	48'	0.9'	0.45'	2.17	12'	1.00	6'	1.50	6'	5.65	20'

NOTE: c.f. = CURB FACE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL
STREET CROSS SECTIONS

STD. DWG.
NUMBER

703-0

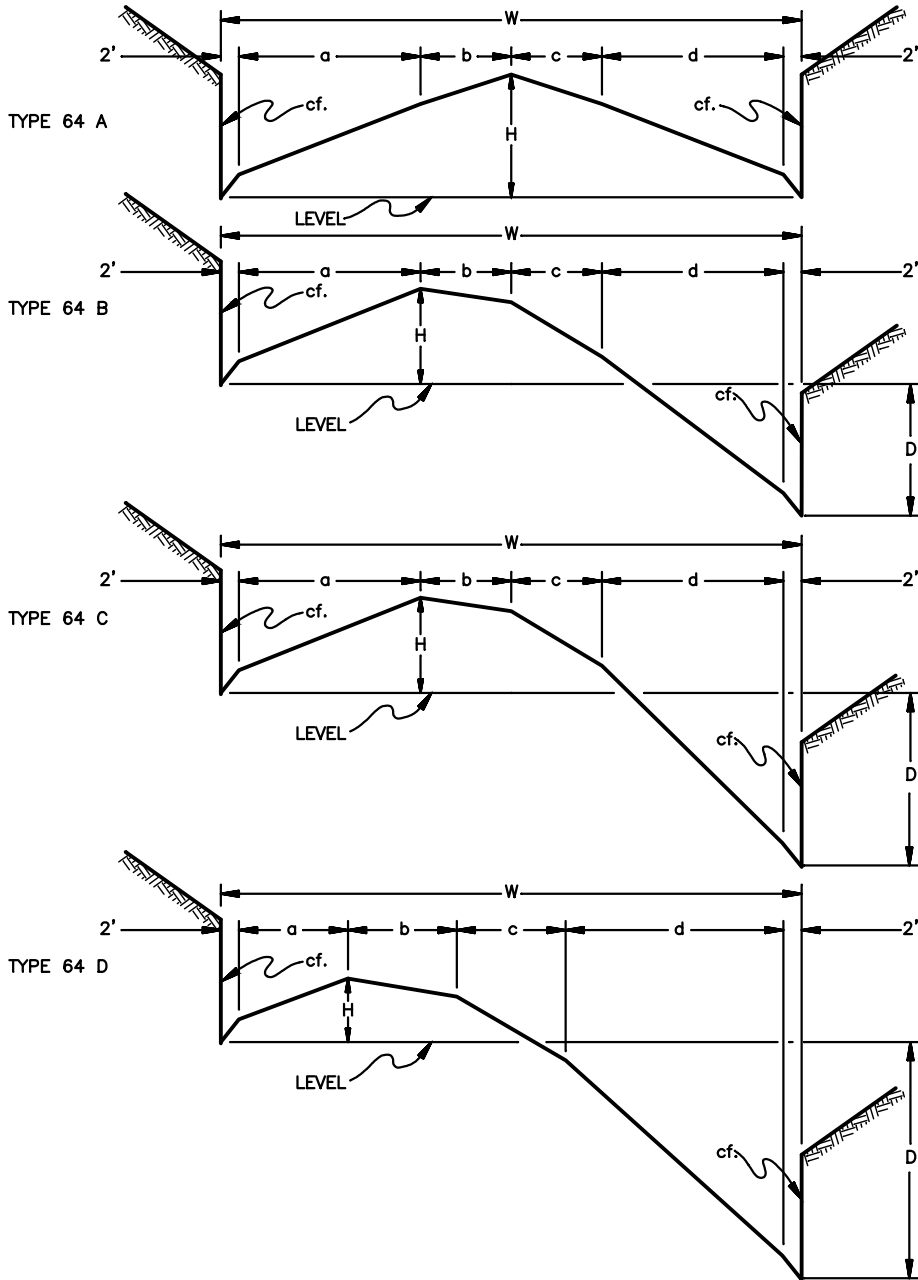
APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 3 OF 5

REV.	BY	DATE



TYPE	W	D	H	a		b		c		d	
				%	W	%	W	%	W	%	W
64 A	64'	0'	0.67'	1.95	20'	1.50	10'	1.50	10'	1.95	20'
64 B	64'	.75'	0.55'	2.10	20'	1.00	10'	3.00	10'	3.85	20'
64 C	64'	1.00'	0.55'	2.10	20'	1.00	10'	3.00	10'	5.10	20'
64 D	64'	1.33'	0.35'	1.83	12'	1.00	12'	3.00	12'	4.46	24'

NOTE: c.f. = CURB FACE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL
STREET CROSS SECTIONS

STD. DWG.
NUMBER

703-0

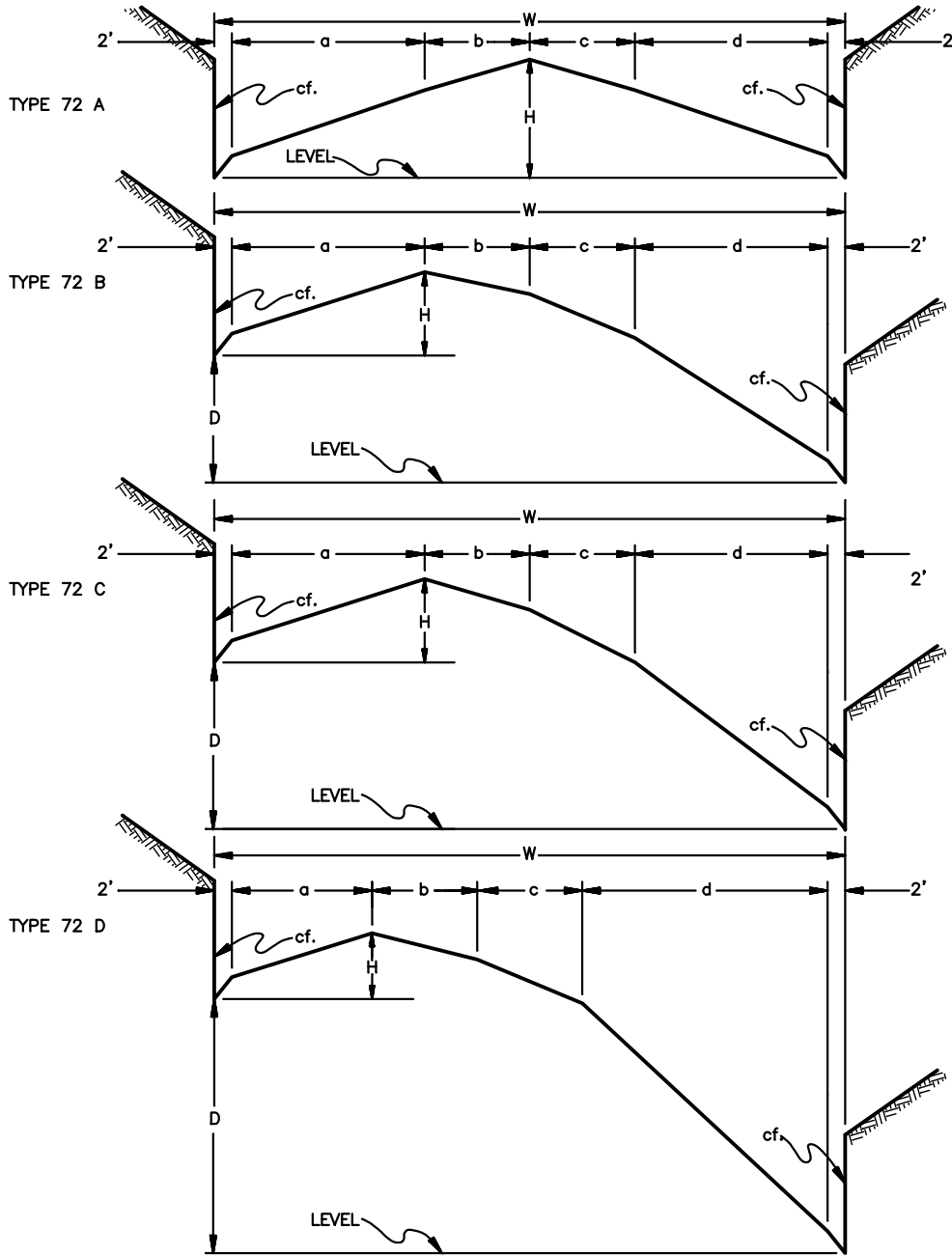
APPROVED:

DATE: 01/03/2023

Goutam K. Dobby, City Engineer RCE 75646

SHEET 4 OF 5

REV.	BY	DATE



TYPE	a		b		c		d				
	W	D	H	%	W	%	W	%	W	%	W
72 A	72'	0'	.67'	1.64	22'	1.50	12'	1.50	12'	1.64	22'
72 B	72'	.75'	.48'	1.59	22'	1.00	12'	2.00	12'	3.36	22'
72 C	72'	1.00'	.48'	1.59	22'	1.00	12'	3.00	12'	3.95	22'
72 D	72'	1.50'	.36'	1.44	16'	1.00	12'	2.00	12'	4.89	28'

NOTE: c.f. = CURB FACE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL
STREET CROSS SECTIONS

STD. DWG.
NUMBER

703-0

APPROVED:

DATE: 01/03/2023

Goutam K. Dobby, City Engineer RCE 75646

SHEET 5 OF 5

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

TYPICAL INSTALLATION,
RESIDENTIAL DRIVEWAY
APPROACH.

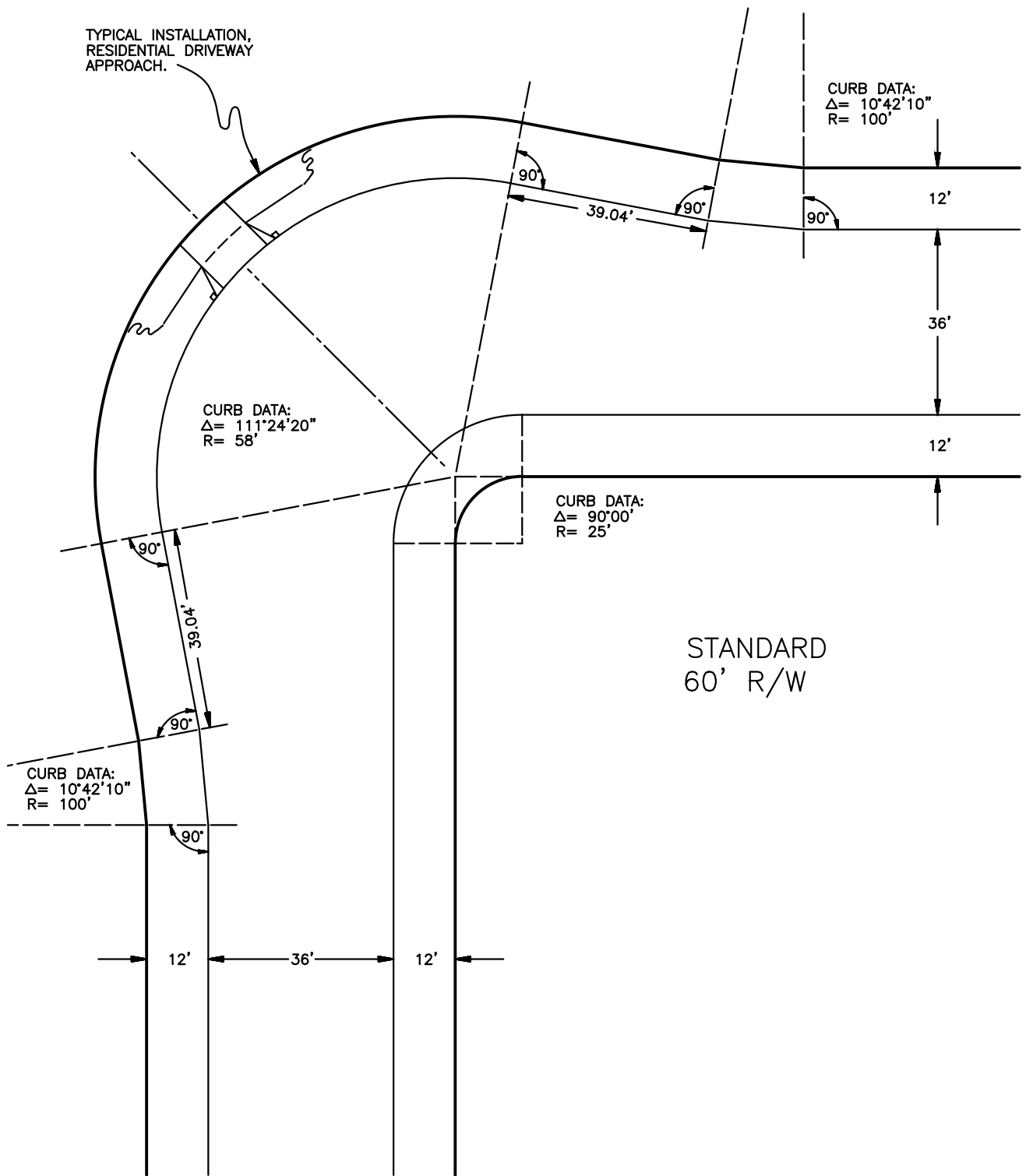
CURB DATA:
 $\Delta = 10^{\circ}42'10''$
 $R = 100'$

CURB DATA:
 $\Delta = 111^{\circ}24'20''$
 $R = 58'$

CURB DATA:
 $\Delta = 90^{\circ}00'$
 $R = 25'$

CURB DATA:
 $\Delta = 10^{\circ}42'10''$
 $R = 100'$

STANDARD
60' R/W



CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

RIGHT ANGLE TURN

STD. DWG.
NUMBER

704-0

APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

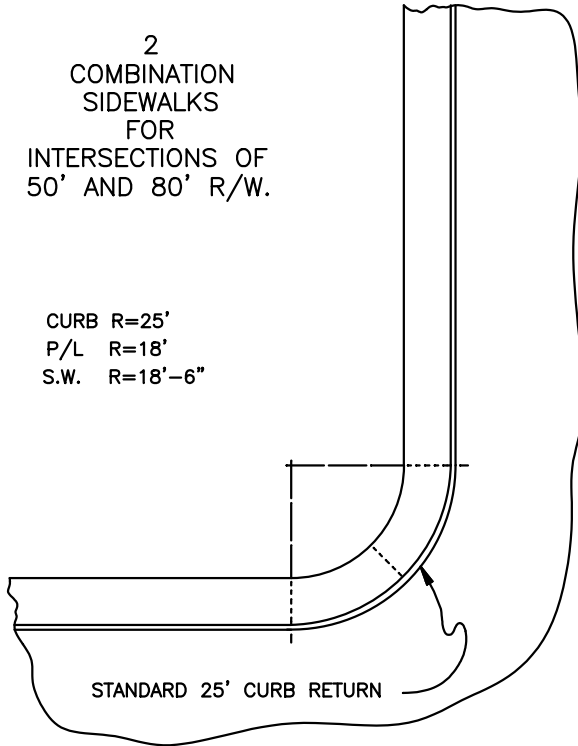
SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

2
COMBINATION
SIDEWALKS
FOR
INTERSECTIONS OF
50' AND 80' R/W.

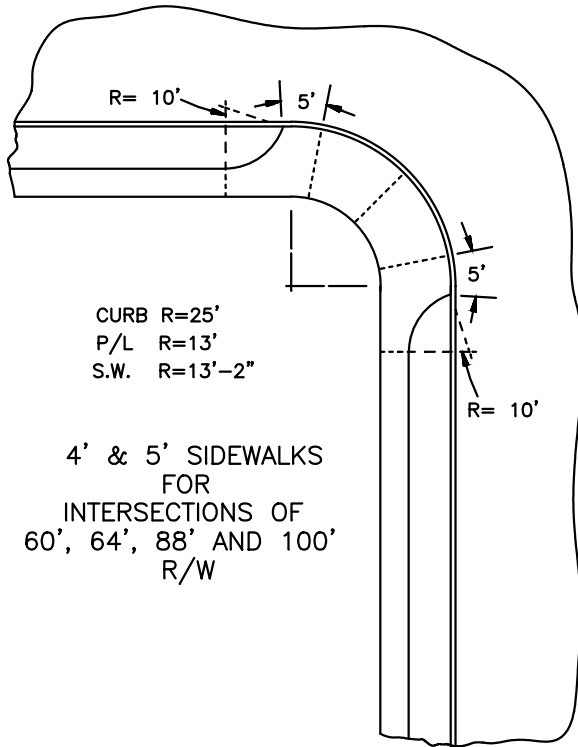
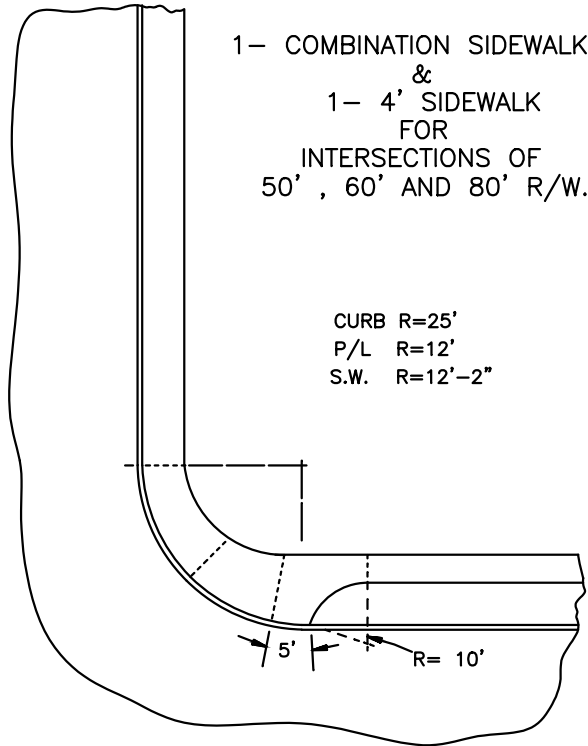
CURB R=25'
P/L R=18'
S.W. R=18'-6"



STANDARD 25' CURB RETURN

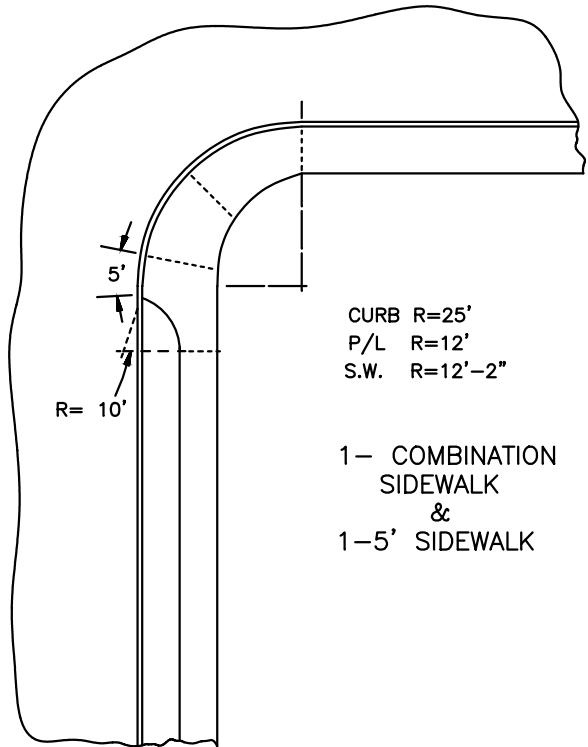
1- COMBINATION SIDEWALK
&
1- 4' SIDEWALK
FOR
INTERSECTIONS OF
50' , 60' AND 80' R/W.

CURB R=25'
P/L R=12'
S.W. R=12'-2"



CURB R=25'
P/L R=13'
S.W. R=13'-2"

4' & 5' SIDEWALKS
FOR
INTERSECTIONS OF
60', 64', 88' AND 100'
R/W



CURB R=25'
P/L R=12'
S.W. R=12'-2"

1- COMBINATION
SIDEWALK
&
1-5' SIDEWALK

NOTE: SEE SPECS FOR JOINT DETAILS
----- DOTTED LINES INDICATE SCORING.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

TYPICAL SIDEWALK INTERSECTIONS

STD. DWG.
NUMBER

705-0

APPROVED:

DATE: 01/03/2023


Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

TYPICAL BLOCK ARRANGEMENT IN LOWER RIGHT HAND CORNER OF PAGE.

<p>A & B ENGINEERING CO.</p>		<p>CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT</p> <p>PLAN & PROFILE</p> <p>REVERE AVENUE ADAMS ST. TO MADISON ST.</p>	<p>* 00-0000</p>
<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>
<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>
<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>	<p>Checked by _____ Date _____</p>
<p>Letter _____</p>	<p>Description _____</p>	<p>Initial _____</p>	<p>Initial _____</p>
<p>REVISIONS</p>	<p>Date _____</p>	<p>Approved by: _____</p>	<p>Approved by: _____</p>
<p>Sheet _____ of _____ Sheets</p>	<p>REVIEWED BY: Donald P. Young, One Stop Permit Center Mgr. R.C.E. 48818</p>	<p>DATE: _____</p>	<p>DATE: _____</p>
<p>Sheet _____ of _____ Sheets</p>	<p>APPROVED BY: Goutam K. Dobey, City Engineer R.C.E. 75646</p>	<p>DATE: _____</p>	<p>DATE: _____</p>

* Drawing number to be assigned by City and installed by Engineer prior to making original for submittal to City for signature.

Edge of paper

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

STANDARD TITLE & REVISION BLOCK

STD. DWG. NUMBER
720-0

APPROVED:  DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

DIVISION II

CONSTRUCTION STANDARDS AMENDMENTS

The Standard Specifications for Public Works Constructions, 2021 Edition (Greenbook), together with supplements as published by Building News, Inc., are modified herein and comprise the Standard Specifications. For convenience, the section and subsection numbering system used in these modifications correspond to those used in the Greenbook. Unless specifically deleted or modified herein, all requirements of the Greenbook shall prevail.

THIS PAGE INTENTIONALLY LEFT BLANK

PART 1 – GENERAL PROVISIONS

SECTION 1 – GENERAL, TERMS, DEFINITIONS, ABBREVIATIONS, UNITS OF MEASURE, AND SYMBOLS

1-2 TERMS AND DEFINITIONS.

Agency - *Amend as follows:*

“The legal entity (City) for which the Work is being performed.”

Bidder - *Amend as follows:*

“Any individual, firm, partnership, corporation, or combination thereof, licensed in accordance with the provisions of Chapter 9, Division III of the Business and Professions Code, submitting a Bid for the Work, acting directly or through a duly authorized representative.”

City. The City of Redlands, San Bernardino County, California, being the legal entity for which the Work is being performed. Also referred to as Agency or Owner.

City Council. The City Council of the City of Redlands, San Bernardino County, California, being the body authorizing entrance into legal agreements and allowing work in public right-of-way or on public property controlled by the City of Redlands. Also referred to as Board.

Engineer - *Amend as follows:*

“The City Engineer of the Agency, or other person designated by the City Engineer, acting either directly or through authorized agents.”

Fabricated. An item specifically assembled or made out of selected materials to meet individual design requirements.

Laboratory. The designated laboratory authorized by the City of Redlands to test materials and work involved in the Contract.

Manufactured. A standard mass-produced unit or item meeting design requirements.

Owner. The City of Redlands, San Bernardino County, California.

Pavement. The uppermost layer of material placed on the traveled way or shoulder. Also referred to as surfacing.

Rain Day. A scheduled working day when you cannot perform work on the controlling activity for at least 50 percent of the day with at least 50 percent of the normal labor and equipment due to adverse weather-related conditions that cause the Contractor to dismiss the crew.

Street - *Delete and replace with the following:*

“Any road, highway, parkway, freeway, avenue, street, lane, alley, crossing, intersection, court, place, circle, walk, way, or any public right-of-way within the jurisdiction of the Agency.”

Surety - *Delete and replace with the following:*

“An admitted corporate surety as listed by the United States Department of Treasury and duly licensed to conduct business in the State of California and County of San Bernardino and acceptable to the City of Redlands, bound with and for the Contractor for the acceptable performance, execution, and completion of the Work, and for the satisfaction of all obligations incurred.”

Warranty. An extended insurance by the Contractor, of any product or item of work installed as a part of this project for replacement and/or repair for the time period specified, including but not limited to, all parts, labor, materials, tools, equipment costs, etc. necessary for the product or item of work to be in proper and acceptable working condition after completion of the project. For the purposes of this Contract, the period of coverage shall begin on the date of the Notice of Completion filed by the Owner.

Working Hours. Unless specified otherwise, working hours shall be from 7:00 AM to 4:00 PM, Monday through Friday, inclusive. Saturdays, Sundays, and City Holidays, as shown on the current year Construction Schedule, are excluded unless authorized by the City.

1-7.2 CONTRACT BONDS. - *Add the following sentence to paragraph 1:*

The warranty provisions set forth in Section 5-17 shall be secured by the Contract Performance Bond required under this section and said Bond shall remain in full force and effect for a period of one year from the date of completion as specified in the Notice of Completion.

SECTION 2 - SCOPE OF THE WORK

2-2 PERMITS. - *Amend the following:*

Amend the first sentence of paragraph 1 as follows:

“The Contractor will obtain all permits necessary to perform the work in streets, highways, railways or other rights-of-way.”

Add the following sentence between the first and second sentences of paragraph 1:

For all work within Caltrans right-of-way, the Contractor shall obtain their own Caltrans Encroachment Permit and pay all necessary permit and inspection fees as required by Caltrans.

Add the following paragraph:

The Contractor shall, prior to the start of work, procure all permits and licenses, including but not limited to, a City Business License for itself, subcontractors, and all parties performing actions associated with this contract within the City of Redlands, City Truck Route Permit, City Street/Lane Closure Permit, City Encroachment Permit, USA Verification Number, DOSH Excavation Permit, other permits required by agencies and/or utilities having jurisdiction on the work, pay all charges and fees required by the City, other agencies and utilities, and give all notices necessary and incidental to the due and lawful prosecution of the work. All City permits associated with this project are no fee to the Contractor.

SECTION 3 - CONTROL OF THE WORK

3-7 CONTRACT DOCUMENTS.

3-7.1 General. – *Add the following paragraphs:*

Contractor's working drawings or plans for any structure not included in the plans shall be approved by the Engineer before any work is performed. It is mutually agreed that approval by the Engineer of the Contractor's working plans does not relieve the Contractor of any responsibility for accuracy of dimensions and details, and that the Contractor shall be responsible for agreement and conformity of their working plans with the approved plans and specifications.

Finished surfaces in all cases shall conform with the lines, grades, cross sections, and dimensions shown on the approved plans. Deviations from the approved plans will be determined by the Engineer and approved in writing. In the event of a discrepancy between any drawing and the figures written thereon, the figures shall be taken as correct.

Should it appear that the work to be done or any matter thereto is not sufficiently detailed or explained by the plans and specification, the Contractor shall apply to the Engineer for such further explanation as may be necessary and shall conform to such explanation or interpretation as part of the Contract so far as may be consistent with the intent of the original plans and specifications.

3-7.1.1 Preconstruction Meeting. The Contractor to whom the contract is awarded, and all his major subcontractors, shall attend a pre-construction meeting. The time and location of said meeting will be set by the City. Contractor will be given adequate notice of such meeting. It shall be the Contractor's responsibility to notify his subcontractors of the time and location of the meeting. All submittals as required under the General Requirements shall be submitted by the Contractor at the time of the meeting.

The Contractor will be provided with an electronic (.PDF file) of the conformed plans and specifications for their use throughout the project. Contractor is responsible for all costs of reproduction.

Progress meetings will be scheduled by the City. The Contractor will be given at least five working days notice of the time and location of said meetings. The Contractor has the responsibility of notifying his subcontractors, suppliers, and fabricators of the time and location of said meetings. Meetings will be held either at the job site, at the offices of the City of Redlands, or at any other location approved by the City. The Contractor may request, in writing, that a meeting be held. The City will schedule a meeting at the Contractor's request not more than five working days after receiving said written notice.

3-7.2 Precedence of Contract Documents. – *Replace paragraph 2 with the following:*

The precedence shall be (A. being highest, O. being lowest):

- A. Permits from other Agencies as may be required by law.
- B. Change Orders.
- C. Contract.

- D. Addenda.
- E. Bid Schedule/Proposal.
- F. General Requirements.
- G. Technical Specifications.
- H. Plans.
- I. MUED General Permit Conditions and Trench Specifications.
- J. City of Redlands Water & Sewer Systems Standard Specifications.
- K. General Conditions.
- L. City of Redlands Standard Specifications and Detail Drawings for Design and Construction of Public Improvements and all Supplements
- M. Standard Specifications for Public Works Construction (SSPWC), 2021 Edition
- N. Standard Plans for Public Works Construction, 2021 Edition
- O. Reference Specifications.

3-8.7 Record Drawings. The Contractor shall maintain at the job site, a set of record drawings for the work showing: exact location information of all existing underground utilities encountered, final locations determined in the field, any deviations from the plans and specifications and new work performed within the work area; and all differences between the work as drawn and as installed for all concealed work as well as work added which is not shown on the drawings. Concealed work shall mean all work installed underground or in an area which cannot be readily inspected by use of access panels, inspection plates or other removable features. When vacuum excavation (potholing) services are required, contractor to provide report that identifies depth and alignment of underground utilities.

These record drawings shall be kept current and legible and shall be available for inspection at all times by the Engineer, Architect and Contractor. All information, changes in the work or work added on these record drawings shall be marked in red. All markings shall use the same legends that are used on the drawings. Indicate locations by exact dimensions and elevations. Give dimensions and elevations from a permanent reference point and prepare all changes to scale.

At the end of construction, the contractor shall prepare one set of marked-up prints of the record drawings indicating any and all revisions and changes to the drawings reflecting As-Built conditions. The drawings shall also contain a listing of all subcontractors who worked on the construction project. The As-Built drawings will be submitted to the Municipal Utilities and Engineering Department for review and approval by the City Inspector and Engineer.

The design engineer or City staff shall prepare the final As-Built drawings for record purposes in one of the following two ways: (1) Check out the original drawings from the City and manually revise the drawings to reflect the As-Built condition; or (2) Re-plot the original drawings electronically on 4 mil Mylar and make revisions electronically to reflect the As-Built conditions. The final As-Built drawings will be reviewed and approved by the City Inspector and Engineer

The construction related bonds will not be released by the City until the As-Built drawings are accepted by the Engineer and all City stipulated conditions for the release of the bonds have been satisfied.

3-10 SURVEYING.

3-10.2 Line and Grade. - *Add the following sentences to paragraph 1:*

All distances and measurements shown are and will be made in a horizontal plane. Construction line and grade staking shall be set at maximum intervals of 25 feet when the grade is 0.50 percent or greater. Construction line and grade staking shall be set at maximum intervals of 12 feet when the grade is less than 0.50 percent.

3-10.3 Permanent Survey Markers.

The Registered (licensed) Land Surveyor or Registered Civil Engineer authorized to practice land surveying in accordance with all provisions of Section 8771 of the Business and Profession Code shall be hired as a subcontractor or employed by the Contractor.

3-10.4 Survey Service.

Contractor shall be responsible for: furnishing all surveying and staking, horizontal and vertical, as shown on the plans and in accordance with the specifications; furnishing all staking for sub-grade and base course grades per typical sections; replacing any existing monuments and ties which have been destroyed by construction; identifying, locating and tying out all monuments and ties necessary within the work area; and shall reinstall all disturbed monuments and ties, supplying the Engineer with copies of monument and tie sheets recorded with the County Surveyor in accordance with applicable State law. Monuments shall be approved by the Engineer.

Surveying and staking shall be done by a Registered (licensed) Land Surveyor or Registered Civil Engineer authorized to practice land surveying in accordance with all provisions of Section 8771 of the Business and Professions Code.

Unless otherwise specified, stakes will be set and stationed by the Contractor's surveyor for curbs, headers, sewers, storm drains, structures, rough grade and all other staking necessary for the construction of the work. A corresponding cut or fill to finished grade (or flowline) will be indicated on a grade sheet to be supplied to the Engineer. The Contractor shall dig all holes necessary for line and grade stakes.

3-13 COMPLETION, ACCEPTANCE, AND WARRANTY.

3-13.2 Acceptance. - *Add the following paragraphs:*

The Contractor shall submit written assertion that the work has been completed prior to the Engineer making final inspection. The Engineer will have 48 hours to inspect the work. If the Engineer determines that the work is not complete, written notice will be given.

Until final acceptance of work by the Engineer, the Contractor shall have charge and care thereof from damage caused by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the work. The Contractor shall rebuild, repair, restore, and make good all injuries or damage to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof.

All work which has been rejected shall be remedied or removed and replaced by the Contractor at their expense with work conforming to the plans and specifications. Any defective material or workmanship which may be discovered before final acceptance or within one year from the date of final acceptance shall be immediately corrected by the Contractor at their expense, notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work at any stage shall not relieve the Contractor from any obligation to perform sound and reliable work as herein described. It is the Contractor's ultimate responsibility to deliver a complete, operational project that complies in all details with these specifications, at the time of final acceptance.

Any omission or failure on the part of the City to discover or notify the Contractor of or to condemn defective work or material at the time of construction shall not be deemed as acceptance, and the Contractor will be required to correct defective work or material prior to final acceptance.

The City will endeavor to locate any errors or defective materials or workmanship and call them to the attention of the Contractor prior to subsequent work being performed. However, the City is under no obligation to do so and shall not be held liable because errors or defective material or workmanship by the Contractor are not discovered prior to subsequent work.

Nothing in this section shall be construed to limit the rights of the City to immediately correct conditions which are unsafe or which pose a public health nuisance. Should said corrections later be found to be caused by defective material and/or workmanship, the Contractor and their surety shall reimburse the City for costs reasonably incurred while attending the situation.

In the event it is necessary for the City to file suit to enforce any liability of the Contractor pursuant to this Section, the City shall be entitled to recover from the Contractor, in addition to all other amounts found due and owing, costs of suit and reasonable expenses and fees including reasonable attorneys' fees incurred by the City in successfully enforcing the Contractor's obligation, all to be taxed as costs and included in any judgment rendered.

3-13.3 Warranty. - *Amend the following:*

Amend the first sentence of the paragraph 3:

"The warranty period for specific items covered under manufacturers' or suppliers' warranties shall commence from the date of the final acceptance, except where longer warranty periods are specified."

Add the following paragraphs:

All start-up and testing shall be complete, approved and accepted before final acceptance, substantial completion, or beneficial occupancy.

The warranty provided herein shall not be in lieu of, but shall be in addition to any warranties or other obligations otherwise imposed by the specifications or by law. The remedies provided herein shall not be exclusive and the City shall be entitled to any and all remedies provided by law.

3-14 INSPECTION.

The Contractor shall notify the Engineer at least 24 hours in advance before inspection is required. Whenever the Contractor varies the period during which work is carried on each day, due notice shall be given to the Engineer so that proper inspection may be provided. Varied working hours may be allowed only upon written authorization from the Engineer.

Work financed in whole or in part with funds from another public entity or performed within the jurisdiction of another public entity shall be subject to inspection at all times by authorized representatives of that entity.

The work shall be ready for inspection, whether by City, other public entities or independent testing laboratories, at the scheduled times arranged by the Contractor. If, in the City's sole judgment, the work is not ready and the inspection must be rescheduled, the Contractor shall be notified. The Contractor shall reschedule the inspection and provide the proper 24 hour notification for the rescheduled inspection. Any costs incurred by the City for rescheduled inspections shall be reimbursed prior to the release of Bonds.

In order to allow for inspection, the Contractor shall notify the City's inspector sufficiently in advance of the permanent concealment of any materials or work. The City's inspector shall make the appropriate notifications to other public entities and independent testing laboratories for inspections. All inspections required in the specifications for this project shall be coordinated through the City's inspector.

If any work is concealed or performed without the prior notice specified, the work shall be subject to such tests or exposure as may be necessary to prove to the Engineer, that the materials used and the work performed are in conformity with the drawings and specifications. All labor, tools, materials and equipment necessary for exposing and testing shall be furnished by the Contractor at their expense. The Contractor shall replace at their expense, any materials or work damaged by exposure or testing.

Overtime inspection may be requested by the Contractor. Overtime inspection includes but is not limited to, any hours worked outside of the inspector's normal working hours including weekends and holidays. Such requests shall be on a case-by-case basis as determined by the Engineer. If the Engineer so determines and approves, overtime inspection shall be paid for by the Contractor at the current City billing rate at the time of request or as billed by other public entities or independent testing laboratories. Any costs incurred by the City for overtime inspection shall be reimbursed prior to the release of Bonds.

SECTION 4 - CONTROL OF MATERIALS

4-1 GENERAL. - *Delete and replace with the following:*

Should any work performed or material furnished under the Contract prove defective or not in accordance with the Plans and Specifications and in the opinion of the Engineer such defect is not of sufficient magnitude or importance to make the work dangerous or unusable, or if the removal of

such work is impracticable or will create dangerous or undesirable conditions, the Engineer at his discretion shall have the right and authority to retain such work instead of requiring it to be removed and reconstructed, but he shall make such deductions therefore in the payment due the Contractor as may be just and reasonable.

4-1.1 Warranty of Title. No materials, supplies or equipment for the work under this Contract shall be purchased subject to any chattel mortgage or under a conditional sale contract or other agreement by which an interest therein or any part thereof is retained by the seller or supplier. The Contractor warrants clear and good title to all materials supplied and equipment installed and incorporated in the work and agrees, upon completion of all work, to deliver the premises, together with all improvements and appurtenances constructed or placed thereon by him, to the Owner free from any claims, liens, encumbrances or charges, and further agrees that neither he nor any person, firm, or corporation furnishing any material or labor for work covered by the Contract shall have any right to a lien upon the premises or any improvement or appurtenance thereon, provided that this shall not preclude the Contractor from installing metering devices or other equipment of utility companies the title of which is commonly retained by the utility company. Nothing contained in this article, however, shall defeat or impair the right of such persons furnishing materials or labor under any bond given by the Contractor for their protection, or any right under any law permitting such persons to look to funds due the Contractor, which are in the hands of the Owner.

4-1.2 Clayton Act. In submitting a bid to the City, if the bid is accepted the Contractor agrees it will assign to the City all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Section 15) or under the Cartwright Act (chapter 2 [commencing with Section 16700] of Part 2 Division 7 of the Business and Professions Code), arising from purchases of goods, materials, or services by the Bidder for sale to the City pursuant to the bid. Such assignment shall be made and become effective at the time the City tenders final payment to the Bidder.

SECTION 5 – LEGAL RELATIONS AND RESPONSIBILITIES

5-1.1 CONTRACTOR'S EQUIPMENT AND FACILITIES.

A noise level limit of 86 dbA at a distance of 15 m (50 feet) shall apply to all construction equipment on or related to the work whether owned by the Contractor or not. The use of excessively loud warning signals shall be avoided, except in those cases required for the protection of personnel.

5-1.2 General.

The enclosed toilets required by this section shall be located within an approved yard, if one is acquired by the Contractor. If a yard is not acquired by the Contractor or the project is not within a City owned property, the toilets must be installed on a trailer and removed from the jobsite each day. At no times shall toilets be stored within the public right of way outside of working hours.

5-3 LABOR. - Amend the following:

5-3.1 General. - Add the following paragraphs:

Employment of apprentices are required on projects of \$30,000 or more. Provisions in Sections 1777.5 of the California Labor Code fixes responsibility of compliance with that section for all apprenticeable occupations with the Contractor. Section 1777.5 provides that the Contractor and every Subcontractor shall submit contract award information to the applicable joint apprenticeship committee. One apprentice hour for every five journeymen hours worked is the minimum State requirement applicable to each apprenticeable trade. Section 1777.7 of said Labor Code provides that the Contractor shall forfeit as a civil penalty the sum of one hundred dollars (\$100.00) for each calendar day of noncompliance with provision of said Section 1777.5.

The Contractor will observe all applicable health and safety requirements, including, but not limited to the California and Federal Occupational Safety and Health Acts. The Contractor shall submit for review by the City a Site Specific Health and Safety Plan prior to the commencement of construction activities. This Plan shall meet or exceed the requirements of 29 CFR 1910.120.

5-3.2 Prevailing Wages. - *Add the following paragraphs:*

Contractors are hereby notified that pursuant to Section 1770 of the Labor Code of the State of California, the City Council of the City of Redlands, California, by Resolution No. 2326, has ascertained the general prevailing rate of hourly wages and rates for legal holidays and overtime work in the locality where this work is to be performed, for each craft or type of workman or mechanic needed to execute the Contract which will be awarded to the successful Bidder. The Contractor shall comply with Sections 1770 to 1780 inclusive of the Labor Code and Master Labor Agreement of Southern California.

The Contractor and each of his subcontractors shall pay each of his employees engaged in work on the project under this Contract in full less legally required deductions and also deductions made pursuant to the regulations prescribed under the so-called "Kick- Back Statute" (48 Sta. 948; U.S.C. 875; 40 U.S.C. 276c).

In accordance with Section 1775 of the California Labor code, Contractor shall forfeit to City, as a penalty, a minimum of \$40 for each day, or portion thereof, and a maximum of \$200 for each day, or portion thereof, for each worker paid, either by Contractor, or any subcontractor, less than the prevailing rates as determined by the Director of the California Department of Industrial Relations for the work.

Contractor further agrees to fully comply with all applicable provisions of the California Labor Code including but not limited to Sections 1771, 1775, 1776, 1777.5, 1813 and 1815. Failure to abide by prevailing wages and laws by Contractor will be enforced.

The Contractor or subcontractor shall, as a penalty, to the State or political subdivision on whose behalf the contract is made or awarded forfeit twenty-five (\$25) dollars for each worker employed in the execution of the contract by the respective contractor or subcontractor for each calendar day during which the worker is required or permitted to work more than 8 hours in any calendar day and 40 hours in any calendar work in violation of Labor Code section 1813.

5-3.3 Payroll Records. – *Delete and replace with the following:*

The contractor and subcontractors shall submit electronic certified payroll on a weekly basis to the City of Redlands through LCPtracker. LCPtracker is a web-based labor compliance management system. The Prime Contractor and Subcontractors and lower-tier Subcontractors will receive an email from LCPtracker providing their log-on identification and temporary password. The Contractors will need to follow the instructions in the email to set-up their permanent password and activate their account. Once their account is setup, LCPtracker Inc. provides either computer based or web based training. Training can be accessed via the “Book Now” button located under the “Projects” tab. The prime contractor shall submit their certified payroll, along with any subcontractor who is performing any labor, on a weekly basis. The prime contractor is responsible for all communication with their subcontractors and shall submit their subcontractor’s certified payroll as part of their weekly payroll packet. All labor compliance correspondence and submissions will be made through the LCPtracker software.

All certified payroll shall be submitted no later than 7 days from the close of the pay period. The payroll records shall set out accurately and completely the name, social security number, classification and hourly wage rate of each employee, hours worked by employee during the payroll period and a full weekly wages and the actual weekly wages paid to the employee. Such certified payroll records shall be made available at all time for inspection by the City, the Department of Industrial Relations, the Department of Labor or authorized representatives within ten days of request. The contractor and subcontractor shall preserve weekly payroll records for a period of three (3) years from the date of completion of the Contract. In case on noncompliance with said Section 1776 and after a ten-day period following receipt of written notice, the Contractor shall forfeit to the California Department of Industrial Relations one hundred dollars (\$100.00) for each calendar day or portion thereof, for each worker in non-compliance, until compliance is effectuated.

In order to meet labor compliance requirements, all contractors will be required to complete eDocuments which are accessed, submitted and approved through LCPtracker. All eDocuments are required to be signed by an owner/officer or authorized signer. The Prime Contractor and each Subcontractor and every lower-tier Subcontractor and any Vendors subject to this provision shall comply with Title 8, Section 16404 of the California Code of Regulations.

A Fringe Benefit Statement shall be submitted with the first payroll and is required for both the prime contractor and any subcontractors. A new Fringe Benefit Statement will be required when general determinations are issued in February and August. Please refer to the DIR website for additional details. Any weeks where no work was performed must be represented by the submittal of a Statement of Non-Performance covering the 7 day pay period where no hours were worked on the site. Final payroll on the project should state “Final” on the certified payroll, and must be marked as such in the LCPtracker system.

Failure by the Contractor to comply with the aforementioned requirements shall result in withheld progress payments until such time certified payroll documents have been received, reviewed, and accepted by the City. The City reserves the right to seek assistance from the State Department of Industrial Relations in determining the acceptability of certified payroll submittals before release of withheld progress payments. Prior to the release of retention monies, all certified payroll must be

submitted on the project and any outstanding issues that may have occurred throughout the project must be resolved.

5-4 INSURANCE. - *Delete Section 5-4.1, Section 5-4.2 and replace with the following:*

Before entering into a Contract, the Bidder to whom the Contract has been awarded shall furnish satisfactory evidence that they have secured all required insurance from a responsible insurance company authorized to do business in California and satisfactory to the City, and such insurance shall be maintained in full force and effect at the Contractor's own expense during the life of the Contract. Contractor shall furnish the City with the customary Certificates of Insurance for all required insurance listed below. General Liability Insurance shall name the City and the Consultant, as an additional insured and shall be primary and non-contributing to any insurance or self-insurance maintained by the City. All liability insurance policies shall bear an endorsement or shall have attached a rider whereby it is provided that, in the event of expiration or proposed cancellation of such policies for any reason whatsoever, the City shall be notified by registered mail, return receipt requested, giving sufficient time before the date thereof to comply with any applicable law or statute, but in no event less than forty five (45) days before expiration or cancellation is effective. The coverage shall provide the following minimum limits based on the type of work proposed under this Contract. The Contractor shall determine if the proposed work requires Tier 1 or Tier 2 Designated Insurance Requirements shown below.

CONTRACTED OPERATIONS DESIGNATED AS TIER 1		
Air Conditioning (HVAC) Systems (installation)	Electric Light or Power Line Construction	Pipeline Construction
Airport Runways (paving, repaving, etc.)	Elevator Work	Roofing
Blasting Operations	Excavation	Sandblasting
Bridge or Elevated Highway Construction	Fire Suppression Systems (installation)	Sewer and Water Main Construction
Buildings Structural Work (including elevators)	Gas Mains or Connections Construction	Sign Erection (streets)
Building Structure (raising or moving)	Geophysical Exploration	Solar Energy
Cable Installation in Conduits and Conduit Construction (streets)	Grading of Land	Street Cleaning
Caisson or Cofferdam Work	Hazardous Materials Contractors	Street or Road Construction
Dam or Reservoir Construction	Irrigation or Drainage Construction	Tank Construction, Installation, Erection or Repair
Demolition (structures)	Landscape Construction (street or street medians)	Telephone or Cable Line Construction
Drilling	Painting (exterior greater than single story)	Tree Pruning, Dusting, Spraying or Removal

TIER 1 DESIGNATED INSURANCE REQUIREMENTS

- a. Commercial General Liability
 - \$1 Million Per Occurrence/ \$2 Million Aggregate
 - City listed as an Additional Insured on the coverage

- Coverage is primary and non-contributory
 - If scope of work is within 50 feet of any railroad, endorsement citing inclusion of liability associated with this work is required
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission

- b. Business Auto Liability
 - \$1 Million Combined Single Limit
 - City listed as an Additional Insured on the coverage
 - Must include liability arising from all owned, leased, hired, and non-owned autos
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission
 - If Contractor or its subcontractors or suppliers haul hazardous material (including, without limitation, waste), Auto Liability insurance must be applicable to all hazardous waste hauling vehicles, and include MCS 90 and CA9948 Endorsements.

- c. Commercial Umbrella/ Excess Liability
 - \$5 Million Per Occurrence/ Aggregate
 - City listed as an Additional Insured on the coverage
 - Coverage is primary and non-contributory
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission

- d. Workers Compensation
 - \$1 Million Per Occurrence for Bodily Injury by Accident
 - \$1 Million Each Employee for Bodily Injury by Disease
 - \$1 Million Policy Limit for Bodily Injury by Accident
 - Waiver of Subrogation in favor of City
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission

- e. Pollution Policy (Hazardous Materials) [If Applicable]
 - Required of Projects that involve Demolition and/or Excavation Activities
 - \$1 Million Per Occurrence/ \$2 Million Aggregate
 - City listed as an Additional Insured on the coverage

CONTRACTED OPERATIONS DESIGNATED AS TIER 2		
Air Conditioning (HVAC) Systems (service and repair)	Carpentry (building interiors)	Fire Suppression Systems (service and repair)
Alarms and Alarm Systems	Communications Equipment Installation (interior)	Landscape Construction
Building Interior Work (service, repair and non-structural remodeling)	Driveway, Parking Area or Sidewalk (paving or repaving)	Painting (exterior)
Cable Installation in Conduits (buildings)	Fence Erection	All Other Job Types including Vendors

TIER 2 DESIGNATED INSURANCE REQUIREMENTS

a. Commercial General Liability

- \$1 Million Per Occurrence/ \$2 Million Aggregate
 - City listed as an Additional Insured on the coverage
 - Coverage is primary and non-contributory
 - If scope of work is within 50 feet of any railroad, endorsement citing inclusion of liability associated with this work is required
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission

b. Business Auto Liability

- \$1 Million Combined Single Limit
 - City listed as an Additional Insured on the coverage
 - Must include liability arising from all owned, leased, hired, and non-owned autos
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission
- If Contractor or its subcontractors or suppliers haul hazardous material (including, without limitation, waste), Auto Liability insurance must be applicable to all hazardous waste hauling vehicles, and include MCS 90 and CA9948 Endorsements.

c. Workers Compensation

- \$1 Million Per Occurrence for Bodily Injury by Accident
- \$1 Million Each Employee for Bodily Injury by Disease
- \$1 Million Policy Limit for Bodily Injury by Accident
 - Waiver of Subrogation in favor of City
 - If any policy forms of endorsements are cited to grant extension of coverage, they must be included with the Certificate of Insurance submission

d. Pollution Policy (Hazardous Materials) [If Applicable]

- Required of Projects that involve Demolition and/or Excavation Activities
- \$1 Million Per Occurrence/ \$2 Million Aggregate
- City listed as an Additional Insured on the coverage

Contractor expressly waives all rights to subrogation against the City, its officers, employees and volunteers for losses arising from work performed by Contractor for City by expressly waiving Contractor's immunity for injuries to Contractor's employees and agrees that the obligation to indemnify, defend and hold harmless provided for in this Agreement extend to any claim brought by or on behalf of any employee of Contractor. This waiver is mutually negotiated by the parties. This shall not apply to any damage resulting from the sole negligence of City, its agents and employees. To the extent any of the damages referenced herein were caused by or resulted from the concurrent negligence of City, its agents or employees, the obligations provided herein to indemnify, defend and hold harmless are valid and enforceable only to the extent of the negligence of contractor, its officers, agents and employees.

Subcontractors. The prime contractor shall include all subcontractors as insureds under its policies or shall furnish separate certificates and endorsements from each subcontractor.

The Contractor shall not assign or sublet the contract, in whole or in part, without the written consent of the City, nor shall the contractor assign any monies due to, or to become due to, Contractor hereunder without prior written consent of the City.

The Contractor shall be fully responsible to the City for the acts and omissions of the subcontractor and persons either directly or indirectly employed by the Contractor. Consent to subcontracting part of the work shall, in no way, release the Contractor from responsibility for performance of the work, and Contractor will be held, in all respects, accountable for the same as if no consent had been given. The Contractor shall give personal attention to this work which is sublet. Nothing contained in the contract documents shall create any contractual relation between any subcontractor and the City.

Hold Harmless and Indemnification. Contractor shall indemnify, hold harmless and defend City and its elected officials, agents and employees and the Consultant from and against any and all claims, losses or liability, including attorney's fees, arising from injury or death to persons or damage to property occasioned by any act, omission or failure to act of Contractor, its subcontractors, and any officers, agents and employees in performing the work required by this Agreement. Contractor's obligations under this provision shall not be limited in any way by any terms of this Agreement, or the insurance limits.

5-4.3 Worker's Compensation Insurance. - *Delete and replace with the following:*

A. Contractor shall have worker's compensation and employer's liability insurance in force throughout the duration of the contract in an amount which meets the statutory requirement with an insurance carrier acceptable to the City. The insurance policy shall include a provision prohibiting cancellation of said policy except upon forty-five (45) days prior written notice to City. Certificates of Insurance shall be delivered to the City at the time of the Contractors' execution of the agreement.

B. Contractor expressly waives all rights to subrogation against the City, its officers, employees and volunteers for losses arising from work performed by Contractor for City by expressly waiving Contractor's immunity for injuries to Contractor's employees and agrees that the obligation to

indemnify, defend and hold harmless provided for in this Agreement extend to any claim brought by or on behalf of any employee of Contractor. This waiver is mutually negotiated by the parties. This shall not apply to any damage resulting from the sole negligence of City, its agents and employees. To the extent any of the damages referenced herein were caused by or resulted from the concurrent negligence of City, its agents or employees, the obligations provided herein to indemnify, defend and hold harmless are valid and enforceable only to the extent of the negligence of contractor, its officers, agents and employees.

5-6 PATENT FEES OR ROYALTIES. *Delete and replace with the following:*

The Contractor shall include in its Bid the patent fees or royalties on any patented article or process which may be furnished or used in the Work. The Contractor shall indemnify and hold the City harmless from any legal action that may be brought for infringement of patents. The Contractor's attention is directed to "Notice of Patents, Data, and Copyright Regulations" of the Federal Labor Standards.

The Contractor shall bear all costs arising from the use of patented goods and/or processes used on and/or incorporated into the Work. When use of these goods and/or processes is judged to be an infringement and the use is banned, the Contractor, at its own expense, shall, with concurrence of the Engineer, do one of the following:

- A. Secure for the City the right to continue using goods and/or processes by suspension of the injunction or by procuring a license(s);
- B. Replace said goods and/or processes with non-infringing goods and/or processes;
- C. Modify said goods and/or processes so that they become non-infringing; or
- D. Remove said goods and/or processes and refund the sum paid therefore without prejudice to any other rights of the City.

The preceding shall not apply to any goods manufactured to the detailed design of the City contained in the Contract Documents.

5-7 SAFETY.

5-7.1 Work Site Safety.

5-7.1.1 General. - *Amend the following:*

Add the following sentences to paragraph 1:

Should watering be the sole method utilized for roadway dust abatement purposes, the maximum time interval that shall elapse between applications thereof shall be no greater than 3 hours during normal working day, supplemented by an additional application thereof immediately prior to the conclusion of the workday and at such other times as may be required, including evenings, weekends and holidays as required by the Engineer. Should the Contractor be unable to furnish

dust abatement as specified, the City may perform or cause to be performed the necessary service, the expense of which will be deducted from the payment due the Contractor.

Add the following paragraphs:

To insure the protection of storm drain inlets, Best Management Practices (BMPs) shall be employed during cleanup and dust control operations. Refer to Section 5-10.

Compliance with this section is of extreme importance to the City and its citizens. The City may fine the Contractor \$1,000 per incident if there are issues with dust, mud, unused equipment or materials and rubbish within the construction area that result in citizen complaints. A 24 hour notice shall be issued to the Contractor and failure to correct the problems will result in the fine being levied. This fine will be in addition to those fines potentially charged for NPDES violations.

5-8 AIR POLLUTION CONTROL.

Dust control shall be performed in accordance with Subsection 7-8 of the Standard Specifications, South Coast Air Quality Management District (SCAQMD) Rule 403, the general Provisions and the following Provision.

Dust resulting from the Contractor's performance of the work, either inside or outside, the right-of-way shall be controlled by the Contractor. Dust control includes the action necessary to prevent, reduce or control dust within the work area as required to complete the work. The Contractor shall carry out proper and efficient measures to prevent his operations from producing dust in amounts damaging to property or causing a nuisance, or harm to persons living nearby or occupying buildings in the vicinity of the work. The Contractor shall control dust 24 hours a day, seven days a week. The methods to be used for controlling dust in the construction area and along haul roads shall be approved by the Engineer prior to starting any work. The Rule 403 Implementation Handbook published by the SCAQMD, contains a detailed listing of reasonably available dust control measures.

Dust control ordered by the Engineer to be applied on Saturdays, Sundays or holidays will be included in the Contract price for dust control and no additional compensation will be allowed therefore.

The full compensation for all direct and indirect costs incurred for work performed or materials used to control dust resulting from the Contractor's performance of the work and caused by public traffic, either inside or outside the right-of-way shall be considered as included in the Contract prices paid for the various items of work involved and no additional compensation will be allowed therefore.

5-9 STORAGE OF EQUIPMENT AND MATERIALS.

The Contractor shall be required to provide and maintain as necessary, any additional property required for storage of equipment, materials, etc., to perform work on this project. Should the additional property be located within the city limits of the City of Redlands, the Contractor shall obtain written approval from the City of Redlands Development Services Department and comply with all conditions set therein prior to use. When private property is used for a yard area, the

Contractor shall also secure written authorization from the private property owner and supply a copy of such to the City before any monthly progress payment is submitted. Contractor to propose designated areas of the project site, upon approval by the Engineer, suitable for material delivery, storage, and waste collection.

The Contractor shall ensure the construction yard adheres to all local, State and Federal regulations, ordinances, codes and maintained in a neat and orderly manner throughout the duration of the project. The contractor shall include the construction yard in the Erosion Control Plan or SWPPP and shall be inspected and approved prior to use of the yard. If at any time during the project the location of the construction yard changes from the approved site, the City shall be notified prior to relocation for inspection and approval. Should the Contractor fail to comply with these conditions, the Engineer may suspend the work per SSPWC section 6-3 until the condition is corrected.

At the end of the project or as required, the Contractor shall: clean up and remove all trash and debris, including all organic trash and debris; clean up and remove all hazardous and biochemical wastes from the property to the satisfaction of the agency (City, County, State, or Federal) charged with overseeing these items; and provide to the City a written release from the private property owner that they are satisfied with all clean up and removal work.

5-9.1 Storage in Public Streets.

Construction materials and equipment shall not be stored within public streets or right of way without prior approval from the City. In order to seek approval, Contractor shall submit a location map with all equipment or materials identified including size, duration and any BMP's installed and provide at least 7 days for review by the City.

5-10 WATER POLLUTION CONTROL.

The Contractor shall follow the City's guidelines for Storm Water Pollution Prevention in providing storm water pollution control at the project site, including the implementation of approved Erosion/Sediment Control Plans during construction as well as the implementation of approved Water Quality Management Plans.

Construction activities disturbing 1 acre or more of land shall comply with the State Water Resources Control Board's NPDES General Construction Storm Water Permit. A copy of the Notice of Intent (NOI) to include the Waste Discharge Identification (WDID) number shall be submitted as part of the Storm Water Pollution Prevention Plan (SWPPP) to the Engineer for review. Call (909) 782-4130 for NOI/WDID information.

All projects requiring grading shall submit to the City for review and approval an Erosion/Sediment Control Plan and a Grading Plan. Permit(s) will not be issued until plans are approved and may be revoked if work required in these specifications are not complied with.

Construction sites shall be maintained by implementation of BMPs in such manner that pollutants are not discharged from the site to the maximum extent practicable. A few references available to help with selection and implementation of applicable BMPs are:

1. California Storm Water Best Management Practice Handbook, American Public Works Association, March 1993;
2. The Construction Site Best Management Practices Manual, November 2000;
3. Storm Water Pollution Prevention Plan and Water Pollution Control Program Preparation Manual, November 2000;
4. California Regional Water Quality Control Board's San Francisco Bay Region, Guidelines for Construction Projects; and
5. California Regional Water Quality Control Board's San Francisco Bay Region, Erosion and Sediment Control Field Manual, July 1999.

All discharges into the storm drain system are prohibited except for potable water, properly treated discharge, and those discharges specifically approved by the Engineer. The following are some of the prohibited discharges:

1. Discharges that could have an impact on human health or the environment, cause or threaten to cause pollution, contamination, or nuisance;
2. Discharges that exceed any applicable water quality standard contained in a statewide Water Quality Control Plan or local Basin Plan; and
3. Discharges containing hazardous substances equal to or in excess of a reportable quantity listed in Federal regulations 40 CFR, Parts 117 and 302.

Materials that can cause or contribute to pollution or a violation of any applicable water quality standard include, but are not limited to: sediments; solid or liquid chemical spills; wastes from paints, stains, sealants, glues, limes, pesticides or herbicides and wood preservatives or solvents; asbestos fibers, paint flakes or stucco fragments; fuels, oils, lubricants or hydraulic, radiator and battery fluids; fertilizers; vehicle and equipment wash water or concrete wash water; concrete, detergent or floatable wastes; wastes from any engine and equipment steam cleaning or chemical degreasing; and chlorinated potable water line flushings.

Unless exempted or authorized by an NPDES permit, all non-storm water discharges require prior approval by the Engineer or the State Water Resources Control Board with Engineer's approval.

During construction, temporary storage of such materials as identified above must occur in a designated area physically separated from potential storm water runoff, with ultimate disposal in accordance with local, state and federal requirements.

De-watering of contaminated groundwater or discharging contaminated soils via surface erosion is prohibited.

Unless indicated otherwise by the Engineer, all projects, regardless of size, shall submit for review and approval, a Water Quality Management Plan (WQMP). The WQMP shall consist of post construction BMPs which shall remain in effect throughout the life of the facility. Refer to WQMP guidelines.

5-11 TEMPORARY LIGHTS, POWER AND WATER.

Any water drawn from a City fire hydrant shall be via a City owned water meter. Said meter may be obtained from the Municipal Utilities & Engineering Department. Contractor is responsible for payment of a \$1200 deposit fee. Said meter shall be returned in a condition like received, less normal wear and tear. All meters are loaned subject to the conditions of the Fire Hydrant Construction Meter Water Service Application. Contractor must provide proposed location of meter and notify Customer Service at (909) 798-7516 each time the meter is relocated during construction. Water reasonably used in connection with the construction contract will be provided at no cost to the Contractor. Water use determined to be wasteful or unreasonable will be charged for at the prevailing rate.

5-12 PROTECTION AND RESTORATION OF EXISTING IMPROVEMENTS.

The Contractor shall relocate, re-establish, repair or replace all existing improvements within the work limits or right-of-way which are not designated for removal (e.g., sprinkler systems, curbs, sidewalks, driveways, fences, walls, signs, utility installations, pavement, structures, etc.) which are damaged or removed as a result of its operations.

Relocations, re-establishments, repairs and replacements shall be at least equal to existing improvements and shall match them in finish and dimension. All costs to the Contractor for protecting, removing, restoring, relocating, repairing, replacing or re-establishing existing improvements shall be included in the Bid.

The Contractor shall be responsible for the maintenance of the streets and roadways to be used by public and local traffic through and adjacent to the construction zone, from the date of "Notice to Proceed" until the date of acceptance of the completed construction improvements.

Street maintenance shall include filling of potholes, grading of subgrade and base, replacing signs, installing interim pavement striping and markers on the project streets and other side streets within the construction zone. Street maintenance shall also include sweeping and washing of streets, adjacent and connected to the construction zone on a weekly, or more frequent schedule, to prevent the accumulation of dust, dirt, gravel or other deleterious materials, all as necessary to maintain the construction roadways and adjacent streets in a safe, clean and drivable condition for use by public and local traffic.

Upon request from the City for information pertaining to a claim against the contractor, contractor shall provide a written/email response, including all requested information, within 14 calendar days of City's request. If a response with all requested information is not provided to the City within 14 calendar days, a penalty of \$500 per calendar day will be assessed to the Contractor by the City.

5-13 PUBLIC CONVENIENCE AND SAFETY.

5-13.1 General.

The Contractor may be allowed to close the roadway, or a portion thereof, to traffic during normal work hours upon approval from the Engineer. During any closure, the Contractor shall allow access

for residents, schools, trash service trucks, churches and businesses within the affected portion of roadway, except as required for construction for a reasonable period of time. The Contractor shall notify residents as noted within Section 5-18.

The Contractor shall provide and install barricades, delineators, warning devices and construction signs in accordance with the Work Area Traffic Control Handbook (WATCH) prepared by the Southern California Chapter of the American Public Works Association. During adverse weather or unusual traffic or working conditions additional devices shall be placed as directed by the Engineer. All traffic signs and devices shall conform to the current State of California, Department of Transportation (CALTRANS), "Manual of Warning Signs, Lights, and Devices for Use in Performance of Work upon Highways", unless otherwise approved by the Engineer.

Fences, barriers, lights and signs shall be furnished, erected and maintained as necessary to give an adequate warning to the public at all times that the work is under construction and of dangerous conditions to be encountered as a result thereof, and warning and directional signs shall also be erected and maintained as may be required by the City. Should the Contractor fail to furnish a sufficient number of traffic and/or pedestrian safety devices within three (3) hours after being notified, the Owner will place such necessary items and the Contractor shall be liable to the Owner for providing such devices in accordance with the following provisions:

1. For placing of barricades - \$15.00 per barricade for each day or part thereof.

For flashers - \$15.00 per flasher for each day or part thereof.

For traffic cones - \$7.50 per cone for each day or part thereof.

2. In the event that the services of the Owner are required outside the normal working hours and/or days or items not noted above are furnished by the City, all costs incurred by the City shall be the responsibility of the Contractor.

The Contractor shall relocate, preserve and maintain the visibility of all signs within the project limits which affect the flow of traffic, as directed by the Engineer. Any signs that are missing or found damaged shall be replaced immediately by the Contractor at his expense.

The Contractor shall provide and maintain Class II barricades along excavation edges parallel to the flow of traffic at a spacing of twenty-five feet (25'). Class II barricades mounted with flashers shall be installed around work areas in parkways. Class II barricades shall have alternating black and reflectorized white (or yellow) stripes at an angle of 45 degrees. The stripe width shall be four to six inches.

During paving operations barricades may be supplemented with minimum size eighteen-inch (18") high traffic cones and delineators such that spacing between barricades and/or cones or delineators is no greater than twenty-five feet (25'). At all access points such as intersecting streets, alleys and driveways, barricades and/or cones shall be provided at five-foot (5') intervals so as to prevent vehicular access to the paving area. Where access from an intersecting street is prohibited, a "Road

Closed" sign shall be provided. "No Left Turn" sign shall be provided wherever required by the Engineer.

Clearances from traffic lanes shall be 5 feet to the edge of any excavation and 2 feet to the face of any curb, pole, barricade, delineator or other vertical obstruction.

A 4 foot wide pedestrian walkway shall be maintained in the parkway area on each side of all streets, unless otherwise authorized by the Engineer. The minimum clearance from: the edge of pedestrian walkways to any traffic lane shall be 5 feet; the edge of pedestrian walkways to any work zone shall be 3 feet; and the surface of pedestrian walkways to any overhead obstruction shall be 7 feet.

The Contractor shall, at the end of each work day, have backfilled, compacted and placed a temporary drivable roadway surface on all work areas within traveled roadways prior to leaving the job site. Failure to comply to the satisfaction of the Engineer shall result in immediate correction by City forces, and all costs shall be borne by the Contractor.

Traffic control devices shall be marked with the Contractor's name as appropriate. At no time shall any traffic control devices marked with companies or agencies other than the Contractor or subcontractors, be utilized within the work area.

All said traffic controls and safety devices shall be maintained in clean condition, with any and all graffiti removed by the end of workday on which the graffiti was first reported to the Contractor.

If the traffic control devices are deemed unacceptable by the Engineer due to being damaged, dirty, or marked incorrectly, the Contractor shall replace the traffic control devices immediately. Should the Contractor fail to furnish traffic control devices within three (3) hours after being notified, the Owner will place such necessary items and the Contractor shall be liable to the Owner for providing such devices in accordance with the provisions above.

5-13.1.1 Vehicular Access.

At such times as driveways are inaccessible due to the Contractor's work they shall be blocked by two (2) Class II barricades or one (1) Class II barricades and two (2) delineators. Driveways that are ramped or planked for temporary access shall be provided with a delineator at each side.

5-13.1.2 Signage. The Contractor shall furnish, erect and maintain all construction traffic signage as required and specified.

All construction traffic signage shall be in place prior to commencing any work, placed as needed during construction, moved as necessary and removed only upon completion of all work.

All construction traffic signage and controls shall comply with the State of California Manual of Traffic Controls, Warning Signs, Lights and Devices for use in Performance of Work Upon Highways. All construction traffic signage used in the performance of the work shall be a minimum of the encapsulated lens (high intensity) type. All traffic controls and safety devices, equipment and materials, including but not limited to cones, channelizers, delineators, flashing warning lights,

barricades, high level warning devices, telescoping flag trees, flags, signs, markers, portable barriers, flashing arrow signs, changeable message signs, markings and flagging equipment shall be provided and maintained in like new condition.

When a Traffic Signal is constructed as a part of the project, the Contractor shall place and maintain for one calendar month, a message board for each approach leg to a new traffic signal. The message board shall read “CAUTION - NEW TRAFFIC SIGNAL”. The one month period shall begin from the day of activation. This requirement may be lessened or waived, on a case-by-case basis, by the Engineer.

The Contractor shall furnish and properly install, construct, erect, use and continuously inspect and maintain, twenty-four (24) hours per day, seven (7) days per week, including holidays, all said devices, equipment and materials and all temporary and permanent pedestrian and driving surfaces as necessary to provide for the safety and convenience of, and to properly warn, guide, control, regulate, channelize and protect the vehicular traffic, pedestrian traffic, project workers, and the public throughout the entire limits of the work activity and beyond said limits as necessary to include areas affecting or affected by the work, from the date of notice to proceed to the completion and acceptance of the work. Any corrective work required to be performed by City forces shall be charged to the Contractor and paid in full before release of any bonds on the project.

All traffic cones shall be no less than 28 inches in height, except that shorter cones, 12 inches minimum height, may be permitted during striping maintenance operations where the only function of the cone is to separate traffic from the wet paint. All barricades used to delineate traffic at night or placed in or adjacent to the traveled roadway at night, shall be equipped with flashing warning lights.

Channelizers shall be required when lane restrictions, detours or other work conditions need to be maintained for periods longer than normal work hours. Channelizers shall be surface-mounted type and shall be furnished, placed and maintained at the locations shown on the plans or as approved by the Engineer and shall conform to these specifications. Channelizers shall be, at the Contractor's option, one of the following types, or approved equal: (1) Safe-Hit SH236SMA; (2) Repo “The Replaceable Post”; or (3) Carsonite, “Super Duck” SDF-436.SDF-436.

5-13.2 Traffic Control Plan

The Contractor shall provide a Traffic Control Plan to the agency for approval prior to the scheduled commencement of work. Comments and corrections shall be returned to the Contractor within five (5) working days.

The Contractor shall be required to maintain one lane in each direction when working on the roadway. Access to schools, businesses, etc. shall be maintained as necessary for their operations. If closures are authorized by the Engineer, all detour signage shall be installed prior to closure of specified portion of roadway(s) and shall be maintained during closure.

The Contractor shall make provision to allow pedestrians full access across work areas at existing crosswalks, while working within those areas.

Traffic controls, including but not limited to vehicular and pedestrian traffic controls, maintenance of vehicular and pedestrian access, detours, and street closures shall be in accordance with Subsection 7-1, of the current edition of the "Standard Specifications for Public Works Construction," including all its subsequent amendments, and the current edition of the "Work Area Traffic Control Handbook."

Traffic control and the Traffic Control Plan shall conform to the following:

- a. All major streets shall remain open to through-traffic at all times, residential street will be closed to traffic only as long as it takes for material application and drying time.
- b. The Traffic Control Plan shall indicate the traffic control requirements for the different types of work to be performed. The Contractor shall be responsible for the preparation of Plans as necessary for specific items of work. These Plans shall be approved by the Engineer.
- c. All traffic controls and safety devices, equipment and materials, including but not limited to cones, delineators, flashing warning lights, barricades, high level warning devices (flag trees), flags, signs, markers, portable barriers, flashing arrow signs, markings, and flagging equipment shall be provided and maintained in "like new" condition.
- d. The Contractor shall furnish and properly install, construct, erect, use, and continuously inspect and maintain, twenty-four (24) hours per day, seven (7) days per week, all said devices, equipment and materials and all temporary and permanent pedestrian and driving surfaces as necessary to provide for the safety and convenience of, and to properly warn, guide, control, regulate, channelize and protect the vehicular traffic, pedestrian traffic, project workers, and the public throughout the entire limits of the work activity and beyond said limits as necessary to include area affecting or affected by the work, from the start of work to the completion of the work.

In the event the slurry and cape seal ravel, a "loose gravel" (C6) sign shall be placed to adequately warn the public.

- e. High-level warning devices (flag trees) are required at all times for any work being performed within the roadway unless otherwise specifically authorized by the Engineer.
- f. All barricades shall be equipped with flashing warning lights, and all traffic cones shall be no less than twenty-eight inches (28") in height, except that shorter cones, twelve inches (12") high or higher, may be used during striping maintenance operations where the only function of the cones is to protect the wet paint from the traffic.
- g. Type III barricades, no less than six feet (6') in length and equipped with two (2) Type "N" markers each and two (2) flashing warning lights each, shall be used to close streets, except as otherwise specifically authorized in advance by the Engineer for minor maintenance work of no more than one (1) working days duration on weekdays, or on holidays only, and between 8:00 a.m. and 3:30 p.m. only. Said barricades shall be placed across the full roadway at each point of closure with the distance between barricades or between barricades and curbs, not exceeding

three feet (3'), except that one (1) eleven-foot (11')-wide gap between barricades shall be provided at the center of the street. Barricades to the right of the street's center, facing the inbound vehicular traffic, shall also be equipped with one (1) Type C2 "Road Closed" sign each or one (1) Type C3A "Road Closed to Thru Traffic" sign each.

- h. Except for residential streets, as otherwise directed and/or authorized by the Engineer, two-way vehicular traffic shall be maintained at all times within two (2) eleven foot (11')-wide lanes on streets, having an effective roadway width of forty-four feet (44') or more with restricted parking, and other streets of lesser widths may be reduced to one (1) twelve-foot (12') wide lane with work activity being limited to one side at a time, and with one-way vehicular traffic being maintained at all times by properly trained and experienced flaggers.

No reduction of the traveled way width shall be permitted on any City street before 8:00 a.m. nor after 3:30 p.m., on weekends or holidays, or when active work is not being done, unless prior authorization to do so is granted by the Engineer.

Arrow boards shall be required for all lane closures on major streets.

- i. Properly trained and experienced flaggers shall be provided to traffic when said traffic is to be interrupted, when two-way traffic is to be reduced to one-way traffic, and at such other times as is necessary to safely pass the traffic through or around the work area, and when so directed by the Engineer.
- j. Vehicular access to occupied residential property may be restricted on weekdays other than holidays between the hours of 8:00 a.m. to 3:30 p.m. while essential work activity is taking place, with specific prior written approval from the Engineer, providing the Contractor gives the owner and/or resident at least forty-eight (48)-hour advance written and oral notice. See Part 2, "Notification of Residents," herein.

Convenient and safe pedestrian access to occupied residential property shall be maintained at all times. Access to mailboxes must be maintained at all time, such that the postal delivery service is not interrupted.

Access to vacant and unused property may be restricted at the Engineer's discretion. Both vehicular and pedestrian access shall be maintained at all times to all other property except as otherwise specifically authorized in writing by the Engineer.

- k. Any traffic control and safety devices and equipment being used which becomes damaged, destroyed, faded, soiled, misplaced, worn out, inoperative, lost, or stolen shall be promptly repaired refurbished and/or replaced, and any traffic control and safety devices and equipment being used which are displaced or not in an upright position from any cause, shall be promptly returned or restored to their proper position.
- l. An unobstructed view of all signs and warning devices including but not limited to stop signs, stop ahead signs, street names signs, and other regulatory, warning and construction signs, markers, and warning devices shall be maintained at all times. No trucks or other equipment or

materials shall be stopped, parked, or otherwise placed so as to obscure said signs, markers, and devices from the view of vehicular and/or pedestrian traffic to which it applies.

- m. When entering or leaving roadways carrying public traffic, the Contractor's equipment, whether empty or loaded, shall yield to said public traffic at all times, except where the traffic is being controlled by police officers, fire officers, properly trained and experienced flaggers, or at traffic signalized intersections.
- n. Stockpiling and/or storage of materials on any public right-of-way or parking areas will not be allowed without specific permission of the Engineer. Materials spilled along or on said right-of-way or parking areas shall be removed completely and promptly. All stockpile and/or storage areas shall be kept in a safe, neat, clean, and orderly fashion, and shall be restored to equal or better than original condition upon completion of the work.
- o. Where vehicular access to abutting property must be restricted, the work shall be so selected, arranged, and scheduled that the person(s) requiring access to said abutting property and/or residents along said streets affected will be able to park within a reasonable distance of not more than five hundred feet (500') from their homes and/or destination. Residents must be supplied written notice of such restrictions a minimum of 48 hours in advance.
- p. When work has been completed on a particular street or has been suspended or rescheduled, and said street is to be opened to vehicular traffic, all equipment, "NO PARKING" signs, other obstructions, and unnecessary traffic control devices and equipment shall be promptly removed from that street except as otherwise authorized or directed by the Engineer.
- q. Should the Contractor be neglectful, negligent, or refuse, fail, or otherwise be unavailable to promptly, satisfactorily, and fully comply with the provisions specified and referred to hereinabove, the City reserves the right to correct and/or mitigate any situation, which in the sole opinion of the Engineer constitutes a serious deficiency and/or serious case of noncompliance, by any means at its disposal at the Contractor's and/or permittee's expense, and will deduct the cost therefore from the Contractor's progress and/or final payment. Such corrective action taken by the City shall not reduce or abrogate the Contractor's legal obligations and liability for proper traffic control and safety measures, and shall not serve to transfer said obligations and liabilities from the Contractor to the City or the City's agents.
- r. Violations of any of the above Provisions and/or Provisions of the referenced publications, unless promptly and completely corrected to the satisfaction of the Engineer, shall at the sole discretion of the City, be grounds for termination of the Contract, or shut down or partial shutdown of the work, without compensation to the Contractor and/or permittee, or liability to the City, all as prescribed by Contractual obligation or State law, whichever is applicable.

Full compensation for furnishing all labor, materials, tools, equipment, flaggers, lights, channelizers (surface mounted), temporary striping, barricades, portable flashing lights, flashing arrow signs, traffic control and detour plan, and incidentals required to comply with the provisions specified and referred to herein above, to provide all required traffic and pedestrian control for the duration of this

contract, all as shown and as specified, shall be paid as specified in Section 01200 of the General Requirements and no other compensation shall be made therefore.

5-13.3 Edison Energized Conductors. The Contractor hereby promises and agrees that in the performance of the Work, he will employ and utilize only qualified persons, as hereinafter defined, to work in proximity to Edison's secondary, primary and transmission facilities. The term "qualified person" is defined as follows:

"Qualified Person". A person by reason of experience or instruction is familiar with the operation to be performed and hazards involved.

Contractor further promises and agrees that the provisions of this paragraph shall be and are binding upon any Subcontractor or Subcontractors that may be retained by it, and that the Contractor shall take such steps as are necessary to insure compliance by said Subcontractor or Subcontractors with the requirements of this paragraph.

5-14 CONTRACTOR'S RESPONSIBILITY FOR DAMAGE.

5-14.1 Responsibility for Damage. The Contractor agrees to and does hereby indemnify, defend and hold harmless the City, its elected officials and the Consultant and their officers, agents and employees from every claim or demand made, and every liability, loss, damage, or expense of any nature whatsoever, including attorney's fees and costs, which may be incurred by reason of:

- (a) Liability for damages for (1) death or bodily injury to persons, (2) injury to loss or theft of property, (3) any other loss, damage or expense arising under either (1) or (2) above, sustained by the Contractor or any person, firm or corporation employed by the contractor upon or in connection with the work called for in this agreement, except for the liability resulting from the sole negligence or willful misconduct of the City, its elected officials and their officers, employees and agents who are directly employed by the City and the Consultant; and
- (b) any injury to or death of persons or damage to property caused by any fault, neglect, default or omission of the Contractor, or any person, firm or corporation employed by the Contractor, either directly or by independent contract, including all damages due to loss or theft, sustained by any person, firm or corporation, including the City, arising out of, or in any way connected with the work covered by this agreement, whether said injury or damage occurs either on or off City property, provided that any of the foregoing (1) is attributable to personal injury, bodily injury, sickness, disease or death, or to injury to or destruction of tangible property (other than the work itself), including the loss of use resulting there from, and (2) is caused in whole or in part by any act or omission of the Contractor, any subcontractor, any supplier, anyone directly or indirectly employed by any of them or anyone for whose act or omissions any of them may be liable, regardless of whether or not caused in part by any act or omission (active, passive, or comparative negligence included, excepting the active negligence of the District) of a party indemnified hereunder.
- (c) The Contractor, at its own expense, cost, and risk shall defend any and all actions, suits or other proceedings that may be brought or instituted against the City, its elected officials, officers,

agents and employees and the Consultant, against any such claim, demand or liability, and shall pay or satisfy any judgment that may be rendered against the City, its elected officials, officers, agents or employees, in any such action, suit or other proceedings as a result thereof.

5-15 NO PERSONAL LIABILITY. Neither the City Council, the Engineer, the Consultant, nor any other officer or authorized assistant or agent shall be personally responsible for any liability arising under the contract.

5-16 CONTRACTOR'S RESPONSIBILITY FOR WORK. Except as provided above, until the formal acceptance of the Work by the City, the Contractor shall have the charge and care thereof and shall bear the risk of injury or damage to any part thereof by the action of the elements or from any other cause, whether arising from the execution or from the non-execution of the Work. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the work occasioned by any of the above causes before final acceptance and shall bear the expense thereof, except such injuries or damages occasioned by act of the federal government or the public enemy.

The City of Redlands shall not be held responsible for the care or protection of any material or parts of the work prior to final acceptance, except as expressly provided in these specifications.

The City shall not be responsible for security of the Contractors equipment or materials at the site. The City will not be responsible for theft or damage to any property or materials of the Contractor. Security for Contractor's property shall be the responsibility of the Contractor.

5-17 WARRANTY OF WORK. The Contractor shall warranty the Work against defective materials or workmanship for a period of (1) year from the date of completion date specified in the Notice of Completion, except where longer warranty periods are specifically stated. As specified in Section 2-4 in the GENERAL CONDITIONS, the Performance Bond shall remain in full force and effect during the warranty period.

All work which has been rejected, shall be remedied, or removed and replaced, by the Contractor at his own expense, with work conforming to the Plans and Specifications. Any defective material or workmanship which may be discovered before final acceptance or within (1) one year from the completion date specified in the Notice of Completion shall be corrected immediately by the Contractor at his own expense notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work at any stage shall not relieve the Contractor from any obligation to perform sound and reliable work as herein described. It is the Contractor's ultimate responsibility to deliver at the time of final acceptance a complete project that complies in all details with these Contract Documents. All items shall be ready to operate.

Any omission or failure on the part of the Owner to discover or notify the Contractor of or to condemn defective work or material at the time of construction shall not be deemed an acceptance, and the Contractor will be required to correct defective work or material prior to final acceptance.

The Owner will endeavor to locate any errors or defective materials or workmanship and call them to the attention of the Contractor prior to subsequent work being performed. However, the Owner is

under no obligation to do so and shall not be held liable because errors or defective material or workmanship by the Contractor are not discovered prior to subsequent work.

During the (1) one year warranty period, should the Contractor fail to remedy defective material and/or workmanship, or to make replacements within five (5) days after written notice by the Owner, it is agreed that the Owner may make such repairs and replacement and the actual cost of the required labor and materials shall be chargeable to and payable by the Contractor or his Surety.

Nothing in this section shall be construed to limit the rights of the Owner to immediately correct conditions which may be unsafe or which may pose a public health nuisance. Should said conditions later be found to be caused by defective material and/or workmanship, the Contractor and his Surety shall reimburse the Owner for costs reasonably incurred while attending the situation.

In the event it is necessary for the Owner to file suit to enforce any liability of the Contractor pursuant to this sections WARRANTY OF WORK, the Owner shall be entitled to recover from the Contractor, in addition to all other amounts found due and owing, costs of suit and reasonable expenses and fees, including reasonable attorneys' fees, incurred by the Owner in successfully enforcing the Contractor's obligations, all to be taxed as costs and included in any judgment rendered.

The warranty provided herein shall not be in lieu of, but shall be in addition to any warranties or other obligations otherwise imposed by the Contract Document or by law. The remedies provided herein shall not be exclusive and the Owner shall be entitled to any and all remedies provided by law.

5-18 NOTIFICATION OF RESIDENTS/BUSINESSES. The Contractor shall notify all residents, firms, institutions, agencies, and utility companies which may be affected by the work. Notification shall be by hand delivery of an approved notice within the project limits approved by the City. The notification process shall consist of two notifications, one prior to the start of construction for all properties within the project area and a second notification at least seven days in advance of any activity which may impact each specific property. In the event of any work within the downtown area, the distribution of the second notification shall be at least fourteen days in advance of any activity. Activities impacting said properties and, therefore, requiring the above said notices include the following: the work itself; closure or partial closure of the street; and disallowance of street parking and disallowance of vehicular ingress to or egress from the property.

Said firms, institutions, agencies, and utility companies which must be notified of proposed work shall include, but are not limited to the following: public schools, private schools, day care centers, postal service, hospitals, governmental services, police department, fire department, ambulance services, Omnitrans, solid waste collection, and City street sweeping.

The proposed notice shall be submitted to the Engineer at least seven calendar days prior to the date of distribution for review and approval. The submittal shall also include a map identifying the limits of the work and proposed limits of distribution. The printed notices shall contain a general description of the work to be done, the name of the street with limits, the day and date of the work and the name and telephone number of the Contractor. The notice shall also include a statement

that there will be no disruption of trash collection schedules and that trash should be set out by 6:00 a.m. on the scheduled day of pickup. If on-street parking will be affected the notice shall include a statement that no on-street parking will be allowed between the hours of 7:00 a.m. and 5:00 p.m. on the day of work, and a statement that it will be necessary to tow away parked vehicles at the owner's expense per California Vehicle Code CVC 22651L and CVC 22654D.

The Contractor will provide City with the dates and addresses of when project notifications are delivered to affected properties. City will verify the notification process is completed in compliance with the requirements of the specifications. Work will commence when City approves Contractor's compliance with the requirements set forth in the specifications.

If on-street parking is affected, the Contractor shall also post pre-approved "NO PARKING-TOW WAY" signs on 1 x 2 wood stakes or barricades at one hundred foot (100') maximum spacing along the affected areas of the street, 48 hours prior to the start of the work. The "NO PARKING-TOW AWAY" signs shall contain the day, date, and hours that parking will be prohibited on that particular street and a statement that parked vehicles will be towed away at owner's expense per California Vehicle Code CVC 22651L and CVC 22654D. The Contractor shall maintain said signs throughout the day of work, and shall start the removal of said signs by 4:00 p.m. and complete the removal by 6:00 p.m. on said day of work or as otherwise directed by the Engineer.

The Contractor shall document the day, date, and time the signs are installed because the no parking restriction cannot be enforced until the signs have been in place 24 hours. Posting of signs on trees, utility poles, light standards and other existing parkway improvement is strictly forbidden.

In the event of street resurfacing operations, the notices to residents shall contain a statement that the street to be resurfaced will be closed to vehicular traffic, and the suggestion that if they require the use of their vehicles on the day of the resurfacing work, they should consider parking their vehicle on a nearby street which is not scheduled for a resurfacing application.

In the event scheduled work is delayed, the Contractor shall immediately remove all "NO PARKING" signs. The contractor must notify all previously notified, in person and with printed notices, that the work will be rescheduled and that they will be re-notified 48 hours in advance. The Contractor shall have an adequate supply of approved notifications for distribution to residents.

Full compensation for conforming to these requirements shall be considered as included in the various Contract items of work involved, and no additional compensation will be allowed therefore.

Failure to comply with this section shall result in a penalty assessment imposed of up to \$10,000 per violation at the City's discretion.

SECTION 6 – PROSECUTION AND PROGRESS OF THE WORK

6-1 CONSTRUCTION SCHEDULE AND COMMENCEMENT OF WORK. - *Add the following paragraph:*

Contractor shall notify Underground Service Alert (USA) at 1 (800) 227-2600, two working days prior to starting work, and must submit verification number to the City prior to starting work.

6-1.2 Commencement of the Work. - *Amend the second sentence as follows:*

“The work shall start within 10 days thereafter, and be diligently prosecuted to completion within the Contract Time.”

6-3 TIME OF COMPLETION.

6-3.1 General. - *Add the following sentence:*

The time of completion of the Contract shall be expressed in consecutive calendar days.

6-4.1 General. - *Add the following paragraphs:*

If saturated soil is encountered during construction due to leaks in an existing utility, contractor shall remove saturated material and replace with a suitable backfill material until adequate compaction can be attained by verification from the Engineer.

Prior to any removal of saturated material, contractor shall discuss the methods of remediation with the City's representative. Approval from the City, or the City's representative, shall be obtained for any amount of saturated material removal in which the contractor anticipates to be compensated for, if approval is not obtained all costs shall be borne by the contractor.

Up to a 14 day delay in paving operations may be requested after all leaks have been resolved to provide time for excess moisture to dissipate, at no additional cost to the city, in lieu of removing and replacing the saturated soil. A no cost change order will be prepared to provide the contractor with additional contract time if such delay is requested by the City.

6-9 LIQUIDATED DAMAGES. The value of liquidated damages noted in this section is amended to five hundred dollars (\$500) per calendar day.

6-10 NOTICE AND SERVICE THEREOF. Any notice required or given by one party to the other under the Contract shall be in writing and shall be dated and signed by the party giving such notice or by duly authorized representative of such party. Any such notice shall not be effective for any purpose whatever unless served in the following manner:

Notice shall be given to the Contractor by personal delivery thereof to said Contractor or to his authorized representative at the project site, or by depositing the same in the United States Mail enclosed in a sealed envelope addressed to said Contractor at the address established for the conduct of work under this Contract, certified and with postage prepaid.

Notice shall be given to the Surety, or any other person, by personal delivery to said Surety or other person, or by depositing the same in the United States Mail, enclosed in a sealed envelope addressed to such Surety or persons at the address of said Surety or persons last communicated by him to the party giving the notice, certified and with postage prepaid.

Notice shall be given to the Owner by personal delivery thereof or by depositing the same in the United States Mail enclosed in a sealed envelope, certified and with postage prepaid. The address of record for the owner is:

City of Redlands
Municipal Utilities & Engineering Department
P.O. Box 3005
35 Cajon Street, Suite 15A
Redlands, CA 92373

6-11 PUBLIC RECORDS ACT. All documents, Plans, specifications and all other information relating to the conduct of the City’s business, including information submitted by the Contractor, shall become the exclusive property of the City and except as provided by law shall be deemed public records. Said information shall be subject to the provisions of the California Public Records Act (Government Code Sections 6250 et seq.).

Under no circumstances will the City be responsible or liable to the Contractor, submitter or any other party for the disclosure of any records or information submitted to the City, regardless of whether such records or information are labeled “Trade Secret”, “Confidential”, or “Proprietary” (or words to similar effect) and regardless of whether the disclosure is required by law or a court order or occurs through inadvertence, mistake, or negligence on the part of the City or its officers, employees, and/or Contractors.

The City will not advise as to the nature or content of documents entitled to protection from disclosure under the California Public Records Act, including interpretations of the Act or the definition of “Trade Secret”. The submitting party shall be solely responsible for all determinations made under the Act, and where appropriate for clearly and prominently marking each and every page or sheet of information with “Trade Secret”, “Confidential”, or “Proprietary”. Each submitting party is advised to contact its own legal counsel concerning the California Public Records Act and its applicability to the submitting party’s own circumstances.

In the event of litigation concerning the disclosure of any information submitted by the submitting party, the City’s sole involvement will be as a stakeholder, retaining the information until otherwise ordered by a court. The submitting party, at its sole expense and risk, shall be responsible for any and all fees and costs for prosecuting or defending any action concerning the information, and shall indemnify and hold the City harmless from all costs and expenses including attorneys’ fees, in connection with such action.

SECTION 7 - MEASUREMENT AND PAYMENT

7-3 PAYMENT.

7-3.2 Partial and Final Payment. - *Delete and replace with the following:*

The closure date for the purpose of making monthly progress payments shall be assigned by the Engineer during the pre-construction meeting. Payment, less deductions, unearned work and retention, will be made within 30 days of the closure date. If a dispute exists between the City and the Contractor regarding an item included in the Contractor's Monthly Progress Payment Request, progress payments will be withheld until said dispute is resolved, in which case longer period of time will be required to make such payment. No such payment shall be required to be made, when

in the judgment of the Engineer, the total value of the work since the last estimate amounts to less than \$500. If, in the opinion of the Engineer, work is not progressing according to the approved schedule, payments may be withheld until the Contractor returns to the approved schedule.

Deductions will be made for: (1) amounts due the Owner for equipment or material furnished or services rendered; (2) amounts due the Owner under the terms of the Contract; (3) amounts of any claims of lien filed with the Owner; (4) accrued amounts of liquidated damages; (5) amounts required to be deducted by Federal, State or local governmental authorities. From the balance thus determined will be deducted the amounts of all previous payments, and the remainder shall constitute the monthly payment due the Contractor.

A retention of five percent (5%) will be withheld from each and every progress payment to the Contractor. This percentage will remain constant throughout the duration of the Contract. The City shall make a progress payment within thirty (30) days after receipt of an undisputed and properly submitted payment request from Contractor pursuant to Public Contract Code section 20104.50.

After completion of the work to the satisfaction of the Engineer, the Engineer shall make a final estimate of the amount of work done. The City shall pay the entire sum so found to be due after deducting there from all previous payments and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of thirty-five (35) days from and after the recordation of the Notice of Completion filed by the City.

As provided by paragraph 22300 of the California Public Contract Code, the Contractor may substitute securities for any monies withheld by the City to ensure performance under the Contract. Substitute securities shall be deposited in a financial institution in a form acceptable to the City of Redlands. The financial institution shall be located within the City limits of the City of Redlands. The Escrow Agreement to be used is set forth in Public Contract Code section 22300.

7-3.3 Delivered Materials. - *Delete and replace with the following:*

No payment will be made for materials or equipment delivered but not yet incorporated in the work.

7-4.2.6 Extras. Without invalidating the Contract, the City may order extra work or make changes by altering, adding or deducting from the work, the Contract sum being adjusted accordingly and the consent of the Surety being first obtained where necessary or desirable. All the Work of the kind bid upon shall be paid for at the price stipulated on the proposal, and no claims for any extra work or material shall be allowed unless the work is ordered in writing by the Engineer and the price is stated in such order.

7-4.2.7 Claims for Extra Costs. No claim for extra work or cost shall be allowed unless the same was done in pursuance of a written order by the Engineer, as aforesaid, and the claim presented with the first estimate after the changed or extra work is done. When work is performed under the terms of the General Conditions, the Contractor shall furnish satisfactory bills, payrolls, and vouchers covering all items of cost and when requested by the City, give the City access to accounts relating thereto.

After completion of the work to the satisfaction of the Engineer, the Engineer shall make a final estimate of the amount of work done. The City shall pay the entire sum so found to be due after deducting there from all previous payments and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments shall be subject to correction in the final estimate and payment. The final payment shall not be due and payable until the expiration of the thirty-five (35) days from and after the recordation of the Notice of Completion filed by the City.

SECTION 8 - FACILITIES FOR AGENCY PERSONNEL

This section is deleted in its entirety.

SECTION 9 - ASSIGNMENT OF UNFAIR BUSINESS PRACTICES CLAIMS

9-1. In entering into a public works contract or a subcontract to supply goods, services, or materials pursuant to a public works contract, the Contractor or subcontractor offers and agrees to assign to the City all rights, title and interest and to all causes of action it may have under Section 4 of the Clayton Act (15 U.S.C. Sec. 15) or under the Cartwright Act (Chapter 2, commencing with section 16700 of part 2 of division 7 of the Business and Professions Code), arising from the purchase of goods, services, or materials pursuant to this public works agreement. This assignment shall be made and become effective at the time the City tenders final payment to the Contractor, without further acknowledgment by the Parties.

SECTION 10 - TRENCHING AND EXCAVATION

10-1. If this contract involves digging trenches or other excavations that extend deeper than (4) feet below the surface, the following shall be done pursuant to California Public Contract Code Section 7104:

- A. That the Contractor shall promptly and before the following conditions are disturbed, notify the City in writing, of any:
 - (1) Material that the Contractor believes may be material that is hazardous waste, as defined in Section 25117 of the Health and Safety Code, that is required to be removed to a Class I, Class II or Class III disposal site in accordance with provisions of existing law.
 - (2) Subsurface or latent physical conditions differing from those indicated.
 - (3) Unknown physical conditions at the site of any unusual nature, different materially from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the contract.
- B. That the City shall promptly investigate the conditions, and if it finds that the conditions do materially so differ, or do involve hazardous waste, and cause a decrease or increase in the Contractor's cost of, or the time required for, performance of any part of work shall issue a change order under the procedures described in the contract.

- C. That, in the event that a dispute arises between the City and the Contractor whether the conditions materially differ, or involve hazardous waste, or cause a decrease or increase in the Contractor cost of, or time required for, performance of any part of the work, the Contractor shall not be excused from any scheduled completion date provided for by the contract, but shall proceed with all work to be performed under the contract. The Contractor shall retain any and all rights provided either by contract or by law which pertains to the resolution of disputes and protests between the contracting parties.

SECTION 11 - REMOVAL, RELOCATION OR PROTECTION OF EXISTING UTILITIES

- 11-1.** Pursuant to Government Code Section 4215 et seq, the City shall assume the responsibility between the parties to this contract, for the timely removal, relocation, or protection of existing main or trunk line utility facilities located on the site of the construction project for this contract, if such utilities are not identified by the public agency in the plans and specifications made a part of the invitation for bids.
- 11-2.** The Contractor shall be compensated for the costs of locating, repairing damage not due to the failure of the Contractor to exercise reasonable care, and removing or relocating such utility facilities not identified in the plans and specifications with reasonable accuracy and for equipment on the project necessarily identified during such work.
- 11-3.** The Contractor shall not be assessed liquidated damages for delay in completion of the project, when such delay was caused by the failure of the City, or the owner of the utility to provide for removal or relocation of such utility facilities.
- 11.4.** The City shall not be required to indicate the presence of existing service laterals or appurtenances whenever the presence of such utilities on the site of the construction project can be inferred from the presence of other visible facilities, such as buildings, meter and junction boxes, on adjacent to the site of construction, provided, however, nothing herein shall relieve the City from identifying main or trunk lines in the plans and specifications.
- 11.5.** Nothing herein shall preclude the City from pursuing appropriate remedy against the utility for delays which are the responsibility of the utility.
- 11.6.** If the Contractor, while performing the contract, discovers utility facilities not identified by the City in the contract plans or specifications, Contractor shall immediately notify the City and the utility in writing.
- 11.7.** The public utility, when it is the owner, shall have the sole discretion to perform repairs or relocation work or permit the Contractor to do such repairs or relocation work at a reasonable price.
- 11.8.** Contractor shall comply with Government Code Section 4216 through 4216.9.
- 11.9.** Conduits from existing street light and traffic signal systems may be encountered during construction of this project. All removals, relocations, and/or replacements of existing conduit systems shall be performed in accordance with these specifications and City standards, by a qualified electrical contractor. All costs for said work shall be borne by the Contractor and paid as a part of the various items of work requiring such removals, relocations, and/or replacements, and no other compensation shall be made therefore.

PART 2 – CONSTRUCTION MATERIALS

SECTION 200 - ROCK MATERIALS

200-2 UNTREATED BASE MATERIALS.

200-2.1 General. - *Amend the first paragraph as follows:*

“Materials for use as untreated base or subbase shall be classified in the order of preference as follows:

Crushed Aggregate Base

Crushed Miscellaneous Base

Pulverized Miscellaneous Base.”

200-2.4.1 General. - *Delete the second sentence and replace with the following:*

“The material shall be free of deleterious material as defined in 200-1.1.”

200-2.4.2 Grading. - *Amend the first sentence of paragraph 1 as follows:*

“The material shall be uniformly graded and shall conform to the ‘fine’ gradations:”

200-2.5.1 General. - *Delete the third sentence and replace with the following:*

“The material shall be free of deleterious material as defined in 200-1.1.”

200-2.8.1 General. - *Amend as follows:*

Delete the second sentence of paragraph 1 and replace with the following:

“Pulverized miscellaneous base may contain underlying base material.”

Delete the third sentence of paragraph 1 and replace with the following:

“The material shall be free of deleterious material as defined in 200-1.1.”

SECTION 201 - CONCRETE, MORTAR AND RELATED MATERIALS

201-1 PORTLAND CEMENT CONCRETE.

201-1.1.1 General - *Add the following paragraph:*

The Contractor shall furnish the Engineer with a copy of the mix design to be used, and with a legible certified weighmaster's certificate for each load of PCC delivered to the project. PCC delivered to the project site having a water content and/or slump greater than that specified in the mix design, shall be rejected and removed from the project site.

201-1.1.2 Concrete Specified by Class and Alternate Class - *Amend Table 201-1.1.2.(A) as follows:*

Street Surface Improvements section -

All concrete in this section shall have a minimum compressive strength at 28 days of 22,410 kPa (3,250 pounds per square inch), and meet the requirements of class 330-C-23 (560-C-3250) concrete.

Sewer & Storm Drain Facilities section, Sidehill Surface Drainage Facilities subsection -

All concrete in this subsection shall have a minimum compressive strength at 28 days of 22,410 kPa (3,250 pounds per square inch), and meet the requirements of class 330-C-23 (560-C-3250) concrete.

201-1.4.3 Transit Mixers. - *Replace the first sentence in paragraph 6 with the following:*

The total elapsed time between addition of water at the batch plant and the completion of the discharge of the PCC from the mixer, shall not exceed ninety (90) minutes. All PCC remaining in the mixer, after said ninety (90) minutes time limit, shall be rejected and removed from the project site.

SECTION 203 - BITUMINOUS MATERIALS

203-3 EMULSIFIED ASPHALT.

203-3.1 General. - *Modify the section by adding the following:*

Asphalt emulsion shall be a QUICKSET ANIONIC OR CATIONIC EMULSIFIED ASPHALT conforming to the requirements of Subsection 203-1.3, "Test Reports and Certification", and Subsection 203-1.2, "Testing Requirements" of the Standard Specifications.

The latex additive shall be Ultra Pave 70 (for anionic) or Ultra Pave 65 K (for cationic) or an approved equal. The latex shall be added at the emulsion plant after weighing the asphalt and before the addition of mixing water. The latex shall be added at a rate of two to two-and-one-half (2 to 2.5) parts to one-hundred (100) parts of emulsion by volume.

203-6 ASPHALT CONCRETE.

203-6.1 General. - *Add the following paragraph:*

Unless otherwise approved by the Engineer, asphalt concrete for paving shall be C2-PG 64-10 (1/2") for finish paving or B-PG 64-10 (3/4") for base paving. Asphalt concrete for Type D1 or Type D2 curb shall be D2 -PG 70-10.

SECTION 206 - MISCELLANEOUS METAL ITEMS

206-7 TRAFFIC SIGNS.

206-7.1 General. The Contractor shall furnish or relocate and erect all traffic signage as required and specified.

All new traffic signage shall be a minimum of the encapsulated lens (high intensity) type, have an anti-graffiti protective covering and be installed on new posts. All traffic signage to be relocated shall be installed on new posts.

206-7.2 Protective Covering. Anti-graffiti protective covering shall be Type 1150-POF, manufactured by 3M Company, or approved equal.

206-7.3 Post and Base. New posts and bases shall be Ultimate Sign Support System as manufactured by Western Highway, or approved equal.

SECTION 207 – GRAVITY PIPE

207-2 REINFORCED CONCRETE PIPE (RCP).

207-2.1 General. - *Add the following sentences to paragraph 2:*

The minimum D-load for any RCP shall be 1,350. The minimum size for RCP shall be 18 inches (457 mm) unless otherwise approved by the Engineer.

SECTION 211 - MATERIAL TESTS

211-1 COMPACTION TESTS.

211-1.4 General. The Contractor shall be responsible for all quality control for all work. The Contractor shall complete all necessary testing to ensure the quality requirements within the specifications are achieved. The Contractor shall conduct the compaction testing by a geotechnical engineering firm and the results of the testing shall be made available to the Engineer.

The City will complete assurance testing throughout the project by an independent testing firm. The City will perform the first compaction test required at any location. If such test does not meet the required specifications, the City will make additional tests until the required compaction is obtained and withhold from the final payment due the Contractor, the cost of all such additional tests. To be acceptable, tests must be ordered and witnessed by the City. Tests will be ordered by the City and performed at a location and depth as directed by the City. The Contractor shall assist the City in performing these tests as necessary. The Contractor shall provide to the City the maximum dry density and the optimum moisture content results of backfill and bedding material when requested by the City.

SECTION 214 - TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

214-4 PAINT FOR STRIPING AND MARKINGS.

214-4.1 General. - *Amend the first sentence in paragraph 4 as follows:*

“Glass beads conforming to 214-3 shall be mechanically applied at a rate of 0.6 to 0.8 kg of beads per liter (5 to 7 pounds of beads per gallon).”

PART 3 – CONSTRUCTION METHODS

SECTION 300 - EARTHWORK

300-1 CLEARING AND GRUBBING.

300-1.1 General. - Amend as follows:

Amend paragraph 3 as follows:

“The natural ground surface shall be cleared of all vegetable growth, such as trees, logs, upturned stumps, roots of downed trees, brush, grass, weeds, shrubs, ground cover, tree stumps, decorative landscape rocks, edging, railroad ties, other decorative landscape treatments, boulders, rock, Portland cement concrete, and all other objectionable materials, within the limits of construction.”

Add the following paragraphs:

Grubbing and removal of organic debris shall include the repair and/or replacement of all parkway irrigation piping and systems necessary to perform work on this Contract and capping pipelines until such time that permanent repairs and/or replacements have been made.

All debris removed from the project site under this item shall be disposed of at an approved dump site. All transportation costs and dump fees shall be borne by the Contractor.

Clearing and Grubbing shall include, but is not limited to, the following:

1. Removal of existing AC berms.
2. Removal of all curb and gutter, cross gutters, and spandrels shall be replaced within three (3) calendar days. The Asphalt Concrete patch for areas with curbs and gutters removed and replaced shall be placed within two (2) working days after the curb and gutter, cross gutters, and spandrels are replaced. Removal of all sidewalks shall be replaced within three (3) calendar days.
3. Saw cut and removal of poles, posts, PCC pavements, curb, gutter, and sidewalk. Holes resulting from removal of existing poles and posts from existing PCC, AC pavements and curbs and gutters, shall be filled or patched with like materials. Self-propelled drop hammers will not be allowed for removals.
4. Removal of all raised pavement markers not conforming to the approved plan or conflicting with the proposed striping as shown on the plans in accordance with Subsection 314-3, Removal, of the Standard Specifications.
5. Removal and disposal of boulders, rock or PCC.
6. All trees and shrubs less than 3m (9 ft) directly above the entire sidewalk surface shall be trimmed and removed by the contractor to allow a clear path of travel for pedestrians.

7. Irrigation system relocation:

Any irrigation systems in conflict with the proposed improvements that are removed, damaged, disturbed, or broken shall be modified, repaired, and/or replaced to be operable and provide full irrigation coverage to the areas requiring irrigation using new materials, equal or better than the original materials, with 20 mm (3/4 in) Schedule 40 PVC being the minimum acceptable for underground lines and 13 mm (1/2 in) Schedule 80 being minimum acceptable for risers and with the systems not being out of operation for more than two (2) days. No payment for work associated with the irrigation repair will be released, until all irrigation is complete, operable and accepted by the City.

All trees, shrubbery and lawns deprived of normal irrigation watering due to a disruption of service caused by the Contractor's operations shall be regularly and thoroughly irrigated by the Contractor so that said plantings will not be damaged. If any trees, shrubbery or lawns die or suffer unacceptable damage as a result of or precipitated by the Contractor's operations the Contractor shall replace same with the same plant species and size. Existing grass lawns within areas that must be excavated and/or re-graded shall be cut into approximate 305 mm (1 ft) squares, removed, protected, cared for and replaced as soon as possible. Dead, dying, and unacceptably damaged grass shall be replaced with new grass sod.

8. Existing inlets, slotted drains, drainage pipes, concrete gutters, drainage pipes, where any portion of such structure is within 1m of the grading plane in the excavation areas, or within 300 mm (1 ft) of original ground in embankment areas, or where shown on the plans to be removed, shall be completely removed and disposed of accordingly.
9. Removal and disposal of existing drainage inlet structure and PCC or AC apron.
10. The Contractor shall dispose all materials not being salvaged outside of the right-of-way and shall pay for all costs for disposal.
11. Removal and disposal of any abandoned utilities that may interfere with the improvements.
12. Self-propelled drop hammers will not be allowed for removals.

300-1.3.1 General. - *Add the following paragraphs:*

The Contractor shall dispose Portland cement concrete, stone rubble, and brick at an approved dump site.

All reprocessed asphaltic cement concrete may be placed as the lower course of crushed aggregate base material. If the Contractor chooses not to reprocess the material, disposal at an approved dump site shall be required. All costs for disposal shall be borne by the Contractor. If the Contractor chooses to reprocess material, it shall be protected and remain contaminate-free, otherwise disposal at an approved dump site will be required with all costs borne by the Contractor.

All reprocessed asphaltic cement concrete to be used as crushed aggregate base shall be ground to conform to Section 200-2.2.

300-1.3.2 (a) Bituminous Pavement. - Amend the following:

Amend the second sentence as follows:

“Saw cutting of edges to be joined shall be with a power-driven saw. The groove shall be cut to a minimum depth of 4 inches (102 mm).”

Amend the third sentence as follows:

“Where bituminous pavement is to be removed, a cold mill header cut of maximum 6 feet (1.8 m) in width perpendicular to the join line shall be made, and a minimum laying depth of 1 inch (25mm) of new pavement material shall be provided at the join line.”

Amend the fourth sentence as follows:

“The edges of existing concrete pavement adjacent to the trench shall be saw cut to neat straight lines for the purpose of removing the damaged pavement areas.”

Add the following sentence:

Work under this item shall include asphalt concrete berms.

300-1.3.2 (b) Concrete Pavement. - Amend the following:

Amend the second sentence as follows:

“Saw cuts shall be made to a minimum depth of 4 inches (102 mm).”

Amend the third sentence as follows:

“If a saw cut in concrete pavement falls within 5 feet (1.5 m) of a construction joint, cold joint, expansion joint, or edge, the concrete shall be removed to the joint or edge.”

300-1.3.2 (c) Concrete Curb, Walk, Gutters, Cross Gutters, Driveways and Alley Intersections. - Amend the following:

Amend the first sentence as follows:

“Concrete shall be removed to neatly sawed edges with saw cuts made to a minimum depth of 4 inches (102 mm).”

Amend the third sentence as follows:

“No section to be replaced shall be smaller than 36 inches (1 m) in either length or width.”

Amend the fourth sentence as follows:

“If the saw cut in sidewalk or driveway would fall within 36 inches (914 mm) of a construction joint, expansion joint, or edge, the concrete shall be removed to the joint or edge, except that where the saw cut would fall within 12 inches (300mm) of a score mark, the saw cut shall be made in and along the score mark.”

Amend the fifth sentence as follows:

“curb and gutter shall be sawed to a depth of 4 inches (102 mm) on a neat line at right angles to the curb face.”

300-1.3.2 (d) Striping and Markings. All existing striping, markings and raised pavement markers shown to be removed or necessary to be removed from paving areas. This item includes removal in compliance with applicable laws and cleanup of residue from the operation.

All striping, markings and raised pavement markers removed beyond the limits shown on the plans for and/or at the convenience of the Contractor shall be replaced at the Contractor's expense.

300-1.3.2 (e) Structures. All existing concrete structures (reinforced or non-reinforced) as shown on the plans to be removed or abandoned, including but not limited to, undersidewalk drains, manholes, headwalls, bulkheads, drop inlet structures, energy dissipaters, catch basins, vaults and pipelines. Abandonment shall include all cuts and concrete plugs necessary to seal ends or openings of abandoned pipes or structures.

300-1.3.2 (f) Rock Curbs. All rock from rock curb removals, as shown on the plans or required for construction of the project, shall be transported, delivered and unloaded at a storage site as directed by the Engineer.

300-1.3.2 (g) Miscellaneous Removals. All other removals of facilities, as shown on the plans but not covered under separate bid items, and any underground facilities found during the work and not shown on the plans shall be performed. The City has endeavored to show all known underground facilities but is not responsible for unknown or abandoned facilities. Unknown underground facilities shall be paid as extra work.

300-1.3.2 (h) Miscellaneous Relocations. All relocation work as shown on the plans or required for construction of the project, but not covered under separate bid items, shall be included as a part of Subsection 300-1 Clearing and Grubbing. All relocation work performed as a part of clearing and grubbing work shall conform to the requirements and specifications of the agency or utility having jurisdiction over the item to be relocated.

300-1.4 Payment. - *Add the following sentence to paragraph 1:*

Payment for work on this item shall be made as a percentage of the work completed at each monthly payment.

300-2 UNCLASSIFIED EXCAVATION.

300-2.2.2 Wet Material. - *Amend the second sentence of the paragraph:*

“If such high moisture content is not the result of any action on the part of the Contractor, or inaction in protecting the work during the course of the contract, the work involved will be paid for in the following manner: Over-excavation and disposal work shall be considered “extra work,” with backfill and compaction of crushed aggregate base paid under the appropriate bid item in these specifications.”

300-12 MISCELLANEOUS GRADING. The parkway, whether landscaping exists or not, shall be graded and compacted to achieve drainage towards the street at a slope of 2%. Grading shall be coordinated such that it is the last item of work to be completed, prior to site clean-up. Loose material and dirt shall be raked, compacted and distributed throughout the parkway area. Areas

adjacent to installed improvements must be graded to a level within one inch from the finished surface. Extra dirt/fill shall be removed from the project in accordance with Specifications.

The Contractor, at his expense shall photo-document pre-construction conditions prior to starting excavating. After construction is completed, the Contractor shall photo-document the finished grade. The Contractor shall provide the City with said photos with addresses identifying each property location, the direction the photograph was taken (facing North, South etc.). The Contractor shall keep a copy of the photos (either electronically or hard copy) and provide the City with electronic copies of the photos.

SECTION 301 - TREATED SOIL, SUBGRADE PREPARATION AND PLACEMENT OF BASE MATERIALS

301-1 SUBGRADE PREPARATION.

301-1.3 Relative Compaction. - *Amend the second sentence of paragraph 1 as follows:*

“When base material, curb, gutter, alley pavement, driveways, or sidewalks are to be placed on the subgrade material, the top 6 inches (150mm) of such subgrade material shall be compacted to a relative compaction of 95 percent.”

301-2.1 General. – *Add the following paragraphs:*

The contractor shall use ‘crushed aggregate base’ or ‘crushed miscellaneous base, fine graded’ as the base material. The use of ‘processed miscellaneous base,’ ‘select subbase,’ or ‘disintegrated granite’ shall not be used as base material.

The contractor may use ‘pulverized miscellaneous base’ (grindings) as part of the crushed base material. Said grindings shall be uncontaminated and placed in an even thickness as the lower course of crushed base material. Spreading and compacting shall comply with Sections 301-2.2 and 301-2.3.

301-2.3 Compacting. – *Amend the second sentence of paragraph 3 as follows:*

“Compaction in the excepted areas shall be as specified in 211-1 with each layer of compacted base material having a minimum relative compaction of 95 percent.”

301-2.4 Measurement and Payment. – *Add the following paragraph:*

Payment shall be made for cold-planing, storing, placing, and compacting reprocessed asphalt concrete pavement (grindings) as part of the crushed aggregate base (CAB) material. The volume of grindings placed shall be figured and a tonnage figure computed using 9.35 kg/m^3 (150 pounds per cubic foot). This tonnage figure shall be paid as part of the crushed aggregate base tonnage for this project.

301-7 FULL DEPTH RECLAMATION WITH MECHANICAL STABILIZATION (FDR-25)

301-7.1 Description. This rehabilitation alternative consists of pulverizing the existing asphalt concrete (AC) layer along with the underlying unbound material to a depth of 6, 9 or 12 inches per

plan and specifications. The properties of this layer are considered to be similar to an Aggregate Subbase material with a modulus of at least 25 ksi.

The manufacture of the recycled base course shall be done in-place by pulverizing and blending the existing AC layer and base materials, if present. The process shall be accomplished in accordance with these specifications and conform to the lines and grades shown in the plans or as established by the Engineer.

301-7.2 Construction. The asphalt concrete surfacing and underlying base materials shall be pulverized such that 100 percent of the material will pass a two-inch sieve and a minimum of 90 percent will pass a one and one-half inch sieve. All materials other than rock and pulverized asphalt concrete shall be broken up such that these materials will pass a one inch sieve. The pulverized materials shall be free of roots, weeds, wood, and construction debris. All grass and other vegetation shall be removed from the edge of the exiting pavement or lip of gutter pan to prevent contamination of the pulverized bituminous material during the milling operation.

Trimming and disposal of excess material, if required, will be performed on the intimate mixture of pulverized asphalt concrete, base materials and subgrade soil. Excess pulverized material is the surplus that results after trimming and grading the pulverized pavement section to the lines and grades matching existing and/or per plans and specifications.

Do not start pulverized roadbed activities if the ambient air temperature is below 40F. If the ambient air temperature falls below 40F, you may only compact and finish pulverized roadbed. Before starting daily pulverized roadbed activities, sweep the pulverized roadbed area constructed the previous day to remove loose material.

301-7.3 Surface Preparation. Before pulverized roadbed activities start, prepare the existing roadway surface by:

1. Clearing foreign matter including vegetation
2. Removing standing water
3. Referencing the profile and cross slope
4. Marking the proposed longitudinal cut lines on the existing pavement as follows:
 - 4.1. Cut lines must coincide with points where the existing cross slope changes, approximately at the centerline and edge of traveled way
 - 4.2. Cut lines must indicate the sequence of the cuts
5. Referencing existing lane lines and striping layout

Final subgrade surface shall slope away from the street centerline to a maximum of 3% grade. Pulverized asphalt material must be used as base material to meet new cross slope requirements. Native sub-grade material may need to be hauled off to allow for the use of all pulverized base material. No additional compensation will be allowed for any sub-grade removal and haul-off if required. Any contaminated material will be removed and disposed of by the contractor off site at his expense. Any shortage of material, caused by premature disposal of the indicated surplus material by the contractor, shall be replaced by it and no additional compensation will be allowed for such replacement.

301-7.4 Spreading, Mixing, and Compacting. Do not use a heating device to soften the pavement. Remove any visible oversized materials in the pulverized roadbed mixture prior to shaping and compacting. If you encounter unstable subgrade or rocks greater than 4 inches in the roadway section, notify the Engineer. The Engineer determines the extent of the unsuitable material and the corrective measures to be taken.

According to the Section 301-2.3, the compaction shall always be commenced along the edge of the area to be compacted and the roller shall gradually advance toward the center of the area to be compacted. Rollers shall be operated along lines parallel or concentric with the centerline of the road being constructed, and no material variation therefrom will be permitted. All rollers must be maintained in good mechanical and working condition.

The relative compaction of each layer of compacted base material shall not be less than 95 percent. ASTM D2922, Methods of Density of Soil and Soil Aggregate in Place by Nuclear Methods, (or ASTM D1556). After compaction, the sub-grade shall be firm, and unyielding.

301-7.5 Finishing. The finished pulverized roadbed surface must not vary more than 0.05 foot from the lower edge of a 12-foot straight edge laid in directions parallel and perpendicular to the centerline. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met. The finished surface must be free from segregation, tearing, and scarring, and have a uniform surface texture throughout the work limits.

301-8 FULL DEPTH RECLAMATION WITH CEMENT STABILIZATION (FDR-200)

301-8.1 Description. This rehabilitation alternative consists of pulverizing the existing asphalt concrete (AC) layer along with the underlying unbound material to a depth of 6, 9 or 12 inches per plan and specifications. The properties of this layer are considered to be similar to an Aggregate Subbase material with a modulus of at least 200 ksi.

The manufacture of the recycled base course shall be done in-place by pulverizing and blending the existing AC layer and base materials, if present, and adding cement. Micro-cracking of the completed cement stabilized surface is required before HMA is to be placed directly on top of the cement treated surface, regardless of the AC thickness. The process shall be accomplished in accordance with these specifications and conform to the lines and grades shown in the plans or as established by the Engineer.

The cement content must be 2% by dry weight of FDR with cement with a dry unit weight of 130 lb/cu ft for 6" FDR section. The cement content must be 3% by dry weight of FDR with cement with a dry unit weight of 130 lb/cu ft for 9" FDR section. The cement content must be 4% by dry weight of FDR with cement with a dry unit weight of 130 lb/cu ft for 12" FDR section. Cement must be Type II or Type V Portland cement specified in ASTM C 150/150M.

301-8.2 Construction. The asphalt concrete surfacing and underlying base materials shall be pulverized such that 100 percent of the material will pass a two-inch sieve and a minimum of 90 percent will pass a one and one-half inch sieve. All materials other than rock and pulverized asphalt concrete shall be broken up such that these materials will pass a one inch sieve. The pulverized

materials shall be free of grass and vegetation, and construction debris to prevent contamination of the pulverized materials. Mixing shall continue until, and at the speed of the recycling unit adjusted to ensure, a homogenous mixture of the above materials and pulverized materials are achieved.

Trimming and disposal of excess material, if required, will be performed on the intimate mixture of pulverized asphalt concrete, base materials and subgrade soil. Excess pulverized material is the surplus that results after trimming and grading the pulverized pavement section to the lines and grades matching existing and/or per plans and specifications. Excess pulverized material shall consist of non-treated well mixed pulverized AC pavement and subgrade.

Do not start pulverized roadbed activities if the ambient air temperature is below 40F. If the ambient air temperature falls below 40F, you may only compact and finish pulverized roadbed. Before starting daily pulverized roadbed activities, sweep the pulverized roadbed area constructed the previous day to remove loose material.

301-8.3 Surface Preparation. Before pulverized roadbed activities start, prepare the existing roadway surface by:

1. Clearing foreign matter including vegetation
2. Removing standing water
3. Referencing the profile and cross slope
4. Marking the proposed longitudinal cut lines on the existing pavement as follows:
 - 4.1. Cut lines must coincide with points where the existing cross slope changes, approximately at the centerline and edge of traveled way
 - 4.2. Cut lines must indicate the sequence of the cuts
5. Referencing existing lane lines and striping layout

Final pavement surface shall slope away from the street centerline to a maximum of 3% grade. Pulverized material must be used as base material to meet new cross slope requirements. Native sub-grade material may need to be hauled off to allow for the use of all the pulverized base material. No additional compensation will be allowed for any sub-grade removal and haul-off if required. Any contaminated material will be removed and disposed of by the contractor off site at his expense. Any shortage of material, caused by premature disposal of the indicated surplus material by the contractor, shall be replaced by it and no additional compensation will be allowed for such replacement.

301-8.4 Spreading, Mixing, and Compacting. Do not use a heating device to soften the pavement. Remove any visible oversized materials in the pulverized roadbed mixture before shaping and compacting. If you encounter unstable subgrade or rocks greater than 4 inches in the roadway section, notify the Engineer. The Engineer determines the extent of the unsuitable material and the corrective measures to be taken.

Recycling shall be performed to the depth provided in the plans, while incorporating stabilizing agents, mineral filler, additional aggregate and water. Mixing shall continue until, and the speed of the recycling unit adjusted to ensure, a homogenous mixture of the above materials and pulverized materials is achieved. Pre-cutting, grading and light compacting of the recycled material shall be

performed prior to incorporation of the stabilizing. Spread cement uniformly over the full roadway surface width. Do not spread cement more than 30 minutes before mixing. Do not apply dry cement in windy conditions that will result in dust outside the FDR with cement area. The application rate must be the mix design rate or the ordered application rate in lb/sq yd \pm 0.5 percent. The application rate of all stabilizing agents shall be continuously monitored. If the measured application rate falls outside the above tolerance, then the recycling operations shall be stopped and corrected before proceeding. Do not spread cement and aggregate before pulverizing.

Water must be injected through the pulverizing machine. The injection rate of mixing water must be sufficient to produce the FDR with cement material mixing moisture content. The water content of the stabilized material shall be monitored closely to ensure proper compaction. Mark where the center of the pulverizing drum stops. Start the following cut on this alignment at least 2 feet behind the mark. Before compacting, remove solids larger than 3 inches in any dimension by hand.

Immediately after pulverizing and mixing, compact FDR with cement to the minimum relative compaction. Do not allow more than 2 hours between final mixing of the pulverized material with cement and completion of initial compaction before trimming. During grading and final compaction add water to maintain the mixing moisture content as described in the mix design. Do not allow more than 2 hours to elapse from the time water is added to the aggregate and cement to completion of final compaction after trimming.

Longitudinal joints between adjacent stabilization passes shall be overlapped at least 4 inches. Transverse joints between the recycling process shall be saw-cut, if necessary, to provide a vertical clean face to ensure proper compaction. Compaction of cementitious stabilizer begins within 20 minutes after mixing and achieving gradation and moisture requirements.

According to the Section 301-2.3, the compaction shall always be commenced along the edge of the area to be compacted and the roller shall gradually advance toward the center of the area to be compacted. Rollers shall be operated along lines parallel or concentric with the centerline of the road being constructed, and no material variation therefrom will be permitted. All rollers must be maintained in good mechanical and working condition.

The relative compaction of each layer of compacted base material shall not be less than 95 percent. ASTM D2922, Methods of Density of Soil and Soil Aggregate in Place by Nuclear Methods, (or ASTM D1556). After compaction, the sub-grade shall be firm, and unyielding.

Construction joints shall have vertical faces and shall be made in thoroughly compacted material. Additional mixture shall not be placed against the construction joint until the joint has been approved by the Engineer. The face of the cut joint shall be lean and free of deleterious material and shall be kept moist until the placing of the adjacent FDR with cement.

301-8.5 Finishing. Once the entire working width (full lane width plus effected shoulder width) has been stabilized, and only after primary compaction has been completed, the entire working width shall be graded to the required profile and cross-slope. Disturbance to the stabilized and primary compacted material shall be kept to a minimum during this grading and shaping operation.

The finished pulverized roadbed surface must not vary more than 0.05 foot from the lower edge of a 12-foot straight edge laid in directions parallel and perpendicular to the centerline. Variations within the above specified tolerances shall be compensating so that the average grade and cross section specified are met. The finished surface must be free from segregation, tearing, and scarring, and have a uniform surface texture throughout the work limits.

Immediately after compaction, apply water and roll with no vibration. The finished surface must be free of ruts, bump, indentations, segregation, raveling, and any loose material.

The completed cement treated subgrade shall be moist cured continuously until it is in a firm and unyielding condition. The cement treated subgrade shall be kept free from heavy traffic during the curing period or until the asphalt concrete surfacing is placed whichever is less, unless otherwise directed by the Engineer. Moisture curing shall be the only method of curing prior to micro-cracking.

Micro-cracking shall be performed with several vibratory roller passes 48 to 72 hours after finish grading to prevent severe, wide cracks from forming thus reduces the potential for reflective cracking through the HMA layer. Micro-cracking shall be performed before the application of asphaltic emulsion curing seal. After micro-cracking is complete additional moisture curing may be used. Any additional water required to achieve maximum density shall be applied by spraying the surface of the stabilized material with light applications. Care shall be taken so as not to over-apply additional water to any areas of the stabilized material.

While open to traffic and before placing HMA, maintain the FDR with cement surface free of ruts, bumps, indentations, raveling, and segregation. If FDR with cement material is damaged, it shall be repaired by removing and replacing the entire depth of affected layers in the damaged area. Feathering will not be permitted for repair of low areas.

Asphaltic emulsion curing seal must be applied on the completed cement treated base immediately before placing HMA. Asphaltic emulsion curing seal must comply with Caltrans Standard Section 94, Grade SS1 or CSS1. Dilute and thoroughly mix asphaltic emulsion for curing seal at a ratio of 1 part water to 1 part asphaltic emulsion. The water must not cause premature separation of the emulsion. Uniformly apply the diluted curing seal at a rate of 0.1 gal/yd² of cement treated base surface.

SECTION 302 - ROADWAY SURFACING

302-4 SLURRY SEAL SURFACING.

302-4.3.1 General. – *Add the following paragraphs:*

All slurry mixing machines shall be equipped with a Fines Feeder for the adding of cement or granular Aluminum Sulfate.

Prior to the beginning of slurry operations, the Contractor shall furnish, at no cost to the City, current licensed weigh master's certificates indicating the net weight capacity of the aggregate bin. The Contractor shall provide a drive upon scale at the project site or an alternate site approved by

the City. The drive on scale shall show the net weight of the aggregate bin on each slurry machine before the machine and product will be approved for applying slurry on the project.

All slurry machines are to carry, at all times, a calibrated emulsion measuring stick. The emulsion measuring stick is to be calibrated in 10-gallon increments to the slurry machine it is used on. Emulsion measuring sticks from other slurry machines will not be allowed to measure the gallons of emulsions on the slurry machines they were not calibrated to. The emulsion measuring stick is to have the slurry machine number or identification permanently marked on the stick. The gallons of emulsion are to be measured with a calibrated emulsion measuring stick and recorded before leaving and after returning to materials site. Use of a slurry machine will not be allowed if it does not have a calibrated emulsion measuring stick.

The Contractor shall furnish prior commencing work, a calibrated stick in 10-gallon increments to measure the oil in the trailer storage tanks in gallons. The measuring stick shall be calibrated to the trailer storage tank it is used on. The inspector shall check the oil in each load “in and out” and in the storage tanks at the beginning and end of each day to determine the amount of emulsion used for that day. Emulsion is not to be transferred from delivery tank to on-site storage tank before the City performs the sieve analysis on the emulsion. Aggregate used in the slurry shall not exceed a moisture content of four percent (4%) by weight of dry aggregate.

Contractor may not schedule more than 150 tons of slurry to be placed per day. Slurry may not be applied at more than 150 feet per minute.

The Contractor shall provide a self-propelled 10 ton pneumatic roller with a tire pressure of 50 PSI and equipped with a water spray system. The Contractor shall roll the required streets the same day they are slurred. The Contractor will be responsible for proper scheduling of the work such that the rolling can be properly done within the given time constraint. Failure to comply shall result in a \$250.00/calendar day liquidated damage being assessed per incident. The cost of furnishing the roller and operator shall be included in the price paid for slurry seal.

The Contractor is hereby advised that City streets, parking lots, or other City-approved property will not be allowed as a site for stockpiling and batching. Arrangements for an acceptable site shall be the sole responsibility of the Contractor.

The Contractor shall sweep any raveled material on the street one (1) week after the initial placement. If the Engineer determines the raveling is excessive, the frequency of sweeping shall be adjusted to the field conditions of the raveling. If raveling continues within two (2) weeks of the initial placement, the street shall be swept and reslurred with a Type I mixtures (Local Streets) or a Type II (Arterial/Collector Streets) at no cost to the City. Raveling can be identified by the presence of “black pebbles” in the gutter.

The Contractor shall remove any and all weeds that are growing through cracks from the project street located within the pavement or growing between the concrete gutter and the pavement and spray a herbicide mixture of either Hyvar mixed with Roundup or Pramitol mixed with Roundup, or approved equal, at least fourteen (14) calendar days prior to slurring. The herbicide mixture shall contain Blazon, or approved equal, a purple dye to easily confirm the herbicide has been applied. The work shall be approved by the Engineer or his representative prior to slurring. Full

compensation for plant removal and herbicide treatment shall be considered as included in the unit cost for slurry seal.

Longitudinal joints must correspond with lane lines. You may request other longitudinal joint patterns if they do not adversely affect the slurry seal. Spread slurry seal in full lane widths. Do not overlap slurry seal between adjacent lanes more than 3 inches. Use a material, such as building paper at transverse joints and over previously placed slurry seal to prevent double placement. Remove the material after use. Use hand tools to remove spillage.

Full compensation for developing a water supply, for furnishing and placing all water required for work done in the Contract, including extra work shall be included in the prices paid for the various items of work requiring water; and no separate payment will be made therefore. The Contractor shall supply the City with licensed weighmaster's certificates of weight for all delivered aggregates to the job during the course of each day. Aggregate shall be delivered to the project only in the presence of a City representative. The Contractor shall also present weighmaster certificates for the amount of such aggregate remaining at the completion of the project at no cost to the City. Payment shall be determined by the amount that is physically placed, which cannot exceed the amount that is delivered to the job site with the certified weighmaster tickets. There shall be not outside work done utilizing materials from the tanks or stockpiles stored for the City's Contract.

Prior to storing aggregate on private property, the Contractor shall submit to the Engineer written permission from the property owner for such stockpiling.

Precautions shall be taken to ensure that stockpiles do not become contaminated with oversized rock, clay, silt, or excessive amounts of moisture. The stockpiles shall be kept in areas that drain readily. Segregation of the aggregate will not be permitted.

The Contractor shall protect the wet slurry from traffic at all times and if damaged or defaced, the Contractor shall repair said damage at no additional cost to the City.

The placement of slurry seal may be suspended with the concurrence of the Engineer due to unsuitable weather, temperature conditions, or other conditions that are considered unfavorable for the prosecution of the work. The Contractor shall immediately comply with the order of suspension by the Engineer, and work shall not be resumed until authorized by the Engineer.

302-4.8 Spreading and Application.

302-4.8.1 General. - *Add the following paragraphs:*

Prior to applying slurry seal, the Contractor shall clean, to the satisfaction of the Engineer, the street surface with a power sweeper, remove all R.P.M.'s, abrasive grind or sandblast completely all lane lines, street legends, crosswalks or other painted or thermoplastic surfaces. This is necessary to provide a good bonding surface for the slurry seal, as well as eliminate "ghosting" of the old striping and markings as the new slurry wears off over time.

It is anticipated that nuisance water, such as storm water runoff and irrigation water, will run in and across the right-of-way at various time throughout the period of construction. It shall be the responsibility of the Contractor, at their own expense, to provide for and protect the work from such

water. In addition, the Contactor's responsibility shall include handling nuisance waters such that their operations do not cause them to damage existing improvements or properties adjacent to or near the site of work.

Slurry shall not be applied when the atmospheric temperature is less than 65°F (18°C).

The application of slurry shall not commence until after 8:00 a.m., and shall conclude at 1:30 p.m. unless other authorized by the Engineer. The slurry shall be sufficiently cured to be open to traffic by 4:00 p.m. The portions of streets to be slurried shall be closed from the time the application begins until the mixture as achieved sufficient set to be opened to traffic.

The slurry shall be applied in such a manner that no ripples or waves exist. If ripples or waves occur in the slurry during the application, the work shall cease and the Contractor shall correct the situation. The Contractor may use a drag to knock down ridges. If ripples or waves are not corrected to the Engineer's satisfaction, the street shall be reslurried at the Contractor's expense.

The Contractor shall, at the direction of the Engineer, repair the reseal to the entire street, or complete section thereof, as determined by the Engineer, which have not been sealed properly (includes areas that have failed to meet yield and mix design specifications) and completely. No compensation will be provided for slurry seal used in repair and reseal work.

Each slurry crew shall be composed, at a minimum, of a coordinator at the project site at all times, a competent quick-set mixing man, a competent driver, two squeegee men, and sufficient laborers for any handiwork and cleanup.

Surface oil and grease shall be removed or sealed with shellac or an equivalent material approved by the City before the application of the slurry seal. Full compensation for surface oil and grease removal shall be considered as included in the unit cost for slurry seal.

The Contractor shall roll all cul-de-sacs (the last 250' minimum), the last 250' of dead-end streets and knuckle curves. Full compensation for rolling the slurry shall be considered as include in the unit cost for slurry seal.

During slurry seal operations, it shall be the Contractor's responsibility to place protective covering over, or to otherwise avoid slurry seal coating of manholes, utility covers, pavement markers (reflective and non-reflective), concrete gutters, concrete cross gutters, and drainage facilities, survey monuments and remove said covering and/or slurry seal coating after slurry sealing has been completed.

The start and finish of slurry application shall be a straight line which, unless otherwise approved by the Engineer, shall be obtained by laying a strip of building paper or other material approved by the Engineer on the pavement surface. After application of slurry, the paper is to be removed leaving a straight edge. The entire street surface area shall be sealed the same day.

302-4.8.4 Crack Sealing and Filling. Crack sealing shall be performed prior to the Slurry Seal application. Pavement cracks 1/4" wide and larger shall be sealed. Pavement cracks 1/8" to 1" wide

shall be cleared of all loose particles of dust, dirt and laitance with oil-free compressed air immediately preceding the sealing operation. Cracks shall be routed out as necessary to provide a reservoir for the sealer that will have a depth of 1" to 1 1/2".

The crack sealing material shall be a hot-applied asphalt (Crafco Polyflex or approved equivalent). The crack sealing material must not be modified or diluted in any way. Pavement cracks larger than 1" wide shall be filled with the mixtures per Specification Section 203-6.4 Type E (Extra Fine).

A wand and nozzle type application shall be used to fill all cracks with crack sealing material. Crack sealing material shall be applied in two applications with the possibility of additional applications to fill the crack within the allowable tolerance. The cracks must be filled to the surface and not overfilled or applied to the top of adjoining pavement or concrete surfaces. The cracks shall be squeegee immediately after the sealant has been applied to insure conformity with the pavement surface.

The crack sealing material shall then be allowed to penetrate and sink into the crack area for a minimum of one hour. Each crack must then have a second application of crack sealer material applied in the crack area only to within + 0.01' of the adjoining pavement surface. If the material is a cold-applied, polymer modified petroleum emulsion, sand will be applied over the crack sealing material after the second application, covering a minimum of 1 1/2 inches each side of the crack and not more than 3/4 inch higher than the top of the pavement. The contractor shall be responsible for the removal of all excess sand which shall be removed within three hours after being applied.

302-5 ASPHALT CONCRETE PAVEMENT.

302-5.1 General. - *Add the following paragraphs:*

Asphalt concrete pavement structural sections equal to or greater than 3 inches (76 mm) in thickness shall be installed in two lifts. Base course aggregate material size shall be 3/4 inch (19 mm) and cap course aggregate material size shall be 1/2 inch (13 mm). All pavement shall be placed over 4 inches of crushed aggregate base, unless compacted to 95% relative compaction.

All valves within project limits in the public right-of-way shall be raised to finish grade as a part of this work. The Contractor shall furnish and install new can or slip can materials as necessary. If new water valve lids are necessary, they shall be supplied by the Municipal Utilities and Engineering Department. All valve can lids within the project limits in the public right-of-way shall be painted the appropriate color for the utility they represent (i.e.. Water - Blue, Gas - Yellow, Fire – Red, etc.).

302-5.2 Timeline of Paving Operations.

All paving operations shall follow the timeline and requirements shown below unless otherwise approved by the City:

PAVING TIMELINE				
DESCRIPTION OF WORK	TIME PERIOD			
	WEEK 1 (DAY 1-7)	WEEK 2 (DAY 8-14)	WEEK 3 (DAY 15-21)	WEEK 4 (DAY 22-28)
PAVING (START TO FINISH) ⁽¹⁾				
CURE PERIOD ⁽²⁾				
MANHOLE ADJUST TO GRADE ⁽³⁾				
STRIPING & PAVEMENT MARKINGS ⁽⁴⁾				
TRAFFIC LOOPS ⁽⁵⁾				
NO PARKING SIGNS ALLOWED ⁽⁶⁾				

Note: All time periods shown above are the maximum amount of allowable time for each activity. This timeline does not apply to the installation or repair of curb and gutter, ac dikes, sidewalks, cross gutters, curb ramps, driveway approaches or truncated domes.

- (1) In no case shall any street segment remain unpaved longer than three calendar days if no other work activity is being performed on that street segment. Any deviation from the timeline shall result in a penalty assessment of \$1,000 per calendar day.
- (2) No work except cat tracking of proposed striping is allowed during this period; therefore “No Parking Signs” shall not be installed during this activity.
- (3) Once each manhole is exposed, all associated work to adjust it to grade must be completed within 48 hours. This shall include all adjustments of manholes, vaults, valve cans, etc. as required by the Contract.
- (4) All cat tracking and approval of proposed striping shall occur during the cure period.
- (5) Traffic loops must be installed after the approval of striping layout and prior to the installation of thermoplastic striping and pavement markings.
- (6) “No Parking Signs” shall be installed per Section 5-18 of these specifications.

302-5.4 Tack Coat. – *Delete and replace with the following:*

If the asphalt concrete pavement is being constructed directly upon an existing hard-surfaced pavement, a tack coat of High Performance Seal (HPS) No-Track Tack at an approximate rate of 0.05 gallon per square yard shall be uniformly applied upon the existing pavement preceding the placement of asphalt concrete. The surface shall be free of water, foreign material, or dust when the tack coat is applied. To minimize public inconvenience, no greater area shall be treated in any one day than is planned to be covered by asphalt concrete during the same day, unless otherwise approved by the Engineer.

302-5.5 Distribution and Spreading. – *Add the following:*

Unless otherwise permitted by the Engineer, the top layer of asphalt concrete for shoulders, tapers, transitions, road connections, private drives, curve widening, turnouts, left-turn pockets, and other

such areas, shall not be spread before the top layer of asphalt concrete for the adjoining through lane has been spread and compacted. At locations where the number of lanes are changed, the top layer for the through lanes shall be paved first. Tracks or wheels of spreading equipment shall not be operated on the top layer of asphalt concrete in any area until final compaction has been completed or unless directed by the Engineer.

All screed extensions for paving machines shall be provided with a tamper, roller, or other suitable compacting devices.

Asphalt pavers shall be equipped with automatic screed controls and a sensing device or devices. Automatic grade and slope control shall be used for overlays.

All joints shall be sealed after rolling.

When placing asphalt concrete to the lines and grades noted in the plans or as approved by the Engineer, the automatic screed controls shall control the longitudinal grade and transverse slope of the screed. Grade and slope references shall be furnished, installed, and maintained by the Contractor. The Contractor shall use a ski device, the minimum length of the ski device shall be 30 ft. The ski device shall be a rigid one-piece unit and the entire length shall be utilized in activating the sensor. The Contractor may use a laser to control the screed.

When placing the initial mat of asphalt concrete on existing pavement, the end of the screed nearest the center line shall be controlled by a sensor activated by a ski device not less than 30 ft long. The end of the screed farthest from center line shall be controlled by an automatic transverse slope device set to reproduce the cross slope approved by the Engineer.

When paving contiguously with previously placed mats, the end of the screed adjacent to the previously placed mat shall be controlled by a sensor that responds to the grade of the previously placed mat and will reproduce the grade in the new mat within a 0.01 ft. tolerance. The end of the screed farthest from the previously placed mat shall be controlled in the same manner as when placing the initial mat.

Should the automatic screed controls fail to operate properly during any day's work, the Contractor may use manual control of the spreading equipment for the remainder of that day; however, the equipment shall be corrected or replaced with alternative automatically controlled equipment conforming to the requirements in this section before starting the next day's work.

Should the methods and equipment furnished by the Contractor fail to produce a layer of asphalt concrete conforming to the requirements, including straightedge tolerance, of Subsection 302-5.6.2 - Density and Smoothness, of the Standard Specifications, the paving operation shall be discontinued and the Contractor shall modify his equipment or furnish substitute equipment. A drop-off of more than 0.15 ft will not be allowed at any time between adjacent lanes open to public traffic.

The Contractor shall schedule his paving operations such that each layer of asphalt concrete is placed on all contiguous lanes of a traveled way each work shift. At the end of each work shift, the distance between the ends of the layers of asphalt concrete on adjacent lanes shall not be greater

than 10 ft. nor less than 5 ft. Additional asphalt concrete shall be placed along the transverse edge at the end of each lane and along the exposed longitudinal edges between adjacent lanes, hand raked, and compacted to form temporary conforms. Kraft paper, or other approved bond breaker, may be placed under the conform tapers to facilitate the removal of the taper when paving operations resume.

302-5.6.1 General. - *Add the following paragraph:*

All asphalt concrete pavement abutting portland cement concrete gutters shall match and be flush with the gutter lip when finish rolling is complete.

302-5.6.2 – Density and Smoothness. – *Delete and replace with the following:*

The completed surfacing shall be thoroughly compacted, smooth and free from ruts, humps, depressions or irregularities. Any ridges, indentations or other objectionable marks left in the surface of the asphalt concrete shall be eliminated by rolling or other means. The use of any equipment that leaves humps, ridges, irregularities or other objectionable marks in the asphalt concrete shall be discontinued, and acceptable equipment shall be furnished by the Contractor.

The finished surface shall meet the following smoothness criteria:

- When a 12 foot long straightedge is laid on the finished surface parallel to the centerline of the roadway, the finished surface shall not vary from the edge of the straightedge more than 0.05 feet, except at changes in grade,
- When a 12 foot long straightedge is laid on the finished surface perpendicular to the centerline of the roadway and extends from edge to edge of a traffic lane, the finished surface shall not vary from the edge of the straightedge more than 0.05 feet, except at changes in grade.

If the top layer of pavement does not comply with the smoothness specifications shown, remove and replace the entire section or complete a grind and overlay of 1.5 inches or 3 times the aggregate size, whichever is greater. Grind and overlay will be considered as a repair method only when the thickness of the asphalt pavement section is greater than 1.5 inches following the required grinding. Corrected section shall be rectangular to the nearest pavement edge or lane line and to a crosswalk, concrete spandrel or other limits approved by the City. Do not begin corrective actions until the method and limit of correction is authorized by the City. If the tolerances cannot be achieved by the methods described above, the contractor must re-pave the street section, in kind, at their own expenses.

The compaction after rolling shall be a minimum of 91 percent and a maximum of 97 percent of the density obtained on samples compacted with the California Kneading Compactor per California Test 304. Cores will be taken randomly by the City for laboratory testing per California Test 308, Method A at a frequency of three per lot. A lot shall consist of a maximum of 3,000 square yards of asphalt concrete and will be identified in the field by the City. The cores will be averaged to determine the percent of maximum theoretical density, as determined by ASTM D-2041, per lot to the nearest tenth of a percent.

Reduced payment factors for percent of maximum theoretical density will be per the following table, and will be applied to the entire lot sampled.

Reduced Payment Factors for Percent of Maximum Theoretical Density

Asphalt percent of maximum theoretical density	Concrete percent of maximum theoretical density	Reduced factor	payment	Asphalt percent of maximum theoretical density	Concrete percent of maximum theoretical density	Reduced factor	payment
91.0		0.0000		97.0		0.0000	
90.9		0.0125		97.1		0.0125	
90.8		0.0250		97.2		0.0250	
90.7		0.0375		97.3		0.0375	
90.6		0.0500		97.4		0.0500	
90.5		0.0625		97.5		0.0625	
90.4		0.0750		97.6		0.0750	
90.3		0.0875		97.7		0.0875	
90.2		0.1000		97.8		0.1000	
90.1		0.1125		97.9		0.1125	
90.0		0.1250		98.0		0.1250	
89.9		0.1375		98.1		0.1375	
89.8		0.1500		98.2		0.1500	
89.7		0.1625		98.3		0.1625	
89.6		0.1750		98.4		0.1750	
89.5		0.1875		98.5		0.1875	
89.4		0.2000		98.6		0.2000	
89.3		0.2125		98.7		0.2125	
89.2		0.2250		98.8		0.2250	
89.1		0.2375		98.9		0.2375	
89.0		0.2500		99.0		0.2500	
< 89.0		Remove and replace		> 99.0		Remove and replace	

In addition to the reduced payment factors below, all costs associated with the testing of the lot which resulted in values outside of the 91-97 percent range, will be withheld from the final payment due to the Contractor.

Following completion of the testing by the City, the core locations within the asphalt pavement shall be repaired by the Contractor.

302-5.6.3 Tracking. All areas receiving asphalt pavement shall be protected from tracking onto adjacent areas. Do not allow traffic on new asphalt pavement until its mid-depth temperature is below 140° Fahrenheit to minimize the tracking.

A rock dust blotter coat per Section 302-9.7 or a sand coat at a rate of 1-2 pounds per square yard shall be applied to the compacted surface for all areas where tracking is a concern. The application of tracking prevention measures shall be determined by the Contractor.

A haul route for all paving operations shall be reviewed and approved by the City prior to the start of any construction activity. No deviations from the approved haul route shall occur unless approved in writing from the City.

All tracking onto adjacent streets, striping or pavement markings shall be the responsibility of the Contractor. All striping and pavement markings shall be removed and replaced in kind by sandblasting. All tracking onto roadway surfaces may require the use of a street sweeper to the satisfaction of the City.

302-5.7 Joints. – *Add the following:*

Longitudinal joints shall be trimmed to a vertical face and to a neat line if the edges of the previously laid surfacing are, in the opinion of the Engineer, in such condition that the quality of the completed joint will be affected. Longitudinal and transverse joints shall be tested with a 12' straightedge and shall be cut back as required to conform to the provisions in Subsection 302-5.6.2 Density and Smoothness for surface smoothness. Connections to existing surfacing shall be feathered to conform to the provisions for smoothness.

Longitudinal joints in the top layer shall correspond with the edges of proposed lane striping. Longitudinal joints in all other layers shall be offset not less than 0.5' alternately each side of the edges of traffic lanes.

All feathered joints shall be sealed after rolling.

302-5.9 Measurement and Payment. – *Add the following:*

Reduced payment factors per 302-5.6.2 will be applied to the Contract Unit Price for lots with a Maximum Theoretical Density less than 91.0 and greater than 97.0 percent.

302-5.10 Hot Asphalt Leveling Course. Areas to receive the Hot Asphalt Concrete Leveling Course shall be determined and defined by the project manager and inspector, and identified to the Contractor in the field. Mix for hot Asphalt Concrete Leveling Course shall be 1/2 inch aggregate, C2, as defined in Section 203-6.4.3.

Areas to receive hot asphalt concrete leveling course shall be areas located near or adjacent to existing curbs and/or gutters that are potholed, or have the lip of gutter higher than the adjacent roadway. Potholes, large cracks, or ruts shall be filled to the surrounding grade elevation and compacted. Hot Asphalt Concrete Leveling Course shall be completed prior to the placement of Type II Slurry Seal, ARAM or resurfacing.

Prior to placement of asphalt concrete, the surface shall be cleaned and all debris and deleterious materials shall be removed. A tack coat meeting the material and application requirements of Section 302-5.4 Tack Coat, shall be applied prior to placement of hot mix asphalt concrete.

302-5.11 Asphalt Pavement Crack Sealing and Filling. Crack sealing shall only be performed as a repair method for conventional hot mix asphalt pavement (HMA) and not installed at project locations which will have asphalt rubber hot mix (ARHM) used as the overlay material. Crack sealing shall be performed after milling of existing asphalt surface and prior to any leveling course, if necessary.

Right after milling of existing asphalt and before crack sealing or filling, Contractor shall remove any and all weeds that are growing through cracks from the project street located within the pavement or growing between the concrete gutter and the pavement and spray a herbicide mixture of either Hyvar mixed with Roundup or Pramamol mixed with Roundup, or approved equal, at least seven (7) calendar days prior to paving. The herbicide mixture shall contain Blazon, or approved equal, a purple dye to easily confirm the herbicide has been applied. The work shall be approved by the Engineer or his representative prior to paving. Full compensation for plant removal and herbicide treatment shall be considered as included in the unit cost for paving.

The crack sealing material shall be a hot-applied asphalt (Crafco Polyflex or approved equivalent). The crack sealing material must not be modified or diluted in any way. Pavement cracks larger than 1" wide shall be filled with the mixtures per Specification Section 203-6.4 Type E (Extra Fine).

A wand and nozzle type application shall be used to fill all cracks with crack sealing material. Crack sealing material shall be applied in two applications with the possibility of additional applications to fill the crack within the allowable tolerance. The cracks must be filled to the surface and not overfilled or applied to the top of adjoining pavement or concrete surfaces. The cracks shall be squeegee immediately after the sealant has been applied to insure conformity with the pavement surface.

The crack sealing material shall then be allowed to penetrate and sink into the crack area for a minimum of one hour. Each crack must then have a second application of crack sealer material applied in the crack area only to within + 0.01' of the adjoining pavement surface. If the material is a cold-applied, polymer modified petroleum emulsion, sand will be applied over the crack sealing material after the second application, covering a minimum of 1 1/2 inches each side of the crack and not more than 3/4 inch higher than the top of the pavement. The contractor shall be responsible for the removal of all excess sand which shall be removed within three hours after being applied.

SECTION 303 - CONCRETE AND MASONRY CONSTRUCTION

303-1 CONCRETE STRUCTURES.

303-1.1 General. - *Delete the first sentence of paragraph 1 and replace with the following:*

“Concrete bridges, culverts, catch basins, retaining walls, abutments, piers, footings, foundations, drainage inlets, head walls, end walls, wing walls, junction structures, transition structures, manholes, and other similar types of portland cement concrete structures shall be constructed to the lines and grades in conformity with the Plans and Specifications.

303-5 CONCRETE CURBS, WALKS, GUTTERS, CROSS GUTTERS, ALLEY INTERSECTIONS, ACCESS RAMPS, AND DRIVEWAYS.

303-5.1.1 General. - *Replace the last paragraph with the following:*

No PCC shall be ordered and/or placed until the forms and subgrade have been inspected and approved by the Engineer in the field.

All pull boxes, water meter boxes, and water valve covers shall be adjusted to proposed finish grade and approved by the Engineer in the field prior to placement of the PCC.

The Contractor shall barricade and protect placed PCC from all damage, marks, mars, and/or graffiti. Any PCC damaged, defaced, discolored, or defective shall be replaced at the Contractor's expense.

When removals of curb and/or sidewalk are located at curb return, the Contractor shall install access ramps. The Contractor is to construct all access ramps in accordance with American Disability Act (ADA) Standards/California Code of Regulations Title 24 – Accessibility Regulations. If the ramps constructed by the Contractor are found to be in non-compliance with ADA Standards, the Contractor will be required to remove and replace the ramps to ADA Standards at the Contractor's expense.

303-5.1.2 Drainage Outlets Through Curb. - *Add the following paragraph:*

Coring shall be required for all drains through existing curbs.

303-5.1.3 Driveway Entrances. – *Replace the last paragraph with the following:*

Driveway approaches where required, shall be 150 mm (6") thick for single-family residential area, and 200 mm (8") thick for commercial driveway approaches.

303-5.1.4 Walk. The back of sidewalk shall be 2 inches from the street Right-of-Way line unless otherwise specified by the Engineer.

Included in the price of sidewalk construction are retaining curbs. Retaining curbs are needed to retain soils from sloughing and eroding onto the finished sidewalk surface, as a result of grade differentials from existing ground surface to proposed sidewalk surface. Retaining curbs shall be installed when the finished surface is lower than the surrounding grade by 3 inches vertically within 6 inches horizontally. If the vertical difference in elevation is less than 3 inches, the surrounding grade shall be sloped, maximum 2:1 slope, to match the finished elevation. The height of the retaining curb shall be to the height of the existing grade it is retaining. Retaining curbs shall be located within the City's right-of-way at all times.

303-5.1.5 Access Ramps. Construction of curb ramps shall conform to the Type and Case appropriate for the condition, as specified on the plans and as shown within the 2021 Standard Plans for Public Works Construction, Plan 111-5. The Contractor shall be responsible to layout the proposed access ramp to comply with the maximum slope indicated on the plans or Standard Plan 111-5. The maximum slope for the ramp shall not be exceeded unless otherwise approved in writing by the Engineer. The Contractor shall remove and replace access ramps deemed non-compliant with the plans or Standard Plan 111-5.

For proposed locations adjacent to a cross gutter spandrel, sawcuts along the radius of the curb will not be allowed. The spandrel shall be replaced from expansion joint to expansion joint to the extents of the curb removal. For proposed locations adjacent to curb and gutter, sawcuts along the flowline of the curb will not be allowed. The entire curb and gutter shall be replaced from expansion joint to expansion joint as required. Sawcuts at locations other than the expansion joint

will not be allowed unless approved by the Engineer. Curb cuts of the existing curb will not be permitted for installation of proposed ramp. Any deviation from these requirements will result in rejection of all work at this location and shall not be included in progress payment requests until corrected, per direction from the Engineer.

The Contractor shall verify the extents of sawcut and removal for each access ramp taking into account the maximum slope and transition area required. It shall be the Contractor's responsibility to identify required removal limits, set concrete forms and verify maximum slopes are not exceeded. The Engineer shall be present to verify the concrete forms prior to the placement of the concrete at each location, however this does not alleviate the responsibility of the accuracy of forms or slopes of the access ramp from the Contractor.

Included in the price of access ramps are retaining curbs. Retaining curbs are needed to retain soils from sloughing and eroding onto the finished ramp surface, as a result of grade differentials from existing ground surface to proposed ramp surface. Retaining curbs shall be installed when the finished surface is lower than the surrounding grade by 3 inches vertically within 6 inches horizontally. If the vertical difference in elevation is less than 3 inches, the surrounding grade shall be sloped, maximum 2:1 slope, to match the finished elevation. The height of the retaining curb shall be to the height of the existing grade it is retaining. Retaining curbs shall be located within the City's right-of-way at all times.

Access Ramps shall have truncated domes installed in accordance with standard plans and specifications. Truncated domes on new access ramps shall be Armor-Tile, Cast in Place System, or approved equal. Truncated domes installed on existing surfaces shall be Safety Sted TD, or approved equal. Truncated dome panels shall be 36"x48", inline configuration, with a spacing of 2.35" on center, and Federal Yellow in color.

The access ramp work shall include all related adjustments of pull boxes, pull box covers, signs, and protection of any underground utilities within the work area. The removal and replacement of up to 5 linear feet of sidewalk on each side of the access ramp shall be included within the cost of the access ramp. The removal and replacement of the sidewalk will allow for transition from the top of ramp to adjacent sidewalk and will be utilized as necessary.

303-5.4.3 Weakened Plane Joints, (a) General. - *Add the following paragraph:*

All weakened plane joints shall be spaced at a maximum of 3.05 m (10') feet for curbs, gutters, and sidewalks. Scoring lines shall conform to those prevailing in the area and be uniform in spacing.

303-5.5.2 Curb. - *Replace the first paragraph with the following:*

PCC for curb and gutter shall be placed within three working days from removal of the existing PCC curb and gutter. The curb and gutter surface shall not vary more than 3 mm (0.01') from a 3 m (10') straightedge except at the grade changes. Prior to the removal of the forms, the surface shall be finished true to grade by means of a straightedge float of not less than 3 m (10') in length, and operated longitudinally over the surface of the concrete. Form clamps shall be constructed so as not to interfere with the operation of the float. The form on the front of the curbs shall not be removed less than one (1) hour, nor more than six (6) hours after the concrete has been placed. In no event shall forms be removed while the concrete is sufficiently plastic to slump. The top and face of the

finished curb shall be true and straight, and top surface of curbs shall be of uniform width, free from humps, sags, blemishes, or other irregularities.

303-5.5.3 Walk. - *Add the following paragraphs:*

The sidewalk surface shall not vary more than 5 mm (0.02') from the 3m (10') straightedge except at grade changes, and the finished surface shall be free from humps, sags, blemishes or other irregularities. All sidewalks shall be a minimum of 100 mm (4") thick, except at driveways where the sidewalks shall be a minimum of 150 mm (6") thick for single family residential areas and 200 mm (8") thick for all other areas.

303-5.6 Curing. - *Add the following paragraph:*

Curing compound shall be translucent with red fugitive dye, Type 1, in accordance with Section 201-4 Concrete Curing Compound, of the Standard Specifications.

303-5.7 Repairs and Replacements. - *Add the following paragraphs:*

In order to minimize vandalism damage to the finished PCC surfaces, the Contractor shall plan his work so that no PCC is poured after 1:00 p.m., unless otherwise authorized by the Engineer in the field.

The Contractor shall barricade and protect placed Portland Cement Concrete from all damages, marks, mars, and/or graffiti. Any Portland Cement Concrete damaged, defaced, discolored, or defective shall be replaced to the satisfaction of the Engineer at the Contractor's expense, and no additional time will be allowed.

Grading, patching, or other remedies to correct the situation will not be accepted unless in the opinion of the Engineer the vandalized area is so small that it does not warrant replacement. Concrete replacement areas shall be from score mark or control joint to score mark or control joint, and full width of the sidewalk. All replacement areas shall be saw cut.

303-5.8 Backfilling and Cleanup. - *Add the following paragraph:*

A minimum of 300mm (12") wide full depth asphalt concrete pavement repair patch and an 450mm (18") wide 1-1/2" deep grind outside of the trench width is required when cross gutter, spandrel, driveways, curb and gutter is placed adjacent to existing asphalt concrete pavement. The asphalt concrete pavement repair patch shall be placed within two (2) working days after the cross gutters, spandrels, driveways, curb and gutter are replaced. The asphalt concrete pavement shall be sawcut. All work shall be in accordance with the General Permit Conditions and Trench Specifications, latest edition.

SECTION 304 - METAL FABRICATION AND CONSTRUCTION

304-3 CHAIN LINK FENCE.

304-3.4 Measurement and Payment. - *Delete paragraph 1 and replace with:*

Chain link fence will be measured along the horizontal projection line of the completed fence, deducting the widths of gates and openings.

SECTION 314 - TRAFFIC STRIPING, CURB AND PAVEMENT MARKINGS, AND PAVEMENT MARKERS

314-1 GENERAL. - *Add the following paragraphs:*

To insure the protection of storm drain inlets, Best Management Practices (BMPs) shall be employed during all striping operations. Refer to Section 5-10.

Each storm drain catch basin or storm drain inlet box shall be marked “NO DUMPING - FLOWS TO CREEK.” Two coats of paint are required. Stencil shall match City’s stencil. Paint and painting shall comply with the specifications.

All street resurfacing work shall include installing fire hydrant pavement markers at all fire hydrant location, whether the pavement markers were existing or not. The pavement markers shall be Type I – Two-Way Blue Retroreflective per Section 214-6 of the Specifications and installed per City’s detail drawing No. 102-0. All work associated with the installation of all new, or replacement of existing, fire hydrant pavement markers shall be included as noted within the specifications.

314-4 APPLICATION OF TRAFFIC STRIPING AND CURB AND PAVEMENT MARKINGS.

314-4.1 General. – *Add the following paragraphs:*

During construction, if traffic legends or lane striping are removed or paved-over for any reason, they shall be replaced immediately with temporary traffic legends or lane striping as directed by the City, and the Contractor shall place permanent traffic legends or lane striping at the end of the job or on completion of final paving. When permanent items are placed, they shall be complete markings, legends, or striping i.e.: if limit lines are disturbed, they shall be replaced to centerline or from curb to curb, whichever was existing; if a letter in a word is removed or covered, the entire word shall be replaced; and lane striping shall extend 75 feet beyond construction limits. All replacement markings, legends, or striping required to be replaced beyond the contract limits shown shall be at the cost of the Contractor and shall meet City standards. If existing striping or legends are to be removed on existing surfaces, they shall be sandblasted. Painting over striping or legends in lieu of removal will not be permitted. Pavement striping shall comply with the applicable provisions of Sections 214 and 314 of the Standard Specifications.

Where side streets with existing striping, markings and markers are encountered, striping, markings and markers shall be repainted and replaced for a minimum distance of 15 m (50 feet) from the crosswalk, stop bar or limit line.

314-4.2 Control of Alignment and Layout.

314-4.2.1 General. - *Delete and replace with the following:*

The Contractor will be responsible for all layout of all striping. All striping, markings and markers shall be reinstalled in their existing locations unless otherwise shown on the plans. The Contractor shall be responsible to take appropriate measures and record the existing locations.

The Contractor shall verify all dimensions in the field prior to installation of pavement striping/marketing layout (Cat-Track). Should field measurements differ from the plan, the Contractor shall immediately notify City staff. No Cat-Track marks shall be placed until discrepancies are resolved.

Cat-Track must be approved by City staff prior to the installation of permanent pavement striping/marketing. Contractor shall notify City staff a minimum of 24 hours prior to installation of permanent pavement striping/marketing to allow for inspection and approval. If approval of Cat-Track is not obtained by the Contractor, all work required to correct the striping/marketing will be at the expense of the Contractor

Cat-Track marks shall be made in chalk. Paint for the purpose of Cat-Track is prohibited. If paint is used, the Contractor must remove the paint without damaging or visually deforming the pavement surface. If damage or visual deformity within the removal area occurs, in the opinion of City staff, the Contractor shall grind and overlay the entire segment with no additional compensation. The area of the grind and overlay shall be as required by City staff and shall be a minimum of 0.10' thickness.

All visible Cat-Track markings after the installation of the permanent striping/marketing shall be removed without damage or visual deformity to the pavement surface. Any damage or visual deformity to the pavement shall be remedied as noted above.

314-4.3.5 Application. - *Amend the first sentence in paragraph 8 as follows:*

“Glass beads shall be applied at a rate of 0.6 to 0.8 kg of beads per liter (5 to 7 pounds of beads per gallon).”

314-6 GREEN BIKE LANE. Green bike lanes shall be installed per plan and conform to the technical specifications included within the contract documents and shall be Streetbond CL or approved equal.

PART 7 – STREET LIGHTING AND TRAFFIC SIGNAL SYSTEMS

SECTION 700 - MATERIALS

700-3 COMMON COMPONENTS.

700-3.5.1 General. - *Delete paragraph 1 and replace with the following:*

Conduits shall be Schedule 80 PVC or galvanized as indicated on the Plans or approved by the Engineer.

Conduits shall be of the sizes indicated on the Plans with the following minimum sizes: street lighting conduit shall be 1-1/4 inch nominal size minimum; traffic signal conduit under roadway shall be 4 inch nominal size minimum; traffic signal conduit not under roadway shall be 3 inch (76 mm) nominal size minimum; and traffic signal conduit between pull box and pole shall be 2-1/2 inch (64 mm) nominal size minimum.

700-3.7 Pull Boxes. - *Add the following paragraph:*

Street light pull box shall be concrete No. 3½. Traffic signal pull box shall be concrete No. 6, double depth as required.

700-3.12 Street Light Power Pedestal. The power pedestal shall be Model No. USPU41-100-108C, as manufactured by Myers, or approved equal.

700-3.13 Traffic Signal Power Pedestal. The power pedestal shall be Model No. USP 16-100-188CTB, as manufactured by Myers, or approved equal.

700-4 STREET LIGHTING SYSTEM MATERIALS.

700-4.1.1 General. - *Add the following paragraphs:*

Electroliers shall be centrifugally spun and reinforced Ameron No. 4B127F4, or approved equal.

The above-ground clearance shall be 27 feet (8.2 m) and the luminary mounting height shall be 29 feet (8.8 m). The aluminum mast arm shall be 4 feet (1.2 m) unless otherwise specified, with an outside diameter of 2-3/8 inches (60 mm).

700-4.2.2 Conductors for Series Circuits. - *Amend the following:*

Amend the first sentence of paragraph 1 as follows:

“... street lighting systems between light standards shall be No. 8 AWG stranded copper wire.”

Add the following sentences to paragraph 1:

Conductors in the street light standard shall be a minimum No. 10 AWG stranded copper wire. Ground bond conductors in the street light standard shall be a minimum No. 8 AWG solid or stranded copper wire. The neutral conductor shall be white insulation and the ground bond shall be green insulation. Phase tapes shall not be allowed. Larger size ground bond and conductors may be required for longer circuits.

Amend the third sentence of paragraph 2 as follows:
“... shall be standard THWN grade polyvinyl chloride ...”

700-4.2.3 Conductors for Multiple Circuits. - *Amend the following:*

Amend the second sentence of paragraph 1 as follows:

“The insulation shall be THWN grade polyvinyl chloride, conforming to the applicable provisions of ASTM D2219 and D2220.”

Amend the third sentence of paragraph 1 as follows:

“At any point the minimum thickness of any THWN insulation shall be 55 mils (1400 µm) for conductor sizes No. 14 AWG to No. 10 AWG, inclusive and 59 mils (1500 µm) for No. 8 AWG to No. 2 AWG inclusive.”

700-4.4 High Pressure Sodium Luminaires. - *Add after first paragraph as follows:*

The luminaire shall be an LED street light(s) General Electric ERL1-0-04-D5-30-A-GRAY, ERL1-0-06-D5-30-A-GRAY, ERL1-0-11-D5-30-A-GRAY with the equivalent illumination of a 100-, 150-, or 200-watt sodium vapor street light respectively.

700-5 TRAFFIC SIGNAL MATERIALS.

700-5.3.1 General. - *Add the following paragraph:*

Shrink tubing, when specified for splices, shall be Hi Line TSHD5BK, or approved equal.

700-5.4.3.1 General. - *Add the following paragraphs:*

Traffic controller cabinet shall be a TS2 Type-1, unpainted aluminum, or approved equal.

The cabinet assembly (CA) shall meet, as a minimum, all applicable sections of the NEMA Standard Publication No. TS 2-2003. Also, the CA wiring shall follow The National Electrical Code (NEC) that specifies acceptable practices and methods and type of materials for all electrical wiring in the United States. Where differences occur, this specification shall govern.

700-5.4.3.1.1 Cabinet Assembly – Design and Construction. Each CA shall be of enough size to accommodate all equipment. The NEMA, Size 6 CA – 52 inch H x 44 inch W x 24 inch D shall be the city’s standard. All enclosures must be constructed, approved and marked following the requirements for Type 1 Industrial Control Panel Enclosures contained in UL 508A, the Standard for Industrial Control Panels. Enclosure must meet NEMA 3R rating requirements and be marked with UL approval sticker. The CA shall be constructed from type 5052-H32 aluminum with a minimum thickness of 0.125 inches. The roof of the CA shall incorporate an exhaust plenum with a vent screen. Perforations in the vent screen shall not exceed 0.125 inches in diameter. The CA shall be designed and manufactured with materials that will allow rigid mounting, whether intended for base mounting. The CA must not flex on its mount. The top of the CA shall incorporate a 1 inch slope toward the rear to prevent rain accumulation. The cabinet shall come with lifting ears affixed to the upper exterior of the cabinet. These ears shall utilize only one bolt for easy reorientation. Unless otherwise specified, the CA shall be supplied with a natural aluminum finish. Enough care shall be taken in handling to ensure that scratches are

minimized. All surfaces shall be free from weld flash and black soot. Welds shall be smooth, neatly formed, free from cracks, blowholes and other irregularities. All sharp edges shall be ground smooth. All seams shall be sealed with RTV sealant or equivalent material on the interior of the CA.

700-5.4.3.1.2 Cabinet Assembly – Shelves. All CA shall be supplied with a minimum of two removable shelves manufactured from 5052-H32 aluminum. Shelf shall be a minimum of 10 inches deep. The shelf shall have horizontal slots at the rear and vertical slots at the front of the turned downside flange. The shelf shall be installed by first inserting the rear edge of the shelf on the CA rear sidewall mounting studs, then lowering the shelf on the front sidewall mounting studs. The shelf shall be held in place by a nylon tie-wrap inserted through holes on the front edge of the shelf and around the front sidewall mounting studs. The rear of each shelf shall be turned up, to stop any shelf mounted equipment from contacting the back wall or panels. The front edge of the shelf shall have holes punched every 6 inches to accommodate tie-wrapping of cables/harnesses. A minimum of two set of vertical "C" channels shall be mounted on each interior left and right walls of the CA for the purpose of mounting the cabinet components. The channels shall accommodate spring mounted nuts or studs. All mounting rails shall extend to within 7 inches of the top and bottom of the CA. Sidewall rail spacing shall be 7.88 inches center-to-center. Rear wall rail spacing shall be 18.50 inches center-to-center.

700-5.4.3.1.3 Cabinet Assembly – Doors. The CA shall have both a front & back door. The openings on the CA shall have a rain channel incorporated into the design to prevent liquids from entering the enclosure. The CA door opening must be a minimum of 80 percent of the surface of both the front and back of the CA. A stiffener plate shall be welded across the inside of the doors to prevent flexing. Both the front and back doors and police door-in-door shall close against a weatherproof and dust-proof, closed-cell neoprene gasket seal. The gasket material for the main door shall be a minimum of 0.25 inches thick by 1 inch wide. The gasket material for the police door shall be a minimum of 0.25 inches thick by 0.5 inches wide. The gaskets shall be permanently bonded to the CA.

The lower section of the CA front door shall be equipped with a louvered air entrance. The air inlet shall be large enough to allow enough air flow per the rated fans capability. Louvers must satisfy the NEMA rod entry test for 3R ventilated enclosures. A non-corrosive, vermin- and insect-proof, removable air filter shall be secured to the air entrance. The filter shall fit snugly against the CA door wall. The CA front door shall incorporate a shroud to cover the filtered louvered openings as proper for the design. The assembly is secured on the interior of the door over the filtered louvers. The shroud is louvered downward and matches the door louvers. The cabinet air filter shall be a one-piece removable, medium efficiency, synthetic, pleated air filter. Both CA doors shall be equipped with a three-point latching mechanism.

The handle on the doors shall be manufactured from cast aluminum or stainless steel. The handle shall include a hasp for the attachment of an optional padlock. The CA door handle shall rotate towards the center of the cabinet door to open. The handle shall not extend beyond the perimeter of the door at any time. The lock assembly shall be positioned so that the handle shall not cause any interference with the key when opening the CA door. Both door hinges shall have a one-piece, continuous piano hinge with a stainless-steel pin running the entire length of the door. The

hinge shall be attached in such a manner that no rivets or bolts are exposed. Both doors shall include a mechanism capable of holding the door open at approximately; 90, 145, and 165 degrees under windy conditions. Both doors shall be equipped with a Corbin tumbler lock number 1548-1 or exact equivalent. Minimum of two keys shall be supplied. The police door-in-door shall be provided with a treasury type lock Corbin No. R357SGS or exact equivalent and has a minimum of one key.

The CA will require anchor bolts to properly secure the CA to its base. The CA flange for securing the anchor bolts shall not protrude outward from the bottom of the CA. Four anchor bolts shall be needed for the NEMA Size 6 CA for proper installation. All external fasteners shall be stainless steel. Pop rivets shall not be allowed on any external surface.

700-5.4.3.1.4 Terminals and Facilities – Design and Construction. The design of the panel shall conform to NEMA TS 2 Section 5, Terminals and Facilities (TF), unless modified herein. This panel shall be the termination point for the (MMU) MSA, MSB cables and field terminal facilities. The TF shall be constructed from 5052-H32 brushed aluminum of 0.125 inches minimum thickness and installed to minimize flexing when plug-in components are installed. The 16-position TF shall be provided with a mounting mechanism which allows easy access to all wiring on the rear of the panel. Lowering of the TF can be carried out without the use of any tools. Complete removal can be carried out using basic hand tools.

All wiring connecting to the TF from the CA shall not restrict or hinder the lowering of the TF all the way down for any needed service or inspection.

The TF shall be available as a minimum in the following configuration: *Sixteen load switch sockets, six flash transfer relay sockets, two flasher socket, 2- BIU sockets and one Type-16 MMU.* Sixteen load switch sockets and two flasher sockets mounted in one horizontal row, six flash transfer relay sockets and one Type-16 MMU. All load switch and flash transfer relay socket reference designators shall be silk-screen labeled on the front and rear of the TF to match drawing designations. Socket pins shall be marked for reference on the rear of the panel. All load switches and flashers shall be supported by a bracket, extending at least half the length of the load switch.

All field output circuits shall be terminated on a non-fused barrier type terminal block with a minimum rating of 10 amps. All field input/output (I/O) terminals shall be labeled by permanent alphanumeric labels. As defined by NEMA all labels shall use standard NEMA TS 2 specification nomenclatures.

All load switches, flasher, and flash transfer relay sockets shall be marked and mounted with screws. Rivets and clip-mounting is unacceptable.

The TF shall be supplied with (16) unused red jumpers. They shall be made of .063 inches thick brass, 2 inches x 11/16 inches. The U-shaped cut-out shall be exposed brass with the rest of the jumper covered with red, heat-shrink tubing insulation. It shall be possible to flash either the yellow or red indication on any vehicle movement and to change from one color indication to the other by use of a screwdriver. Field terminal blocks shall be wired to use four positions per

vehicle or overlap phase (green, yellow, and red, flash). It shall not be necessary to de-buss field terminal blocks for flash programming. The TF shall have two flasher sockets (silk screen labeled) capable of operating 15 amps, 2 pole, NEMA solid-state flasher. One RC network shall be wired in parallel with each group of three flash-transfer relays and any other relay coils. All logic-level, NEMA-CU and MMU input and output terminations on the TF shall be permanently labeled. CA prints shall show the function of each terminal position. At a minimum, three 20-position terminal blocks shall be provided at the top of the TF to provide access to the CU's programmable and nonprogrammable I/O. Terminal blocks for DC signal interfacing shall have a number 6 - 32 x 7/32 inch screw as minimum. All TF wiring shall conform to the following wire size and color:

1. Green/Walk load switch output - brown wire - 14 gauge
2. Yellow load switch output - yellow wire - 14 gauge
3. Red/Don't Walk load switch - red wire output - 14 gauge
4. MMU (other than AC power) - violet wire - 22 gauge
5. CU I/O - blue wire - 22 gauge
6. AC Line (ACPD panel to - black wire TF) - 8 / 10 gauge
7. AC Line (TF) - black wire - 10 gauge
8. AC Neutral (ACPD panel to - white wire TF) - 8 / 10 gauge
9. AC Neutral (TF) - white wire - 10 gauge
10. Earth ground (ACPD panel) - green wire - 8 gauge
11. Logic ground - gray wire - 22 gauge
12. Flash programming - orange wire
13. Flasher terminal - black wire red or yellow field terminal - 14 gauge

All wiring, 14 AWG and smaller, shall conform to MIL W 16878/1, type B/N, 600V, 19-strand tinned copper. The wire shall have a minimum of 0.010 inches thick PVC insulation with clear nylon jacket and rated to 105 degrees Celsius. All 12 AWG and larger wire shall have UL listed THHN/THWN 90 degrees Celsius, 600V, 0.020 inches thick PVC insulation and clear nylon jacketed. Connecting cables shall be sleeved in a braided nylon mesh or poly jacketed. The use of exposed tie-wraps or interwoven cables is unacceptable. The CU and MMU cables shall be routed through the back of the load-bay so that they will not be subject to damage during load-bay roll down.

All TF configurations shall be provided with wiring assignments consistent with NEMA TS 2-2003 specifications. All TF configurations shall be provided with BIU wiring assignments consistent with NEMA TS 2-2003 specifications. All TF configurations shall be provided with enough RS-485 Port 1 communication cables to allow for the intended operation of that cabinet. Each communication cable connector shall be a 15-pin metal shell D subminiature type. The cable shall be a shielded cable suitable for RS-485 communications.

The TF shall be pre-wired for an MMU operating in a Type-16 mode. All wiring shall be neat and unformed in appearance. All CA wiring shall be continuous from its point of origin to its termination point. Any type connections/splices are not acceptable. All connecting cables and wire runs shall be secured by mechanical clamps. Stick-on type clamps are not acceptable. The grounding system in the CA shall be divided into three separate circuits (AC Neutral (NGB), Earth Ground (EGB), and Logic Ground). These ground circuits shall be connected at a single

point as outlined in the NEMA TS 2 Standard. The TF shall incorporate a relay, to remove +24 VDC from the common side of the load switches when the intersection is in any mechanical flash. The relay shall have an LED to indicate when the relay is energized and a momentary pushbutton to mechanically force the relay to be in the energize condition. The momentary pushbutton is for ease of troubleshooting only.

The TF shall have wired at a minimum four (4) Alarm and an Automatic Flash inputs. They shall function as follows:

1. **ALARM 1** input shall be wired to a MAIN CA's door switch. When the CA's main door is open, then ALARM 1 input shall be activated.
2. **ALARM 2** input shall be wired to or be available to be wired to the CA's BBS equipment. When the BBS equipment is running in BATTERY MODE, then ALARM 2 input shall be activated.
3. **ALARM 3** input shall be wired to the CA's POLICE DOOR, door switch. When the CA' POLICE DOOR is open, the ALARM 3 input shall be activated.
4. **ALARM 4** input shall be available to be wired to any CA's feature. (SPARE) When the input becomes active then ALARM 4 input shall be activated.
5. **Automatic Flash** (AUTO FL) input shall be wired to or be available to be wired to the CA's BBS equipment. When the BBS equipment is running in LOW BATTERY MODE, then Automatic Flash input shall be activated.

All pedestrian push button inputs from the field to the controller shall be opto-isolated through the BIU and operate at 12 VAC. All eight BIU opto-isolated inputs shall be terminated on the TF near the field terminals. All wire (size 16 AWG or smaller) at solder joints shall be hooked or looped around the eyelet or terminal block post prior to soldering to ensure circuit integrity. Lap joint soldering is not acceptable. All wires shall have lugs or terminal fittings when not soldered. All soldered connections shall be made with 60/40 solder and non-corrosive, non-conductive flux. All cabinet 120 VAC wires shall be 18AWG or greater, including controller "TS 2 Type 1 A & Type 2 A", MMU "A & B" and Cabinet Power Supply cables.

All mounted panels and equipment shall have a minimum tool access clearance of 8 inches.

700-5.4.3.1.5 AC Power Distribution – Design and Construction. The AC Power Distribution (ACPD) panel shall interface into the TF and the EPD panels. The ACPD panel shall be located on the lower right part of the CA. The ACPD panel shall be wired to supply the necessary NEMA required high energy protected filtered power to the load switches and flashers. The ACPD components shall be equipped with a removable plastic front cover for general protection. The design will allow a technician to access the breakers without removing the protective front cover.

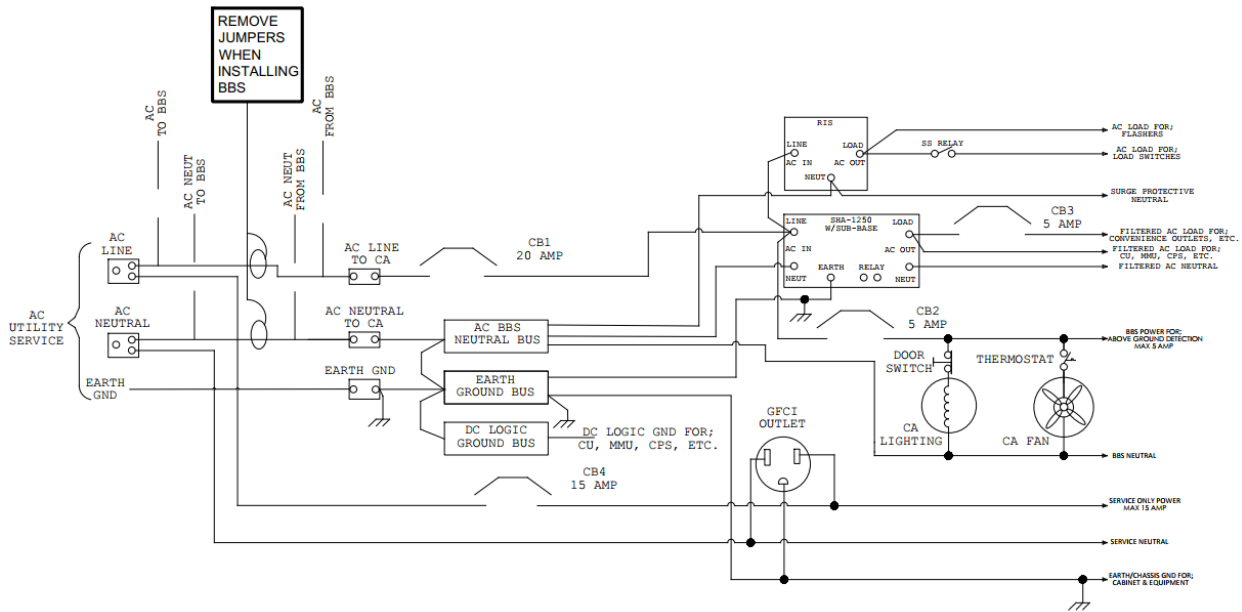
The ACPD panel part of the CA shall include the following components:

1. An ASCO model SHA-1250-WITH BASE-A (SA) or exact City of Redlands approved equivalent surge arrester.
2. A 50-amp, 125 VAC Radio Interference Suppressor (RIS).
3. A normally open, 75-amps, Solid State signal buss Relay (SSR). The SSR shall be a Crydom Model # HA4875H or City of Redlands approved equal.

4. Two AC service terminal blocks:

There shall be two AC service terminal blocks for incoming AC service. The primary AC service terminal block shall be connected to the local power utility. The secondary AC service terminal block shall be connected to the ACPD panel. The primary AC service terminal block shall be a two-pole distribution block. The first and second poles (line side) shall have one opening excepting wire sizes #2/0 thru #14. This shall serve as the primary connection for incoming power, for both the Line and Neutral. The first and second poles (load side) shall have two-four openings excepting wire size #4 thru #14. The load side pole shall connect to the secondary AC service terminal and Circuit Breaker 4 (CB4). The primary AC service terminal block outgoing neutral side pole shall connect to the secondary AC service neutral terminal and GFI. AC service terminal block Manufacture, Littelfuse P# LFD25702Z with cover LPBC22, Power Distribution block or City of Redlands approved equal. The second AC service terminal block shall be a two-pole distribution block. The line side shall connect to the primary utility service block for both Line and Neutral.

Four Circuit Breakers, shall be configure as follows:



Circuit Breaker 1 (CB1) rated at 20-amp. CB1 line side shall receive AC power

Circuit Breaker 2 (CB2) rated at 5-amp. CB2 line side shall receive AC power from the line side of Suppressor. CB2 load side shall supply AC power to the CA fans, internal lighting and an open position on Terminal Block 3 (TB3) labeled “ACDP POWER”.

Circuit Breaker 3 (CB3) rated at 5-amp, shall receive AC power from the SA on the load side to CB3 line side. CB3 Load side shall supply AC power to an open position on Terminal Block 3 (TB3) labeled “FILTERED POWER”.

Circuit Breaker 4 (CB4) rated at 15-amp, shall receive AC power from the primary AC service terminal block load side. CB4 Load side shall supply AC power to an open position on Terminal Block 3 (TB3) labeled “PRE BBS-POWER”. The GFCI AC line (terminal B) shall be connected to Block 3 (TB3) to the terminal labeled “PRE BBS-POWER”, “AC LINE”.

All Breakers shall be at minimum, a thermal magnetic type, U.L. listed for HACR service, with a minimum of 10,000 amp interrupting capacity.

1. Two (2) 8-position, isolated from earth ground, Neutral Ground Bus (NGB) bar electrically connected, capable of connecting three 12g wires per position.
2. 5.1.1.7 One (1) 6-position Earth Ground Bus (EGB) bar and one (1) an 8-position EGB bar electrically connected, capable of connecting three 12g wires per position.
3. 5.1.1.8 One (1) NEMA type 5-15R GFI utility outlet.

Permanent alphanumeric labels shall label all field wiring terminals. As defined by NEMA all labels shall use standard NEMA TS 2 specification nomenclatures.

All mounted panels and equipment shall have a minimum tool access clearance of 8 inches.

700-5.4.3.1.6 Equipment Power Distribution Design and Construction. The Equipment Power Distribution (EPD) assembly is designed for power distribution:

1. The primary source and distribution of filtered AC and CPS power.
2. The EPD assembly shall be manufactured from 0.090," 5052-H32 aluminum. It shall supply filtered power for the CU, MMU, CPS, DR, and all other critical CA equipment.

The EPD Assembly shall house the following components:

1. At a minimum two (2) 12 position terminal strips to hardwire the equipment power connections.
2. At a minimum the CA's, EPD assembly shall include both CU Type-1 and Type-2 power cables and the CPS cable.
3. All CA equipment requiring filtered power to operate shall be connected to the EPD assembly and shall be hardwired directly to the EPD's terminal blocks.

All mounted panels and equipment shall have a minimum tool access clearance of 8 inches.

700-5.4.3.1.7 Synchronous Data Link Communication Hub Assembly. Assembly shall include a minimum of six (6) and maximum of eight (8) D-Subminiature Female 15 pin (DB15) connectors that are wired in parallel.

The PCB shall be mounted to an "L" bracket for attaching to cabinet "C" channel. All SDLC cables shall attach with screw type retainers. There shall be one position with latching blocks to mate with latching spring blocks. This panel shall be mounted on the left wall of the cabinet between the shelves.

All mounted panels and equipment shall have a minimum tool access clearance of 8 inches.

700-5.4.3.1.8 Axillary Cabinet Assembly Equipment.

700-5.4.3.1.8.1 Cabinet Assembly Fans. All mounted panels and equipment shall have a minimum tool access clearance of 8 inch. The CA shall be provided with two (2) individually fused and thermostatically controlled ventilation fans, in the top of the CA, called FTL plenum plate. The FTL assembly shall be removable with the use of simple hand tools for serviceability.

The fans shall be a ball bearing type fans and shall be capable of drawing a minimum of 100 cubic feet of air per minute per fan. The FTL assembly shall be connected to the ACPD panel by a 4-position plug-in cable. (Note: each of the thermostats shall be adjustable between 55-160 degrees Fahrenheit)

700-5.4.3.1.8.2 Lighting. All mounted panels and equipment shall have a minimum tool access clearance of 8 inch. A fluorescent lighting fixture shall be mounted on the inside top of the CA on the FTL assembly near the front edge. The fixture shall be rated to accommodate at minimum a F15T8 LED lamp shall operate in a normal power factor UL or ETL listed ballast. The lamp shall be wired to a door activated switch mounted near the top of the door.

700-5.4.3.1.8.3 Filtered Convenience Outlets. The CA shall have two (2) set of Filtered Convenience Outlets (FCO). Each set of outlets shall have 4 simplex plugs configured horizontally to fit across the sidewall to the “C” rails. One FCO shall be mounted on the upper right side of the cabinet wall and the other shall be mounted on the upper left side of the cabinet wall. Both FCO’s shall be labeled “FILTERED OUTLETS 5.0 AMP”.

700-5.4.3.1.8.4 Supplemental Load Resistors. There shall be a supplemental load panel with (4) 2.5K-ohm, 10-watt panel mount resistor. One side terminated to a (4) position terminal block tied to NGB-1. The other side terminated to a (4) position terminal block. This block shall be left open for future loading in the cabinet. This panel shall be mounted on the right side of the cabinet below the bottom shelf.

700-5.4.3.1.8.5 Cabinet Assembly Envelope. A re-sealable print pouch shall be mounted to the door of the CA. The pouch shall be of enough size to accommodate one complete set of folded CA prints.

700-5.4.3.1.8.6 Cabinet Assembly Wiring Diagrams (Cabinet Prints). Intersection Diagram: An intersection diagram prepared in AutoCAD shall be provided on an 8.5inch x 11inch sheet of paper and enclosed in a protective plastic cover. The diagram and protective cover shall be found on the inside of the cabinet door above the Auxiliary Panel. The diagram shall depict the general intersection layout, phases, overlaps, detector assignments, and north arrow. The diagram, as well as the position of the North arrow shall be pre-approved by the Engineer.

A minimum of three (3) sets of complete and correct CA drawings shall be supplied with each CA. There shall be a USB Flash drive with both an ACAD and PDF of the CA drawings. Cabinet Wiring Diagrams, pages shall be 24 inch x 36 inch in size. The cabinet wiring diagrams shall be arranged on three separate pages in a simplistic way to ease the reading of it. The first page shall represent everything on the left side of the cabinet and the equipment on the shelves, the second page, everything in the middle of the cabinet including the TF, and the third page, everything on the right side of the cabinet and CA door equipment. There shall be a legend key on every plan sheet that includes all abbreviated words and all the pages their located on. All field wire terminations shall be labeled and correspond with the designation on the intersection layout plans. These labels include phase, overlap, direction, loop designation, etc. The Engineer shall approve the final cabinet wiring diagram and cabinet layout.

The Left wall of the cabinet shall support Vehicle Detection and communications. The Center/Back Wall of the cabinet shall support the Terminal & Facilities. The Right wall shall support the incoming AC power and other auxiliary equipment.

700-5.4.3.1.8.7 Auxiliary and Police control Panels Design and Operation. An Auxiliary and Police control Panels (APP) shall be mounted on the inside of the main door. The Auxiliary control panel shall provide as a minimum the following functions:

1. **Auxiliary AUTO/FLASH Switch:** A two-position switch labeled “FLASH CONTROL” with “AUTO/FLASH” positions. When in the “AUTO” position the CA shall run normal color sequencing, only when all other required equipment is running as designed and all operational switches are in the proper positions. When in the “FLASH” position, power shall be maintained to the CU and MMU, and the intersection shall be placed in a flashing condition. The CU shall not be stop timed when this switch is in FLASH position. This switch shall be wired according to NEMA-TS 2-2003 “A TF wired in accordance with this standard will provide a full Start-Up Flash period following the transfer of the AUTO-FLASH switch to the AUTO position or transfer of the MMU Output relay to the No Fault state when used with a CU and MMU developed in accordance with this standard. This switch shall have a switch guard.
2. **Auxiliary STOP TIME Switch:** A three-position switch labeled “STOP TIME” with “AUTO/OFF/ON” positions. When in the “AUTO” position and the CA is in FLASH because of the MMU in a fault mode or the Police panel AUTO/FLASH switch is in the FLASH position, the CU shall be stop timed in its current interval. When in the “ON” position, the CU shall be STOP TIMED in its current interval. When in the “OFF” position, the CU shall NOT have STOP TIMED applied. This switch shall have a switch guard.
3. **Auxiliary EQUIP POWER Switch:** A two-position switch labeled “EQUIP POWER” with “ON/OFF” positions. This switch shall control power to the CU and the MMU. This switch shall have a switch guard.
4. **Auxiliary MCE Switch:** A two-position switch labeled” MCE” with “ON/OFF” positions. When in the “ON” position and the main door is open, the CU shall be controlled by the MCE feature and the INTERVAL ADVANCE pushbutton shall control the CU sequencing. (Note: this switch shall not function any time the main door is closed). When in the “OFF” position, the CU shall NOT have MCE and the INTERVAL ADVANCE pushbutton shall not function. This switch shall have a switch guard.
5. **Auxiliary INT ADV Switch:** A pushbutton switch labeled “INT ADV”. This pushbutton shall work only when the MCE switch is in the “ON” position and the main door is open.

The police door control panel (part of the APP assembly) shall have the following:

1. **Police SIGNALS Switch:** A two-position switch labeled “SIGNALS” with “ON/OFF” positions. In the “OFF” position, power shall be removed from signal and pedestrian heads in the intersection. The CU shall continue to run. When in the “OFF” position, the MMU shall not conflict or require to be reset.
2. **Police FLASH CONTROL Switch:** A two-position switch labeled “FLASH CONTROL” with “AUTO/FLASH positions. When in the “AUTO” position the CA shall run normal color sequencing, only when all other required equipment is operating as designed and all operational switches are in the proper positions. When in the “FLASH”

position, power shall be maintained to the CU and the intersection shall be placed in flash. The CU shall be stop timed when in flash. Wired according to NEMA-TS 2-2003 “A TF wired in accordance with this standard will provide a full Start-Up Flash period following the transfer of the Auto-Flash switch to the AUTO position or transfer of the MMU Output relay to the No Fault state when used with a CU and MMU developed in accordance with this standard.

3. **POLICE DOOR, Door Switch:** A pushbutton police door switch shall be added. The police door switch shall be wired to the CU’s ALARM 3 input. When the Police Door is open the ALARM 3 input shall be activated. All toggle type switches shall be heavy duty and rated 15 amps minimum. Single- or double-pole switches may be provided, as required. Any exposed terminals or switch solder points shall be covered with a non-flexible shield to prevent accidental contact. All switch functions must be permanently and clearly labeled. All wire routed to the police door-in-door and test switch push button panel shall be protected against damage from repetitive opening and closing of the main door. All functional Control/Test switches on the APP shall be hardwired to the TF.

700-5.4.3.1.9 Cabinet Assembly Plug-ins Devices.

700-5.4.3.1.9.1 Controller Unit Controller Unit. The Controller Unit (CU) shall rest on the lower shelf on the left side of the MMU. Each CA shall be supplied with one CU as defined by the requirements of Section 3 of the NEMA TS 2 Standard and the ATC 5201 (ITE ATC Controller) ITE Advanced Transportation Controller (ATC) Standards. CU shall include a high-power, Linux-based Engine Board that is compliant with the ATC 5.2b and proposed 6.25 standard for a NEMA standard TS 2 Type-1 or Type-2 I/O connectors: four Ethernet ports, two USB ports, and an SD Card slot. Additionally, the CU shall be a seven-inch color, high brightness TFT LCD module with touch screen capabilities is readable in direct sunlight, can be operated with gloved hands, and is not affected by condensation or water drops. The CU shall be an Econolite ATC Cobalt C-Series Controller (Shelf Mount) using ASC/3 LX Software, model number COBS22100120000 or City of Redlands approved equal.

700-5.4.3.1.9.2 Malfunction Management Unit. The Malfunction Management Unit (MMU) shall rest on the lower shelf on the right side of the CU next to the EPD panel. Each CA shall be supplied with one MMU as defined by the requirements of Section 4 of the NEMA TS 2 Standard. MMU shall be a Type 16, Model number (Eberle Design, Inc. (EDI) Model MMU2-16LEip SmartMonitor) or City of Redlands approved equal.

700-5.4.3.1.9.3 Loop Detectors. The Loop Detector shall be a Reno A & E Model G-200-SS. A two channel, NEMA TS 2-1998 rack mount detector with solid state outputs and an audible detect signal (buzzer). Each DR shall have at a minimum of eight (8) Reno A & E Model G-200-SS, 2-Channel units. With the eight G-200 detectors, a Diagnostic Loop Detector shall also be included. It shall be a Reno A & E Model C-1200-SS, NEMA TS 2-1992, two channel, rack mount detector with solid state outputs and an audible detect signal (buzzer). Each DR shall have at a minimum of one (1) Reno A & E Model C-1200-SS 2-Channel unit.

700-5.4.3.1.9.4 Load Switches. Load Switches (LS) shall be solid state and shall conform to the requirements of Section 6.2 of the NEMA TS 2 Standard. LS shall have a minimum rating of 10 amps at 120 VAC for an incandescent lamp load. The front of the LS shall be provided with three indicators to show the input signal from the CU to the LS and three indicators to show the output signal from the LS to the field. LS shall be dedicated one (1) per phase. The full complement of LS shall be supplied with each CA to allow for maximum phase use for which the CA, TF is designed. The load switches shall be PDC model SSS-86I/O or City of Redlands approved equivalent.

700-5.4.3.1.9.5 Flashers. The flasher shall be solid state and shall conform to the requirements of section 6.3 of the NEMA TS 2 Standard. Flashing of field circuits for the purpose of intersection flash shall be done by a separate flasher. The flasher shall be rated at 15 amps, double pole with a nominal flash rate of 60 FPM.

700-5.4.3.1.9.6 Flash Transfer Relays. All flash transfer relays shall meet the requirements of Section 6.4 of the NEMA TS 2 Standard. The relays shall be Detrol Controls model 295 or City of Redlands approved equivalent. The coil of the flash transfer relay must be de-energized for flash operation. All flash transfer relays shall have an LED to show when the relay is energized. The full complement of relays shall be supplied with each CA to allow for maximum phase use for which the CA is designed.

700-5.4.3.1.9.7 Bus Interface Unit. All Bus Interface Unit (BIU) shall meet the requirements of Section 8 of the NEMA TS 2 Standard. Each Bus Interface Unit shall include POWER ON, TRANSMIT and VALID DATA indicators. All indicators shall be LEDs. The (BIU)'s shall be Eberle Design, Inc. model BIU700 or City of Redlands approved equivalent.

700-5.4.3.1.9.8 Cabinet Power Supply. The Cabinet Power Supply (CPS) shall rest on the top shelf on the right side of the CA closest to the EPD panel. The CPS shall meet the requirements of Section 5.3.5 of the NEMA TS 2 Standard. The CPS shall have LED indicators for the LINE FREQUENCY, AC LINE, 12 VDC, 12 VAC, and 24 VDC outputs. The CPS shall provide (on the front panel) jack plugs for access to the 24 VDC and 12 VDC for test purposes. One EDI, Inc. Model PS-250 CPS shall be supplied with each CA and shall be wired directly to the EPD assembly. The CPS shall be powered by the EPD panel and shall have continuous filtered 120VAC power, and not be controlled by the APP "EQUIP POWER" switch.

700-5.4.3.1.9.9 Emergency Vehicle Preemption Unit. Emergency vehicle preemption units shall be an Applied Information Glance Preempt and Priority In-Vehicle Unit – AI-500-065 Series and Applied Information Glance Preempt and Priority Unit – AI-500-085-02 Series.

700-5.4.3.1.9.9 Vehicle Loop Detection Design and Construction. Install the following equipment, if required:

1. A minimum of one Loop DR shall be provided in each CA. This configuration shall be integrated on top shelf and the left side of the CA.

The DR shall support up to 16 channels of loop detection (either eight 2 channel detectors or four 4 channel detectors), two 2 channel EVP preemption or one 4 channel EVP preemption device and one BIU. DR BIU mounting shall be an integral part of the DR.

All BIU rack connectors shall have jumper address pins corresponding to the requirements of the TS 2 specification. The jumpers may be moved to change the address of any individual rack. The address pins shall control the BIU mode of operation. BIUs shall be capable of being interchanged with no added programming.

Each CA shall have loop detector interface panels for the purpose of connecting field loops lead-in cables to the DR. The panels shall be terminal blocks mounted on an aluminum panel. No printed circuit boards shall be used for connecting the field (LOOP) detection devices to the DR. One loop/EVP interface panel shall be provided for each DR. The DR interface panel shall be secured and attached to the lower left wall towards the front of the CA.

Each DR interface panel shall allow for the connection of sixteen independent field loops and four EVP detectors. Two EGB ground bus terminals shall be provided below the terminal block where the loop pairs are terminated, to provide a termination for the loop lead-in cable ground wire.

A cable(s) consisting of 20 AWG twisted pair wires shall be used to connect to and from the DR loop interface panel terminal blocks to a DR. The twisted pair wires shall be color coded red and white, any other wires that are not loop wires shall be black.

All loop termination points shall be identified by a unique number and silk screened on the panel.

Detector loop field terminals shall be labeled with the letter “L” followed by the detector channel number and loop connection (A or B) per the following example:

Function	Label
Detector Channel 01 Loop	L01A & L01B
Detector Channel 02 Loop	L02A & L02B
Detector Channel 16 Loop	L16A & L16B

All mounted panels and equipment shall have a minimum tool access clearance of 8 inches.

Each DR shall accommodate rack mountable four channel preemption devices such as EMTRAC or Opticom. Each DR shall be wired and powered by the EPD assembly

700-5.4.3.1.9.10 Cabinet Assembly and Equipment Design Acceptance Requirements. The City of Redlands, process for acceptance of either a direct purchase or contractor purchase on a project, either public or private, shall be reviewed and approved before any manufacturing processing is started. The requirements are as follows:

1. The City of Redlands shall receive:
 - a. *The City of Redlands’ signed plans and specifications, used in the design of the CA. (in PDF format)*

- b. *The Cabinet Manufacture's cabinet wiring design. (PDF format)*
- c. *The Cabinet Manufacture's cabinet lay out. (and PDF format)*
- d. *Both the Equipment and Cabinet Manufacture's list of all plugin components. (in PDF format)*
- e. *The Cabinet Pre-Manufacturing Submittal Form filled out and completed.*

After receiving the above information, the City will do a review process and respond to the status of the project. Failure to received written approval from the City of Redlands before the start of manufacturing shall constitute a rejection of any and all equipment delivered or not.

700-5.4.3.1.9.11 Cabinet Assembly and Equipment Testing Acceptance Requirements.

Testing, the City of Redlands process for acceptance of either a direct purchase or contractor purchase on a project, either public or private, SHALL be fully ready for testing. When the City of Redlands is proceeding through the process of "Evaluation and Testing Procedure" (ETP), if the CA and/or CU equipment fails any part of the ETP, then all failed CAs shall be returned to the manufacture and all shipping charges shall be the responsibility of the equipment manufacture. The first evaluation shall be a visual inspection of both the cabinet layout and equipment list. If passed, then the City of Redlands shall move to the next step. The next step shall be reviewing CA prints and documents to verify they match the design in the CA and Equipment Design Acceptance Requirements process. VOM to measure resistance from earth to line, neutral to line, with circuit breakers in the on position. Connect the main service terminal block to power. The City of Redlands shall test each CU and CA as a complete entity under signal load, based on Caltrans equipment testing Document CTM-658. Each assembly shall be delivered with a signed document detailing the CA final tests performed by the manufacture.

700-5.4.3.7 Cabinet Accessories. - *Add the following section:*

Uninterruptible Power System (UPS). An UPS shall be required for all new or modified traffic signal work. The UPS shall be SP1250LX-N- UPS, 1250VA, with power input/output front connections as manufactured by Clary Corporation, or approved equal. The UPS must be a true on-line system that provides clean, regulated dual conversion power to all components in the controller cabinet. The system is unique in that it continuously regenerates and conditions the AC sine wave, where 100% of the power to the load, whether on utility or batteries, is generated by the on-board inverter. The system will include a SPD-302C bypass switch with GFI duplex, 5-15R receptacle, generator cable and connector (LX Model). The batteries required will consist of 6 batteries, MK40-12-SLDM, 12v, 45 Ah battery.

The battery backup system shall also include the following:

1. SPO-09A2 Internal, SNMP adapter for TCP/IP/Internet Support
2. SP-19N1 battery cable, single string, 72Vdc, Andersen to Andersen
3. 104-13573-1 (quantity of 6, 1 required per battery) battery cable for bolt/lug batteries, Ring Lug to Anderson
4. CBS-127 Style 3 Cabinet contains CBO-126, CBT-123 (thermal option with fan, thermostat and cabinet wiring) and CBL-123 (Corbin Lock)

Any UPS to be considered as an "approved equal," shall be Caltrans approved.

700-5.5.2 Optical Units. - *Add the following paragraph:*

All vehicle indicators shall be 12 inch (305 mm) General Electric (GE) LED's, or approved equal.

700-5.6.1 General. - *Add the following paragraph:*

All pedestrian indicators and countdown modules with hand and man shall be GE LED 16 inch x 18 inch module PS7-CFF1-27A-J, or approved equal.

700-5.8.1 General. - *Amend as follows:*

Add the following sentence to paragraph 1:

Loop detectors per Section 700-5.4.3.1.9.3 and video detection per Section 700-5.14 shall be used for the detection at each traffic signal installation.

700-5.8.2.1 General. - *Amend as follows:*

Add the following sentence to paragraph 1:

Inductive loops shall be installed per 2022 Caltrans Standard Plan RSP ES-5B.

700-5.9 Pedestrian Push Button Assemblies. - *Add the following paragraph:*

Accessible Pedestrian Signals shall be:

1. Push Button Housings: Traffic Signal Hardware, Inc. 5x7 TSH-8016 Black Adjustable Push Button Housings
2. Pushbuttons: Campbell Company PedSafety DCC-200A Black
3. Push Button Sign per Caltrans 5x7 R10-4b Double Sided

700-5.10 UPS System Cabinet. If an UPS system is to be added to an existing traffic signal, it shall be a cabinet bolted to the existing traffic controller cabinet or a standalone cabinet, as specified by the Engineer. All UPS system cabinets shall be equipped with a fan, filter, thermostat and generator receptacle, as manufactured by Clary, or approved equal.

Bolt-on and standalone cabinet shall be Model No. CBS-127 Style 3 with Corbin lock. Cabinets shall be as manufactured by Clary, or approved equal.

700-5.11 Load Switches and Flashers. Load switches and flashers shall be EDI, or approved equal. Load switches shall have LED's for input and output.

700-5.12 Loop Detector Amplifiers. Loop Detector Amplifiers shall be A & E Model G-200-SS, or approved equal.

700-5.13 Conflict Monitor/MMU. The conflict monitor shall be an MMU16LE manufactured by EDI, or approved equal.

700-5.14 Video Detection (Rack Mounted Video Detection System Design and Construction). - *Add the following paragraph:*

Install the following equipment, if required:

1. A minimum of one Vantage Next Rack Mount Platform shall be provided in each CA. This configuration shall be mounted underneath the shelf on the left side of the CA.
2. The Next System software shall discriminately detect the presence of individual vehicles and bicycles in a single or multiple lanes using only the video image. Detection zones shall be defined using only an embedded software application. A monitor, a keyboard and a pointing device are used to place the zones on a video image. A minimum of 32 detection zones per camera view shall be available. A separate computer shall not be required to program the detection zones.
3. The Next video detection system (VDS) hardware shall consist of up to four video cameras, up to two video detection processors (VDP) capable of processing up to two video sources each, one Central Control Unit (CCU), in a rack mount form factor, an SDLC Port 1, for detection outputs and phase color inputs, external power supply and video surge suppressors.

The Vantage Next Rack-Mount Platform hardware to be installed for the central control unit (CCU) is below:

(1) NEXT-CCU-PAK-Next CCU unit, 1U box, supports up to 4 Next-VP's, includes Next-CCU-SHIPKIT

This includes the following below:

- (1) 2.4GHz rubber duck antenna
- (1) USB optical mouse
- (1) 6 foot HDMI cable
- (1) 5 foot Cat5E patch cable

Below is the hardware for the Vantage Next Cameras:

- (4) NEXT-CAM-PAK, Vantage NEXT WDR Camera
- (4) CAMBRKT4, Camera mounting bracket universal
- (4) PELCO0175, 5' Camera extension bracket for MAM

Below is the hardware for the Vantage Next Cabinet Equipment:

- (1) MON-10LCD-SL 10inch LCD Color Video Monitor
- (2) CAT5E-SHLD-CABLE, 1000 foot Spool
- (1) Manufacturer turn on support

700-5.15 Pedestal Feed Point. The exact location of the pedestal shall be determined by the Engineer with concurrence of the Southern California Edison (SCE) Service Planner. The photo cell window shall face north per SCE requirements. Photo cell shall be furnished and installed by the Contractor inside the pedestal.

On the City side of the pedestal there shall be: a minimum of two 1¼ inch (32 mm) Schedule 40 PVC conduits stubbed out a minimum 6 inches (152 mm) from the concrete base for current or future use; and an 8 foot x _ inch copper-clad ground rod which shall be installed and connected to satisfy NEC and SCE requirements.

On the SCE side of the pedestal there shall be a 3 inch (76 mm) Schedule 40 PVC conduit installed to the SCE power source to meet SCE requirements.

Pedestal base shall meet SCE requirements as a minimum, and shall extend a minimum 12 inches (305 mm) beyond outside face of pedestal on all sides. Base dimensions may be shortened at the direction of the Engineer.

Contactors, if used, shall be solid state.

Circuit breakers shall be labeled for traffic signal, safety luminaries and street lights. Felt markers are not acceptable. When possible, the traffic signal breaker shall be placed in the upper right.

700-5.16 Reflectorized Street Name Sign.

700-5.16.1 General. Reflective mast arm street name signs shall be manufactured by Safeway Sign Company, or approved equal, and shall conform the specifications for S.S.G. mast arm signs.

The sign panel shall be 72 inches x 18 inches x 3/16 inch (1,829 mm x 457 mm x 5 mm) anodized aluminum. Length of the sign panel may vary, as required by the Engineer.

Sign shall be mounted by clamps for existing mast arms and new Type 3 mast arms, and by hangers for all other new mast arms. Placement and mounting location shall be as detailed on Standard Drawing Nos. 491-1 and 492-1.

700-5.16.2 Sign Legends. Sign panel surfaces, including letters and borders, shall be reflectorized using 3M Scotchlite Reflective Sheeting Diamond Grade Visual Impact Performance (VIP 3990) reflective sheeting or approved equal.

Sign legends shall be white letters on blue background with white borders and shall include City logo. Copy and border shall be reverse screened using ink. Logo shall be screen-printed. Cut out letters, logo or border shall not be used.

Letter sizes shall be 8 inches (203 mm) for upper case and 6 inches (152 mm) for lower case. Lettering shall be 'FHWA D Series' type. Periods (.) shall not be used on abbreviations. The border shall be 1 inch (25 mm). "City of Redlands" identification shall be 3½ inches (89 mm) for upper case and 2½ inches (64 mm) for lower case letters. City logo shall be an orange with leaves.

A layout for each legend shall be submitted to the Engineer for approval prior to fabrication. See Detail Drawing Nos. 491 or 492 for additional information and layout.

700-5.16.3 Sign Frame and Panel. Signs with identical legends shall be displayed on both sides of a single frame, unless otherwise indicated on the plans. The sign shall be reflectorized as specified in Section 700-5.16.2, mounted on the mast arm, able to be read from both sides and shall be Type SG.

700-5.16.3.1 Frames. Frame shall be aluminum channel extrusion, 1¼ inch x 1¼ inch x inch (32 mm x 32 mm x 3 mm) wall thickness, alloy 6063-T5. All joints of the aluminum channel shall be miter cut to form 45-degree angles at each corner. Frame shall be welded with an inert gas mig weld process using 4043 electrode filler wire in accordance with good shop practice. Filler wire width shall be equal to the wall thickness of the channel being welded.

Top of the frame shall have two 2-inch x 2-inch x ¼-inch (51 mm x 51 mm x 6 mm) wall thickness channel members welded and fastened to the frame with stainless steel bolts, washers, ny-lock nuts and cotter pins. The adjustable swing assembly will be attached to these members as shown on the drawing.

700-5.16.3.2 Panels. Sign panel shall be fastened to both sides of the channel frame to make a double-faced unit. Each sign panel shall be a continuous sheet with no vertical or horizontal splices in the panel.

Sign panels shall be affixed to the frame with 3/16 inch (5 mm) diameter aluminum blind pop rivets, alloy 5052, or approved equal. The exposed face of the rivet shall be of similar shade and compatible with the face color of the finished sign. Rivets shall be placed through the sign face and the channel wall shall be placed against the back of the sign panel. Rivets shall be installed at a minimum of ½ inch (13 mm) from the sign panel edge and at a maximum spacing of 8 inches (203 mm) along the sign panel edge. All rivets shall penetrate the web of the channel frame for proper grip strength between sign panel and frame.

Swing hinge shall be attached to the 2 inch x 2 inch (51 mm x 51 mm) channel member with a ¼ inch (6 mm) stainless steel bolt and bronze bushing and then secured with any-lock nut.

700-6 Warranty.

700-6.1 Equipment Warranty. The controller unit (CU) and malfunction management unit (MMU) shall be warranty by the manufacturer against mechanical and electrical defects for a period of two years from date of shipment. The manufacturer's warranty shall be supplied in writing with each controller assembly (CA) and CU. Second party extended warranties are not acceptable.

The CA and all other components shall be warranty for a period of one year from date of installation/Notice of Completion. Any defects shall be corrected by the manufacturer or supplier at no cost to the City.

700-6.2 City's Acceptance of Contractor Work. The Contractor shall submit written assertion that the work has been completed prior to the Engineer making final inspection. If City Staff determines that the work is not complete, written notice will be given.

The City will endeavor to locate any errors or defective materials or workmanship and call them to the attention of the Contractor prior to subsequent work being performed. However, the City is under no obligation to do so and shall not be held liable because errors or defective material or workmanship by the Contractor are not discovered prior to subsequent work.

700-6.3 Warranty of Work. The Contractor shall warranty the work against defective materials or workmanship for a period of one (1) year from the date of completion date specified in the Notice of Completion, except where longer warranty periods are specifically stated.

All work which has been rejected, shall be remedied, or removed and replaced, by the Contractor at his own expense, with work conforming to the Plans and Specifications. Any defective material or workmanship which may be discovered before final acceptance or within one (1) year from the completion date specified in the Notice of Completion shall be corrected immediately by the Contractor at his own expense notwithstanding that it may have been overlooked in previous inspections and estimates. Failure to inspect work at any stage shall not relieve the Contractor from any obligation to perform sound and reliable work as herein described. It is the Contractor's ultimate responsibility to deliver at the time of final acceptance a complete project that complies in all details with these contract documents. All items shall be ready to operate.

The City will endeavor to locate any errors or defective materials or workmanship and call them to the attention of the Contractor prior to subsequent work being performed. However, the City is under no obligation to do so and shall not be held liable because errors or defective material or workmanship by the Contractor are not discovered prior to subsequent work.

Nothing in this section shall be construed to limit the rights of the City to immediately correct conditions which may be unsafe, or which may pose a public health nuisance. Should said conditions later be found to be caused by defective material and/or workmanship, the Contractor and his Surety shall reimburse the City for costs reasonably incurred while attending the situation.

THIS PAGE INTENTIONALLY LEFT BLANK

DIVISION III
STANDARD PLAN AMENDMENTS

THIS PAGE INTENTIONALLY LEFT BLANK

STANDARD PLAN AMENDMENTS

The following changes shall be made to the Standard Plans for Public Works Construction:

101-3 ABOVE-GROUND UTILITIES LOCATION IN PARKWAY

Add the following note:

7. Stop sign and Street Name sign posts shall be set 750 mm (2-1/2 feet) behind curb face and 600 mm (2 feet) from BCR/ECR, being a minimum 1,200 mm (4 feet) in advance of the crosswalk line nearest the approaching traffic, unless otherwise approved by the Engineer.
8. If a street light standard is located within the BCR/ECR area described in Note 7, 'Stop' and 'Street Name' signs shall be mounted to the street light standard.
9. Sign post anchor system shall be installed in concrete, unless otherwise approved by the Engineer.

110-2 DRIVEWAY APPROACHES

Amend note 1 as follows:

"... shall be 150 mm (6 inch) thick PCC."

Add the following notes:

6. Commercial driveway approach shall be Type A, unless otherwise approved by the Engineer. Width (W) shall be 3.6 m (12 feet) minimum to 10.7 m (35 feet) maximum.
7. Residential driveway approach shall be Type B, unless otherwise approved by the Engineer. Width (W) shall be 3.6 m (12 feet) minimum to 6.1 m (20 feet) maximum.
8. Alley approach shall be Type C, unless otherwise approved by the Engineer. Width (W) shall be 6.1 m (20 feet).

111-5 CURB RAMP

Amend note 1 as follows:

"... be class 330-C-23 (560-C-3250) conforming to ..."

112-2 CURB AND SIDEWALK JOINTS

Amend the first sentence of note 2 as follows:

"... walks and 3,000 mm (10 feet) in gutters ..."

Add the following notes:

4. Expansion joints shall be placed at the top of all driveway "x"s.
5. Expansion joints shall be spaced at maximum 18.3 m (60 foot) intervals.
6. Sidewalk shall be minimum 100 mm (4 inches) thick.
7. All concrete shall be class 330-C-23 (560-C-3250).

120-3 CURB AND GUTTER - BARRIER

Add the following note:

7. "W" shall be measured from flow line to gutter lip.

Amend note on details A2-6(150) and A2-(8)200) as follows:

Delete - Slope 8.3%

Replace with - Slope 6.25%

121-3 CURB AND GUTTER - MOUNTABLE

Add the following note:

7. "W" shall be measured from flow line to gutter lip.

Amend note on detail B2-6(150) as follows:

Delete - Slope 8.3%

Replace with - Slope 6.25%

122-3 CROSS AND LONGITUDINAL GUTTERS

Add the following notes:

8. 150 mm (6 inch) crushed aggregate base compacted to 95 percent shall be placed under all cross gutter and spandrel areas.
9. Section D-D dimension may be increased to 3,000 mm (10 feet) at the direction of the Engineer.

123-3 CROSS GUTTER AT T INTERSECTIONS

Add the following notes:

6. 150 mm (6 inch) crushed aggregate base compacted to 95 percent shall be placed under all cross gutter and spandrel areas.
7. Section A-A dimension may be increased to 3,000 mm (10 feet) at the direction of the Engineer.

130-3 ALLEY INTERSECTION

Amend note 2 as follows:

Delete - 520-C-2500 (310-C-17)

Replace with - 560-C-3250 (330-C-23)

Add the following notes:

3. Standard alley section shall be as shown on City Detail Drawing No. 118-0.
4. Runoff water shall not be allowed to cross sidewalks or alley approaches. Drains shall be installed as shown on Standard Plan 150-4, Case II Inlet.

133-4 ASPHALT CONCRETE PAVEMENT REPLACEMENT

Delete - Case I - WITHOUT BASE in its entirety.

Delete - Case II - T + 1" (25 mm) MIN

Replace with - T+1" (25 mm) or 3" (75 mm), whichever is greater.

Add the following notes:

3. Minimum trench width shall be not less than 300 mm (12 inches).
4. Backfill lateral utility trenches, full depth, with crushed aggregate base or sand.
5. A 3,600 mm (12 foot) wide overlay may be required by the Engineer when:
 - a. Existing pavement is uneven.
 - b. Existing pavement is damaged by Contractor's operations. Length of overlay shall be determined by the Engineer.

301-4 CURB OPENING CATCH BASIN WITH GRATING(S) AND DEBRIS SKIMMER

Amend note 4 as follows:

Delete - H = Noted on the plans

Replace with - H = 50 mm (2 inches)

302-4 CURB OPENING CATCH BASIN WITH GRATING(S)

Amend note 5 as follows:

Delete - H = Noted on the project plans

Replace with - H = 50 mm (2 inches)

303-4 CURBSIDE GRATING CATCH BASIN

Amend note 5 as follows:

Delete - H = Noted on the plans

Replace with - H = 50 mm (2 inches)

307-4 CURB OPENING CATCH BASIN WITH MANHOLE IN STREET

Amend note 5 as follows:

Delete - H = Noted on the plans

Replace with - H = 50 mm (2 inches)

313-4 LOCAL DEPRESSIONS AT CATCH BASINS

Amend note 5 as follows:

Delete - H, H1, H2 and H3 shall be as noted on the plans

Replace with - H, H1, H2 and H3 shall be 50 mm (2 inches).

314-3 MODIFICATIONS FOR SIDE OPENING CATCH BASIN

Add the following note:

9. H = 50 mm (2 inches).

324-2 MANHOLE SHAFT WITH ECCENTRIC REDUCER

Amend Collar notes on sheet 1 as follows:

Delete - Class C mortar

Replace with - Class B concrete, plant mixed, 150 mm (6 inch) thick by 300 mm (12 inch) wide, as shown in Detail Drawing No.325-0.

Delete - R = 50 mm (2 in.) shown for the collar in both vertical sections.

326-2 MANHOLE SHAFT 900 mm (36") WITHOUT REDUCER

Amend Collar note on sheet 1 as follows:

Delete - Class C mortar

Replace with - Class B concrete, plant mixed, 150 mm (6 inch) thick by 300 mm (12 inch) wide, as shown in Detail Drawing No.325-0.

518-4 TREE STAKING

Amend Single Staking note 1 as follows:

"... chromated copper arsenate."

Amend Single Staking note 2 as follows:

"... shall be a minimum 2.5 m (8 feet); however, it ..."

Amend Double Staking note 1 as follows:

"... chromated copper arsenate."

Amend Double Staking note 3 as follows:

"Height of stakes shall be a minimum 2.5 m (8 feet); however, they shall not be ..."

520-5 TREE PLANTING

Amend note 3 as follows:

"Amend backfill mix with fertilizer tablets per specifications. Leave ..."

Delete note 4 in its entirety and replace with:

"Perforated pipes are not required for street trees."

Amend note 5 as follows:

"... high berm a minimum 760 mm (30 inch) diameter around backfill ..."

Add the following sentence to note 8:
"All stakes shall be placed outside of rootball."

Amend note 9 as follows:
"... to stakes with two 50 mm (2 inch) "Cinch Tree Ties" per stake, or approved equal."

Add the following notes:

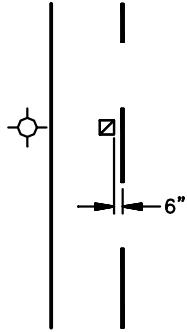
12. Tree spacing shall be 10 m (35 feet) minimum, and 15 m (50 feet) maximum.
13. Tree planting shall be a minimum 10 m (30 feet) from the BCR on the approach leg to an intersection; a minimum 3 m (10 feet) from the ECR on the departure leg to an intersection.
14. Tree planting shall be a minimum 3 m (10 feet) from the edge of a driveway approach, bottom of X.
15. Tree planting shall be a minimum 5 m (15 feet) from street light standards and power poles.
16. Tree planting shall be a minimum 3 m (10 feet) from fire hydrants.
17. Tree planting shall be a minimum 1.5 m (5 feet) from utility meters.
18. Tree planting shall be centered in the parkway between curb and sidewalk.
19. Where there is no sidewalk, tree planting shall be centered between curb & right-of-way line.

Add the following City Detail Drawings to the Standard Plans for Public Works Construction:

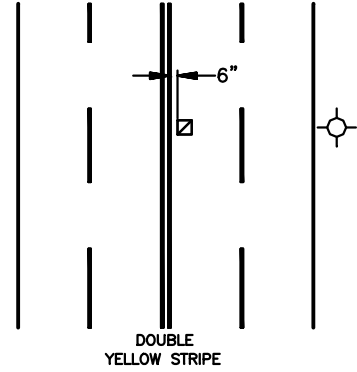
- 102-0 FIRE HYDRANT PAVEMENT MARKER LOCATIONS**
- 117-0 CENTRALIZED MAILBOX CONCRETE ACCESS PAD**
- 118-0 STANDARD ALLEY SECTION**
- 119-0 MEANDERING SIDEWALK**
- 129-0 SPLIT-FACE ROCK CURBING**
- 148-0 STANDARD TRANSITION INTO A SUB-STANDARD SECTION**
- 149-0 STANDARD TERMINUS FOR EXTENDABLE STREET**
- 159-0 CURB OUTLET BOX**
- 325-0 MANHOLE AT GRADE DETAIL**
- 459-1 LIGHTING STANDARD**
- 491-1 REFLECTORIZED STREET NAME SIGN, MAST ARM**
- 492-1 REFLECTORIZED STREET NAME SIGN, 1-A POLE**

THIS PAGE INTENTIONALLY LEFT BLANK

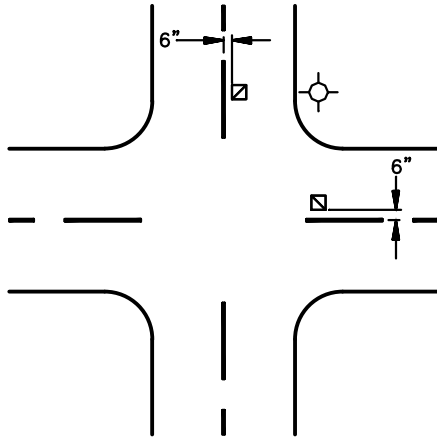
TWO LANE STREET



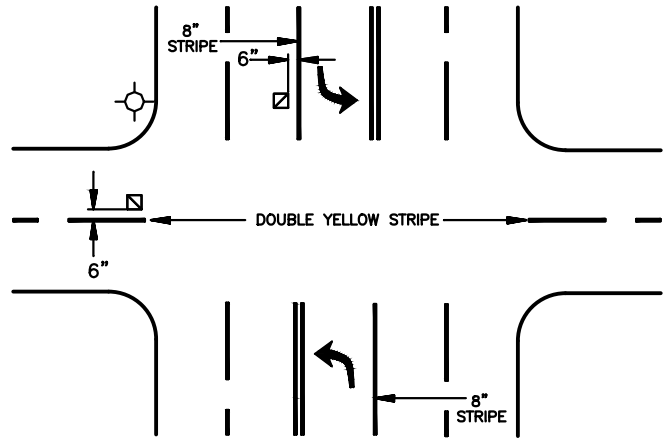
MULTI-LANE STREET



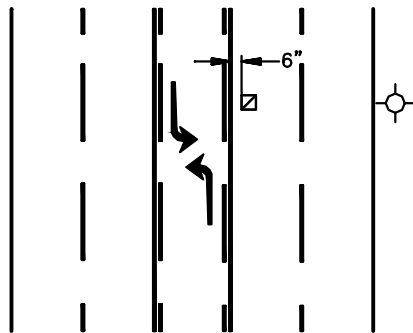
TWO LANE STREET AT INTERSECTION



FOUR LANE STREET WITH TURN LANE AT INTERSECTION



MULTI-LANE STREET WITH TURN LANE



LEGEND

⊙ FIRE HYDRANT ◻ BLUE PAVEMENT MARKER

NOT TO SCALE

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

FIRE HYDRANT PAVEMENT MARKER LOCATIONS

STD. DWG. NUMBER

102-0

APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

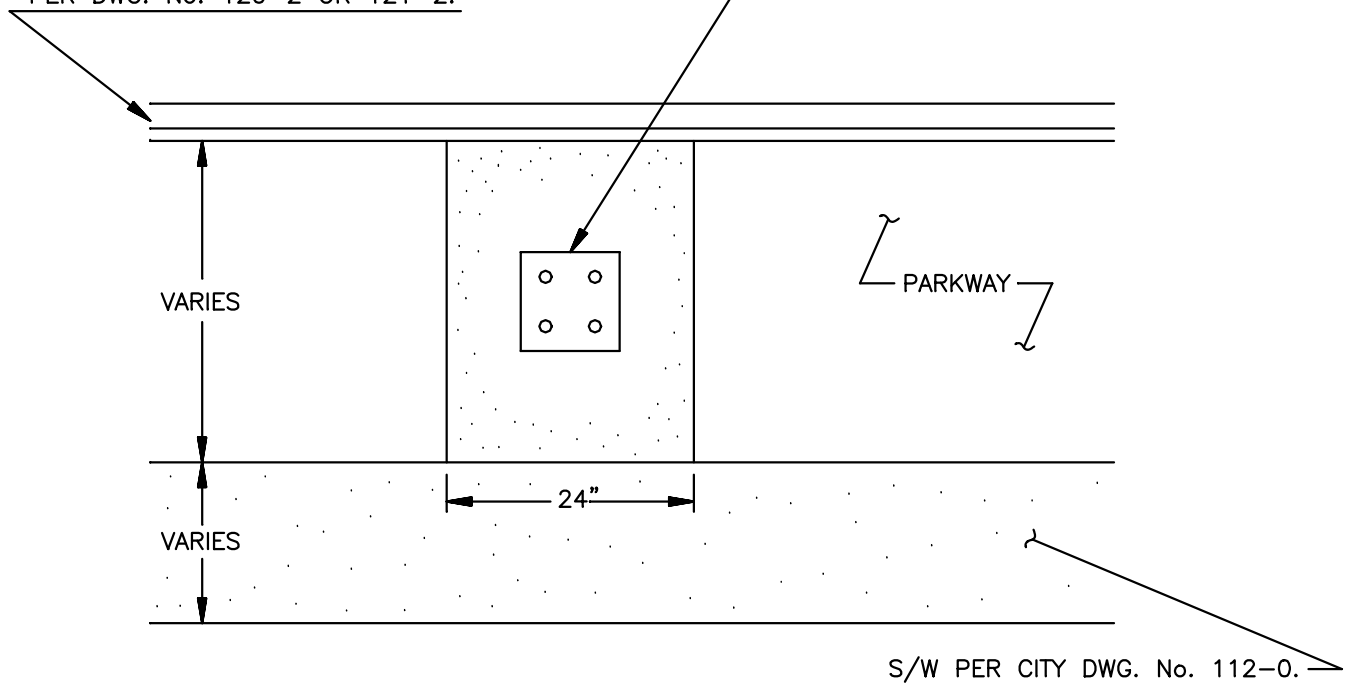
SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

CURB & GUTTER
PER DWG. No. 120-2 OR 121-2.

PEDESTAL BASE PLATE
DIMENSIONS AS PER U.S.P.S. SPECS.



S/W PER CITY DWG. No. 112-0.

NOTES:

1. CONSTRUCT 24" WIDE BY 4" DEEP CONCRETE ACCESS PAD TO SURROUND U.S.P.S. PEDESTAL.
2. PEDESTAL TO BE INSTALLED AS PER U.S.P.S. SPECS.
3. PAD TO EXTEND COMPLETELY FROM SIDEWALK TO CURB.
4. SLOPE OF PAD TO MATCH THAT OF SIDEWALK.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

CENTRALIZED MAILBOX CONCRETE ACCESS PAD

STD. DWG.
NUMBER

117-0

APPROVED:

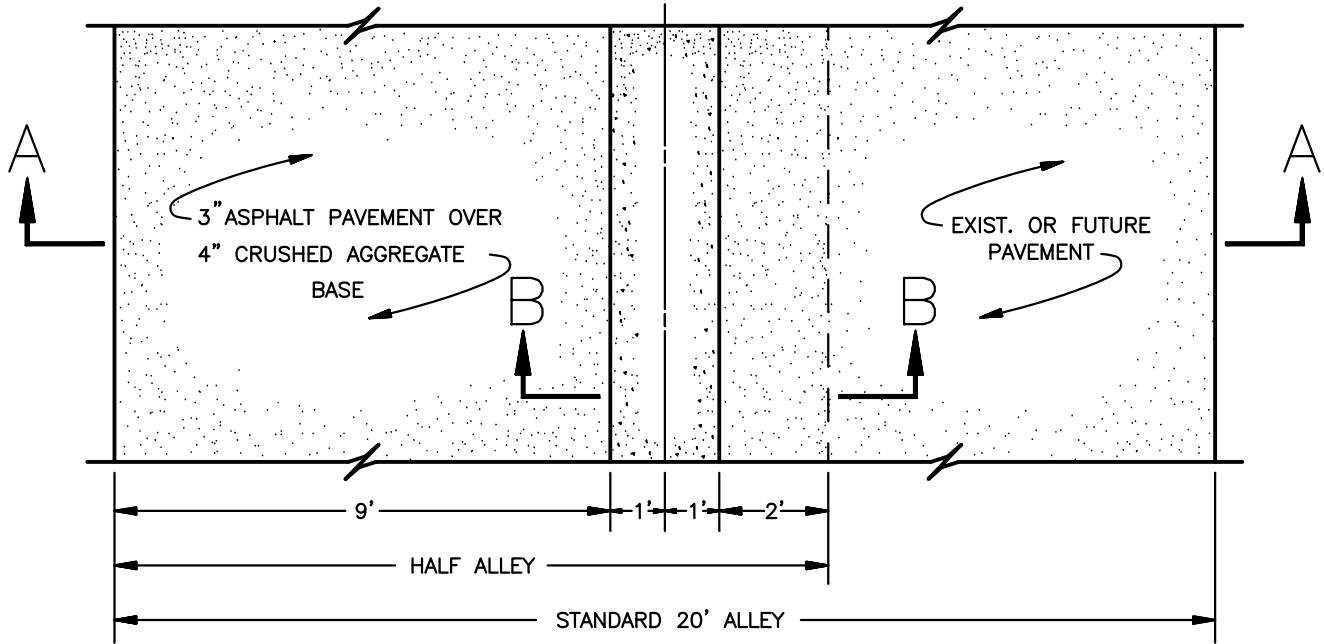
DATE: 01/03/2023

Goutam K. Dobe, City Engineer RCE 75646

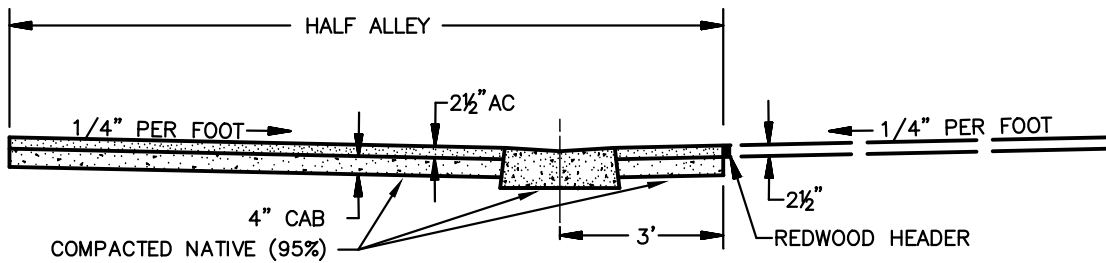
SHEET 1 OF 1

REV.	BY	DATE

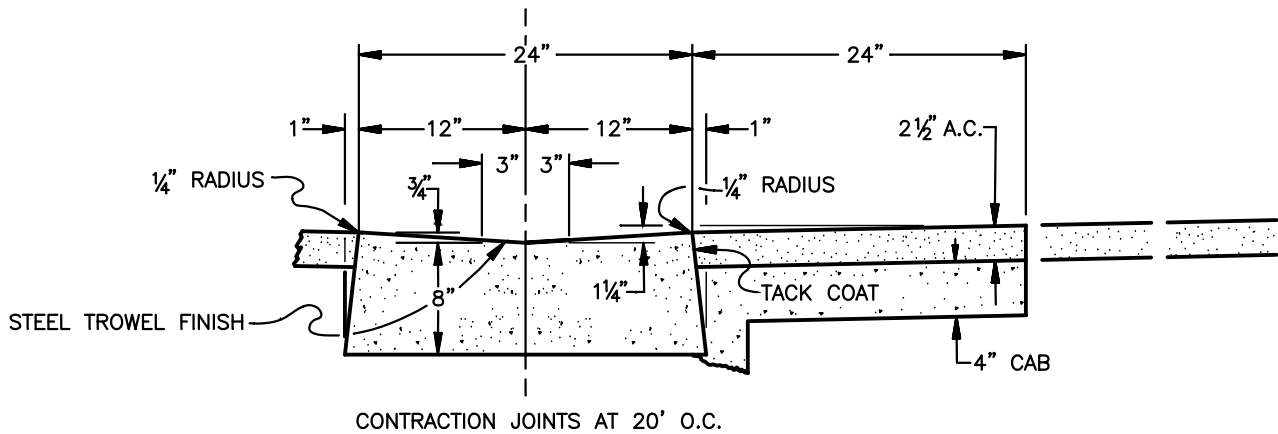
THIS PAGE INTENTIONALLY LEFT BLANK



PLAN VIEW



SECTION A-A



SECTION B-B

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

STANDARD ALLEY SECTION

STD. DWG.
NUMBER

118-0

APPROVED:

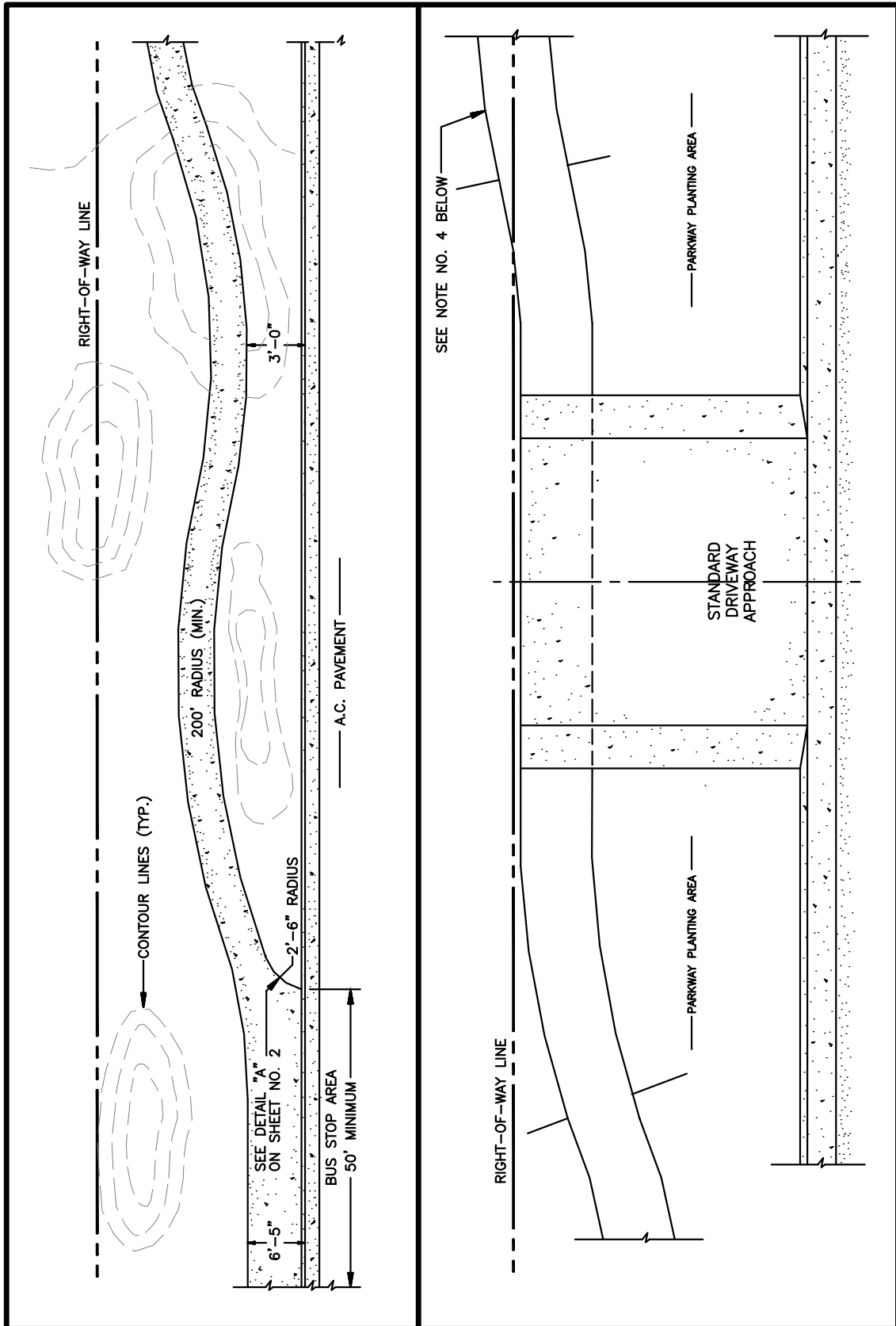
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK



- NOTES:
1. RADII FOR SIDEWALK SHALL BE BETWEEN 200' AND 600' AND SHALL BE STAGGERED.
 2. MAXIMUM SIDEWALK SLOPE SHALL NOT EXCEED 10% ON STREETS WITH GRADES LESS THAN 10%.
 3. MAXIMUM SIDEWALK SLOPE SHALL NOT EXCEED MAXIMUM STREET GRADE ON STREETS WITH GRADES GREATER THAN 10%.
 4. SIDEWALK EASEMENT SHALL BE REQUIRED FOR ANY SIDEWALK EXTENDING BEYOND RIGHT-OF-WAY LINE.
 5. BUS STOPS SHALL BE A MINIMUM OF 50' IN LENGTH.
 6. SIDEWALK SHALL BE A MINIMUM OF 6' IN WIDTH WHEN ADJACENT TO CURB.
 7. SIDEWALK SHALL BE A MINIMUM OF 3' AWAY FROM CURB FACE EXCEPT AT CURB RETURNS AND BUS STOPS.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

MEANDERING SIDEWALK

STD. DWG. NUMBER

119-0

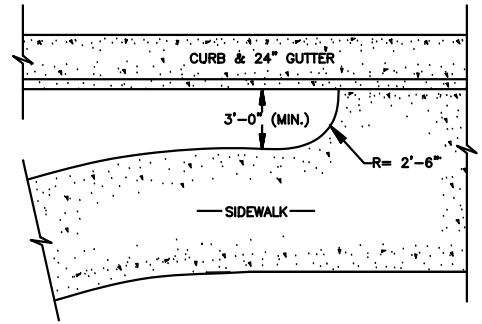
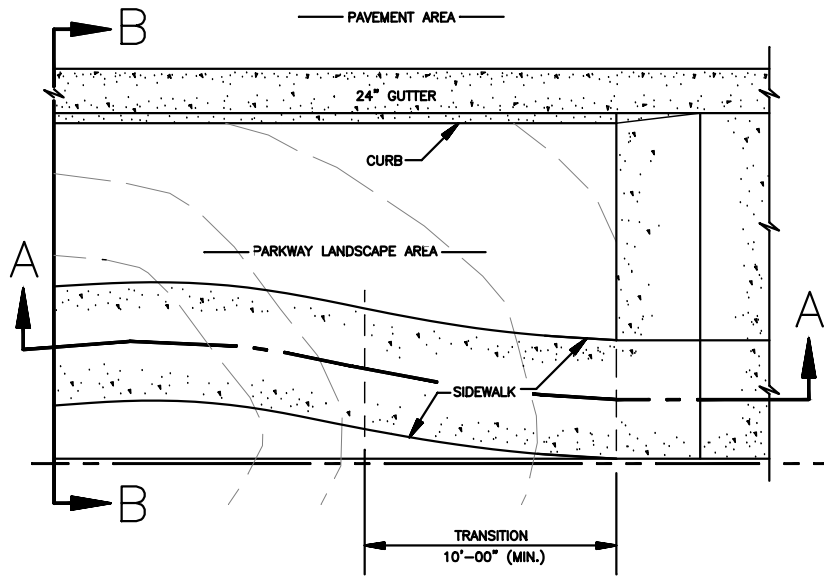
APPROVED:

DATE: 01/03/2023

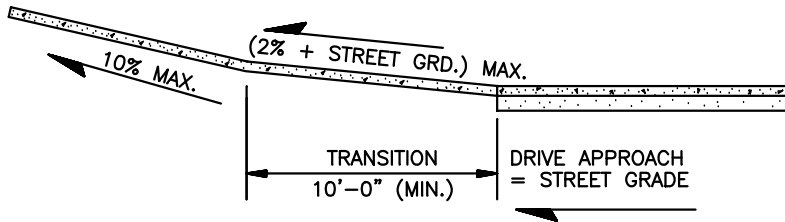
Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 2

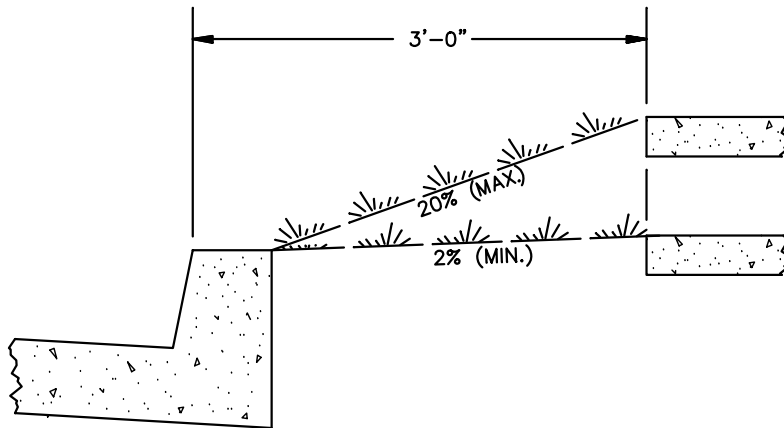
REV.	BY	DATE



DETAIL A



SIDEWALK SECTION A-A



PARKWAY SECTION B-B

DESIGN NOTES

1. THE SLOPE DIFFERENTIAL BETWEEN THE STREET GRADE AND SIDEWALK TRANSITION SHALL NOT EXCEED 2%.
2. SIDEWALK ADJACENT TO CURBS SHOULD ONLY TAKE PLACE AT STREET INTERSECTIONS AND DESIGNATED BUS STOPS.
3. ANY SIDEWALK CONSTRUCTED ADJACENT TO CURB SHALL BE A MINIMUM OF 6 FEET IN WIDTH.
4. ANY SIDEWALK CONSTRUCTED WITHIN 3 FEET OF CURB FACE SHALL JOIN TO BACK OF CURB.
5. SIDEWALK GRADE BREAKS OF GREATER THAN 3% REQUIRE A MINIMUM 40 FOOT VERTICAL CURVE DESIGN. ALL GRADE BREAKS FROM 0.25% TO 2.99% REQUIRE A MINIMUM 10 FOOT VERTICAL CURVE.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

MEANDERING SIDEWALK

STD. DWG. NUMBER

119-0

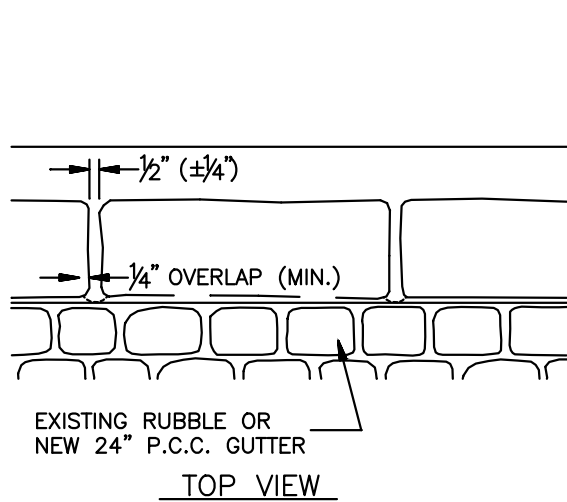
APPROVED:

DATE: 01/03/2023

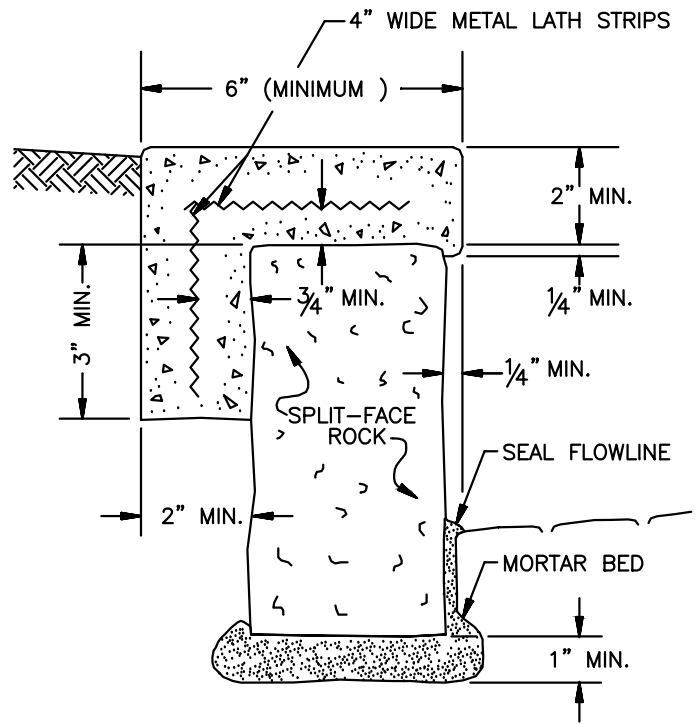
Goutam K. Dobby, City Engineer RCE 75646

SHEET 2 OF 2

REV.	BY	DATE



FRONT VIEW



CROSS SECTION OF ROCK CURB

SPECIFICATIONS

1. Description – This work shall consist of placing split-faced rock in cement mortar beds and placing of mortar caps at locations as shown on the plans or as directed by the Engineer and as specified in these specifications and the special provisions.
2. Rock – Rock for use in split-face rock curbs shall be existing split-face rock or new rock as may be required. Rock shall be clean, hard, durable and free from seams and other imperfections. Rock shall be of uniform shape and size. Any new rock used shall be approved by the Engineer prior to use.
3. Mortar – Mortar for bedding and finishing of split-face rock curb shall be class "C" mortar consisting of one part by volume of portland cement to two parts by volume of clean, fine aggregate. Hydrated lime, to the extent of 10% by volume of the cement may be added to the mortar. Hydrated lime shall be treated as an addition and not as replacing any cement. Mortar may be mixed in either a mixing machine or by hand. If mixed by hand, the fine aggregate, cement and lime shall be mixed dry until the mixture assumes uniform color. Water shall then be added at sufficient quantities to produce a mixture workable for the intended use. Mortar shall be used within one hour after water has been added and shall not be retempered.
4. Placing – Rocks shall be thoroughly wetted before placing and shall be laid in full mortar beds in courses approximately horizontal and vertical in both longitudinal and transverse directions as herein defined. Rocks will not be considered to be properly bedded until mortar exudes from the underside of the bedded rock. Mortar caps shall contain 4 inch wide "Strip-Ex" steel lath and shall be placed to the dimensions shown above. Grades for the top of the cap shall comply as follows: When a 10 foot straight edge is placed on top of the finished cap, the surface shall not vary from the edge of the straight edge more than 1/8 inch, except at changes in grade. Grades and changes in grade shall conform to the City of Redlands Standard Specifications. The alignment of the curb shall be set at a uniform perpendicular distance from the centerline of the street as shown on the plans or as defined by the Engineer. No voids in any part of the curb shall be permitted. Dimensions and tolerances for placing of rock shall be as shown above.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

SPLIT-FACE ROCK CURBING

STD. DWG. NUMBER

129-0

APPROVED:

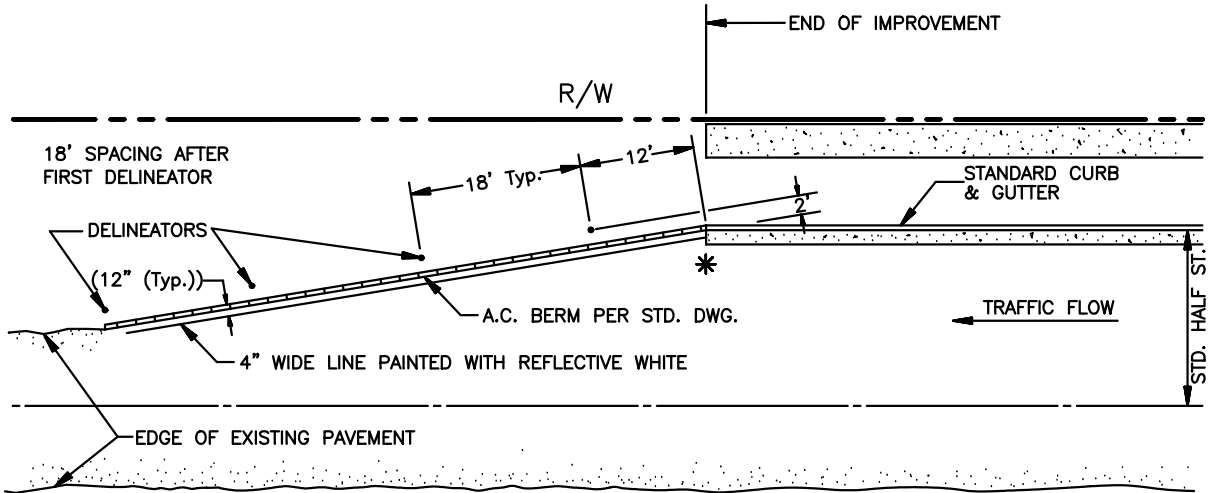
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

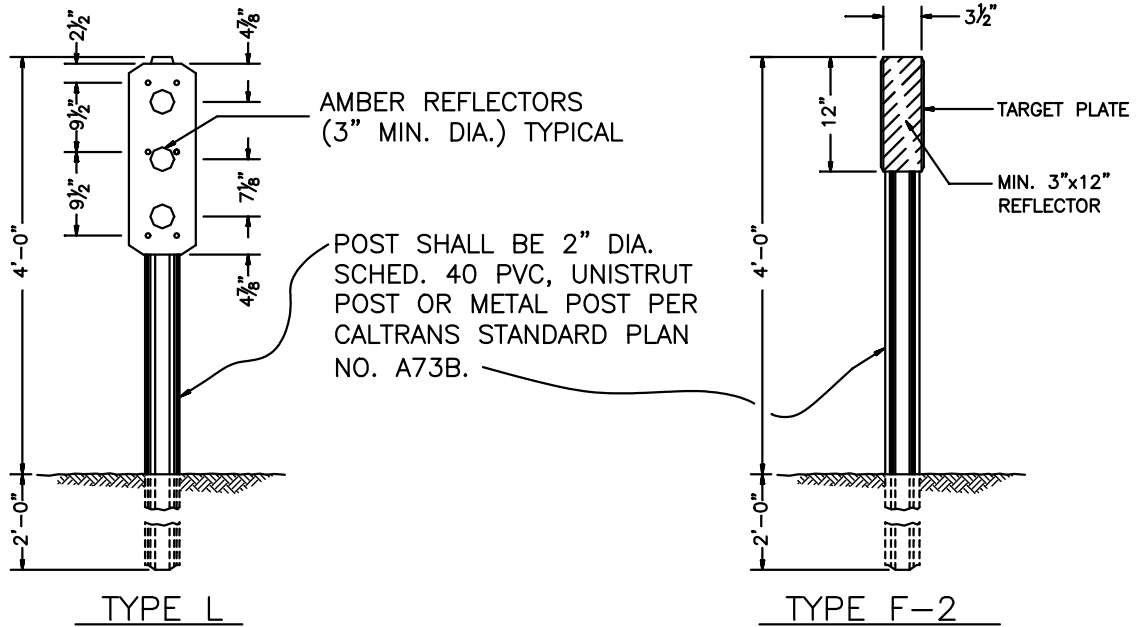
THIS PAGE INTENTIONALLY LEFT BLANK



* TRANSITION LENGTH SHALL BE COMPUTED USING THE FORMULA $L=WS^2/60$, WHERE
 L= LENGTH IN FEET, W= WIDTH OF TRANSITION IN FEET, & S= SPEED IN M.P.H. , WHEN $S \leq 40$ M.P.H.

* WHEN $S > 40$ M.P.H., THE FORMULA $L= WS$ SHALL BE USED.

PLAN VIEW



DELINEATOR

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**STANDARD TRANSITION INTO
 A SUB-STANDARD SECTION**

STD. DWG. NUMBER

148-0

APPROVED:

DATE: 01/03/2023

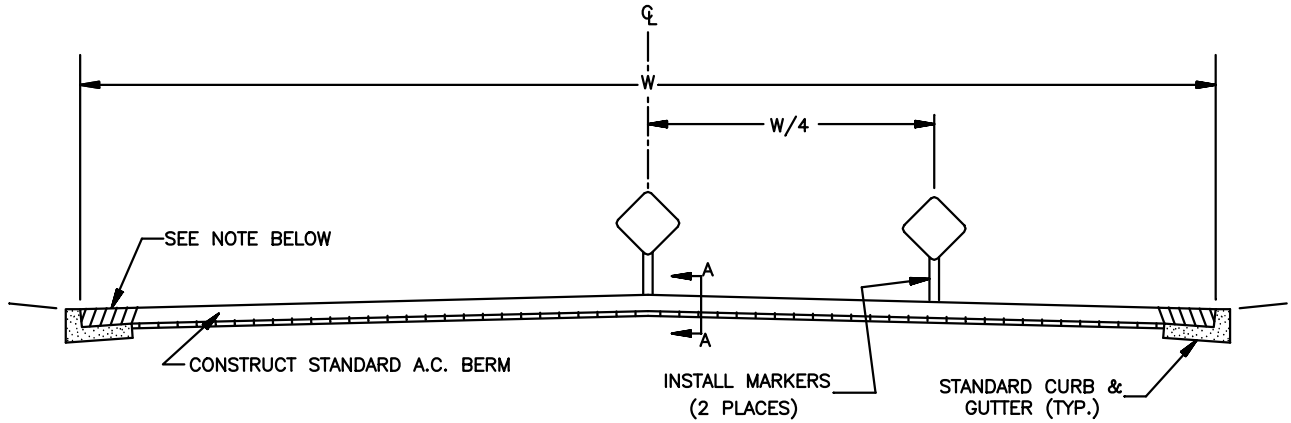
Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

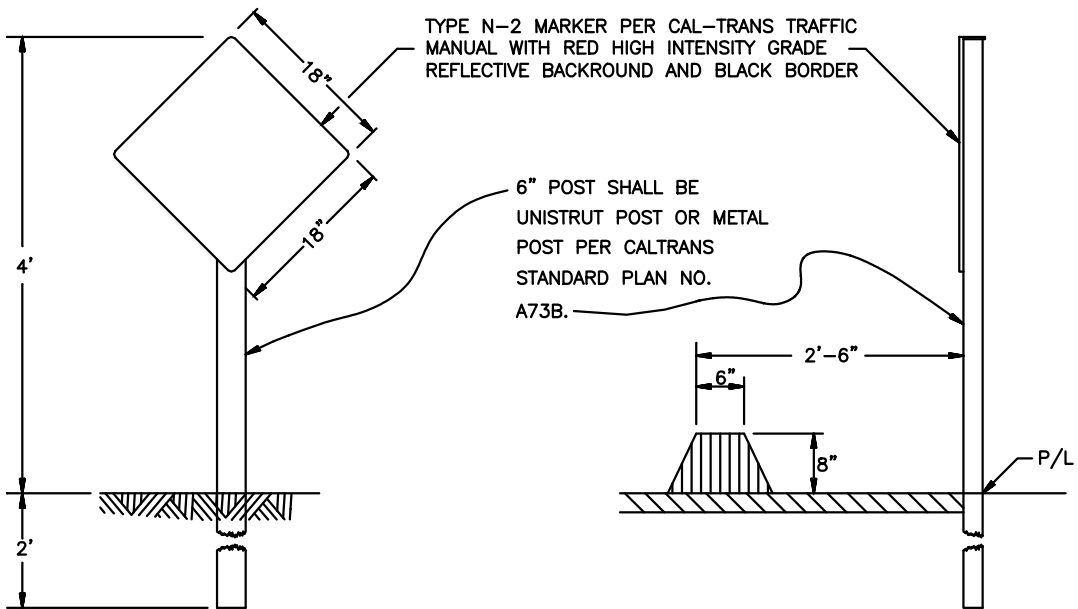
REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

ADVANCE WARNING SIGNS SHALL BE PLACED AS SPECIFIED BY ENGINEER. TYPE, NUMBER AND LOCATION TO BE DETERMINED DURING DESIGN.



STANDARD STREET SECTION AT P/L



MARKER

SECTION A-A
NO SCALE

NOTE: IF NECESSARY, DEPRESS BERM IN GUTTER AREA TO ALLOW DRAINAGE.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

**STANDARD TERMINUS FOR
EXTENDABLE STREET**

STD. DWG.
NUMBER

149-0

APPROVED:

DATE: 01/03/2023

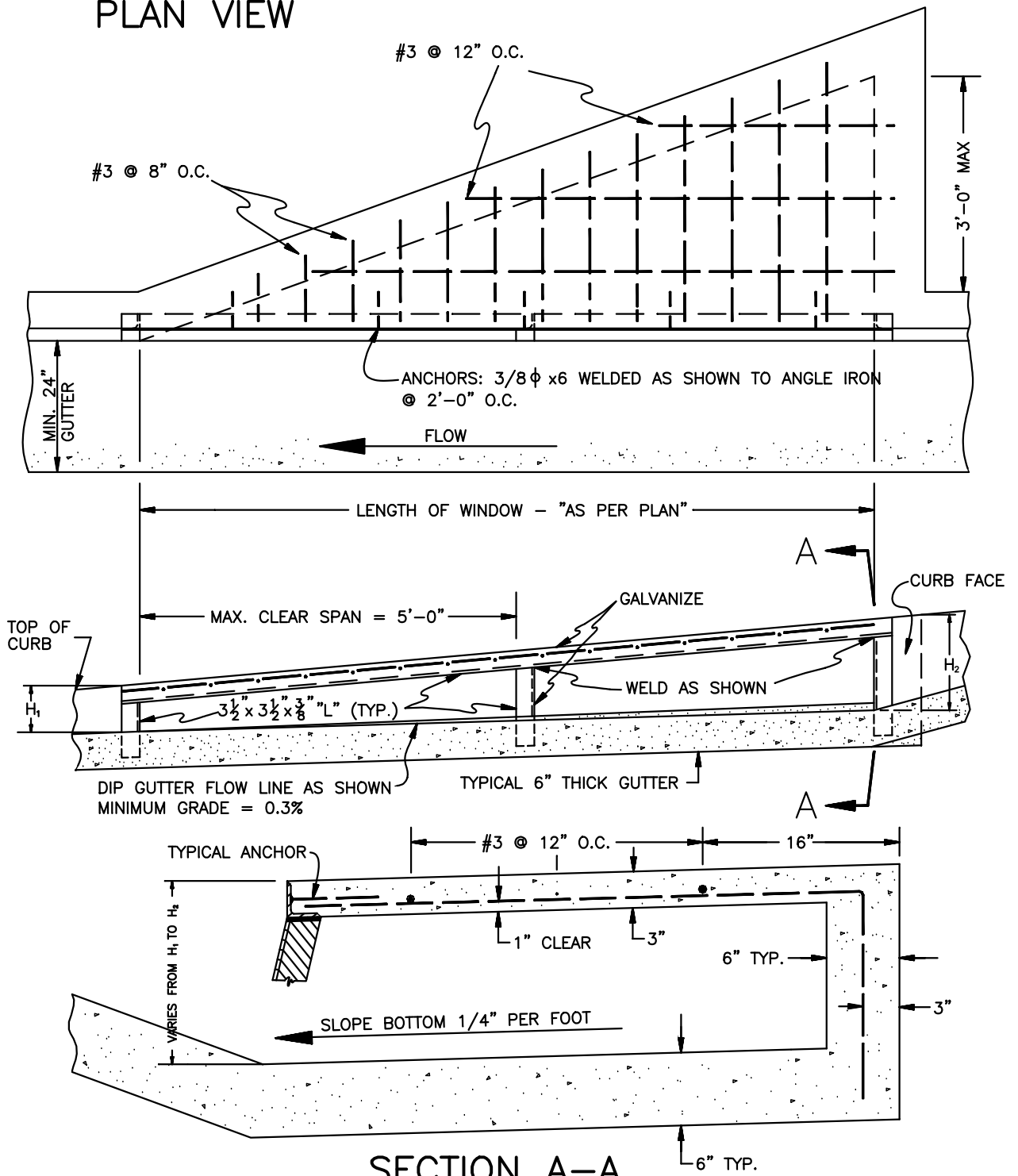
Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

PLAN VIEW



NOTE: DIMENSIONS H₁ AND H₂ ARE "AS SHOWN ON PLANS"
CLASS "A" CONCRETE SHALL BE USED.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

CURB OUTLET BOX

STD. DWG. NUMBER

159-0

APPROVED:

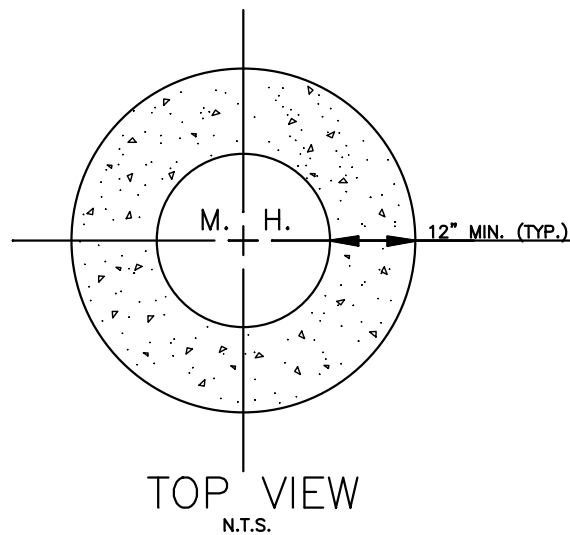
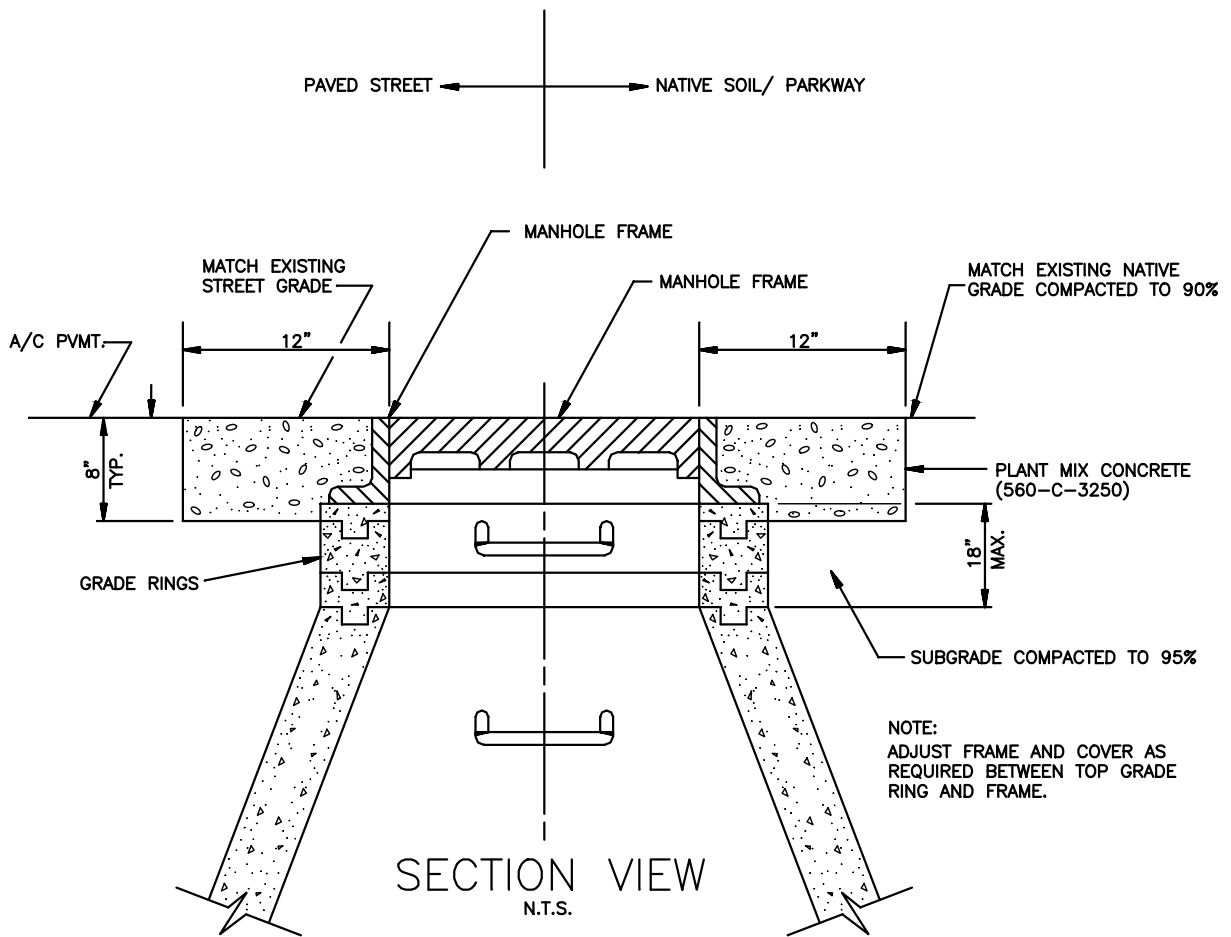
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK



CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

MANHOLE AT GRADE DETAIL

STD. DWG. NUMBER

325-0

APPROVED:

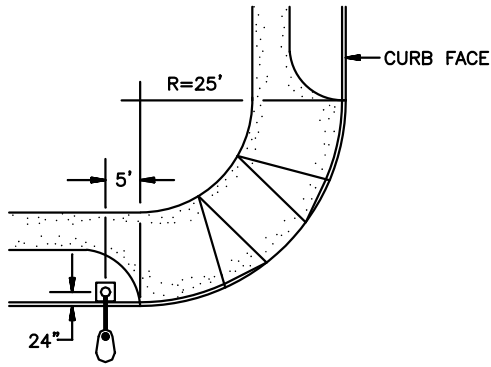
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

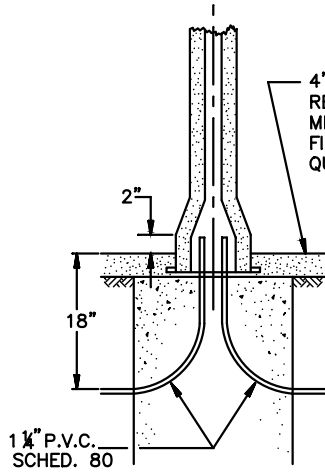
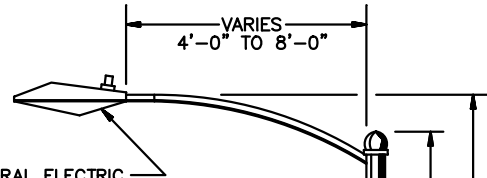
REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK



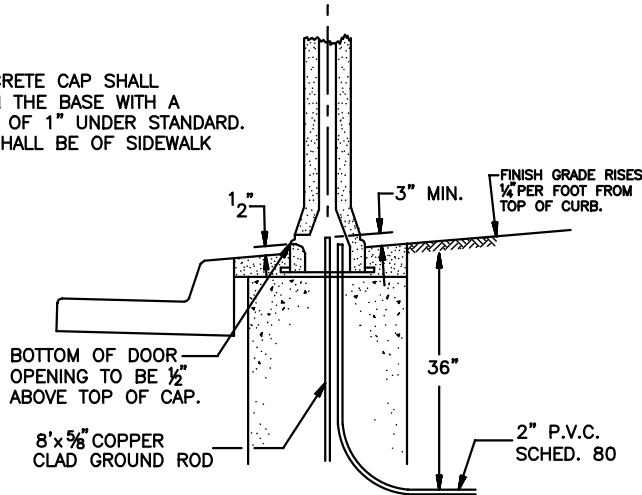
TYPICAL INTERSECTION

LUMINAIRE SHALL BE GENERAL ELECTRIC
 ERL1-0-04-D5-30-A-GRAY (100 WATT),
 ERL1-0-06-D5-30-A-GRAY (150 WATT),
 ERL1-0-11-D5-30-A-GRAY (200 WATT),
 OR APPROVED EQUAL



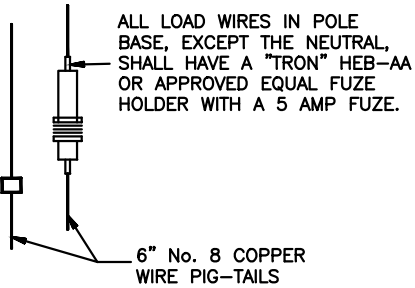
CONDUIT FEED

REAR VIEW



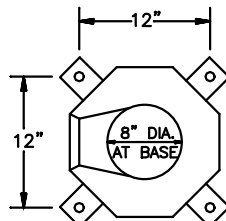
C.I.C. FEED

SIDE VIEW



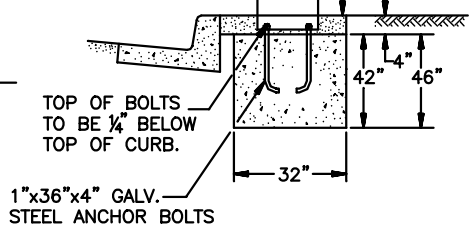
ALL LOAD WIRES IN POLE
 BASE, EXCEPT THE NEUTRAL,
 SHALL HAVE A "TRON" HEB-AA
 OR APPROVED EQUAL FUZE
 HOLDER WITH A 5 AMP FUZE.

6" No. 8 COPPER
 WIRE PIG-TAILS



SECTION
 THROUGH BASE

STANDARD SHALL BE
 AMERON 4B127F4 OR
 APPROVED EQUAL



TOP OF BOLTS
 TO BE 1/4\"/>
 TOP OF CURB.

1"x36"x4" GALV.
 STEEL ANCHOR BOLTS

NOTES:

1. USE 560-C-3250 CONCRETE FOR BASE AND CAP.
2. ALL CONDUCTORS SHALL BE T.H.W.N.
3. ALL CONDUCTORS IN CONDUIT FEED SYSTEM SHALL BE A MINIMUM OF #8 COPPER.
4. ALL CONDUCTORS IN THE STANDARD SHALL BE A MINIMUM #10 COPPER.
5. ALL CONDUITS SHALL BE P.V.C. AS PROVIDED BY THE CURRENT N.E.C. OR S.C.E. STANDARDS.
6. ROUND FOUNDATIONS, WHEN USED, SHALL HAVE A 32" DIAMETER AND DEPTH OF 60".
7. FEED TYPE SHALL BE DETERMINED BY S.C.E.
8. MINIMUM CONDUIT COVER SHALL BE 24" WHEN PASSING UNDER ANY ROADWAY.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

LIGHTING STANDARD

STD. DWG.
 NUMBER

459-1

A	GD	12/1/20
REV.	BY	DATE

APPROVED:

DATE: 01/03/2023

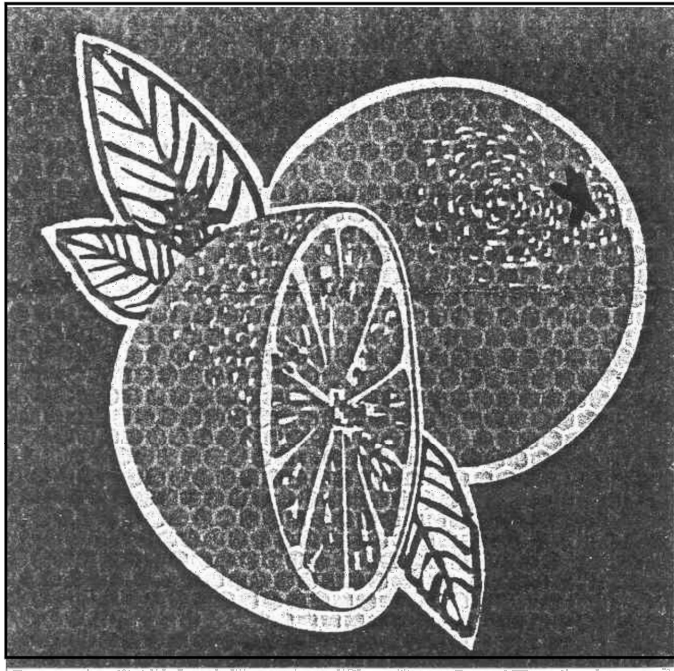
Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

THIS PAGE INTENTIONALLY LEFT BLANK



Street Name Sign Graphic



Orange Graphic

Sign shall be 457 mm (18 in.) high by a minimum of 1,220 mm (48 in.) wide by 5 mm (3/16 in.) thick. Length of sign shall be determined by length of street name. In no case shall length cause the sign to be less than 305 mm (12 in.) from any signal head, vertical pole or other object mounted on the traffic signal.

Edge of sign shall be 1,070 mm (42 in.) from the pole, unless otherwise shown on the plans or directed by the Engineer.

Sign legends shall be white letters on blue background.

Lettering style shall be 'FHWA D Series' for all words. Punctuation marks shall not be used.

'Street Name' letter sizes shall be 200 mm (8 in.) for upper case and 150 mm (6 in.) for lower case.

'City of Redlands' letter sizes shall be 90 mm (3½ in.) for upper case and 65 mm (2½ in.) for lower case.

The orange graphic shall be 305 mm (12 in.) by 305 mm (12 in.).

Orange graphic colors shall be: blue for leaf veins on a white background; orange for skin and heart of oranges on white background; and blue for the star located in the upper right quadrant of the whole orange. The white background shall extend 10 mm (d in.) beyond leaf and orange edges.

Sheeting shall be 3M Scotchlite Reflective Sheeting, Diamond Grade Visual Impact Performance (VIP 3990), or approved equal.

For additional requirements regarding size, color, manufacturing and mounting, refer to Section 700 and Section 701 of the Standard Specifications.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

REFLECTORIZED STREET NAME SIZE
FOR TRAFFIC SIGNAL MAST ARMS

STD. DWG. NUMBER

491-1

APPROVED:

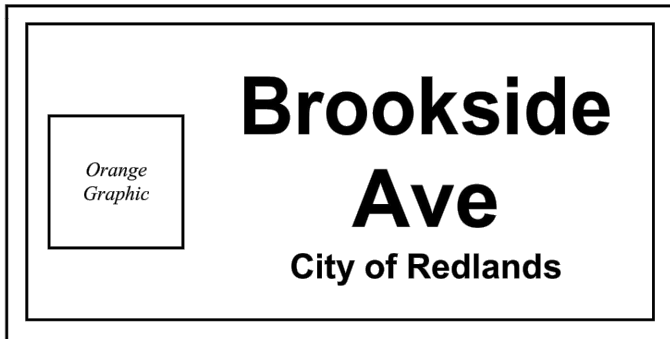
DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

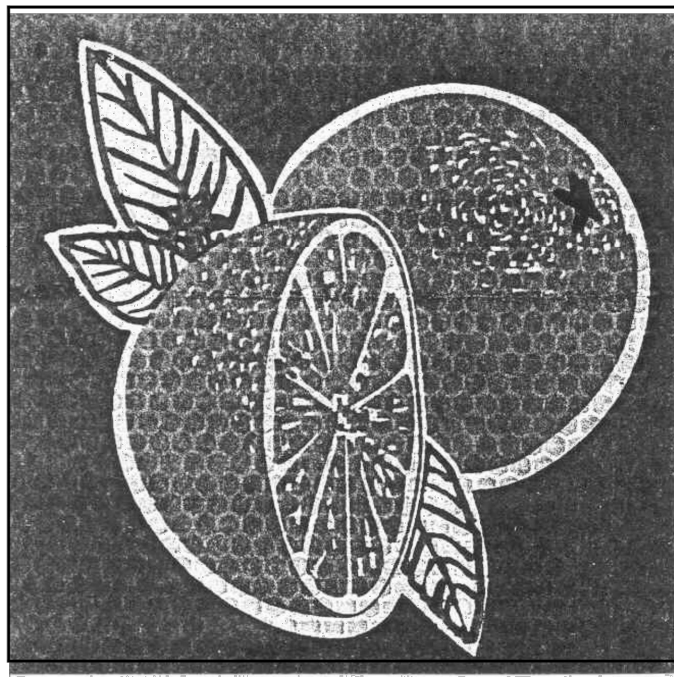
SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK



Street Name Sign Graphic



Orange Graphic

Height and width dimensions of sign shall be as necessary for street name. It is intended that this sign be as close to square as possible. Contractor shall submit a scale drawing to the City for approval before manufacture of the sign. Sign shall be 5 mm (3/16 in.) thick. Length of sign shall be determined by length of street name. In no case shall sign be less than 305 mm (12 in.) from any signal head or other object mounted on the traffic signal pole.

Sign legends shall be white letters on blue background.

Lettering style shall be 'FHWA D Series' for all words. Punctuation marks shall not be used.

'Street Name' letter sizes shall be 200 mm (8 in.) for upper case and 150 mm (6 in.) for lower case.

'City of Redlands' letter sizes shall be 90 mm (3½ in.) for upper case and 65 mm (2½ in.) for lower case.

The orange graphic shall be 305 mm (12 in.) by 305 mm (12 in.).

Orange graphic colors shall be: blue for leaf veins on a white background; orange for skin and heart of oranges on white background; and blue for the star located in the upper right quadrant of the whole orange. The white background shall extend 10 mm (D in.) beyond leaf and orange edges.

Sheeting shall be 3M Scotchlite Reflective Sheeting, Diamond Grade Visual Impact Performance (VIP 3990), or approved equal.

For additional requirements regarding size, color, manufacturing and mounting, refer to Section 700 and Section 701 of the Standard Specifications.

CITY OF REDLANDS MUNICIPAL UTILITIES AND ENGINEERING DEPARTMENT

REFLECTORIZED STREET NAME SIZE
FOR TRAFFIC SIGNAL 1-A POLES

STD. DWG. NUMBER

492-1

APPROVED:

DATE: 01/03/2023

Goutam K. Dobey, City Engineer RCE 75646

SHEET 1 OF 1

REV.	BY	DATE

THIS PAGE INTENTIONALLY LEFT BLANK

