CITY OF PATTERSON

IMPROVEMENT STANDARDS

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SECTION 1

GENERAL AND SUBMITTAL STANDARDS

1.1 IMPROVEMENT STANDARDS

These Improvement Standards have been prepared by the City of Patterson to aid all persons engaged in the construction of public works within the city limits of Patterson. (Portions of these standards also apply to private work within the city limits.)

The data contained herein is not intended for use as Contract Documents for contracts between the City and a Contractor, or for contracts between a subdivider or private person and a Contractor. Rather, separate Contract Documents must be prepared for each project, with each such document containing a Special Provisions section applicable to that particular project.

Design Engineers and Contractors working in the City of Patterson should be familiar with these Improvement Standards. All Plans and Specifications for construction of improvements to be accepted by the City shall be prepared in accordance with these standards. Improvements shall be constructed in accordance with these standards.

These Improvement Standards do not cover all the work which may require acceptance by the City. Work which is not covered by these standards shall be designed in accordance with generally accepted engineering principles. It is recommended that the criteria for work which is to be accepted by the City and which is not covered by these Improvement Standards be reviewed with the City Engineer prior to the actual design to establish design criteria. (Design criteria will be based on current codes and regulations applicable to the work and the accepted principles of engineering. The City Engineer may require the Design Engineer to submit engineering calculations for the work.)

Nothing in these Improvement Standards is intended to reduce or modify applicable Federal, State or local laws, nor to create a standard to be applied retroactively to existing improvements except where specifically noted.

City Engineer shall be the final authority on all questions that may arise as to the interpretation of the Standards. The City Engineer's decision shall be final and he/she shall have authority to enforce and make effective such decisions for design, construction, and repair of streets, utilities, drainage,

sewerage, and water supply. Appeals of the City Engineer's decisions may be made to the City Council.

1.2 DEFINITIONS

When used for the construction of any improvements within the City of Patterson, the appropriate definitions and terms listed in Section 1 of the State Standards shall apply, with the following modifications:

APLLICANT. Any person, association, corporation, entity, or government agency requesting approval for design and construction of public infrastructure, often a subdivider or developer.

Auto-CAD. The latest computer aided design/drafting program by AutoDesk currently being used by the City.

BICYCLE WAY. An area either within or outside the right-of-way of a dedicated street where bicycle travel is the designated use.

BIDDER. Any person or persons, firms, partnerships, joint ventures, corporation or combination thereof submitting proposal for work contemplated, acting directly or through a duly authorized representative.

CALTRANS. Shall mean California Department of Transportation.

CITY. The City of Patterson or any persons to whom the power of the City has been delegated.

CITY COUNCIL. The City Council of the City of Patterson, State of California.

CITY ENGINEER. The City Engineer of the City of Patterson acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

CITY MAINTAINED STREET. A street for which the City has accepted maintenance responsibilities.

CONSULTING ENGINEER. Any person or persons, firm, partnership or corporation legally authorized to practice Civil Engineering in the State of California who prepares or submits Improvement Plans and specifications to the Engineering, Building and Capital Projects Department for the City of Patterson for approval.

CONTRACT. Written agreement covering the performance of work.

CONTRACTOR. An individual, firm, corporation, partnership or association duly licensed by the State of California who does work for City acceptance.

COUNTY. Stanislaus County.

DESIGN ENGINEER. The registered engineer licensed by the State of California responsible for preparation of plans and specifications for work to be accepted by the City.

DEVELOPER. Shall mean any person, firm, corporation, partnership or association engaged in the development of property in part or in whole by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.

DIRECTOR. The Director of Public Works for the City of Patterson.

EASEMENT. Shall mean an easement dedicated to the City or Public Utility which shall be continuing and irrevocable unless formally abandoned.

ENGINEER. The registered engineer licensed by the State of California in responsible charge of the project. (Normally this is the Design Engineer.)

ENGINEER'S ESTIMATE. The list of estimated quantities of work and the estimated cost to perform the work.

GEOMEMBRANE. Synthetic liner comprised of polymer resins, plasticizers, and various additives.

IMPROVEMENT PLANS. Plans of proposed improvements prepared by the Design Engineer, after they have been approved by the City Engineer.

IMPROVEMENT STANDARDS. The Improvement Standards of the City of Patterson which include design standards, construction standards and specifications and standard drawings.

INFILTRATION. The Quantity of groundwater or surface water that leaks into a pipe through joints, breaks, or holes.

INSPECTOR. The authorized representative of the City Engineer and/or the Public Works Director assigned to a jobsite.

LABORATORY. Any testing agency or testing firm approved by the City.

LANDSCAPE IRRIGATION. Irrigation for parks, schoolyards, playgrounds, medians, greenbelts, parkways, roadside landscaping, etc.

MAP ACT. The same as and is interchangeable with the term Subdivision Map Act as defined herein.

MEDIAN. The portion of a divided roadway separating the traveled way for traffic in opposite directions. A median may be raised, landscaped or painted.

NPDES. Shall mean the National Pollutant Discharge Elimination System.

MORATORIUM STREETS. Newly constructed or reconstructed streets within five (5) years of the acceptance by the City.

PARKWAY. The area adjoining the outer edge of the roadbed, extending to the right-of-way in which sidewalks, plantings, utilities, bank slopes and related facilities may be located.

PRIVATE STREET. A roadway within a private development or a planned residential development whereby the street improvements remain in private ownership.

PUBLIC STREET. Any road, which is open for unrestricted travel by the general public. A public road may or may not be dedicated to or maintained by the City.

PRODUCT DATA. All illustrations, standard schematics, performance charts, instructions, brochures, diagrams and other information furnished by the CONTRACTOR to illustrate a material, product or system for some portion of the work.

SOIL REPORT. The project geotechnical report prepared by an engineer legally licensed to prepare "Soils Report" in the State of California.

SHOP DRAWINGS. All drawings, diagrams, schedules and other data which are specifically prepared for the work by the Contractor, a

subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated or installed.

SPECIFICATIONS. Directions, provisions and requirements prepared by the Design Engineer pertaining to performance of the work.

STATE STANDARDS. Current edition of the State of California Standard Plans and Specifications as issued by the Department of Transportation (where "State" is referred to, substitute with "City of Patterson").

SUBDIVISION ORDINANCE. Shall mean the Subdivision Ordinance of the City of Patterson.

SWPPP. Shall mean Storm Water Pollution Prevention Plan.

ZONING ORDINANCE. Shall mean the zoning ordinance of the City of Patterson.

1.3 SUBMITTAL STANDARDS

A. GENERAL

The City requires strict compliance with the Professional Engineers Act of California Business and Professionals Code. All plans, specifications, reports, and documents required by the City shall be signed and stamped with the wet seal of Registered Engineer in a discipline appropriate to the project, currently licensed to practice in the State of California.

If Standards, Specifications, Plans, Drawings, and Details referenced conflict with each other, the most stringent shall prevail at the discretion of the City Engineer.

B. PREPARATION OF IMPROVEMENT PLANS

All Improvement Plans, Specifications and Special Provisions shall comply with the requirements of the approved or conditionally approved development plan and/or tentative map and these Improvement Standards.

City of Patterson is classified as Phase II Municipal Separate Storm Sewer System (MS4) community. The Phase II permit requires that projects submitted for development approvals on or after July 1, 2015

must incorporate City of Patterson's Post Construction Stormwater Standards into the project designs. The Post Construction Stormwater Manual is available to download from City of Patterson's website or can be obtained by contacting City's Public Works Department.

The design engineer/surveyor shall prepare all maps and plans in AutoCAD unless otherwise approved by the City Engineer. All AutoCAD drawings shall follow the requirements set forth below:

a. AutoCAD LTSCALE shall be set to one half of plotting scale.

b. Pen assignments shall be set as follows:

COLOR	PEN NO.	PEN WIDTH
Red	1	0.03
Yellow	2	0.02
Green	3	0.015
Cyan	4	0.008
Blue	5	0.035
Magenta	6	0.012
White	7	0.01

c. All drawings shall be prepared on a scale of one drawings unit (1DU) = 1'.

d. All drawing shall be prepared up to two (2) decimal places ex. 0.01 and angle measure shall be Degrees, Minutes, Seconds ex. 08º04'06".

e. See Standard Drawings section for more details.

C. IMPROVEMENT PLAN REQUIREMENTS

Improvement Plans submitted for preliminary review to the City or City Engineer shall be stamped, need not be signed, but should be complete. The following details and supplemental information shall be shown on plans submitted:

1. GENERAL REQUIREMENTS

    a. Improvement Plans shall show all existing activities and all improvements to be constructed.

b. Size: The size of the Improvement Plan sheets shall be 24" x 36" or 22" x 34" with 1-1/2 inches clear margin on the left edge and 1/2 inch margin on all other edges.

c. All lettering shall be a minimum height of 0.1".

d. Scale: The scales selected shall be sufficient to clearly show all required details when reproduced on Blueline. Preferred vertical scales are 1" = 4' in reasonably flat areas, and Horizontal scales 1" = 20' or 40'.

e. Title Block: Each sheet within the set shall have a title block showing the project's name, sheet title, date of drawing and revisions, scale of drawings, sheet number, and the Design Engineer's name, registration number, expiration date of registration, and signature. See Standard Drawings for more detail.

f. Vertical Control: All elevations indicated in the Improvement Plans shall be based on Patterson datum. Benchmark location, number, and elevation shall be shown on the drawings.

g. Orientation and Stationing: Insofar as practical, the plans shall be arranged so that the North shall be at the top or right edge of the sheet. The stationing on plan and profile sheets shall read from left to right or from bottom to top.

2. TITLE SHEET AND NOTES

Title sheets shall be prepared for Improvement Plans exceeding two sheets per set, and shall show the following:

a. The entire project, drawn at a suitable engineering scale, including existing and proposed street names and lot numbers. Surrounding lot lines shall be shown within a minimum distance of 50 feet of the project.

b. Vicinity map and north arrow.

c. Index of sheets.

d. Legend of symbols.

e. List of applicable City Standards.

f. Location, description and elevation of the reference Patterson Benchmark as well as any temporary benchmark used for the project.

g. Plan view showing the limits of each sheet and sheet number within the plan set.

h. Name, address, telephone number and designated agent of any agency whose facilities will be installed, utilized, interfered with, or crossed as part of the improvements, as well as a signature block for their approval. Where construction requires encroachment permits by other agencies, copies of signed encroachment permits together with evidence of any required insurance shall be submitted.

i. Name, address and telephone number of the developer or his authorized representative.

j. Signature blocks conforming to the Standard Detail G-1 and situated at the lower right hand corner of the sheet.

k. The following notes shall be placed on the title sheet:

- This set of Improvement Plans is valid for construction purposes only after being signed by the City Engineer and upon issuance of permits.

- All Contractors and Subcontractors involved in the construction of this project shall attend a pre-construction conference arranged by the Developer at the Department of Public Works and Engineering for construction and inspection coordination prior to commencement of any on-site construction activities.

- The current City of Patterson Improvement Standards that have been referenced in these plans shall be considered as part of these plans.

l. General and Construction Specification Notes relating to project on title sheet or extra sheets can be added.

3. TOPOGRAPHYAND DEMOLITION SHEET

A topographical survey sheet shall be included in the improvement plan set and shall show spot elevations at an appropriate interval, fences, structures, pipelines, ditches, utility poles, trees, driveways, roads, pavement, wells, rights-of-way, easements, etc., and their disposition. Disposition of existing facilities may be indicated on the topographical survey sheet by reference to appropriate sheets within the Improvement Plans. Elevation of utilities shall be field verified by the Design Engineer especially when a potential utility conflict exists.

4. GRADING AND DRAINAGE SHEET

A grading and drainage sheet shall be included in the Improvement Plans set and shall show the following:

a. Plan view at an appropriate scale showing existing significant geographic features and proposed topography on site and minimum 50 feet of the immediately adjacent areas.

b. Lot elevations and lot numbers.

c. A typical lot grading detail. (Specific lots may be required to provide an independent grading plan.)

d. Proposed lot corner elevations as well as any elevation differential between the project boundaries and the adjoining properties.

e. Gutter or ditch flow arrows, slopes, and grade break elevations.

f. Street Slopes at centerline.

g. Storm drainage pipes, manholes, valley gutters, and catch basins.

h. Detention basin location and details.

i. Location and height of any retaining walls or retaining fences. Concrete or masonry retaining walls shall be provided where the difference in grade at property line exceeds 12 inches. For

grade differentials of 12 inches or less, a grading strip with a 6 horizontal:1 vertical slope may be utilized.

5. UTILITIES SHEET

A utilities sheet shall be included in the set of Improvement Plans and shall show street lights, conduits, pullboxes and connection points to the serving companies utilities, fire hydrants, water lines, valves, blowoffs, sanitary sewer lines, manholes and clean outs, sewer and water service locations, water wells, PUE's, driveways, centerline monuments, street signs, etc. If available prior to approval of improvement plans, power lines, gas lines, TV cable lines, telephone lines and mail box locations shall be provided. If not, these utilities shall be shown on the required Record Drawings. Utility company Record Drawings may be accepted in lieu of required Record Drawings provided sufficient detail is provided to coordinate the electrical, gas, telephone and TV cable line locations with other utilities as determined by the City Engineer.

6. STREET PLAN AND PROFILE SHEET

a. A plan and profile sheet shall be included in the set of Improvement Plans showing the existing and proposed profiles of all roadways, utilities and other improvements in public rights-of-way.

b. Plan views at a scale of 1" = 40' for all new streets, widening of existing streets, etc. including existing improvements, proposed improvements, landscaped parkways, and future improvements if known.

c. Proposed improvements shall include sidewalk, parkway strip, curb, gutter, driveways, sewer mains and laterals, water mains and services, storm drains, manholes, drainage inlets, valves, fire hydrants, barricades, street lights, pavement removal and replace survey monuments and other data required by the City Engineer.

d. Profiles for all pipes shall show the flow lines slope and grades, flow line and top of pipe profile, existing and proposed ground line, all proposed and existing utility crossings, pipe sizes, length, class, material, and slope. Utility structures with rim and invert elevations with hydraulic grade line.

e. Centerline stationing shall be shown with grades indicated in plain view for street intersections, drainage structures (include dimensions or station offsets from centerline), beginning and endings of curb returns and vertical and horizontal curve information (as required).

f. Street plan views shall include right-of-way lines (including widths), street widths (curb to curb) street names and easement widths.

g. Profile view of each street shall be shown on the same sheet as plan view and at a vertical scale of 1" = 2' or 4' or approved alternate.

h. Profiles shall show existing grade at centerline of street, proposed top of curb, sanitary sewer mains, water mains, storm drains, utility crossings, dry utilities and any other features of interest. Station and elevation at every 1+00 stationing.

i. Elevations shall be shown in profile of top of curb at grade breakpoints, manhole and drainage inlet inverts, high points and low points of water mains. Vertical curves shall show station and elevation of beginning points, points of intersections, low points and ending points.

j. Street cross slopes, curb slopes, storm drain and sewer main slopes shall be shown.

k. Centerline curve data shall be shown in plain view or by tabulation for street centerline; curb data for curb returns shall also be shown. If a utility is nonconcentric with the street centerline, utility curb data shall be annotated on the pipe in plain view.

l. The "R" value and T.I. shall be shown with each roadway section. The typical section shall be designed to an R-value of "5". A revision shall be made to the construction plans as soon as recommendation from the Geotechnical Engineer are approved by the City Engineer. Example of Pavement Design Chart:

STREET NAME	LIMITS FROM/TO	AC	AB	AS	R Value	TI

7. SIGNING AND STRIPING PLAN

    a. Plan view at a scale sufficient to clearly indicate all street striping and signing.

    b. Plan shall include all existing and proposed striping and markings for the full width of the roadway including any intersecting streets.

    c. Striping plan shall conform to Caltrans Standards.

8. STREET LIGHTNING PLAN (may be combined with striping plan)

    The Design Engineer shall show the street light locations and wattage in the initial submittal of Improvement Plans. The final As-built set of improvement plans shall show the service points, conduit runs, pull box locations and wire size. As-built shall be provided before the final acceptance of the subdivision.

    Service Pedestal shall be located out of the sight distance triangle area.

9. TRAFFIC SIGNAL PLAN (when appropriate for the project)

    a. Plans shall have a cover sheet showing project location, map, Caltrans Standards used, general notes, project name, index of sheets, City and Consulting Engineer signing blocks.

    b. Plans shall have equipment and wiring schedules.

    c. Plans shall have detector loop layout, service and phasing diagrams.

    d. Detector loop assignments shall be called out.

    e. Plans shall show existing or proposed lane widths. A signing and striping plan will be required for any new or modified street widths.

    f. Plans shall show all existing utilities and accommodate for them. Overhead line heights at pole locations shall be noted on plans.

g. Controller Cabinet and Service Pedestal shall be located out of Sight Distance Triangle area.

10. DETAIL SHEET

A detail sheet shall be included in the set of Improvement Plans showing typical construction details. Construction details included in the Improvement Standards, that are applicable to the work, shall be reproduced and included on the detail sheet(s).

Additional drawings may be required to show special project improvements or structures that are deviation from any adopted City Standards.

11. EROSION AND SEDIMENT CONTROL PLAN

Erosion and sediment control plan is required for all projects that disturbs dirt. An erosion control sheet(s) shall be included in the set of Improvement Plans for all projects. SWPPP is required for 1 acre or more and/or less than an acre of part of a larger common development project. All projects, whether a SWPPP or an erosion control plan is required, shall utilize Caltrans' Construction Site Best Management Practices. WDID#, SWPPP, and NOI must be submitted to the City prior to the pre-construction meeting.

12. LANDSCAPE PLANS (when appropriate for the project)

The Licensed Landscape Architect shall prepare and submit plans to the City as part of the submittal. It shall include all elements from 1.3(C)-1 and 1.3(C)-2 and irrigation and planting specifications. Landscaping plans shall comply with the latest edition of all federal, state, and local regulations (i.e. Stormwater, AB 1881, and State's Model Water Efficient Landscape ordinance). Once landscaping is installed, AB1881 Audit certification must be submitted to the City prior to project final.

13. COMBINING REQUIRED SHEETS

Sheets may be combined or omitted depending on the complexity of the project.

D. SUPPLEMENTAL INFORMATION

The following supplemental information shall be submitted with the initial sets of Improvement Plans unless otherwise indicated in these Standards.

1. SOILS REPORT

   The required soils report shall be prepared by a Civil or Geotechnical Engineer legally authorized to practice in the State of California. Three (3) copies shall be submitted. The soils report shall include:

   a. The results of "R" value tests taken in the project site and a recommendation by the Civil or Geotechnical Engineer for design "R" values for road pavement sections.

   b. Depths to groundwater measurement or other records of depth to groundwater. Civil or Geotechnical Engineer's recommendations for elevations of roads above groundwater.

2. MISCELLANEOUS CALCULATIONS

   Submit calculations for pavement structural section determination plus any calculations used in the design of any retaining walls or other miscellaneous items not covered in these standards, such as domestic water flow, fire flow, sewage flow, and storm drainage calculations.

3. QUANTITIES LIST AND ENGINEER'S ESTIMATE

   Quantities list and engineer's estimate shall show estimated costs, descriptions and total costs of each item of work. Engineer's estimate shall be separated into items that deal with storm drainage, domestic water systems, sanitary sewers, etc., and shall include a separate 10% contingency for the total value of work to be done.

4. PRODUCT SPECIFICATIONS

   When a product is mentioned in the Improvement Plans such as pumps, motors, street lights, etc., the Design Engineer shall submit the manufacturer's specifications upon request.

1.4 CITY STANDARD NOTES

All plans must include the note "All construction and material shall conform to the updated City of Patterson Improvement Standards and the latest edition of State of California Standard Specifications and Plans".

The following City Standard Notes shall be placed on the plans, where applicable:

1. These plans have been checked by the City of Patterson and/or its authorized representative, but such checking and/or approval does not relieve the developer from its responsibility to correct errors, omissions or make changes required by conditions discovered in the field during the course of construction.

2. All revisions to this plan must be reviewed by the City Engineer prior to construction and shall be accurately shown in revised plans stamped and signed by the City prior to the installation of the improvements.

3. The improvements are subject to the inspection and approval of City of Patterson Engineering and Public Works Department. Contact Engineering and Public Works Department at least three (3) working days prior to start any work to arrange for inspection.

4. Notify Underground Service Alert (USA) at 800-227-2600 at least two (2) working days prior to excavation.

5. If necessary to confirm field locations of facilities, explanatory trenching or potholing shall be done at the expense of contractor.

6. If a conflict occurs between the City of Patterson Improvement Standards and the recommendations by the Design Engineer and/or Soils Engineer, the more stringent shall apply as directed by the City Engineer.

7. Basis of elevation datum shall be provided (if City/County benchmark, give number, location and elevation).

8. Existing utilities shall not be interrupted until the utility company has provided alternative service facilities. The contractor shall cooperate and coordinate his work with appropriate agencies and utility companies.

9. Final pavement work shall not occur within the City right-of-way prior to completion of utility relocation without the specific approval of the City Engineer.

10. All construction staking for grading, street, curb, and gutter, sidewalk, sanitary, sewer, storm drains, water lines, non-potable water lines, fire hydrants, electroliers, etc. shall be done by registered civil engineer or licensed land surveyor.

11. All area undergoing grading, and all other construction activities shall be watered, or other dust-palliative measures used, to prevent dust, as conditions warrant. Water trucks shall be available at all times.

12. Prior to receiving/taking any water from the City of Patterson water system the Contractor shall acquire a city water meter or city fire hydrant meter. All water usage shall be metered.

13. All lines abandoned during construction shall be removed unless otherwise noted on the plans.

14. Any damage caused by trenching to existing underground utilities shall be the sole responsibility of the Contractor and shall be replaced at his/her expense.

15. Traffic control plan shall be submitted to the City of Patterson Engineering Department for approval.

16. Any street monuments, lot corner, benchmarks and other permanent pipe or monuments disturbed during the process of construction shall be replaced by the licensed land surveyor.

17. Erosion Control Plan must be prepared consistent to City Standards. SWPPP must be prepared by Qualified SWPPP Developer.

18. If the project is applicable to the State's Construction General Permit, a Notice to Intent (NOI) to comply with the NPDES general permit for storm water run-off associated with construction activity shall be submitted to the SWRCB via the State's SMARTS system. The WDID Number should be indicated on the plans.

19. Disposal of water to city sanitary sewer system is prohibited.

20. The manner of bracing and shoring excavations shall be as set forth in the rules, orders and regulations of the State of California Construction Safety Orders, Division of Industrial Safety.

21. Prior to begin work, Contractor shall attend a pre-construction meeting with the City of Patterson.

1.5 IMPROVEMENT PLAN SUBMITTAL

The applicant shall submit a complete set of plans and required submittals to the Engineering and Public Works Department, in accordance with these Improvement Standards. Incomplete plans will be returned to the Design Engineer without a complete review by the City. A complete set of improvement plans shall include, at a minimum, the following elements:

1. Final Report of Action of the City Council (or Planning Commission if the Planning Commission is the governing body with approval authority over the development project), including a complete set of conditions of approval for the project (including both Planning Division and Engineering Division) – 2 Sets.

2. Approved Tentative Map – Original and a copy (in accordance with the Final Report of Action signed by the City Engineer and the City Planner)

3. Improvement Plans (with all supporting calculation i.e. storm, sewer, and pavement etc.) – 3 Sets. Plans shall be complete with all the supporting documents, partial plans are not acceptable. AutoCAD files of improvement plans shall be submitted at the request of the City Engineer.

4. Engineer's Estimate – 2 Sets.

5. Soils Report – 2 Sets.

6. Final Map Package – 2 Sets. Package shall include Title Report, Copies of deeds, copies of all maps referenced, all calculations, easement copies, and building architectural approval.

7. **One (1) CD or USB drive containing .PDF files of all the submittal documents shall be submitted with hard copies.**

8. Plan check and inspection fee payment.

1.6 IMPROVEMENT PLAN RE-SUBMITTAL

Plans being resubmitted shall consist of two (2) complete sets and CD or USB containing revised plans and other submittals or supporting documents. The City Engineer may require additional sets. In order to reduce the man-hours required in checking resubmittals of Improvement Plans, the Design Engineer shall highlight all changes that have been made on one of the required sets resubmitted. The City will make every reasonable effort to provide all pertinent comments and identify all necessary corrections during the first improvement plan review. However, the Design Engineer's changes in response to the comments may themselves require further comments and corrections, and may necessitate changes in other areas of the design. Thus, the Design Engineer is cautioned not to assume all the changes have been identified during the first submittal review cycle.

1.7 GRADING PERMIT

A developer may seek a Grading Permit prior to the approval of Improvement Plans. However, prior to obtaining a grading permit, the project applicant shall prepare a detailed grading plan, with erosion control plans, and Storm Water Pollution Prevention Plan (SWPPP). A complete submittal for a grading permit shall include following:

1. 2 Sets of Grading Plans

2. Grading Permit Application and Fee Payment

3. All projects greater than one (1) acre shall obtain coverage under the CGP; General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The General Construction Permit requires the applicant to prepare and carry out a Storm Water Pollution Prevention Plan or SWPPP for the project. Developer shall provide one copy of the NOI and SWPPP to the City of Patterson Public Works Department for review prior to obtaining a Grading or Encroachment Permit for project.

1.8 PLAN CHECK AND CONSTRUCTION INSPECTION FEES

The plan check and construction inspection fees are due in full with the first plan check submittal. The final fees will be adjusted based on the final approved engineer's construction estimate. The final engineer's

construction estimate shall be approved by the City Engineer. The fees must be paid before Public Works and Engineering Department will release the plans for construction. Inspection fees for work performed before 8:00 A.M. and after 5:00 P.M. or on weekends or holidays that requires City inspection shall be at an overtime rate. Funds to cover overtime cost must be deposited by the contractor or developer before the work is authorized.

1.9 DEPARTMENT REVIEW AND APPROVAL

After all the corrections have been made to the satisfaction of the City Engineer, Water Engineer, Traffic Engineer and other departments, the entire set of originals shall be signed by the Design Engineer and three (3) sets of originals submitted to the City for approval.

Plans are not considered approved for construction until City Engineer has signed the title sheet of original sets. Plan approval is valid for twelve months from the date of approval. If construction has not begun within the twelve-month period, the approval shall expire and the plans and engineer's estimate shall be resubmitted for review and re-approval. The plan check fee for re-approval of plans shall be paid in full.

1.10 IMPROVEMENT AGREEMENT

The Developer shall enter into an Improvement Agreement with the City of Patterson for all of the improvements shown on the approved Improvement Plans. The Improvement Agreement shall be fully executed and required bonds or securities submitted prior to any construction being allowed to begin.

1.11 SHOP DRAWINGS AND SUBMITTALS

The Contractor shall provide the Design Engineer with Shop Drawings and Product Data required by the Specifications or Improvement Plans or as otherwise submitted for custom design work including but not limited to pumping stations, bridges and other structures. The Design Engineer shall promptly review all Shop Drawings and Product Data submitted and return reviewed Shop Drawings and Product Data directly to the Contractor; two copies of favorably reviewed Shop Drawings and Product Data shall be sent directly to the City Engineer for construction monitoring.

The Contractor shall also submit to the Design Engineer for review engineering calculations as required by the Specifications or Improvement Plans or to support the Shop Drawing and Product Data submittals. The

Design Engineer shall promptly review these items and return them directly to the Contractor; two copies of favorably reviewed calculations shall be sent directly to the City Engineer.

The City Engineer may request to review Shop Drawings or Product Data for City acceptability of major components and assemblies. If such a request is made, the Design Engineer shall submit the requested Shop Drawings or Product Data to the City Engineer following favorable review by the Design Engineer. The City Engineer shall promptly review the requested submittals, make a determination on acceptability and return the submittals to the Design Engineer.

The Contractor shall submit to the Engineer all proposed substitutions of items in these Improvement Standards where an "or equal" option is not explicitly permitted. The City Engineer shall promptly review these proposed substitution submittals, make a determination on whether or not the proposed substitutions are acceptable, and return the reviewed submittals directly to the Contractor.

1.12 PRE-CONSTRUCTION REQUIREMENTS

All projects small or large will require a Pre-Construction meeting with City Public Works and Engineering Department. The meeting is to help communicate the areas of responsibility. Contractor will be notified about the required permits for the job.

All projects greater than one (1) acre shall obtain coverage under the CGPL General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The General Construction Permit requires the applicant to prepare and carry out a Storm Water Pollution Prevention Plan (SWPPP) for the project. Developer shall provide one copy of NOI and SWPPP to the City of Patterson prior to schedule pre-construction meeting and apply for permits.

All projects less than one (1) acre shall develop a Local Storm Water Pollution Prevention Plan (Local SWPPP) or Erosion Control Plan and implement stormwater Best Management Practices (BMPs) during construction. The Local SWPPP typically consists of one to two pages, included in the civil drawings. The Local SWPPP shall be submitted to the City of Patterson prior to schedule pre-construction meeting and apply for permit.

1.13 PLAN REVISIONS DURING CONSTRUCTION

Changes in the plans may be required during construction. The Design Engineer shall first obtain the City Engineer's approval for any revisions in the plans. Revisions of the plan shall be made in the following manner:

1. The Design Engineer shall submit three (3) hard copies and .pdf copy of the proposed revisions to the City Engineer for review.

2. The changes shall be clearly shown on the plans with the changes and approval noted on the revision signature block. The Design Engineer and the City Engineer shall both initial the revision block to confirm responsibility and approval.

3. The changes shall be identified by the revision number in a triangle delineated on the plans adjacent to the change and in the revision signature block.

Minor changes, which do not affect the basic design or contract, may be made upon the written authorization of the City Engineer. ALL changes must be shown on the "As-built" drawings before the "As-Built" drawings are submitted to the City Engineer.

1.14 CONSTRUCTION REVIEW AND INSPECTIONS

All work accomplished and all materials furnished under these Improvement Standards shall be subject to the inspection and approval of the City Engineer. Such inspection and approval of work and materials shall not relieve the Contractor of any of his obligations to complete the work specified. Work and materials not meeting these requirements shall be corrected.

The City Engineer shall have access to the work at all times and shall be furnished every reasonable opportunity for ascertaining that the methods, materials and workmanship are in accordance with the requirements and intent of these Improvement Standards. The Contractor or his authorized agent shall be in charge of and responsible for all phases of work while it is in progress.

The City Engineer shall be notified in writing by the Contractor at least two working days prior to beginning any of the stages of work listed below and shall be notified when each of the stages has been completed. Subsequent stages shall not begin until the City Engineer has approved the previous stage.

1. Placement of culvert pipes, storm drains, sanitary sewer, waterlines and other utilities. Upon completion of the backfill of all trenches in the public rights-of-way, the Geotechnical firm providing compaction testing shall furnish the City a letter, that all trench backfill was accomplished per the recommendations of the Geotechnical Report and met the minimum compaction requirements per these Improvement Standards.

2. Placement of any layer of subbase, base or surfacing material, including the preparation of the subgrade for streets and roads, curb, gutters and sidewalk.

3. Installation of reinforcing steel and preparation of structural subgrade.

4. Placement of concrete

5. Placement of structure backfill material.

6. Testing and start-up.

In addition to the above, the Contractor shall notify the City Engineer whenever improvement work is to be performed on Saturdays, Sundays or holidays or during hours of the day when such work is normally not performed so that inspection may be provided.

The Contractor shall give the City Engineer sufficient notice regarding proposed sources of materials to be used in the work so that such tests and inspections as the City Engineer deems necessary can be performed to determine that the materials comply with these standards.

All tests of materials and work to determine compliance with these standards shall be in accordance with City approved methods and procedures. If required, the Contractor shall furnish to the City Engineer, without charge, samples of all materials to be used in the work. Samples of

material from which tests are to be made shall be taken under the supervision of the City Engineer by a recognized laboratory.

The Contractor shall be responsible for coordinating all required testing, shall notify the City Engineer when testing is to be performed and shall be responsible for the testing laboratory submitting results in a timely manner. Subsequent work shall not be started until all tests pass and written reports are filed with the City Engineer.

The Developer, Contractor or Utility shall inspect and repair all defective work done in the public rights-of-way for a period of one year from the date the work is accepted by the City, or if subsequent repairs are required, one year from the date the repairs are complete and acceptable.

1.15 RECORD DRAWINGS (required for final acceptance of improvements)

Prior to the City's acceptance of the improvements, the Design Engineer shall compile and submit a set of Record Drawings on vellum or mylar showing final improvement details, corrected improvement elevations and locations, as well as any changes that occurred during construction. Record Drawings shall consist of a bond copy, an electronic (PDF) copy of the record drawings along with an electronic **(AutoCAD) file for all utilities (water, sewer and storm drain lines with sizes, manholes, valves, catch basins, etc.) street rights-of-way, street names and lot lines. (The AutoCAD file will be utilized for updating utility base maps.).**

Original data that has been superseded shall be crossed out, but not eradicated. All utilities that could not be shown on the construction plans shall be drawn on the Record Drawings. The Design Engineer shall provide final elevations of all catch basins, storm drainage pipe inverts, sewer flowline elevations at manholes and curb and gutter flowline. All lettering must be clear and legible. Extensive changes which cannot be shown clearly on an original sheet shall be drawn on a supplemental sheet. All supplemental sheets shall be signed by the Design Engineer and included as part of the Record Drawings. The Design Engineer shall sign the bond copies of the Record Drawings. The Record Drawings will be retained by the City.

1.16 EXISTING UTILITIES

The City is a member of Underground Services Alert (USA) on-call program. The Contractor or sub-contractor is required to notify USA at (800)-227-2600, two working days in advance of beginning any excavation

work. All existing utilities are to be shown on the plans. In addition, the Design Engineer shall submit preliminary plans and final approved plans to the Utility Companies involved. The utility companies shall use this information to properly plan their relocation projects and any needed additional facilities. Copies of the transmittal letters to the utility companies shall be provided to the City Engineer with the first submittal for the plan check. The transmittal letters shall indicate all known utility conflicts, which require relocation. The conflict shall be referenced to stationing and distance from centerline. In addition, the following note shall appear on the first page on the plans that include utility work in asphalt pavement areas: **Final pavement work shall not occur within street right-of-way prior to completion of utility relocation without the specific approval of the City Engineer.**

1.17 OTHER AGENY NOTIFICATION

The Design Engineer is responsible for obtaining the approval and necessary permits from governmental or municipal agencies when their facilities or jurisdictions are involved. An approved signature block shall be on the cover sheet of the improvement plans and shall be signed by all affected agencies prior to the City approval.

1.18 FAITHFUL PERFORMANCE SECURITY

The City may require a faithful performance security with a Faithful Performance Security in the form of an acceptable bond or other suitable financial guarantee acceptable to the City Attorney from a financial institute authorized to do and doing business in the State of California. The security shall be valid until the City accepts the improvements. The security shall be the 100% of the City approved Engineer's Estimate.

The purpose of the Faithful Performance Security is to provide protection to the City for any expense it may incur as a result of:

1. Failure by the Contractor to complete the installation.

2. Necessary repairs caused by poor installation techniques.

3. Necessary repairs caused by the installation of defective material.

4. Failure by the Contractor to perform in accordance with the approved plans and specifications.

5. Material liens against the City.

1.19 GUARANTEE OF WORKMANSHIP, MATERIALS, AND EQUIPMENT

The applicant shall guarantee that the improvements for subdivisions installed by the Contractor (or applicant) be free from any and all defects in materials and workmanship for a period of one (1) year acceptance by the City Council. The guarantee shall be a bond in an amount of 10% of the Design Engineer's approved construction cost estimate, or other amount determined by the City Engineer. The City may make any necessary repairs and charge the security in the event the Developer or Contractor fails to correct the defects.

1.20 EQUIPMENT OPERATION AND MAINTENANCE SUBMITTALS

Prior to the acceptance of the improvements by the City, the Developer shall compile and submit information and materials related to each maintainable piece of equipment, equipment assembly, or sub-assembly provided and dedicated to the City in conjunction with his work. This requirement generally applies to such items as pumps, lift stations, irrigation systems, and similar equipment and systems. It also includes valves, fire hydrants, and similar items not specifically listed in the Improvement Standards that have been provided on an "or equal" basis, where operation and maintenance of such items differs from listed items and replacement parts and special tools are not directly interchangeable with those for listed items.

1. OPERATION AND MAINTENANCE MANUALS

   Three sets of operation and maintenance manuals shall be provided for each maintainable piece of equipment, equipment assembly or sub-assembly which covers the following subjects in detail:

   General

   a. Names, addresses, and telephone numbers of the manufacturer, the nearest representative of the manufacturer, and the nearest supplier of the manufacturer's equipment and parts.

      In addition, one or more of the following items of information shall be provided as applicable, to the satisfaction of the Director of Public Works:

Operating Instructions

a. Safety precautions
b. Operator prestart
c. Startup, shutdown, and post shutdown procedures
d. Normal operations
e. Emergency operations
f. Operator service requirements
g. Environmental conditions

Preventive Maintenance

a. Lubrication data
b. Preventive maintenance plan and schedule

Corrective Maintenance

a. Troubleshooting guides and diagnostic techniques
b. Wiring diagrams and control diagrams
c. Maintenance and repair procedures
d. Removal and replacement instructions
e. Spare parts and supply list
f. Corrective maintenance man-hours

Appendices

a. Parts identification
b. Warranty information
c. Personnel training requirements
d. Testing equipment and special tool information

2. ROUTINE MAINTENANCE ITEMS AND SUPPLIES

Consumables, lubricants, gaskets, fuses, and similar routine maintenance items and supplies (not including fuel) sufficient for one (1) year operation.

1.21 GENERAL PERMITTING AND INSURANCE REQUIREMENTS

Any work in the Public right-of-way require Encroachment permit approved by the City. Encroachment Permits for work in the public right-of-way are the responsibility of Public Works Department. The time

required to process the permit will vary by the complexity of the issues presented.

To obtain a permit, the applicant's company must have workers' compensation and general liability insurance on file with the City of Patterson City Clerk's Office.

APPROVED BY THE CITY ENGINEER, CITY OF PATTERSON REVIEWED FOR CONFORMANCE WITH CITY OF PATTERSON REQUIREMENTS ONLY. SINCE PLANS WERE PREPARED BY OTHERS, NO RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN IS EXPRESSED.
(SHEETS _____ THRU _____)

BY _____ DATE _____

[1] APPROVED BY THE CITY WATER ENGINEER, CITY OF PATTERSON REVIEWED FOR CONFORMANCE WITH CITY OF PATTERSON REQUIREMENTS ONLY. SINCE PLANS WERE PREPARED BY OTHERS, NO RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN IS EXPRESSED.
(SHEETS _____ THRU _____)

BY _____ DATE _____

[1] APPROVED BY THE CITY TRAFFIC ENGINEER, CITY OF PATTERSON REVIEWED FOR CONFORMANCE WITH CITY OF PATTERSON REQUIREMENTS ONLY. SINCE PLANS WERE PREPARED BY OTHERS, NO RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN IS EXPRESSED.
(SHEETS _____ THRU _____)

BY _____ DATE _____

[1] APPROVED BY THE FIRE DEPARTMENT, CITY OF PATTERSON REVIEWED FOR CONFORMANCE WITH CITY OF PATTERSON REQUIREMENTS ONLY. SINCE PLANS WERE PREPARED BY OTHERS, NO RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN IS EXPRESSED.
(SHEETS _____ THRU _____)

BY _____ DATE _____

[1] APPROVED BY THE PUBLIC WORKS DIRECTOR, CITY OF PATTERSON REVIEWED FOR CONFORMANCE WITH CITY OF PATTERSON REQUIREMENTS ONLY. SINCE PLANS WERE PREPARED BY OTHERS, NO RESPONSIBILITY FOR THE ADEQUACY OF THE DESIGN IS EXPRESSED.
(SHEETS _____ THRU _____)

BY _____ DATE _____

NOTES:

[1] *TO BE USED IF APPLICABLE.*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

TYPICAL APPROVAL BLOCKS

DRAWING NO. G - 1

NTS

Oct 26, 2020 - 3:17pm
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DRAFTING STANDARDS

ALL FINAL MAPS, PARCEL MAPS, OR RECORD OF SURVEYS, IMPROVEMENT PLANS OR CONSTRUCTION DRAWINGS SUBMITTED TO THE CITY FOR REVISION AND APPROVAL SHALL CONFORM TO AND PREPARED IN ACCORDANCE WITH THE FOLLOWING STANDARDS:

1. ALL LETTERING SHALL BE A MINIMUM OF 0.10 INCHES (2.5 mm) HEIGHT USING A 0.35 mm PEN. VERTICAL OR SLANTED LETTERING MAY BE USED.

2. FINAL MAPS, ETC.

SUBDIVISION OUTLINE		0.80 mm LINE WIDTH
BLOCK OUTLINE		0.60 mm LINE WIDTH
LOT LINES		0.50 mm LINE WIDTH
EASEMENT LINES		0.35 mm LINE WIDTH
STREET CENTER LINES		0.35 mm LINE WIDTH
RADIAL BEARING LINES		0.25 mm LINE WIDTH
MONUMENT SET		
MONUMENT SET IN CAST IRON BOX		
MONUMENT FOUND		
MONUMENT FOUND IN CAST IRON BOX		

		LETTERS, SIZE, STYLE, & PEN
STREET NAMES	MAIN	0.175" (4.5mm), SOLID, 0.5 mm PEN
LOT NUMBERS	44	0.175" (4.5mm), SOLID, 0.5 mm PEN
BEARINGS, DISTANCES, CURVE DATA, COORDINATES, ETC.	N45°E 50.00'	0.100" (2.5mm), SOLID, 0.35 mm PEN
ADJACENT SUBDIVISIONS AND LOT NUMBERS	FIR TRACT 44	0.175" (4.5mm), SHADOW, 0.35 mm PEN
	FIR TRACT 44	0.175" (4.5mm), DOTTED, 0.35 mm PEN

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: _____

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAFTING STANDARDS - 1

DRAWING NO. G - 2

NTS

Oct 26, 2020 – 3:19pm
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3. IMPROVEMENT PLANS, ETC.

DESCRIPTION	TO BE CONSTRUCTED	EXISTING
SANITARY SEWER	8"SS	8"SS
STORM DRAIN	8"SD	8"SD
POTABLE WATER	8" W	8" W
NON–POTABLE WATER	8" W(NP)	8" W(NP)
GAS LINE	4" G	4" G
TELEPHONE LINE	TEL	TEL
CABLE TELEVISION	TV	TV
WATER VALVE	W	W
GAS VALVE	G	G
S.S. SERVICE LATERAL	8"SS	8"SS
S.S. CLEANOUT	CO	CO
MANHOLE	MH	MH
FIRE HYDRANT	FH	FH
CATCH BASIN		
GAS METER	G	G
WATER METER	WM	WM
SIGN		
CURB, GUTTER, AND SIDEWALK		
WHEELCHAIR RAMP		
DRIVEWAY		
CONFORM PAVEMENT		
RAILROAD		
FENCE		
BARRICADE		
ELECTROLIER		

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAFTING STANDARDS - 2

DRAWING NO. G - 3

NTS

Oct 26, 2020 – 3:20pm
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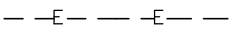
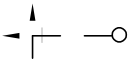
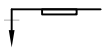
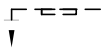
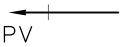
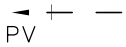
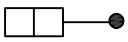
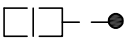
3. IMPROVEMENT PLANS, ETC. CONTINUED:

DESCRIPTION	TO BE CONSTRUCTED	EXISTING
UTILITY POLE		
ELECTRICAL CONDUIT		
PULL BOX		
PULL BOX WITH DETECTOR STUB IN CONDUIT		
COMBINATION TRAFFIC SIGNAL WITH BACKPLATE & LUMINAIRE		
VEHICLE SIGNAL WITH AND WITHOUT BACKPLATE		
COMBINATION TRAFFIC SIGNAL RED/AMBER/GREEN ARROW, AND BACKPLATE		
MASTARM SIGNAL WITH STREET NAME SIGN		
PROGRAMMED VISIBILITY HEAD WITH BACKPLATE		
PEDESTRIAN SIGNAL FACE		
PEDESTRIAN PUSH BUTTON AND ASSOCIATED VEHICLE PHASE	PPB Ø 6	PPB Ø 6
INDUCTIVE DETECTOR LOOP		
TRAFFIC SIGNAL CONTROLLER CABINET WITH DOOR SWING AS SHOWN		
TYPE III OR III M SERVICE CABINET WITH DOOR SWING AS SHOWN		

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAFTING STANDARDS - 3

DRAWING NO. G - 4

NTS

Oct 26, 2020 – 3:21pm
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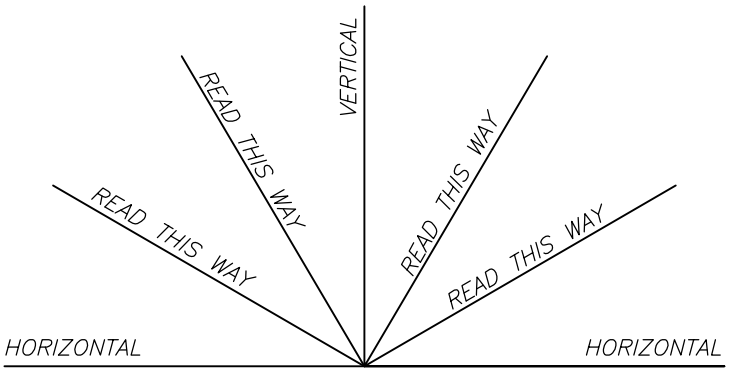

NOTES:

1. NOTATION ORIENTATION IN THE DRAWINGS REQUIRES THE PLACEMENTS OF CALL OUTS AT VARIOUS ANGLES SKEW TO THE HORIZONTAL PLAIN. IF POSSIBLE, ANY TEXT DESCRIBING ANY DRAWING LINEWORK SHALL BE SET PARALLEL WITH THE LINE WORK AS SHOWN ABOVE
2. GENERAL TEXT NOTATIONS SHALL HAVE UPPER LEFT JUSTIFICATION AND HAVE A MEDIUM LINE THICKNESS.
3. BOLD TEXT FOR GENERAL NOTATION SHALL BE AVOIDED. BOLD TEXT IS TO BE LIMITED TO ROAD LABELS, TITLE BLOCK INFORMATION, DETAILS TITLES, ETC.
4. TEXT AND ALL DIMENSIONS SHALL BE CONSISTENT THROUGHOUT THE SET OF DRAWINGS, ALL ABBREVIATIONS, WORD SEQUENCING, DECIMALS, ORIENTATIONS, AND ALL OTHER PERTINENT INFORMATION SHALL BE PRESENTED IN A CONSISTENT MANNER THROUGHOUT THE SET.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAFTING STANDARDS - 4

DRAWING NO. G - 5

NTS

Mar 29, 2021 - 11:37am
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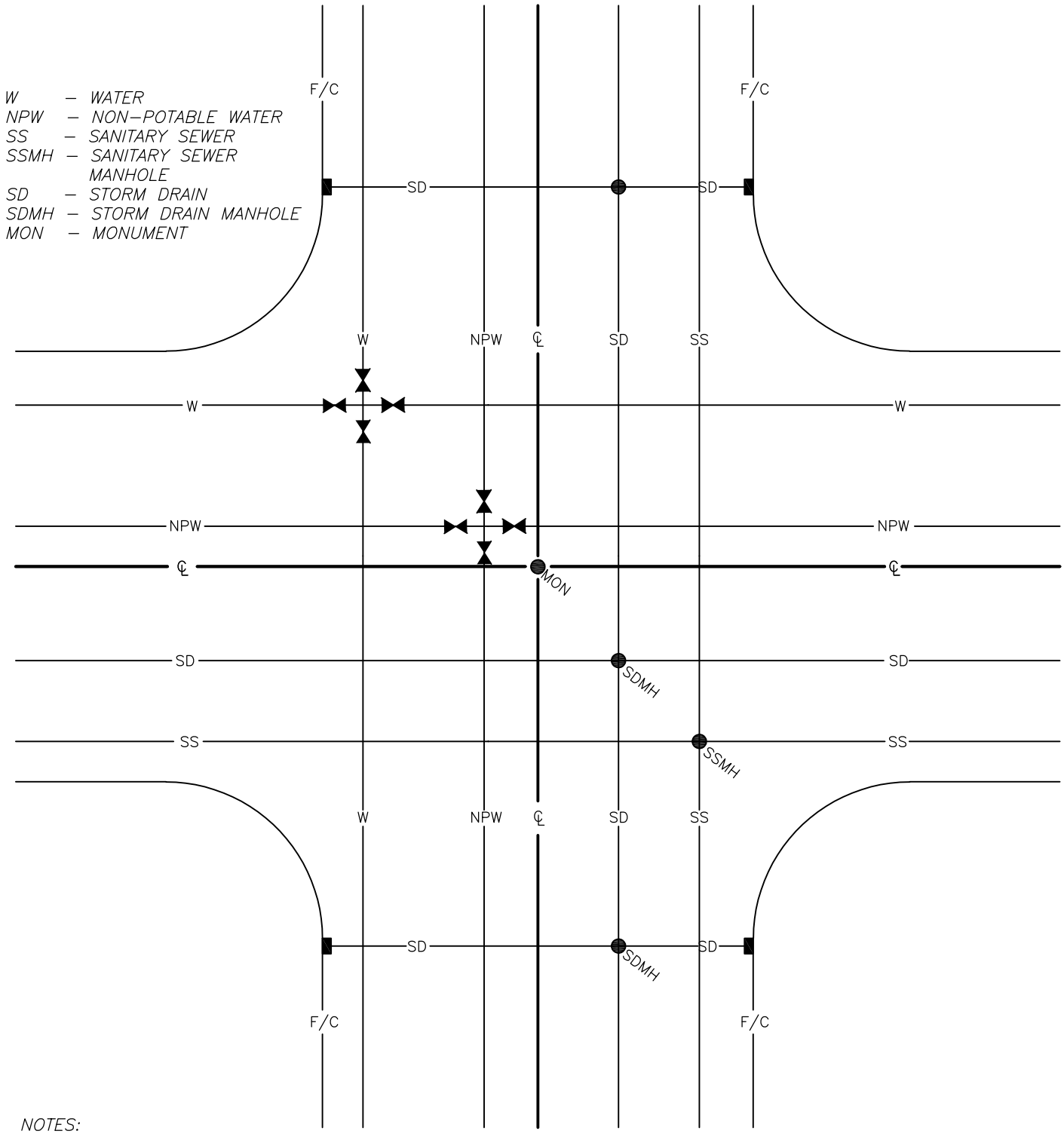

NOTES:

1. ANY DEVIATIONS FROM THE STANDARD LOCATIONS SHALL BE APPROVED BY THE CITY ENGINEER.
2. ALL DISTANCES SHALL BE MEASURED FROM THE EXTERIOR WALL OF THE PIPE TO EXTERIOR WALL OF THE OTHER PIPE.
3. LAYOUT SHALL BE ADJUSTED AS PRACTICABLE SO THAT MANHOLES AND UTILITY VAULTS WILL NOT BE IN THE WHEEL PATH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

UNDERGROUND UTILITIES LOCATIONS AT NEW DEVELOPMENTS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. G - 6

NTS

Mar 29, 2021 – 11:38am
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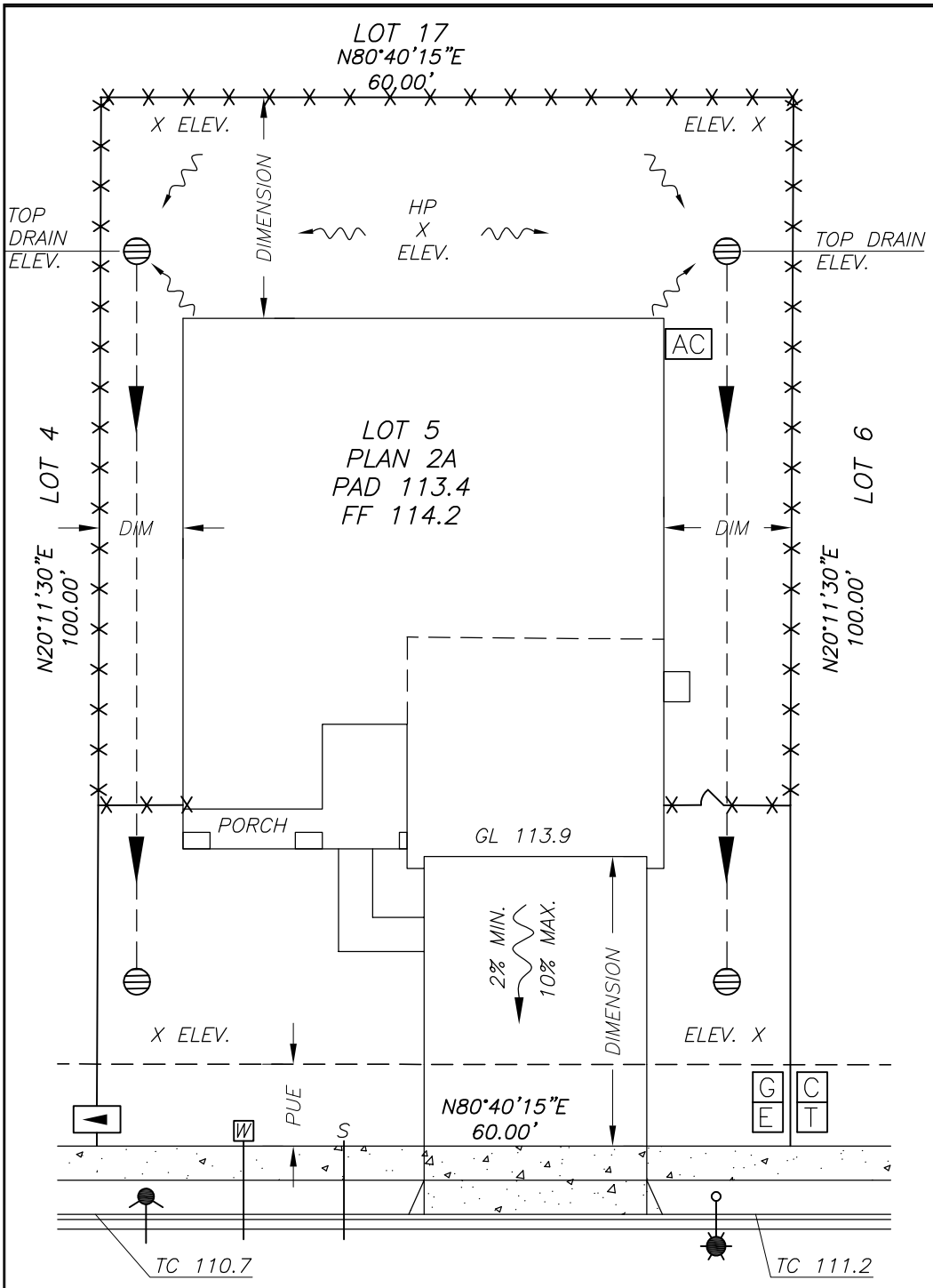


N

SCALE 1" = 20'

LEGEND

— — —	PUBLIC UTILITY EASEMENT
W	WATER SERVICE
S	SEWER SERVICE
	FIRE HYDRANT
X X X	FENCE
2% MIN.	DRAINAGE SWALE
— —	4" DRAIN PIPE
	AREA DRAIN
	ELECTROLIER
	TRANSFORMER
G	GAS
T	TELEPHONE
C	CABLE
E	ELECTRICAL
AC	AIR CONDITION
HP	HIGH POINT
FF	FINISH FLOOR
GL	GARAGE LIP
TC	TOP OF CURB

123 APRICOT LANE

NOTES:

1.
2.
3.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

PLOT PLAN EXAMPLE

DRAWING NO. G - 7

NTS

Mar 29, 2021 - 11:39am
L:\Standard details\Cad Files 2020\Section 1 (General)\G-6.DWG

SECTION 2 – TRAFFIC CONTROL AND SAFETY

SPECIFICATIONS:

2.1 GENERAL ……..……..…2-1
2.2 TRAFFIC CONTROL ...…….. 2-2
2.3 COVERING OF SIGNS ...……... 2-2
2.4 CONSTRUCTION SIGNS……... 2-2
2.5 BARRICADES…… 2-3
2.6 FLASHER SUPPORTS ...…… 2-3
2.7 DELINEATORS ...……... 2-3
2.8 FLAGGER ...…… 2-4
2.9 WARNING LIGHTS ...…… 2-4
2.10 STREET CLOSURE ...…….2-5
2.11 SIDEWALK CLOSURE …… 2-6
2.12 PUBLIC NOTIFICATION ...……... 2-7
2.13 RULES AND REGULATIONS ...……... 2-8

DRAWINGS:

TC - 1 STREET NAME SIGN
TC - 2 STOP SIGN INSTALLATION
TC - 3 TYPICAL CONSTRUCTION SIGNS
TC - 4 PORTABLE CONSTRUCTION BARRICADES
TC - 5 TRAFFIC DELINEATORS
TC - 6 STREET CLOSURE
TC - 7 DEAD END STREET BARRICADE
TC - 8 BARRICADE FOR ENDING STREET WITH INSTERSECTION STREET
TC - 9 ROAD WITH TRANSITION BARRICADE
TC - 10 SIDEWALK BARRICADE TYPE I
TC - 11 SIDEWALK BARRICADE TYPE II
TC - 12 BOLLARD DETAIL

SECTION 2

TRAFFIC CONTROL AND SAFETY

2.1 GENERAL

This Section is intended to establish general principles of traffic control, worker protection and public safety measures to be taken in the performance of all work covered by these Improvement Standards. The Developer and Contractor's attention is directed to Section 12 "Temporary Traffic Control", of the State Standard Specifications.

No specification contained herein shall be deemed to create a legal standard of conduct or duty toward the public nor shall it limit the City in the exercise of powers conferred by law in modifying these Standard Specifications under special conditions.

The requirements of the current edition of "California Manual on Uniform Traffic Control Devices" (California MUTCD), herein referred to as the "CAMUTCD", shall take precedence over the requirements of this Section.

Prior to start of Work, the Contractor shall submit for City review and approval its Traffic Control and Detour Plan. Submit said plan a minimum of two (2) full Working Days prior to the Preconstruction Conference. If there is no Preconstruction Conference, submit said plan at least two (1) week prior to starting the work. The plan shall include (where necessary) lane closures, detours, no parking areas, signing program for construction, access to private property and business establishments, pedestrian traffic, railroad crossings, transit routes, loading areas, the proposed routing of the construction vehicles, hours required for access and the safe guards and procedures necessary to carry out the Work, as well as where Contractor plans to park construction vehicles and equipment, and other matters which might be important to the safe movement of traffic. The plan shall also indicate placement and type of warning signs, lights, devices, flag persons; and have a schedule for implementation.

It is imperative that field traffic control be handled in such a manner as to adequately and safely direct all traffic movements in the Project area. The Contractor shall not be allowed to proceed with construction at any time that, in the opinion of the Engineer, traffic control is inadequate to meet the field conditions. If the traffic control is inadequate, at the direction of City Engineer, the City may provide the temporary traffic control and charge the

contractor. Traffic control measures, in addition to those indicated on the approved traffic control plans, may be required as field conditions dictate.

2.2 TRAFFIC CONTROL

The safe movement of traffic through construction areas depends upon communicating concise and proper information to the public by signs, barricades, delineators, flagmen and warning lights. All such devices necessary during construction shall be furnished by the Developer or the Contractor.

The size, shape and color of such devices as shown herein, shall be as required by the State of California, Department of Transportation and as shown in the California MUTCD.

2.3 COVERING OF SIGNS

If the traffic control plan requires temporary covering of signs and/or traffic signal indications, Contractor shall cover the entire sign, signal indication or portions of the indications with a cover manufactured for that purpose.

The sign and traffic signal indication covers shall be sufficient size and density to completely block out the message so that it is not visible either during day or at night. Covers shall be fastened securely to the sign or signal indication and the cover material shall be wind and rain resistant. The covering material shall be approved by City.

With the City Engineer approval, Contractor may remove the signs and signal indications in lieu of covering them or may turn them so the signs are not visible to the coming traffic.

2.4 CONSTRUCTION SIGNS

All temporary signs shall comply with the California MUTCD and these Specifications.

Warning signs used for nighttime conditions shall be reflectorized or illuminated. The use of orange flags in conjunction with signs is permitted if they do not at any time interfere with a clear view of the sign face.

Reflectorized signs fastened to barricades or similar supports shall have the face of the sign vertical and normal to the direction of traffic for effective visibility.

Signs are to be used only as long as necessary and then removed. During periods when the signs are temporarily unnecessary, they shall be removed or have their message covered.

Areas to be posted with "No Parking" signs must be verified as correct by the Public Works Department. "No Parking" signs must be verified and posted a minimum of forty-eight (48) hours prior to the start of construction in each area requiring parking restrictions.

2.5 BARRICADES

Barricades are intended to impose an obstacle or close off the normal flow of travel. Approved barricades are shown on Drawing No. TC-4 and/or as shown in the California MUTCD.

Barricades shall not be used unless they are needed to separate the motorist from objects of greater hazard than the barricades themselves. Barricades should never be used primarily for delineation. The use of non-standard types of barricades, such as drums, buckets, sandbags, etc., is prohibited. Under no circumstances shall a single barricade be placed in a lane of traffic.

2.6 FLASHER SUPPORTS

Portable flasher supports shall be as required by the State Department of Transportation as shown on Drawing No. TC-4 and/or as shown in the California MUTCD.

2.7 DELINEATORS

The function of delineators is to channelize traffic. They shall consist of post and paddle type markers or cylindrical or cone shaped objects, 18 to 48 inches in height, as shown in Drawing No. TC-5 and/or as shown in the California MUTCD.

Delineators should be uniformly positioned laterally and longitudinally relative to the line of traffic and they must be maintained in an erect position.

Delineators for night use shall be reflectorized or illuminated to be visible from 500 feet under normal conditions.

When placed in close proximity to the edge of a traffic lane, delineators should be made of a material that will withstand impact without damage to them or the striking vehicle.

Consideration must also be given to the necessity for stability against knockdown from wind or from the wind wash of passing traffic.

2.8 FLAGGER

A flagger should be used only when such discretionary capability is required or as directed by the City Engineer, and not as a substitute for other warning signs and devices. The C9A (CA) Flagger Ahead symbol sign shall be placed in advance of all flagger stations. The distance between the sign and the flagger should be based on the average traffic speed.

When a flagger is necessary, the flagger must convey a message, and the message must be timely and accurate. The flagger's effectiveness and the safety of the traffic and his fellow workmen depend upon the way the flagger works. Standard hand signals shall be used as shown in the California MUTCD.

Section 12-2.03 "Flagging Costs," of the State Standards is replaced by the following:

The cost of furnishing all flaggers, including transporting flaggers, to provide for the passage of public traffic through the work under the provisions in Section 7-1.03, "Public Convenience" and 7-1.04, "Public Safety" shall be borne ***100 percent*** *by the Contractor.*

Flaggers shall wear high visibility safety apparel complying with ANSI/ISEA 107-2004 and the California MUTCD, and shall utilize highly visible STOP/SLOW signs. Flaggers shall be equipped with a portable, self-contained two-way radio when more than one flagger is used for traffic control. Contractor shall provide Flaggers with the necessary equipment and training to perform their duties in accordance with the current "Instructions to Flaggers" of the
California Departments of Transportation.

2.9 WARNING LIGHTS

Contractor shall use electronic signs with sequential arrow or changeable message to advice traffic of approaching conditions.

Warning lights shall be electric lanterns, electric markers or flashers provided to indicate an obstruction or restriction during periods of low visibility. Warning lights shall be placed to mark the location of obstructions. Motion may be imparted to warning lights.

Flashing lights for delineating the path traffic is to follow shall be uniformly spaced as approved by the City Engineer.

Warning lights may be fastened to signs, barricades and portable flasher supports in a manner satisfactory to the City Engineer.

2.10 STREET CLOSURE

During the period of construction, the Developer or Contractor shall maintain the public way so as to not unreasonably hinder, render inconvenient or interfere with the public use thereof and shall erect such barriers, signs and other measures as may be necessary and proper to provide for the safety of persons, animals and vehicles using the public right-of-way. The City Engineer or designated representative shall be the sole judge of the interpretation of the provisions of this paragraph and all decisions rendered regarding same shall be final. When safety measures are required, all construction shall immediately cease until such measures are provided to the satisfaction of the City Engineer or designated representative.

Solid waste services consist of garbage, green waste, organic waste, and/or recycle materials collection services shall be arranged with the City's franchise haulers during street closures. For information contact Public Works at 209-895-8060.

Partial temporary street closures shall be made as shown on Drawing No. TC-6 and/or as shown in the California MUTCD. One lane for each direction of through traffic must be maintained except where flagmen are provided to control traffic, then one lane may serve both directions. When trenching is necessary across intersecting streets, the work shall be done in such a manner as to maintain two-way traffic on cross streets at all times.

Where trench line crosses the entrance to private property, access to the property shall be maintained at all times by means of a suitable bridge, until the trench may be backfilled. Such bridges shall be properly guarded and

illuminated at night. Where any crosswalk is cut by the trench, suitable bridging shall be constructed. Such bridging shall be at least 4 feet in width, shall have suitable hand railing, and shall be properly guarded and illuminated at night. Wherever it is necessary that trenches and excavation be bridged, these bridges shall permit unobstructed flow of traffic or pedestrians (**ADA compliant**) and shall meet the following criteria:

a. Bridging shall be secured against displacement by using adjustable cleats, angles, bolts, or other methods such as by applying cold mix asphalt around plate edges.

b. Bridging shall be installed to operate with minimum noise.

c. The trench shall be adequately shored, to support the bridging and traffic.

d. Only steel plates shall be used for bridging. Steel plates used for bridging shall extend one foot (minimum) beyond the edges of the trench.

One 12-foot paved travel lane in each direction must be maintained open at all the times throughout the construction area, unless otherwise approved by the City Engineer. The complete closure of a street is allowed only when authorized by the City Engineer in writing. Such closure shall be accomplished only through the use of Type III Barricades as shown on Drawing No. TC-4 and/or as shown in the California MUTCD.

Permanent closures and temporary closures in new developments at dead end streets and where pavement narrows at the edge of the development shall be made as shown in Drawing No. TC-7 and/or as shown in the California MUTCD.

2.11 SIDEWALK CLOSURE

Sidewalk Closures: Contractor must obtain all necessary permits and comply with all City regulations before closing sidewalks.

a. Where walks, pathways, or access ways are closed by the Work, an ADA complaint alternate walkway shall be provided, preferably within the immediate location of the pathway or access to be closed. Where it is necessary to divert pedestrians into a major detour and/or into a parking lane or traffic area, at no time shall pedestrians be diverted into a portion

of a street used for vehicular traffic. Any deviation from the above must have prior approval of the Engineer.

b. At locations where adjacent alternate walkways cannot be provided (i.e., where no pathway or access is available within the immediate location of the interruption) ADA compliant detours shall be clearly planned, marked, and constructed. Appropriate signs and barricades must be installed at the limits of construction and in advance of the closure (or detour) in order to divert pedestrians to the appropriate walkway or detour.

c. Contractor shall provide sufficient signage, indicating by way of arrows and text, pedestrian route closures, and new pathways and detours required for alternate pedestrian routes around the construction. Alternate pedestrian routes, the final sign configuration, the exact wording of the base sign and all mounting locations shall be approved by the City.

2.12 PUBLIC NOTIFICATION

The Contractor will ensure the public is given at least 7 Days notification prior to street closure, and 96 hours notification prior to trail and lane closure. Method of notification must be approved in writing by the City Engineer or his/her designated person. Any deviation from these requirements must have prior written approval of the City Engineer.

At least **48 hours** in advance of closing, or partially closing, or of reopening, any Street, alley, or other public thoroughfare, the Contractor shall notify the Police, Fire, Bus, School District, Post Office, Ambulance Services, and Engineering Departments of jurisdictional agencies involved, and comply with their requirements. Any deviation from these requirements must have prior written approval of the City Engineer.

Lane closures on all major Streets shall be limited to the hours of 9 am – 4 pm. Full closures of major Streets shall not start until 9 am on the first Day and shall be pre-notified on-Site at least 7 Days in advance of the start of the project. On high volume Streets this may require the use of a changeable message sign as pre-notification. Barricades with lights and proper reflectivity are required at night.

Lane closures within 250 feet of signalized intersections shall extend to both sides of the intersection. If the Work area moves beyond 250 feet of

the intersection, clear the intersection zone of traffic control. (The intersection zone is defined as 250 feet on all sides of the intersection.)

2.13 RULES AND REGULATIONS

All work performed and all materials used by the Developer or Contractor shall comply with the following: State Labor Code, California Administrative Code, Construction Safety Order, Title 8, Subchapter 4; and all other applicable Federal, State and local laws and regulations.

Specifically, the Developer or Contractor shall furnish, install and maintain all shoring, bracing and sheeting. Any damage resulting from a lack of adequate shoring, bracing or sheeting shall be repaired at the Developer's or Contractor's expense.

Additional requirements may be imposed by the Engineer in the interest of public safety.

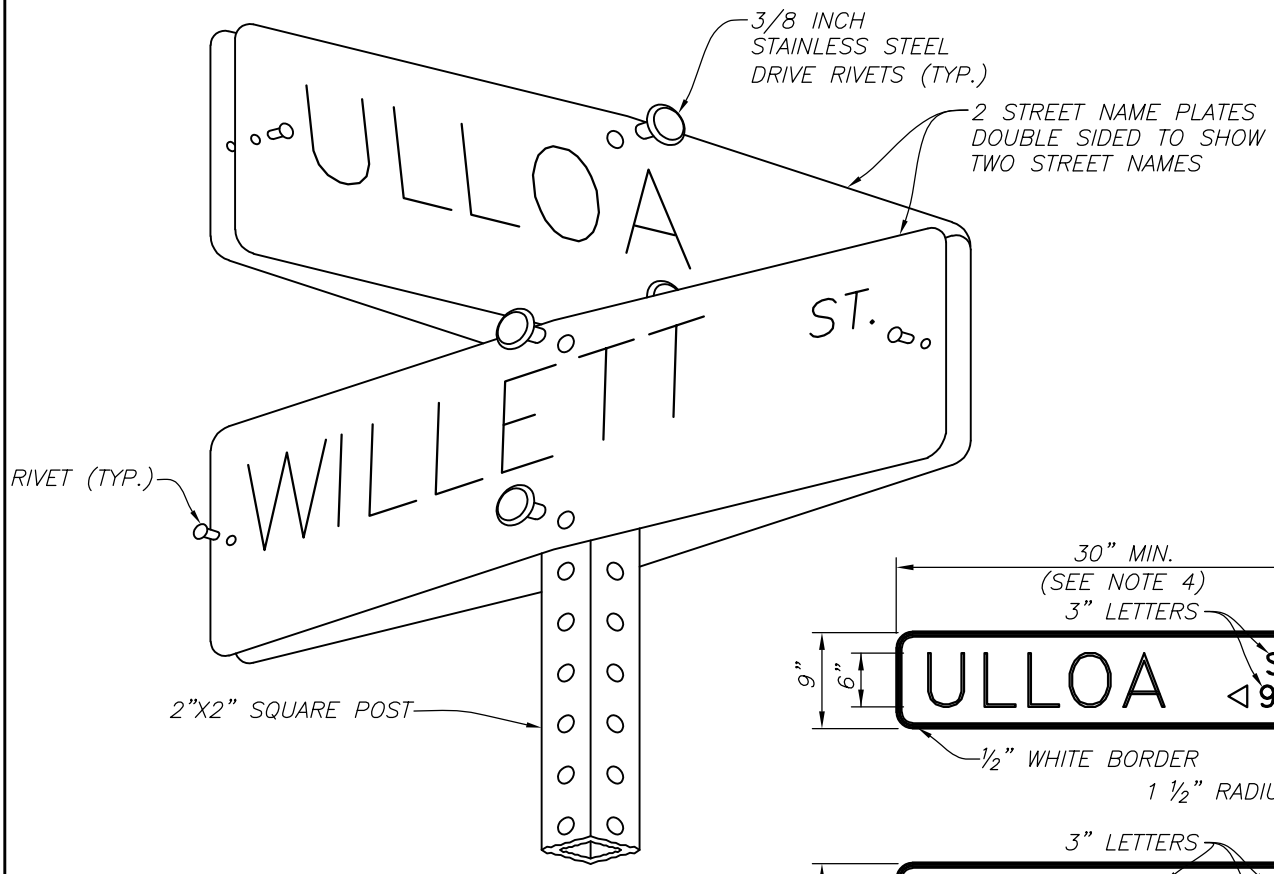
All excavations shall be in compliance with Section 1540(a) (1) of the Construction Safety Orders (Title 8, California Administrative Code Section 1540), issued by the Occupational Safety and Health Standards Board pursuant to the California Occupational Safety and Health Act of 1973, which states:

(1) "Prior to opening an excavation, effort shall be made to determine whether underground installations: i.e., sewer, water, fuel, electric lines, etc., will be encountered and, if so, where such underground installations are located. When the excavation approaches the approximate location of such an installation, the exact location shall be determined by careful probing or hand digging; and when it is uncovered, adequate protection shall be provided for the existing installation. All known owners of underground facilities in the area concerned shall be advised of proposed work at least 48 hours prior to the start of actual excavation."

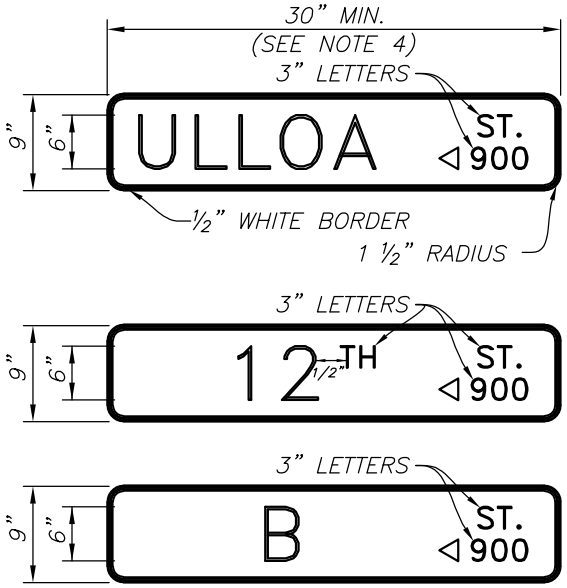
The Developer or Contractor shall be responsible for the preservation of, and any damage to, both private and public property in accordance with the current State Standards – Section 5-1.36 (Property and Facility Preservation).).

Contractor shall assume sole and complete responsibility for job site conditions during the course of construction of the project including the

safety of all persons and property. This requirement shall apply continuously and not be limited to normal working hours and the contractor shall defend, indemnify and hold the City Engineer and the City of Patterson and their directors, officers, employees, agents and volunteers harmless from any and all liability, real or alleged, in connection with the performance of work on the project excepting for liability arising from the sole negligence of the City Engineer or City of Patterson.



STREET NAME SIGN HARDWARE



STREET SIGN

NOTES:

1. STREET NAME SIGN TO BE PLACED 7 FEET, 6 INCHES ABOVE GROUND.
2. SEE DRAWING No. TC-2 FOR MOUNTING LOCATIONS AND INSTALLATION DETAILS.
3. STREET NAME SIGN SHALL BE 0.080-INCH ALUMINUM. BACKGROUND SHALL BE HIGH INTENSITY GRADE 3M REFLECTIVE VINYL SHEETING. SIGN PLATE COLOR SHALL BE No. 3279 BROWN WITH A ½ INCH REFLECTIVE WHITE BORDER. SIGN LEGEND SHALL BE 3M REFLECTIVE WHITE VINYL "C" HIGHWAY GOTHIC LETTERING.
4. LENGTH OF 36 INCH AND 42 INCH MAY BE USED TO ACCOMMODATE LONGER STREET NAMES.
5. INDIVIDUAL STREET SIGN LAYOUTS SHALL BE APPROVED BY THE PLANNING DEPARTMENT PRIOR TO FABRICATION.
6. 3-INCH LETTERS SHALL BE USED FOR "AVE., BLVD., DR., CT., PL., RD., ST." "LANE" AND "WAY" SHALL NOT BE ABBREVIATED.
7. STREET SIGNS SHALL BE COVERED WITH 1160A PREMIUM OVERLAY ANTI-GRAFFITI FILM.
8. ONLY ONE STREET NAME SIGN IS REQUIRED IF BOTH INTERSECTING STREETS' RIGHT-OF-WAY WIDTH IS LESS THAN 70 FEET; TWO STREET SIGNS LOCATED DIAGONALLY ACROSS FROM EACH OTHER ARE REQUIRED WHERE ONE OF THE TWO INTERSECTING STREETS' RIGHT-OF-WAY WIDTH IS 70 FEET OR MORE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

STREET NAME SIGN

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. TC - 1

NTS

Oct 26, 2020 - 3:25pm
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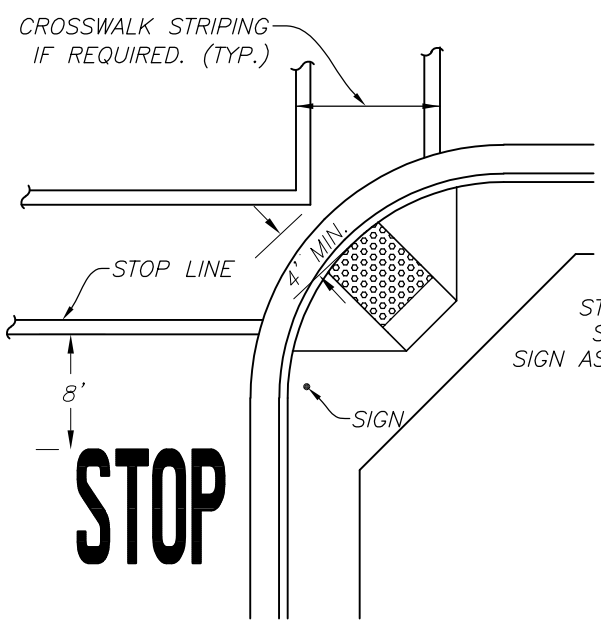

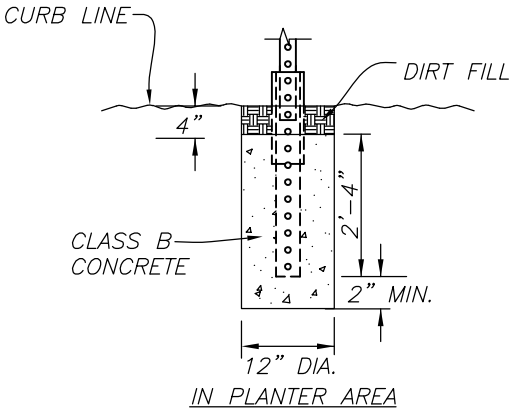

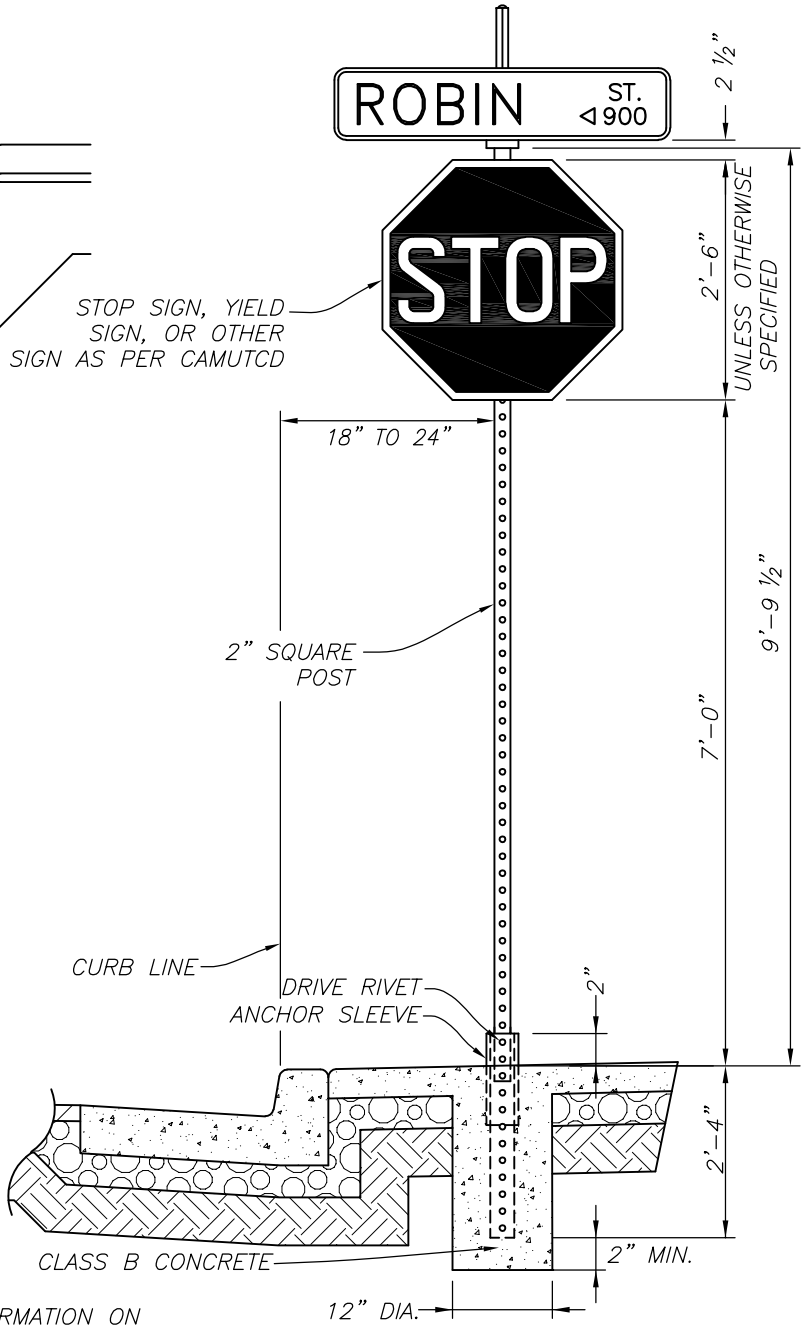

NOTES:

1. CONCRETE FOOTING MAY NOT REQUIRED IF POST INSTALLED IN CONCRETE.
2. INSERT POST 4" INTO SLEEVE.
3. SEE DWG. No. TC–1 FOR ADDITIONAL INFORMATION ON STREET NAME SIGN ASSEMBLY.
4. STOP SIGNS SHALL BE REFLECTIVE TYPE: 3M HIGH INTENSITY GRADE REFLECTIVE MATERIAL OR EQUAL.
5. "STOP", PAVEMENT MARKING, STOP LINE AND CROSS WALK STRIPING SHALL BE OF THERMOPLASTIC MATERIAL IN ACCORDANCE WITH SECTION 84–2, OF THE STATE STANDARD SPECIFICATIONS.
6. LOCATE POLE IN CONCRETE AREA UNLESS SHOWN OTHERWISE ON PLANS.
7. SIGN POST SHALL BE BREAKAWAY 12 GAUGE 2–INCH SQUARE PERFORATED GALVANIZED STEEL WITH 6 GAUGE 2 ¼–INCH SQUARE PERFORATED GALVANIZED STEEL ANCHOR SLEEVE AS MANUFACTURED BY UNISTRUT CORPORATION, OR APPROVED EQUAL.
8. INSTALL STREET NAME SIGNS ON STREET LIGHT POLES WHERE APPLICABLE AND USE HAWKINS WING BRACKETS, OR APPROVED EQUAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

STOP SIGN INSTALLATION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. TC - 2

NTS

Oct 26, 2020 – 3:26pm
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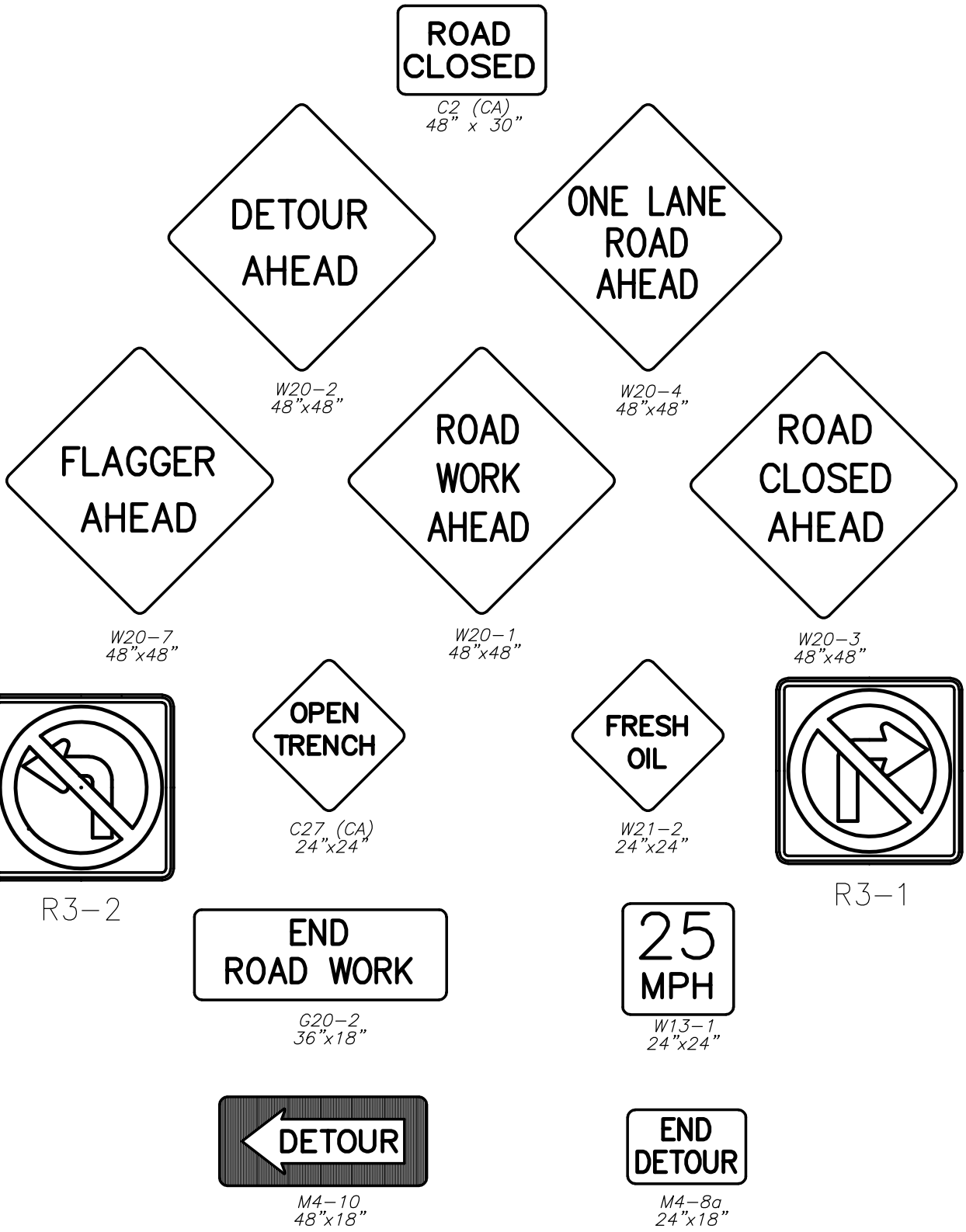

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

TYPICAL CONSTRUCTION SIGNS

DRAWING NO. TC - 3

NTS

Oct 26, 2020 - 3:27pm
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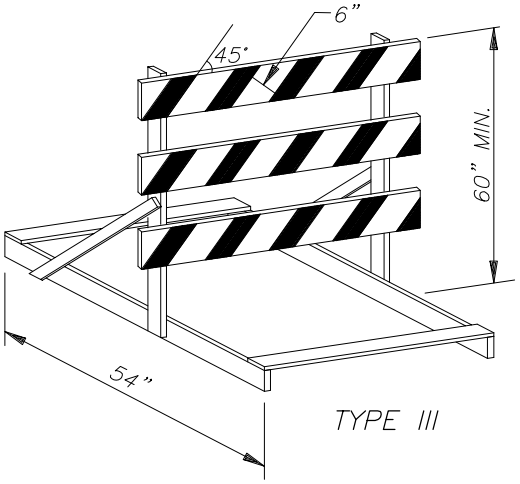
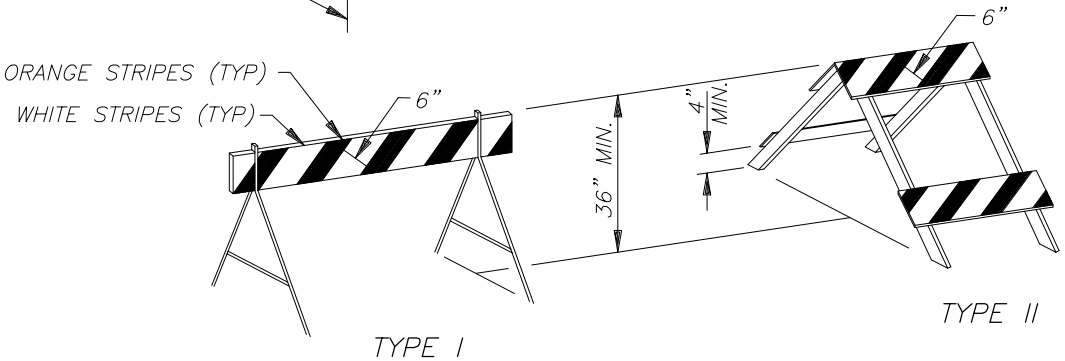
BARRICADE AND PORTABLE FLASHER SUPPORT CHARACTERISTICS

TYPE	1	2	3	PORTABLE FLASHER SUPPORT
WIDTH OF RAIL	8" – 12"	8" – 12"	8" – 12"	TOP – 8" – 12" BOTTOM – 4" MIN.
LENGTH OF RAIL	2' MIN.	24" MIN.	4' MIN.	31" MAX.
WIDTH OF STRIPE	6"	6"	6"	4" OR 6"
HEIGHT	3' MIN.	3' MIN.	5' MIN.	30" MIN.
NUMBER OF RAIL FACES REFLECTORIZED	2	4	3 IF FACING TRAFFIC IN ONE DIRECTION. 6 IF FACING TRAFFIC IN TWO DIRECTIONS.	2 IF TOP RAIL IS 12" WIDE. 4 IF TOP RAIL IS LESS THAN 12" WIDE



TYPE III



TYPE I

TYPE II

NOTES:

1. REFLECTORS AS REQUIRED BY THE CITY ENGINEER OR DIRECTOR OF PUBLIC WORKS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

PORTABLE CONST. BARRICADES

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. TC-4

NTS

Oct 26, 2020 – 3:28pm
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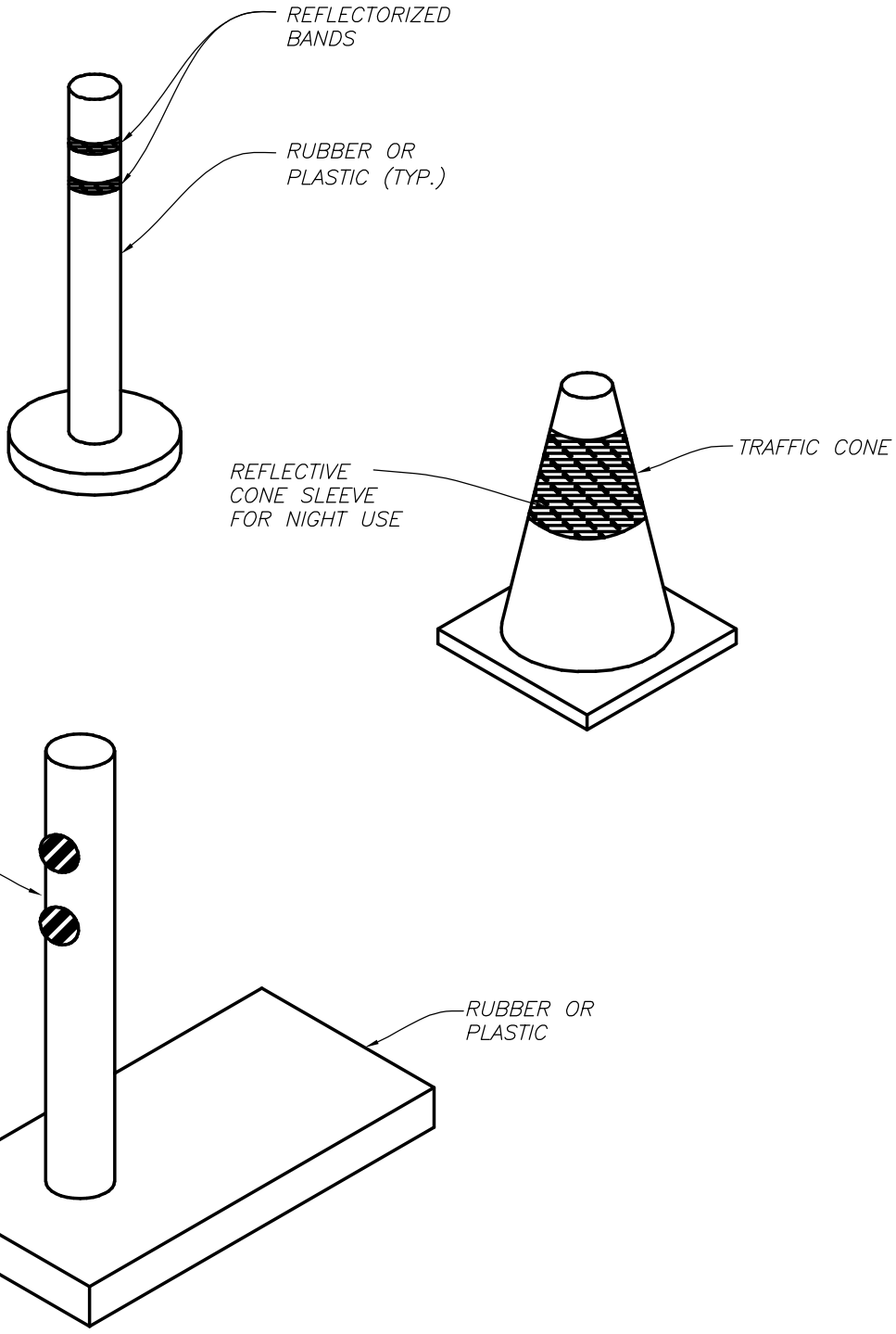

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

TRAFFIC DELINEATORS

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. TC - 5

NTS

Oct 26, 2020 - 3:29pm
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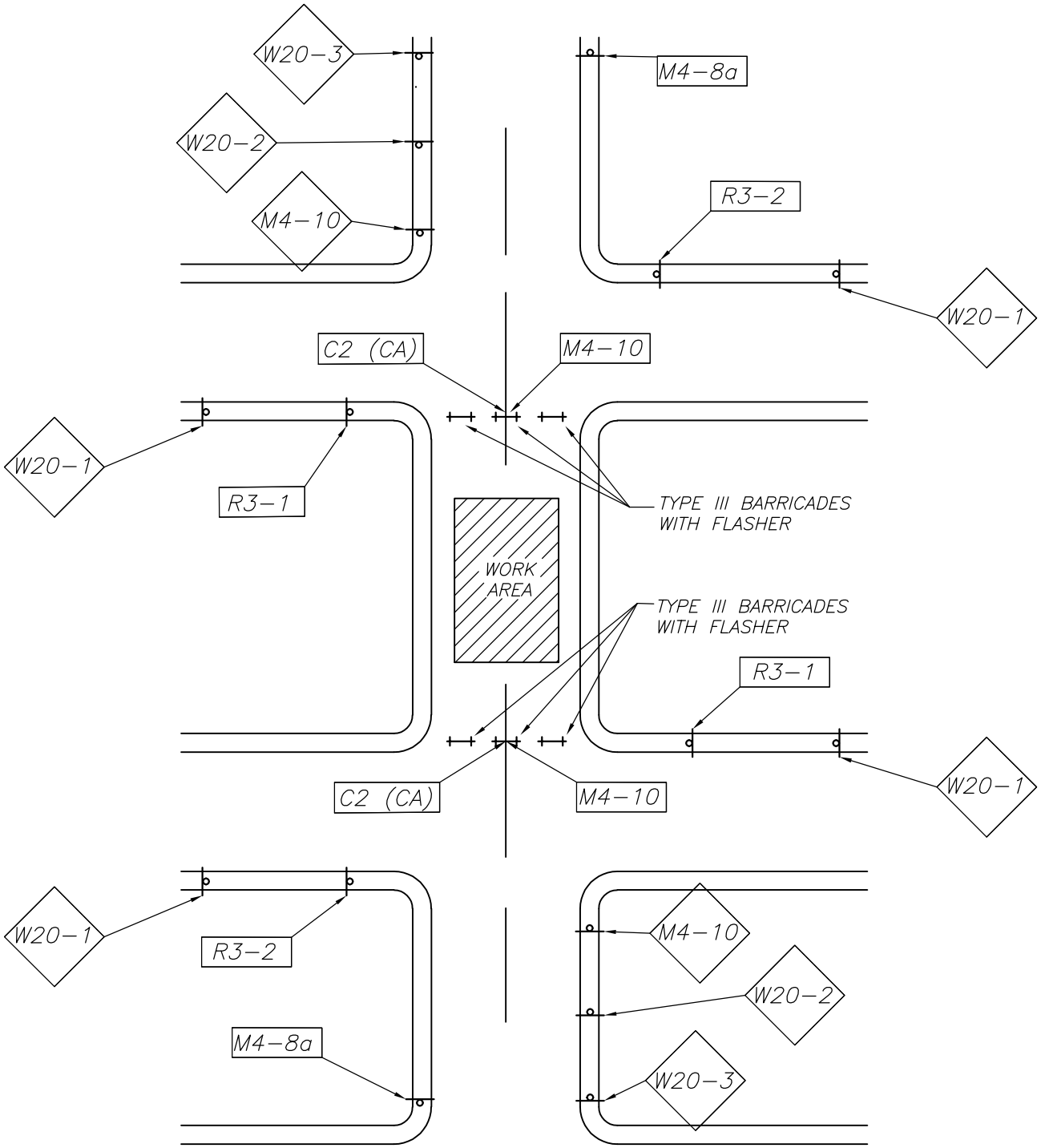

NOTES:

1. PLACEMENT OF BARRICADES SHALL NOT PRECLUDE ENTRANCE OF EMERGENCY VEHICLES OR LOCAL TRAFFIC.
2. ADDITIONAL DETOUR SIGNS MAY BE REQUIRED BY THE CITY ENGINEER.

▭ OR ◇ SIGN PER DRAWING NO. TC – 3

⊢⊣ TYPE III BARRICADE PER DRAWING NO. TC – 4

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

STREET CLOSURE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. TC - 6

NTS

Oct 26, 2020 – 3:31pm
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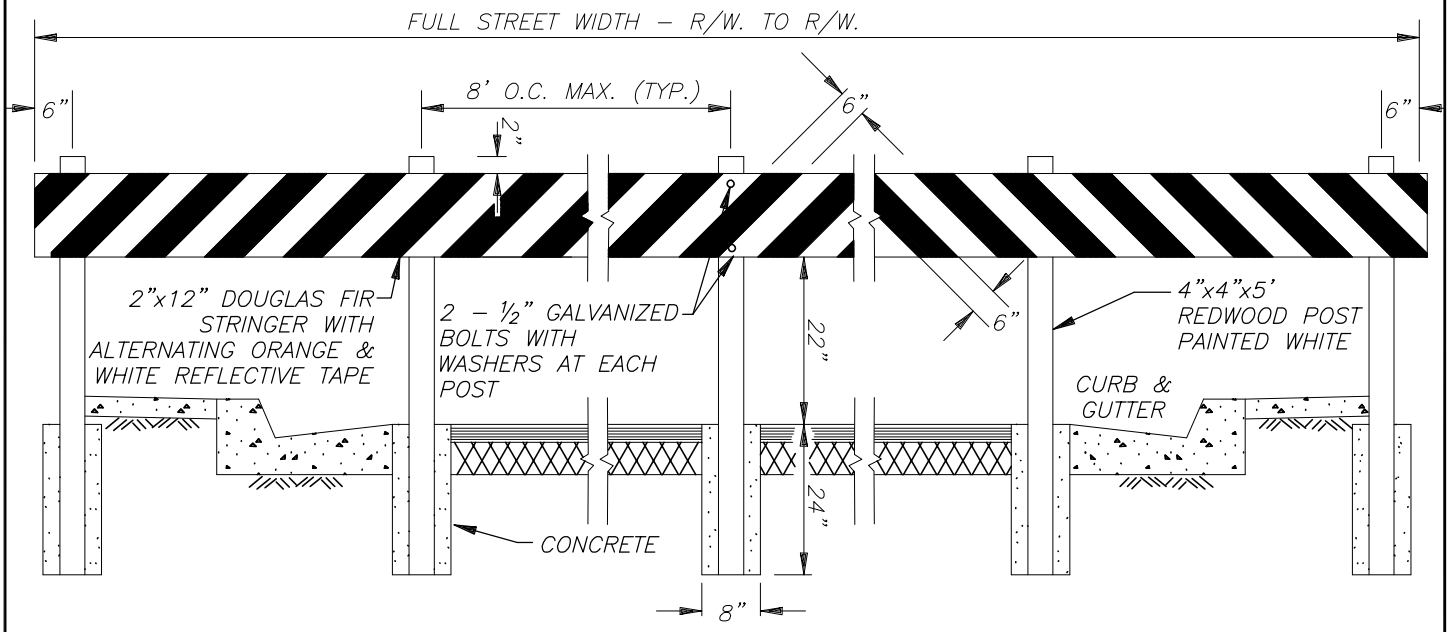

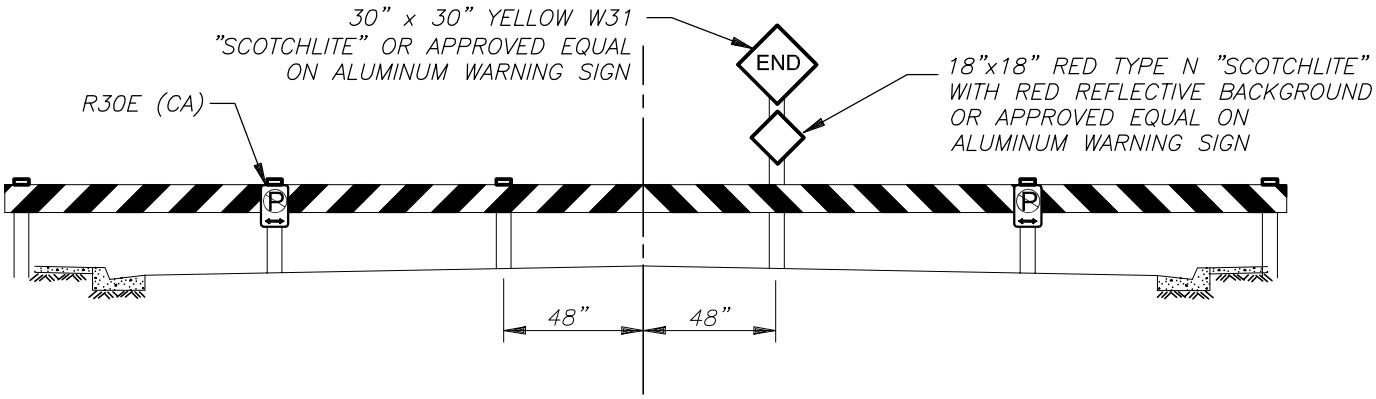

NUMBER OF SIGNS		
RIGHT OF WAY WIDTH	W31(CA)	RED TYPE N
20' – 74'	1	1
86' – 116'	2	2

NOTES:

1. BARRICADE TO BE PAINTED WHITE. USING TWO COATS OF "EXTERIOR ALKYD RESIN HI–GLOSS ENAMEL" OVER A COMPATIBLE PRIMER – APPLY REFLECTIVE GLASS BEADS COATING.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DEAD END STREET BARRICADE

DRAWING NO. TC - 7

NTS

Oct 26, 2020 – 3:32pm
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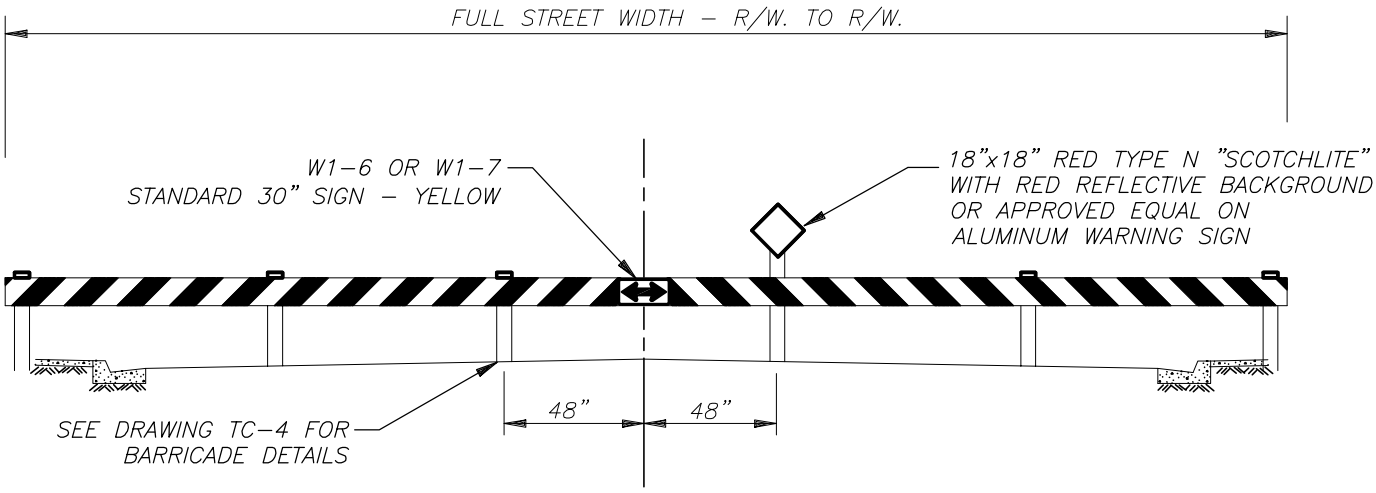
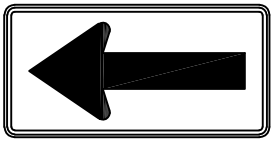
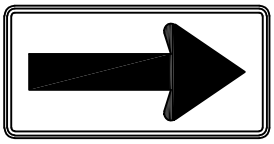
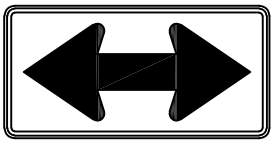




W1–6L (FOR LEFT TURN ONLY)



W1–6R (FOR RIGHT TURN ONLY)



W1–6L (FOR T–INTERSECTION ONLY)

NOTES:

1. BARRICADE TO BE PAINTED WHITE. USING TWO COATS OF "EXTERIOR ALKYD RESIN HI–GLOSS ENAMEL" OVER A COMPATIBLE PRIMER – APPLY REFLECTIVE GLASS BEADS COATING.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

BARRICADE FOR ENDING STREET WITH INTERSECTION STREET

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. TC - 8

NTS

Oct 26, 2020 – 3:33pm
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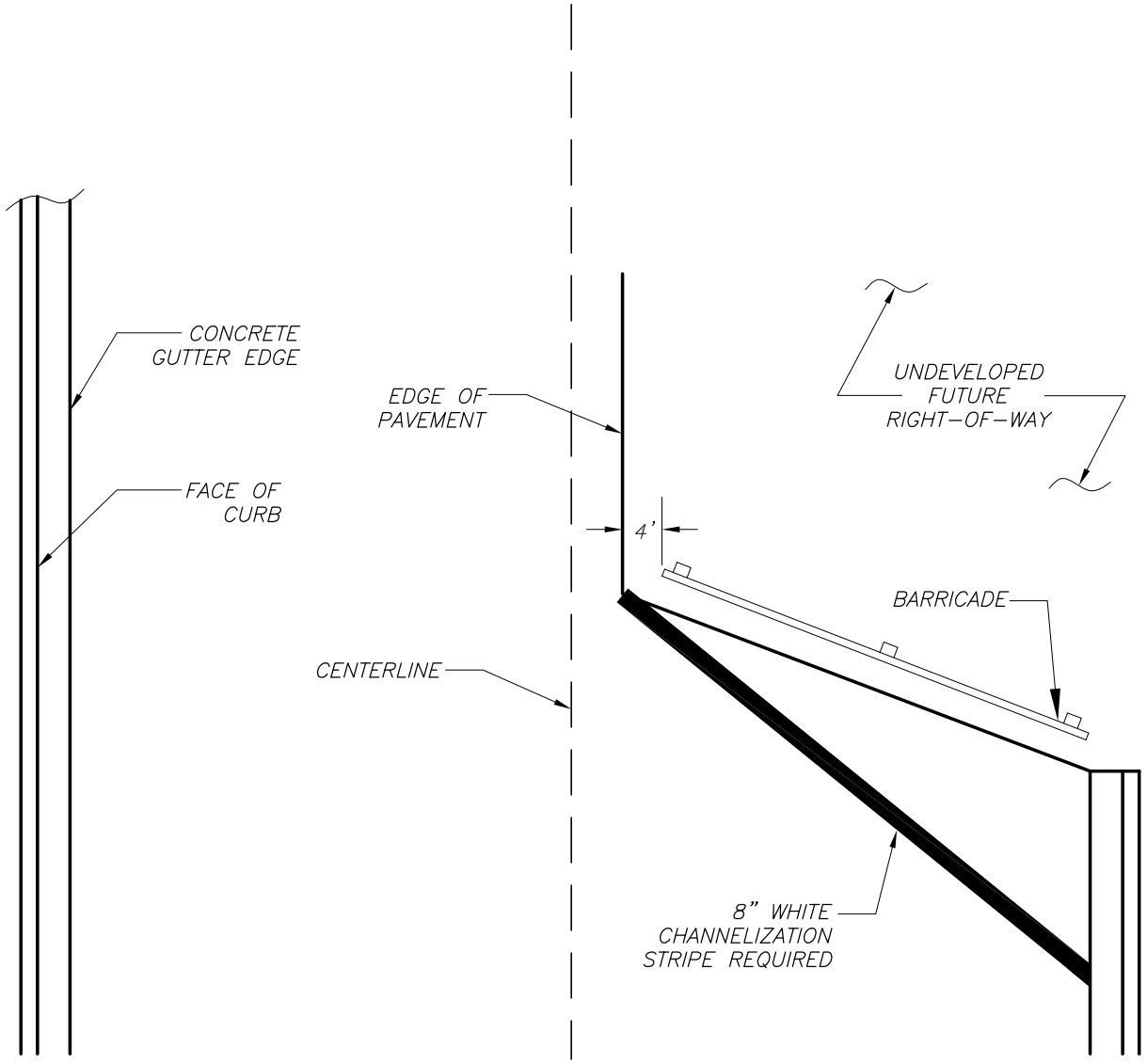
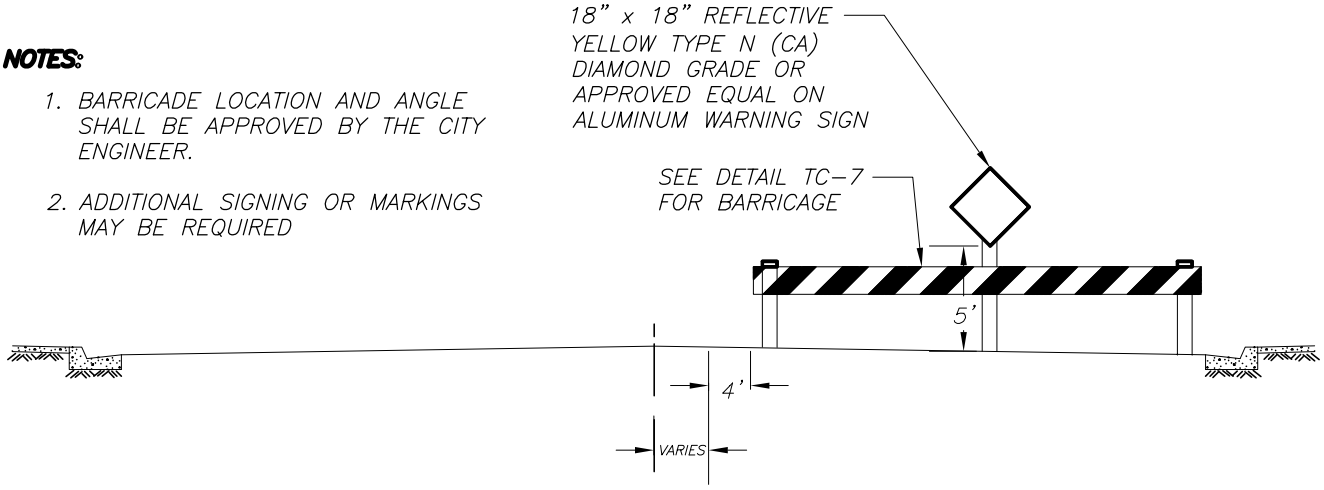


NOTES:

1. BARRICADE LOCATION AND ANGLE SHALL BE APPROVED BY THE CITY ENGINEER.
2. ADDITIONAL SIGNING OR MARKINGS MAY BE REQUIRED



CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

ROAD WIDTH TRANSITION BARRICADE

DRAWING NO. TC - 9

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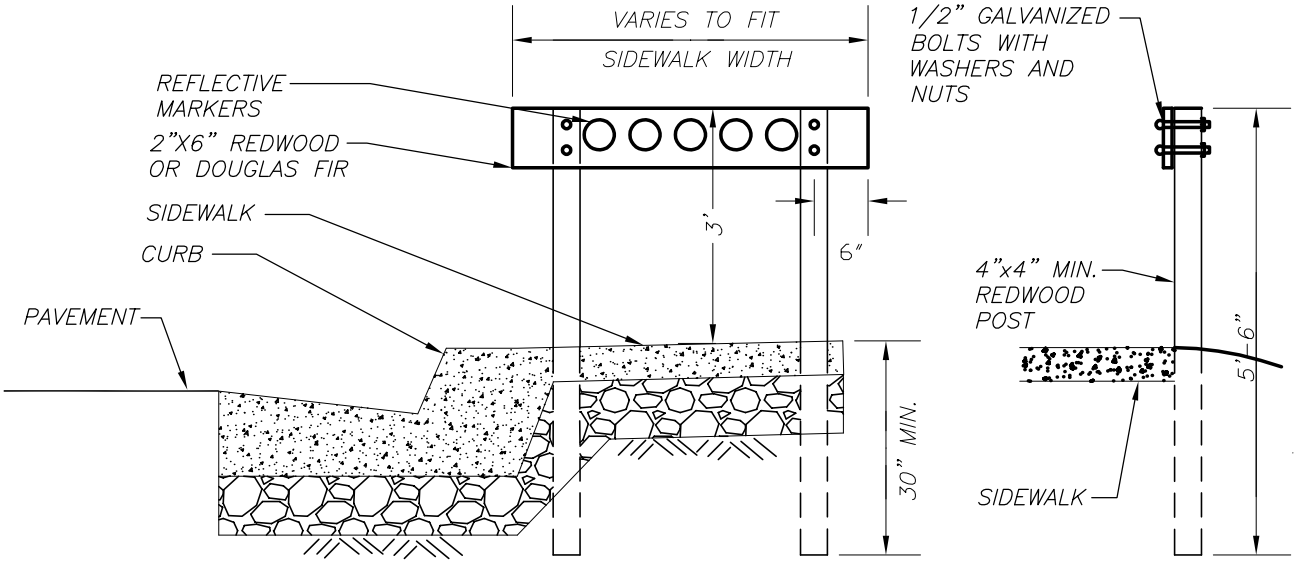

NOTES:

1. SIDEWALK BARRICADES TO BE INSTALLED AT EACH LOCATIONS WHERE STANDARD PROVISIONS CAN NOT BE MADE FOR PEDESTRIANS TO CONTINUE BEYOND THE TERMINUS OF A SIDEWALK. LOCATIONS SHALL BE AS DETERMINED BY THE CITY ENGINEER.
2. ALL EXPOSED SURFACES TO BE PAINTED WITH TWO COATS OF WHITE PAINT "EXTERIOR ALKYD RESIN HI-GLOSS ENAMEL" OVER A COMPATIBLE PRIMER.
3. IN AREAS WITH PLANTER STRIPS THE BARRICADE SHALL NOT EXTEND TO THE CURB.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

SIDEWALK BARRICADE TYPE I

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. TC - 10
NTS

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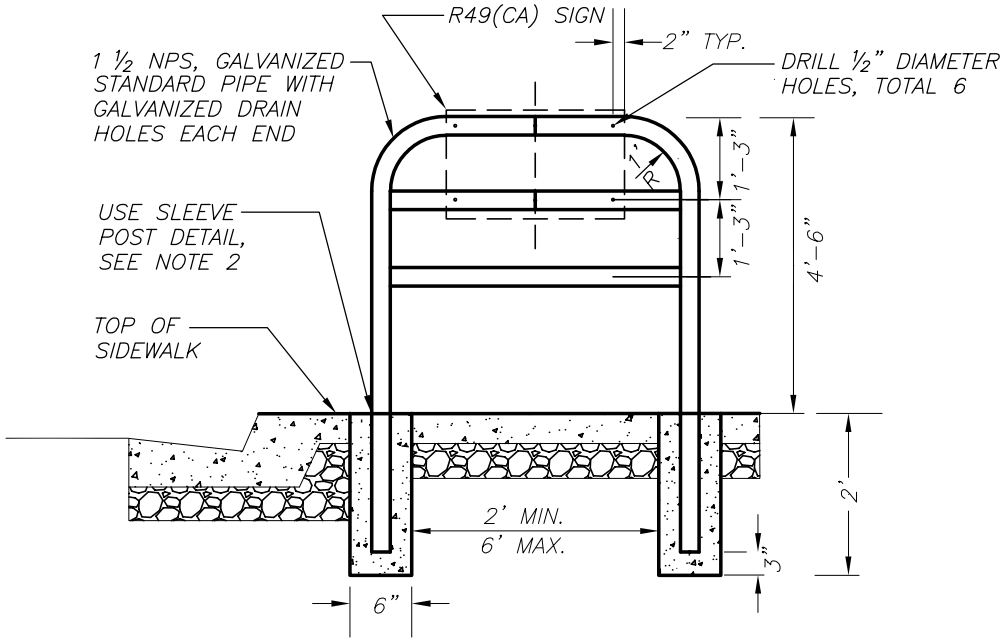

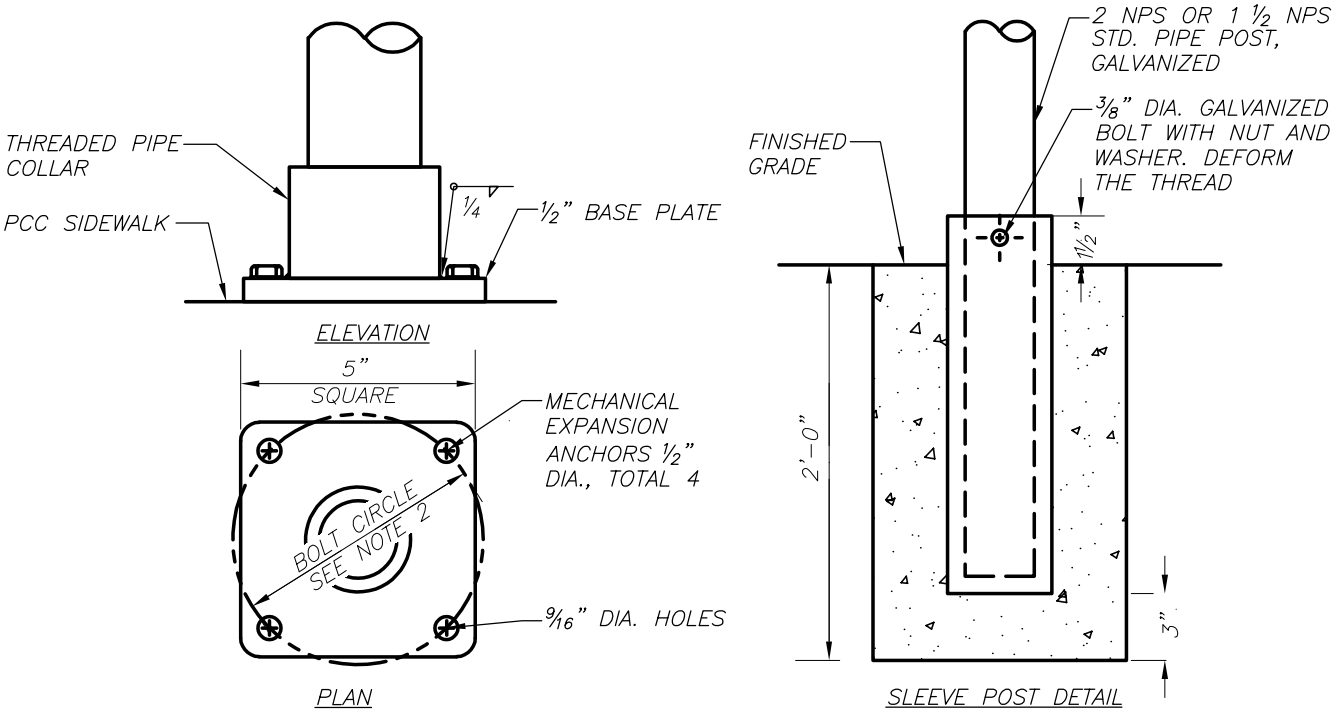

Use unless otherwise specified on the plans

NOTES:

1. PIPE POST TO BE SET 1'-6" BACK FROM THE FACE OF CURB UNLESS OTHERWISE SPECIFIED.
2. WHERE BARRICADE POSTS ARE INSTALLED IN EXISTING CONCRETE SIDEWALK, THE POST MAY BE ANCHORED TO THE SIDEWALK AS SHOWN IN THE "POST ANCHORAGE DETAIL". BOLT CIRCLE DIAMETER SHALL BE 4" MINIMUM.
3. STEEL SLEEVE SHALL BE CONSTRUCTED WITH AN INSIDE DIAMETER 1/10" LARGER THAN THE POST'S OUTSIDE DIAMETER. WALL THICKNESS OF SLEEVE SHALL BE SAME AS POST OR LARGER.
4. CONTRACTOR MAY SUBMIT ALTERNATIVE DETAILS FOR APPROVAL BY THE CITY ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

SIDEWALK BARRICADE TYPE II

DRAWING NO. TC - 11

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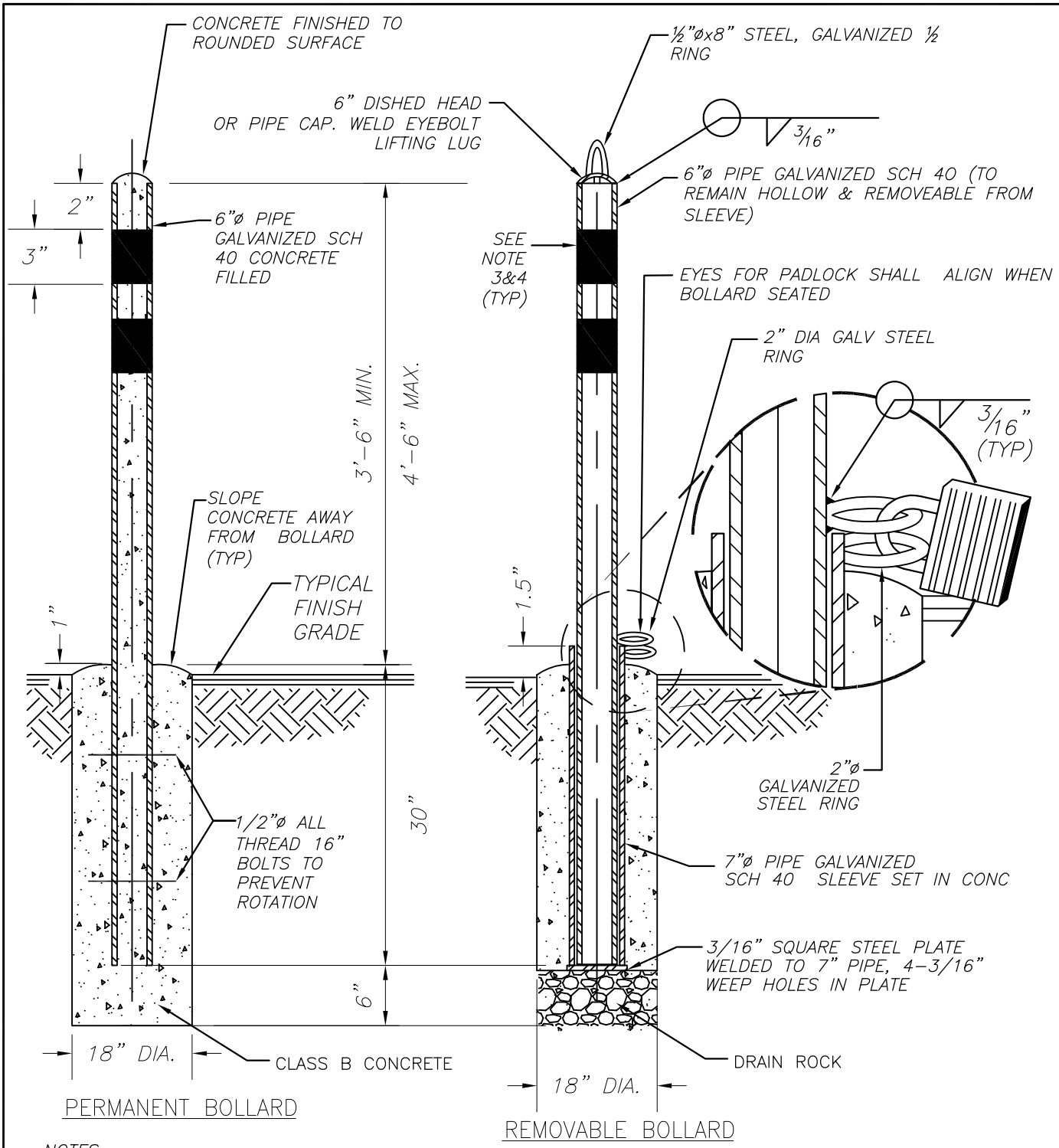

NOTES:

1. CONTRACTOR MAY SUBMIT ALTERNATIVE DETAILS FOR APPROVAL BY THE CITY ENGINEER.
2. APPLY ZINC PRIMER AFTER WELDING AS NEEDED.
3. RETROREFLECTIVE YELLOW OR WHITE TAPE WITH THE APPROVAL OF CITY ENGINEER.
4. CITY ENGINEER MAY REQUIRE BOLLARDS TO BE PAINTED WITH TWO COATS OF SAFETY YELLOW RETROREFLECTIVE PAINT IN PLACE OF RETROREFLECTIVE TAPE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

BOLLARD DETAIL

DRAWING NO. TC - 12

NTS

Oct 26, 2020 - 3:36pm
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SECTION 3 – STREETS

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SECTION 3

STREETS

3.1 GENERAL

Road improvements in the public right-of-way shall be designed in accordance to the latest edition of the Highway Design Manual (HDM) and minimum American Association of State Highway and Transportation Officials (AASHTO) standards. Road improvements in the public right-of-way shall be constructed by the Developer or Contractor to conform to these Standards, the latest edition of the Caltrans Standard Specifications and Standard Plans, and to the Circulation Element of the General Plan. The work shall include furnishing of all labor, materials, tools and equipment to construct and complete installation of including, but not limited to, streets, curbs, gutters and sidewalks in accordance with the approved plans, Standard Details and these Specifications:

1. Only a Developer or Contractor with an appropriate license and required insurance may perform the work described herein.

2. Any Street Improvement damaged by the Developer or Contractor shall be repaired by the Developer or Contractor at his expense as required by the City Engineer.

3. Where existing curb, gutter, and sidewalk do not meet the current City Standards or are in need of repairs, it shall be the Developer's responsibility to remove and replace necessary curb, gutter, and sidewalk. Removal shall be to the nearest score line, whenever sidewalk is removed and replaced regardless of reasons of removal.

3.2 UNDERGROUNDING THE OVERHEAD UTILITIES

All new subdivisions and major developments, in accordance with City policy, shall underground all new services and existing fronting overhead utilities in accordance with respective utility company policies in either public utility easements or within the public right-of-way. Any installation of utilities outside a Public Utility Easement and in a public right-of-way shall be specifically approved by the City Engineer for location. Installation of said underground utilities shall be in accordance with the specifications of the respective utilities. Where corner properties are

undergrounding existing fronting overhead facilities and those facilities continue across the fronting streets, the Developer shall be responsible for undergrounding to the street right-of-way line opposite the development.

3.3 RIGHT-OF-WAY & PUBLIC UTILITY EASEMENT

A. RIGHT OF WAY

Right-of-way widths shall be in accordance with these standards for the street classification under consideration or as determined by the City Engineer. In no instance, without approval of the City Engineer, shall a street have a right-of-way width that is less than the street of which it is a continuation. Right-of-way requirements for widening at intersections shall be as specified by the City Engineer. Right-of-way corner returns shall have a minimum radius of 20 feet, except in industrial areas, where larger radius corner returns are required.

Building setbacks, landscaping requirements, and parking requirements shall be based on the ultimate right-of-way, regardless of the location of public street improvements.

B. PUBLIC UTILITY EASEMENT

A minimum 10-foot public utility easement (P.U.E.) shall be dedicated adjacent to all public and private streets and shall include traffic control appurtenances. Additional easement for sewer, water, storm drainage, landscaping, fencing, and all other public utilities shall be provided as required by the utility companies, these Design Standards, and as specified by the City Engineer. If Turlock Irrigation District (TID) or any other utility companies require additional easements, the developer shall provide the easements as required. Developer shall contact all the utility companies for easement dedications prior to the City approval.

PUE's through cul-de-sac bulbs are discouraged. If a utility is cross connected through a cul-de-sac to an adjacent street, the City Engineer will require dedication of the property and line of sight vision where possible.

3.4 TRAFFIC STUDIES

All traffic studies shall be prepared and stamped by a Registered Traffic Engineer or a Registered Civil Engineer with demonstrated competence and adequate experience in Transportation Engineering. A written traffic study may be required under, but not limited to, the following conditions:

A. Ministerial Projects – City Engineer and/or City Planner may require a written traffic study report for ministerial projects that may be expected to generate fifty (50) or more vehicle trip ends during any hour.

B. Development Projects – a written traffic report shall be prepared when required by the City Engineer and/or City Planner for development project.

C. Supplemental Study – City Engineer and/or City Planner may require a written supplemental traffic study if the property use is changed so that the average daily trip generation is increased by more than 15% over indicated in an existing traffic study.

At the City Engineer's option, the City may prepare or contract for the preparation of any traffic studies required by this section, or the City may direct the Developer to have the study prepared. The Developer shall deposit with the City funds for all costs, as estimated by the City Engineer, prior to the preparation of any required traffic study.

Daily trip generation rates by land use are based on the data from the Institute of Transportation Engineers, Caltrans, Federal Highway Administration, and other jurisdictions within the Stanislaus County.

3.5 GEOMETRIC DESIGN

For the purposes of geometric design of all new public streets, streets shall be classified according to the following requirements, the appropriate Standard Drawings, and Table 3-1 Street Geometric Requirements. Under certain circumstances, particularly within the infill areas of the City, changes to the standards can be made at the discretion of the City Engineer.

A. Private Streets - Private Streets and Gated Entryways shall be designed to the same structural and geometric requirements as those for public streets. Gate access for Gated Entryways must be provided in accordance with Fire Department requirements.

B. Partial Streets - Partial width Streets, with the discretion of the City Engineer, may be permitted along the boundary of a subdivision of other private development where the full width cannot be dedicated. For collector and arterial streets, the developer shall, as minimum, dedicate sufficient right-of-way and construct sufficient width of pavement approved by the City Engineer with full frontage

improvements along the developing property. One half ultimate right-of-way width plus 12 ft. past centerline as required. When paving partial construction of an ultimate street development, the edges of the current pavement are to be protected by use of approved headers.

TABLE 3-1
STREET GEOMETRIC REQUIREMENTS

Class	*Right of Way Width (ft.)	Face of Curb to Face of Curb Width (ft.)	Minimum Curb Return Radius (ft.)	No. of Travel Lanes	** Minimum Centerline Radius of Horizontal Curve (ft.)
Local Residential & Cul-de-Sac Streets	46-54	36	25	2	300
	46-54	36			
Minor Collector	60	40	30	2	300
Major Collector	70&74	40	35	2	550
	86	52	40		
Commercial and Industrial	70	50	40	2	650
Minor Arterial	110	58	60	4	1100
	110	80		5	
Major Arterial	116	68	60	4	1400

*Additional Right-of-Way may be required for Bike Routes or Lanes per the City Bicycle and Pedestrian Master Plan and General Plan and/or when required by the City Engineer.

**Minimum Centerline Radius of Horizontal Curves may be increased or decreased by the approval of City Engineer.

C. Sight Distance at Intersections – Streets shall not be designed with intersections on the inside of curves or at any location in general where sight distance will be inadequate for drivers to safely enter the traffic flow or cross the street. Sight distances will as specified in the latest

edition Highway Design Manual and Stopping Sight Distance shall conform to Table 3-2.

D. Horizontal Curves - Minimum centerline radius of horizontal curve shall be in conformance to Table 3-1. There shall be a tangent between reversing curves of at least 250 feet on arterial and industrial streets and 100 feet on residential and collector streets.

E. Boundary lines - Subdivision boundary lines shall follow lot lines where possible and should cross streets perpendicular to street centerlines. Streets shall be fully improved within tract boundaries. The centerlines of new streets shall be aligned with those existing streets when continuing and existing street.

F. Gutter - The gutter grade shall not be less than 0.30% except that the minimum curb and gutter grade around intersection corner roundings shall be 0.50%. Curb and gutter elevations on crest and sag vertical curves shall be adjusted to meet the 0.30% minimum grade. In special situations, the grade may be reduced if approved by the City Engineer.

G. Cross Slope - The standard street cross slope shall be 2%. Where necessary when matching existing facilities, the cross slope may vary between 1.5% and 4%. In special situations, the cross slope grade may be modified with the approval of the City Engineer. Grades on opposite side of the street shall be the same whenever practical. The street shall be designed to collect storm water at intersections (3 feet past the end of curb return), whenever possible. Low points shall not be designed in driveways or curb returns.

H. Vertical Curves - Where the algebraic difference in slope exceeds 1 percent, a vertical curve shall be used. The minimum length of vertical curve shall be 1.2AV, where "A" equals the algebraic difference between grades in percent and "V" is the design speed in miles per hour.

I. Intersections - Street intersections shall be as near right angles as practical. In no case shall the angle of an intersection be less than 70 degrees. Streets located on opposite sides of an intersecting street shall have a continuous centerline or have their centerline separated by not less than 125 feet on residential, 200 feet on collector, and 300 feet on arterial streets, unless separated by a median. Greater distances may be required on higher classification streets based on anticipated turning volumes.

Where offset intersections are collector streets, commercial/industrial or arterial streets offset intersections shall be designed to avoid conflicting left turns.

J. Cul-de-Sac - The maximum length of a residential cul-de-sac shall be 500 feet as measured from the centerline of the intersecting street to the radius point of the cul-de-sac. Longer cul-de-sac lengths may approved when secondary emergency vehicle access is provided to the rear of cul-de-sac bulb area, and also approved by the Fire Chief and City Engineer. Cul-de-sacs shall be open end design to allow pedestrian access to adjacent streets unless otherwise approved by the City Planner. For cul-de-sac length greater than 200 feet or where the end of the cul-de-sac is not visible from the centerline intersection of cross street, a "NOT A THROUGH STREET" sign shall be installed at the beginning of cul-de-sacs.

K. Blocks - Block length shall not exceed 900 feet for local & residential streets. If required or for curved streets, Block lengths may be increased or decreased by the approval of City Engineer and/or City Planner.

L. Medians - Medians with landscaping shall require curbing. The top of curbs shall be constructed 8 inches above street surface grade, or in the areas of median extension, match the existing curbing height as allowed by the City Engineer. Moisture barriers, Root barriers and/or median sub-drains may be required by the City Engineer.

M. Monuments - Standard City Monuments shall be placed on the street centerline at every street intersection, angle point, center of cul-de-sac, and beginning and ending of all horizontal curves.

3.6 STRUCTURAL DESIGN

For the purposes of structural design, streets shall be designed utilizing the minimum traffic indices shown in Table 3-2 Street Design Standards. Any deviations from the standard will require the approval of the City Engineer. In the project limits, if subgrade soils R-values are not known, the structural section of the street shall be designed assuming R-value of 5. The table below lists typical sections for an R value of 5.

The minimum street section shall be determined from R values obtained from material gathered from the level of the proposed sub-grade using the design method described in the latest edition of Highway Design Manual. **In no case shall the minimum street section be less than 0.46 feet on**

arterial and major collector streets and 0.25 feet of hot mix asphalt (HMA) for all other streets. In no case the thickness of aggregate base (AB) be less than and 1 feet on any street. The minimum HMA and AB requirements can only be waived by the City Engineer, if Geotechincal Report suggests otherwise. Aggregate base section may be comprised of an equivalent section of aggregate base and aggregate sub-base, but in no case shall aggregate base be less than 1 feet.

TABLE 3-2
STREET DESIGN STANDARDS

Class	Design Speed (MPH)	Minimum Stopping Sight Distance (ft.)	Traffic Index	Street Sections R = 5	
				H.M.A. (ft.)	A.B. (ft.)
Local Residential & Cul-de-Sac Streets	30	200	6	0.30	1.20
Minor Collector	35	300	8	0.46	1.60
Major Collector	40	350	10	0.50	2.0
Commercial and Industrial	40	350	9	0.46	1.80
Minor Arterial	50	430	10	0.50	2.0
Major Arterial	55	500	12	0.55	2.2
Parking Lots	-	-	5	0.25	0.95

The above requirements of HMA and AB thickness can only be changed by the Geotechincal Report's recommendation.

Intersections shall be designed using traffic index number one (1) higher than the larger traffic index number of the crossing streets (i.e. 10 x 9 = 11).

Whenever the pavement calculations produce more than 8-inches of base rock, a safety factor may be used at the option of the Engineer.

The Traffic Index (T.I.) shall be determined from traffic counts where they are available, or as determined by the City Engineer. A 20-year design life shall be used.

3.7 BIKEWAYS

Bike lanes or off-street bike paths may be required on any street based on the adopted Bikeway Master Plan, Community Design Guidelines, a specific plan or the General Plan. Typically all arterial road and collector road corridor will include either on or off street bicycle facilities. When on-street bike lanes are required an additional eight to ten feet (8′ to 10') of right-of-way and pavement shall be required. Where an off-street bike path is required, additional right-of-way and pavement requirements shall be determined by the City Engineer.

1. Bikeways shall be designed in accordance with Chapter 1000, latest edition Bikeway Planning and Design, of the latest edition Highway Design Manual, as specified in the most recent edition of the Bikeway Master Plan.

2. Bikeways shall be planned and constructed only where locations are designated in the City's current Bikeway Master Plan, or as part of a Specific Plan approved by the City.

3. Bikeways include all facilities provided primarily for bicycle travel. Specific types are defined as follows:

   a. Bike Path (Class I Bikeway). A Class I Bikeway is for the exclusive use of bicycle and pedestrian travel on a right-of-way completely separated from any street with motorized vehicular crossings minimized. The minimum paved width for a bike path shall be eight (8) feet. A minimum two (2) foot wide graded shoulder shall be provided along both sides of the finished bike path for Class 1 Bikeways.

   b. Bike Lane (Class II Bikeway). A Class II Bikeway provides for a striped lane for one-way bicycle travel on each side of a street or roadway. The minimum paved width for a bike lane shall be five (5) feet when there is no curb and gutter and six (6) feet when curb and gutter are present (4′ paved and 2′ curb and gutter). Bike lane striping shall be discontinuous at all street intersections.

c. Bike Route (Class III Bikeway). A Class III Bikeway provides shared use with pedestrians on sidewalks and motor vehicle traffic on streets along with bicycles. These routes are established along streets in areas not served by Class I or II bikeways. They provide connectivity to other bicycle facilities. Bike Routes designate preferred routes through high traffic corridors with appropriate signage.

4. For all Class I Bikeways, access ramps must be a minimum of ten (10) feet wide and shall be designed in all areas to allow two bikes with trailers to pass at any point. Bollards shall be used at all locations where a bikeway (or multi-use path) intersects with or has access to a roadway and at other locations as designated by the City Engineer.

3.8 R-VALUE TESTING

The Developer shall be responsible for obtaining soil R-value tests, specifically supervised by a registered civil engineer or geotechnical engineer, in sufficient quantity to establish the quality of the soil and to provide a basis for the design of the structural section. The following R-value tests will be required at the street subgrade elevation:

A minimum of one (1) R-value test shall be taken for all developments with additional R-value tests specified by the City Engineer. The City Engineer may require as many as one (1) test per ten (10) lots along a residential street.

On arterial and collector streets where the frontage is less than 500', one (1) R-value test shall be made. On major or collector streets, where the frontage exceeds 500', a minimum of one (1) R-value test shall be taken at each 500' interval.

Exact locations of the R-value tests shall be as approved by the City Engineer. The Developer shall stake the field test locations and shall provide an existing ground and finish subgrade elevation for each test location. The top of the R-value sample shall be taken at the estimated finished subgrade elevation.

The Developer shall provide results of the R-value tests to the City Engineer. The results provided to the City shall include the following:

1. Locations and a summary table shown in the soils report or the supplement.

2. Self-certification that the stabilimeter is properly calibrated per California Test 102.

3. Completed California Test 301 Forms T.C. – 361.

3.9 LIME STABILIZATION

Lime Stabilization shall only be used with the prior approval from City Engineer. Lime Stabilization work shall consist of preparing the native material, mixing the native material with specified percentages of hydrated lime or quick lime and water and spreading and compacting the mixture to the lines, grades, and dimensions shown in the Contract Documents. This section shall form to Section 24 of the Standard Specifications except as indicated below or in Contract Documents. When working in the developed areas, extreme caution shall be exercised to control the dust from the operation. The following are to be added to the appropriate sections of Section 24 of the Caltrans Standard Specifications:

24-1 General – Add the following:

The use of lime stabilization shall be subject to submittal of a mix design prepared by a Contractor and approval of same by the Engineer. The approved mix design shall be based on the actual soils to be used and shall specify the type and amount of lime and the type and amount of curing seal to be applied.

The maximum allowable R-value attributable to lime-stabilized soil for purposes of roadway structural design shall be 50.

The maximum allowable design compressive strength attributable to lime-stabilized soil shall be 200 psi.

The gravel equivalency factor for lime-stabilized soil shall be 1.1.

The in-place moisture content of the soil immediately below the lime-stabilized layer shall be maintained above the optimum moisture content, as determined by California Test 373, prior to application of the lime.

A minimum of 6 inch of aggregate base shall be installed between lime-stabilized soil and asphalt concrete paving unless otherwise recommended by the geotechnical report.

The preparation, spreading, mixing, compaction, rolling, grading and curing of lime-stabilized soil shall be completed under the observation of a Contractor and City Inspector. Submit Certificate of Compliance for the lime-stabilized soil prior to acceptance by the City.

24-2.03C Applying Lime - Add the following:

The area to be stabilized by lime treatment shall extend a minimum of two (2) feet beyond the edge of pavement and one (1) feet beyond the back of the walk and as required by the City Engineer.

24-2.03C Mixing - Add the following:

The minimum depth of lime-stabilized soil shall be 12 inches and an additional three inches of lime-stabilized soil shall be added to all roadway structural design sections as a safety factor unless otherwise recommended by the geotechnical report.

24-2.03E Compaction – Replace with the following:

Lime-stabilized soil shall be compacted to a relative compaction of not less than 95%.

3.10 CLEARING AND GRUBBING

Preservation of Property:

Whether shown on the Plan or not, existing improvements, adjacent property, Utility and other facilities, and trees and plants that are not to be removed shall be protected from injury or damage resulting from the Contractor's operations.

The Contractor shall make such investigations and examinations as are required to determine the existence and locations of all pipes, conduits, and other underground improvements and shall consult with and advise the owners of the Utilities before undertaking any work that might endanger them.

The Contractor shall assume full responsibility for any damage to pipes, conduits, poles, or any other structures or Utilities. She/he shall not make

any claim for inconvenience, delay or added cost of performing the Work which may be attributed in any degree to inaccuracy of information furnished by the City relative to the locations, sizes, dimensions, depths, and character of any pipes, conduits, poles, or other structures and Utilities or for failure of the City to furnish any information relative thereto.

The City does not guarantee the accuracy or completeness of any data shown on the Plans relative to the locations, sizes, dimensions, depths, and character of pipes, conduits, poles or any other structures or Utilities located above ground or underground.

At locations where lawn sprinkler systems exist, the Contractor will cut and cap water lines at the property lines or at such point as directed by the Engineer. All heads and pipe removed shall be salvaged and returned to their respective owners. Full compensation for cutting and capping water lines shall be considered as included in this item.

Existing land subdivision monuments and benchmarks shall be fully protected from damage or displacement and they shall not be disturbed unless directed by the Engineer.

Clearing and Grubbing Operations:

This work shall conform to Section 16 of the Standard State Specifications, where applicable, and shall consist of removing all objectionable material from within the area of the work including, but not limited to, the street right-of-way, bridge construction areas, road approaches, material sites within the right-of-way, areas through which ditches and channels are to be excavated and such other areas as may be indicated in the Contract Documents.

The following is added to Section 16-1.03 of the Caltrans Standard Specifications:

Where roots of existing trees are to be pruned, the following specification shall be followed:

All roots pruned shall be cut as smooth as possible with the least amount of surface wood exposed or at a 90 degree angle to the root end cut. All root cuts made over one (1) inch in diameter shall be painted to seal with an approved type of tree seal paint.

Section 16-1.03D, Disposal of Materials, of the Standard Specifications shall not apply. All materials removed under this Section shall become the property of the Contractor and shall be disposed of offsite by the Contractor. Should the Contractor produce evidence, acceptable to the Engineer, that any part of the material is suitable, the suitable material may be disposed of on the Work Site in a method and location acceptable to the Engineer.

3.11 EARTHWORK

Earthwork shall be performed as set forth in Sections 19 of the State Standards and in accordance with the recommendations of the geotechnical engineering investigation report prepared for the project.

All compaction of fill materials shall be in accordance with Section 19-5 of the State Standards; except that the Contractor or Developer will only be required to strip the original ground of vegetation and compact the top 6 inches of original ground in place to not less than 95% of maximum dry density in accordance with ASTM Designation D1557 before the fill is placed. Relative compaction shall be tested by the Developer, at Developer's expense, as directed by the City Engineer, in accordance with Test Methods No. California 216 or 231 and test results shall be provided to the City Engineer. Alternative test methods can be used with the prior approval from City Engineer.

3.12 SUBGRADE

All clods shall be broken and all rocks, hard ribs and earth lumps over 2 1/2 inches in greatest dimension and other unsuitable material such as roots shall be removed from the job site. The top 6 inches of subgrade material shall be compacted to a firm, stable condition with approved equipment to not less than 95% of maximum dry density in accordance with ASTM Designation D1557. On industrial streets or where the Traffic Index is ten (10) or above, relative compaction of not less than 95% shall be obtained for a minimum depth of 2.5 feet below the finished grade. Location or depth of existing utilities may require alternate construction methods as approved by the City Engineer.

The finished subgrade shall not vary more than 0.05 foot above the planned grade at any point. Care shall be taken to obtain compaction around existing manholes and water valves. Relative compaction shall be tested by the Developer, at Developer's expense, as directed by the City Engineer, in accordance with Test Methods No. California 216 or 231 and test results

shall be provided to the City Engineer. Alternative test methods can be used with the prior approval from City Engineer.

3.13 ROAD STABILIZATION FABRIC

Road stabilization fabric shall be furnished and placed at all locations required by the Contract Documents and as directed by the Engineer. The work shall include all the labor, material, tools, and equipment necessary to place the Stabilization Fabric in accordance with the approved contract documents and these specifications. Road stabilization fabric shall be woven or non-woven and manufactured from polyester, nylon, or polypropylene material, or any combination thereof. The stabilization fabric shall conform to Mirafi HP370 or approved equal.

The Contractor shall submit material certificate and manufacturer's instructions for road stabilization fabric at the Preconstruction Conference to the Engineer for approval. If there is no Preconstruction Conference, submit required documents at least three (3) working days prior to initial placements.

Geotextile fabric shall be handled and placed in accordance with manufacturer's recommendations. The fabric shall be aligned and placed in a wrinkle free manner.

Adjacent borders of the fabric shall be overlapped a minimum of 12 inches or stitched. The preceding roll shall overlap the following roll in the direction of the material is being spread or shall be stitched. When fabric is joining by stitching, it shall be stitched with yarn of a contrasting color. The size and composition of yarn shall be as recommended by the fabric manufacturer. The stitches shall number 5 to 7 per inch of the seam.

Within the 24 hours after the fabric has been placed, it shall be covered with aggregate base material per contract documents.

During spreading and compaction of the aggregate base material a minimum of 6 inches of such material shall be maintained between the fabric and he Contractor's equipment. Equipment or vehicles shall not be operated directly on the fabric.

3.14 AGGREGATE BASE

Unless otherwise specified in the Contract documents, the aggregate base material shall conform to the requirements of Section 26 of the State Standard Specifications for Class 2, 3/4-inch maximum combined grading.

An exception to Section 26-1.03C shall be that a single layer up to 0.7 foot may be permitted to be placed.

Motor graders may be permitted to spread and shape the aggregate base materials, provided this method does not result in segregation of material. The aggregate base shall be maintained in a well-mixed optimum moisture condition.

Contractor shall furnish the City a Certificate of Compliance for all aggregate base used. Relative compaction shall be tested by the Developer, at Developer's expense, as directed by the City Engineer, in accordance with Test Methods No. California 216 or 231 and test results shall be provided to the City Engineer. Alternative test methods can be used with the prior approval from City Engineer.

3.15 PAVEMENT REINFORCING FABRIC

Pavement reinforcing fabric shall be furnished and placed at all locations required by the Contract Documents and as directed by the Engineer. The work shall include all the labor, material, tools, and equipment necessary to place the Reinforcing Fabric in accordance with the State Standard Specifications, Section 88 "Geosynthetics", the approved contract documents and these standard specifications.

Pavement reinforcing fabric shall be manufactured from polyester, polypropylene, or polypropylene-nylon material. The fabric shall be non-woven heat bonded on the top side, and shall conform to the following:

Property	Minimum Requirements	Test Method
Grab Strength (lbs.)	102	ASTM D4632
Elongation at Break (%)	50	ASTM D4632
Asphalt retention (gal/sy)	0.2	TF25#8
Thickness (mils.)	30 to 100	ASTM D461
Melting Point (F)	325	ASTM D276

The Contractor shall submit material certificate and manufacturer's instructions for pavement reinforcing fabric at the Preconstruction Conference to the Engineer for approval. If there is no Preconstruction Conference, submit required documents at least three (3) working days prior to initial placements.

After cleaning and drying the surface, a tack coat of Performance Grade PG 70-10 asphalt conforming with Section 92 of the Standard State Specifications followed by a leveling course of hot mix asphalt shall be placed as required. Pavement reinforcing fabric shall be placed on the leveling course to the width determined by the Engineer. Placement of the pavement reinforcing fabric, including longitudinal and transverse overlap limits, shall be in accordance with the manufacturer's recommendations and as well as with Section 39-1.09D of the State Standard Specifications. The pavement surface temperature shall not be greater than 140 degrees Fahrenheit when placing the pavement reinforcing fabric unless approved by the Engineer. The fabric shall be laid by mechanical means or by hand with sufficient tension to eliminate wrinkles.

The pavement reinforcing fabric and asphaltic binder may be rubber tire rolled sufficiently to activate the adhesive and to adhere the fabric to the pavement surface. The reinforcing fabric shall be paved with hot mix asphalt on the same day it is installed.

All work shall be done in accordance with the manufacturer's specifications.

3.16 HOT MIX ASPHALT

This work shall consist of furnishing and placing hot mix asphalt pavement for use in pavement, resurfacing of existing pavement, pavement repair and the construction of berms. The work includes mixing aggregate and asphalt binder at a central mixing plant, spreading and compacting the mixture, and furnishing and applying prime coat, tack coat and, when required, pavement reinforcing fabric, upon a prepared roadbed, base or over existing pavement, to the lines, grades, and dimensions shown in the Contract Documents. The hot mix asphalt shall conform to the requirements of Section 39 of the State Standard Specifications. Asphalt concrete used in all but the final course shall be Type B with 3/4-inch maximum medium grading. Asphalt concrete used in the final course shall be Type B as follows:

- Arterial, Collector and Commercial/Industrial Streets - 3/4-inch maximum, medium grading

- Collector and Residential Streets - 1/2-inch maximum, medium grading

- Asphalt berms and dikes – 1/2 –inch maximum, medium grading

The asphalt grade shall be PG 70-10 as specified by the latest revision of the State Standard Specifications unless otherwise approved by the City Engineer.

Contractor shall submit the mix design submittals minimum two (2) weeks prior to start work. Contractor shall furnish the City a Certificate of Compliance for all hot mix asphalt used.

When required by conditions or contract documents Prime Coats and Tack Coats shall be applied as following:

Type	Asphalt Grade	Rate (gallon/sq. yard)
Prime	SC-250	0.25
Tack	CSS-1 (slow setting)	0.02 – 0.05

Tack coat must comply with the specifications of asphaltic emulsion in Section 94, "Asphaltic Emulsion", or asphalt binder in Section 92, "Asphalts" and Section 39-1.09C, "Tack Coat"."

Tack coat is required between hot mix asphalt lifts when traffic has utilized the paving surface, and all cold joins shall be tack coated prior to the adjacent overlay pavement.

Seal Coats shall be applied 6 to 10 weeks after the asphalt is laid. All seal coats shall conform to the State Standard Specifications Section 37, "Bituminous Seals" and these specifications.

3.17 HEADER BOARDS

Header boards shall be constructed to protect the edges of the hot mix asphalt where streets are partially completed.

All header boards shall be either Redwood or Douglas Fir with an American Wood Preservers Bureau Stamp indicating its use for ground contact and application of LP22 waterborne preservative or approved equal.

Header board size shall meet or exceed the depth of hot mix asphalt section (i.e. 2″x4″, 2″x6″, 2″x8″, etc.) with 1 in. x 2 in. x 18 in. stakes at 6 ft. O.C.

3.18 CONCRETE

This work shall conform to Section 40 of the State Standard Specifications except as specifically modified by the Contract Documents. Portland Cement concrete, unless otherwise specified, shall be Class 3 as defined in the State Standards with a minimum 28-day compressive strength of 3,000 pounds per square inch and a maximum slump of 4 inches. Concrete shall consist of Portland Cement, water and aggregate. Portland Cement shall be Type II. Aggregate shall be washed before use and be free from any foreign matter.

The aggregate shall be graded to provide a plastic, workable mixture of maximum size aggregate of 3/4-inches. The water shall be potable (or non-potable if pulling from the City source) and no admixtures shall be used without approval of the Design Engineer and the City Engineer.

The cement, water and aggregates shall be combined at the batch plant and be thoroughly mixed. No water shall be added to the mixture after leaving the batch plant without approval of the Engineer. All concrete shall be in place within 1-1/2 hours from the time the cement is added to the aggregate.

The temperature of concrete as mixed and placed shall not be less than 55° Fahrenheit nor greater than 90° Fahrenheit.

The concrete shall be consolidated by tamping or vibrating. Concrete which has rock pockets or honeycombing after curing shall be removed and replaced.

All concrete shall be cured in accordance with Section 90-1.03B of the State Standards. No concrete shall be placed or finished in the rain. It shall be Developer's or Contractor's responsibility to schedule his/her operations such that concrete will not be placed or finished in the rain.

All concrete that has been damaged by vandalism or any other causes, as determined by the City Engineer, shall be removed and replaced by the Developer or Contractor at his/her expense.

The Contractor shall furnish the City a Certificate of Compliance for all Portland Cement concrete used.

3.19 CURBS, GUTTERS AND SIDEWALKS

General:

Curbs, gutters and sidewalks shall be constructed in accordance with these Improvement Standards and Section 73 of the State Standards. Curb, gutter and sidewalk shall be installed in all new developments unless specifically deferred or otherwise waved by the City Engineer. Curb and gutter may be required to be extended across parcels for drainage purposes. Concrete surface shall be finished with a medium broom finish.

Curbs, gutters and sidewalks shall be placed monolithically where appropriate. Use of extrusion machine is allowed with the approval of City Engineer. Native material bases and subbases under curbs, gutters and sidewalks shall be conditioned in accordance with the recommendations of the soils report prepared for the project. Prior to placement of concrete, the Geotechnical Engineer shall provide the City Engineer a written certification that the native material bases and subbases for the curbs, gutters and sidewalks were conditioned in accordance with the recommendations of the soils report.

The minimum width of sidewalk shall be 5 feet attached to curb and 4 feet separated in residential areas and 10 feet in commercial areas, or as noted on Contract Documents. All sidewalks shall be minimum of 6 inches in thickness. Rolled type curb and gutter shall not be installed other than as replacement. Rolled type curb and gutter is not allowed on new developments.

Where poles, trees, fire hydrants, and other small structures are located within the sidewalk, the minimum clear path on sidewalk shall be 5 feet. Upon prior approval from the City Engineer, the minimum width may be reduced to 3 feet in extreme cases.

Construction:

Sidewalks shall have a cross-slope toward the curb face of 1/8-inch per foot minimum to 1/4-inch per foot maximum. Sidewalk contraction joints shall be minimum 1-1/2 inch deep and have maximum joint interval of ten (10) feet. Contraction joint intervals for curbs shall match adjacent sidewalk, when possible. Transverse score joints shall be 3/8 inch deep and have maximum joint intervals of five (5) feet. Expansion joints shall be installed in conformance with Section 303.5.4.2 of the Standard Specifications of the

Public Works Construction (SSPWC) at the end of each curb return and at the intervals not to exceed 200 feet. Where the existing sidewalk is cut to install new driveways and approaches, expansion joints shall be constructed on each side of the driveway or approach.

Unless poured monolithic, sidewalk, curb and gutter shall be doweled to existing with No. 4 rebar and as shown in the Standard Details. Sidewalks when not placed monolithically with curbs and gutters shall be fixed form construction in accordance with 73-1.03C of the State Standard Specifications.

All gutters shall be water tested under the supervision of City Inspector.

Developer or Contractor shall clearly mark a **"W"** for water services, and an **"S"** for sewer services on the curb in wet concrete at the location of particular crossings.

Moisture barrier shall be required where sidewalk is poured adjacent to the landscaping. Moisture barrier shall be 14 mil. thick plastic sheet liner extending full length and should be placed 24 inches deep.

At the end of each day's pour, when work is terminated, or when a delay of more than 30 minutes occurs, the joint shall be made vertical and square needed. In no case shall the end of day's pour terminate in the driveway.

Traffic, parking and road name signs on City roads which require relocation because of the work will be relocated by the Developer at locations approved by the City Engineer. Traffic signs on State highways and stop signs on roads entering State highways must be relocated by Caltrans. Utility poles which require relocation because of the work shall be relocated by the utility company owning the poles. The Developer shall be responsible for protecting the work against damage and insuring the safety of the public.

Sidewalks which are required against the edge of right-of-way shall be placed 1 inch from the property line to provide space for lot corner monuments.

3.20 DRIVEWAY APPROACHES

Driveways shall be constructed in accordance with these Improvement Standards and Section 73 of the State Standard Specifications. City Engineer may require an applicant to submit a driveway volume and capacity

analysis of the proposed driveway. City Engineer may require traffic studies shall be submitted in accordance with the City's Traffic Study procedures. The requirement may be waived if the Engineer determines that the driveway has been adequately analyzed in previous traffic study.

A. Driveway Locations on Local Residential Streets and Minor Collector Streets:

1. Driveways located on streets with roundabouts, regardless of driveway classification, shall be a minimum of 60 feet from the end of the curb return.

2. Driveways in residential streets shall be at least ten (10) feet apart as measured edge to edge, except in cul-de-sac bulbs and the outside portion of elbows, where the minimum shall be five (5) feet. For corner parcels, the driveway shall front whichever street is projected to have a lower traffic volume, and the driveway shall be located as far from the curb return as possible.

3. Where a residential street intersects a collector or minor or major arterial street, there shall be no driveways on the residential street within 50 feet of said intersection.

4. For all land uses other than single family residential or duplex, driveways shall be at least 100 feet apart and shall be no driveways within 100 feet of an intersection, whenever possible.

B. Driveway Locations on Major Collector, Minor and Major Arterial Streets:

1. There shall be no driveways along collector or arterial streets serving single family residential or duplex land uses, unless otherwise approved by the City Engineer.

2. Driveways shall be at least 200 feet apart on major collector streets and at least 250 feet apart on arterial streets.

3. Driveways shall be at least 150 feet from the intersection curb return on major collector streets and at least 200 feet from the intersection curb return on arterial streets.

When back of approach is poured against existing concrete a 1/2 inch expansion joint shall be placed against the existing concrete.

Approaches shall be located so they will not interfere with intersecting sidewalks, traffic signals, light poles, fire hydrants, or other public improvements unless specific approval is given by the City Engineer and the necessary adjustments to the improvements are accomplished without cost to the City. Driveway shall be located to provide at least five (5) feet clearance between the driveway's traveled way and appurtenances such as fire hydrants, poles, and drop inlets.

Subgrade preparation and certification of subgrade preparation shall be required for drive approaches, curbs, gutters and sidewalks.

3.21 RIGHT TURN DECELRATION/ACCELERATION LANES FOR DRIVEWAYS

A right turn deceleration lane shall be provided for driveways under the following conditions:

1. The driveway is located on an arterial or expressway.

2. Right turn ingress volume is expected to exceed fifty during peak hour flows on the roadway. For right turn ingress volume between ten to fifty, a right turn curb taper shall be required.

3. There is ample room and frontage to fit a deceleration lane as determined by the City Engineer.

4. The travel speed of the roadway, as determined by the City Engineer, equals or exceeds 45 mph.

There may be cases where some of the above criteria are not met, whereupon the City Engineer may still require a deceleration lane in the interest of safety.

There may be cases where it will be necessary to merge a deceleration lane with an existing acceleration lane. Where the beginning of deceleration taper will within 100 feet of the end of an acceleration taper, then the deceleration and acceleration shall be merged to form a continues auxiliary lane.

In the event the applicant is allowed to locate a driveway with deceleration lane within 100 feet on an arterial intersection, developer or contractor shall be required to extend the deceleration lane to such intersection. The 100'

shall be measured from the center of driveway to the intersection of extended right-of-way lines of the arterial intersection.

In cases where it is desirable to provide room for right turn deceleration, but an entirely separate deceleration lane is infeasible due to design constraints, a right turn curb taper shall be provided.

3.22 LEFT TURN DECELERATION/ACCELERATION LANES FOR DRIVEWAYS

Left turn deceleration lanes (left turn pockets) are not required on minor collector and local residential streets.

On major collectors, arterials and where left turns in will be permitted, a left turn deceleration lane shall be provided. This may be in the form of separate left turn pocket on a four (4) or six (6) lane road. Depending on land use, traffic volumes, and driveways, a continues two-way-left-turn-lane may be considered on a four (4) lane road with approval of the City Engineer. In the absence of traffic study, or if one is determined not to be necessary, the pocket shall be 200 feet in length with a 90 foot bay taper. The length of the left turn pocket may be increased or decreased based on a traffic study. However, in no case it shall be less than 50 feet.

3.23 ALLEYS

New Alleys (20-foot Street) depressed in the center with a right-of-way and surface width of 20 feet are not allowed unless specifically approved by the City Engineer.

Existing Alleys shall be brought up to the current City Standards, if they are in the proposed work area. The subgrade, aggregate base and hot mix asphalt shall be constructed as required in Sections 3.12, 3.14 and 3.16 respectively of these Improvement Standards.

3.24 VALLEY GUTTERS

Valley gutters designed to permit drainage across a street shall be constructed as shown on Standard Detail S-24.

3.25 ADA ACCESSIBILITY REQUIREMENTS

Curb ramps shall be constructed at all corners of intersecting streets in conformance with the requirements of the ADA, California Title 24, and as shown on Standard Detail S-44 to S49 as applicable.

The City Engineer will determine ADA upgrade requirements for projects adjacent to existing public streets. The goal is to achieve ADA accessibility for the length of the frontage on all adjacent public streets. Reconstruction or repair projects that damage existing pedestrian facilities (sidewalk, curb ramps, etc.) will be required to reconstruct to current ADA standards.

The ramps must comply with the latest requirements of Section 3307 "Ramps" of the California State Accessibility Standards, State Architects Office. This information shall be placed in the Improvement Plans by the Design Engineer.

3.26 RAISING UTILITY BOXES

Utility boxes and manholes shall be raised by the Developer or Contractor to conform to these Improvement Standards. Utility boxes include, but are not limited to, sewer manholes, sewer lampholes, water valves, storm drain manholes and survey monuments.

Where existing utility boxes are in the work area, their frames and covers shall be removed before subgrade compaction is made and a cover shall be placed to prevent dirt and loose materials from entering the facility.

Base and surface material shall be placed over the covers, after which the frames and covers shall be set to finish grade. Other utility manholes such as PG&E may be raised by others. The Contractor shall locate and tie-out these facilities prior to paving. The Contractor shall pave over these facilities and remove a 5" diameter plug of hot asphalt from each manhole in order that the utility can locate the manhole later.

3.27 TESTING

Material testing to show conformance with these Improvement Standards shall be done in accordance with Section 1 of these Improvement Standards.

3.28 ACCESS CONTROL WALLS

Where required by the City, access control walls shall be constructed. Access control walls shall be reinforced masonry or concrete and shall be a minimum of 6 feet in height. The wall height shall be measured from the

highest adjacent finished grade. Architectural approval of the wall design is required from the City Planner.

Walls shall be shown on the Improvement Plans. A building permit shall be obtained by the Developer from the Chief Building Official prior to commencement of work on the walls located outside public rights-of-way.

3.29 CURBED MEDIANS

On existing roads of 70 feet from curb to curb or wider or as required by the City Engineer, an 8 inch high curbed median may be installed at the intersections of an arterial road, at Developer's expense. Painted medians at intersections may be allowed at the discretion of City Engineer.

The median shall extend a minimum of 350 feet from the intersection centerline.

The minimum width of a median shall be 4 feet without landscaping or 8 feet with drought tolerant landscaping. Landscaping shall be designed in accordance with the requirements of the Parks Department and shall not interfere with pedestrian or vehicle safety.

On new arterial roads or where part of a road is widened from 2 lanes to 4 or more lanes, a curbed median shall be installed for the full length of the new road or road widening at Developer's expense. Landscaped medians shall have root barrier and moisture barrier as per City Standard Details.

Breaks in curbed median shall be at all arterial and collector streets with minimum of 600 feet between breaks. Additional breaks shall be as approved by the City Engineer.

3.30 MONUMENTS

All survey monuments shall be visibly marked or tagged with the certificate number of the surveyor or civil engineer setting them, according to Section 8772 of the Professional Land Surveyors Act.

Permanent survey monuments set in pavement areas shall conform to Standard Detail S-50. Monuments found in a perishable condition shall be rehabilitated with a permanent monument according to Section 8773.3 of the Professional Land Surveyors Act.

The instructions as set forth in the 1973 "Manual of Instructions for the Survey of Public Lands of the United States", published by the Bureau of Land Management, Department of Interior, Washington, D.C., shall be followed for the restoration of lost or obliterated corners, for those corners that were established based on the Public Lands Surveying System.

Survey monuments shall be set at all lot corners, angle points and points of curvature. Monuments shall be 2-inch O.D. galvanized iron pipe, 24 inches in length set 6 inches below grade.

Subdivision boundary monuments, except those set in street pavement, shall be 2-1/2 inches O.D. galvanized iron pipe, 24 inches in length, set 12 inches below finish grade. Survey boundary monuments in street pavement shall conform to Standard Detail S-50.

Permanent survey monuments shall be set at all street centerline intersections, angle points and points of curvature. They shall also be placed at all section and quarter corners within the subdivision.

Section and quarter corner monuments shall be constructed and marked according to the 1973 "Manual of Instruction". Monuments located within street sections shall utilize a monument box conforming to Standard Detail S-50.

3.31 MONUMENT PRESERVATION

Monuments set shall be sufficient in number and durability and efficiently placed so as not to be readily disturbed, to assure, together with monuments already existing, the perpetuation or facile reestablishment of any point or line of survey. All work is to be performed by a person or under the supervision of Licensed Land Surveyor allowed to practice in the State of California.

A. PRIOR TO CONSTRUCTION

1. The public records are to be researched for the location of all possible survey monuments within the scope of the project and copies shall be furnished to the City Engineer and County Surveyor.

2. The survey crew shall diligently search for all survey monuments of record above or below the surface, within the road right of way. When buried monuments is found, then digging below the surface to uncover the monument is required.

3. The survey crew shall properly reference all found survey monuments, which may be disturbed during construction, to stable surface points.

4. The authorized surveyor shall properly complete a Corner or Record of Survey for the monuments noted in item 3, above. Prior to start of any construction work, the original or a print of the Record of Survey shall be submitted to the County Surveyor for review, signature and filing.

B. AFTER CONSTRUCTION

1. All covered and distributed monuments shall be reset with the same or more durable type of monument as the original, in the surface of the construction.

2. A monument box per City Standards or other approved protective structure shall be placed around key monuments.

3. The authorized surveyor shall properly complete a Corner or Record of Survey for all set monuments with a change in character, including tag number, and submit it to the County Surveyor for review, signature and filing.

3.32 VERTICAL CONTROL

All vertical control shall be based upon City or USGS datum. When available, 1988 data or most recent datum shall be used. In locations where a new benchmark will be required by the City Engineer, the Consulting Engineer will set in concrete a 2-1/2 inch bronze cap, and shall run a second order, class two closed loop survey from an approved City of Patterson benchmark to establish the USGS elevation of the cap. The level notes will be submitted to the City's Engineering Division for approval. After approval of the notes, the new benchmark will be assigned a number that the developer's engineer will mark the bronze cap, along with the date, and R.C.E. or P.L.S. number of the person certifying the level notes. Benchmark installation shall conform to Standard Detail S-51.

3.33 DEVELOPER RESPONSIBILITY FOR IMPROVEMENTS TO STREETS

The following requirements apply to private development projects adjacent to existing and proposed streets.

A. The Developer shall be responsible for upgrading streets within and adjacent to the developer's project where the pavement section of an existing street does not meet the structural section and/or the centerline grade and alignment requirements specified in these Design Standards for those streets.

Where the design centerline grade is to be higher than the existing, the Developer shall extend the overlay beyond the centerline of the street and shall neatly conform to the existing surface grade on the other side. The Developer shall also be responsible for overlaying any low areas where the new pavement is proposed to meet the existing pavement to maintain a uniform cross slope.

B. When making a connection to an existing stub street, the Developer shall be responsible for removing and reconstructing up to a maximum of twenty feet of the existing roadway to make a satisfactory connection as required by the City Engineer.

C. When widening to complete an existing partial street along a development project, or when removing existing curb and gutter, the Developer shall be responsible for saw cutting and removing a narrow strip along the outside portion of the pavement to provide a clean and stable pavement section for constructing against. Grinding of existing pavement (1½-inch minimum) shall be made to the next nearest edge of lane line. The width to be removed shall be determined by the City Engineer. In the case of curb and gutter removal, minimum width of pavement cut shall be 2 feet.

D. All temporary approaches to existing roadways required as a result of the development shall be at the Developer's expense. The temporary approaches shall be paved with the structural section to be determined individually for each situation.

E. The Developer shall be responsible for relocating existing traffic signals and streetlights, and installing new traffic signals and street lights as necessary for new street and driveway locations. The Developer shall also be responsible for relocating existing traffic signals and street lights as necessary for the installation of new curbs or new curbs and sidewalks at locations where there are no existing curbs or curbs and sidewalks. Traffic signals must remain operational during all construction within signalized intersections.

F. The Developer shall be responsible for constructing or modifying median island curbs where required by these standards, or when required for traffic control as a result of the development, as determined by the City Engineer.

G. The Developer is required to provide frontage improvements along existing and proposed roadways at the Developer's expense. Frontage improvements include, but are not limited to, sidewalk, curb and gutter, center median, 18 feet pavement width, additional pavement width beyond the 18–feet for intersection widening (including acceleration and deceleration lanes, bus turnouts, widening for dual left turns, etc.), drainage system, landscaping, soundwalls, street lighting, roadway signing and striping, and all utilities (including traffic signal interconnect if applicable). For minor residential, primary residential, collector and industrial streets, the Developer shall provide the full right-of-way improvement.

H. For development within the "infill" areas of the City, the level of improvements to public streets adjacent to the development site shall be determined on a project specific basis at the discretion of the City Engineer.

I. The Developer shall be responsible for all drainage facilities (bridges, pipes, culverts, and appurtenances) crossing new streets within or adjacent to the project.

J. The Developer shall be responsible for all necessary modifications within the public right-of-way and the project site to comply with state and federal standards for access for disabled, including but not limited to curb ramps.

3.34 TRENCHING IN MORATORIUM STREETS

Newly constructed or reconstructed streets within five (5) years of the acceptance by the City shall be called Moratorium Streets. Trenching within the Moratorium Streets will subject to the additional terms and conditions as set forth below:

A. **Lateral Repair Limits**: If the distance from the street centerline to the curb line is less than 17 feet, the trench repair shall extend to the centerline of the streets as per Standard Detail S-54. If the distance is wider than 17 feet, the trench repair shall extend to the next traffic lane line or centerline, whichever is greater as per Standard Detail S-54.

B. **Longitudinal Repair Limits:** Pavement resurfacing will require 10 feet of grinding and cap as measured from both edges of the trench. See Standard Detail S-54.

C. **Paving:** After the trench has been backfilled and immediately prior to placing hot mix asphalt (HMA), the existing asphalt concrete shall be sawcut or milled according to City Standards, to a vertical face. New HMA paving shall be butt joined to the existing asphalt concrete vertical face. No feathering of new paving to existing paving is allowed. The vertical faces shall be tack coated. Placement of the final two (2) inches of HMA surface shall be done by a paving machine or spreader box. HMA shall be delivered and compacted in accordance with the Standard Specifications and Plans.

   For trenches in Moratorium Streets with chip seal or slurry seal coatings, the entire lane(s) shall be resurfaced with these coatings.

3.35 SIGNAGE AND STRIPING

Signs, striping, and pavement markings shall conform to the applicable provisions of Section 84 of the Standard State Specifications, the latest edition of California Manual of Uniform Traffic Control Devices (CAMUTCD) and these specifications, unless modified by these standards, or in writing by the City Engineer.

All traffic stripes and pavement markings on existing surfacing shall be removed by grinding prior to placement of hot mix asphalt overlay, slurry seal, chip seal, or cape seal.

A. Barricade Requirements – Barricades shall be required at the end of paved section (or traveled way for non-paved street) of all terminating streets. Barricades shall comply with Standard Detail TC-7.

B. Street Name Sign Locations – Street names and street name sign locations shall appear on plans submitted for approval. Sign details shall be as shown on Standard Detail No. TC-1 and TC-2. Street name signs shall be located as follows:

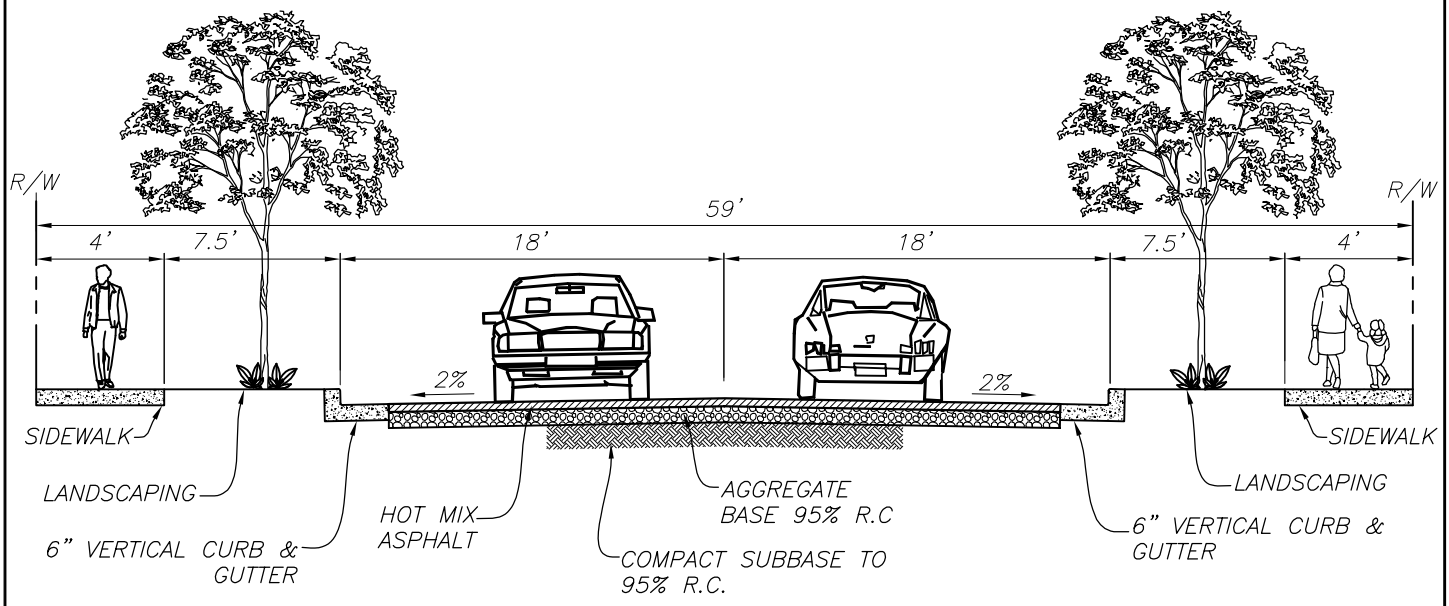
1. "T" intersections shall have one sign located on the near right-hand corner of the non-through street approach of a "T" intersections.

2. Minor Four-Way Intersections (less than 70 ft. right-of-way of both intersecting streets) shall have one (1) street name sign at each intersection. The sign shall be located on one of the far right-hand corner of the intersection relative of the street having the greater right-of-way width or relative to the more important street if the street right-of-way widths are equal.

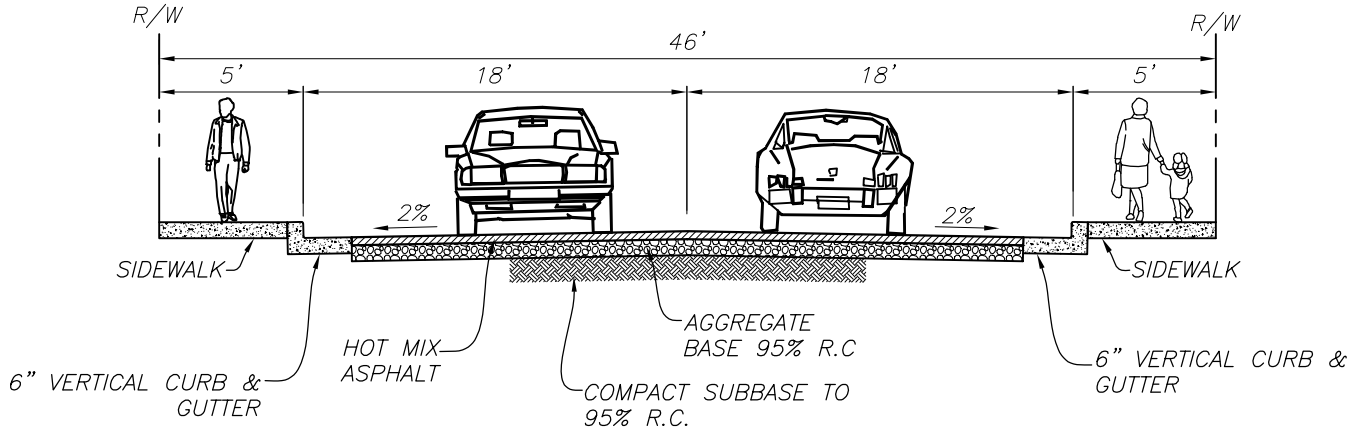
3. Major Four-Way Intersections (more than 70 ft. right-of-way of one or both intersecting streets) shall have two (2) street name signs at each intersections. The signs shall be located on both far right-hand corners of the intersection relative to the street having the greater right-of-way width or relative to the more important street of the right-of-way widths are equal.

4. For street sign on non-symmetrical intersections, expressway, major arterials and freeways, the City Engineer shall approve the locations.

5. Mist arm street name sign details shall be per Section 4.24 Traffic Signals and Standard Drawing TS-1.



SEPARATED SIDEWALK



MONOLITHIC SIDEWALK

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
2. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
3. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.
4. FOR 46' SECTION, ADA PATH BEHIND DRIVE APPROACH IS REQUIRED AND SETBACK LIMITS SHALL START FROM BEHIND THE ADA PATH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

RESIDENTIAL STREET SECTION

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 1

NTS

Feb 04, 2021 - 7:49am
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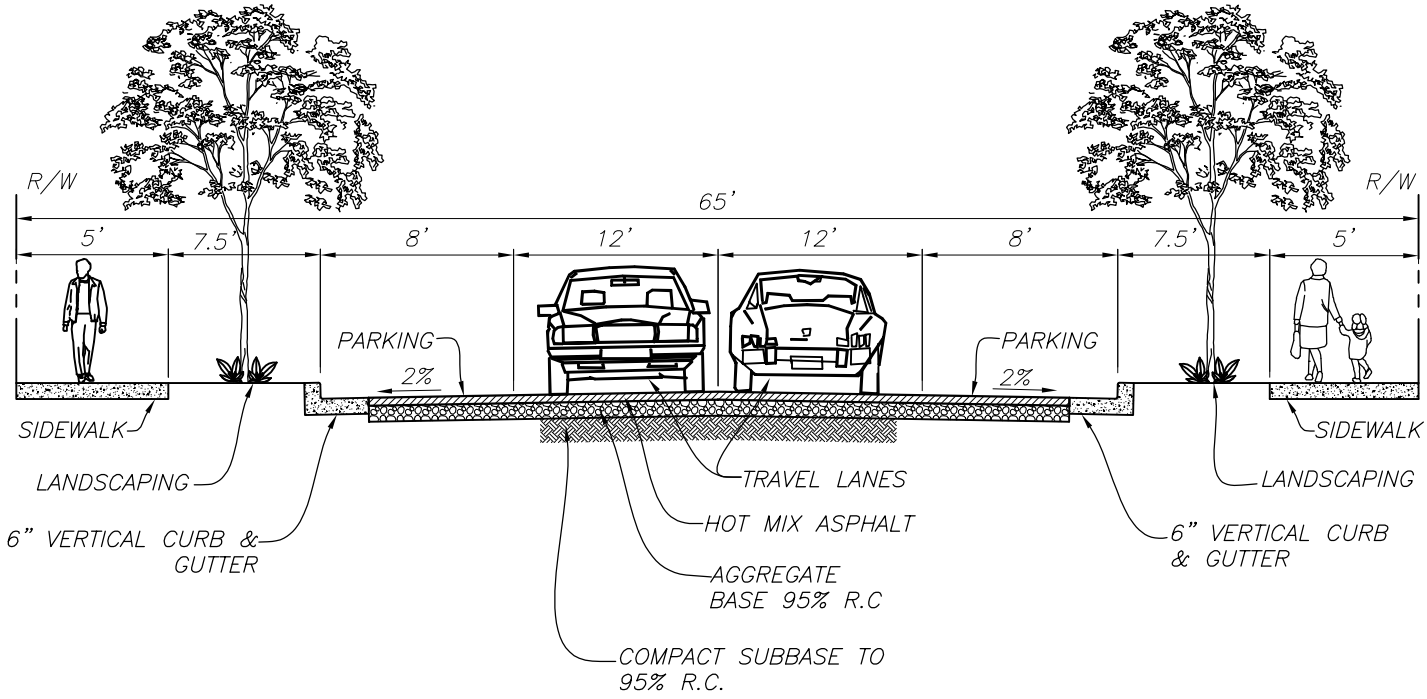

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
2. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
3. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

65' COLLECTOR STREET SECTION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 2

NTS

Feb 04, 2021 - 7:55am
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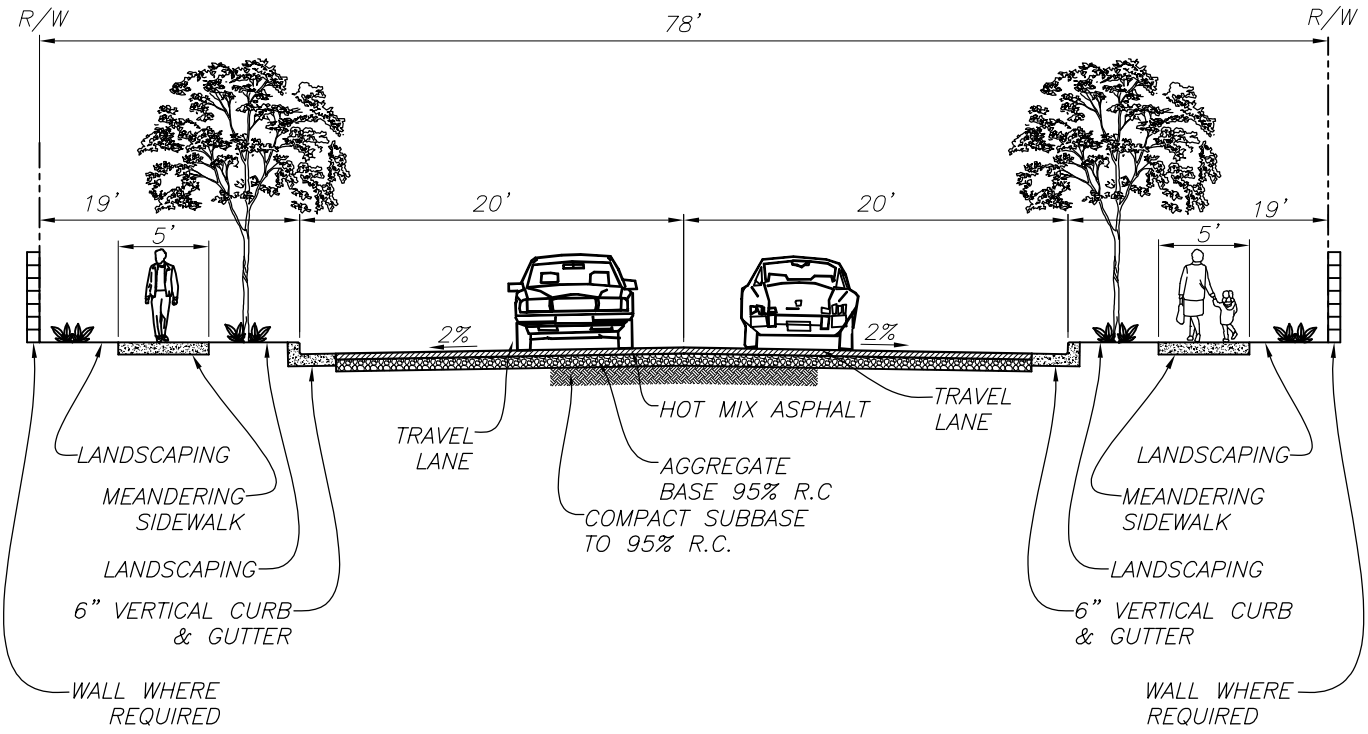

NOTES:

1. 70–FOOT STREET SECTION IS FOR INFILL PROJECTS
2. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
3. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
4. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

78' COLLECTOR STREET SECTION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 3

NTS

Feb 04, 2021 - 8:01am
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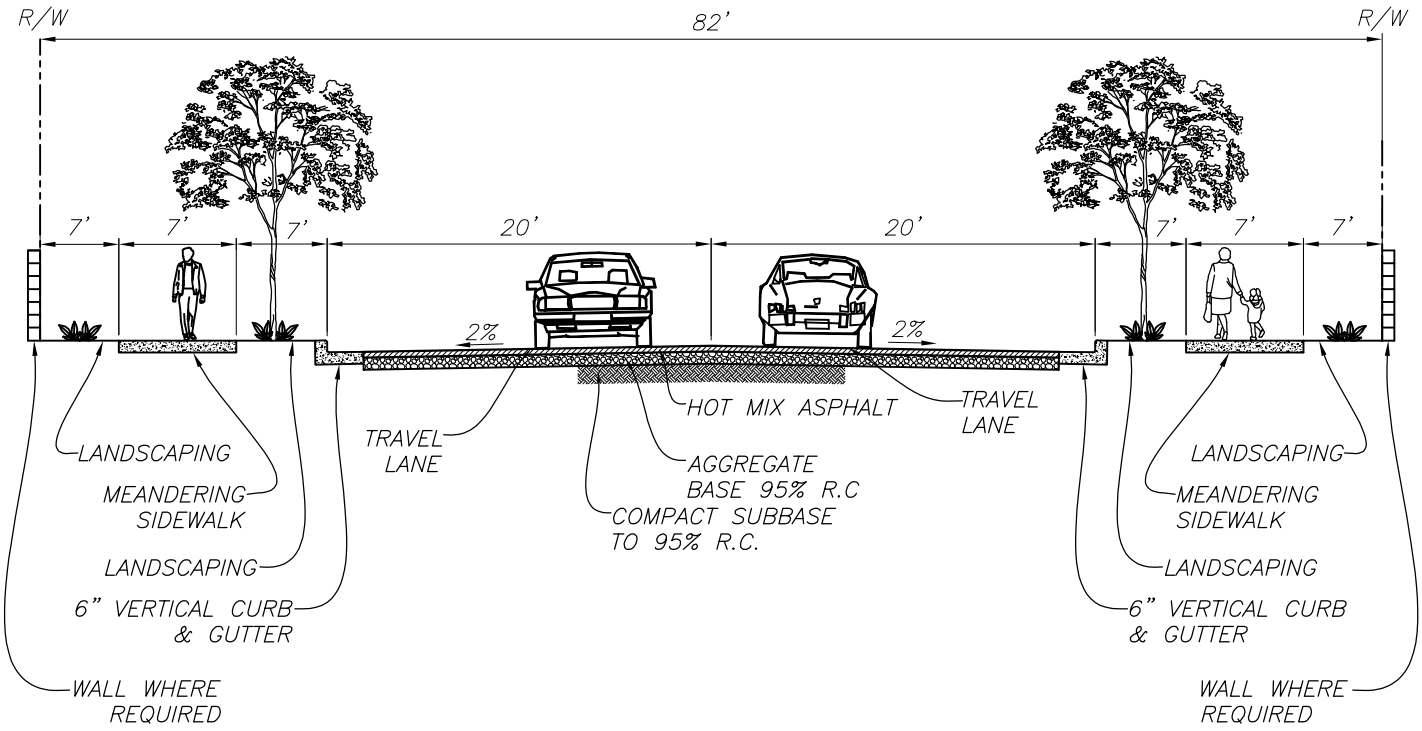

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
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CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

82' COLLECTOR STREET SECTION

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 4

NTS

Feb 04, 2021 - 8:02am
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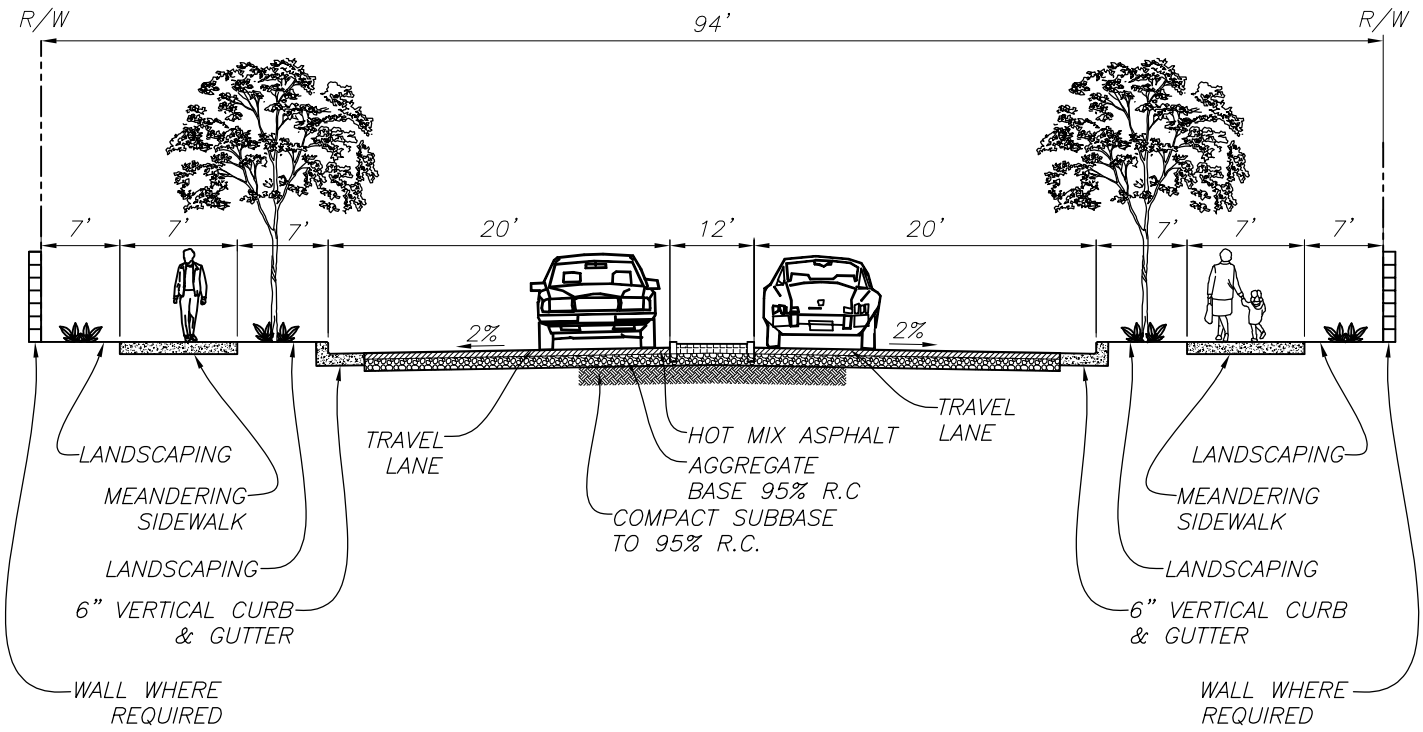

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
2. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
3. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

94' COLLECTOR STREET SECTION

10/26/20
DATE

62736
R.C.E. NO.

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Feb 04, 2021 - 8:02am
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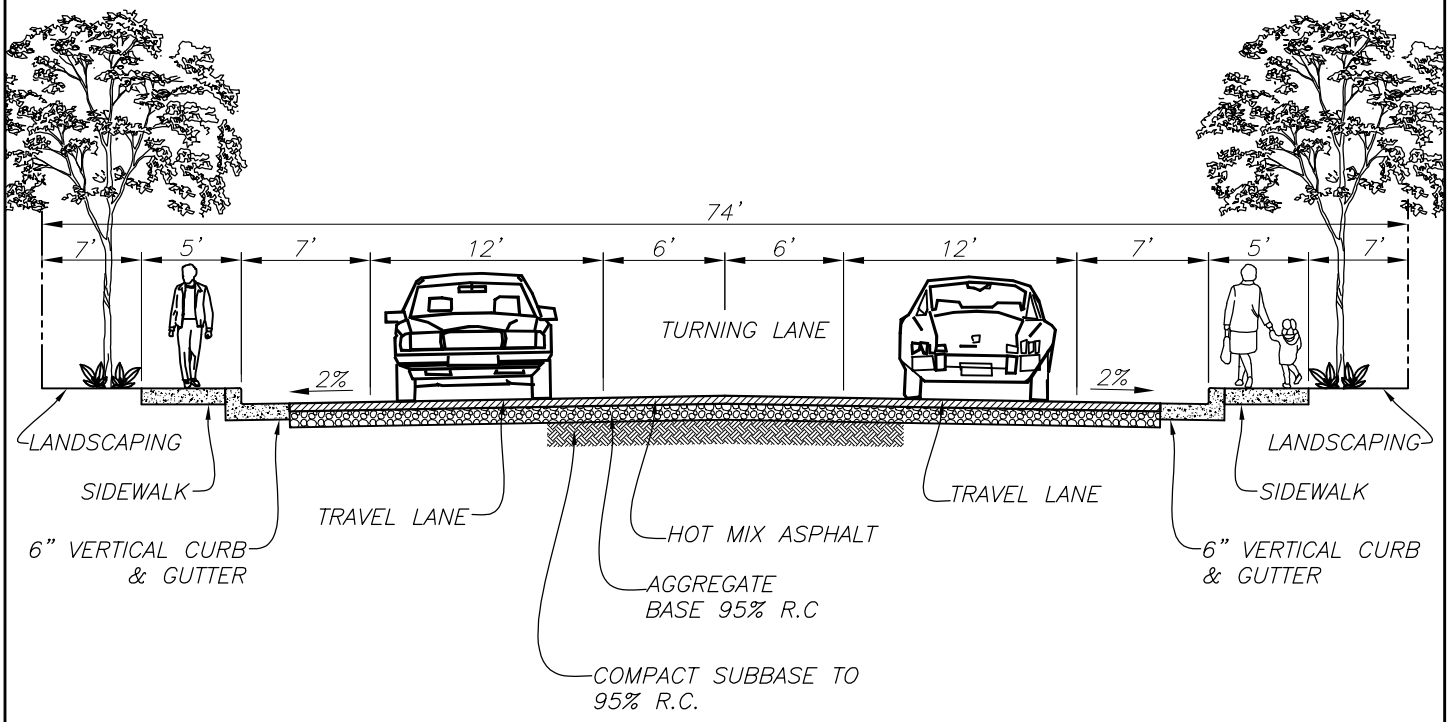

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
2. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
3. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

COMMERCIAL INDUSTRIAL STREET SECTION

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 6

Feb 04, 2021 - 8:06am
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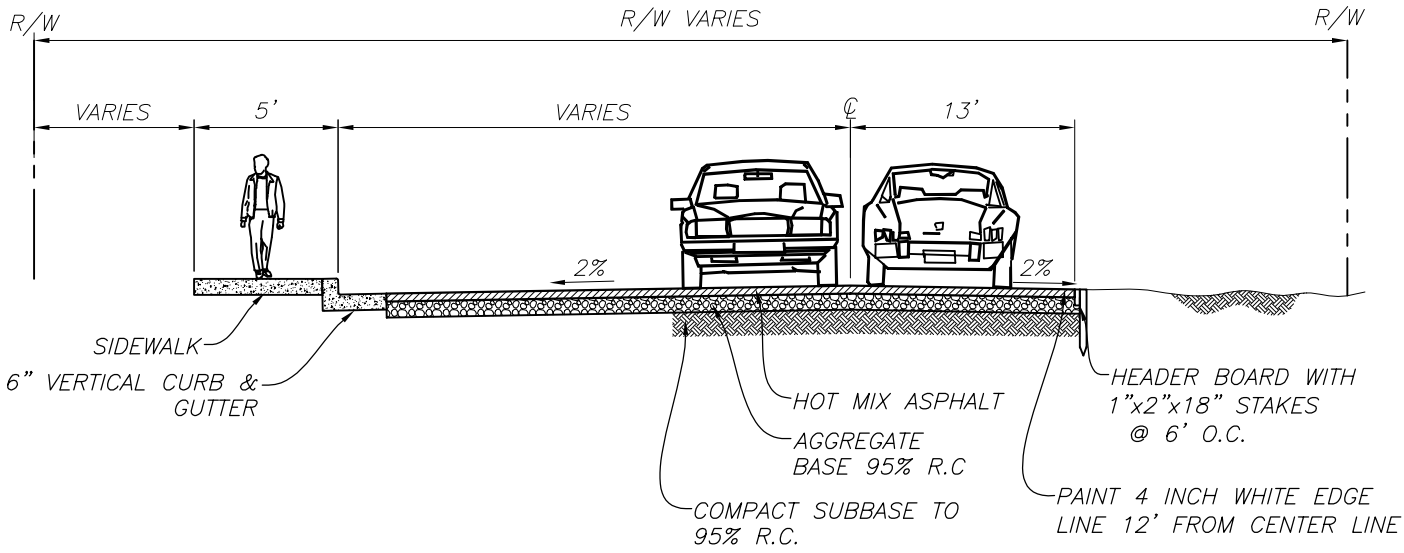

NOTES:

1. THE PARTIAL WIDTH STREET SECTION IS ONLY PERMITTED WHERE APPROVED BY THE CITY ENGINEER.
2. PARTIAL WIDTH STREET SECTIONS SHALL BE DESIGNED ON THE PLANS AS "PARTIAL WIDTH" ADJACENT TO THE STREET NAME.
3. DEVELOPER WILL BE REQUIRED TO PROVIDE DRAINAGE FACILITIES FOR THE ENTIRE ROAD SECTION. A 6 INCH ASPHALT DIKE MAY BE REQUIRED ADJACENT TO THE 13 FOOT LANE.
4. HEADER BOARDS SHALL BE EITHER REDWOOD OR PRESSURE TREATED DOUGLAS FIR.
5. HEADER BOARD SHALL MEET OR EXCEED THE DEPTH OF HOT MIX ASPHALT SECTION (i'e'. 2"x4", 2"x6", 2"x8", ETC.)
6. LOCATION OF CURB & GUTTER, SIDEWALK AND LANDSCAPING MAY VARY DEPENDS ON THE REQUIREMENTS OF ON STREET PARKING AND BIKE LANES.
7. THE STRUCTURAL SECTION SHALL BE DESIGNED IN ACCORDANCE TO SECTION 3.6 STRUCTURAL DESIGN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

PARTIAL WIDTH STREET SECTION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 7

Oct 26, 2020 - 3:50pm
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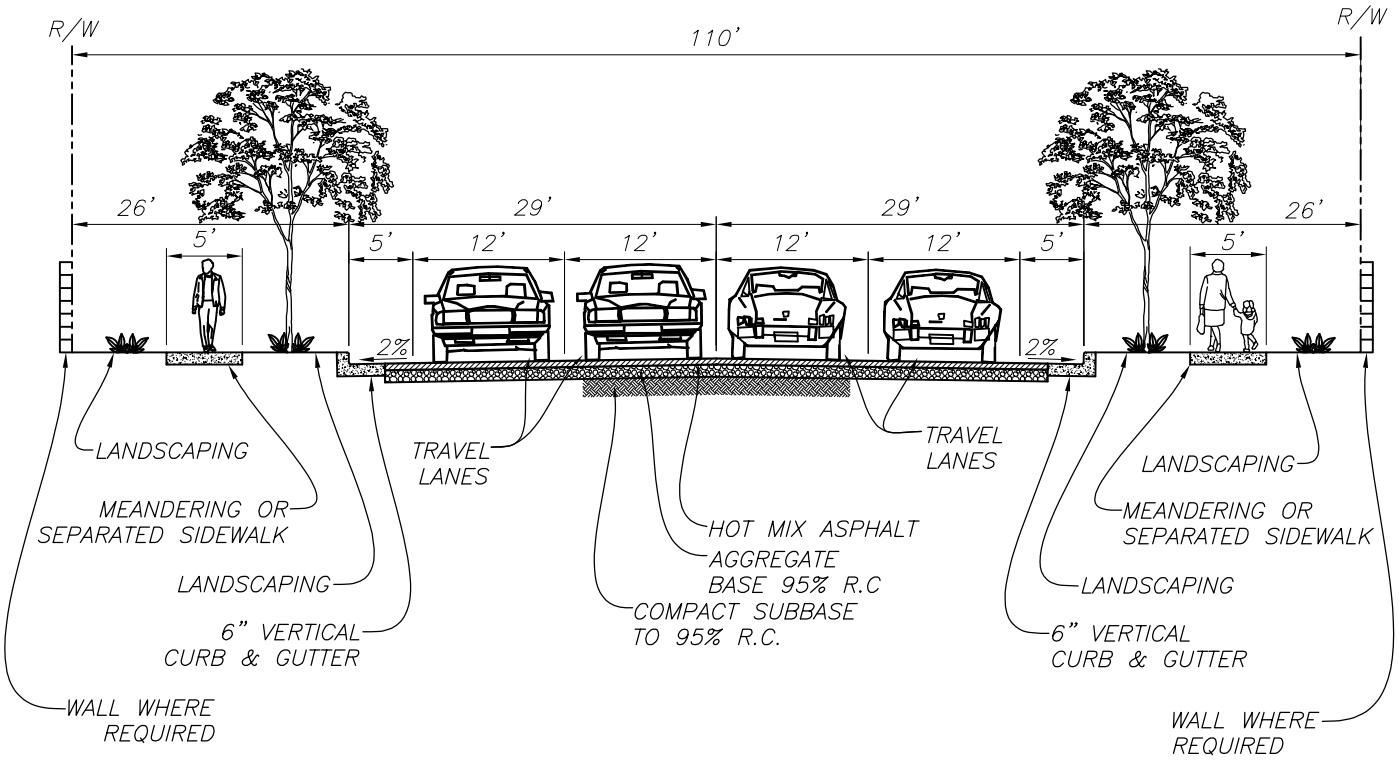

NOTES:

1. CITY ENGINEER MAY REQUIRE ADDITIONAL RIGHT OF WAY FOR BIKE ROUTES OR LANES PER THE CITY BICYCLE AND PEDESTRIAN MASTER PLAN AND GENERAL PLAN.
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CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

4 LANE ARTERIAL STREET SECTION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 8

Oct 26, 2020 - 3:51pm
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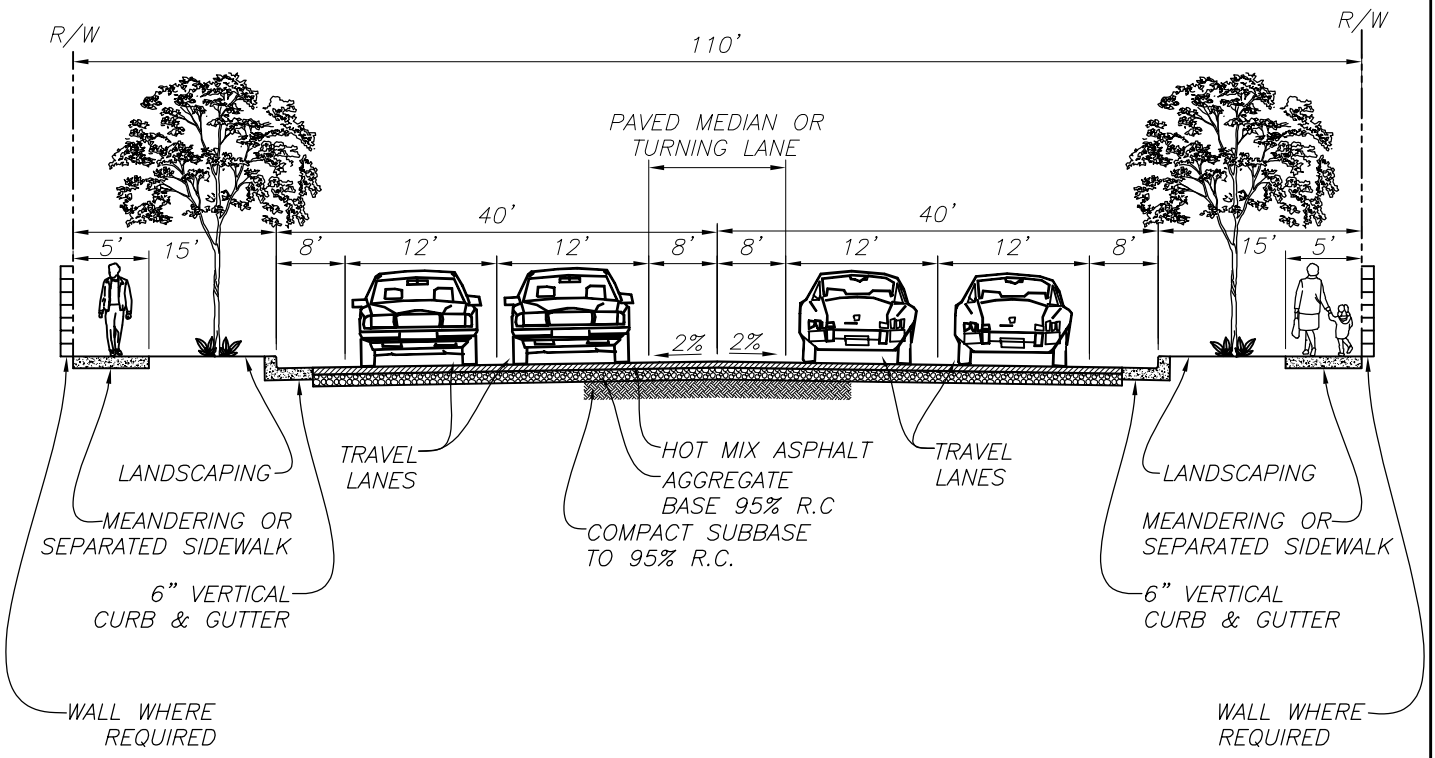

NOTES:

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CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

5 LANE ARTERIAL STREET SECTION

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 9

Oct 26, 2020 - 3:52pm
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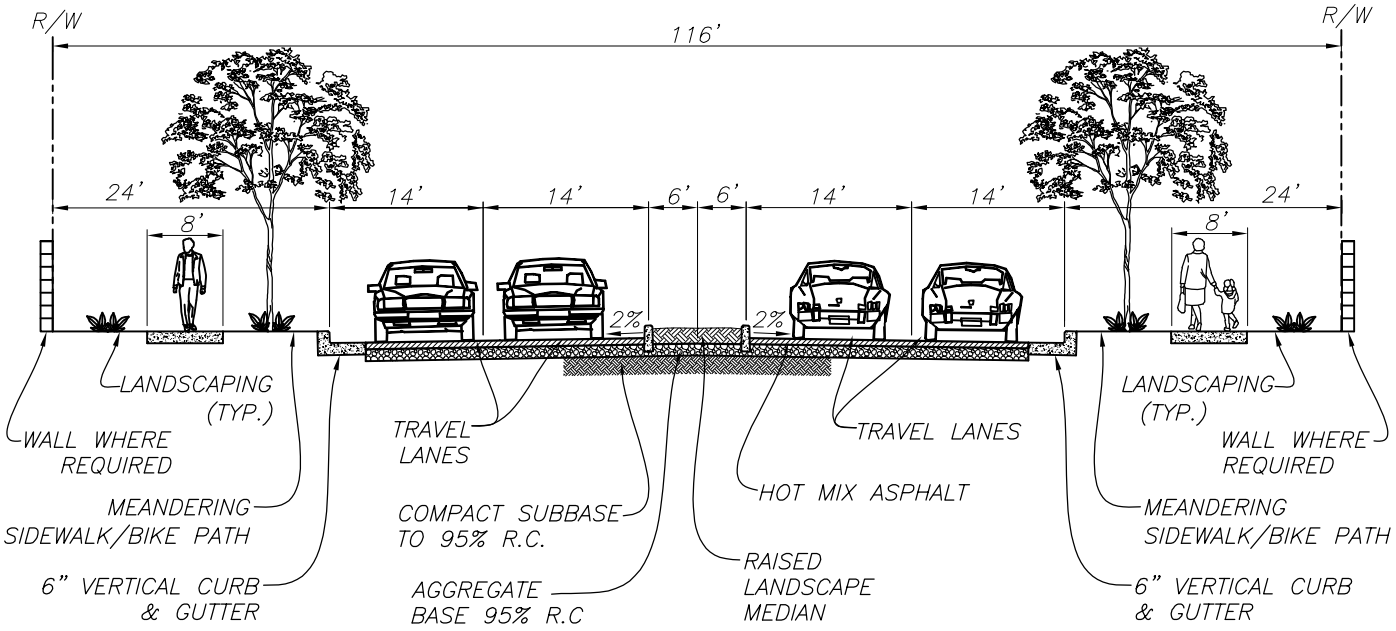

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CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

4 LANE MAJOR ARTERIAL STREET SECTION

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 10

Oct 26, 2020 - 3:53pm
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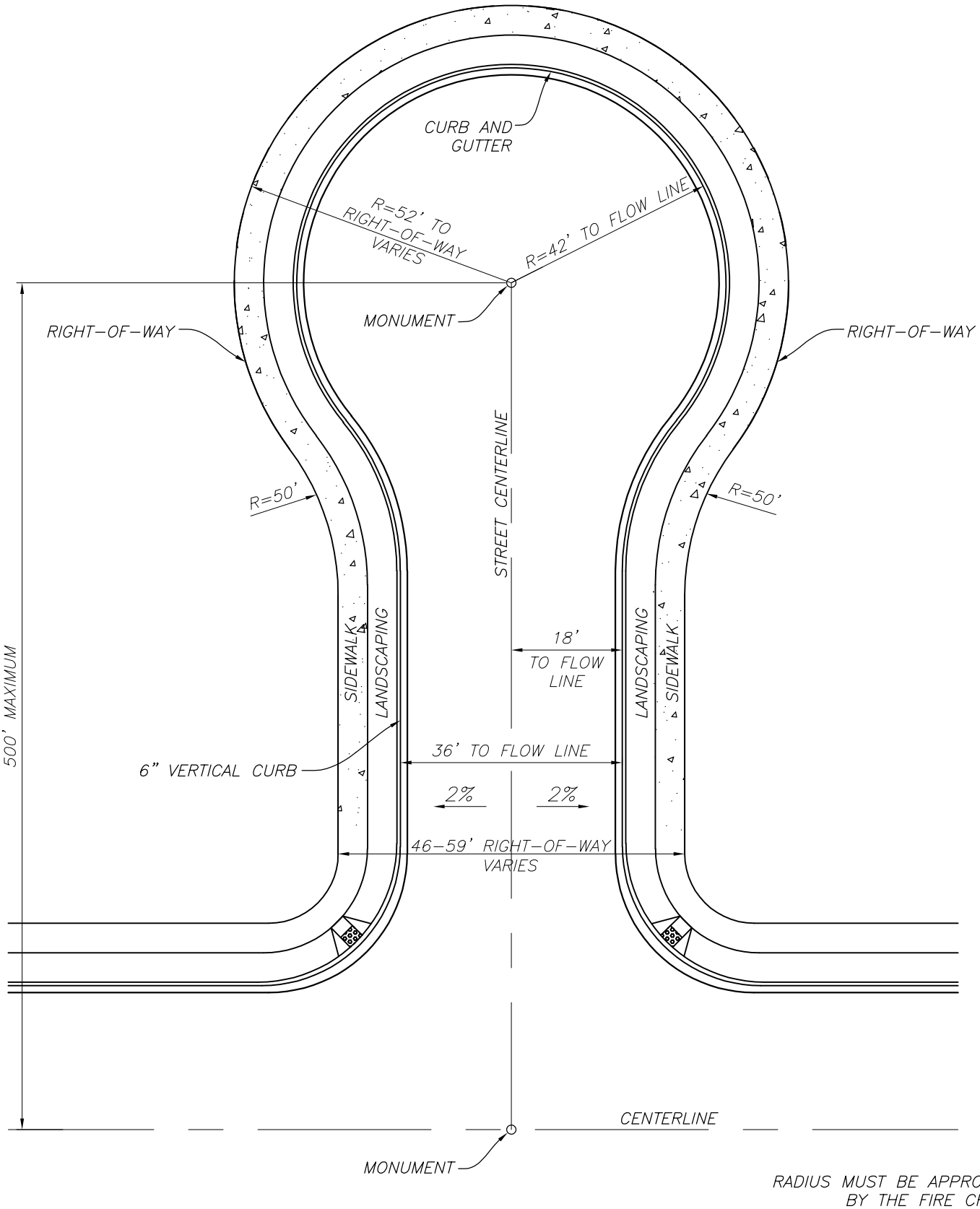

RADIUS MUST BE APPROVED BY THE FIRE CHIEF

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

CUL-DE-SAC GEOMETRY

DRAWING NO. S - 11

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Feb 04, 2021 - 8:07am
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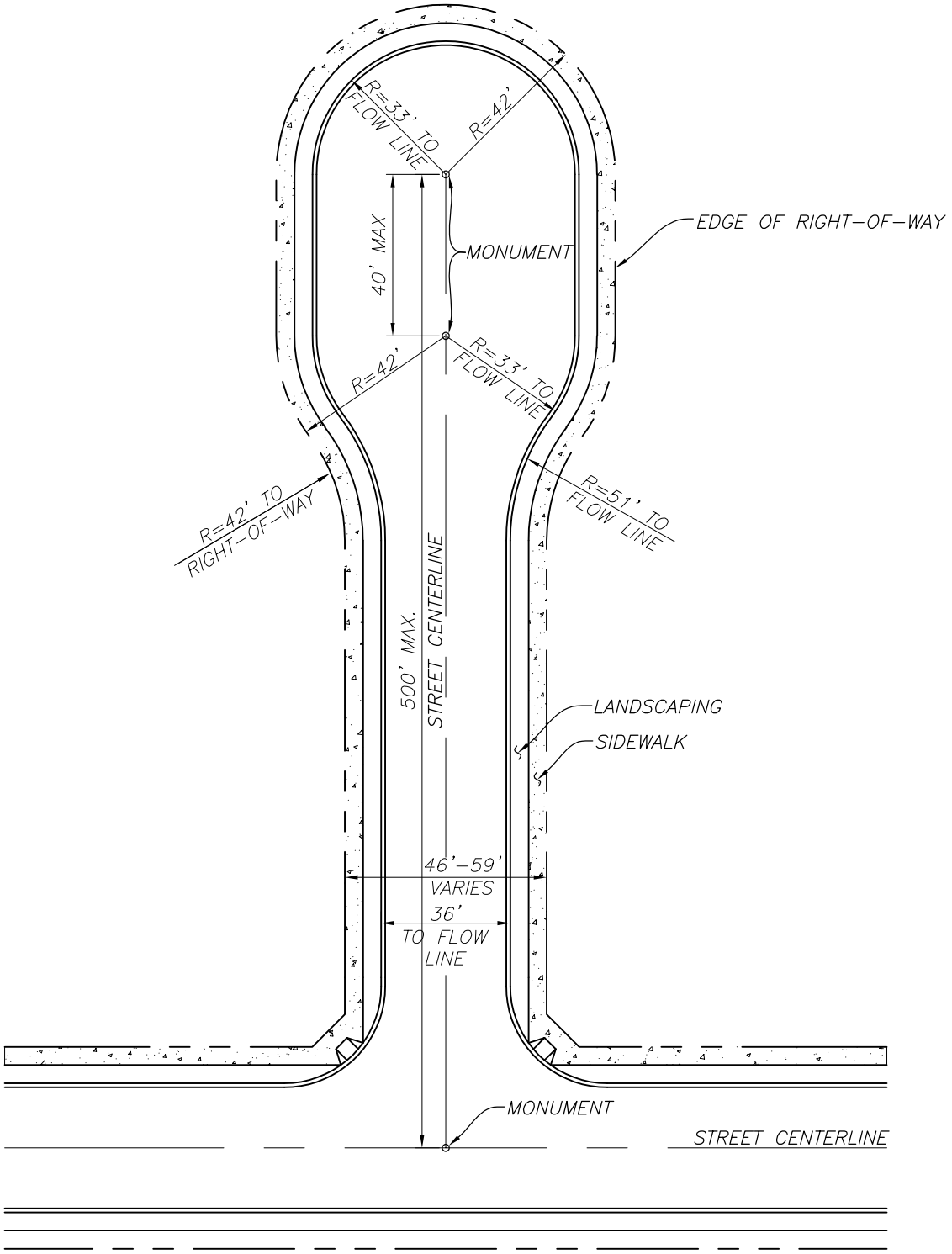

RADIUS MUST BE APPROVED BY THE FIRE CHEIF

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

CUL-DE-SAC ELONGATED

DRAWING NO. S - 12

NTS

Feb 04, 2021 - 8:08am
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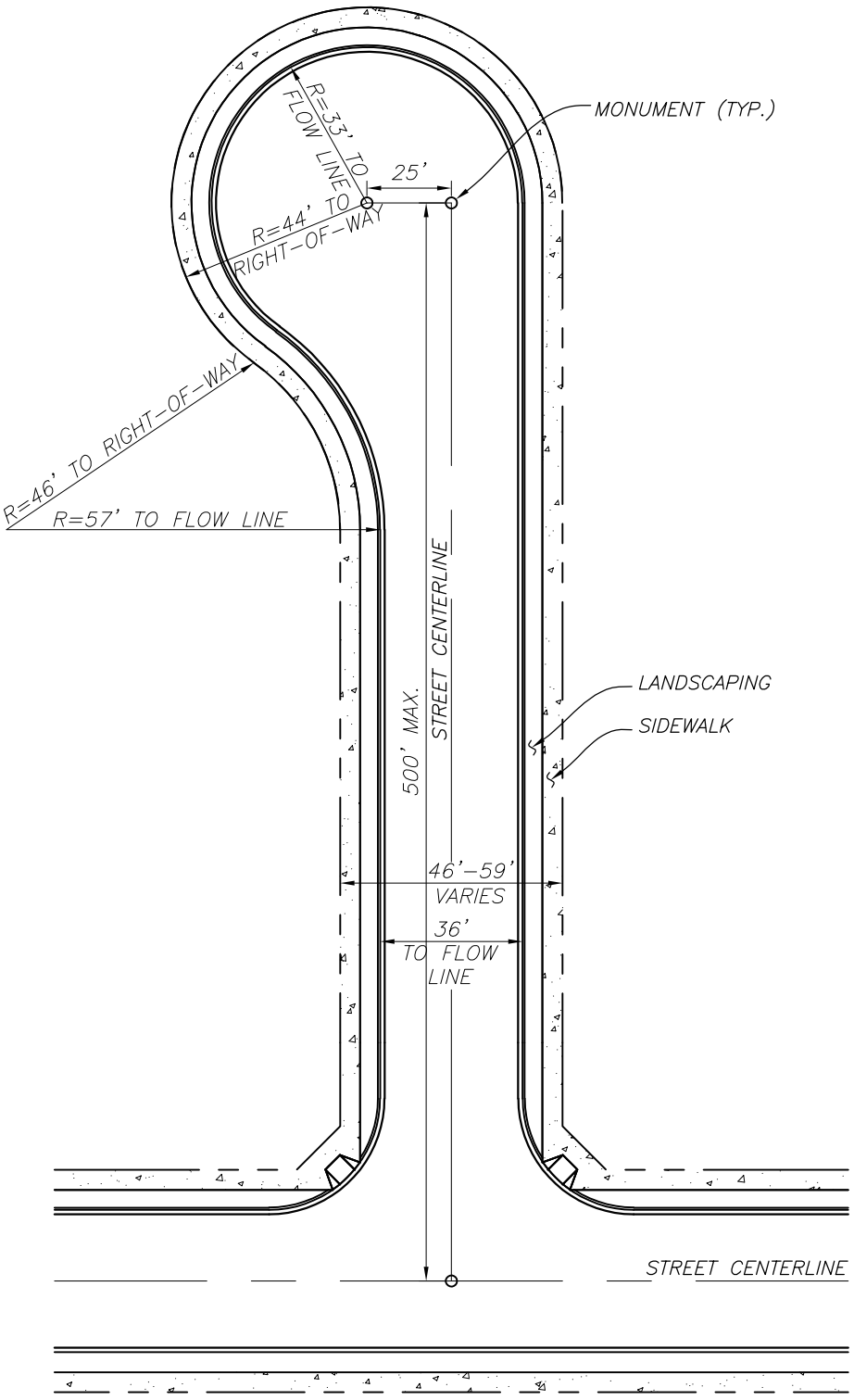

RADIUS MUST BE APPROVED BY THE FIRE CHIEF

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

CUL-DE-SAC TANGENT ONE SIDE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 13

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Feb 04, 2021 - 8:09am
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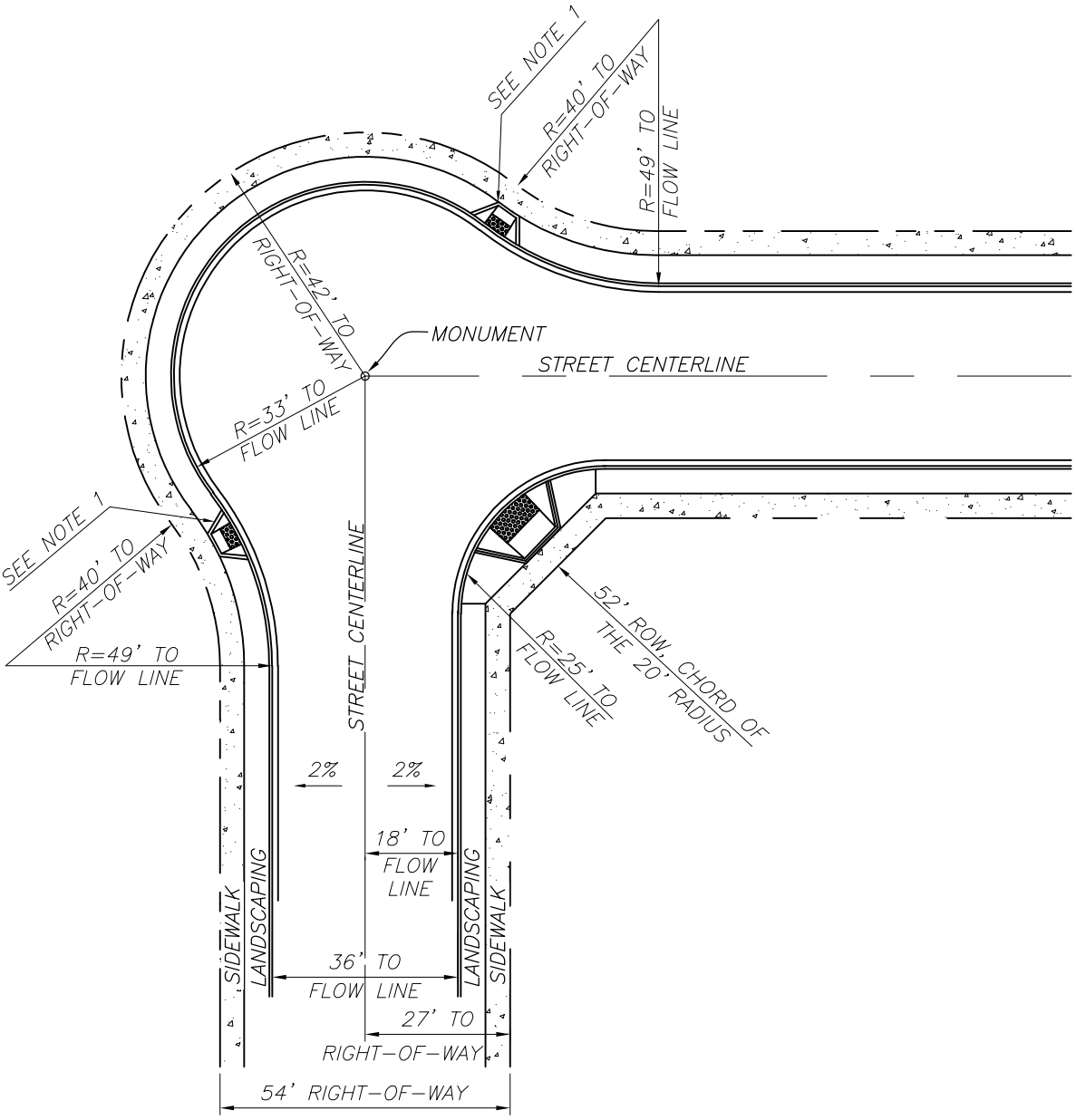

NOTES:

1. ONLY ONE SIDEWALK RAMP ON OUTSIDE CURVE IS REQUIRED.
2. INTERSECTION ANGLE SHALL BE 90°±5°

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

INTERSECTION BULB GEOMETRY

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 14

NTS

Oct 26, 2020 - 4:00pm
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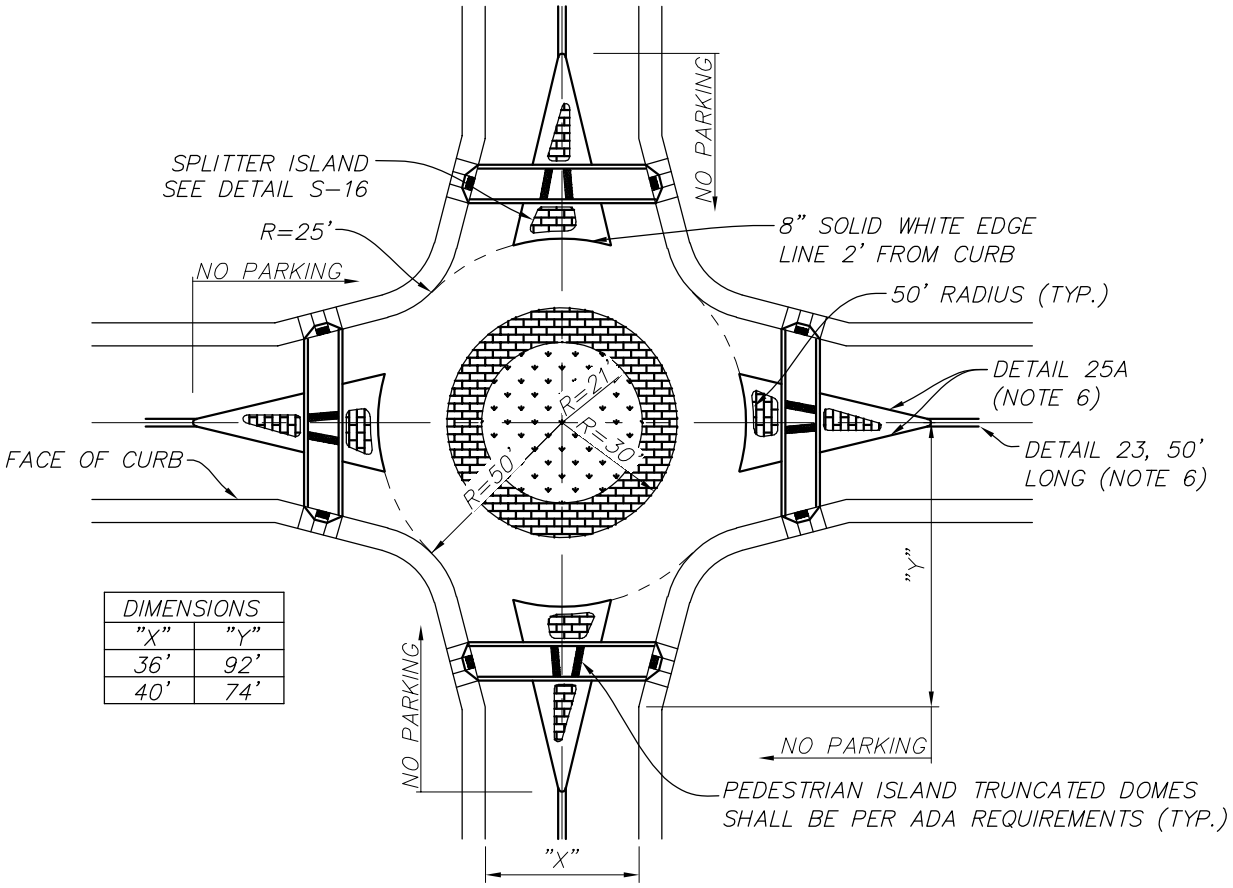
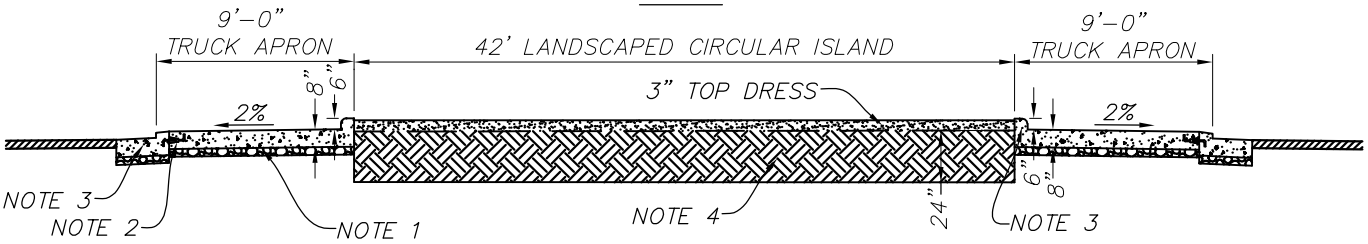


DIMENSIONS	
"X"	"Y"
36'	92'
40'	74'

PLAN



TYPICAL SECTION OF CIRCULAR ISLAND

NOTES:

1. 8" STAMPED AND COLORED CONCRETE SHALL BE USED FOR TRUCK APRON. PATTERN AND COLOR TO BE APPROVED BY THE CITY ENGINEER. REINFORCE WITH No. 4 BARS AT 12-INCH O.C. EACH WAY. PROVIDE 2-INCH DEEP RADIAL CONTRACTION JOINTS ON APPROXIMATE 8-FOOT CENTERS. (EQUAL SPACING)
2. LONGITUDINAL TIE No. 4 BARS 24-INCHES LONG, 24-INCH O.C. 12-INCH EMBEDMENT IN CURB AND GUTTER.
3. ROUNDABOUT CURB AND GUTTER, SEE DRAWING NO. S-16.
4. REMOVE EXISTING SOIL AND REPLACE WITH TOP SOIL APPROVED BY CITY ENGINEER. ALLOW FOR 3-INCH TOP DRESS AND 1-INCH OF FREEBOARD AT CURB.
5. INSTALL TYPE H REFLECTORS AROUND CIRCULAR ISLAND ON APPROXIMATELY 3-FOOT CENTERS.
6. STRIPING AND REFLECTOR DESIGNATION IS PER STATE STANDARDS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

TYP. RESIDENTIAL ROUNDABOUT

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 15

NTS

Feb 04, 2021 - 8:45am
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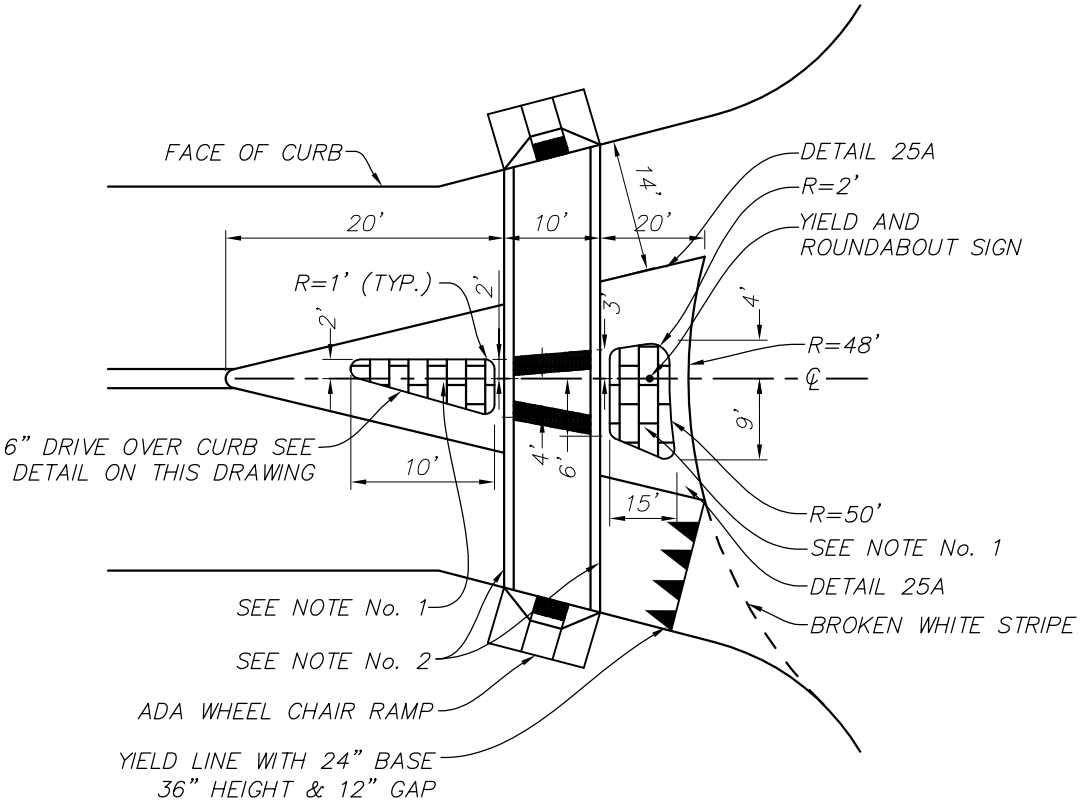
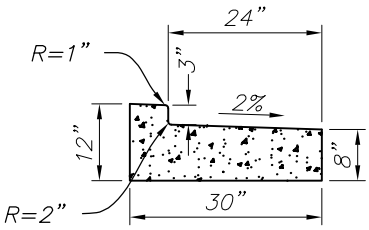
NOTES:

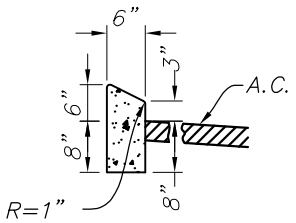
1. STAMPED AND COLORED CONCRETE PATTERN AND COLOR AS APPROVED BY THE CITY ENGINEER.
2. ALL STRIPING SHALL BE THERMOPLASTIC AND THERMOPLASTIC CROSSWALK MARKINGS SHALL BE 12 INCHES WIDE – 8 FEET CLEAR BETWEEN STRIPES.
3. STRIPING AND REFLECTOR DESIGNATION IS PER STATE STANDARDS.
4. ROUNDABOUT DESIGN SHALL BE PREPARED IN ACCORDANCE WITH "ROUNDABOUTS: AN INFORMATIONAL GUIDE", SECOND EDITION, NCHRP REPORT 672 PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION.



SPLITTER ISLAND DETAIL



COMBINATION CURB AND GUTTER



6" CURB

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

ROUNDABOUT DETAILS

DRAWING NO. S - 16

NTS

Feb 04, 2021 – 8:45am
L:\Standard details\Cad Files 2020\Section 3 (Streets)\S-16.dwg

NOTES: CONCRETE CURB, GUTTER AND SIDEWALK CONSTRUCTION

1. CONTRACTOR SHALL SECURE AN ENCROACHMENT PERMIT FROM THE CITY AND CALL UNDERGROUND SERVICE ALERT.
2. CURB, GUTTER AND SIDEWALK CONSTRUCTION SHALL CONFORM TO SECTION 73 OF STATE STANDARD SPECIFICATIONS, EXCEPT AS MODIFIED HEREIN.
3. REFERENCE IS MADE TO THE CITY OF PATTERSON DESIGN GUIDELINES SECTION 3 "STREETS" FOR ADDITIONAL REQUIREMENTS RELATING TO THE DESIGN AND CONSTRUCTION OF CONCRETE CURB, GUTTER AND SIDEWALK.
4. 4 INCHES OF CLASS 2 AGGREGATE BASE 95% COMPACTION AND TOP 8 INCHES OF SUBGRADE SHALL BE COMPACTED TO A MINIMUM RELATIVE COMPACTION OF 90% PER ASTM D1557 FOR CURB, GUTTER AND SIDEWALKS.
5. ALL RADII FOR ROUNDING EDGES SHALL BE 3/4" UNLESS NOTED.
6. CONCRETE SHALL BE CLASS B PER STATE STANDARD SPECIFICATIONS SECTION 90, 6 SACK OF CEMENT PER CUBIC YARD AND SHALL PROVIDE 3000 PSI STRENGTH AT 28 DAYS WITH 4 INCH SLUMP. ADD 1 LB. LAMP BLACK PER CUBIC YARD FOR ALL FLAT WORK INCLUDING MONOLITHIC SIDEWALK. ADJUST QUALITY OF LAMP BLACK TO MATCH ADJACENT CONCRETE FOR REPAIR OF EXISTING SIDEWALK.
7. CURB, GUTTER, AND SIDEWALK SHALL HAVE A LIGHT BROOM FINISH; CURB AND GUTTER PARALLEL TO FLOWLINE AND SIDEWALKS PERPENDICULAR TO FLOWLINE.
8. DEPRESS 2" HIGH LETTERS "I", "W", "NP" OR "S" 1/4" DEEP INTO THE CURB TO IDENTIFY SERVICE LOCATIONS.
9. EXPANSION JOINTS AND CONTRACTION JOINTS (WEAKENED PLANE JOINTS) SHALL BE INSTALLED AS INDICATED ON PLANS. 1/2" EXPANSION JOINTS SHALL BE CONSTRUCTED AT ENDS OF CURB RETURNS, AT BOTH ENDS OF DRIVEWAY, AROUND LIGHT POLES, FIRE HYDRANTS, CATCH BASINS, AND OTHER FIXED OBJECTS IN SIDEWALK; AND INTERVALS NOT TO EXCEED 200 FEET.
10. 1–1/2 INCH DEEP CONTRACTION JOINTS (WEAKENED PLANE JOINTS) SHALL BE CONSTRUCTED AT 10 FEET MAXIMUM INTERVALS EXTENDING THROUGH CURB AND GUTTER AND 3/8 INCH DEEP TRANSVERSE SCORE LINES AT THE INTERVALS OF 5 FEET IN SIDEWALK ONLY.
11. LONGITUDINAL SCORE MARK ALONG CENTER OF SIDEWALK IS REQUIRED WHEN SIDEWALK IS 6' OR MORE IN WIDTH.
12. ANY CURB, GUTTER AND SIDEWALK AREA TO BE REPLACED SHALL BE DOWELLED TO EXISTING CURB, GUTTER AND SIDEWALK PER STANDARD DETAIL S–27.
13. IF CURB, GUTTER AND SIDEWALK ARE NOT POURED MONOLITHICALLY, NEW IMPROVEMENTS SHALL BE DOWELLED TO EXISTING AS PER STANDARD DETAIL S–27.
14. REMOVAL OF EXISTING SIDEWALK, CURB OR GUTTER TO BE MADE TO NEAREST SCORE LINE OR DEEP JOINT.
15. CITY SHALL APPROVE SUBGRADE PREPARATION PRIOR TO PLACEMENT OF CONCRETE.
16. ANY UTILITY BOX AND LID LOCATED WITHIN THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC–RATED.
17. DURING CONSTRUCTION OF GUTTER, WATER SHALL BE USED TO INSURE PROPER DRAINAGE ALONG THE FLOWLINE.
18. SOIL CONDITIONS AND/OR CITY ENGINEER MAY REQUIRE LIME TREATED SUBGRADE, IF REQUIRED, AREA OF LIME TREATMENT SHALL EXTEND TO 1 FEET BEYOND THE BACK OF THE SIDEWALK.
19. MOISTURE BARRIER IS REQUIRED WHERE SIDEWALK AND STREET SECTION IS POURED ADJACENT TO LANDSCAPING AND/OR IF REQUIRED BY THE CITY ENGINEER. IT SHALL BE 14 MIL. THICK PLASTIC SHEET LINER EXTENDING FULL LENGTH SHOULD BE PLACED 24 INCHES DEEP MINIMUM.
20. IN HEAVY CLAY SOILS AND WHERE TREE TRUNK IS WITHIN 8' OF SIDEWALK, STREET SECTION OR ANY OTHER CONCRETE STRUCTURE, 24 INCHES DEEP ROOT BARRIER SHALL BE INSTALLED ALONG FOR A LENGTH OF 5 FEET EACH DIRECTION FROM TREE.
21. 18" WIDE BAND OF PAVEMENT SHALL BE REMOVED AND REPLACED WHEN NEW CURB AND GUTTER IS TO BE INSTALLED ON AN EXISTING STREET.
22. CITY APPROVED EVAPORATION REDUCERS SHALL BE APPLIED IMMEDIATELY AFTER INITIAL FINISHING AND CURING AGENTS SHALL BE APPLIED AFTER FINAL FINISHING.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

CONCRETE CURB, GUTTER, AND SIDEWALK CONSTRUCTION NOTES

DRAWING NO. S - 17

NTS

Oct 26, 2020 – 4:04pm
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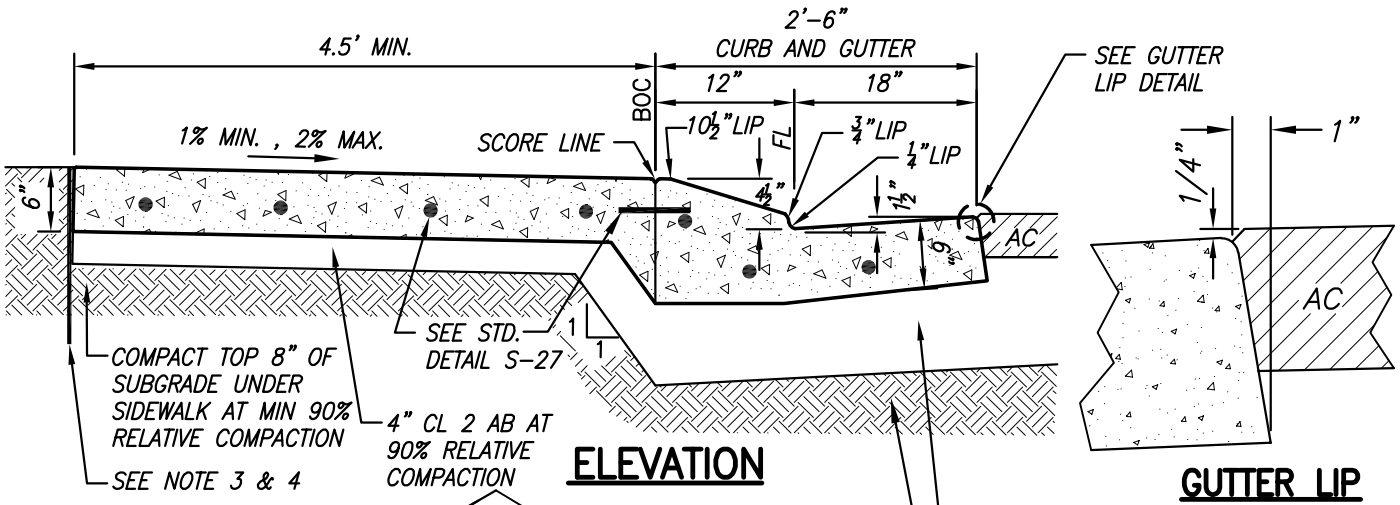
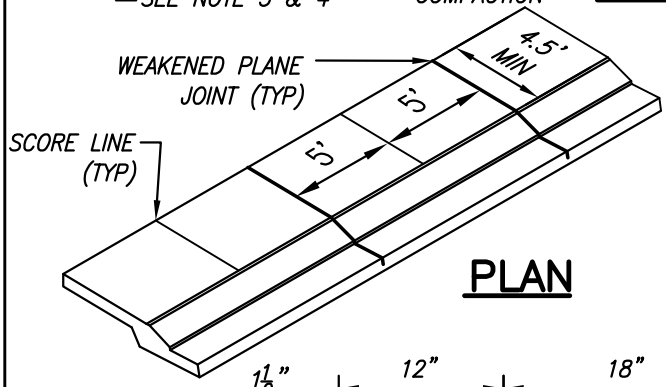


ELEVATION

GUTTER LIP DETAIL



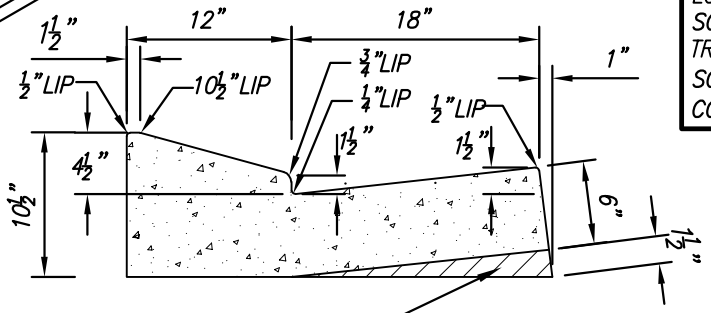
PLAN

TOP 12" OF SUBGRADE UNDER CURB, GUTTER & STREET AT MIN 90% RELATIVE COMPACTION

THE CLASS 2 AB ROCK DEPTH UNDER THE CURB AND GUTTER SHALL BE EQUIVALENT TO THE STREET SECTION DEPTH AT MIN 95% RELATIVE COMPACTION

ABBREVIATIONS

BOC	BACK OF CURB
FL	FLOWLINE



SECTION

LONGITUDINAL JOINTS:
SCORE LINE AT BACK EDGE OF CURB
TRANSVERSE JOINTS:
SCORE LINE AT 5' INTERVALS,
CONTRACTION JOINT AT 10' INTERVALS

NOTES:

1. DRIVE OVER CURB AND GUTTER SHALL ONLY BE USED IN INFILL AREAS AS A REPLACEMENT, NOT ALLOWED ON NEW DEVELOPMENTS.
2. TRANSITION LOW PROFILE CURB AND GUTTER TO VERTICAL CURB AND GUTTER TO ACCOMMODATE CURB INLETS IN ACCORDANCE WITH STANDARD DETAIL S-25.
3. MOISTURE BARRIER IS REQUIRED WHERE SIDEWALK IS POURED ADJACENT TO LANDSCAPING AND IT SHALL BE 14 MIL. THICK PLASTIC SHEET LINER EXTENDING FULL LENGTH SHOULD BE PLACED 24 INCHES DEEP MINIMUM.
4. IN HEAVY CLAY SOILS AND WHERE TREE TRUNK IS WITHIN 8' OF SIDEWALK OR ANY OTHER CONCRETE STRUCTURE, 24" DEEP ROOT BARRIER SHALL BE INSTALLED ALONG THE BACK OF SIDEWALK FOR A LENGTH OF 5 FEET EACH DIRECTION FROM TREE.
5. SEE NOTES ON STANDARD DETAIL S-17.
6. FINISHED CONCRETE SHALL BE FREE OF GRAFFITI.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

4 1/2" DRIVE OVER CURB, GUTTER AND SIDEWALK DETAIL

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 18
NTS

Oct 26, 2020 - 4:04pm
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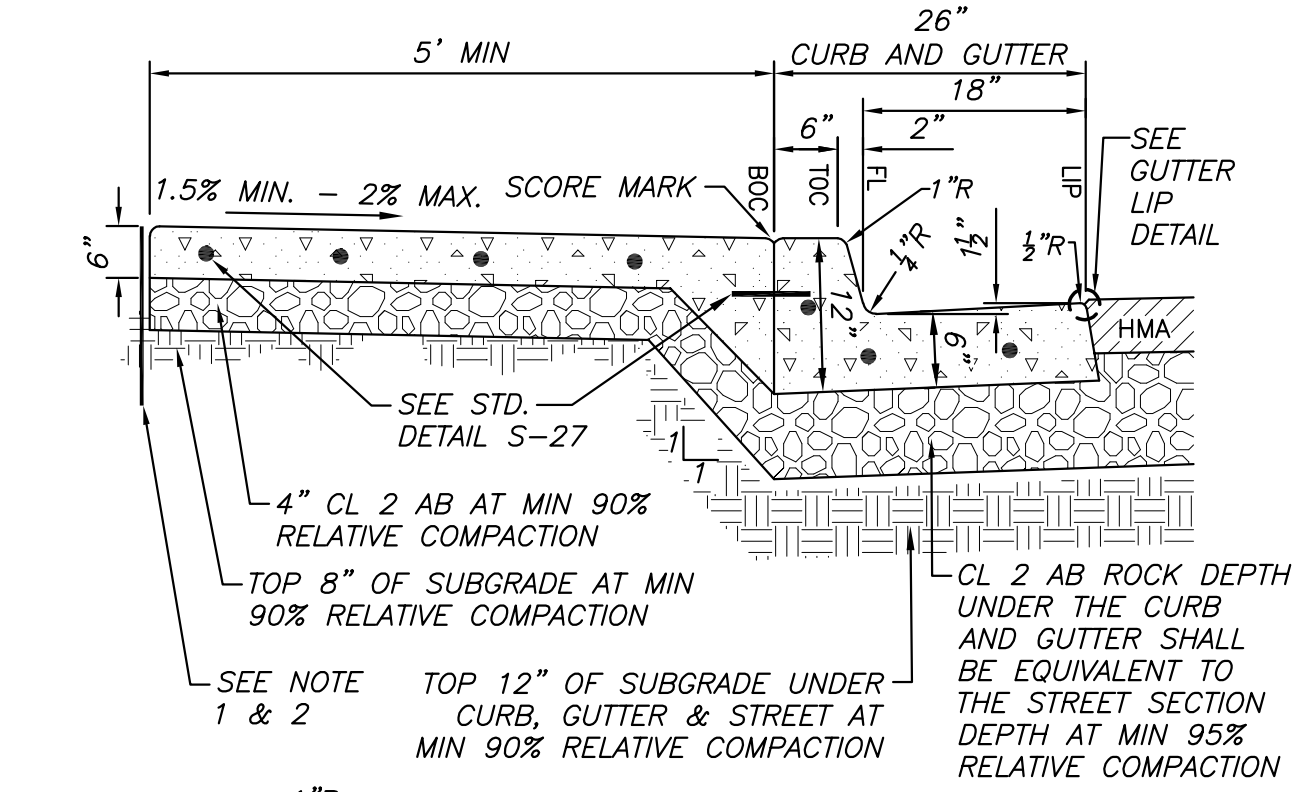
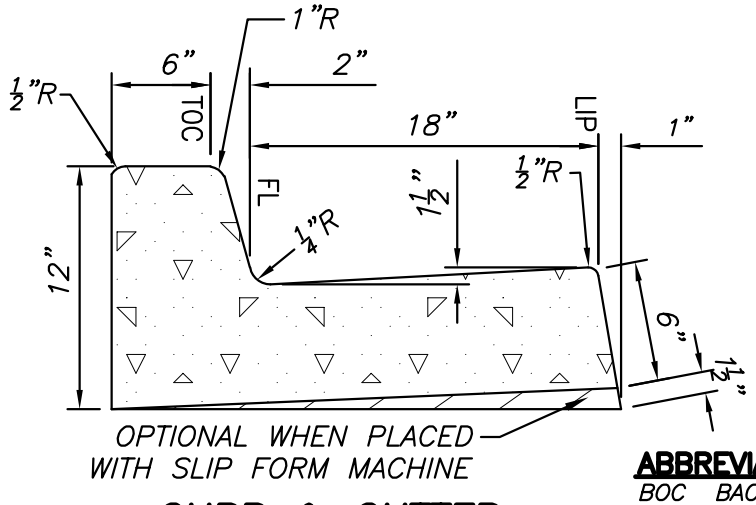
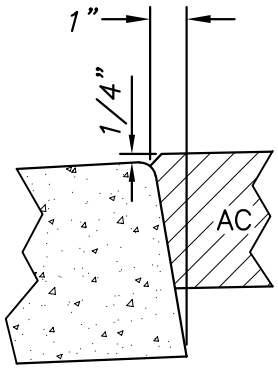




CURB & GUTTER DETAIL

ABBREVIATIONS

BOC	BACK OF CURB
FL	FLOWLINE
LIP	LIP OF GUTTER
TOC	TOP FACE OF CURB



GUTTER LIP DETAIL

NOTES:

1. MOISTURE BARRIER IS REQUIRED WHERE SIDEWALK IS POURED ADJACENT TO LANDSCAPING AND IT SHALL BE 14 MIL. THICK PLASTIC SHEET LINER EXTENDING FULL LENGTH SHOULD BE PLACED 24 INCHES DEEP MINIMUM.
2. IN HEAVY CLAY SOILS AND WHERE TREE TRUNK IS WITHIN 8' OF SIDEWALK OR ANY OTHER CONCRETE STRUCTURE, 24" DEEP ROOT BARRIER SHALL BE INSTALLED ALONG THE BACK OF SIDEWALK FOR A LENGTH OF 5 FEET EACH DIRECTION FROM TREE.
3. SEE NOTES ON STANDARD DETAIL S-17
4. FINISHED CONCRETE SHALL BE FREE OF GRAFFITI.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

6" VERTICAL CURB, GUTTER AND SIDEWALK DETAIL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 19

NTS

Oct 26, 2020 – 4:05pm
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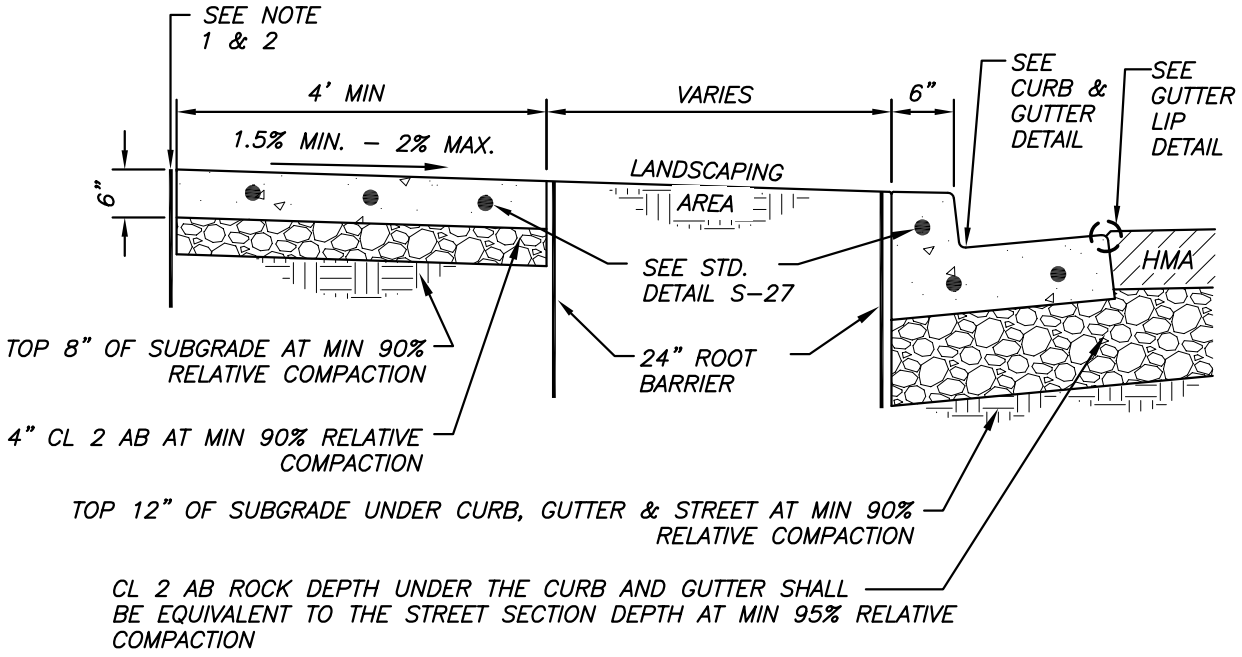
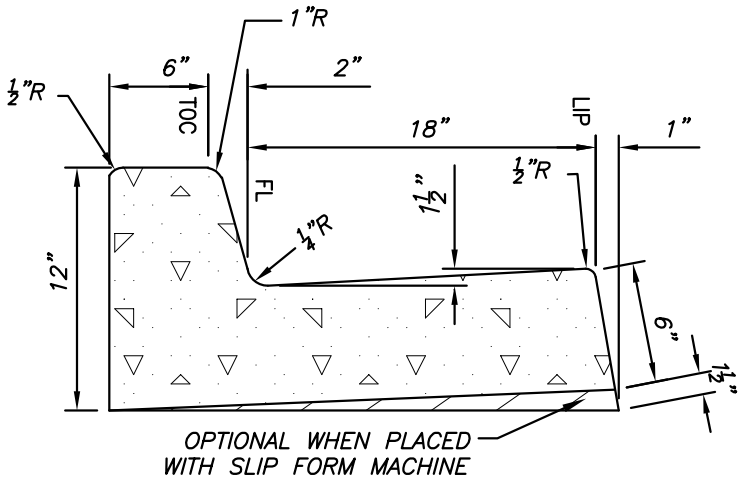
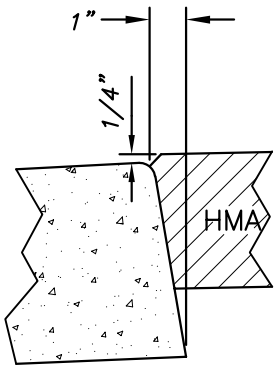




CURB & GUTTER DETAIL



GUTTER LIP DETAIL

ABBREVIATIONS

BOC	BACK OF CURB
FL	FLOWLINE
LIP	LIP OF GUTTER
TOC	TOP FACE OF CURB

NOTES:

1. MOISTURE BARRIER IS REQUIRED WHERE SIDEWALK IS POURED ADJACENT TO LANDSCAPING AND IT SHALL BE 14 MIL. THICK PLASTIC SHEET LINER EXTENDING FULL LENGTH SHOULD BE PLACED 24 INCHES DEEP MINIMUM.
2. IN HEAVY CLAY SOILS AND WHERE TREE TRUNK IS WITHIN 8' OF SIDEWALK OR ANY OTHER CONCRETE STRUCTURE, 24" DEEP ROOT BARRIER SHALL BE INSTALLED ALONG THE BACK OF SIDEWALK FOR A LENGTH OF 5 FEET EACH DIRECTION FROM TREE.
3. SEE NOTES ON STANDARD DETAIL S–17
4. FINISHED CONCRETE SHALL BE FREE OF GRAFFITI.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

6" VERTICAL CURB, GUTTER WITH DETACHED SIDEWALK DETAIL

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 20
NTS

Oct 26, 2020 – 4:06pm
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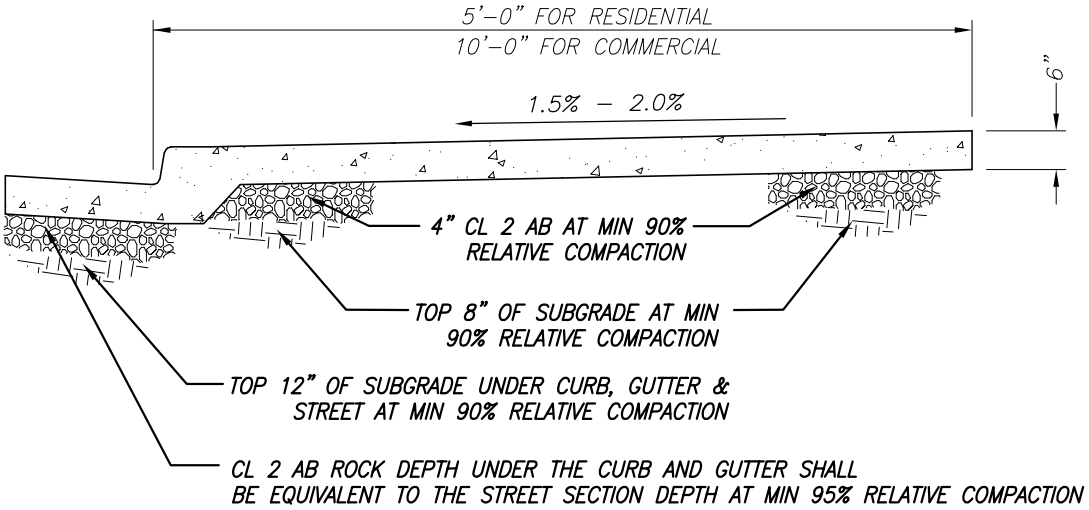
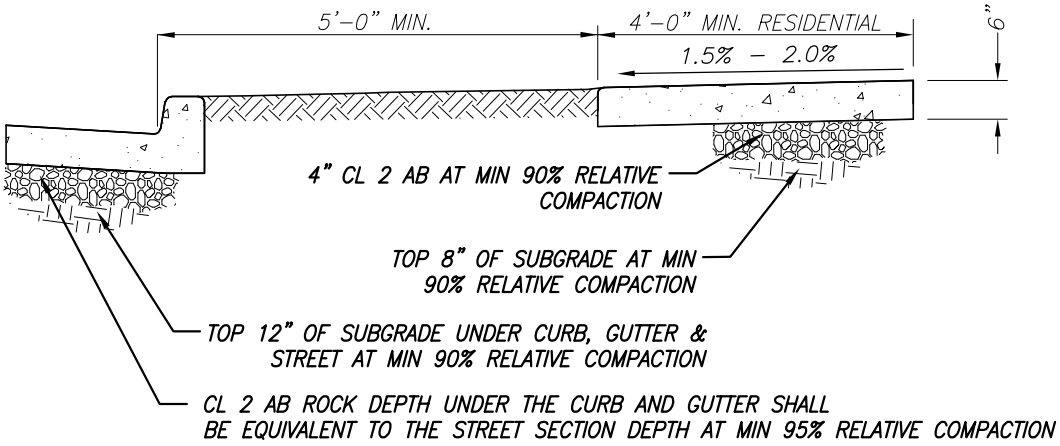
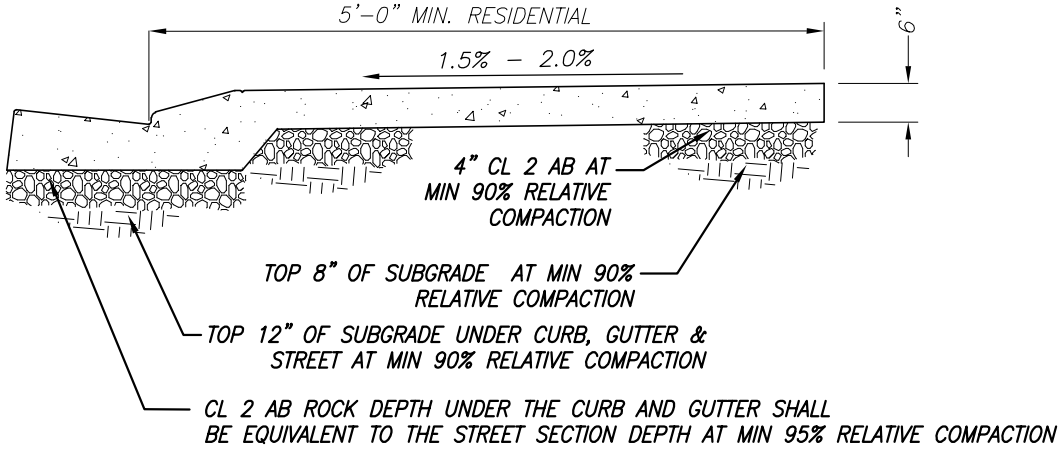


ATTACHED CURB AND SIDEWALK



DETACHED CURB AND SIDEWALK



ROLLOVER CURB AND SIDEWALK

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

SIDEWALK SECTIONS

DRAWING NO. S - 21

NTS

Oct 26, 2020 - 4:07pm
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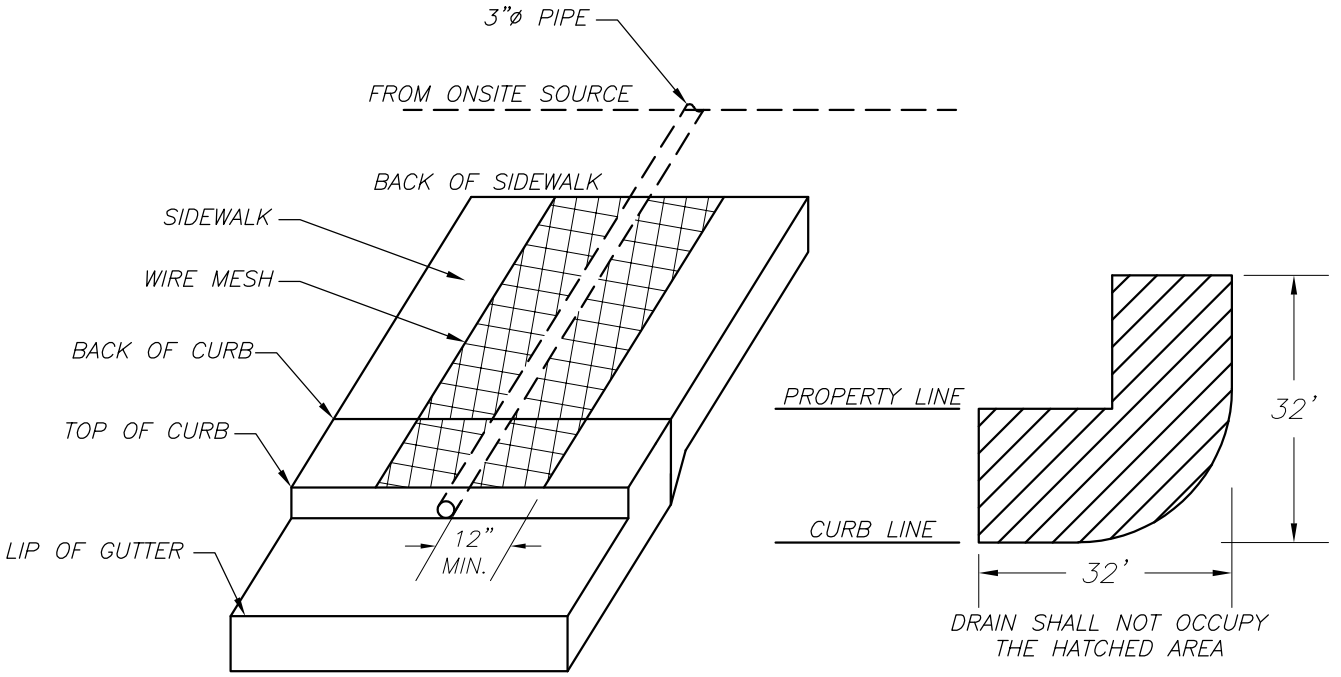

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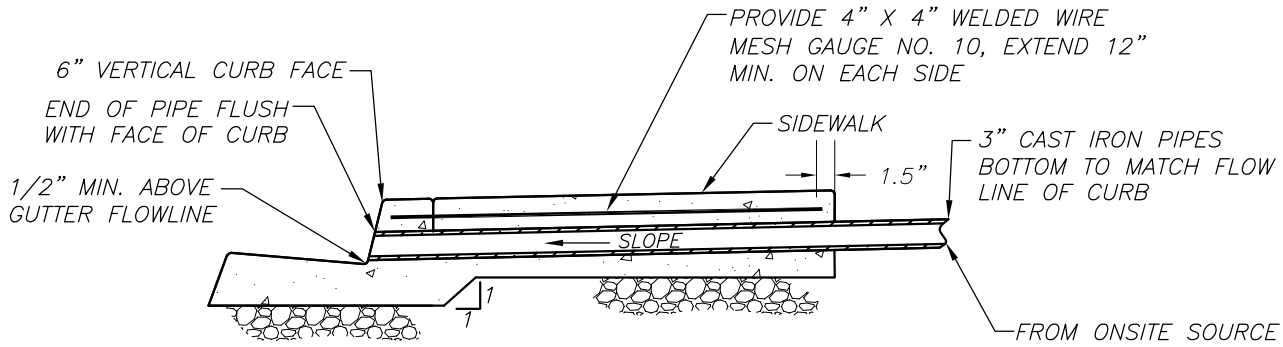

ELEVATION

NOTES:

1. *UNDER DRAIN PIPES SHALL ONLY BE INSTALLED WITH PRIOR APPROVAL FROM THE CITY ENGINEER.*
2. *PIPES WILL NOT ME MAINTAINED BY THE CITY.*
3. *FOR 3" OR SMALLER DIAMETER PIPE SHALL BE CAST IRON OR RIGID PLASTIC APPROVED BY THE CITY ENGINEER.*
4. *DRAIN SHALL NOT BE CONSTRUCTED UNDER A DRIVE APPROACH AND CURB RETURNS.*
5. *ALL DRAINS SHALL BE FLUSH WITH FACE OF CURB.*
6. *DRAIN SLOPES SHALL BE 0.01 FT./FT. MIN. AND 0.04 FT./FT. MAX.*
7. *SURFACE DRAINAGE OVER DRIVEWAY APPROACHES AND SIDEWALKS IS NOT PERMITTED.*
8. *CURB, GUTTER AND SIDEWALK SHALL BE PER CITY STANDARDS.*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

SIDEWALK - UNDER DRAIN

DRAWING NO. S - 22

NTS

Oct 26, 2020 - 4:08pm
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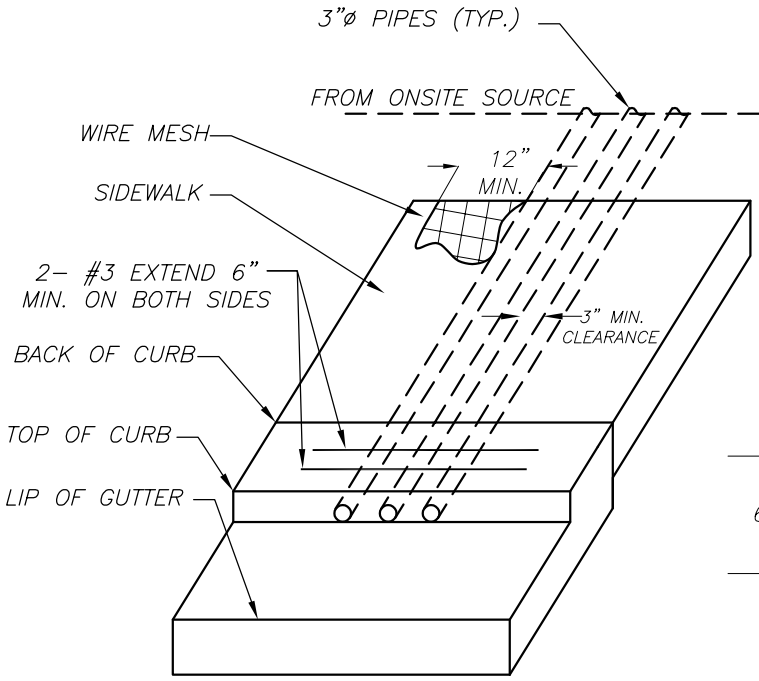

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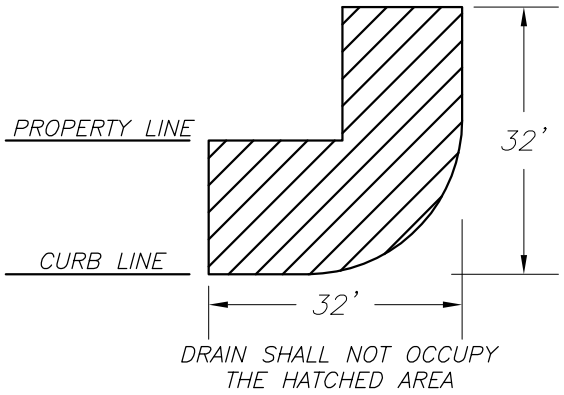
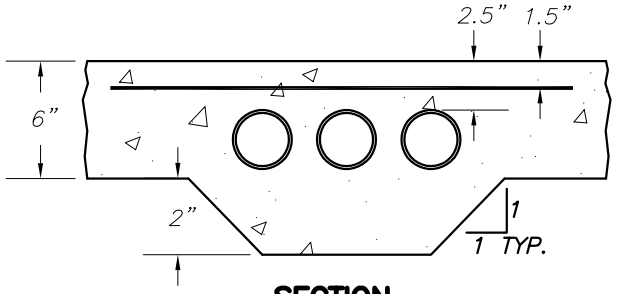
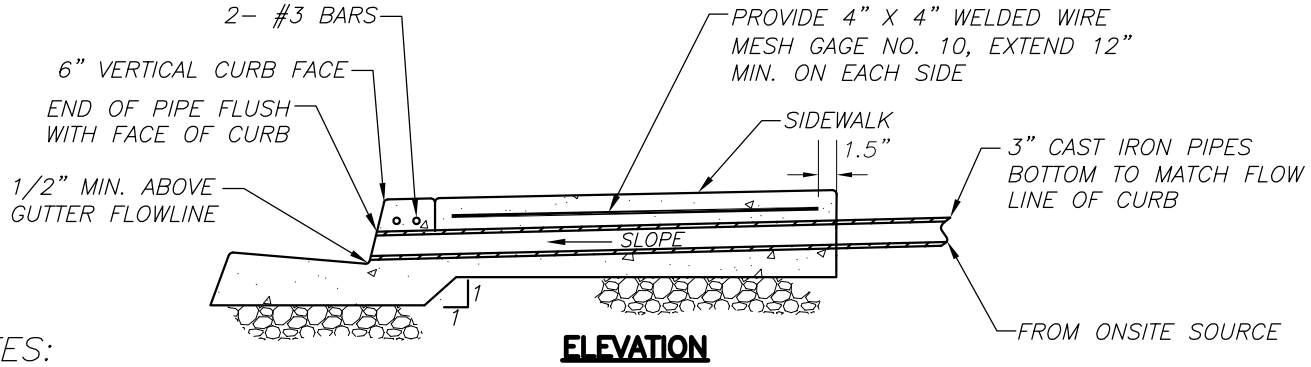




SECTION



ELEVATION

NOTES:

1. UNDER DRAIN PIPES SHALL ONLY BE INSTALLED WITH PRIOR APPROVAL FROM THE CITY ENGINEER.
2. PIPES WILL NOT ME MAINTAINED BY THE CITY.
3. FOR 3" OR SMALLER DIAMETER PIPE SHALL BE CAST IRON OR RIGID PLASTIC APPROVED BY THE CITY ENGINEER.
4. DRAIN SHALL NOT BE CONSTRUCTED UNDER A DRIVE APPROACH AND CURB RETURNS.
5. ALL DRAINS SHALL BE FLUSH WITH FACE OF CURB.
6. DRAIN SLOPES SHALL BE 0.01 FT./FT. MIN. AND 0.04 FT./FT. MAX.
7. SURFACE DRAINAGE OVER DRIVEWAY APPROACHES AND SIDEWALKS IS NOT PERMITTED.
8. CURB, GUTTER AND SIDEWALK SHALL BE PER CITY STANDARDS.
9. THE NUMBER OF PIPES AT ANY LOCATION SHALL NOT EXCEED 4.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

SIDEWALK - UNDER DRAIN (MULTIPLE)

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 23

NTS

Oct 26, 2020 – 4:08pm
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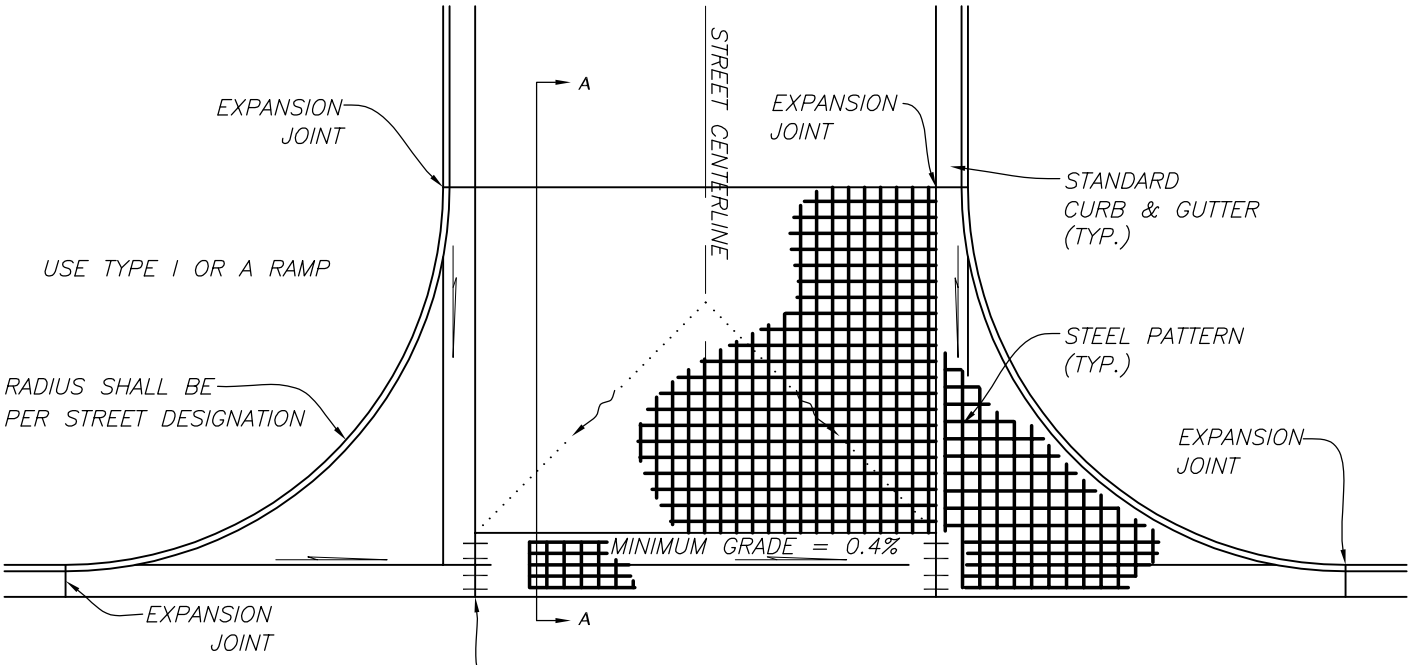
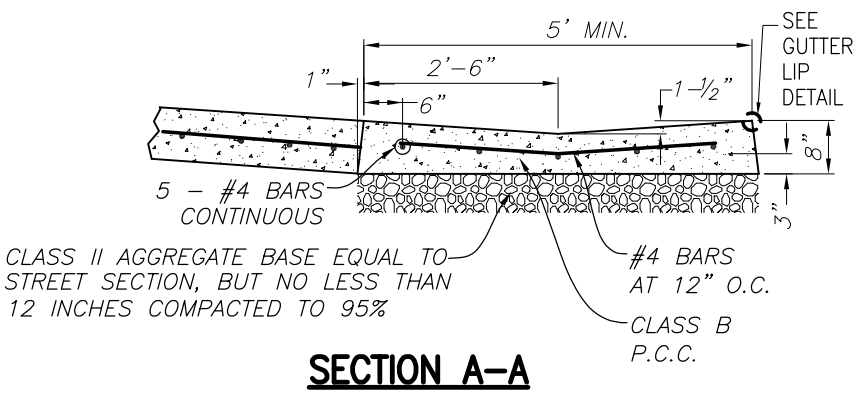
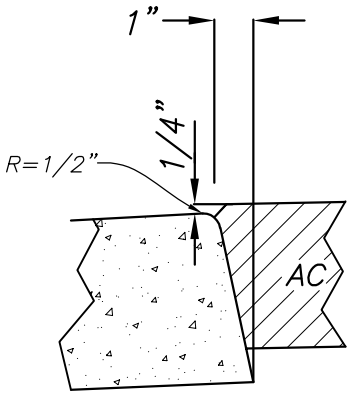




SECTION A-A



GUTTER LIP DETAIL

NOTES:

1. REINFORCING BAR TO BE SUPPORTED AT 4' O.C. WITH 3" CONCRETE DOBIES.
2. A COLD JOINT TO BE PLACED AGAINST CLEANED CURB FACE EXCEPT WHEN POURED MONOLITHICALLY WITH THE CURB.
3. RAISE CURB AT CENTER OF RETURN TO MAINTAIN 2% MIN. SLOPE AWAY FROM CURB.
4. VALLEY GUTTER WIDTH SHALL BE 5' MIN. TO 8' MAX.
5. REINFORCING STEEL TO BE EXTENDED 12" MIN. & SPLICED ACCORDING TO STATE SPECIFICATIONS.
6. SEE NOTES ON STANDARD DETAIL S-17.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

CONCRETE APRON

DRAWING NO. S - 24

Feb 16, 2021 - 11:07am
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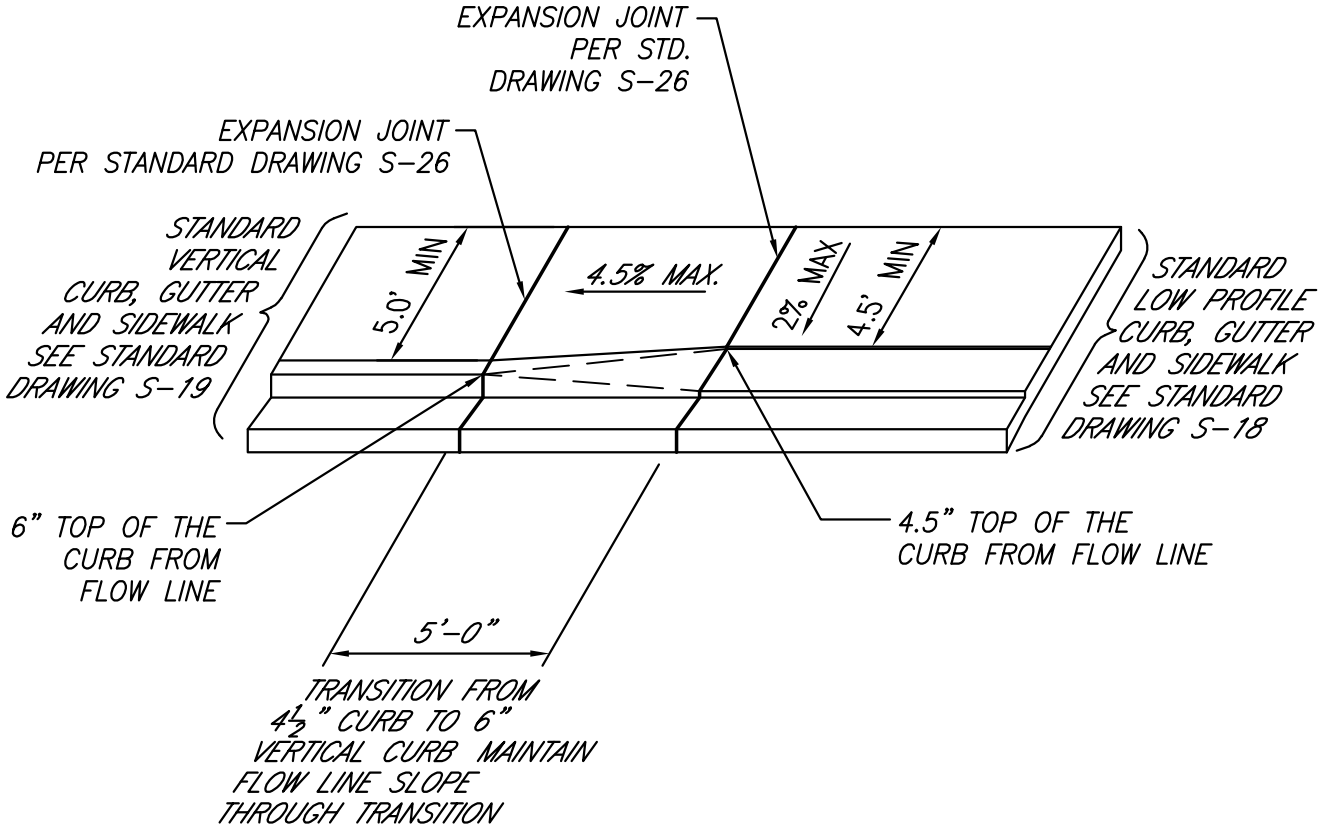


NOTES:

1. SEE NOTES ON STANDARD DRAWING S-17.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

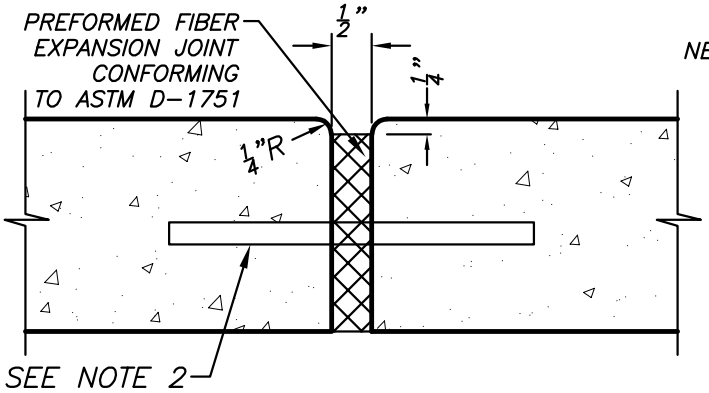
10/26/20
DATE

62736
R.C.E. NO.

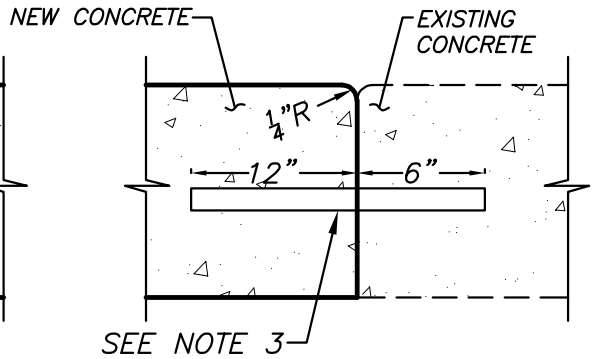
CURB TRANSITION DETAIL

DRAWING NO. S - 25

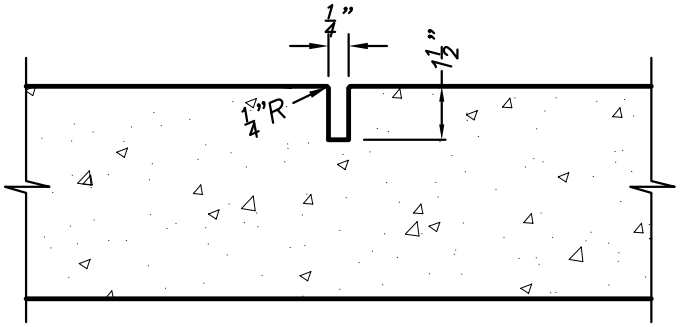
NTS



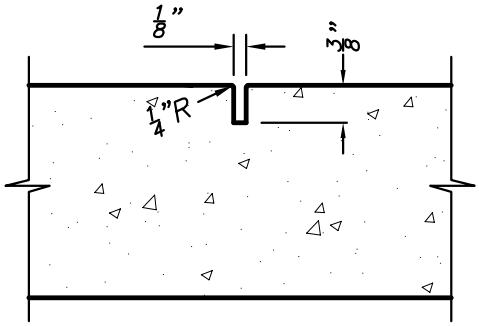
EXPANSION JOINT



SIDEWALK CONTACT JOINT "COLD JOINT"



WEAKENED PLANE JOINT "CONTRACTION JOINT" "DEEP JOINT"



SCORE MARK "DUMMY JOINT"

NOTES:

1. SEE NOTES ON STANDARD DETAIL S-17 AND S-27 FOR DOWEL CONNECTION DETAILS.
2. 18" NO. 4 REBAR AT 12" O.C., GREASED AND WRAPPED ONE SIDE FOR MOVEMENT THROUGH ALL EXPANSION JOINTS OFFSET 6" FROM CONCRETE EDGES.
3. DRILL HOLES, BLOW CLEAN AND SET 18" NO. 4 REBAR AT 12" O.C. IN EPOXY THROUGH ALL COLD JOINTS WITH 6" EMBEDMENT AND OFFSET 6" FROM CONCRETE EDGES.
4. EXPANSION JOINTS SHALL BE CONSTRUCTED AT ENDS OF CURB RETURNS, AT BOTH ENDS OF DRIVEWAY, AROUND LIGHT POLES, FIRE HYDRANTS, CATCH BASINS, AND OTHER FIXED OBJECTS IN SIDEWALK; AND INTERVALS NOT TO EXCEED 200 FEET.
5. CONTRACTION JOINTS (WEAKENED PLANE JOINTS) SHALL BE CONSTRUCTED AT 10 FEET MAXIMUM INTERVALS EXTENDING THROUGH CURB AND GUTTER AND TRANSVERSE SCORE LINES AT THE INTERVALS OF 5 FEET IN SIDEWALK ONLY.
6. LONGITUDINAL SCORE MARK ALONG CENTER OF SIDEWALK IS REQUIRED WHEN SIDEWALK IS 6' OR MORE IN WIDTH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

CONCRETE JOINTS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 26

NTS

Oct 26, 2020 - 4:11pm
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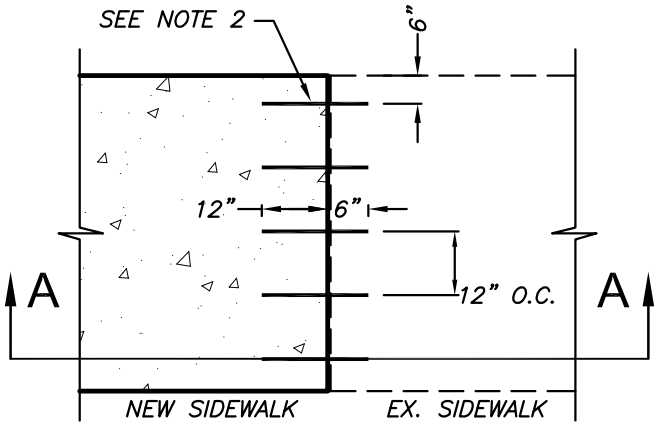
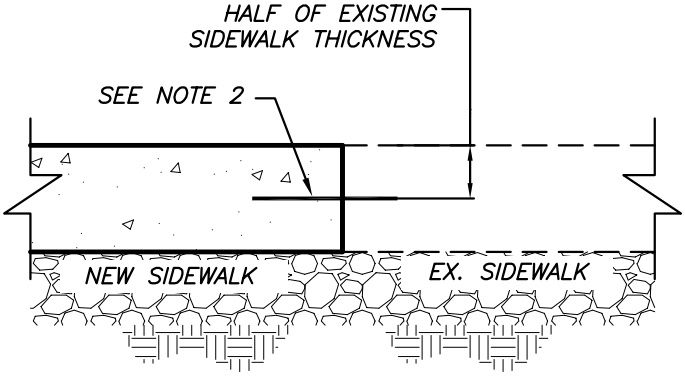
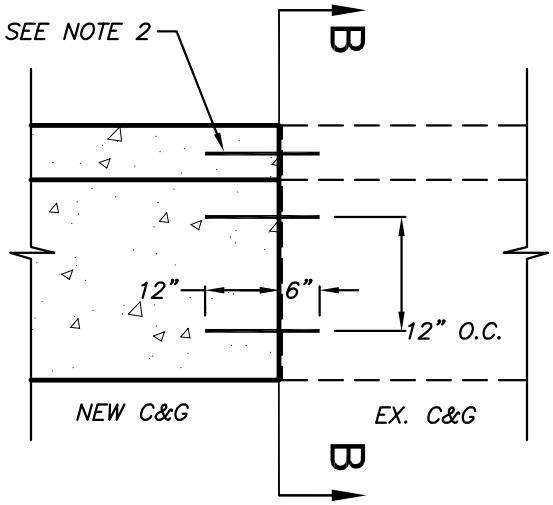


PLAN VIEW

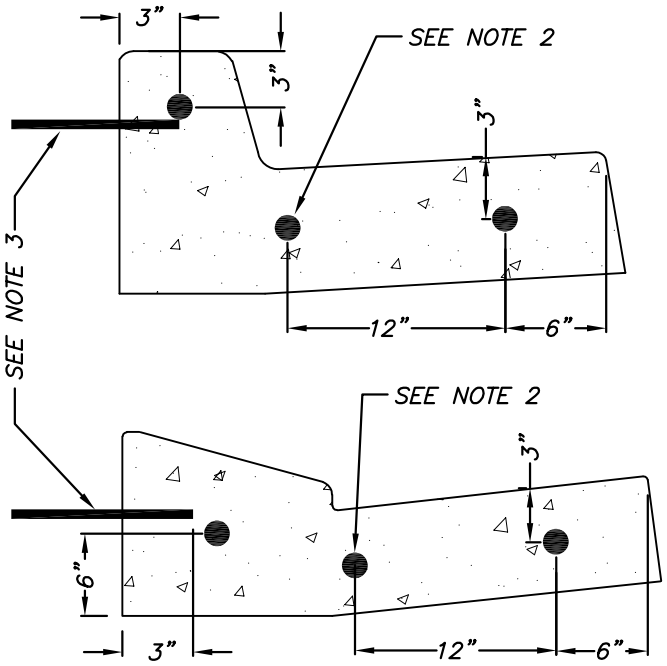


SECTION A–A

SIDEWALK



PLAN VIEW



SECTION B–B

CURB AND GUTTER

NOTES:

1. *SEE NOTES ON STANDARD DETAIL S–17.*
2. *DRILL HOLES, BLOW CLEAN AND SET 18" NO. 4 REBAR AT 12" O.C. IN EPOXY WITH 6" EMBEDMENT AND OFFSET 6" FROM CONCRETE EDGES.*
3. *IF CURB, GUTTER AND SIDEWALK NOT POURED MONOLITHICALLY NEW IMPROVEMENTS SHALL BE DOWELLED TO EXISTING. DRILL HOLES, BLOW CLEAN AND SET 18" NO. 4 REBAR 24" O.C. IN EPOXY WITH 3" EMBEDMENT AS SHOWN ABOVE.*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

DOWEL CONNECTIONS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 27

NTS

Oct 26, 2020 – 4:12pm
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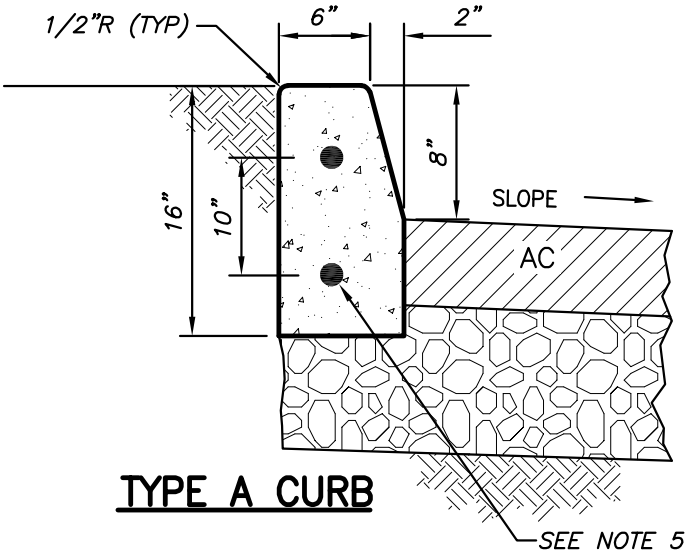
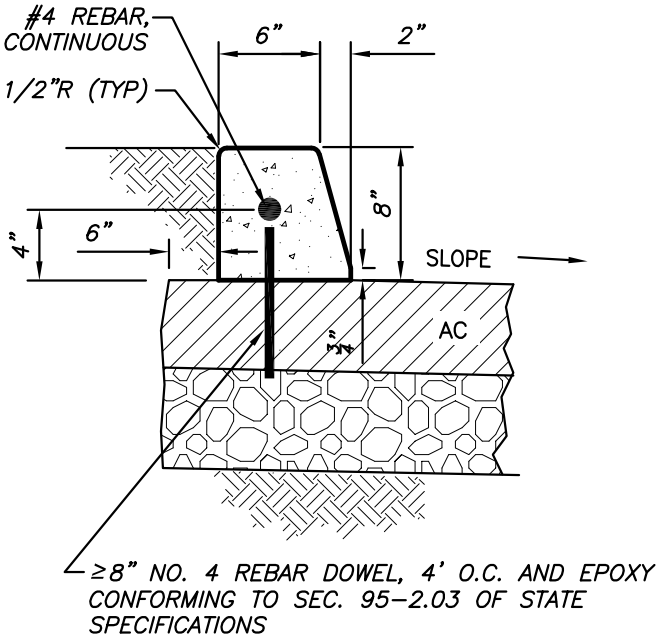
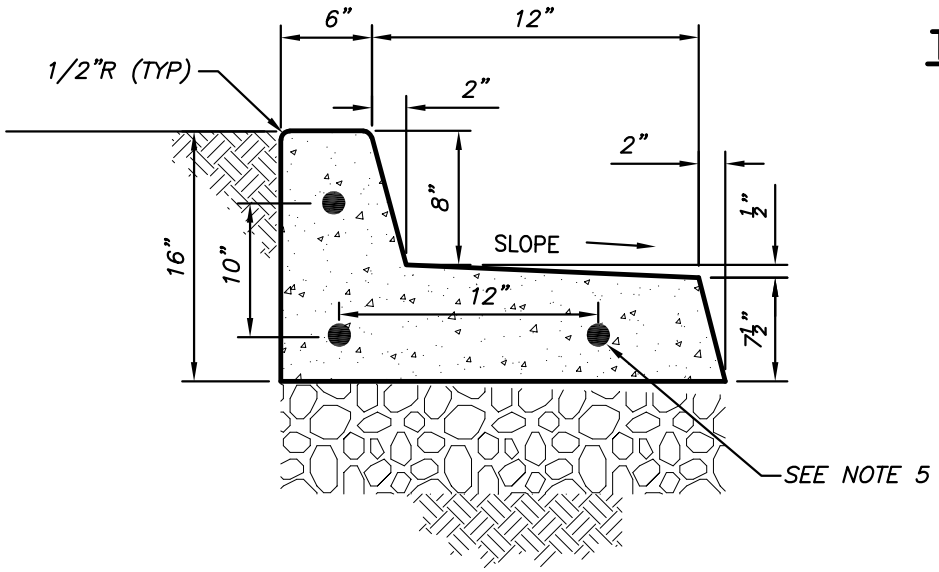


TYPE A CURB



TYPE B CURB



TYPE C CURB

NOTES:

1. *SUBDRAINS MAY BE REQUIRED IN LANDSCAPED MEDIANS.*
2. *SEE NOTES ON STANDARD DETAIL S-17.*
3. *BASE AND SUBBASE SHALL BE EQUIVALENT TO THE STREET SECTION DEPTH COMPACTED AT MIN 95% RELATIVE COMPACTION.*
4. *TYPE B CURB SHALL BE USED FOR TRAFFIC ISLANDS ONLY AND CITY ENGINEER APPROVAL IS REQUIRED.*
5. *DRILL HOLES, BLOW CLEAN AND SET 18" NO. 4 REBAR IN EPOXY WITH 6" EMBEDMENT.*
6. *EXPANSION JOINTS, WEAKENED PLANE JOINTS, AND SCORE LINES AS PER STANDARD DETAIL S-27.*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

MEDIAN AND TRAFFIC ISLAND CURBS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 28

NTS

Oct 26, 2020 - 4:13pm
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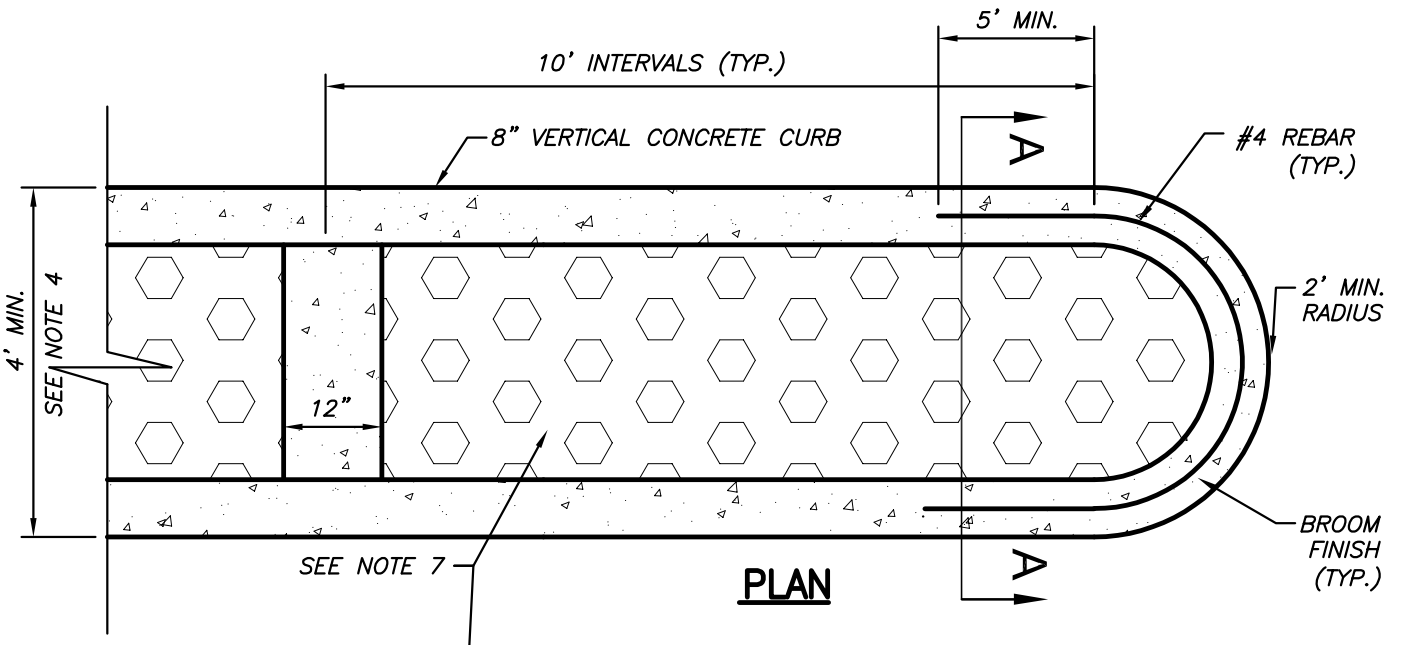

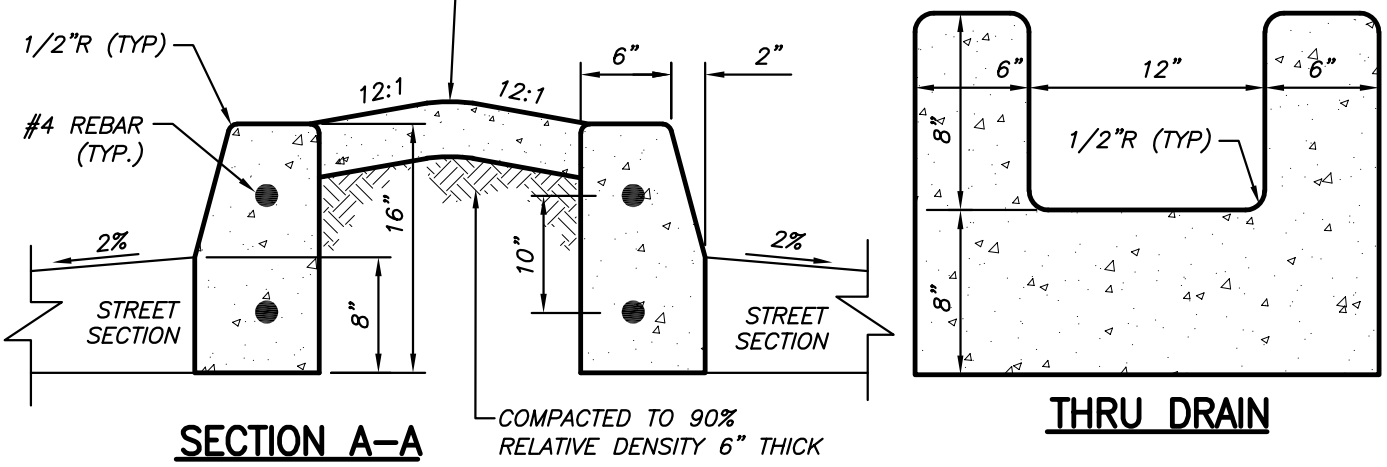

NOTES:

1. THRU DRAINS MAY BE REQUIRED AT 10 FEET INTERVALS AND SUBDRAINS FOR LANDSCAPED MEDIANS MAY BE REQUIRED.
2. SEE NOTES ON STANDARD DETAIL S-17.
3. EXPANSION JOINTS, WEAKENED PLANE JOINTS, AND SCORE LINES AS PER STANDARD DETAIL S-27.
4. MEDIANS 8 FEET IN WIDTH OR GREATER SHALL BE LANDSCAPED WITH DROUGHT TOLERANCE LANDSCAPING.
5. LANDSCAPED MEDIANS, CURB SHALL EXTEND 6" BELOW BOTTOM OF AGGREGATE BASE AND ROOT BARRIER AND/OR MOISTURE BARRIER SHALL BE REQUIRED.
6. MEDIANS SHALL BE CONTINUES FROM START AT AN INTERSECTION FOR A MINIMUM DISTANCE OF 350 FEET. ALL DRIVEWAYS WITHIN THIS DISTANCE SHALL BE RIGHT-IN AND RIGHT-OUT ONLY.
7. MEDIAN SURFACE SHALL HAVE ROUNDED EXPOSED AGGREGATE 3/4" MAXIMUM 4" THICK OR STAMPED COLORED CONCRETE, COBBLE STONES, OR INTERLOCKING PAVERS WITH THE DISCRETION OF CITY ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

MEDIAN DETAIL

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 29

NTS

Oct 26, 2020 - 4:14pm
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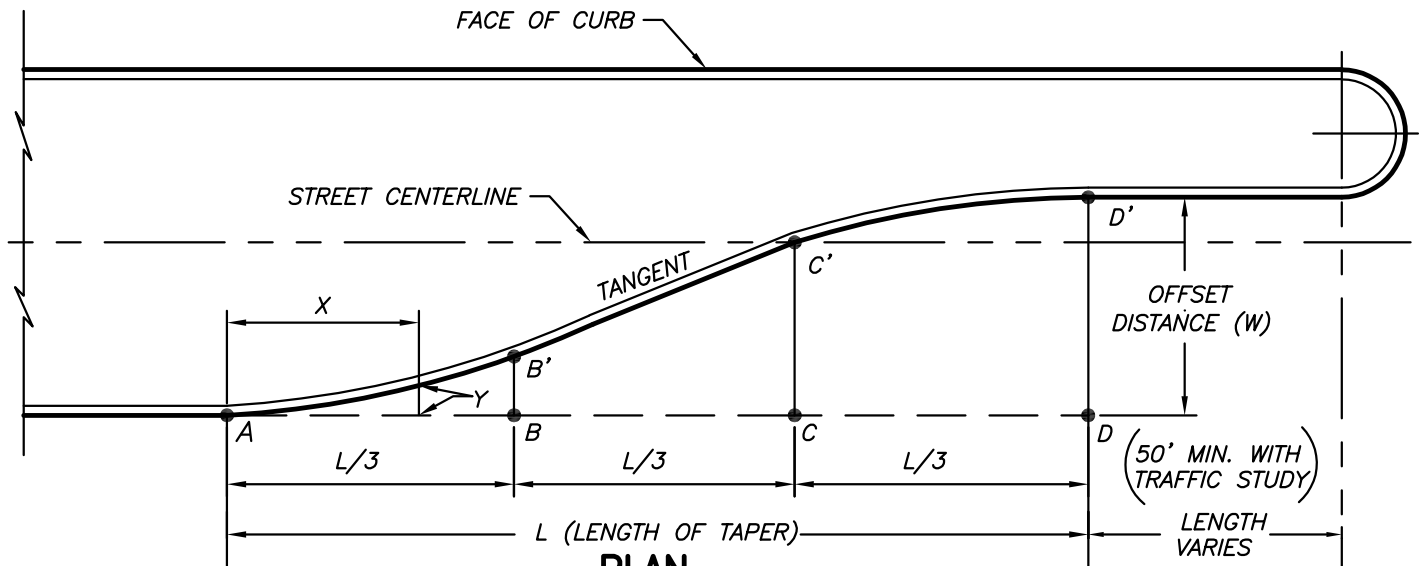

PLAN

	LENGTH OF TAPER (FT.)			OFFSET DISTANCE (FT.)			
	L=60'	L=90'	L=120'	DD'=10'	DD'=11'	DD'=12'	
	DISTANCE FROM POINT "A"						
	0	0	0	0	0	0	
	5	7.5	10	0.16	0.17	0.19	
	10	15.0	20	0.62	0.69	0.75	
	15	22.5	30	1.41	1.55	1.69	
B'	20	30.0	40	2.50	2.75	3.00	B'
	30	45.0	60	5.00	5.50	6.00	
C'	40	60.0	80	7.50	8.25	9.00	C'
	45	67.5	90	8.59	9.45	10.31	
	50	75.0	100	9.38	10.31	11.25	
	55	82.5	110	9.84	10.83	11.81	
D'	60	90.0	120	10.00	11.00	12.00	D'

NOTES:

1. WHERE STREET CENTERLINE IS A CURVE, NEITHER BASE LINE NOR TAPER BETWEEN B & C WILL BE A TANGENT, USE PROPORTIONAL OFFSETS FROM B TO C.

2. L = AD = LENGTH OF TAPER
   W = MAXIMUM OFFSET DISTANCE
   X = DISTANCE ALONG BASELINE
   Y = OFFSET FROM BASELINE
   AB = BC = CD = 1/3 L
   BB' = 1/3 CC' = 1/4 DD'
   AB' & C'D' ARE PARABOLIC CURVES

3. TO DETERMINE OFFSET DISTANCE FOR ANY LENGTH OF TAPER USE FORMULA BELOW:

$$Y = 2.25\ W \left(\frac{X}{L}\right)^2$$

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

MEDIAN ISLAND TAPER

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 30
NTS

Oct 26, 2020 - 4:15pm
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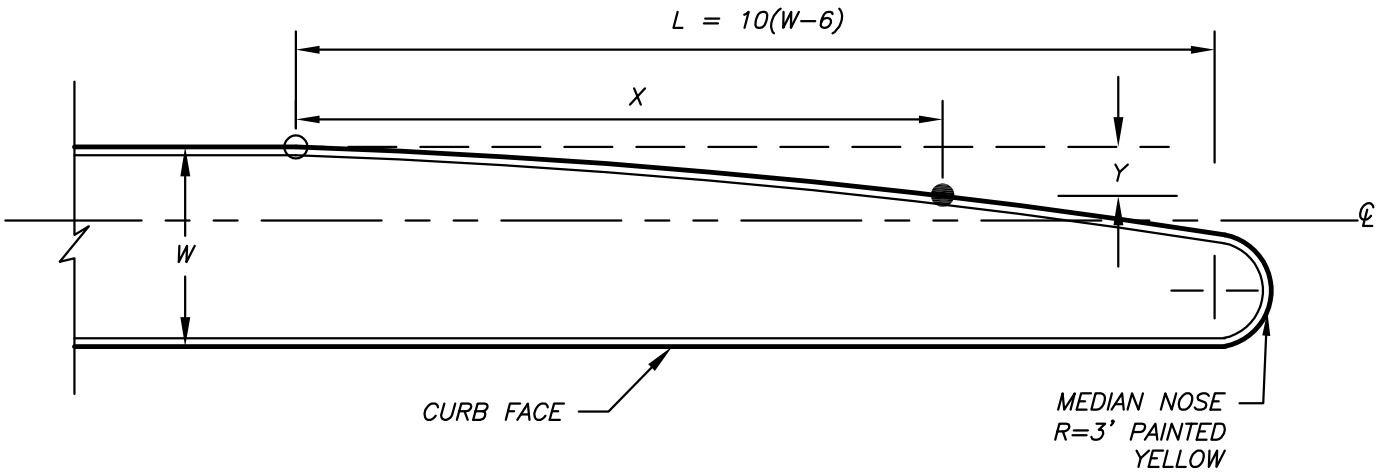

$$Y = (W-6)\left(\frac{X}{L}\right)^2$$

L = LENGTH OF FLARE
W = MAXIMUM OFFSET DISTANCE
X = DISTANCE ALONG BASELINE
Y = OFFSET FROM BASELINE

1:10 FLARE OFFSETS

12' MEDIAN L = 60'	X	0	10	20	30	40	50	60						
	Y	0	0.17	0.67	1.50	2.67	4.17	6.00						
14' MEDIAN L = 80'	X	0	10	20	30	40	50	60	70	80				
	Y	0	0.13	0.50	1.13	2.00	3.13	4.50	6.13	8.00				
16' MEDIAN L = 100'	X	0	10	20	30	40	50	60	70	80	90	100		
	Y	0	0.10	0.40	0.90	1.60	2.50	3.60	4.90	6.40	8.10	10.00		
18' MEDIAN L = 120'	X	0	10	20	30	40	50	60	70	80	90	100	110	120
	Y	0	0.08	0.33	0.75	1.33	2.08	3.00	4.08	5.33	6.75	8.33	10.08	12.00

NOTES:

1. ALL OFFSETS ARE MEASURED FROM A BASE LINE WHICH IS THE CURB LINE EXTENDED.
2. DISTANCE ALONG THE BASE LINE IS MEASURED FROM THE POINT OF TANGENCY AT THE BEGINNING OF THE FLARE.
3. MEDIAN NOSE SHALL BE PAINTED YELLOW WITH REFLECTIVE GLASS BEADS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

MEDIAN ISLAND FLARES

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 31
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Oct 26, 2020 – 4:16pm
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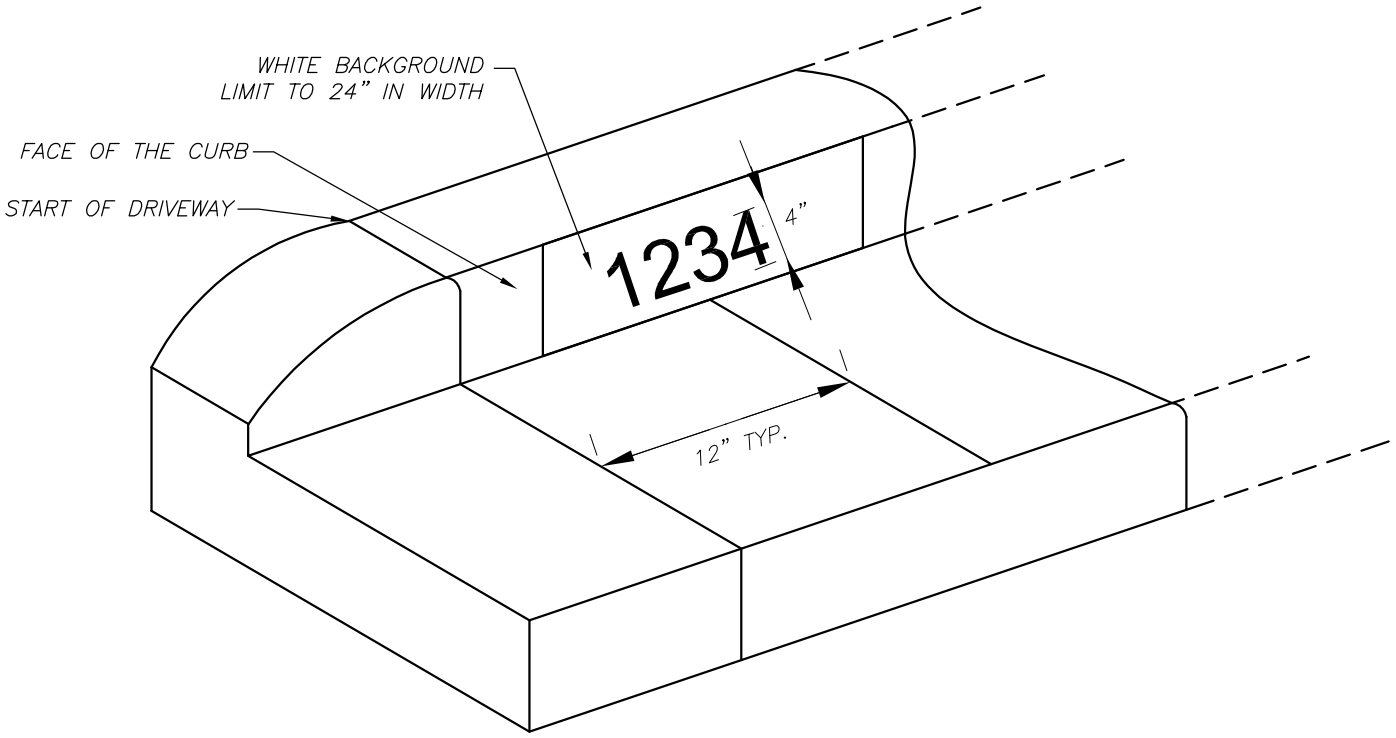

CURB PAINTING STANDARD

NOTES:

1. BUILDING NUMBERS SHALL BE PAINTED ON CURB SURFACES IN ACCORDANCE WITH THIS STANDARD DRAWING.
2. NUMBERS SHALL BE PAINTED WITH BLACK 4" BLOCK LETTERS HAVING 1/2" STROKE ON A WHITE REFLECTORIZED BACKGROUND.
3. NUMBERS SHALL BE PAINTED WITHIN 2 FT. OF THE DRIVEWAY TO THE PROPERTY.
4. AN APPROVED ENCROACHMENT PERMIT FROM THE CITY OF PATTERSON SHALL BE OBTAINED BEFORE CURBS PAINTED.
5. PAINT MUST BE APPROVED BY THE CITY ENGINEER, AND SUBMITTALS SHALL BE SUBMITTED.
6. PAINTING CONTRACTOR MUST HAVE A VALID BUSINESS LICENSE IN THE CITY OF PATTERSON.
7. A SPECIFIED FEE SHALL BE CHARGED FOR WORK PERFORMED (NO DONATIONS).
8. APPROVAL IN WRITING OF THE PROPERTY OWNER PRIOR TO PAINTING SHALL BE SUBMITTED TO THE CITY ENGINEER.
9. NUMBER SHALL BE CENTERED ON 24" BACKGROUND.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

CURB NUMBERS

DRAWING NO. S - 32
NTS

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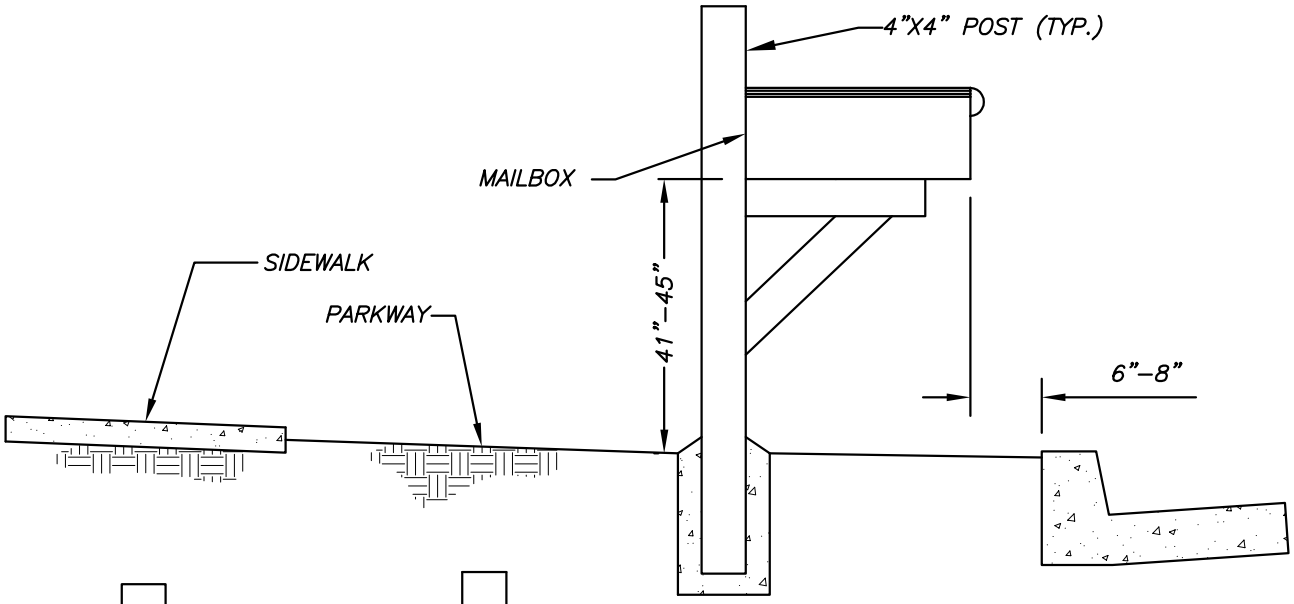
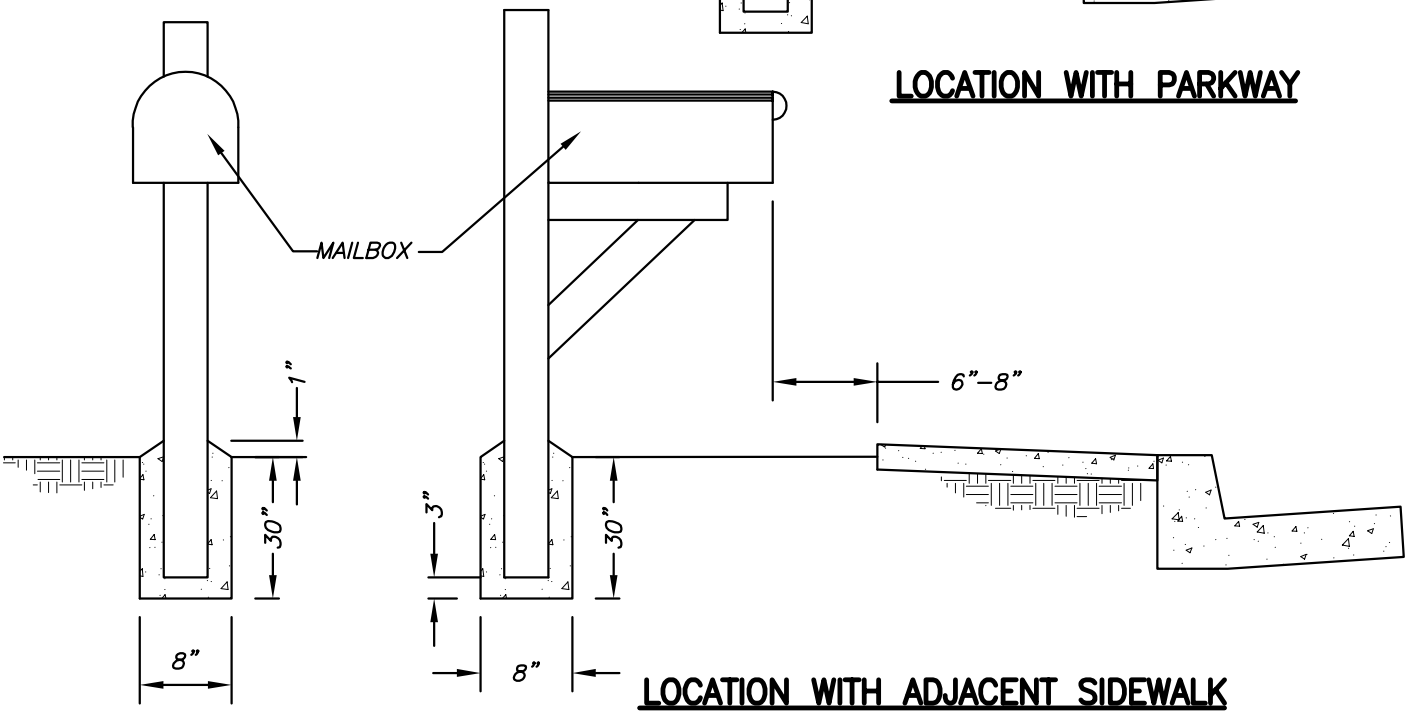


LOCATION WITH PARKWAY



LOCATION WITH ADJACENT SIDEWALK

BACK VIEW

NOTES:

1. MAILBOXES SHALL SERVE HOUSES ON ONE SIDE OF STREET ONLY.
2. HOMEOWNERS SHALL BE RESPONSIBLE FOR ALL MAINTENANCE AND REPAIR.
3. ALL WOOD POSTS SHALL BE REDWOOD OR PRESSURE TREATED DOUGLAS FIR.
4. LOCATION SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO THE PLACEMENT.
5. TWO MAILBOXES MAXIMUM SHALL BE INSTALLED ON EACH POST.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

MAILBOX (INFILL & REPLACEMENT ONLY)

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. S - 33

NTS

Oct 27, 2020 - 7:24am
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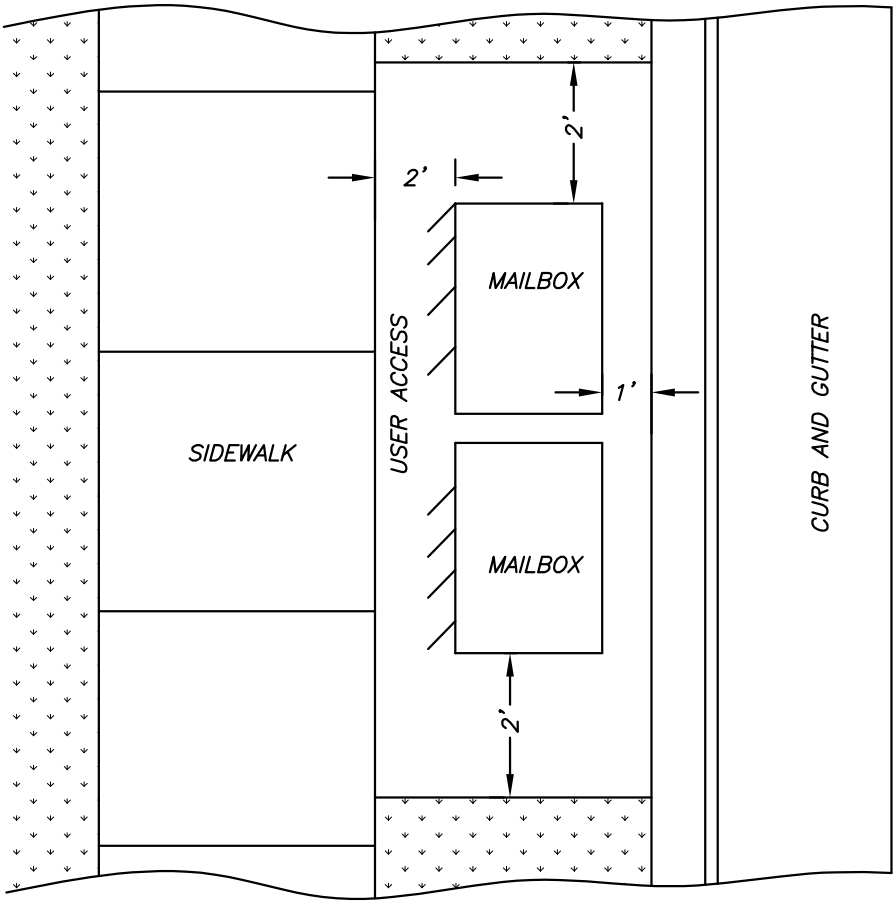
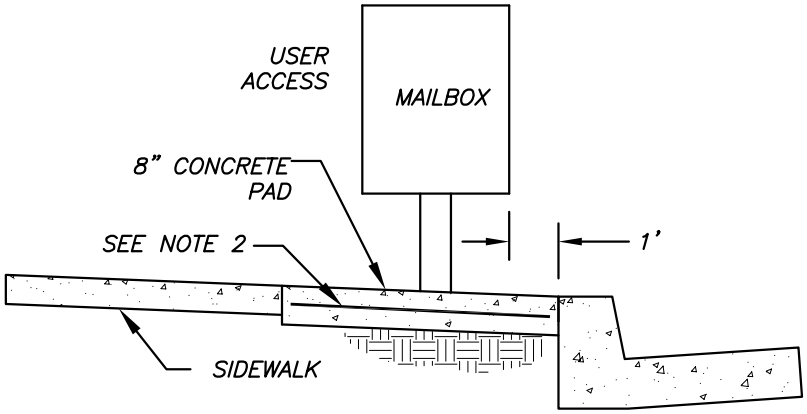


PLAN



SECTION

NOTES:

1. ALL MAILBOX CLUSTER DESIGNS SHALL BE APPROVED BY THE UNITED STATE POSTAL SERVICE PRIOR TO INSTALLATION.

2. ALL MAILBOX CONCRETE PADS SHALL HAVE 4"X6" WELDED WIRE MESH REINFORCEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

MAILBOX CLUSTER

DRAWING NO.
S - 34

NTS

Oct 27, 2020 - 7:25am
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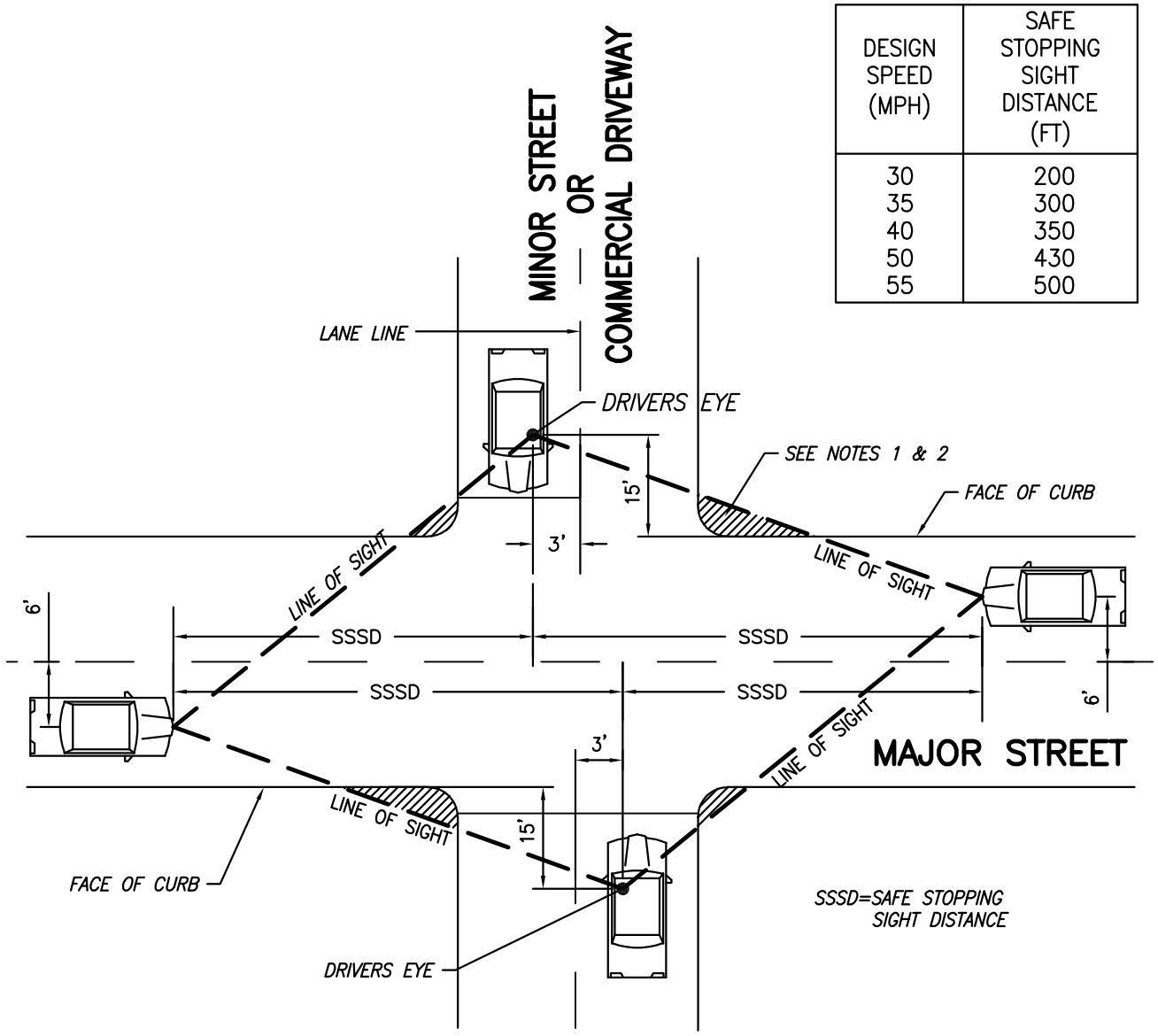
DESIGN SPEED (MPH)	SAFE STOPPING SIGHT DISTANCE (FT)
30	200
35	300
40	350
50	430
55	500



NOTES:

1. ALL SIGNS, HEDGES, SHRUBBERY, NATURAL GROWTH OR OTHER OBSTRUCTIONS TO THE VIEW SHALL NOT EXCEED THREE (3) FEET ABOVE THE LEVEL EDGE OF PAVEMENT. THIS APPLIES TO THE MEDIAN AREAS WITHIN SIGHT DISTANCE TRIANGLE ALSO.
2. NO TREES PERMITTED WITHIN THE CROSSHATCHED AREA WITH A MATURE TREE TRUNK DIAMETER OVER 6 INCHES AND ALL TREE BRANCHES MUST BE TRIMMED TO A HEIGHT OF 8 FEET ABOVE THE GROUND. THIS APPLIES TO THE MEDIAN AREAS WITHIN SIGHT DISTANCE TRIANGLE ALSO.
3. SAFE STOPPING SIGHT DISTANCE VARIES IN ACCORDANCE WITH DESIGN SPEED.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

RIGHT ANGLE INTERSECTION STOPPING SIGHT DISTANCE

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 35
NTS

Oct 27, 2020 - 7:26am
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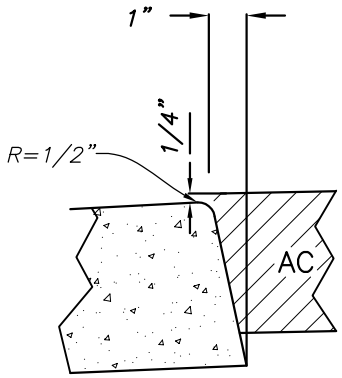
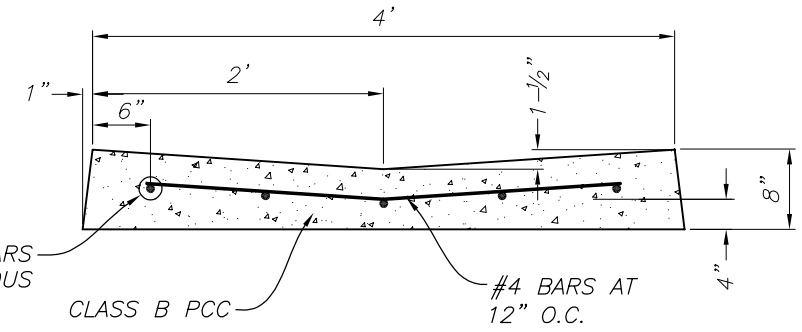
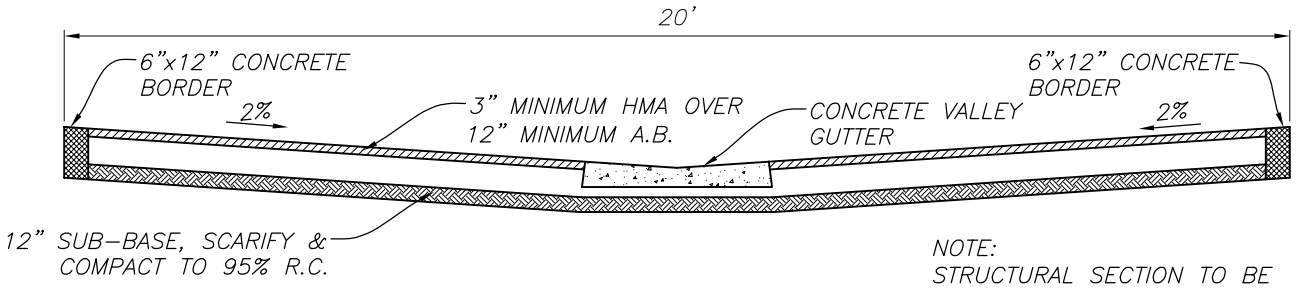


GUTTER LIP DETAIL



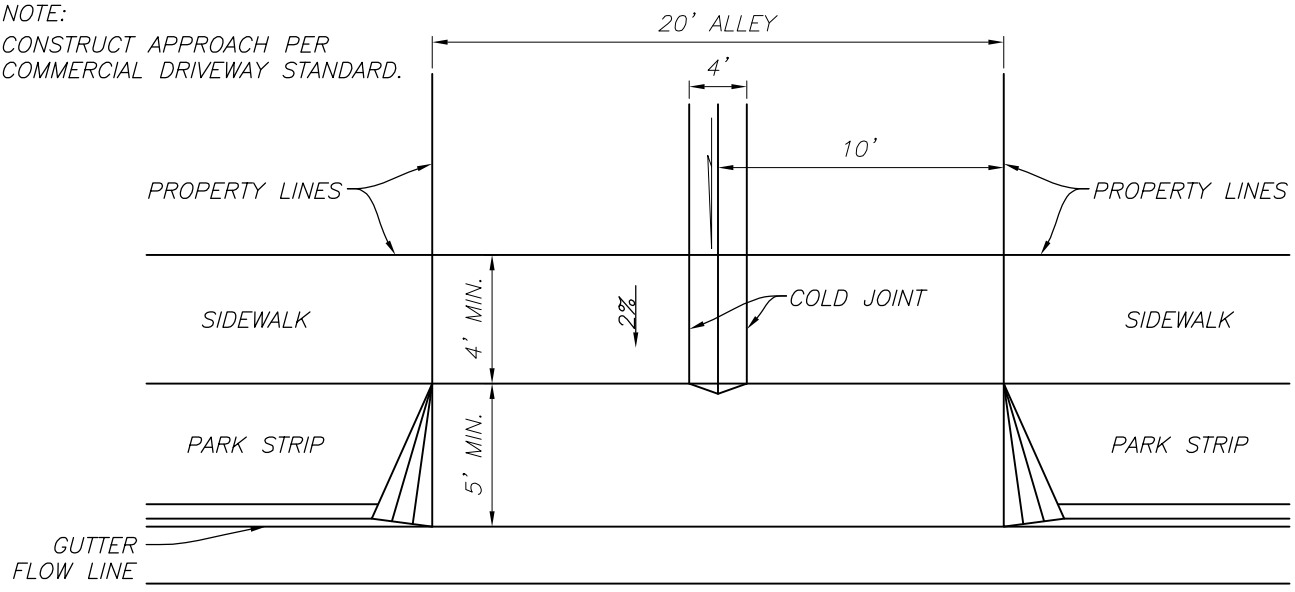
CONCRETE VALLEY GUTTER DETAIL



ALLEY INTERSECTION

NOTE:
STRUCTURAL SECTION TO BE DESIGNED ACCORDING TO SECTION 3.6 OF THESE STANDARDS

NOTE:
CONSTRUCT APPROACH PER COMMERCIAL DRIVEWAY STANDARD.



PLAN

NOTES:

1. REINFORCING BAR TO BE SUPPORTED AT 4' O.C. WITH 3" CONCRETE DOBIES.
2. VALLEY GUTTER SHALL HAVE WEAKENED PLANE JOINTS @ 15' O.C. AND EXPANSION JOINTS @ 90' O.C.
3. REINFORCING STEEL TO BE EXTENDED 12" MIN. & SPLICED ACCORDING TO STATE SPECIFICATIONS.
4. SEE NOTES ON STANDARD DETAIL S–17.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

ALLEY APPROACH

DRAWING NO. S - 36

NTS

Oct 27, 2020 – 7:40am
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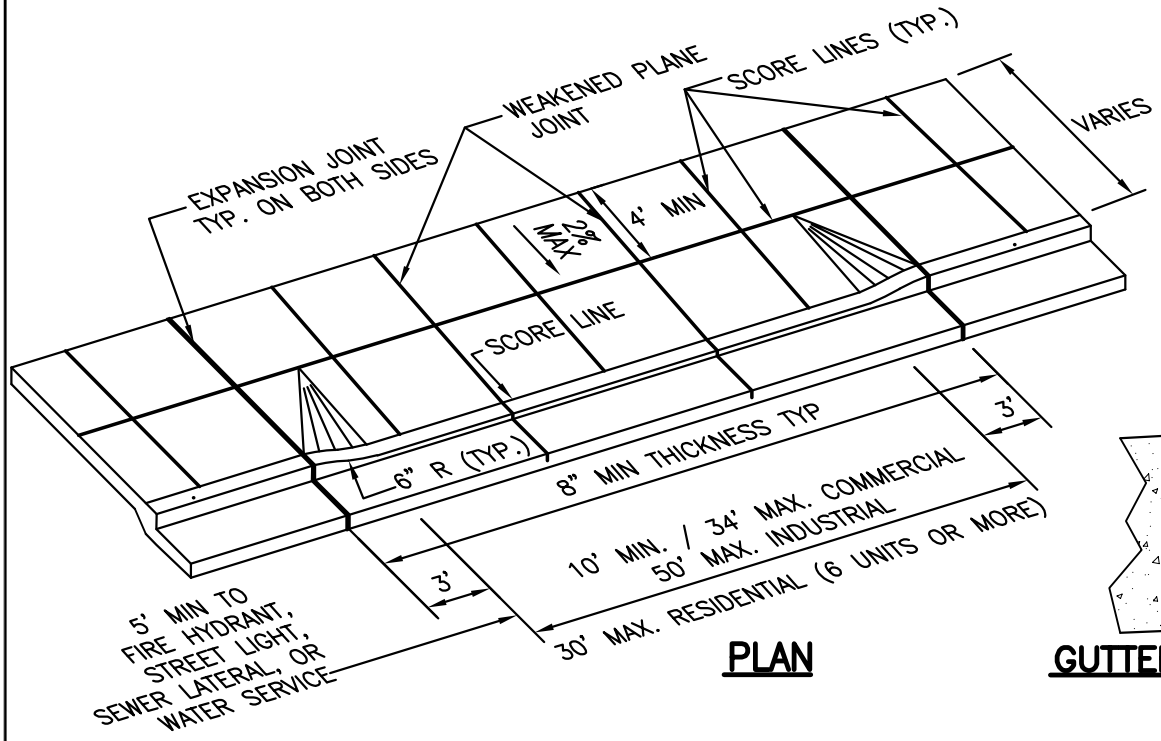
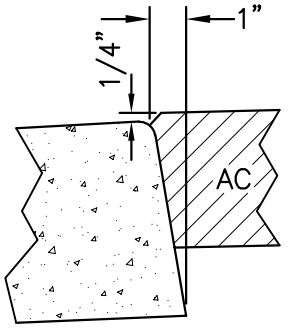
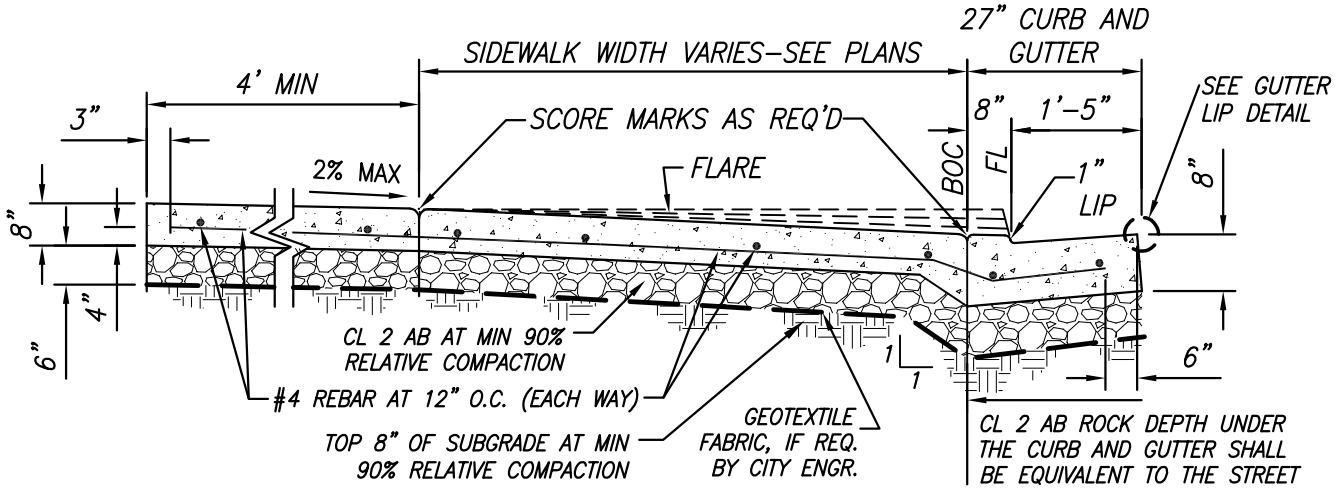


PLAN



GUTTER LIP DETAIL



SECTION

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
3. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
4. EXISTING COMMERCIAL DRIVEWAYS MAY NEED TO BE MODIFIED TO CONFORM TO NEW ELEVATION OF RETROFIT.
5. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC–RATED.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

COMMERCIAL DRIVEWAY

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 37

NTS

Oct 27, 2020 – 7:41am
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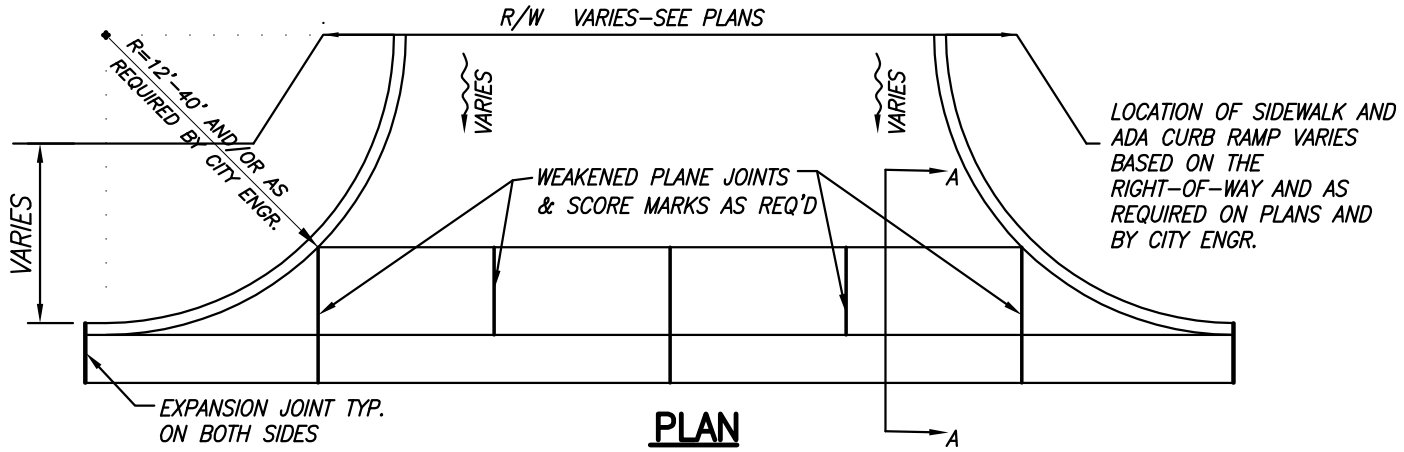
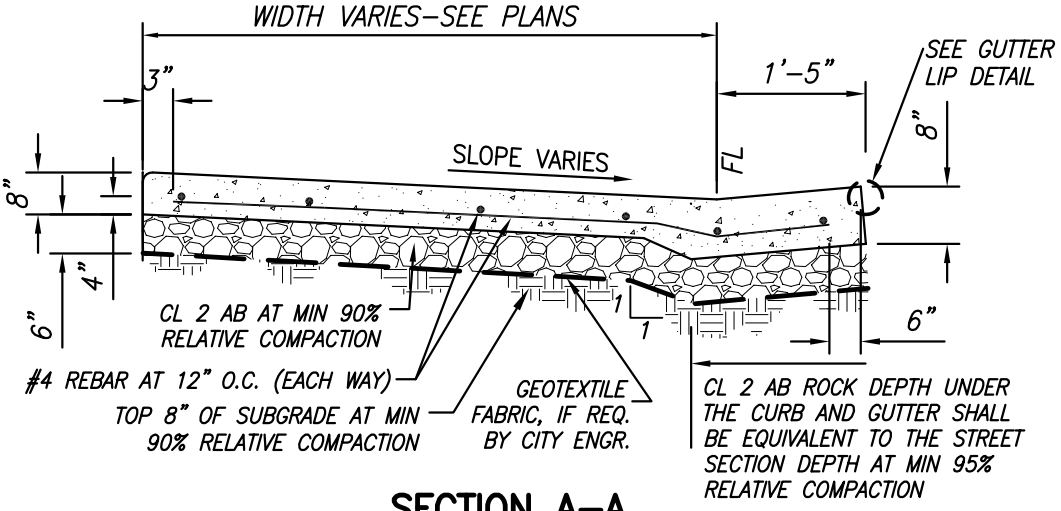
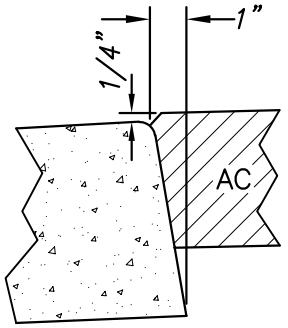


PLAN



SECTION A–A



GUTTER LIP DETAIL

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. SIDEWALK AND ADA RAMP LOCATION VARIES BASED ON THE STREET RIGHT–OF–WAY. SIDEWALK CROSS SLOPE SHALL NOT EXCEED 2%.
3. WIDTH OF THE CROSS–GUTTER AND DRIVEWAY VARIES AS DECIDED ON CASE TO CASE BASIS.
4. RADIUS OF THE CURB VARIES AS REQUIRED FOR ADA RAMP, AND EXISTING RIGHT–OF–WAY.
5. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
6. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
7. EXISTING COMMERCIAL DRIVEWAYS MAY NEED TO BE MODIFIED TO CONFORM TO NEW ELEVATION OF RETROFIT.
8. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC–RATED.
9. ANY PAVEMENT IN CITY RIGHT–OF–WAY SHALL BE REINFORCED CONCRETE AND CURB SHALL BE REINFORCED 5' BEYOND THE END OF CURB RETURN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

INDUSTRIAL/COMMERCIAL DRWY. WITH CURB RETURNS

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 38
NTS

Oct 27, 2020 – 7:42am
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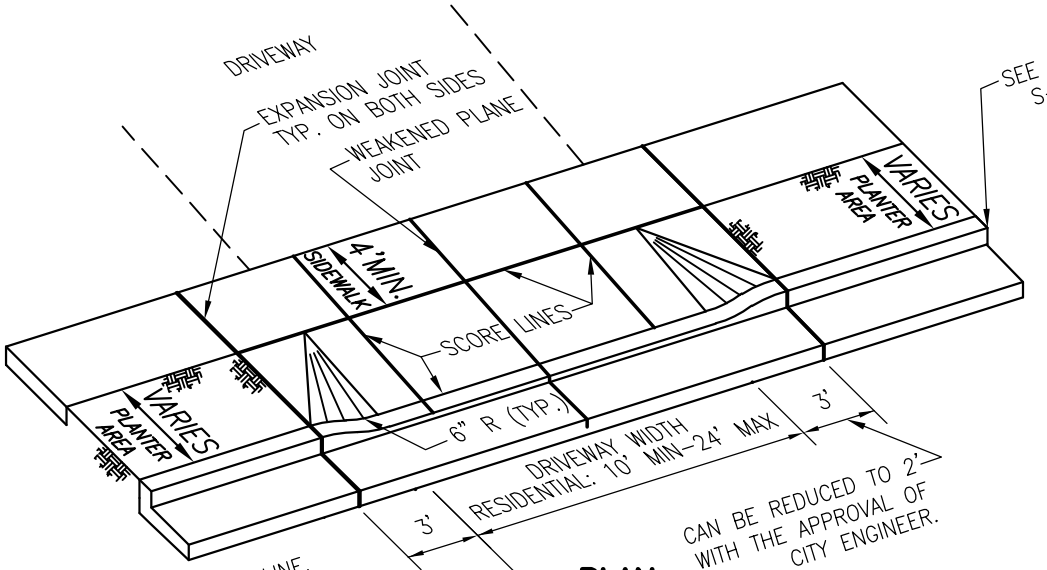
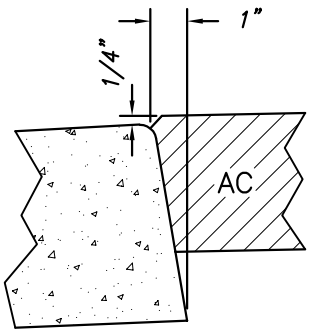
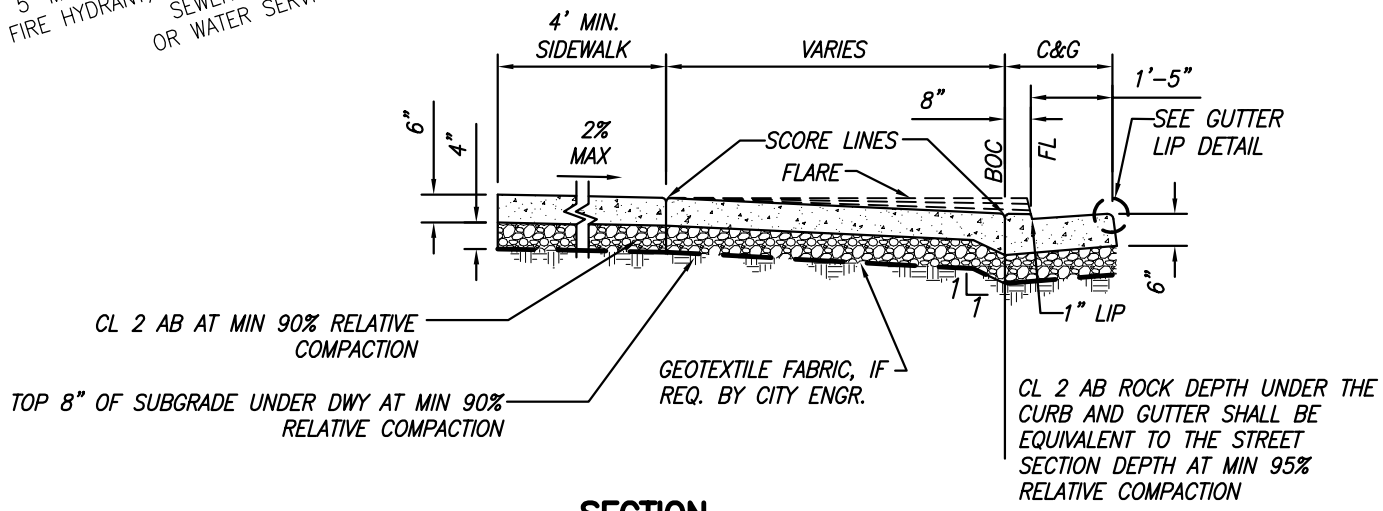


PLAN



GUTTER LIP DETAIL



SECTION

NOTES:

1. SEE NOTES ON STANDARD DETAIL S-17.
2. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
3. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
4. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC-RATED.
5. IF THE EXISTING ON-SITE IMPROVEMENTS DO NOT MATCH THE GRADE OF THE REAR OF THE NEW DRIVEWAY, SUFFICIENT EXISTING IMPROVEMENTS SHALL BE RECONSTRUCTED TO PRODUCE A SMOOTH, USABLE SURFACE WITH A CHANGE IN GRADE NOT EXCEEDING 10%.
6. ALL DRIVEWAYS SHALL BE LIGHT BROOM FINISH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

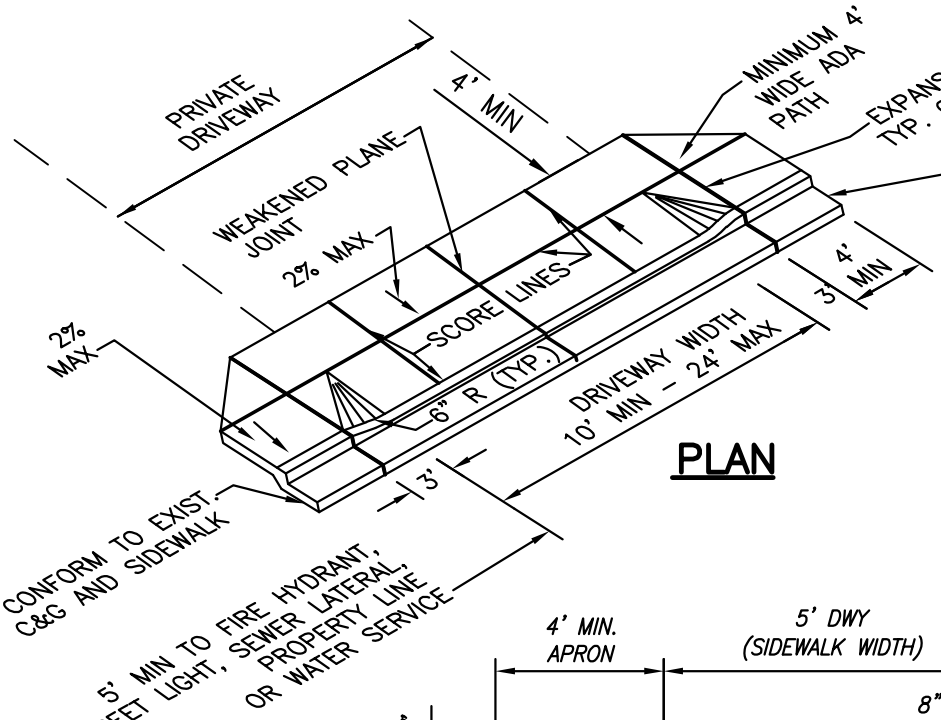
62736
R.C.E. NO.

RESIDENTIAL DRIVEWAY WITH SEPARATED SIDEWALK

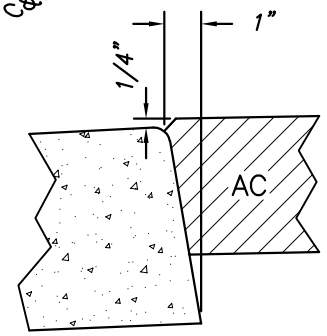
DRAWING NO. S - 39

NTS

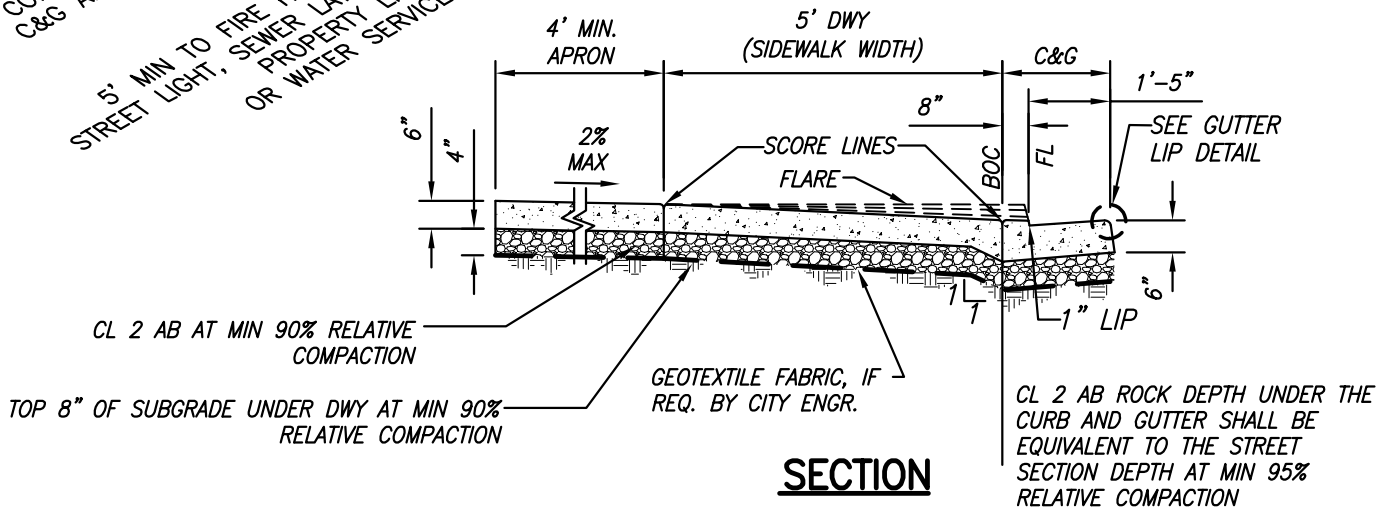
Oct 27, 2020 - 7:43am
L:\Standard details\Cad Files 2018\Section 3 (Streets)\S-39.dwg



PLAN



GUTTER LIP DETAIL



SECTION

NOTES:

1. SEE NOTES ON STANDARD DETAIL S-17.
2. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
3. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
4. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC-RATED.
5. IF THE EXISTING ON-SITE IMPROVEMENTS DO NOT MATCH THE GRADE OF THE REAR OF THE NEW DRIVEWAY, SUFFICIENT EXISTING IMPROVEMENTS SHALL BE RECONSTRUCTED TO PRODUCE A SMOOTH, USABLE SURFACE WITH A CHANGE IN GRADE NOT EXCEEDING 10%.
6. A MINIMUM OF 4' WIDE SIDEWALK AREA WITH A MAXIMUM CROSS SLOPE 2% SHALL BE INSTALLED AS A TRANSITION ADJACENT TO AND BEHIND RESIDENTIAL DRIVEWAY TO COMPLY WITH TITLE 24 ACCESSIBILITY STANDARDS OF THE STATE OF CALIFORNIA CODE OF REGULATIONS.
7. ALL DRIVEWAYS SHALL BE LIGHT BROOM FINISH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

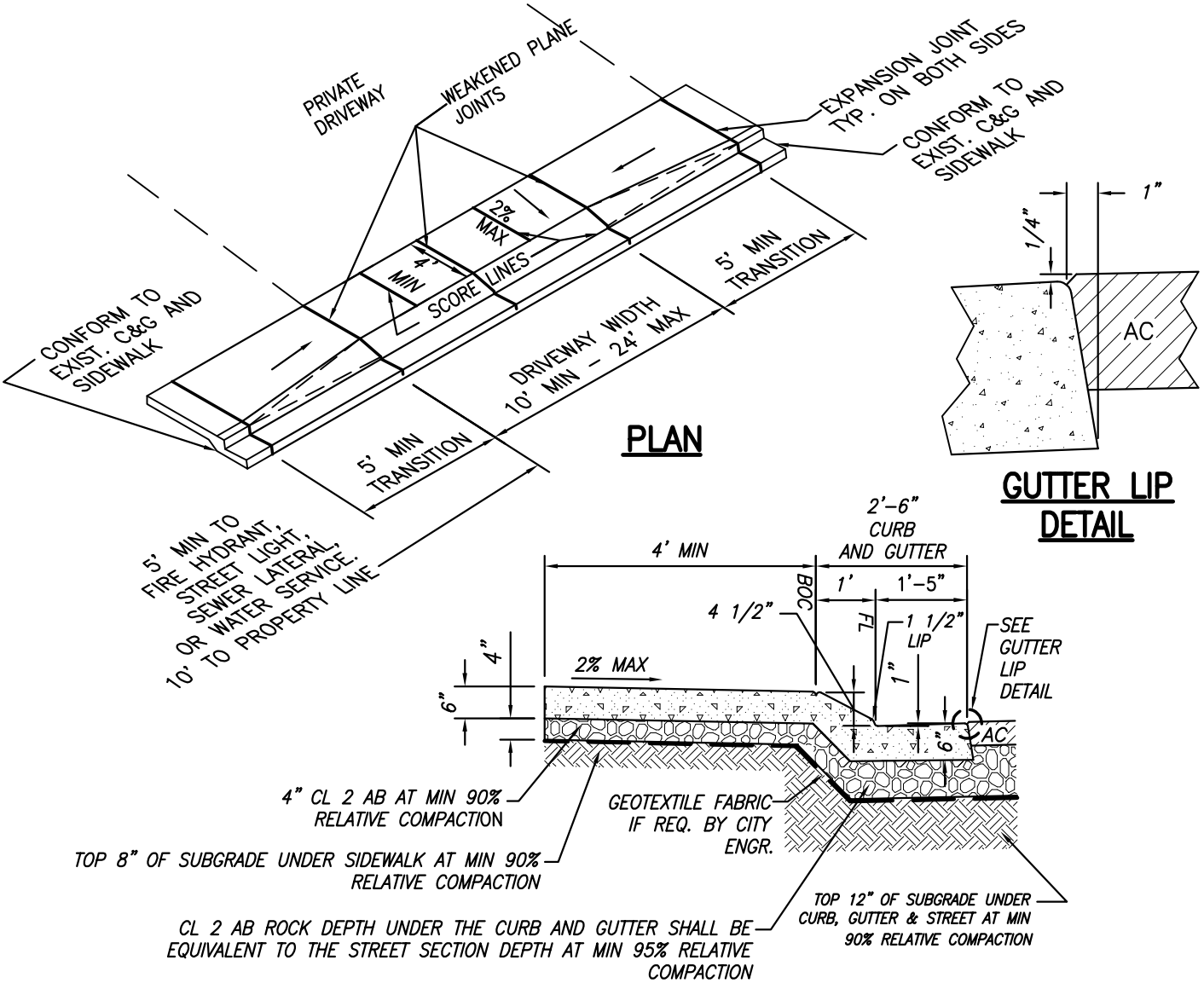
62736
R.C.E. NO.

RESIDENTIAL DRIVEWAY WITH ATTACHED SIDEWALK

DRAWING NO. S - 40

NTS

Oct 27, 2020 - 7:44am
L:\Standard details\Cad Files 2018\Section 3 (Streets)\S-40.dwg



NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
3. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
4. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC–RATED.
5. IF THE EXISTING ON–SITE IMPROVEMENTS DO NOT MATCH THE GRADE OF THE REAR OF THE NEW DRIVEWAY, SUFFICIENT EXISTING IMPROVEMENTS SHALL BE RECONSTRUCTED TO PRODUCE A SMOOTH, USABLE SURFACE WITH A CHANGE IN GRADE NOT EXCEEDING 10%.
6. A MINIMUM OF 4' WIDE SIDEWALK AREA WITH A MAXIMUM CROSS SLOPE 2% SHALL BE INSTALLED AS A TRANSITION ADJACENT TO AND BEHIND RESIDENTIAL DRIVEWAY TO COMPLY WITH TITLE 24 ACCESSIBILITY STANDARDS OF THE STATE OF CALIFORNIA CODE OF REGULATIONS.
7. THIS DRIVEWAY APPROACH SHALL ONLY BE USED IN INFILL AREAS WITH THE APPROVAL OF CITY ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

RETROFIT RESIDENTIAL DRIVEWAY WITH ATTACHED SIDEWALK - 1

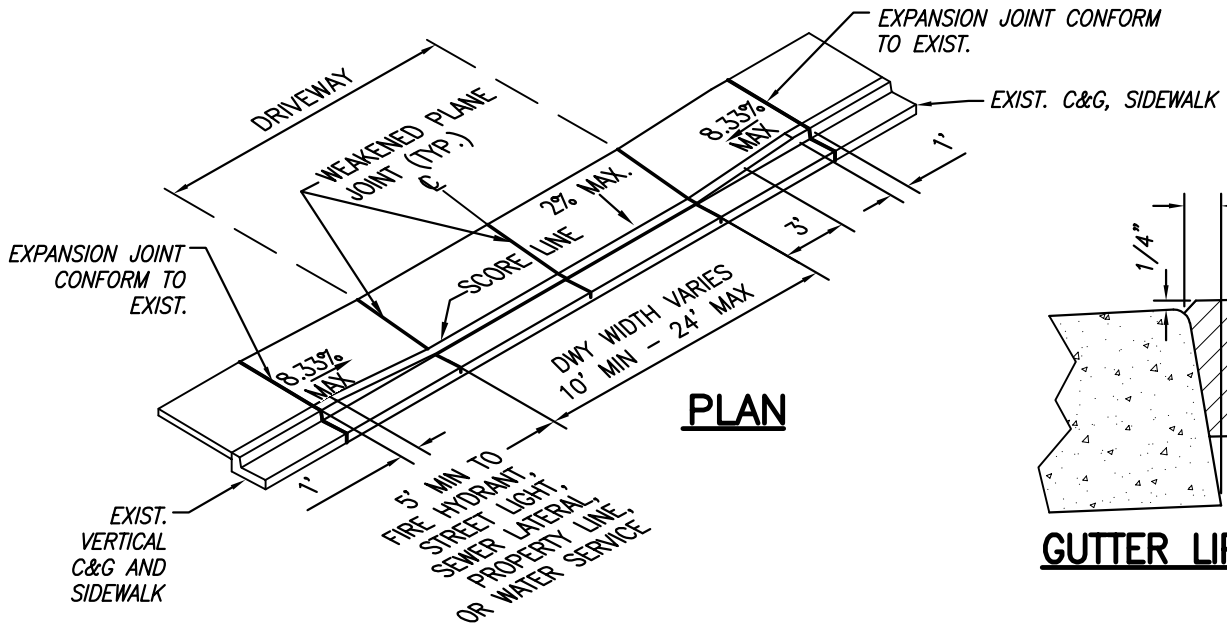
10/26/20 DATE

62736 R.C.E. NO.

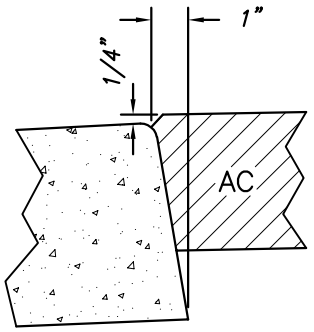
DRAWING NO. S - 41

NTS

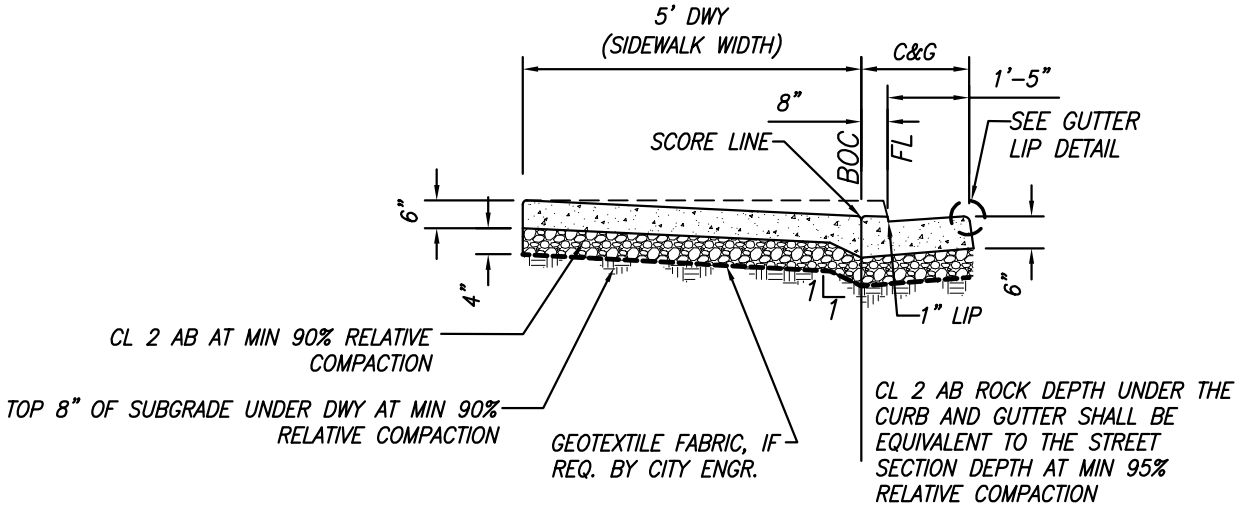
Oct 27, 2020 – 7:45am
L:\Standard details\Cad Files 2018\Section 3 (Streets)\S-41.dwg



PLAN



GUTTER LIP DETAIL



SECTION

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. WHEN NEW APPROACH IS POURED AGAINST EXISTING CONCRETE A 1/2" INCH EXPANSION JOINT SHALL BE PLACED AGAINST EXISTING CONCRETE.
3. SIDEWALK, VERTICAL CURB AND GUTTER SHALL BE CONSTRUCTED PER CITY STANDARDS.
4. ANY UTILITY BOX OR LIDS IN DRIVEWAY OR WITHIN 5 FEET OF THE LIMITS OF THE DRIVEWAY SHALL BE TRAFFIC–RATED.
5. IF THE EXISTING ON–SITE IMPROVEMENTS DO NOT MATCH THE GRADE OF THE REAR OF THE NEW DRIVEWAY, SUFFICIENT EXISTING IMPROVEMENTS SHALL BE RECONSTRUCTED TO PRODUCE A SMOOTH, USABLE SURFACE WITH A CHANGE IN GRADE NOT EXCEEDING 10%.
6. A MINIMUM OF 4' WIDE SIDEWALK AREA WITH A MAXIMUM CROSS SLOPE 2% SHALL BE INSTALLED AS A TRANSITION ADJACENT TO AND BEHIND RESIDENTIAL DRIVEWAY TO COMPLY WITH TITLE 24 ACCESSIBILITY STANDARDS OF THE STATE OF CALIFORNIA CODE OF REGULATIONS.
7. THIS DRIVE APPROACH SHALL ONLY BE USED IN INFILL AREAS WITH THE APPROVAL OF CITY ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

RETROFIT RESIDENTIAL DRIVEWAY WITH ATTACHED SIDEWALK - 2

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. S - 42

NTS

Oct 27, 2020 – 7:45am
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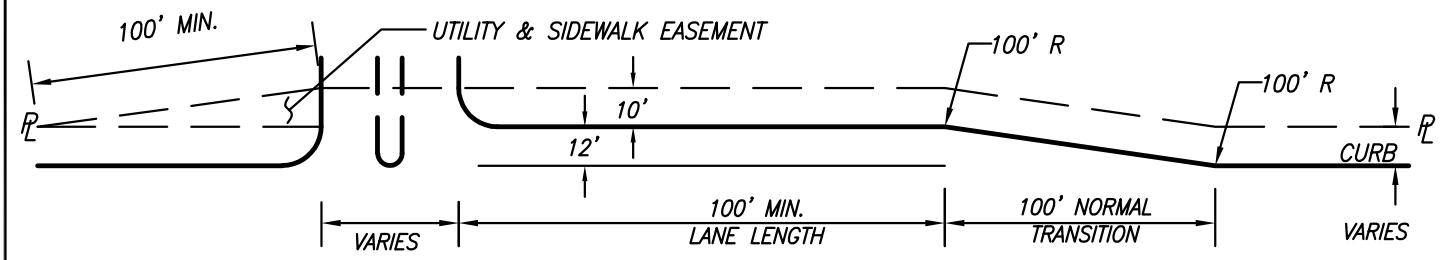
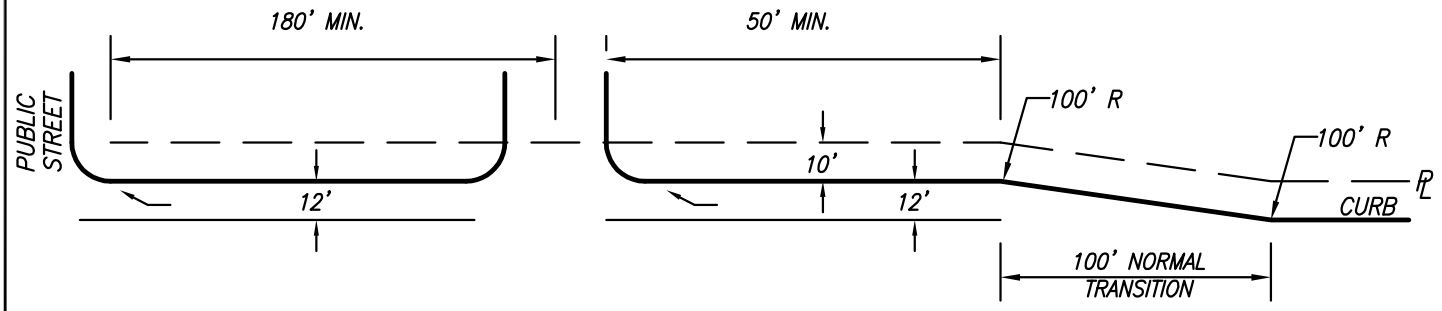
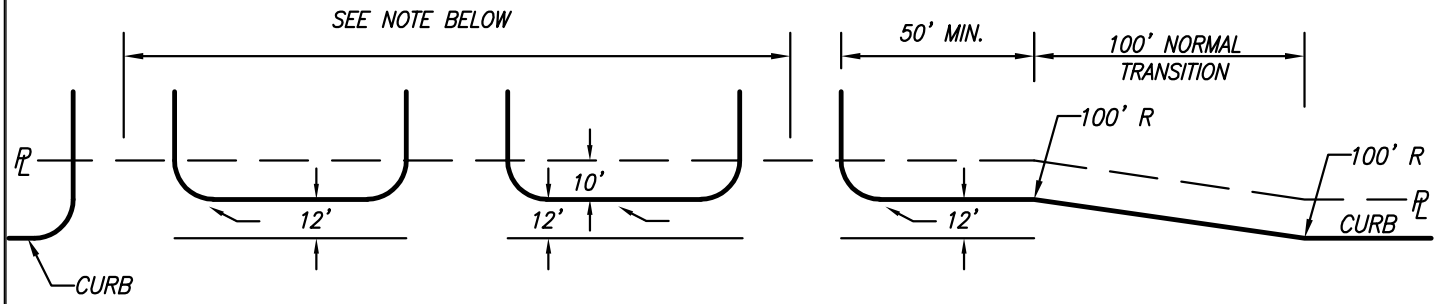


TYPICAL



IN INTERSECTION RIGHT TURN LANE



CONTINUES DECELRATION LANE

NOTES:

A MAXIMUM OF THREE DRIVEWAYS CAN BE CONNECTED WITH A CONTINUES DECELERATION LANE, UNLESS THE LANE IS AN EXTENSION OF A RIGHT TURN LANE AT AN INTERSECTION. THE MAXIMUM LENGTH OF A COMBINATION DECELERATION–RIGHT TURN LANE IS 1,320 FEET. DRIVEWAY SPACING SHALL BE AS IN SECTION 3.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

DECELERATION LANES FOR DRIVEWAYS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO.
S - 43

NTS

Oct 27, 2020 - 7:47am
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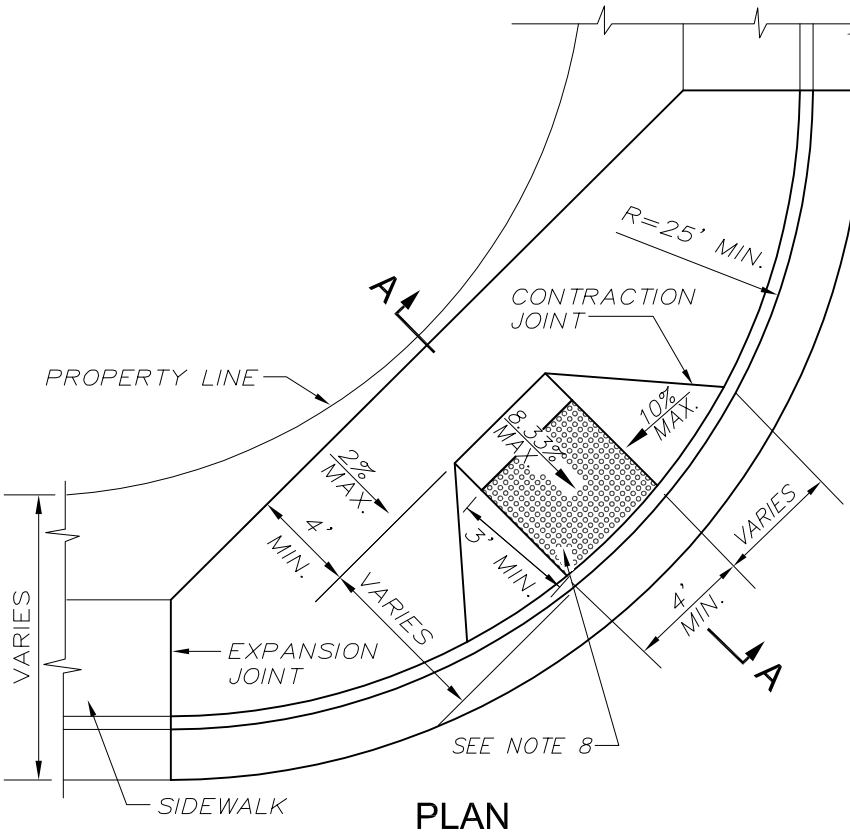
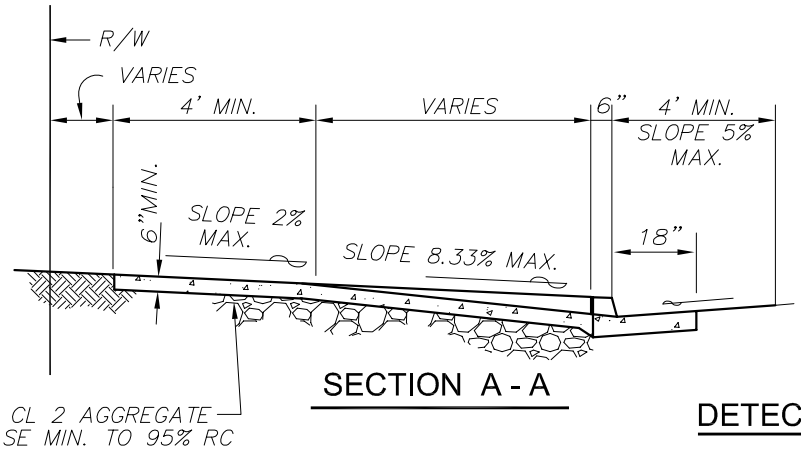


PLAN

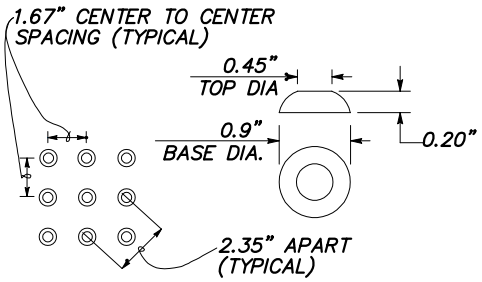
NOTES:

1. RAMP TO BE MINIMUM 6" P.C.C. ON 4" CLASS 2 AGGREGATE BASE WITH HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
2. RAMPS NEED NOT BE CONSTRUCTED WHERE THERE ARE NO PEDESTRIAN FACILITIES. IF SUCH FACILITIES ARE ADDED LATER THEN RAMPS MUST BE INSTALLED AT THAT TIME.
3. RAMPS TO BE LOCATED BY THE CITY ENGINEER WHEN IMPRACTICAL TO BE LOCATED.
4. SLOPE OF RAMP SHALL NOT EXCEED 1:12. THE SLOPE OF FLARED SIDES SHALL NOT EXCEED 1:10.
5. A LEVEL LANDING 4' DEEP (MIN.) SHALL BE PROVIDED AT THE UPPER END OF EACH RAMP.
6. NO PULL BOX, UTILITY VAULT, UTILITY POLE, MANHOLE OR SIMILAR APPURTENANCE SHALL BE LOCATED WITHIN THE RAMP AREA WITHOUT PRIOR WRITTEN APPROVAL BY THE CITY ENGINEER.
7. RAMP SIDE SLOPE VARIES UNIFORMLY FROM A MAXIMUM OF UP TO 10% AT THE CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO THE TOP OF THE RAMP.
8. ALL CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND A MINIMUM 3' DEPTH OF THE RAMP, PER CALTRANS STANDARD DETAIL PLATE A88A.
9. SEE NOTES ON STANDARD DETAIL S-17.

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.



SECTION A - A



DETECTABLE WARNING SURFACE DETAIL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

CURB RAMP TYPE A

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 44

NTS

Oct 27, 2020 - 7:48am
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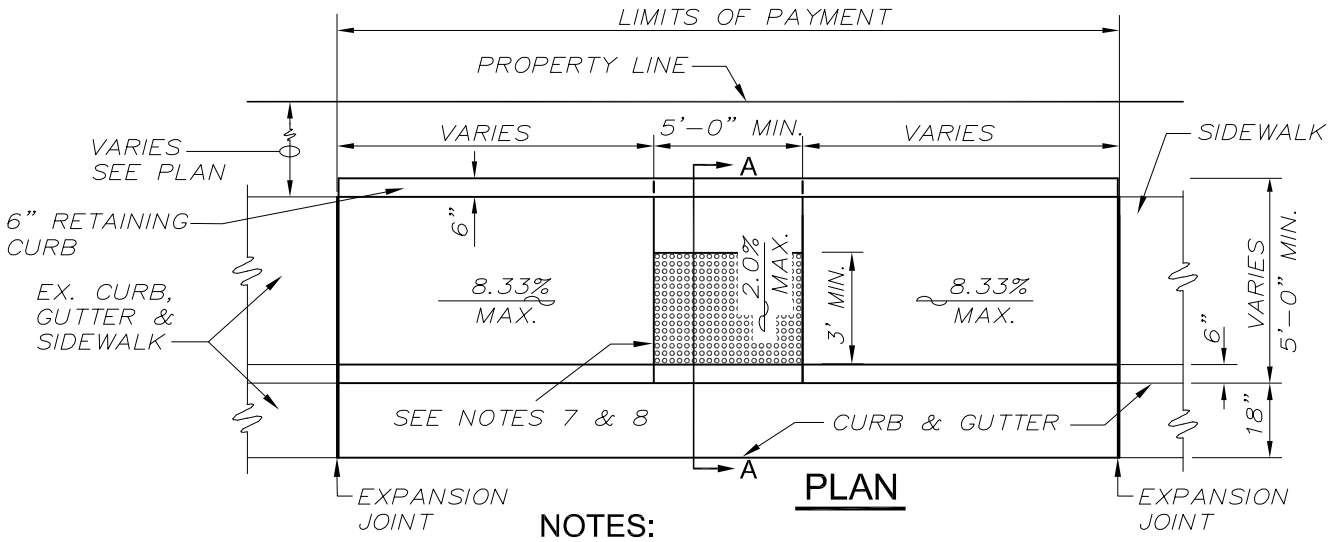
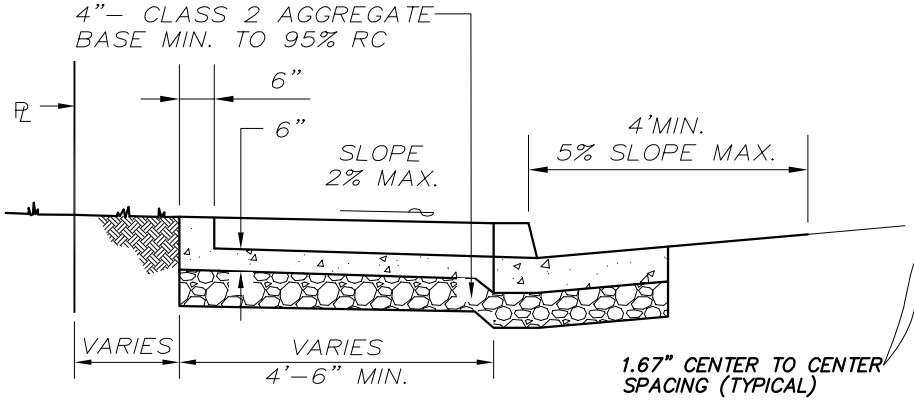


PLAN

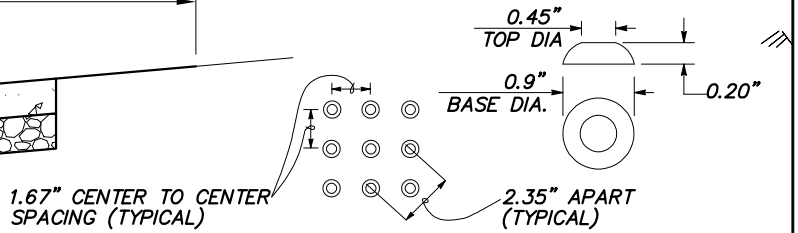
NOTES:

1. RAMPS TO BE MINIMUM 6" P.C.C. ON 4" CLASS 2 AGGREGATE BASE WITH HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
2. RAMPS NEED NOT BE CONSTRUCTED WHERE THERE ARE NO PEDESTRIAN FACILITIES. IF SUCH FACILITIES ARE ADDED LATER THEN RAMPS MUST BE INSTALLED AT THAT TIME.
3. RAMPS TO BE LOCATED BY THE CITY ENGINEER WHEN IMPRACTICAL TO BE LOCATED..
4. A LANDING 4' DEEP (MIN.) WITH A SLOPE OF 2% SHALL BE PROVIDED ADJACENT TO CURB. LANDING SHALL HAVE A BROOM FINISH.
5. NO PULL BOX, UTILITY VAULT, UTILITY POLE, MANHOLE OR SIMILAR APPURTENANCE SHALL BE LOCATED WITHIN THE RAMP AREA WITHOUT PRIOR WRITTEN APPROVAL BY THE CITY ENGINEER.
6. RAMP SIDE SLOPE SHALL BE 2% ALL DEVIATIONS SHALL BE APPROVED BY THE CITY ENGINEER.
7. ALL CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND A MINIMUM 3' DEPTH OF THE CURB RAMP, PER CALTRANS STANDARD DETAIL PLATE A88A.
8. THE EDGE OF THE DETECTABLE WARNING SURFACE NEAREST THE STREET SHALL BE BETWEEN 6" AND 8" FROM THE GUTTER FLOWLINE
9. SEE NOTES ON STANDARD DETAIL S-17.

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.



SECTION A - A



DETECTABLE WARNING SURFACE DETAIL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

CURB RAMP TYPE B

DRAWING NO. S - 45

NTS

Oct 27, 2020 - 7:49am
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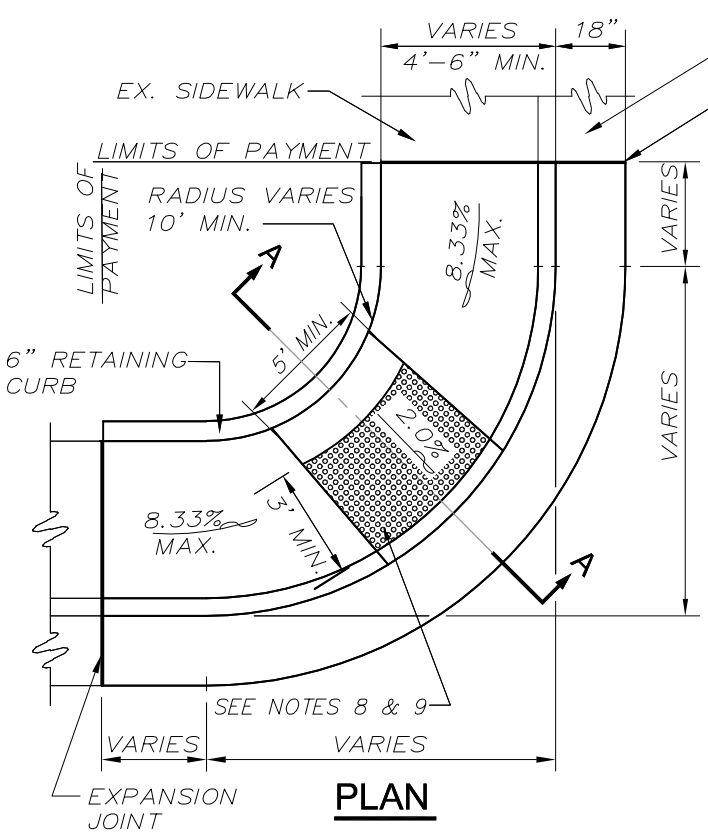
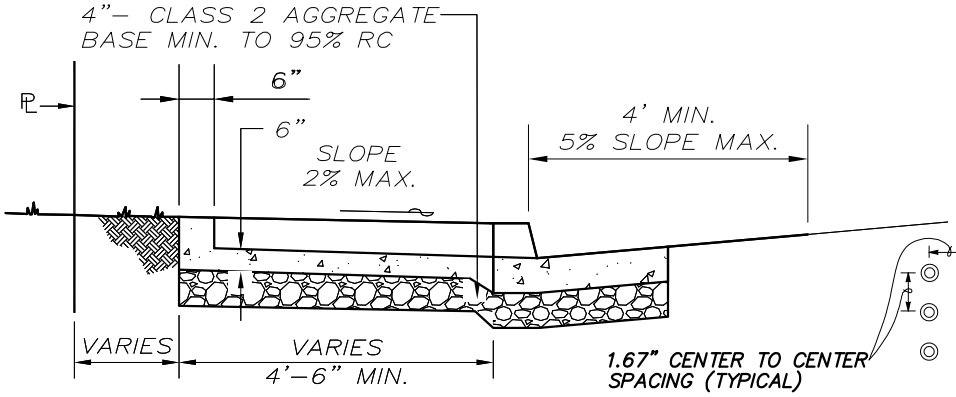


PLAN

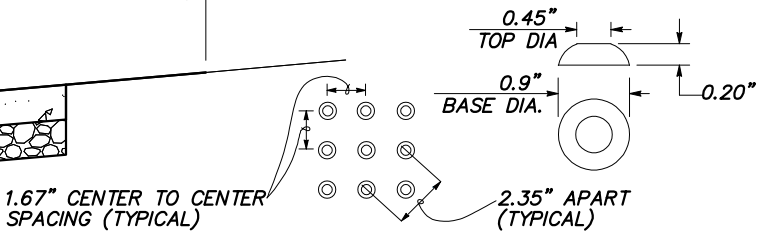
NOTES:

1. RAMPS TO BE MINIMUM 4" P.C.C. ON 3" CLASS 2 AGGREGATE BASE WITH HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
2. RAMPS NEED NOT BE CONSTRUCTED WHERE THERE ARE NO PEDESTRIAN FACILITIES. IF SUCH FACILITIES ARE ADDED LATER THEN RAMPS MUST BE INSTALLED AT THAT TIME.
3. RAMPS TO BE LOCATED BY THE CITY ENGINEER WHEN IMPRACTICAL TO BE LOCATED AT CENTERLINE OF RADIUS.
4. SLOPE OF RAMP SHALL NOT EXCEED 1:12.
5. A LANDING 4' DEEP (MIN.) WITH A SLOPE OF 2% SHALL BE PROVIDED ADJACENT TO CURB RETURN. LANDING SHALL HAVE A BROOM FINISH.
6. NO PULL BOX, UTILITY VAULT, UTILITY POLE, MANHOLE OR SIMILAR APPURTENANCE SHALL BE LOCATED WITHIN THE RAMP AREA WITHOUT PRIOR WRITTEN APPROVAL BY THE CITY ENGINEER.
7. RAMP SIDE SLOPE SHALL BE 2% ALL DEVIATIONS SHALL BE APPROVED BY THE CITY ENGINEER.
8. ALL CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND A MINIMUM 3' DEPTH OF THE CURB RAMP, PER CALTRANS STANDARD DETAIL PLATE A88A.
9. THE EDGE OF THE DETECTABLE WARNING SURFACE NEAREST THE STREET SHALL BE BETWEEN 6" AND 8" FROM THE GUTTER FLOWLINE.
10. SEE NOTES ON STANDARD DETAIL S-17.

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.



SECTION A - A



DETECTABLE WARNING SURFACE DETAIL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

CURB RAMP TYPE C

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 46

NTS

Oct 27, 2020 - 7:49am
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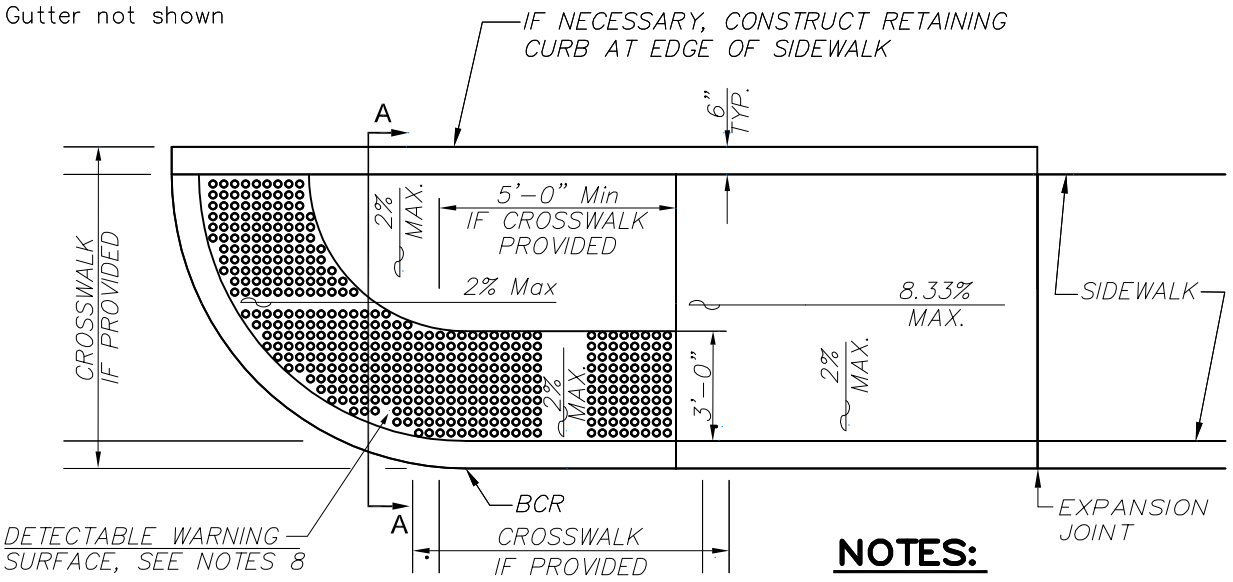
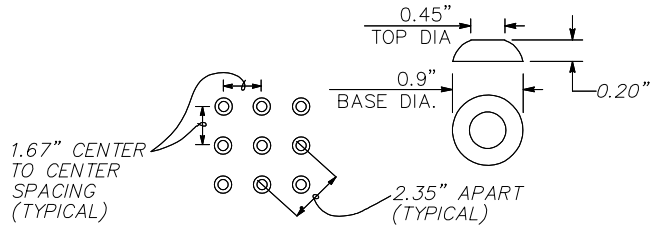
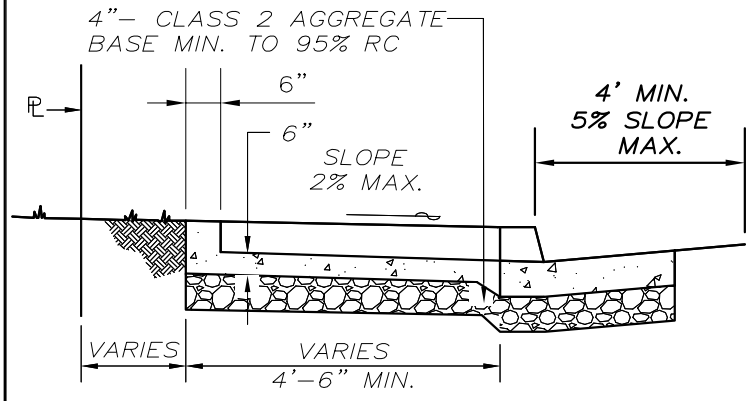


PLAN

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.



DETECTABLE WARNING SURFACE DETAIL



SECTION A - A

NOTES:

1. RAMP TO BE MINIMUM 6" P.C.C. ON 4" CLASS 2 AGGREGATE BASE WITH HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
2. RAMPS NEED NOT BE CONSTRUCTED WHERE THERE ARE NO PEDESTRIAN FACILITIES. IF SUCH FACILITIES ARE ADDED LATER THEN RAMPS MUST BE INSTALLED AT THAT TIME.
3. RAMPS TO BE LOCATED BY THE CITY ENGINEER WHEN IMPRACTICAL TO BE LOCATED.
4. SLOPE OF RAMP SHALL NOT EXCEED 1:12. THE SLOPE OF FLARED SIDES SHALL NOT EXCEED 1:10.
5. A LEVEL LANDING 4' DEEP (MIN.) SHALL BE PROVIDED AT THE UPPER END OF EACH RAMP.
6. NO PULL BOX, UTILITY VAULT, UTILITY POLE, MANHOLE OR SIMILAR APPURTENANCE SHALL BE LOCATED WITHIN THE RAMP AREA WITHOUT PRIOR WRITTEN APPROVAL BY THE CITY ENGINEER.
7. RAMP SIDE SLOPE VARIES UNIFORMLY FROM A MAXIMUM OF UP TO 10% AT THE CURB TO CONFORM WITH LONGITUDINAL SIDEWALK SLOPE ADJACENT TO THE TOP OF THE RAMP.
8. ALL CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND A MINIMUM 3' DEPTH OF THE RAMP, PER CALTRANS STANDARD DETAIL PLATE A88A.
9. SEE NOTES ON STANDARD DETAIL S-17.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

CURB RAMP TYPE D

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 47
NTS

Oct 27, 2020 - 7:50am
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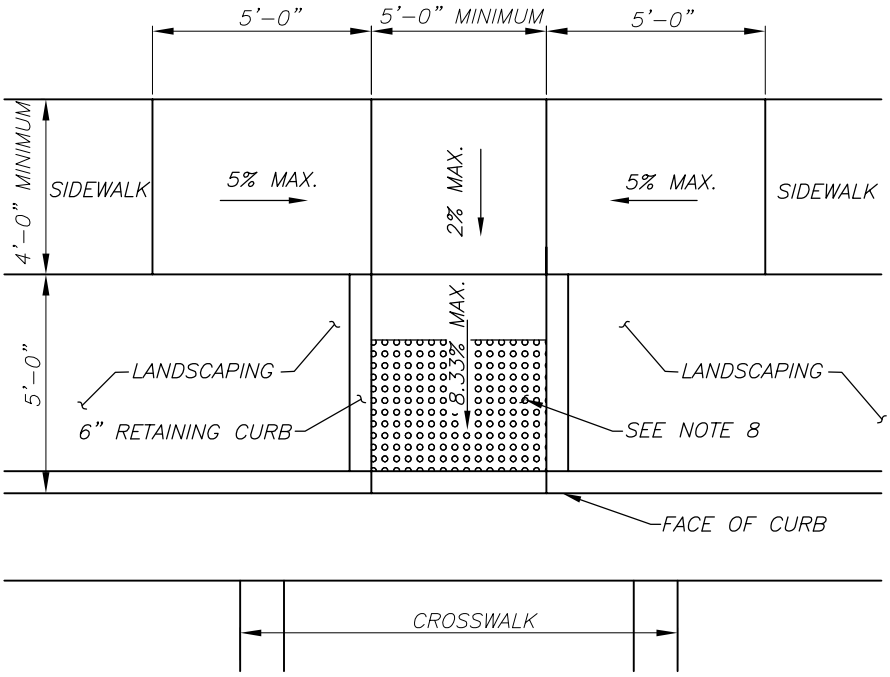

PLAN

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.

NOTES:

1. RAMP TO BE MINIMUM 6" P.C.C. ON 4" CLASS 2 AGGREGATE BASE WITH HEAVY BROOM FINISH TRANSVERSE TO AXIS OF RAMP.
2. RAMPS NEED NOT BE CONSTRUCTED WHERE THERE ARE NO PEDESTRIAN FACILITIES. IF SUCH FACILITIES ARE ADDED LATER THEN RAMPS MUST BE INSTALLED AT THAT TIME.
3. RAMPS TO BE LOCATED BY THE CITY ENGINEER WHEN IMPRACTICAL TO BE LOCATED.
4. SLOPE OF RAMP SHALL NOT EXCEED 1:12. THE SLOPE OF FLARED SIDES SHALL NOT EXCEED 1:10.
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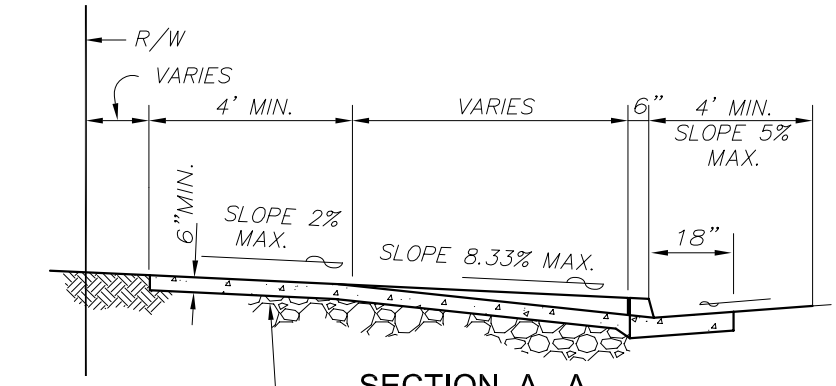
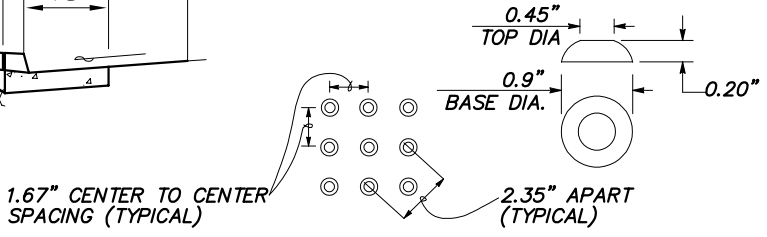
8. ALL CURB RAMPS SHALL HAVE A DETECTABLE WARNING SURFACE THAT EXTENDS THE FULL WIDTH AND A MINIMUM 3' DEPTH OF THE RAMP, PER CALTRANS STANDARD DETAIL PLATE A88A.
9. SEE NOTES ON STANDARD DETAIL S-17.



SECTION A - A



DETECTABLE WARNING SURFACE DETAIL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20 DATE

62736 R.C.E. NO.

CURB RAMP TYPE E

DRAWING NO. S - 48

NTS

Oct 27, 2020 - 7:51am
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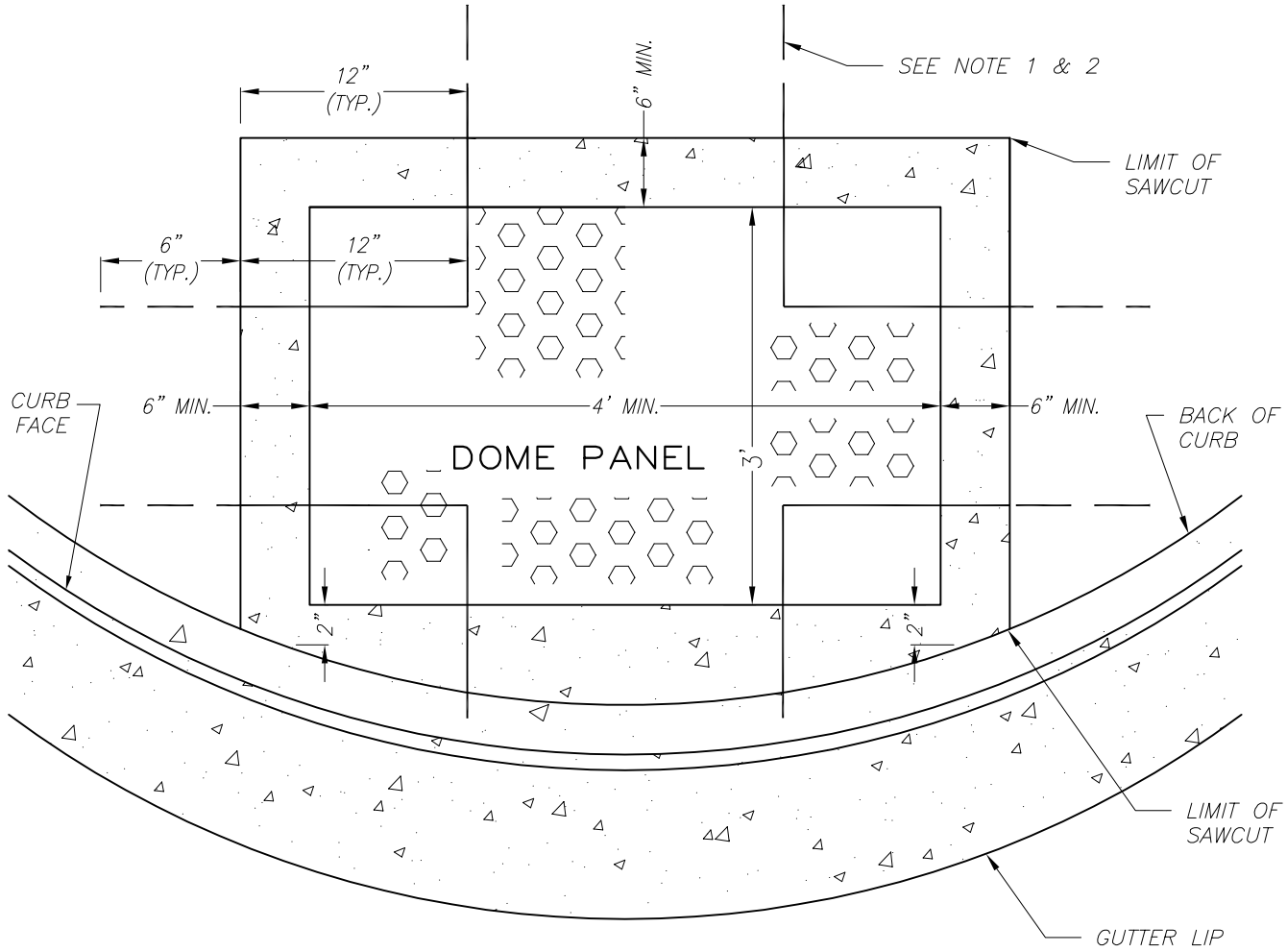
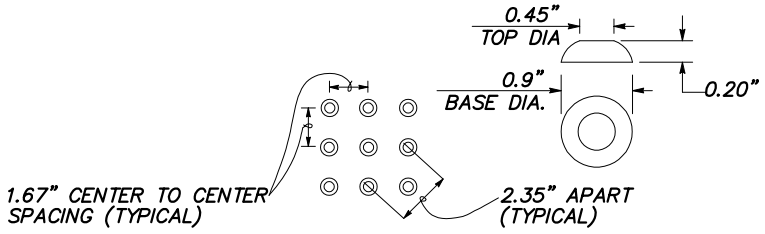


DOME PANEL RETROFIT

DETECTABLE WARNING SURFACE SHALL BE "ARMOR-TILE" OR APPROVED EQUAL, COLOR TO BE YELLOW CONFORMING TO FEDERAL STANDARD 595B. COLOR NO. 33538.



DETECTABLE WARNING SURFACE DETAIL

NOTES:

1. SEE NOTES ON STANDARD DETAIL S-17 AND S-27 FOR DOWEL CONNECTION DETAILS.
2. DRILL HOLES, BLOW CLEAN AND SET 18" NO. 4 REBAR IN EPOXY.
3. PRIOR TO RETROFITTING TRUNCATED DOME PANEL, ASSURE GRADES CONFORM TO CITY REQUIREMENTS.
4. TRUNCATED DOME PANEL SHALL BE PLACED IN WET CONCRETE.
5. CONCRETE SHALL BE CLASS B AND 6 INCHES THICK OVER 4 INCHES OF CLASS 2 AGGREGATE BASE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

DETECTABLE WARNING RETROFIT OR REPLACEMENT

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 49
NTS

Oct 27, 2020 - 7:52am
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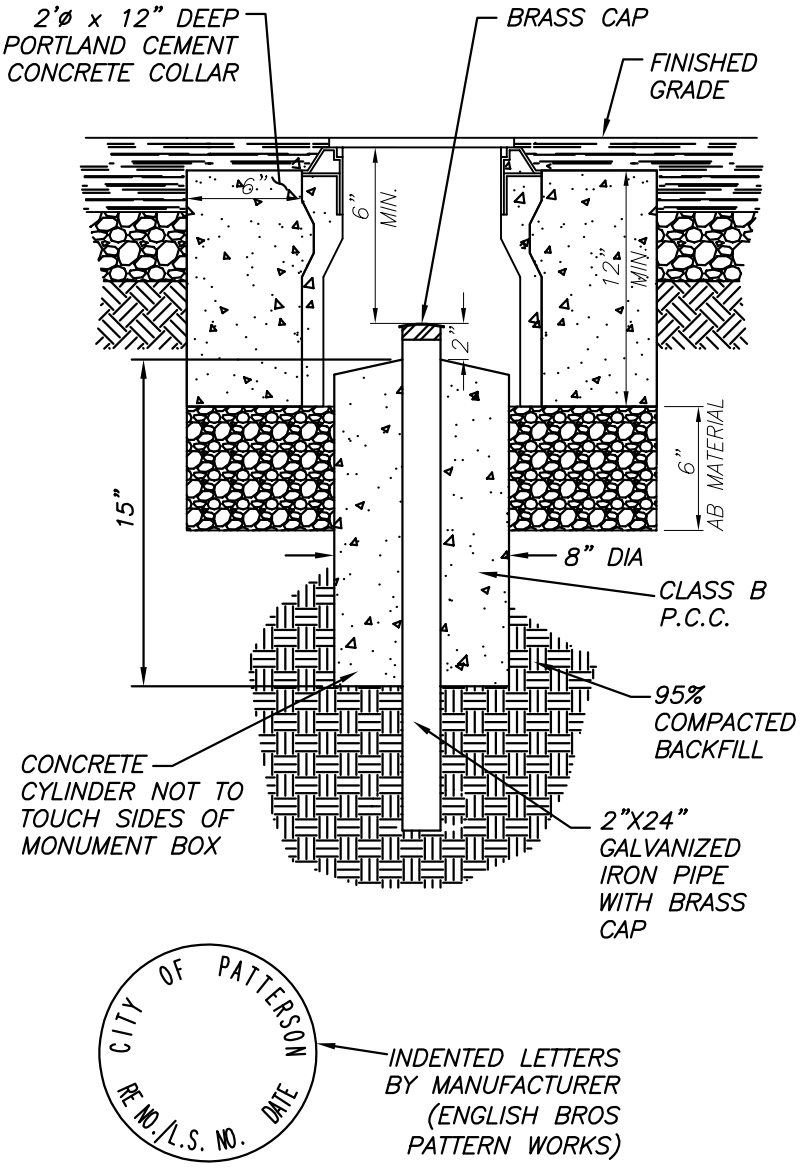
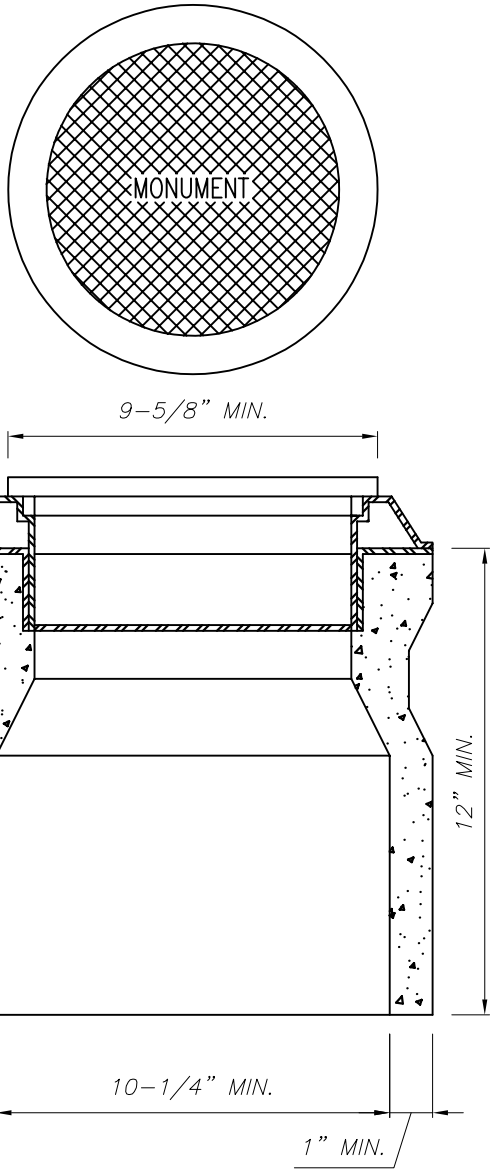


INDENTED LETTERS BY MANUFACTURER (ENGLISH BROS PATTERN WORKS)

STANDARD MONUMENT INSTALLATION



MONUMENT BOX DETAIL

NOTES:

1. ENGINEER'S OR LAND SURVEYOR'S REGISTRATION NUMBER AND YEAR SHALL BE STAMPED ON THE CAP AND NOTIFY THE CITY ENGINEER IN WRITING.
2. MONUMENT BOX SHALL BE CHRISTY G-5 OR APPROVED EQUAL WITH MARKING "MONUMENT" IN RAISED LETTERS ON TRAFFIC RATED COVER.
3. THE BENCHMARK SHALL BE TIED TO THE EXISTING CITY BENCHMARK SYSTEM AND THE ENGINEER OR SURVEYOR SHALL PROVIDE THE CITY WITH CLOSED BENCH LOOP CALCULATIONS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

SURVEY MONUMENT AND WELL

DRAWING NO. S - 50

NTS

Oct 27, 2020 - 7:52am
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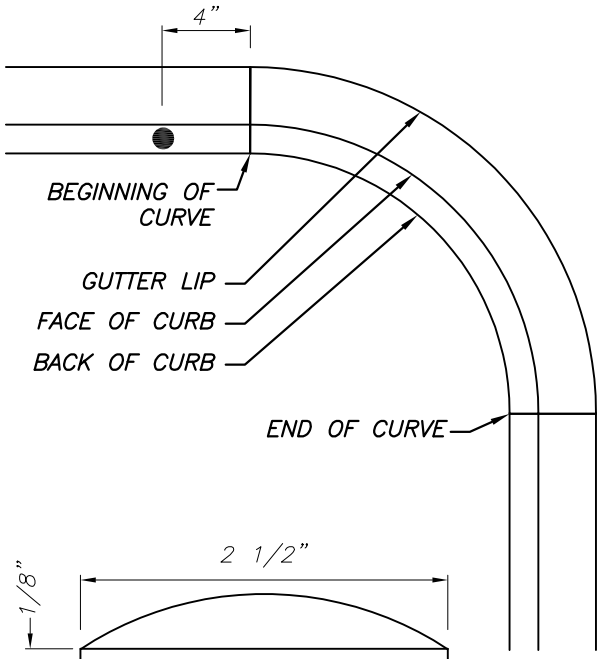
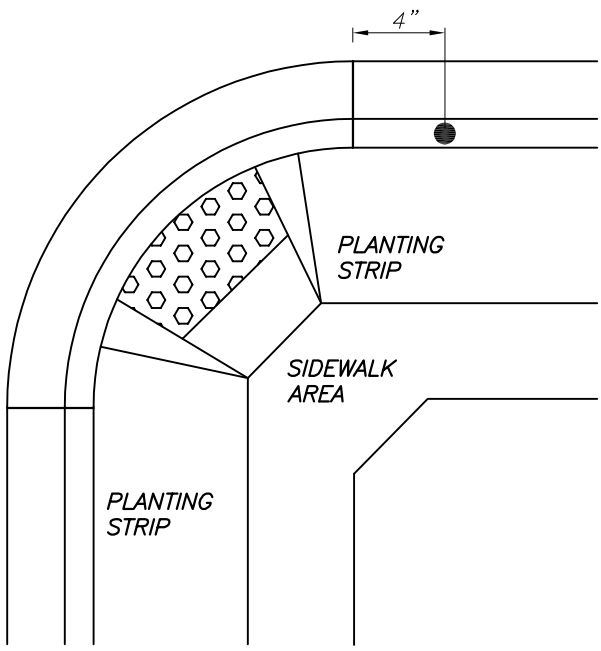
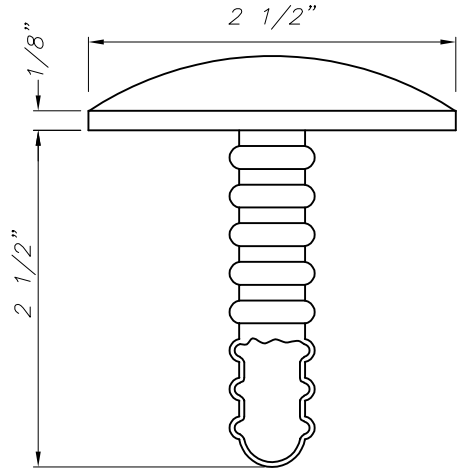
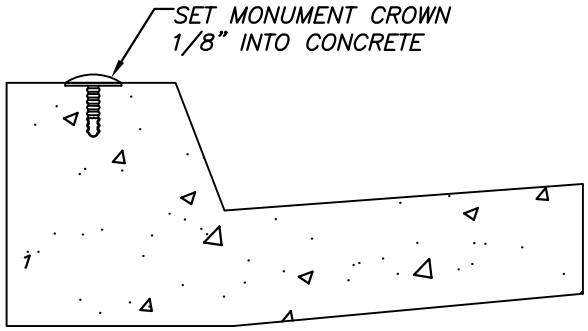




PLAN



BRONZE SURVEY MONUMENT



STANDARD CURB & GUTTER

NOTES:

1. DEVELOPER OR CONTRACTOR SHALL BE RESPONSIBLE FOR RE-ESTABLISHING AND SETTING THE NEW CITY BENCHMARK.
2. COMPLETE NOTES SHOWING LOCATIONS, ELEVATIONS, AND CLOSURES SHALL BE SUBMITTED TO CITY ENGINEERING DEPARTMENT FOR APPROVAL.
3. AFTER THE APPROVED NOTES, THE REGISTERED ENGINEER OR LAND SURVEYOR SHALL PUNCH MARK THE DOMED MARKER WITH NEW VERTICAL ELEVATION, ASSIGNED NUMBER, DATE, AND R.C.E. OR P.L.S. NUMBER.
4. THE CITY ENGINEER SHALL APPROVE THE EXACT LOCATION AND METHOD OF INSTALLATION PRIOR TO INSTALLATION.
5. BENCHMARK SHALL BE A 2.5" DIAMETER SOLID BRONZE DOMED SURVEY MARKER. BENCHMARK SHALL BE INSTALLED AT THE TIME OF CONSTRUCTION AND SHALL BE WET SET.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

ELEVATION BENCHMARK DETAIL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 51

NTS

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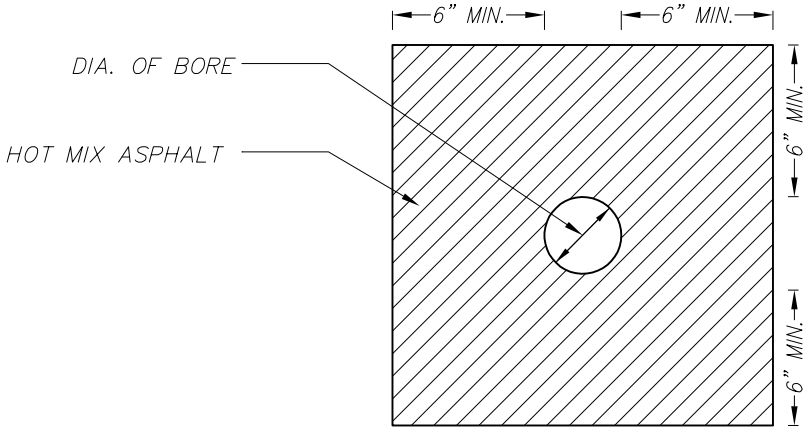
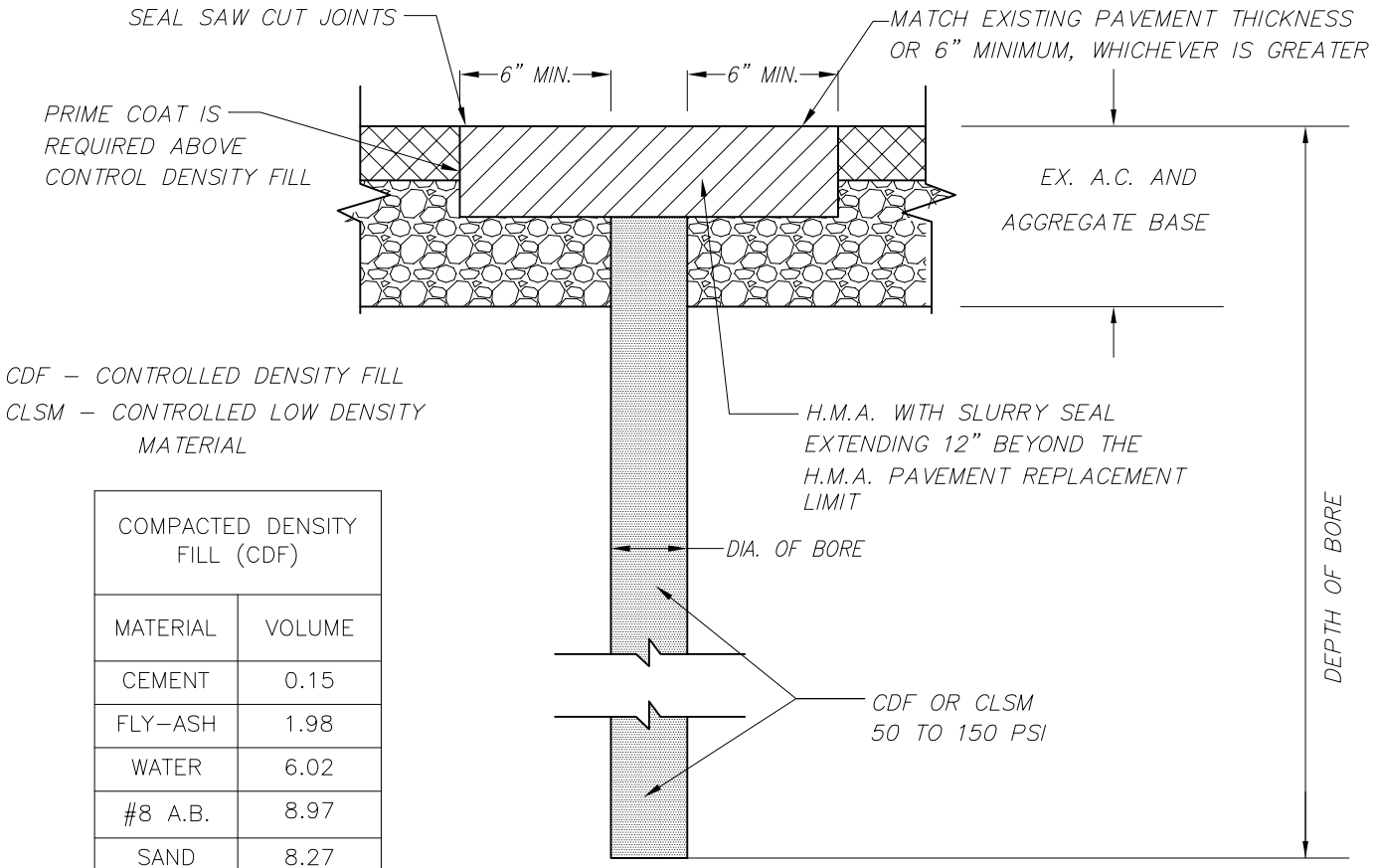


TOP VIEW



ELEVATION VIEW

COMPACTED DENSITY FILL (CDF)	
MATERIAL	VOLUME
CEMENT	0.15
FLY–ASH	1.98
WATER	6.02
#8 A.B.	8.97
SAND	8.27
AIR	1.61
TOTAL	27.00

NOTES:

1. FOR EXPLORATORY POTHOLE WITHIN SIDEWALK, FULL PCC PANEL SHALL BE REMOVED AND REPLACED TO THE NEAREST JOINT, OR AS DIRECTED BY THE CITY ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

SOIL BORING BACKFILL AND PAVEMENT REPLACEMENT

DRAWING NO. S - 52

NTS

Oct 27, 2020 – 7:54am
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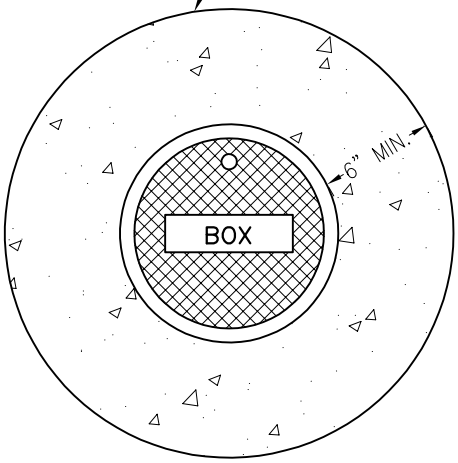
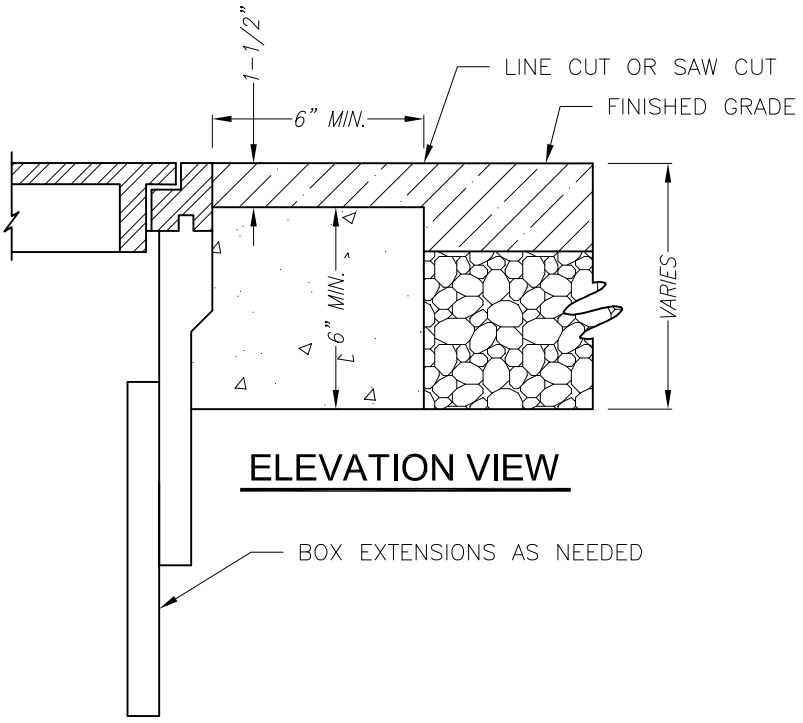
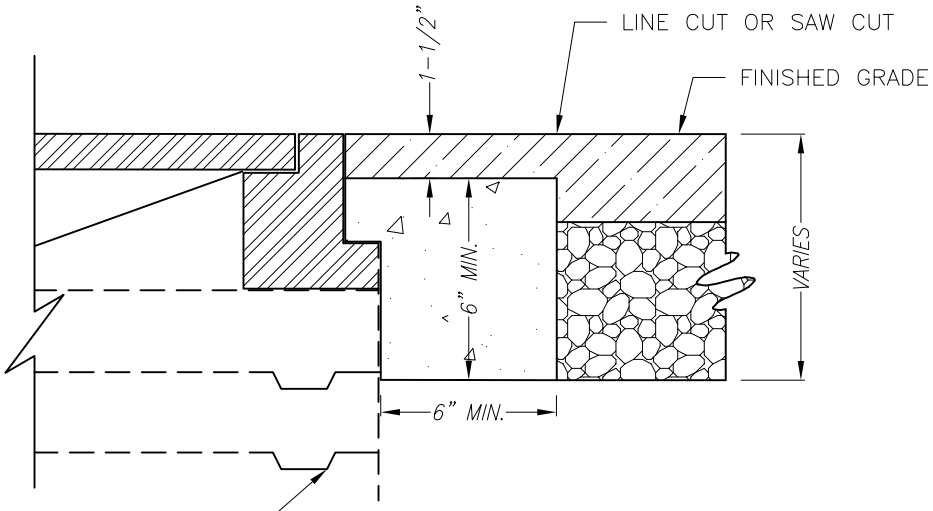


TOP VIEW



ELEVATION VIEW



ELEVATION VIEW

NOTES:

1. *ELEVATION OF FRAME SHALL MATCH FINISH GRADE OF ADJACENT PAVEMENT ± 1/8".*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

ADJUSTING STREET FACILITIES TO FINISHED GRADE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 53

NTS

Oct 27, 2020 - 7:55am
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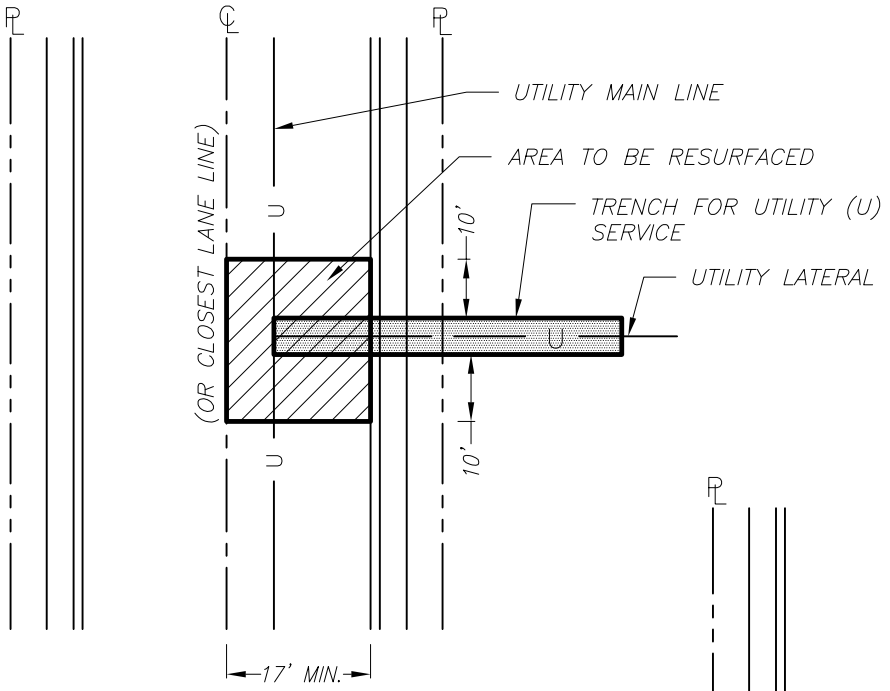
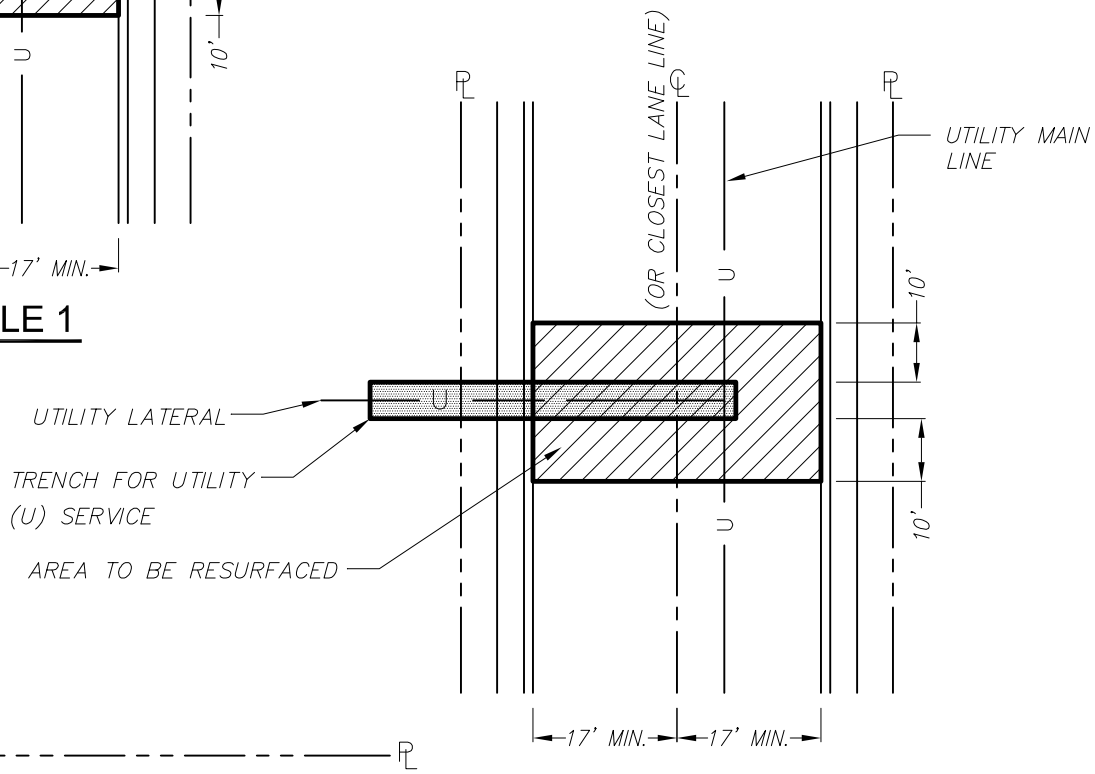


EXAMPLE 1



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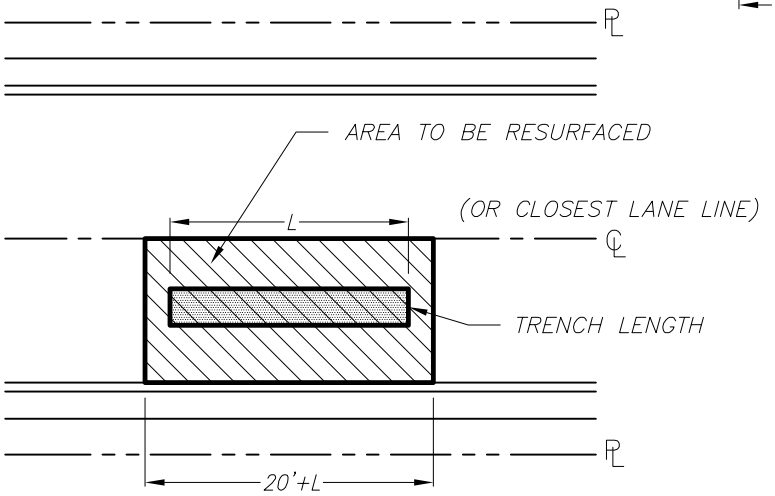

EXAMPLE 3

SEE SPECIFICATIONS SECTION 3.33 FOR MORE DETAIL ON MORATORIUM STREETS

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

MORATORIUM STREET TRENCHES REPAIR LIMITS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. S - 54

NTS

Oct 27, 2020 - 7:56am
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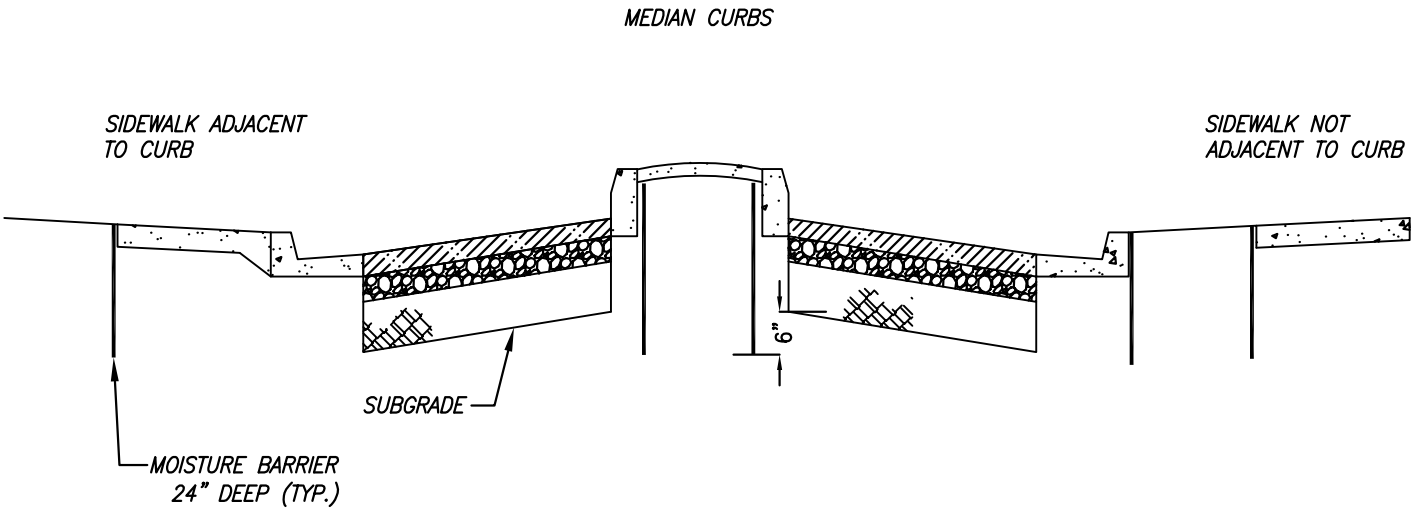

MOISTURE BARRIER DETAIL

NOTES:

1. TRENCH FOR MOISTURE BARRIER SHALL BE EXCAVATED TO A DEPTH OF 6" BELOW SUBGRADE OR A MINIMUM OF 24" (WHICHEVER IS GREATER).
2. MOISTURE BARRIER SHALL BE 14 MIL. THICK PLASTIC SHEET LINER. 2" X 2" SCRAP (FOR WEIGHT) CAN BE USED AT THE BOTTOM OF THE TRENCH.
3. BACKFILL THE TRENCH AFTER PLASTIC SHEET IS INSPECTED BY THE CITY PUBLIC WORKS INSPECTOR.
4. THE REQUIREMENT TO INSTALL MOISTURE BARRIERS AND/OR ROOT BARRIERS MAY BE WAIVED BY THE CITY ENGINEER.
5. MOISTURE BARRIERS WILL NOT BE REQUIRED IN NON LANDSCAPED MEDIAN ISLANDS..
6. LANDSCAPE IRRIGATION SYSTEM SHALL BE PLACED IN MOISTURE BARRIER TRENCH PRIOR TO TRENCH BACKFILL.
7. IN HEAVY CLAY SOILS AND WHERE TREE TRUNK IS WITHIN 8' OF SIDEWALK OR ANY OTHER CONCRETE STRUCTURE, 24" DEEP ROOT BARRIER SHALL BE INSTALLED ALONG THE BACK OF SIDEWALK FOR A LENGTH OF 5 FEET EACH DIRECTION FROM TREE.
8. APPLY MASTIC SEALANT OR SEALANT TAPE TO BACK OF CURB TO HOLD MOISTURE BARRIER IN PLACE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

MOISTURE BARRIER DETAIL

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 55
NTS

Oct 27, 2020 - 7:57am
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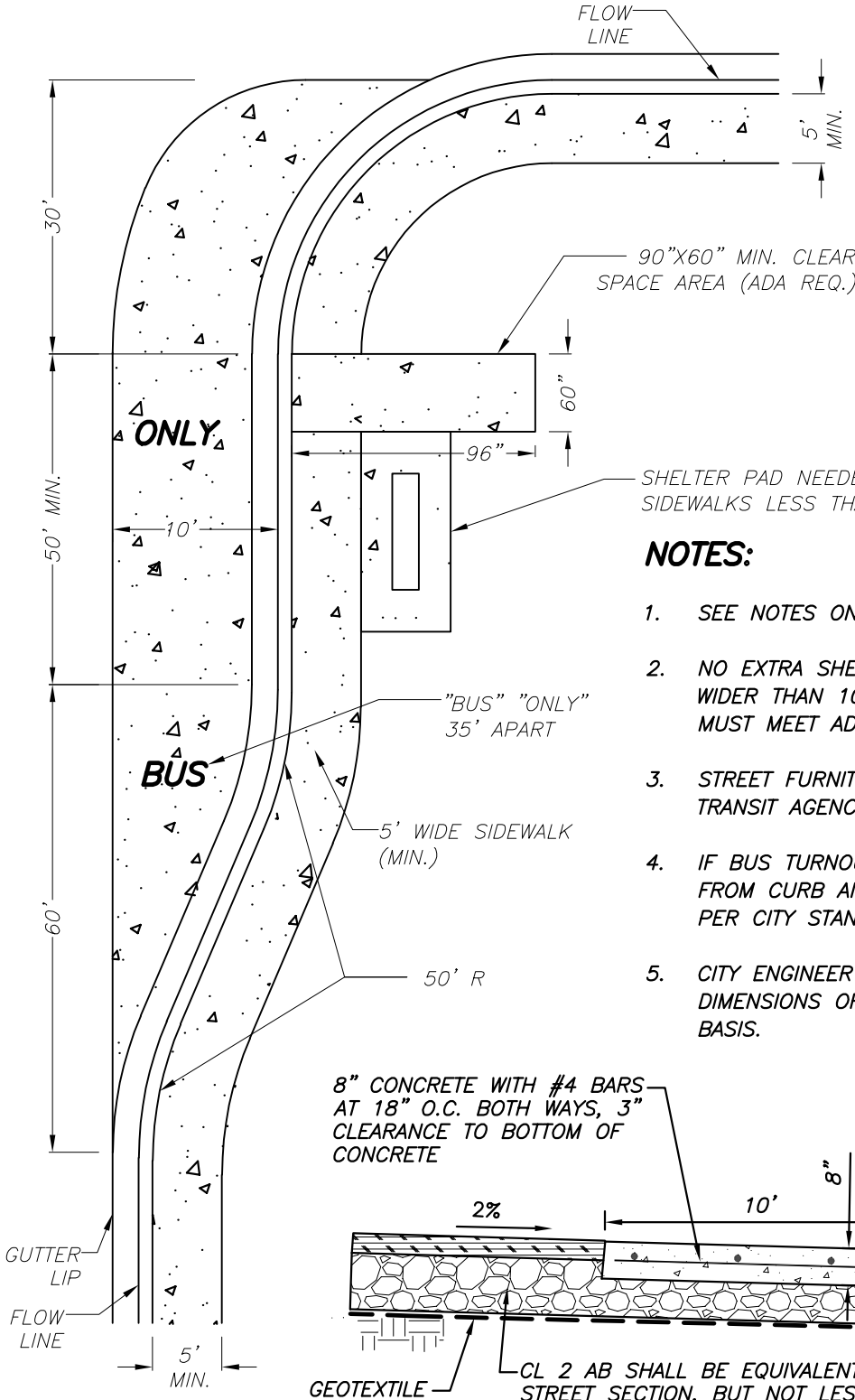
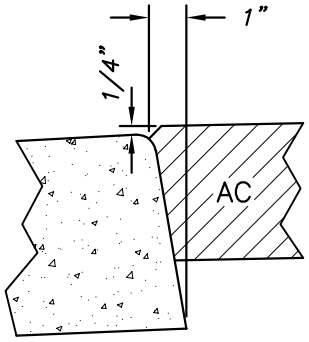


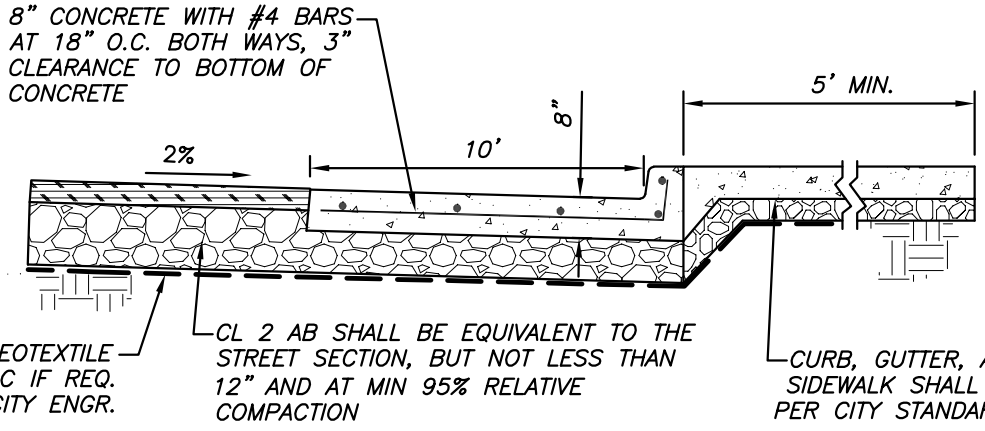
PLAN



GUTTER LIP DETAIL

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. NO EXTRA SHELTER PAD NEEDED FOR SIDEWALKS WIDER THAN 10'. SHELTER PAD AND SHELTERS MUST MEET ADA REQUIREMENTS.
3. STREET FURNITURE SHALL BE PER CITY AND TRANSIT AGENCY REQUIREMENTS.
4. IF BUS TURNOUT IS CONSTRUCTED SEPARATELY FROM CURB AND GUTTER, DOWELS ARE REQUIRED PER CITY STANDARDS.
5. CITY ENGINEER MAY INCREASE OR DECREASE THE DIMENSIONS OF BUS TURNOUT ON CASE TO CASE BASIS.



SECTION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

NEARSIDE BUS TURNOUT

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 56

NTS

Oct 27, 2020 – 7:58am
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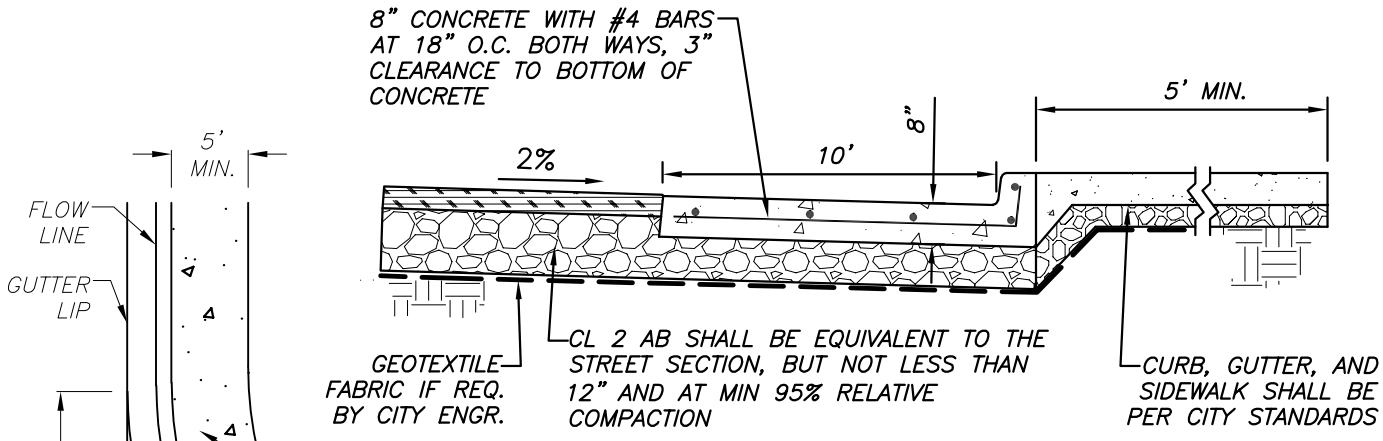
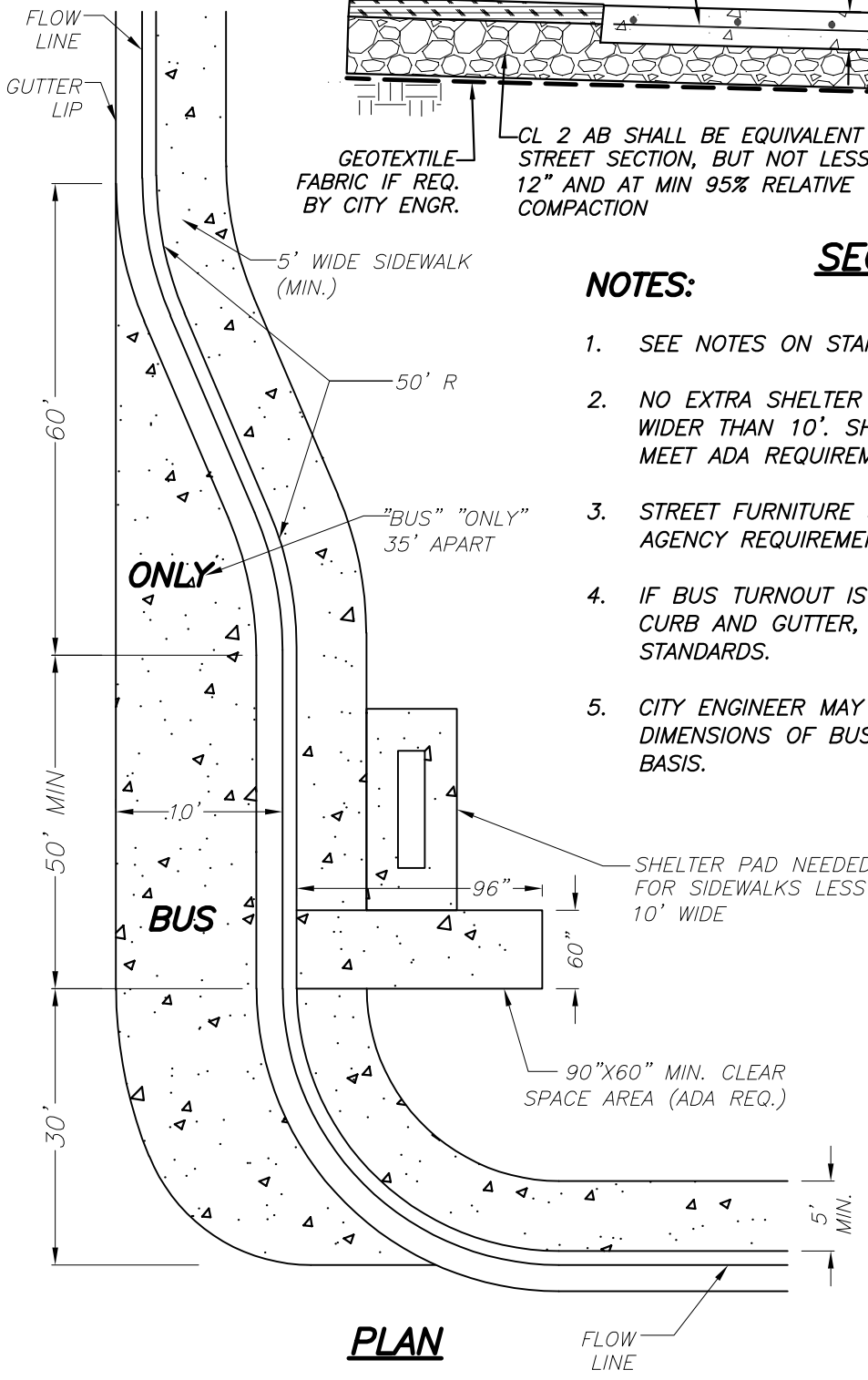


SECTION



PLAN

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. NO EXTRA SHELTER PAD NEEDED FOR SIDEWALKS WIDER THAN 10'. SHELTER PAD AND SHELTERS MUST MEET ADA REQUIREMENTS.
3. STREET FURNITURE SHALL BE PER CITY AND TRANSIT AGENCY REQUIREMENTS.
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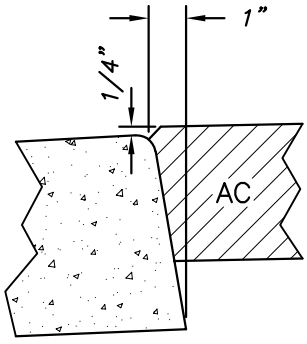
5. CITY ENGINEER MAY INCREASE OR DECREASE THE DIMENSIONS OF BUS TURNOUT ON CASE TO CASE BASIS.



GUTTER LIP DETAIL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

FARSIDE BUS TURNOUT

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. S - 57

NTS

Oct 27, 2020 – 7:58am
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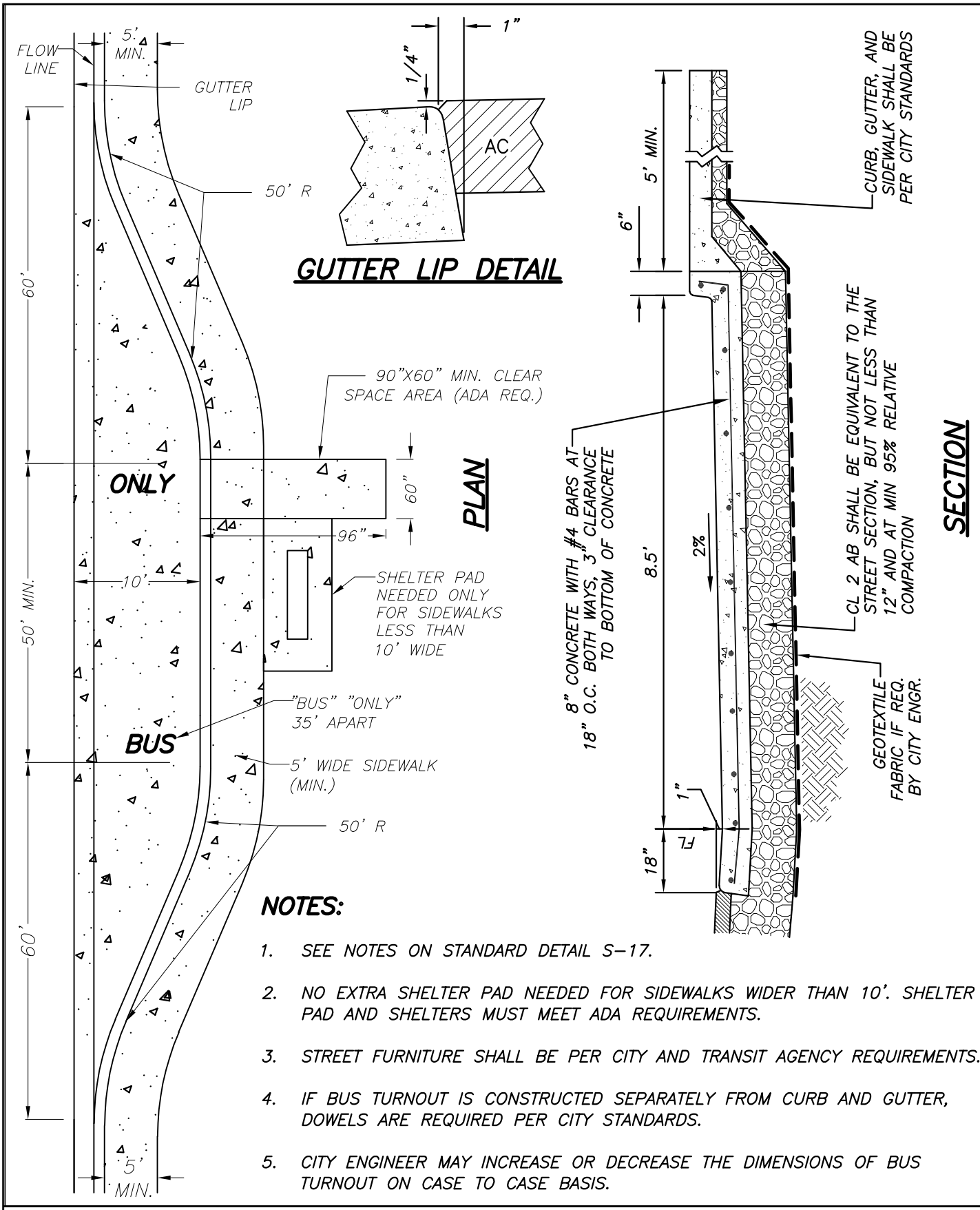

NOTES:

1. SEE NOTES ON STANDARD DETAIL S–17.
2. NO EXTRA SHELTER PAD NEEDED FOR SIDEWALKS WIDER THAN 10'. SHELTER PAD AND SHELTERS MUST MEET ADA REQUIREMENTS.
3. STREET FURNITURE SHALL BE PER CITY AND TRANSIT AGENCY REQUIREMENTS.
4. IF BUS TURNOUT IS CONSTRUCTED SEPARATELY FROM CURB AND GUTTER, DOWELS ARE REQUIRED PER CITY STANDARDS.
5. CITY ENGINEER MAY INCREASE OR DECREASE THE DIMENSIONS OF BUS TURNOUT ON CASE TO CASE BASIS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

MID BLOCK BUS TURNOUT

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. S - 58
NTS

Oct 27, 2020 – 7:59am
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SECTION 4 – TRAFFIC SIGNALS

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DRAWINGS:

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TS - 2 IISNS SUPPORT ARM CLAMP DETAIL
TS - 3 TRAFFIC SIGNALS PULL BOXES

SECTION 4

TRAFFIC SIGNALS

4.1 GENERAL

The work shall include the furnishing of all labor, tools, and equipment to construct and complete the installation of traffic signal system. A registered engineer shall design all traffic signals. The new traffic signals shall be based on the warrants oriented in the latest edition of the California Manual of Uniform Traffic Control Devices (CAMUTCD).

Traffic signals shall be designed in accordance with these Standard Specifications and the latest editions of following:

a. Caltrans Standard Specifications and Caltrans Standard Plans, including all standard symbols contained therein.

b. California Manual on Uniform Traffic Control Devices (CAMUTCD).

Furnishing and installing traffic signal and lighting shall conform to the Section 86, "Electrical Systems" of the State Standard Specifications and State Standard Drawings.

Traffic signal standards, posts, and mast arm shall be of the types listed in the most recent edition of the state standard plans and shall meet 100 MPH wind load design.

4.2 EQUIPMENT LIST, DRAWINGS, AND O&M MANUALS

Ten (10) days prior to start work the Developer or Contractor shall submit 7 copies in three-ring binders of a complete list of equipment and materials to be furnished, including all substitutions proposed to the City Engineer for approval. Partial or incomplete material lists will not be considered. If the Developer or Contractor desires to make a substitution, he shall submit complete product information to document the equipment or material being offered as being equal to that specified. No substitutions will be allowed until requested and approved in writing. Only equipment and/or materials approved by the City Engineer may be substituted. The City Engineer reserves the right to require the originally specified equipment and/or materials.

Installation of an approved substitution shall be the Developer's or Contractor's responsibility, and any revisions necessary for the installation of approved

substituted materials and/or equipment shall be made without additional expense to the City.

Shop drawings shall be submitted in a complete package. Partial submittal will not be considered.

The controller cabinet schematic wiring diagram and intersection sketch shall be combined into one drawing, so that, when the cabinet door is fully open, the drawing is oriented with the intersection.

The Contractor shall furnish in a three-ring binder two (2) maintenance manual for all controller units, auxiliary equipment, and vehicle detector sensor units, control units and amplifiers. The maintenance manual and operation manual may be combined into one manual. The maintenance manual or combined maintenance and operation manual shall be submitted at the time the controllers are delivered for testing or, if ordered by the City Engineer, previous to purchase. The maintenance manual shall include, but need not be limited to, the following items:

(a) Specifications
(b) Design characteristics
(c) General operation theory
(d) Function of all controls
(e) Trouble shooting procedure (diagnostic routine)
(f) Block circuit diagram
(g) Geographical layout of components
(h) Schematic diagrams
(i) List of replaceable component parts with stock numbers

4.3 PROGRESS SCHEDULES

Progress schedules will be required for this contract and shall conform to the provisions in Section 8-1.04, "Progress Schedule," of the State Standard Specifications and these special provisions.

The Contractor shall provide the City Engineer a project schedule at the preconstruction meeting.

No signal standard shall be delivered on-site until Contractor has all signal materials at hand. Signal heads shall not be installed before traffic signal controller is installed and wired.

4.4 CERTIFICATE OF COMPLIANCE, WARRANTIES, GUARANTEES, AND INSTRUCTION SHEETS

Contractor shall conform to the provisions in Section 86-1.05, "Certificate of Compliance" and in Section 86-1.05, "Certificate of Compliance," and in Section 6-3.06, "Guarantee," of the State Standard Specifications and these Standard Specifications.

The Contractor shall be responsible for all work and materials and/or equipment installed under the Plans and Specifications, including but not limited to vandalism.

The Contractor shall repair or replace at his expense, any defective work, material, or equipment which may become evident within one year of the date of filing of the Notice of Completion. The Contractor shall be responsible for all damage to other materials, equipment, structures, etc., caused by defects for a one-year period if the defect is due to defective material, equipment, or workmanship. If any part (or parts) is found to be defective in materials or workmanship within the one-year period, and it is determined by the City Traffic Engineer or by an authorized manufacturer's representative that said part (or parts) cannot be repaired on the site, the manufacturer shall provide a replacement part (or parts) of equal kind and/or type during the repair period, and shall be responsible for the removal, handling, repair or replacement, and reinstallation of the part (or parts) until such time as the traffic signal equipment is functioning as specified and as intended herein, the repair period shall in no event exceed 72 hours, including acquisition of parts.

The one year guarantee on the repaired or replaced parts shall gain commence with the date of reassembly of the system.

4.5 MAINTAINING EXISTING AND TEMPORARY SYSTEMS

Existing traffic signal systems, including detection, and/or safety lighting, shall remain operational during construction, unless otherwise authorized by the City Engineer.

The Contractor shall notify the City Engineer at least one full working day (not less than 24 hours) prior to the shutdown of any traffic signal and lighting system. The Contractor may use temporary splices and wiring as approved by the City Engineer to maintain existing and temporary traffic signal and lighting systems. Shutdowns of traffic signal and lighting systems shall be limited to the period from 9 a.m. to 4 p.m. of normal working days, excluding legal holidays, weekends, and nonworking days as determined by the City Engineer. The Contractor shall place "STOP AHEAD" and "STOP" signs to direct vehicle and pedestrian traffic

through the intersection during traffic signal system shutdown. All signs shall be furnished and provided by the Contractor and shall conform to Section 12-3.06, "Construction Area Signs" of the State Standard Specifications" except that the base material for the signs shall not be plywood.

4.6 REGULATIONS AND CODE

All work and materials shall conform with the latest codes, rules and regulations of the following:
(a) State codes and ordinances
(b) Local City and/or County ordinances
(c) National Electrical Code
(d) Uniform Building Code

Nothing in these Specifications is to be construed to permit work not conforming to the above; expense for compliance with the above shall be paid for by the Contractor. Whenever the Plans and Specifications require higher standards or larger sizes than those required by the Ordinances and Statutes, the Plans and Specifications shall take priority.

The Contractor shall have Special Dispensation from the California Occupational Safety and Health Administration to conduct operations no closer than 6 feet, but within 10 feet, of a high voltage line prior to erecting signal standards.

4.7 FOUNDATIONS

Foundations shall conform to the provisions in Section 86-2.03, "Foundations," of the State Standard Specifications and these Specifications.

Portland cement concrete shall conform to Section 90-2, "Minor Concrete," of the State Standard Specifications and shall contain not less than 505 pounds of cement per cubic yard, except concrete for reinforced pile foundations shall contain not less than 564 pounds of cement per cubic yard. The Concrete shall have minimum 28-day compressive strength 3,000 psi.

Foundation concrete shall be placed in a single pour except that pouring of the top six inches may be postponed when prior approval has been obtained. Exact location for controller cabinet shall be designated by the City Engineer and, 48-hour notice required.

No Utilities shall be permitted to run through any foundations.

The bottom of concrete foundations shall rest on firm ground. When placing the foundations, the Contractor shall place all conduit ends in their proper position, at

the correct heights and shall securely hold them in position during the pouring of concrete. Conduits exiting the controller foundation and entering into the controller cabinet shall be aligned to enter within the tees specified cabinets without any modifications to the cabinet base. Conduit shall be capped before any concrete is poured. Both forms and earth to be in contact with foundations shall be thoroughly moistened before placing concrete.

Anchor bolts shall be galvanized and shall extend above the finished base as needed to ensure a minimum extension above the top nut of 3 threads. The maximum extension above the top nut is 1 inch. Each bolt shall be supplied with 2 nuts and 2 flat washers to facilitate leveling. The distance between the bottom nut and the top of the finished foundation shall vary depending on the diameter of the anchor bolt being used. For anchor bolts 1" or less in diameter this distance is 1" minimum and 1-1/2" maximum. For anchor bolts greater than 1" in diameter the distance is 1-1/2" minimum and 2" maximum.

The anchor bolts and conduits shall be held in place by means of a template until the concrete sets.

The top of controller cabinet foundation shall be 12 inches above the surrounding grade or sidewalk.

Poles, standards and pedestals shall not be erected until the foundation concrete has set at least seven days and shall be plumbed or raked as directed by the City Engineer. Top of concrete foundations shall be finished relative to curb or sidewalk grade or as shown on the Plans or as directed by the City Engineer.

4.8 STANDARD STEEL PEDESTALS AND POSTS

Standards, steel pedestals and posts shall conform to the provisions in Section 86-2.04, "Standards, Poles, Steel Pedestals and Posts," of the State Standard Specifications and these Specifications.

The sign mounting hardware, as shown on “Detail U” of the Standard Plan ES-7N, shall be used to mount Series R-73, Regulatory Signs, on mast arms at the locations shown on Contract Documents.

Where the Standard State Plans refer to the side tenon detail at the end of the signal mast arm, the applicable tip tenon detail may be substituted.

If relocation of Utilities is required, immediate notification shall be given to the appropriate Utility Company by the Contractor.

The Contractor may install all underground electrical components, including foundations for signal standards and controller cabinet at the site of the project; however, no traffic signal standards shall be erected until all controlling equipment is available to the Contractor for installation.

All nuts, washers, screws and other post hardware shall be galvanized.

4.9 SOLID-STATE TRAFFIC ACTUATED CONTROLLER

The Developer or Contractor shall furnish one 2070 ATC controller assembly consisting of 2070 ATC controller unit, one wired Type 332-ATC cabinet and all auxiliary equipment required to control the signal indications as shown on the Contract Documents, and as specified in these Standard Specifications. The controller assembly shall be furnished complete with all equipment conforming to the requirements in the latest "Traffic Signal Control Equipment specifications," issued by the State of California. Controller, cabinet, equipment, and all modifications thereto shall be the type approved by the State of California Testing Laboratory, and shall have California State Quality Product listing.

The controller unit shall be supplied with associated Intersection Control Software. One diagnostic PROM module with C1 and C2 wraparound plugs, compatible with and of the same manufacture as the controller unit shall also be provided with the controller. The diagnostic PROM modules and intersection program shall be accompanied by an operation/instruction manual.

The controller cabinet layout and component locations shall conform to the requirements for ATC controller cabinet in said "Traffic Signal Control Equipment Specifications" and all addenda thereto.

The controller shall have four ACIA capabilities. Four ACIA's shall be integral to the controller unit.

The controller shall be supplied with a Model 400F modem with anti-streaming capability module complete with terminal block and cable to connect to controller's ACIA port. The Contractor shall install terminal block and all cabinet wiring except incoming communication lines.

The cabinet shall be wired and fully equipped for the traffic actuation and phasing shown on the Contract Documents.

Cabinet shall be aluminum, and shall have the additional following items installed:

1. Fluorescent light with door switches.
2. Auto/manual control with police panel cord.
3. Pullout drawer/shelf assembly.
4. Communications panels.

The Developer or Contractor shall arrange to have a signal technician, qualified to work on the controller unit and employed by the controller unit manufacturer or his representative, present at the time the equipment is turned on.

The convenience receptacle shall have ground-fault circuit interruption as define by the Code. Circuit interruption shall occur on 6 milliamperes of ground-fault current and shall not occur on less than 4 milliamperes of ground-fault current.

The Type 332-ATC controller cabinet shall be furnished with a Corbin lock, keyed "State #2."

4.10 SERVICE ENCLOSURE AND BATTERY BACKUP SYSTEM(BBS)

The Developer or Contractor shall furnish and install the Service Equipment Cabinet and BBS as shown on the Contract Documents and as provided in the State Standard Specifications, and these Standard Specifications.

Service shall conform to the Section 86-2.11, “Service” of the State Standard Specifications and these Specifications. Service Enclosure shall be Type III AF (See pages ES-2D of the State Standard Plans) service equipment cabinet as indicated on the Contract Documents, and shall meet the requirements of the serving utility.

Foundation for service shall extend 12” above PCC pad or sidewalk.

Type III service equipment enclosures shall be the aluminum type.

Circuit breakers shall be the cable-in/cable-out type, mounted on non-energized clips. All circuit breakers shall be mounted vertically with the up position of the handle being the "ON" position.

Voltage ratings of the service equipment shall conform to the service voltages indicated on the contract documents.

It shall be located at least 6 feet from the controller assembly with the meter facing the roadway. The service equipment and BBS shall be TESCO 27-22 Electrical Service with BBS, or approved equal.

System shall include a Generator Transfer Switch with BBS bypass and 30-amp external reverse service plug.

4.11 TRAFFIC SIGNAL INTERCONNECT

Traffic signal interconnect shall be provided for new signal installations, and for modification of existing signals which currently do not have interconnection. The interconnect cable shall be in its own conduit and shall not be spliced anywhere other than in traffic signal cabinet.

The interconnect shall connect the subject signal with at least one existing traffic signal. If the subject signal is between two existing signals, the interconnect shall connect all three signals.

The signal interconnect cable shall be a 12-fiber optic cable assembly consisting of loose buffer tubes identified using EIA/TIA color-code standards. The signal system modem shall be capable of operating in a full duplex mode of operation, employing asynchronous RS-232 data link protocol.

4.12 SIGNAL FACES AND SIGNAL HEADS

Signal faces, signal heads and auxiliary equipment as shown on the Plans, and the installation therefore, and shall conform to the provisions in Section 86-4, Traffic Signal Faces and Fittings," of the State Standard Specifications and in accordance with the CAMUTCD. In addition, some guidelines in an effort to standardize the placement of signal heads are below:

A. Typically, a standard three –section head should be centered over each existing lane and all through traffic lanes.

B. When protected left-turn phasing is specified, the three-section head should typically be centered over the left-turn lane. Likewise, when dual left-turn movements are specified, a separate indication should be centered over each left-turn lane. In addition, a separate LEFT TURN SIGNAL sign (R10-10) shall accompany each indication.

C. When protected/permissive left-turn phasing is specified, a four-section head should be placed over the extension of the channelization line between the left-turn lane and the adjacent through lane. The head shall be accompanied by a LEFT TURN YIELD ON symbolic green ball sign (R10-12).

D. For intersections with a left-turn pocket (permissive left turn movements), one 3-section all arrow on mast arm and there shall be an additional far (left) side three-section pole mounted head. Signal head shall be all circular indications.

All signal sections shall be provided with 12 inch diameter Light Emitting Diode (LED) modules conforming to the requirements of the Institute of Transportation Engineers (ITE) publication ST-017B and meet the latest Caltrans Specifications.

Signal housings shall be polycarbonate from virgin material using lexan polycarbonate black in color. Backplates shall be polycarbonate material black in color.

All signals shall have polycarbonate tunnel visors, black in color. Top opening of signal heads shall be sealed in the interior with neoprene gaskets.

Signal faces and heads shall be mounted per Caltrans Standard Plans and Specifications.

4.13 PEDESTRIAN SIGNALS AND PEDESTRIAN PUSH BUTTONS

Pedestrian signals and pedestrian push buttons shall conform to the provisions in Sections 86-4.03, "Pedestrian Signal Faces" and 86-4.04, "Signal Mounting Assemblies," and Section 86-5.02, “pedestrian Push Button Assemblies” of the State Standard Specifications and these Specifications.

Pedestrian signals shall be Type A polycarbonate black in color. International symbol indications shall be provided. The pedestrian signal indications shall have LED’s signal modules that meet Caltrans Specifications “countdown type” with “full figure display.”

The following type of screen shall be provided:

A 1½ inch deep eggcrate-type screen either of 0.030-inch nominal thickness polycarbonate. The assembly shall be mounted in a frame constructed of polycarbonate black in color.

The eggcrate-type screen shall be installed parallel to the face of the message plate and shall be held in place by the use of stainless steel screws or molded one-piece door and egg crate type screen.

The hood described in Section 86-4.01C, "Visors," of the State Standard

Specifications is not required.

The screen and frame shall be anodized flat black or may be finished with flat black enamel as specified in Section 91-4.05, "Paint, Acrylic, Emulsion, Exterior White and Light and Medium Tints," of the State Standard Specifications. Said enamel shall be applied in the shop at the Contractor's expense.

Alternate methods may be substituted for the above screening providing the results are equal to or superior to those obtained with the above-specified screen as determined by the City Traffic Engineer.

Pedestrian push buttons must be audible type and shall meet ADA requirements. The push buttons sign shall be porcelain enameled metal. Pedestrian push button assembly shall be black in color.

Pedestrian push buttons shall be TYPE B and must have a sunlight visible LED indicator to give an indication of button being pushed.

The Accessible Pedestrian Signal (APS) shall provide both a vibrating arrow button and audible sounds during WALK interval. During PED clearance and DON'T WALK interval a locating tone.

Audible signal for the visually impaired shall be required at all intersections. Audible signal shall be Caltrans approved model DS100 Series by Novax, or approved equal. Audible signal shall have Button Actuated Timer and initial timer setting shall be 3 seconds or as directed.

At the direction of City Engineer, Bicycle push buttons and bicycle detection system may be required on Bike Routes.

Pedestrian push buttons, assembly, housing, and sign shall be pre-approved by the City Engineer.

4.14 LED LUMINAIRES

Luminaires shall be Cobra head and from City approved Cree XSP Series LED type or approved equal.

Luminaires shall be mounted on the upper mast arm on the traffic signal poles and as shown on the Contract Documents. All luminaires are to be mounted on Luminaire mast arm.

All luminaires shall be numbered and installed as required by the City.

4.15 PHOTOELECTRIC CONTROLS

Photoelectric controls shall be installed from the City approved list.

4.16 EMERGENCY VEHICLE DETECTOR SYSTEM

Each traffic signal shall have an emergency vehicle detector system which shall conform to the details shown on the Contract Documents and these Specifications. Each Controller shall include a 3M Emergency Vehicle Detector System, or approved equal, 100% compatible with current Opticom uses in the area.

Model 721 detectors shall be furnished and installed by the Contractor as shown on the Contract Documents. They shall be mounted on traffic signal mast arms in accordance with Standard Plan ES-4E.

The contractor shall demonstrate that all of the components of each system are compatible and will perform satisfactorily as a system. Satisfactory performance shall be determined using the following test procedure:

1. Each system to be used for testing shall consist of an optical emitter assembly, an optical detector, at least 200 feet of optical detector cable, and a discriminator module.

2. The discriminator modules shall be properly installed in the cabinet.

3. Two tests shall be conducted; one using a Class I signal emitter and a distance of 1,000 feet between the emitter and the detector, the other using a Class II signal emitter and a distance of 1,800 feet between the emitter and the detector. All range adjustments on the module shall be set to "Maximum" for each test.

4. Each above test shall be conducted for a period of one hour, during which the emitter shall be operated for 30 cycles, each consisting of a one minute "on" interval and a one minute "off" interval. During the total test period, (1) the emitter signal shall cause the proper responses from the controller unit during each "on" interval, and (2) there shall be no improper operation of either the controller unit or the conflict monitor during each "off" interval.

The manufacturer of the required optical priority control system will provide a certificate of product liability insurance protection for $5,000,000 assuring the priority control user that the manufacturer is insured against civil damages if

proven to be at fault for an accident due to equipment failure within the system of matched priority control components. This certificate, however, need not, and is not meant to provide liability insurance protection to the priority control system dealer, installer or user.

4.17 TERMINAL COMPARTMENT

Slip-fitters and terminal compartments shall be cast bronze. All parts of signal mounting assembly shall be black in color.

4.18 DETECTORS

Detectors shall conform to provisions in Section 86-5, "Detectors," of the State Standard Specifications and these Specifications.

Detector Loop wire shall be Type 1 and shall be six feet by six feet in size unless otherwise noted on the Contract Documents.

No loops shall be installed until pre-marking has been verified by the City.

Conductor of each loop shall be run continuous, without splice, to the termination pull box where splice to detector lead-in cable is made. Conductors from loop to termination pull box shall be twisted together three turns per foot, before inserting in the saw cut slot and conduit.

Each loop shall be installed with the conductor wound in a clockwise rotation. Each individual conductor shall be banded "Start" and "End" in the termination pull box.

Each pair of loop conductors shall be identified and banded together in pairs, by lane, in the termination pull box. A minimum of five feet of loop conductors shall be provided, after splicing, in a termination pull box.

All banding shall be of the permanent, waterproof type.

Upon completion of the loop, and prior to connecting the loop to the lead-in cable, each loop shall be Meg-ohm tested and tested for continuity in the presence of the City Engineer. The insulation resistance of the loop conductors, lead-in cables, and splices shall not be less than 100 meg-ohms. In addition, testing shall meet Section 10-18.28 “Testing” of these Standard Specifications.

Final loop connections shall be made such that each loop section is wound in the opposite rotation to an adjacent loop, whether such loop is in the same lane or in the adjacent lane.

The loops shall be joined in combination of series-parallel so that optimum sensitivity is obtained at the detector sensor unit, and shall be in accordance with the detector unit manufacturer's recommendation regarding series-parallel combinations.

Final splices between loops and lead-in cable shall not be made until the operation of the loops under actual traffic conditions is approved by the City Engineer.

Loop detector lead-in cable shall be Type B. Splices to lead-in cable shall be soldered, insulated and installed in heat-shrink tubing, or approved equal.

Each loop detector lead-in cable shall be identified and banded in each pull box and in the controller cabinet.

The sealant for filling slots shall be an ELASTOMERIC SEALANT, and shall conform to State Standard Specification 86-5.01A(5), 3M detector sealant, black 5000 or approved equal.

For projects that include new hot mix asphalt overlay at the intersection, all new detector loops shall be in place before final hot mix asphalt paving surface is applied. Contractor shall not be allowed to cut into the final paving surface to install new detector loops.

4.19 CONDUCTORS AND WIRING

Conductors and wiring shall conform to the provisions in Section 86-2.08, "Conductors and Cables," and Section 86-2.09, "Wiring," of the State Standard Specifications and these Specifications.

Subparagraphs 2, 4, and 5 of the first paragraph of Section 86-2.09D, “Splicing and Terminations” of the State Standard Specifications is hereby deleted.

Splices shall be insulated by “Method B” of Section 86-2.09E, “Splice Insulation” of State Standard Specifications except detector lead-in cables.

A minimum of three (3) feet of slack of each single conductor and cable shall be left at each signal or lighting standard and in each pull box.

Conductors shall be cabled in bundles, by phase, and identified by phase with permanent labels in the controller cabinet and at detector terminal pull boxes.

Multiple lighting conductors, signal light grounded conductors, and bonding conductors only, may be spliced.

"C" shaped compression connectors, as shown on the Contract Documents, shall be used.

Signal cabinet ground rod is to be installed inside first main pull box closest to the cabinet, not on cabinet foundation.

4.20 FUSED SPLICE CONNECTORS

Fused splice connectors are not required

4.21 BONDING AND GROUNDING

Bonding and grounding shall conform to the provisions in Section 86-2.10, "Bonding and Grounding," of the State Standard Specifications and these Specifications.

Grounding jumper shall be attached by a 3/16 inch or larger brass bolt in the signal standard or controller pedestal and shall be run to the conduit, ground rod or bonding wire in adjacent pull box.

Grounding jumper shall be visible after cap has been poured on foundation.

Equipment grounding conductors will not be required in conduit containing loop lead-in cables only.

Green Wire #8 (cabinet ground) shall have a separate ground rod in pull box nearest to cabinet, with no other wire attached.

4.22 CONDUIT

Conduit shall be rigid galvanized metal or Type 3 Rigid non-metallic and shall conform to the provisions in Section 86-2.05, "Conduit" of the State Standard Specifications.

When a standard coupling cannot be used for coupling metal-type conduit, a UL listed threaded union coupling, as specified in the third paragraph in Section 86-2.05C, "Installation," of the State Standard Specifications.

Insulated bonding bushings will be required on metal conduit. All conduit shall be grounded together in all pull boxes and cabinets by means of a grounding jumper.

Conduit to be installed under existing pavement shall be installed by bore and jacking, directional drilling, or other approved methods which do not damage pavement.

The size of conduit used shall be as shown on the plans, but in no case it be less than 2 inches in diameter.

After conductors have been installed, the ends of conduits terminating in pull boxes, and in service and controller cabinets shall be sealed with an approved type of sealing compound. In as much as possible, conduit shall be run in a straight line from one pull box or pole to the next, maintaining a consistent setback from the curb.

If Type 3 non-metallic conduit is used it shall be installed with a rigid galvanized metal elbow and riser into the termination pull box, service, cabinet, and all other termination locations.

4.23 PULL BOXES AND DETECTOR HANDHOLES

Concrete pull boxes shall conform to the provisions in Section 86-2.06, "Pull Boxes," of the State Standard Specifications and these Specifications.

All pull boxes shall be No. 5 with bolt-down lids unless lager size required by the National Electrical Code or where shown on the Contract Documents. Detector Handholes shall be Type A and lids shall be stamped “Detector.”

All pull box lids shall identify the circuit as traffic lids shall be used when pull boxes are placed in areas of traveled by vehicles. The traffic lids shall be per manufacturer’s specifications. “Traffic Signal,” “Detector,” “Street Lights” or “Service” stamped on lids as appropriate.

The bottoms of pull boxes shall be bedded in a minimum of six inches (6”) of crushed rock, and as approved by the City Engineer. Also, box shall be placed over five (5) inches wide and six (6) inches deep concrete ring. Sufficient extensions shall be used to provide connection of conduits without offsets.
Contractor’s attention is directed to Section 86-2.06C, “Installation and Use,” of the State Standard Specifications.

Pull boxes installed in non-concrete areas shall be surrounded by a one (1) foot wide and two (2) foot deep concrete collar.

On the request of City Engineer, the Contractor shall install and supply a City approved theft proof deterrent system in each pull box. The theft deterrent system shall include a galvanized sheet metal pull box insert than can be accepted by all sizes of pull boxes, but allow the conductors to be neatly protected. The padlock shall be protected from bolt cutters. The contractor shall supply either McCain or Madruga brand inserts or approved equal. The contractor shall provide an interim padlock during construction. Upon completion, of the project, the contractor shall replace all interim padlocks with City approved and/or provided padlocks.

4.24 LED INTERNALLY ILLUMINATED STREET NAME SIGNS

Internally Illuminated street name signs (IISNS) shall be Light Emitting Diode (LED) Back Lit/Edge-Lit Internally Illuminated Street Name Signs.

IISNS shall be mounted as shown in the Contract Documents and City Standard Drawing TS-1 and TS-2. City Engineer may require the sign to be mounted on separated 3.5 inch O.D. SCH 40 galvanized steel pipe cantilever arm above the signal mast arm.

All "IISNS" signs shall be double faced unless otherwise noted on the Contract Documents. All signs shall be on diamond-grade reflective sheeting.

The sign shall have polycarbonate panel that UV, weather, abrasion and impact resistant. The front panel shall be replaceable.

The sign shall be designed and constructed to withstand (110 mph) wind loads in conformance with the requirements of AASHTO publications, "Standard Specifications for Structural Supports of Highway Signs, Luminaires, and Traffic Signals" 6th Edition 2013.

Street name text and border shall be white, with 8-inch upper case and 6-inch lower case letters, Series D, on a **brown** background, Block numbers and arrows shall be white, four inches high, in a **brown** background. Block numbers and arrows shall be located on the right hand side of the sign, Arrows shall be oriented toward the highest block number. The size of letters, numbers, and arrows may change with the street classifications and approval of the City Engineer.

Two wraps of stainless steel Band-It-Band strapping 3/4 inch thick shall be used to hand all overhead signs. Band-It-Band buckles type 201 stainless steel shall be used for strapping. Hawkins Swing Sign Brackets 250 Series, Part Number M10J-OCB250AL and M10J-OCB250FL with Adjustable Length Swing Sign Bracket M10J-OCB250AL, or approved equal. Signs shall have 2" x 2" x 1/8" "L" aluminum bracket for additional support.

All signs and faces shall be guaranteed for **10 years**. Those faces found to have failed shall be fabricated and replaced at no charge to the City. Labor to replace defective sign faces shall be provided for the first five years. LED Drivers/Power Supplies shall be warranted for minimum 5 years.

Sign cabinet and supporting structure shall have 10 years warranty.

4.25 VIDEO DETECTION

City Engineer may require Video Detection System to be installed with the traffic signals. If required, Developer or Contractor shall install complete Video Detection System at his/her own expense.

4.26 TESTING

The Contractor shall make the signals fully operational including entering timing settings provided by the Engineer into the controller and peripheral equipment.

The Contractor shall have present, a qualified field technician, who shall be qualified to perform testing and servicing on all systems of the installation.

Prior to scheduled turn on, the field technician shall perform all testing assignments. This testing shall include measurement of each loop installation utilizing a field loop tester/analyzer. Based on the measurement of each loop, the final loop configuration shall be established in such manner as to generate a unique frequency for each adjacent loop system, (detector channel). This unique frequency shall be set such that in the natural state and in the detect state, the frequency does not enter the frequency range of any adjacent loop system. In addition to the frequency setting and adjustments, the loop configuration shall be such that peak tuning characteristics shall be maximized; i.e., the detect state shall be a minimum of a 3.0 reference value based on natural state reference. For loops rated less than a 3.5 reference value, the loops shall be configured to maximize the sensitivity of the loop closest to the stop bar.

The Contractor shall provide the City Engineer with the detector test report. This report shall include each detector as labeled on the drawing, and shall show the final loop configuration, the natural state frequency, the detect frequency, and the calculated reference value of each loop system.

The Contractor shall flash test all circuits of each signal phase and both circuits of each pedestrian phase to confirm that the signal is wired properly before the signal is requested to be energized. The Contractor shall provide the City Engineer with the signal flash report of flash tests of each circuit, at least 24 hours before the signals are energized.

4.27 SIGNAL ENERGIZING

The Contractor, after fully testing the new traffic signal equipment, will contact the City Inspector to schedule signal energizing. Signals will only be allowed to be put into operation on Tuesdays, Wednesdays, and Thursdays. The Contractor will have the signal fully tested at least 24 hours before the signal is energized.

4.28 FUNCTIONAL TESTING

The first paragraph in Section 86-2.14B, :Field Testing," of the State Specifications is amended to read:

Prior to start of functional testing, the Contractor shall perform the following tests on all circuits, in the presence of the Engineer.

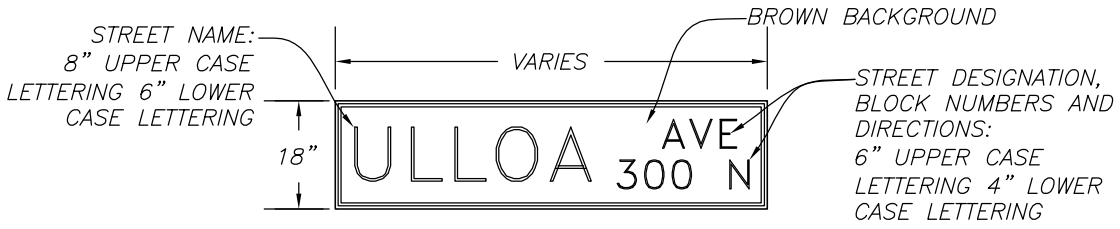
The functional test for each lighting system shall consist of not less than 14 days. If unsatisfactory performance of the system develops, the conditions shall be corrected and the test shall be repeated until the 14 days of continuous, satisfactory operation is obtained.

4.29 RECORD DRAWINGS

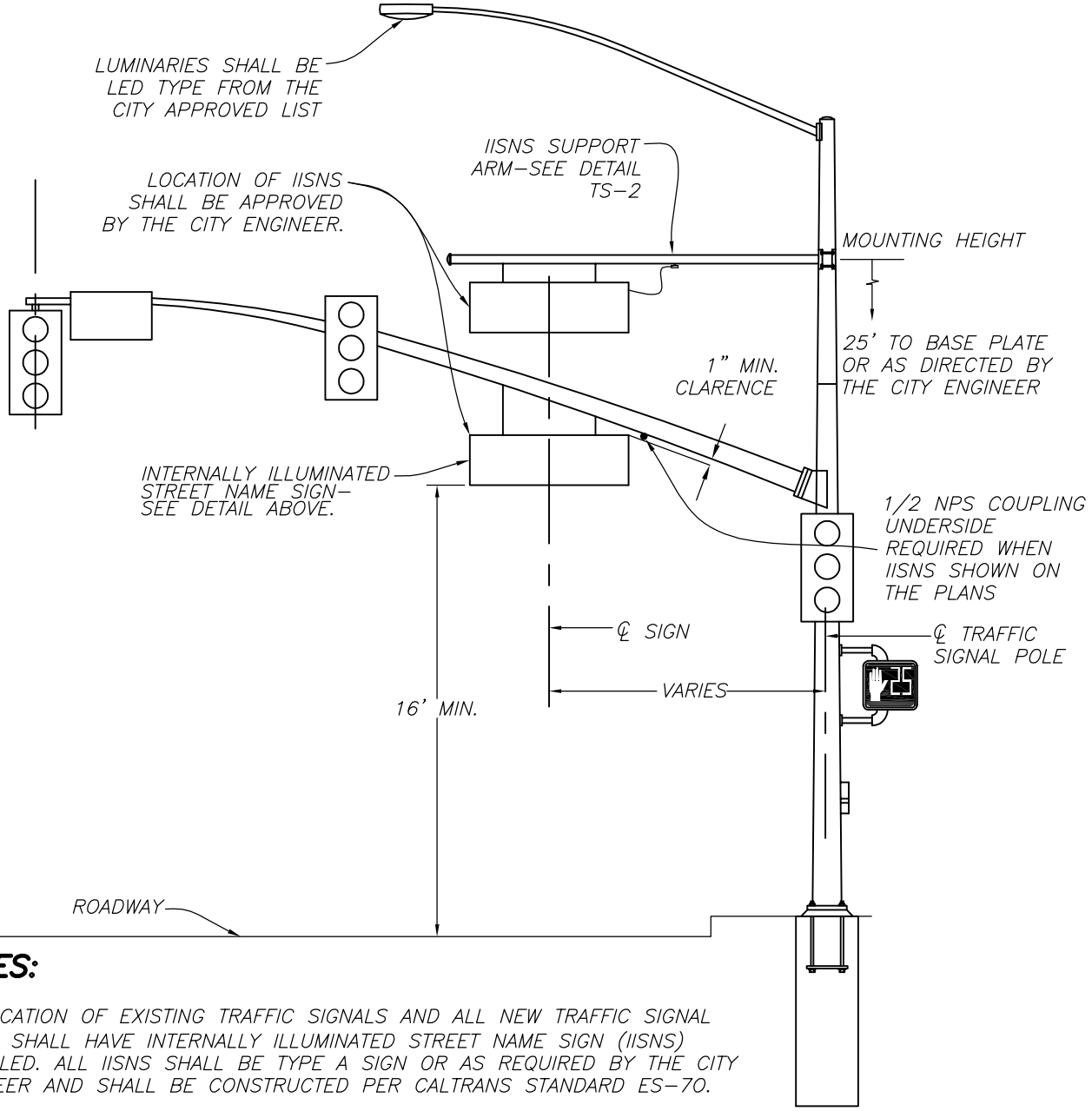
The Developer or Contractor shall keep accurate records on a set of project plans of all additions and deletions to the work, and of all changes in locations, elevation, and character of the work not otherwise shown or noted on the Contract Documents.

"Record Drawings" construction plans shall be provided to the City Engineer after completion of the project. Two copies shall be provided with changes to the original contract work shown in red color. The contractor shall transmit these "Record Drawings" plans to the City Engineer for approval.

"Record Drawings" plans shall be signed and dated by the Contractor or the Sub-Contractor that actually constructed the facility. In addition, company names of the Contractor and the Sub-Contractor shall be shown.



ALL LETTERING SHALL BE WHITE AND CENTERED ON SIGN. ABBREVIATED STREET DESIGNATIONS (AVE., ST., BLVD., ETC.), BLOCK NUMBERS AND DIRECTIONS, SHALL BE AS SHOWN. LETTERING STYLES AND SIZES MAY BE CHANGED TO FIT WITHIN THE SIGN DISPLAY AREA, WITH THE CITY ENGINEER'S APPROVAL.



NOTES:

1. MODIFICATION OF EXISTING TRAFFIC SIGNALS AND ALL NEW TRAFFIC SIGNAL POLES SHALL HAVE INTERNALLY ILLUMINATED STREET NAME SIGN (IISNS) INSTALLED. ALL IISNS SHALL BE TYPE A SIGN OR AS REQUIRED BY THE CITY ENGINEER AND SHALL BE CONSTRUCTED PER CALTRANS STANDARD ES–7D.
2. SUBMITTALS SHALL BE REQUIRED FOR THE CITY ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

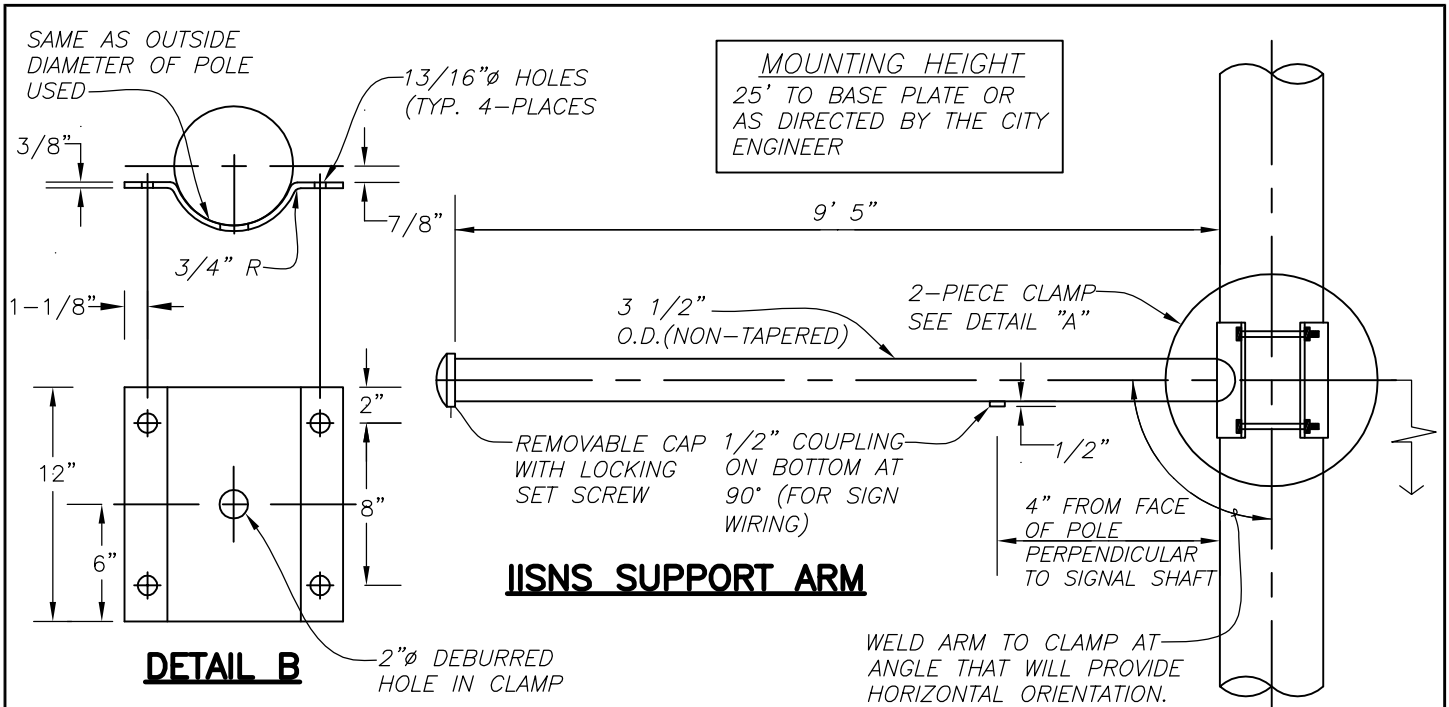
ILLUMINATED STREET NAME SIGN

02/03/16
DATE

62736
R.C.E. NO.

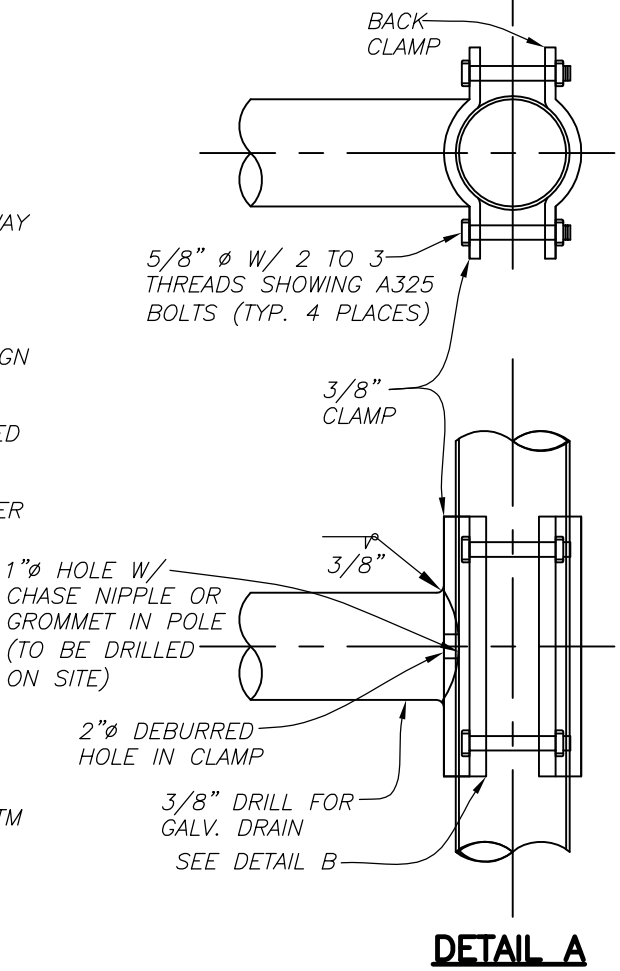
DRAWING NO. TS-1

NTS



DETAIL B

IISNS SUPPORT ARM



DETAIL A

NOTES:

1. ALL STRUCTURE, HARDWARE, AND WELDING SHALL BE DESIGNED IN ACCORDANCE WITH THE "STANDARD SPECIFICATIONS FOR STRUCTURAL SUPPORTS FOR HIGHWAY SIGNS, LUMINAIRES, AND TRAFFIC SIGNALS 6TH EDITION".
2. A SEPARATE LIGHTING CIRCUIT SHALL BE INSTALLED TO POWER THE SIGNS. A 3/4" LB CONDOLET SHALL BE INSTALLED AS A DISCONNECTING POINT BETWEEN THE SIGN AND THE SYSTEM POWER SOURCE.
3. FURNISH SEPARATE CIRCUIT FOR IISNS TO BE CONNECTED TO THE BATTERY BACKUP.
4. SHAFT STEEL SHALL BE 48,000 PSI MINIMUM YIELD AFTER FABRICATION.
5. CLAMP PLATE SHALL BE GRADE 50 STEEL AND IN CONFORMANCE TO ASTM A-572.
6. ALL WELDS SHALL CONFORM TO AWS D1.1 WELD SPECIFICATIONS.
7. ALL STRUCTURE SHALL BE COATED WITH HOT DIP GALVANIZED PER ASTM A-123.
8. ALL HARDWARE SHALL BE HOT DIP GALVANIZED PER ASTM A-153.
9. SUBMITTALS SHALL BE REQUIRED FOR CITY ENGINEER'S APPROVAL PRIOR TO CONSTRUCTION.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

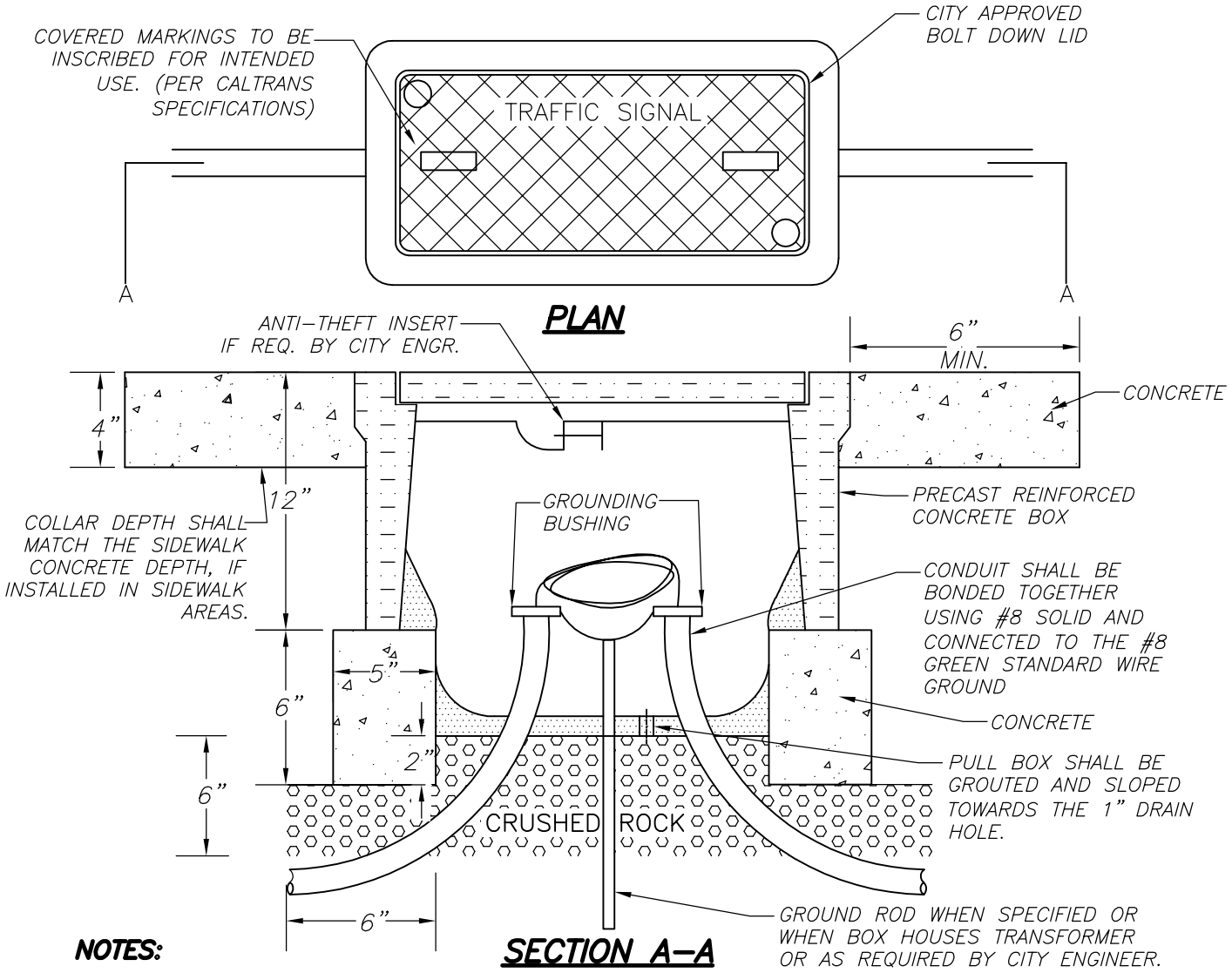
02/03/16
DATE

62736
R.C.E. NO.

IISNS SUPPORT ARM CLAMP DETAIL

DRAWING NO. TS - 2

Mar 24, 2016 - 9:45am
L:\Standard details\Cad Files 2015\Section 4 (Traffic Signal)\TS-2.dwg



NOTES:

1. PULL BOXES SHALL BE NUMBER 5, UNLESS OTHERWISE NOTED ON PLANS. AND REQUIRED BY THE CITY ENGINEER.
2. INSTALL A ONE-FOOT COLLAR OF CONCRETE, 24" DEEP, AROUND THE PULL BOXES INSTALLED IN NON-CONCRETE AREAS, SLOPED TO DRAIN AWAY FROM THE PULL BOX. PULL BOXES IN SIDEWALKS MUST BE SET AT FINISHED GRADE WITH TEMPORARY CONCRETE APRON OR SECTION OF SIDEWALK POURED.
3. IF REQUIRED BY THE CITY ENGINEER, THE PULL BOX SHALL INCLUDE A PAD LOCKABLE HOT DIPPED GALVANIZED ANTI-THEFT ENCLOSURE WHICH SHALL BE MADRUGA IRONWORKS, McCAIN TRAFFIC, OR APPROVED EQUAL.
4. CONDUIT SHALL BE A MINIMUM DEPTH OF 24" BELOW PCC SIDEWALK FINISH GRADE AND 30" BELOW ALL FINISHED GRADE IN ALL OTHER AREAS.
5. TYPICAL 3' SLACK OF CONDUCTORS IN ALL PULL BOXES.
6. IF PULL BOX IS A CIRCUIT TERMINUS AT POWER SOURCE, INSTALL FUSE HOLDER PER SPECIFICATIONS AND WITH 4' OF SLACK CONDUCTOR.
7. IF REQUIRED BY THE CITY ENGINEER, WRAP PULL BOX WITH #15 ROOFING PAPER BEFORE BACKFILLING.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

TRAFFIC SIGNALS PULL BOXES

DRAWING NO. TS-3

NTS

SECTION 5 – STREET LIGHTING

SPECIFICATIONS:

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5.12 CIRCUIT ...……..5-10
5.13 CONNECTION TO ELECTRICAL SYSTEM ...……..…..5-10
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DRAWINGS:

SL – 1 LOCATIONS OF 25’ POLES
SL - 2 LOCATIONS OF 30’ POLES
SL - 3 LIGHTING PULL BOXES
SL - 4 STANDARD ELECTROLIER
SL - 5 DECORATIVE ELECTROLIER
SL - 6 STANDARD ELECTROLIER BASE DETAIL
SL - 7 DECORATIVE ELECTROLIER BASE DETAIL
SL - 8 ELECTROLIER STREET NAME SIGN (S.N.S) ARM BRACKET

SECTION 5

STREET LIGHTING

5.1 GENERAL

This work shall include the furnishing of all labor, materials, tools, and equipment to construct and complete in an efficient and workmanlike manner the installation of the street lighting and electrical system in accordance with the approved plans, these specifications, the City of Patterson Standard Details, and the Section 86 of State Specifications & Standard Plans.

Electrical equipment shall conform to the requirements of the National Electrical Manufacturers Association (NEMA) and material and work shall conform to the requirements of the California Code of Regulations – Title 24, the Electrical Safety Orders of the Division of Industrial Safety, National Electrical Code (NEC), Department of Industrial Relations (DIR) of the State of California, Rules for Overhead Line Construction G.O. 95, State of California, Public Utilities Commission (PUC), the Standards of the American Society for Testing Materials (ASTM), the American National Standards Institute (ANSI) and Turlock Irrigation District (TID).

Street lighting shall be required in all new developments. The cost of installing, relocating, repositioning or reconfiguring streetlights as a result of new construction shall be paid by the Developer. Developer or Contractor holding an appropriate license for such work under the provisions of the State of California Business and Professions Code. All street lighting shall be owned by the City of Patterson.

Electroliers utilized for the project shall be either standard or decorative as determined by the City.

5.2 DESIGN

The lighting system shall be designed to best serve the area and to minimize the length of service runs from the points of connection to the street lights. An illumination analysis may be required for special or unique situations and shall be provided for those situations when requested by the City Engineer.

The Design Engineer shall determine the wire size and length of each conduit run. These items may be shown in tabular form or denoted next to each conduit run on the plans.

The plans shall show and identify all existing lights in the immediate vicinity of the project, all streetlights and pull boxes to be installed, street light numbers, all conduit runs and size, the service point for the new streetlights, all wire and fuse sizes, intensity of luminaries, and voltage drop.

The Consulting Engineer shall submit three (3) hard copies (pdf or CAD file on City request) of street light plans to the City for preliminary review in the initial submittal. The Consulting Engineer shall furnish plans and obtain approvals from Turlock Irrigation District (TID).

The City will not make a street light energizing request to TID unless the plans have obtained prior approval from TID. The cost of all TID services shall be paid for by the Developer or Contractor. This shall include the TID connection charge for energizing street lights.

Decorative electroliers, spacing and location shall be as determined by the Consulting Engineer and as approved by the City Engineer. Developer or Contractor shall provide spares of all components of decorative electroliers and luminaries in quantities dependent upon the number of poles installed in the project.

Decorative Poles Installed	Spares to City
12 or less	2
13-30	3
31 or more	4

The spacing and location for standard electroliers shall be as shown on Standard Details and as following:

1. Standard electroliers shall be spaced 330 feet on local & collector streets and 165 feet staggered to each side of the arterial street.

2. Pole height and arm length shall be as shown in the Standard Details.

3. On streets with separated sidewalks, street lights shall be located at the front of sidewalk. The edge of the pole foundation shall meet the front of sidewalk.

4. On streets with monolithic curb, gutter, and sidewalk, street lights shall be located at the back of sidewalk. The edge of the pole foundation shall meet the back of sidewalk. On major streets, street lights shall be located directly behind curb.

5. Where there is only curb and gutter, the edge of the street light foundation shall be located 4.5 feet from the back of the curb, while maintaining a clear ADA path of travel.

6. T intersections – A street light shall be located on the through street within 12.5′ of the projected centerline of the intersecting street (either direction).

7. Cul-de-sac – A street light shall be located within the bulb if longer than 150′, from the intersection to radius point of bulb. If 330 feet or more, place intermediate light.

8. Four-way intersection/major streets – Street lights shall be located at all curb returns.

9. Four-way intersection/major and minor street – Street lights shall be located at the far right curb returns of the major street in the direction of travel.

10. Four-way intersection/minor street – A street light shall be located at one (1) of the curb returns.

11. Electroliers will normally be staggered on opposite sides of the street. Electroliers shall be placed on the inner edge of curves.

12. City Engineer may require street lighting to be installed at each crosswalk at roundabouts.

13. Mounting height shall conform to overhead clearance specifications GO-95 (at least 10 feet from high voltage lines).

14. Pull boxes shall be spaced at a minimum of 200 feet to the collector location street standard.

15. One (1) pull box shall be located next to each electrolier.

16. Pull boxes shall be placed immediately behind the sidewalk in sidewalk areas while maintaining ADA path of travel.

17. Where a utility company transformer is designated as the service point, a pull box shall be installed adjacent to the transformer. Pull box shall conform to utility company specifications.

5.3 EXCAVATION AND BACKFILL

Excavation and backfill shall be in accordance with Section 86-2.01 of the State Standards and these improvement standards. Location of existing facilities shown on plans are approximate only. The Contractor shall be responsible for locations of all underground facilities before beginning any excavation. Contractor shall secure an encroachment permit with the City prior to excavate in public right-of way.

5.4 CONDUIT

Conduit shall be installed as shown on the improvement plans. Conduit and fittings shall be rigid galvanized metal or rigid PVC in locations where approved by the National Electric Code. All lighting conduit shall be 2" minimum, larger sizes shall be dictated by State of California Standard Specifications or National Electric Code, whichever is more conservative. All fittings installed in concrete shall be concrete tight type.

All 90 degree elbows and risers shall be rigid metal.

Conduit shall be zinc-coated by the sheradizing, hot-dip, or electro-plating process. Each length shall bear the label of the Underwriters Laboratory, Inc.

The following restrictions shall apply while installing conduits in appropriate circumstances:

1. Conduit terminating in each standard or pull box shall be electrically connected to each other with a copper ground strip equivalent in area to No. 8 AWG copper wiring using insulated bushings with the facilities to connect ground wire.

2. All conduits shall be laid to a depth of not less than twenty-four (24) inches nor greater than thirty-six (36) inches below the curb grade in sidewalk areas. All conduits shall be laid to a depth of not less than thirty

(30) inches in paved areas, easements, park strips, alleys and parking strips.

3. If placed by "Trenching in Pavement Method", the conduit shall be placed under existing pavement in a trench approximately two (2) inches wider than the outside diameter of the conduit to be installed. Trench width shall not exceed six (6) inches and conduit shall be installed minimum of thirty (30) inches below the finished grade. Trench shall be crumbled clean prior to placement of conduit.

4. After the installation of all conductors, the ends of conduits terminating in pull boxes and service pedestals shall be sealed with an approved duct seal material.

5. Where factory bends are not used, conduit shall be bent without crimping or flattening using the longest radius practical. In no case shall the bend radius be less than six (6) times the inside diameter of the conduit.

5.5 PULL BOXES

Pull boxes shall be in accordance with Section 86-2.06 of the State Standards, except that all pull boxes shall be concrete. Pull boxes shall be located where shown on the plans or where required by regulations or codes. In addition, a pull box shall be installed immediately adjacent to the light base street crossings, at angle points, 90 degree bends. Pull boxes shall be Christy N16 with N16J bolt-down lids or approved equal. Where located inside vehicular travel areas, lids shall be Christy N16-61J or approved equal. All pull box covers shall be marked "Street Lighting," and installed at finished grade. Pull boxes shall be placed on a bed of crushed rock of 6-inch minimum thickness to allow drainage. Also, box shall be placed over five (5) inches wide and six (6) inches deep concrete ring. Sufficient extensions shall be used to provide connection of conduits without offsets.

Pull boxes installed in non-concrete areas shall be surrounded by a one (1) foot wide and two (2) foot deep concrete collar.

On the request of City Engineer, the Contractor shall install and supply a City approved theft proof deterrent system in each pull box. The theft deterrent system shall include a galvanized sheet metal pull box insert than can be accepted by all sizes of pull boxes, but allow the conductors to be neatly protected. The padlock shall be protected from bolt cutters. The contractor shall supply either McCain or Madruga brand inserts or

approved equal. The contractor shall provide an interim padlock during construction. Upon completion, of the project, the contractor shall replace all interim padlocks with City approved and/or provided padlocks.

5.6 FOUNDATIONS

Foundations for standard and decorative electroliers shall conform to the provisions in Section 86-2.03, "Foundations," of the State Standard Specifications and these improvement standards.

Portland cement concrete shall conform to Section 90-2, "Minor Concrete," of the State Standard Specifications and shall contain not less than 505 pounds of cement per cubic yard, except concrete for reinforced pile foundations shall contain not less than 564 pounds of cement per cubic yard. The Concrete shall have minimum 28-day compressive strength 3,000 psi.

Foundations shall be placed monolithically to within 4-inches of the sidewalk grade. After the pole is set, a square cap equal to the foundation diameter shall be installed to bring the foundation to sidewalk grade.

No Utilities shall be permitted to run through any foundations.

The bottom of concrete foundations shall rest on firm ground. When placing the foundations, the Contractor shall place all conduit ends in their proper position, at the correct heights and shall securely hold them in position during the pouring of concrete.

Anchor bolts shall be galvanized and shall extend above the finished base as needed to ensure a minimum extension above the top nut of 3 threads. The maximum extension above the top nut is 1 inch. Each bolt shall be supplied with 2 nuts and 2 flat washers to facilitate leveling. The distance between the bottom nut and the top of the finished foundation shall vary depending on the diameter of the anchor bolt being used. For anchor bolts 1" or less in diameter this distance is 1" minimum and 1-1/2" maximum. For anchor bolts greater than 1" in diameter the distance is 1-1/2" minimum and 2" maximum.

The anchor bolts and conduits shall be held in place by means of a template until the concrete sets.

Poles, standards and pedestals shall not be erected until the foundation concrete has set at least five (5) days and shall be plumbed or raked as

directed by the City Engineer. Top of concrete foundations shall be finished relative to curb or sidewalk grade or as shown on the Plans or as directed by the City Engineer.

5.7 ANCHOR BOLTS

Anchor bolts for standard electroliers shall be 1-inch in diameter, 36 inches long with a 4-inch "L" bend at the bottom end. Anchor bolts for decorative electroliers shall be ¾-inch in diameter, 19 inches long. All anchor bolts shall conform to ASTM Designation A-307.

5.8 CONDUCTORS, WIRING & SPLICING

Conductors shall conform to Section 86-2.08 of the State Standards and these improvement standards. Wiring shall be in accordance with Section 86-2.09 of the State Standards and these improvement standards.

A minimum of three (3) feet of slack of each single conductor and cable shall be left at each lighting standard or decorative and in each pull box.

The size of conductors shall be determined by voltage drop calculations prepared in accordance with the National Electric Code except as amended by this Section. The conductor shall be sized such that the voltage drop in the circuit from the service point to the last Street Light on the circuit will not exceed 5% of the nominal voltage which is normally 120 volts. However, in any case, the minimum size of the conductors shall be No. 10 AWG.

The neutral conductor shall meet the Article 200 of the NEC and shall have a white outer finish up to and including No. 8 AWG and above shall be permanently marked.

Conductors shall be identified with street light pole number in the service box. Identification shall be by direct labeling, tags, or bands and shall be weather proof.

No conductors shall be pulled until the conduit run is complete. Extreme care shall be exercised when pulling conductors and cable into conduits to avoid kinking, twisting, nicking or scratching of the conductors and insulation, or the placement of extreme stress on the conductors or cable. If the conduit is installed in a pole foundation, the conductors shall not be drawn into the conduit for at least three (3) days after placement of the foundation concrete.

A fused splice connector shall be used to connect the light to the line in accordance with Section 86-2.095 of the State Standard Specifications. However, the fused splice connector shall not be located in the pullbox but shall be located within the pole. The five (5) amp fuse and holder shall be located in the pole adjacent to the hand hole. This shall provide sufficient slack to allow easy changing of the fuse as needed.

Conductors shall not be spliced except in pole bases (or in pull boxes when approved by the City Engineer). The splices shall be made as follows:

a. In pole bases, all splices shall be made with wire connections, ITT No. 10-604, 10-606, or 10-6010 or approved equal.

b. When specifically approved by the City Engineer, splices in pull boxes shall be made using Ilsco IK8 10 STP-8 STP split bolt or approved equal to connect wire ends. Split bolt shall be wrapped first with minimum three (3) layers of Plymouth Bishop 122 Rubber Tape (splicing compound) #2002 or approved equal and then with 3M "33+" electrical tape or approved equal. The entire splice shall be coated with 3M "Scotchkote" electrical coating or approved equal.

5.9 POLES

All poles shall be engineered to withstand 100 mph wind forces per AASHTO standards including a 30% gust factor.

Standard electrolier poles shall be hot-dip galvanized steel. Thirty (30) foot poles, shall be Ameron Catalog No. N-3015, Pacific Union Metal Manufacturing Company Catalog No. FS1130 P15 or an approved equal. Twenty-five (25) foot poles shall be Ameron Catalog No. N-2512, Pacific Union Metal Manufacturing Company No. 71041-Y3-12 or an approved equal. Pole tops and base covers shall be furnished and installed with each pole.

Decorative street lighting is specialized in nature, reflecting community design, the surrounding environment, or other architecturally pertinent factors. When decorative lighting is desired, it will be developer or consultant engineer's responsibility to show the proposed street light system meets the city design requirements. Decorative electroliers poles shall be 14-foot Philps Hadco P2540 or approved equal. A catalog sheet must be submitted to City of Patterson for all decorative street lights prior to installation.

Poles shall not be installed until the foundation has set at least five (5) days. Poles shall be plumbed by adjusting the leveling nuts; leveling shims shall not be used. The poles hall be grounded to conform to the provisions of the California Code of Regulations – Title 24.

Poles shall have hand-holes near their bases facing the street. The hand covers shall have theft-proof bolts.

When the pole is located at the back of sidewalk, the length of luminaire arm shall be as directed by the City Engineer.

5.10 LUMINAIRES

All luminaires shall be LED type for Standard and Decorative electroliers. Standard electroliers shall be located according to size as shown on Standard Drawings SL-5 and SL-6. The luminaries shall be as follows or an approved equal:

LED Luminaire Type	Type of Lightning Distribution	LED System Wattage	Min. Initial LED Delivered Lumens	Min. BUG Rating or Better
A	II	43 to 48	4,700	B1 U0 G1
B	III	53 to 56	4,800	B1 U0 G1
C	II	68 to 75	6,200 to 6,900	B2 U0 G1
D	II-4	68 to 75	9,120 to 9,500	B2 U0 G1
E	III	91 to 101	9,120 to 9,500	B2 U0 G1
City Approved Manufacturer is CREE XSP Series, or approved Equal				

Standard electroliers shall have LED lamps, acrylic refractors, built-in receptacles for photoelectric cells, and regulator or auto-regulator multi-tap (120/240 volt) ballasts with a power factor of not less than 92%.

Decorative electroliers shall have post tops of Philips Hadco Lighting Refractive Globe RL32 Series Lumilock LED or approved equal. They shall be provided with LED lamps, acrylic Type III globes, acrylic reflector, and a twist lock receptacle for the photo cell. Ballasts shall be auto regulating multi-tap (120/240 volt) with a power factor of not less than 92%. A catalog sheet must be submitted to City of Patterson for all decorative street lights prior to installation.

Developer or Contractor shall label the poles with luminaire LED wattage using high intensity or diamond grade sheeting. The numbers shall be minimum 1-1/2" high and black on white background and/or as approved by the City.

5.11 PHOTOELECTRIC CELLS

A photo cell shall be provided on the luminaire nearest to the service point for each service. Photoelectric cells shall be adjustable, compatible with related equipment and adequate for the load. They shall be Acuity Brand Controls – DSS124F1.5TJJE – Fail off or an approved equal for standard electroliers. Photoeletric controls shall be placed at decorative electroliers as per manufacturer specifications.

5.12 CIRCUIT

A 120-volt underground circuit shall be employed on all systems. Multiple circuits shall be used in accordance with the National Electric Code. No more than six (6) street lights shall be included on a circuit without designing a multiple circuit.

Service pedestal shall conform to Caltrans Standard Type III AF.

5.13 CONNECTION TO ELECTRICAL SYSTEM

All services to electroliers shall be installed underground.

1. Where lighting circuit and energy source meet, the circuit shall terminate in TID's service boxes or pull boxes, as shown in the Standard Plans. The circuit shall terminate with a Bussman TRON fuse-holder, with 30 amp, cartridge fuse, type HEB-AB or approved equal. All connection points shall be waterproofed. The fuse shall be taped to the conductor and there shall be 4 feet of slack conductor coiled in the service box.

2. The TID shall make service connection for light standards in the pull box. Where service is from a TID transformer, and no service pull box exists, the Developer or Contractor shall furnish and install a pull box at the transformer locations, as shown in standard details. The Developer or Contractor shall furnish and install conduit and conductors from pull box into the TID transformer. Entrance into TID transformer shall be coordinated with and supervised by TID.

3. The connection to either an overhead or underground energy source will be made by the TID, upon request for service by City. All necessary wiring, conduit, etc. to an existing and available power source shall be installed prior to acceptance by City. Request for service will be made upon completion of work by Contractor or Developer. The Contractor or Developer shall bear all costs by TID for service connection(s).

5.14 ACCEPTANCE TESTING

All streetlights shall be tested a minimum of 48 hours before acceptance by the City.

If requested by the City Engineer, after completion of the installation of street lights, the contractor shall test all street lights in the presence of the City Inspector. The street light system from the service point to the luminaire shall be tested for the following items:

1. Identification of light distribution patterns.

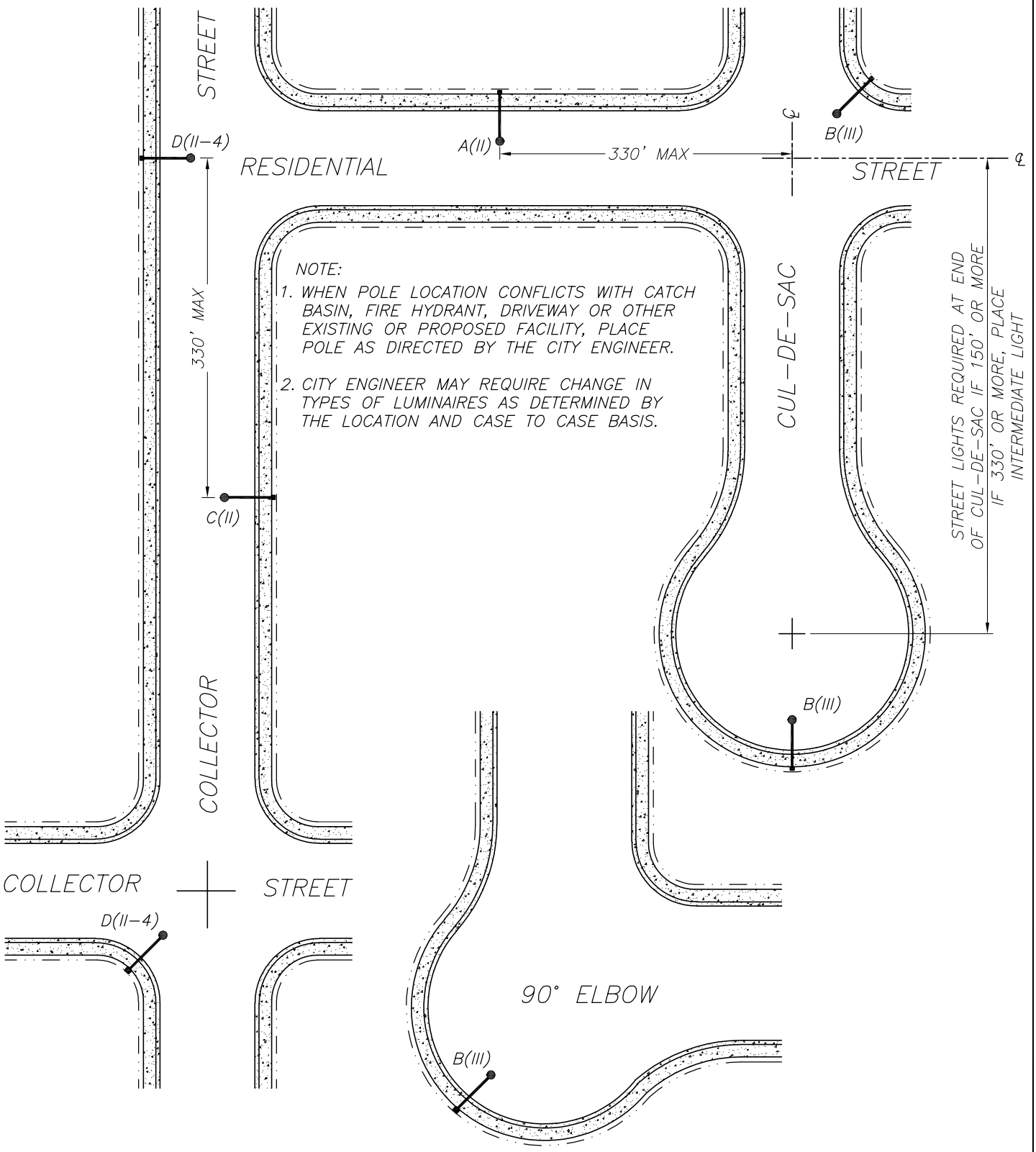
2. Acceptability of ballasts, fixtures, and lamps for electrical and noise standards.

3. Verification that all connections are electrically and mechanically sufficient.

4. Conductors shall move, with minimal effort, within the conduit.

5.15 RECORD DRAWINGS

The Contractor shall provide the Design Engineer one (1) set of "Record Drawings" showing locations of all pull boxes, conduits, and street lights. The Design Engineer shall include this information on the Record Drawings and submit to the City in PDF and as well as AutoCAD files before requesting final acceptance by the City.



CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

CITY ENGINEER

10/26/20
DATE

62736
R.C.E. NO.

LOCATIONS OF 25' POLES

DRAWING NO. SL - 1

NTS

Oct 28, 2020 – 7:37am
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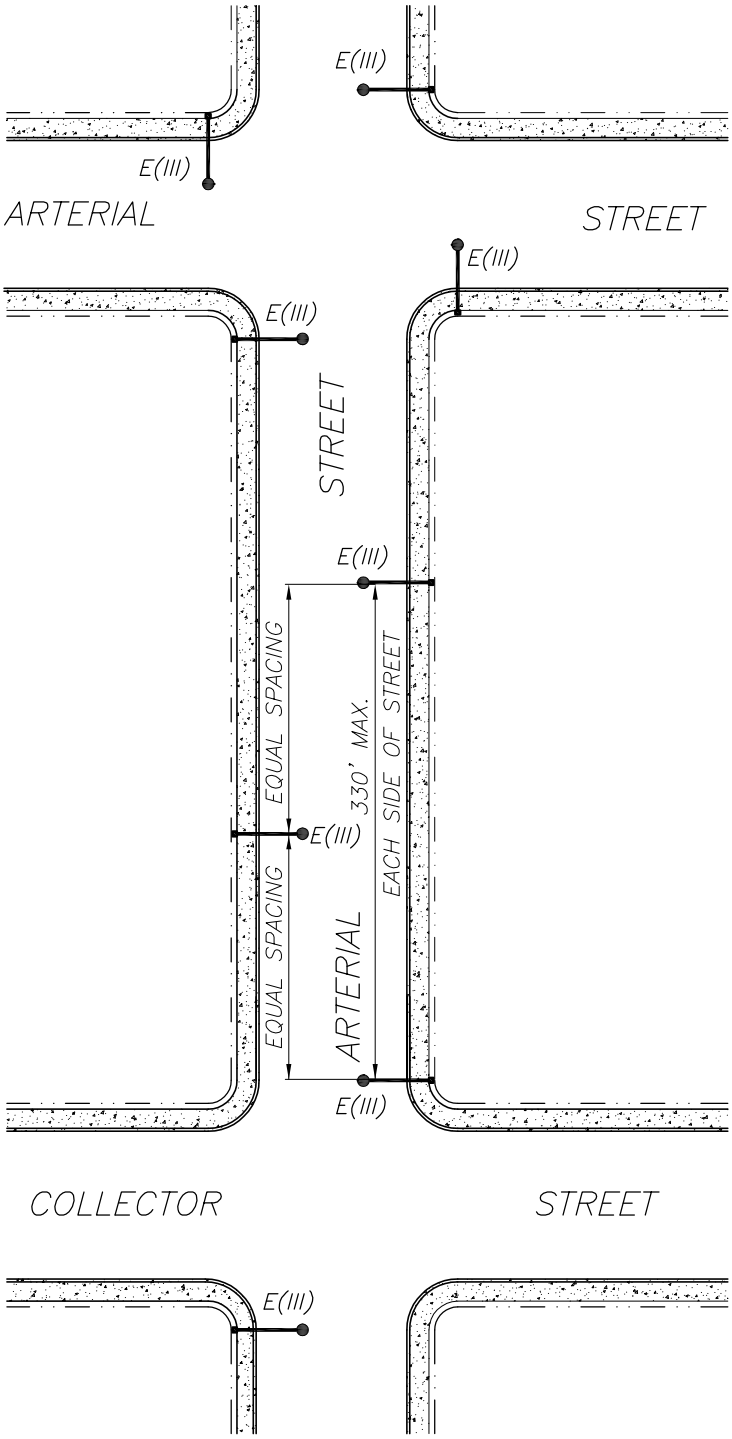

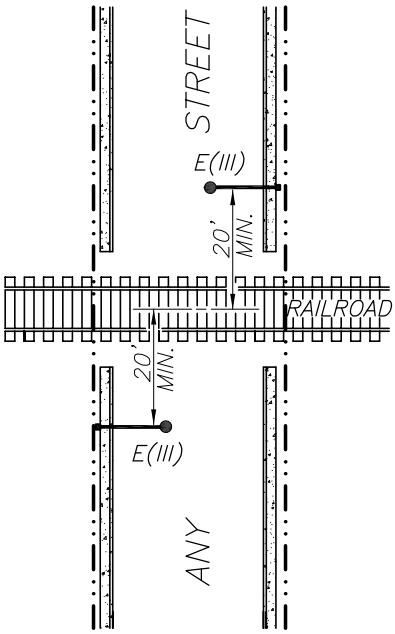

NOTE:

1. WHEN POLE LOCATION CONFLICTS WITH CATCH BASIN, FIRE HYDRANT, DRIVEWAY OR OTHER EXISTING OR PROPOSED FACILITY, PLACE POLE AS DIRECTED BY THE CITY ENGINEER.
2. CITY ENGINEER MAY REQUIRE CHANGE IN TYPES OF LUMINAIRES AS DETERMINED BY THE LOCATION AND CASE TO CASE BASIS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

LOCATIONS OF 30' POLES

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SL - 2

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Oct 28, 2020 - 7:38am
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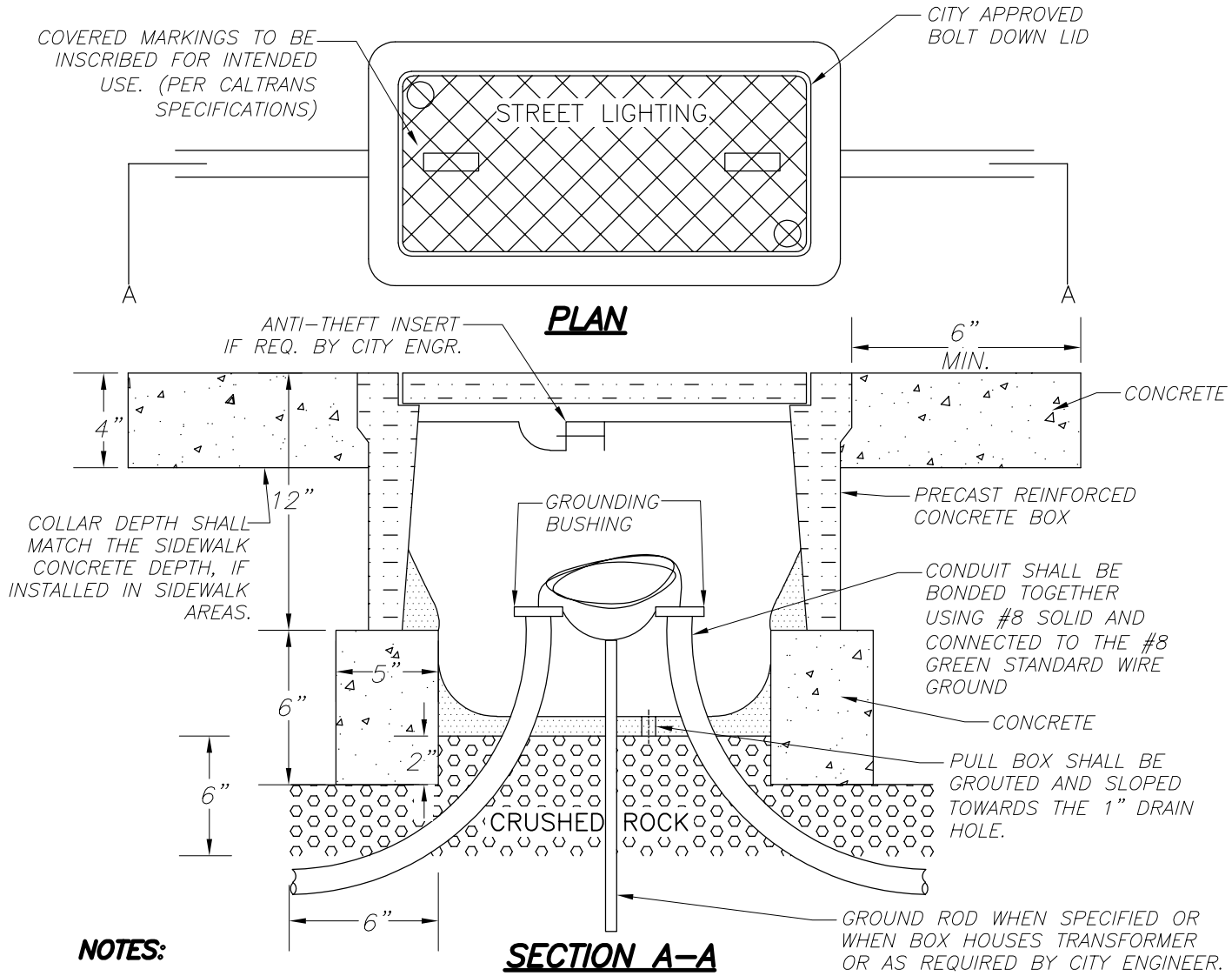

NOTES:

1. PULL BOXES SHALL BE CHRISTY N16 OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLANS. AND REQUIRED BY THE CITY ENGINEER.
2. INSTALL A ONE-FOOT COLLAR OF CONCRETE, 24" DEEP, AROUND THE PULL BOXES INSTALLED IN NON-CONCRETE AREAS, SLOPED TO DRAIN AWAY FROM THE PULL BOX. PULL BOXES IN SIDEWALKS MUST BE SET AT FINISHED GRADE WITH TEMPORARY CONCRETE APRON OR SECTION OF SIDEWALK POURED.
3. IF REQUIRED BY THE CITY ENGINEER, THE PULL BOX SHALL INCLUDE A PAD LOCKABLE HOT DIPPED GALVANIZED ANTI-THEFT ENCLOSURE WHICH SHALL BE MADRUGA IRONWORKS, McCAIN TRAFFIC, OR APPROVED EQUAL.
4. CONDUIT SHALL BE A MINIMUM DEPTH OF 24" BELOW PCC SIDEWALK FINISH GRADE AND 30" BELOW ALL FINISHED GRADE IN ALL OTHER AREAS.
5. TYPICAL 3' SLACK OF CONDUCTORS IN ALL PULL BOXES.
6. IF PULL BOX IS A CIRCUIT TERMINUS AT POWER SOURCE, INSTALL FUSE HOLDER PER SPECIFICATIONS AND WITH 4' OF SLACK CONDUCTOR.
7. IF REQUIRED BY THE CITY ENGINEER, WRAP PULL BOX WITH #15 ROOFING PAPER BEFORE BACKFILLING.
8. ALL CONDUITS TERMINATING IN PULL BOXES SHALL BE PLUGGED WITH DUCT SEALANT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

LIGHTING PULL BOXES

DRAWING NO. SL-3

NTS

Oct 28, 2020 - 7:40am
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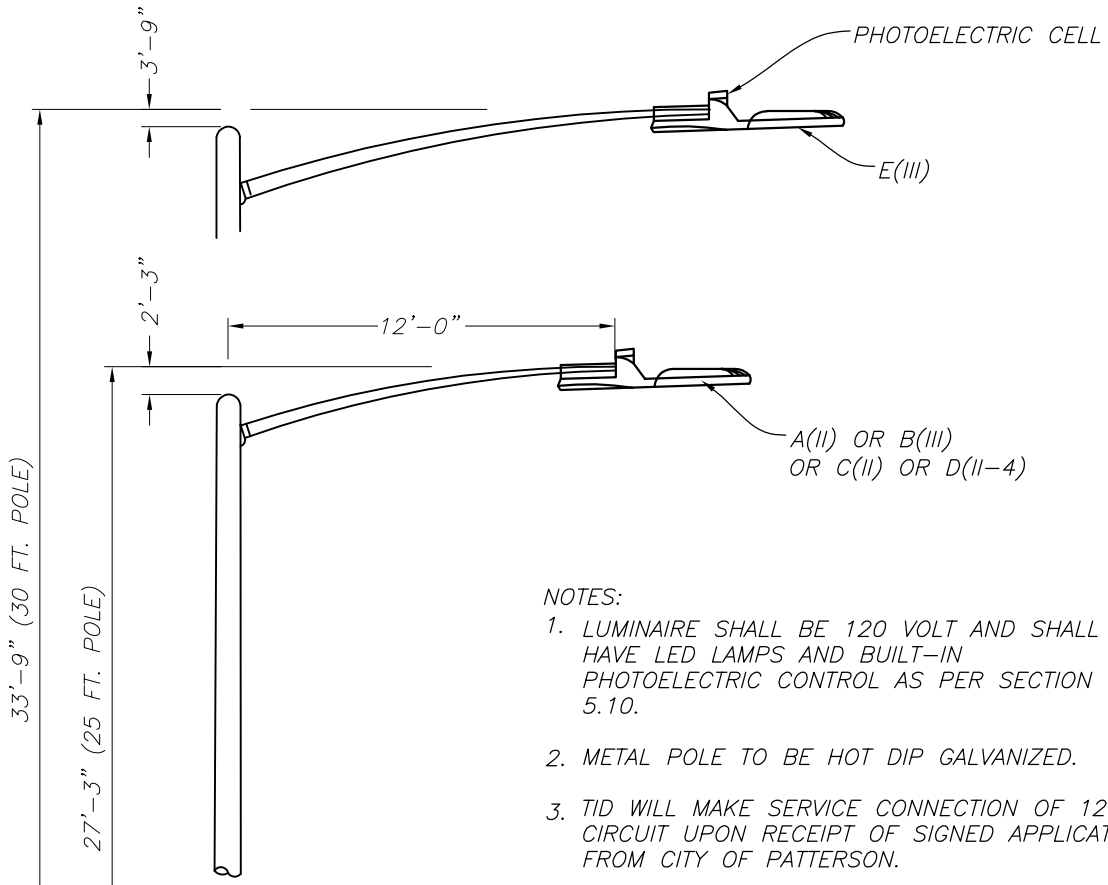
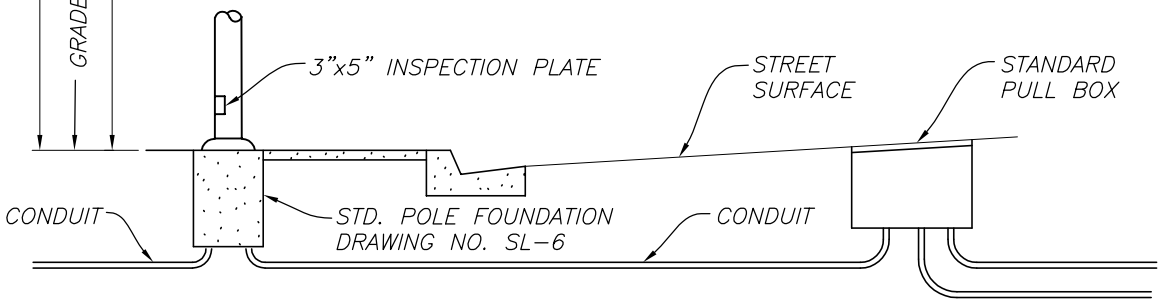
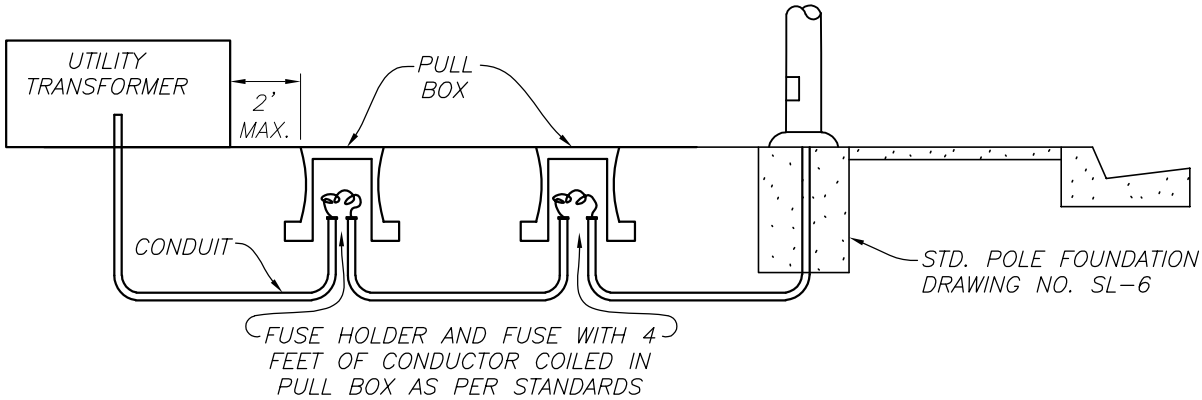


NOTES:

1. LUMINAIRE SHALL BE 120 VOLT AND SHALL HAVE LED LAMPS AND BUILT-IN PHOTOELECTRIC CONTROL AS PER SECTION 5.10.
2. METAL POLE TO BE HOT DIP GALVANIZED.
3. TID WILL MAKE SERVICE CONNECTION OF 120V CIRCUIT UPON RECEIPT OF SIGNED APPLICATION FROM CITY OF PATTERSON.





CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

STANDARD ELECTROLIER

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. SL - 4

NTS

Oct 28, 2020 - 7:41am
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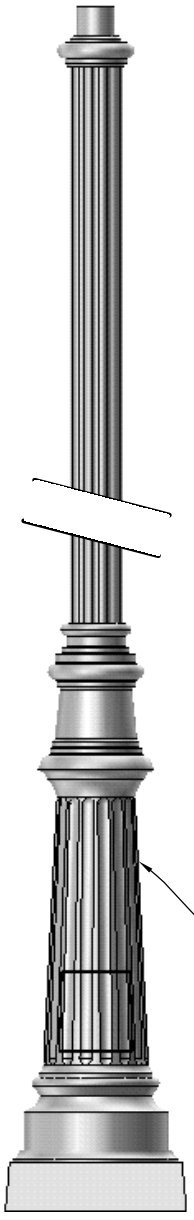
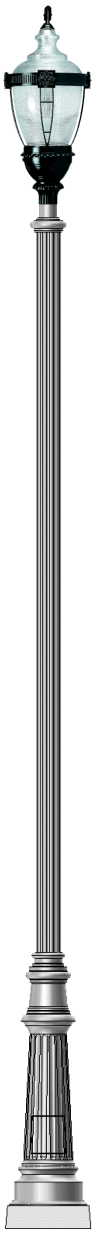
PHILIPS HADCO REFRACTIVE WITH LUMILOCK LED RL32 OR APPROVED EQUAL



PHILIPS HADCO LIGHTING 14–FOOT POLE MODEL No. P2540



CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

DECORATIVE ELECTROLIER

10/26/20
DATE

68237
R.C.E. NO.

DRAWING NO. SL - 5

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Oct 28, 2020 – 7:42am
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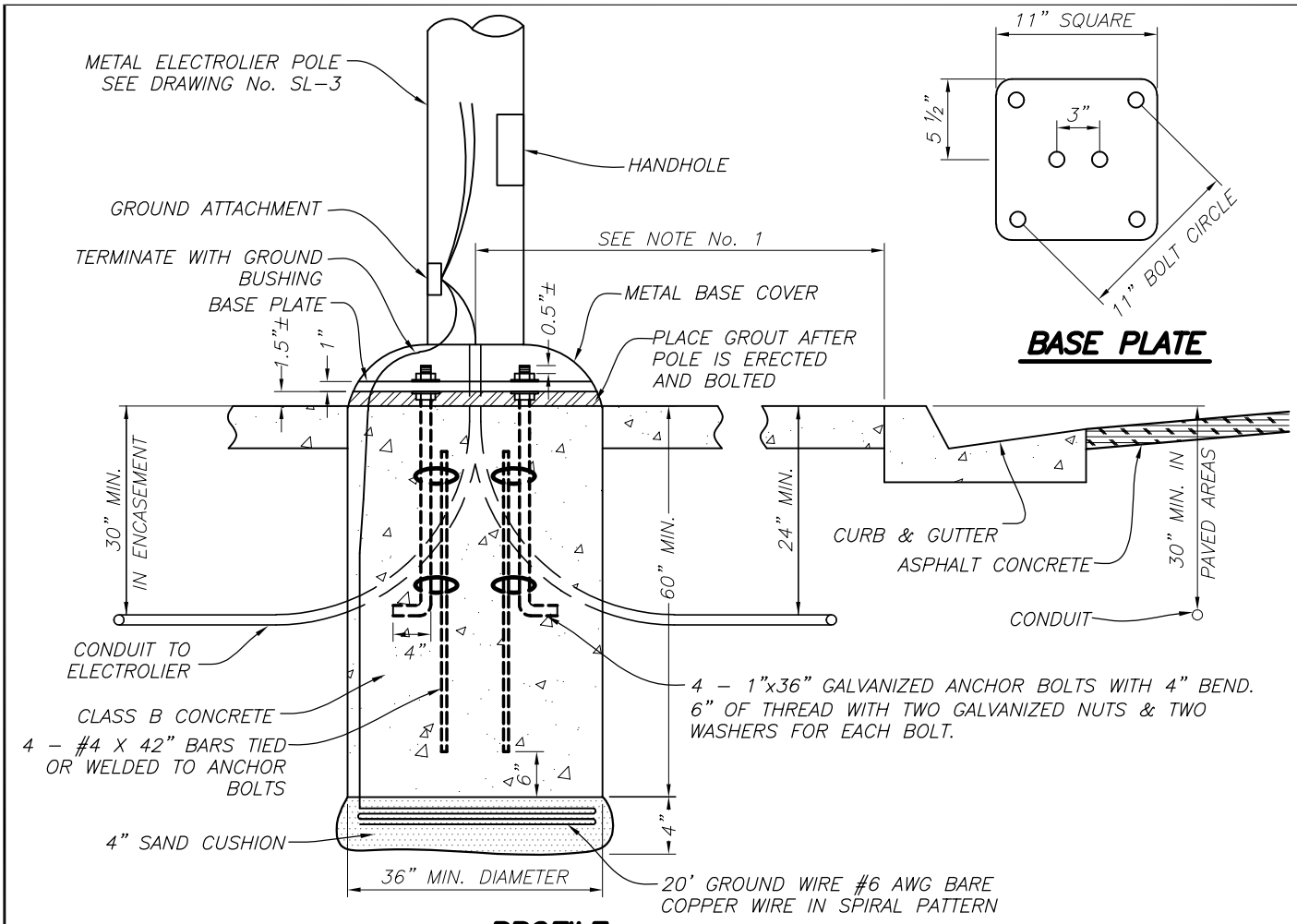
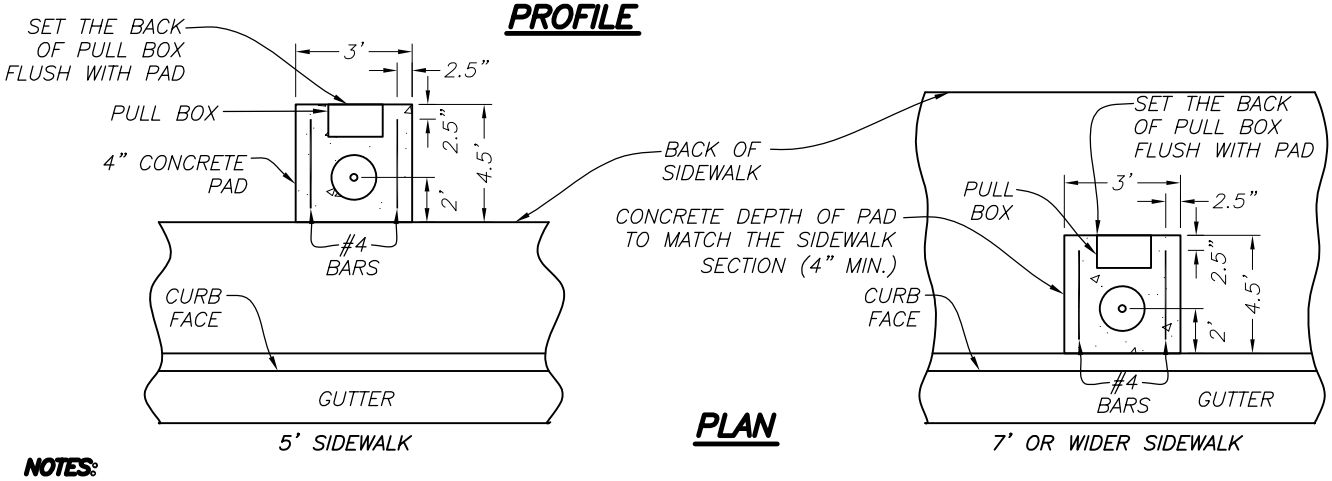


BASE PLATE

PROFILE



PLAN

NOTES:

1. CENTERLINE OF POLE TO BE 2 FOOT BEHIND BACK OF CURB FOR SEPARATED CURB AND SIDEWALK OR ATTACHED SIDEWALKS 7 FEET IN WIDTH OR WIDER. FOR ATTACHED CURB AND SIDEWALK 5 FEET IN WIDTH OR LESS INSTALL CENTERLINE OF POLE 2 FOOT BEHIND BACK OF SIDEWALK.
2. REINFORCING IS TO BE PER ASTM A615 GRADE 60. REINFORCING IS TO BE SECURILY TIED INTO A CAGE AND PLACED INTO A NEAT EXCAVATION.
3. FOUNDATIONS MAY BE 36" SQUARE AND 60" DEEP.
4. VOID UNDER BASE PLATE IS TO BE FILLED WITH HIGH–STRENGTH NON–SHRINK POURABLE GROUT ONCE POLES IS ERECTED.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

STANDARD ELECTROLIER BASE DETAIL

10/26/20
DATE

68237
R.C.E. NO.

DRAWING NO. SL - 6

NTS

Oct 28, 2020 – 7:43am
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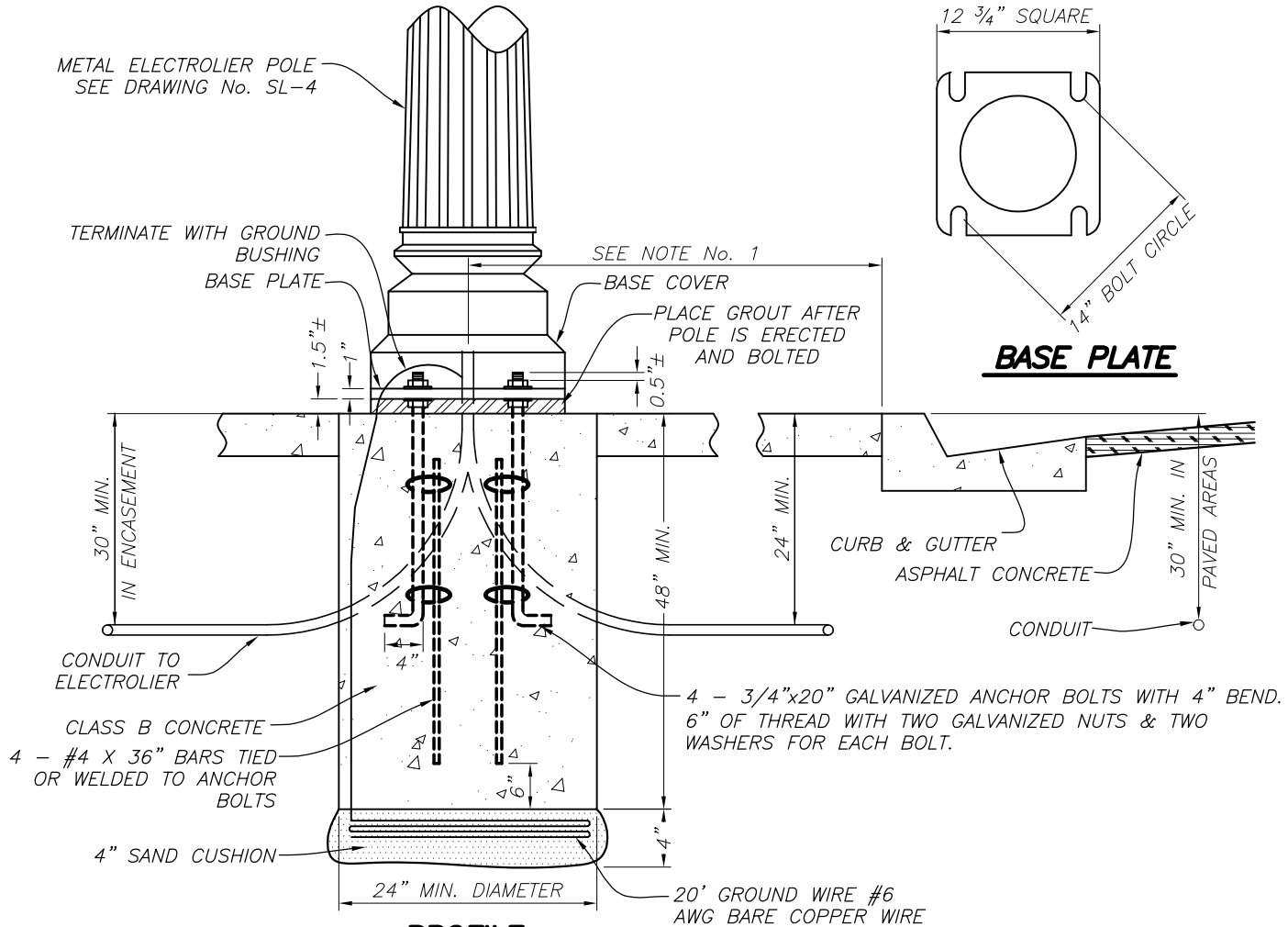

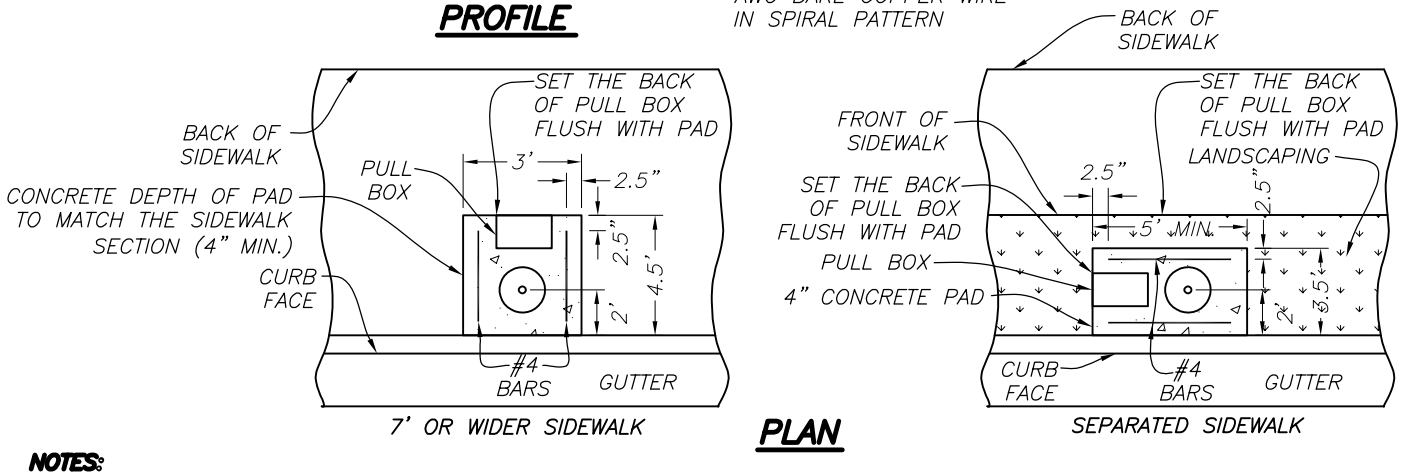

NOTES:

1. CENTERLINE OF POLE TO BE 2 FOOT BEHIND BACK OF CURB FOR SEPARATED CURB AND SIDEWALK OR ATTACHED SIDEWALKS 7 FEET IN WIDTH OR WIDER.
2. REINFORCING IS TO BE PER ASTM A615 GRADE 60. REINFORCING IS TO BE SECURILY TIED INTO A CAGE AND PLACED INTO A NEAT EXCAVATION.
3. FOUNDATIONS MAY BE 24" SQUARE AND 48" DEEP.
4. VOID UNDER BASE PLATE IS TO BE FILLED WITH HIGH-STRENGTH NON-SHRINK POURABLE GROUT ONCE POLES IS ERECTED. ALLOW FOR WATER DRAINAGE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT	DECORATIVE ELECTROLIER BASE DETAIL		
CHECKED BY: M. WILLETT			
APPROVED BY:			DRAWING NO. SL - 7
FERNANDO ULLOA, CITY ENGR.	10/26/20 DATE	68237 R.C.E. NO.	NTS

Oct 28, 2020 - 7:44am
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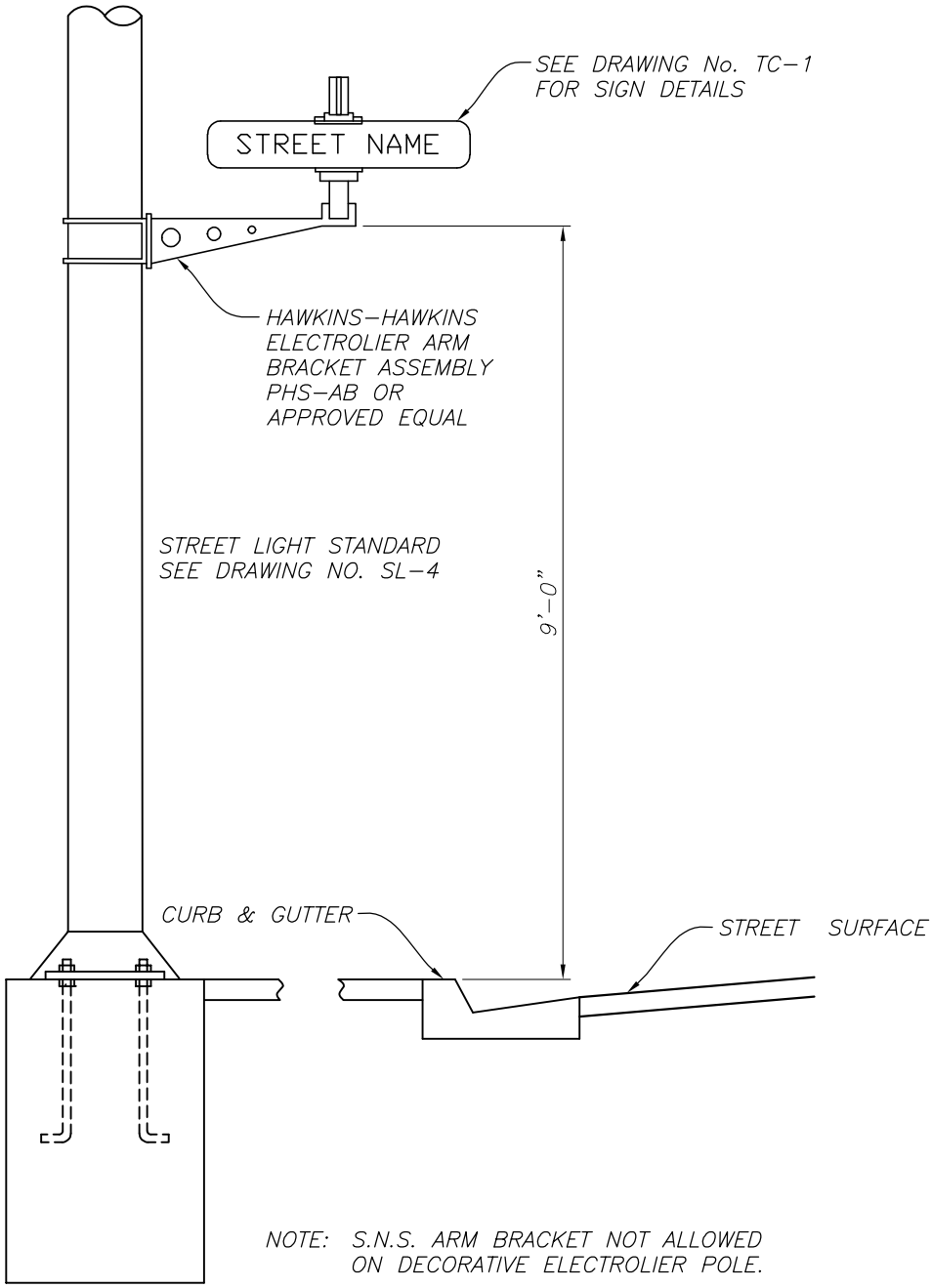

NOTE: S.N.S. ARM BRACKET NOT ALLOWED ON DECORATIVE ELECTROLIER POLE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

68237
R.C.E. NO.

ELECTROLIER S.N.S. ARM BRACKET

DRAWING NO. SL - 8

NTS

Oct 28, 2020 - 7:45am
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SECTION 6 – POTABLE WATER

SPECIFICATIONS:

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6.3 PROJECT PLAN REQUIREMENTS ..……..…… 6-1
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6.8 DESIGN FLOW…….....….6-6
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DRAWINGS:

W - 1 WATER MAIN SEPARATION REGULATIONS
W - 2 TRACER WIRE INSTALLATION DETAIL
W - 3 1” DIAMETER WATER SERVICE
W - 4 2” DIAMETER WATER SERVICE
W - 5 WATER METER SERVICE DETAIL
W - 6 2” OR SMALLER DOUBLE CHECK VALVE BACKFLOW PREVENTER
W - 7 3” OR LARGER DOUBLE CHECK BACKFLOW PREVENTION DEVICE
W - 8 2” OR SMALLER REDUCED PRESSURE BACKFLOW PREVENTER
W - 9 3” OR LARGER REDUCED PRESSURE BACKFLOW PREVENTION DEVICE
W - 10 BACKFLOW ASSEMBLY CAGE
W - 11 WATER LINE GATE VALVE ASSEMBLY
W - 12 FIRE HYDRANT ASSEMBLY
W - 13 WATER LINE BLOW-OFF ASSEMBLY
W - 14 THRUST BLOCKS DETAIL
W - 15 TRENCH DETAIL
W - 16 1” OR 2” AIR RELEASE VALVE

SECTION 6

POTABLE WATER

6.1 GENERAL

These Improvement Standards apply to all public water facilities designed for installation within a public right-of-way (ROW) or public utility easement (PUE) in the City and are limited to mains and services 12-inches or less in diameter. Standards and requirements for larger sizes will be determined by the City Engineer. In all developments, on-site mains and hydrants for fire protection shall be public. Other on-site facilities, unless specifically noted in these Improvement Standards or as required as part of project approval, shall be private and shall be designed and constructed in accordance with the provisions of the Uniform Plumbing Code, as adopted by the City.

Water lines shall be designed in accordance with acceptable engineering principles, California OSHA Standards, Department of Public Health Regulations (DPH), American Water Works Associations (AWWA) Standards, and California Code of Regulations Title 22; Chapter 16, California Waterworks Standards, and shall conform to these Improvement Standards.

6.2 DESIGN SUBMITTALS

Prior to submittal of Improvement Plans for the first phase of construction, a master water plan for the entire development shall be submitted to the City Engineer for review and approval. The plan shall include water flow and pressure calculations.

A Hardy-Cross network hydraulic analysis of any proposed distribution system shall be provided to the City Engineer upon request.

6.3 PROJECT PLAN REQUIREMENTS

The Improvement Plans shall be drafted to present plan and profile views and shall show existing and proposed water main sizes & material, fire hydrants, water valves, water main blow-off valves, trench details, crossings with other utilities, lateral distances to nearest sewer & storm and non-potable water lines, top of pipe elevations at all grade changes, and surveying coordinates of water main intersections, points of direction change, water main taps, water main terminations, and service locations.

City Engineer may require the project plans to include a Connection and Testing Plan for the new addition to the water system. This Connection and Testing Plan shall specifically address the requirements for connections to the existing system, including but not limited to identifying the point of loading (one physical connection to the existing system) chlorine feed location, minimum duration of flushing, possible points for disposal of water, and sampling locations in accordance with the City Standard Specifications. Calculations of the anticipated volume of water and the minimum duration of flushing required to perform the flushing and testing shall be submitted with the Project Plans. All valves, taps and appurtenances and duration of flushing needed to meet these requirements shall be indicated on the Project Plans.

6.4 EASEMENTS

If public water mains are to be located outside of the public street right of way, legal descriptions of the permanent easement shall be submitted with the plans for review by the City. Easements executed by the appropriate property owners shall be submitted to the City prior to the approval of the Project Plans.

The minimum easement width shall be 15 feet. The pipe shall be located in the center of the easement unless the easement will contain multiple utility lines. No permanent structures shall be constructed in such easements, except fences and utilities that are subject of any overlapping easement. Where easement are parallel to a property line, they shall be on one property and not split by the property line.

Water mains shall not be placed in easements across low density or medium density residential lots.

6.5 CATAGORIES OF WATER SYSTEM PIPING:

There are three categories of water system piping as follows:

1. **Service Lateral:** Piping connecting the distribution main to the private property onsite water meter or fire protection backflow prevention device. The service lateral shall be considered as a component of distribution system.

2. **Distribution Main:** Piping solely located within the public right of way connecting the Transmission Main to Service Lateral.

3. **Transmission Main:** Piping connects the City water system to the Distribution Main. No services are allowed to be connected to this main.

6.6 BASIC WATER MAIN SEPARATION REGULATIONS

A. SEWER FACILITIES:

1. New water mains and new service lines shall not be installed in the same trench as, and must be at least 10 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

   a. Untreated sewage,

   b. Primary or secondary treated sewage,

   c. Disinfected secondary-2.2 recycled water (defined in section California Code Regulation (CCR) Section 60301.220),

   d. Disinfected secondary-23 recycled water (defined in section CCR Section 60301.225), and

   e. Hazardous fluids such as fuels, industrial wastes, and wastewater sludge.

B. STORM FACILITIES:

1. New water mains and new service lines shall not be installed in the same trench as, and must be installed at least 4 feet horizontally from, and one foot vertically above, any parallel pipeline conveying:

   a. Disinfected tertiary recycled water (defined in section CCR 60301.230), and

   b. Storm drainage.

C. RAW WATER FACILITIES:

1. New service lines conveying raw water to be treated for drinking purposes shall be installed at least 4 feet horizontally from, and one foot vertically below, any water main.

2. If a new water main crosses a pipeline conveying a fluid listed under Sewer or Storm Facilities, the new water main must be constructed

perpendicular to and at least one foot above that pipeline. Connection joints in the water main must be 8 feet horizontally from the Sewer or Storm Facility pipeline.

3. The vertical separation specified for Sewer, Storm and Raw Water Facilities is required only when the horizontal clearance distance between a water main and pipeline is 10 feet or less.

4. New water mains shall not be installed within 100 horizontal feet of any sanitary landfill, wastewater disposal pond, or hazardous waste disposal site, or within 25 feet of any cesspool, septic tank, sewage leach field, seepage pit, or groundwater recharge project site.

5. The minimum separation distances set forth in this section shall be measured from the nearest outside edge of each pipe barrel, manhole, or sleeve.

6.7 ALTERNATIVE DESIGN CRITERIA FOR REDUCED SEPARATION

Local conditions, such as available space, limited slope, existing structures, etc., may create a situation where there is no alternative but to install water main or sewer lines at a distance less than that required by Basic Separation Standards. In such cases alternative design criteria for reduced separation shall be followed as listed below:

A. NEW WATER MAINS – PARALLEL

For water mains parallel with less than 10 feet and more than 4 feet of clearance to an existing pipeline conveying fluids listed under Sewer Facilities, written approval from the City Engineer is required prior to the construction of the improvements.

a. Water mains parallel to Sewer Facilities must be constructed of "Special Pipe" materials.

b. EXCEPTION: Water mains parallel to a sanitary sewer force main must be greater than 10 feet horizontally and 1 foot vertically.

c. More stringent requirements may be required by the City if conditions such as high groundwater exist or water main or sewer facilities are 24 inches in diameter or greater.

B. NEW WATER MAINS – CROSSING

For water mains crossing with less than 12 inches and more than 4 inches clear of the crown of an existing pipeline conveying fluids listed under Sewer, Storm or Raw Water Facilities, written approval from the City Engineer is required prior to the construction of the improvements.

a. Couplings and pipe joints in water mains crossing ABOVE Sewer, Storm or Raw Water Facilities must be greater than 8 feet from the closest edge of the existing pipeline.

b. Couplings and pipe joints in water mains crossing BELOW Sewer, Storm or Raw Water Facilities must be greater than 10 feet from the closest edge of the existing pipeline.

c. Water mains crossing BELOW Sewer, Storm or Raw Water Facilities must be constructed of "Special Pipe" materials.

d. More stringent requirements may be required by the City if conditions such as high groundwater exist or water main or sewer facilities are 24 inches in diameter or greater.

C. "SPECIAL PIPE" MATERIALS

1. "Special Pipe" materials permissible for the City of Patterson Water System are:

    a. Ductile Iron pipe with hot dip bituminous coating, or

    b. Polyvinyl Chloride pipe, DR 14

2. The selection of pipe materials may be further restricted by the City if corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of the fluid conveyed in the existing pipeline.

D. SPECIAL PERMISSION

1. When new water mains are being installed in existing developed areas, local conditions (e.g., available space, limited slope, existing structures) may create a situation in which there is no alternative but to install water mains at a distance less than that required by these regulations. In such cases, through permit action, the Public Health Agency may approve alternative construction criteria.

2. This alternative approach is allowed under the CCR Section 64551.100, "(a) A water system that proposes to use an alternative to a requirement in this chapter [Chapter 16] shall: (1) Demonstrate to the Department [Division of Drinking Water] that the proposed alternative would provide at least the same level of protection to public health; and (2) Obtain written approval from the Department [Public Health Agency] prior to implementation of the alternative."

6.8 DESIGN FLOW

Unless other water usage figures are required or approved by the City, the following water demands shall be used for design calculations:

Development	Average Daily Demand	Peaking Factors Max. Day	Max. Hour
Single Family Detached	600 gpud	2.0	4.00
Single Family Attached	600 gpud	2.0	4.00
Multi Family, 2-4 Units	500 gpud	2.0	4.00
Multi Family, 5 Units or More	400 gpud	2.0	4.00
Commercial, Industrial & Others	*	2.0	4.00

gpud = gallons per unit per day
* = To be determined on a case-by-case basis.

Per City of Patterson Ordinance Number 763, City of Patterson has adopted the 2013 California Fire Code and Design Fire Flows shall be designed per 2013 California Fire Code Appendix B, or the latest/current edition of adopted California Fire Code.

6.9 DISTRIBUTION SYSTEM DESIGN

A. GENERAL

The distribution system, whenever possible, shall employ a "Grid System" for water mains to maximize the circulation of water and allow pressure equalization under varying rates and location of demand.

The system shall be designed to maintain a minimum residual pressure of 20 psi at the service point or fire hydrant under the following demand conditions:

- maximum day flow plus fire flow, or;
- peak hour flow.

The Hazen-Williams formula shall be used to calculate design flow, pressure loss, velocity and pipe diameter relationships. The coefficient of friction, "C", shall be 130.

B. VERTICAL ALIGHNMENT

Water mains and services shall be installed at a depth which will provide a minimum of 3.5 feet from the top of the outside of pipe barrel to the top of finished grade in paved and unpaved areas. The maximum cover over water lines should not exceed 5 feet.

There are no slope requirements for water mains. However, inverts and pipe slopes shall be shown on the profile sheets of the Improvement Plans.

C. HORIZONTAL ALIGHNMENT

1. Alignment shall be parallel to the street centerline whenever possible. Separation from utilities must follow the requirements listed elsewhere in these standards.

2. In new developments, the horizontal alignment of water mains shall be 13 feet north or 13 feet west of the street centerline. When looping the system around the subdivision, the City will allow the utility lines to be reversed with water mains 13 feet south or 13 feet east of the street centerline.

3. Curved water mains are allowed; however, joint deflection or pipe curvature shall not exceed the pipe manufacturer's recommendations.

D. WATER MAIN REQUIREMENTS AND SIZE

1. The minimum size pipe used for new water mains shall be 6-inches. Industrial and commercial areas minimum size is 8-inch diameter distribution mains. Larger water lines may be required based on required fire flow in engineering study, service demand or planned extension of the City's distribution system.

2. Permanent dead-end runs shall be no longer than 500 feet unless specifically approved by the City Engineer. Reasonable looping of water mains will be required.

3. Normal operating pressures shall be in the target range of 55 to 65 pounds per square inch, and shall not be greater than 80 pounds per square inch at customer service connections.

4. Maximum velocities shall not exceed 10 ft/sec. in design.

5. All dead end mains shall be provided with a fire hydrant as a means of flushing.

6. All ductile iron pipe shall be encased in polyethylene wrapping.

E. WATER SERVICE REQUIREMENTS AND SIZE

Service lines from the water main to the property line shall be installed at the time the main is constructed whenever it is known or whenever it can be reasonably assumed that a connection is or will be required.

1. The limit of water service size determined by these specifications include from the water distribution main connection point to the upstream side of the water meter.

2. All water services shall be metered and each parcel shall have individual water service. In general, only one service is to be provided per parcel served unless otherwise approved by the City Engineer in writing. Five exceptions are as follows:

    a. For residential developments with on-site public mains, one standard service per dwelling unit is required.

    b. For individual commercial/industrial buildings with multiple suites, one standard service with a 1-inch minimum water meter per suite shall be provided.

    c. In parcels with separate buildings, one standard service per building is required.

    d. In non-residential developments, separate water service(s) shall be provided for irrigation, domestic, and fire. City will not manifold the water services at property line from a fire service.

    e. In multi-family residential developments of 5 units or more, separate water service(s) shall be provided for landscape areas.

Due to the variety of building and main configurations and backflow requirements, the above requirements/exceptions are not specific. Details of each project shall be specifically approved by the City Engineer.

3. Water services are not permitted to connect to a dedicated transmission main, fill or blending line unless specific written approval is obtained from the City Engineer.

4. Water services are not permitted to be installed within the limits of any driveway or drive approach.

5. The location of water service lines shall be permanently indicated by embedding the letter "W" in the curb, directly above the service line.

   a. It is developer's responsibility to mark any curb, which is poured after the installation of service.

   b. Where curbs do not exist and are not planned during the improvement project, a 2"x2"x24" construction grade redwood stake shall be driven into the ground directly above the curb stop at a property line, and shall be painted bright blue and have "W" stamped in the top.

6. For City maintained landscape areas, parks and detention basins, minimum water service sizes are as follows:

Parcel Size	Waterservice
Parcels less than 1.5 acres	2-inch
1.5 acres - 4.5 acres	3-inch
4.5 acres - 9.5 acres	4-inch
Parcel greater than 9.5 acres	To be determined

7. The minimum water service size for Single Family Homes less than 4,000 square feet is 1-inch diameter. Single-family homes equipped with automatic fire sprinkler systems may require larger size service line and water meter as determined by the Design Engineer.

8. For residential services for home equal or greater than 4,000 square feet, the minimum size of service line shall be determined by the Design Engineer and shall be sized to meet domestic, fire, and any

other demands as required by the City Municipal Code. The design shall be submitted for approval by the City Engineer.

9. The minimum water service size for all other dwellings and structures shall be determined by the latest edition of California Plumbing Code and the latest edition of AWWA Manual M22 "Sizing Water Service Lines and Meters".

10. If a lot is served by both potable and non-potable water systems, the location of the service lines shall be at opposite ends of the front lot line, or as widely separated as is practical, and with the approval of the City Engineer. Backflow prevention devices are required on the treated water service line of all lots having both potable and non-potable systems.

F. WATER METER REQUIREMENTS AND SIZE

1. All water services shall be metered, except dedicated fire services. Dedicated fire services must have a detector system installed with the approved backflow prevention assembly.

2. Meters located below grade shall be protected within water meter box. Water meters and meter boxes shall not be located in vehicular traffic areas, driveways, or drive approaches.

3. Water meters and meter boxes shall be located in a public right-of-way.

4. Meter boxes shall be clearly marked as containing water meters and shall be capable of withstanding vehicular traffic if set near driveways, sidewalks, or other areas subject to vehicular traffic.

5. Water meters shall be purchased through the Public Works Department.

G. BACKFLOW PREVENTION REQUIREMENTS

Backflow, which is the flow of water or other liquid or foreign materials into the distribution mains of the water systems from another source, is strictly prohibited and shall be prevented by the installation of an appropriate, approved backflow prevention device, purchased, installed, and maintained by the Owner, all certified at Owner's expense.

1. All water services, except a Single Family Residence with a single dedicated domestic service, must include a backflow prevention assembly approved by the City of Patterson. A single Family Residence with an existing well or an auxiliary water supply requires an approved backflow prevention assembly.

2. All domestic (if required) and landscape water services shall require a Reduced Pressure Backflow Prevention (RPBP) Assembly.

3. All fire services must include a Detector Check Backflow Prevention (DCBP) assembly. For fire services, the backflow prevention may be double check detector style or reduced pressure detector check style depending on fire system classification and type of hazard. Design Engineer shall determine the type of backflow prevention assembly. Final determination of which style backflow prevention used will be determined by the City of Patterson.

4. All backflow prevention assembly must be above ground and within unobstructed view for the Fire Marshal's inspection. As a minimum, a Double Check Detector Assembly is required at the point of connection at the property line for any private fire system, including for a single onsite private fire hydrant.

5. A check valve shall not be considered adequate if backflow protection is deemed necessary to protect the water system from pollution or contamination. In such cases, the installation of approved backflow assemblies at such service connections shall be required.

6. Backflow assemblies shall be covered by lockable weather blanket or lockable cage as with the approval of City Engineer.

7. Backflow assemblies shall be located as closest as possible to the water meter.

H. FIRE HYDRANTS

1. Fire hydrants shall be spaced and located in accordance with 2013 California Fire Code Appendix C, or the latest/current edition of the adopted California Fire Code, but the following criteria can be used as guidance:

    a. At approximately 500 foot spacing in residential areas along one side of the street. Hydrants shall normally be placed at street intersections.

b. At approximately 300 foot spacing in industrial areas.

c. On streets classified as arterial or greater, the above spacing shall apply to both sides of the street. If buildings are separated from the street by a 6-foot or higher restrictive wall, hydrants shall be placed only at street intersections with maximum distance 1,000 feet between hydrants for maintenance of the water system instead of blow-off.

d. At the ends of cul-de-sacs and permanent dead-end mains.

e. In commercial developments, locations and spacing shall be determined on a project-by-project basis by the City Fire Chief and City Engineer.

2. Fire hydrants shall only be supplied from the largest water main but shall not be supplied from transmission mains.

3. Additional hydrants may be required on property frontage or onsite as indicated in the latest/current adopted California Fire Code and/or Patterson Fire Department.

I. BLOW-OFFS

1. Blow offs shall be constructed for temporary use only.

2. Blow-off or fire hydrant shall be installed at the terminus of all dead-end water mains or non-circulating flow water mains.

3. Blow-offs shall be provided at the ends of all temporary dead end mains for future extension of the water main at later date. The final length of pipe, past the last inline valve and prior to the blow-off, shall be a minimum of 18 inches to a maximum of 39 inches.

J. VALVES

1. Distribution mains shall be designed with a sufficient number of inline, isolation valves so that no single shutdown will result in a water main length greater than 400 feet out of service. Additionally, no more than two (2) fire hydrants be removed from service during any single shutdown period.

2. Transmission mains shall have inline, isolation valves at a maximum spacing of 700 feet on center. Any shutdown of any section of water main will not result in shutting down a transmission line.

3. Valves shall be of the same size as the pipeline in which they are installed. Water mains 10-inch and smaller shall use gate valves and water mains 12-inch or larger shall use butterfly valves. When butterfly valves are used, butterfly operating nut shall be located toward the nearest property line.

4. Water mains shall be valved on each side of railroad, highway and canal right-of-way crossings. (These valves shall be located outside of the right-of-way being crossed unless otherwise approved by the City Engineer.)

5. Valves on mains shall be spaced and located in conformance with the following criteria:

    a. At "tees", valves are required as follows:

        - 2 valves where one leg is less than 8 inches in diameter, with one of the valves installed on the smaller leg.

        - 3 valves where all legs are 8 inches in diameter or larger.

    b. At "crosses", valves are required as follows:

        - 3 valves where one or more legs is less than 8 inches in diameter with valves on each of the smaller legs.

        - 4 valves where all legs are 8 inches in diameter or larger.

6. All high points within the system shall be located at fire hydrants or air release valves.

7. An inline, isolation valve is required on each side of water main/service tee to all hospitals, schools, and major industrial sites as directed by the City Engineer.

8. A shutoff valve is required for fire hydrants, inline with the hydrant run and immediately adjacent to the hydrant tee at the water main.

9. A shutoff valve is required at the property line for each water service.

10. Valves with a blow-off device shall be installed at the boundary of development.

The valving requirements mentioned above are minimum. Additional valves may be required.

K. THRUST BLOCKING

1. Thrust blocking must be provided at all vertical alignment changes, horizontal alignment changes, bends, tee or tapping sleeve fittings, dead ends, at the back of fire hydrants buries and where changes in pipe diameter occurs.

2. Restrained joints may be used in areas requiring the use of fittings for vertical alignment changes or horizontal alignment changes with prior approval of City Engineer and Public Works Director.

L. BACTERIA SAMPLE STATIONS

1. Sample stations shall be included when new water mains are to be installed. Sampling stations shall be located at a maximum density of 1 sampling station per ¼-square mile, or as otherwise determined by the City Engineer and/or Public Works Director.

2. Any deviation from these Standards shall be approved by the City.

M. AIR RELEASE VALVES

1. Air release valves (ARV) are required in instances of high points within the water system.

   a. If the greatest difference in elevation for the entire water improvements is 18 inches or less, a fire hydrant will be required at the local height point(s) throughout the water improvements.

   b. If the greatest difference in elevation for the entire water improvements is greater than 18 inches, an ARV will be required at the local high point(s) throughout the water improvements.

2. All valves shall be designed for a minimum of 125 psi operating pressure.

N. TRACER WIRE

1. Tracer wire for the purpose of locating buried water mains and services is required for:

   a. Water mains (all material types)

   b. Fire hydrant runs

   c. All water services from the main to the meter

   d. Air relief & blow off assemblies

2. Tracer wire shall be attached to the top of all pipes for distribution mains. Transmission mains shall include tracer tape in addition to the tracer wire. The tracer tape shall be placed between the top of the bedding zone and bottom of the backfill zone.

O. CORROSION PROTECTION

1. In general, all new piping shall be PVC; however, for all steel, cast iron, or ductile iron replacements or new installations approved by the City, the applicant shall provide the City Engineer with a soil corrosion report of the work area conducted by a Corrosion Specialist certified by the National Association of Corrosion Engineers or a Corrosion Engineer registered by the State of California.

2. The soil corrosion report shall form the basis for proposed mitigation measures to be submitted with the plans and specifications for City review.

6.10 MATERIALS

A. GENERAL

All materials and components use for improvements to the City of Patterson Water System shall comply with the latest American Water Works Association (AWWA) Standards including amendments, the National Sanitation Foundation International (NSF International) listings for Water treatment and Distribution Systems including annexations, and be constructed from **"No Lead"** material.

B. WATER MAIN PIPE

The following standard pipe materials shall be used for water main construction and shall conform to the latest edition of appropriate American Water Works Association (AWWA) Standards:

1. Ductile Iron Pipe (DIP)

    a. Ductile iron pipe shall conform to the latest AWWA C151 standards for Class 350.

    b. Unless otherwise specified in the special provisions, ductile iron pipe shall receive a bituminous coating as specified in AWWA Standard C151 and a cement-mortar lining conforming AWWA Standard C104. All ductile iron pipe shall be wrapped with an approved polyethylene encasement per AWWA Standard C105.

    c. All ductile iron pipe joints shall be mechanically restrained. Mechanically restrained joints shall be "TR-FLEX", "TY-SEAL", or "TYTON" joints or approved equal.

2. Polyvinyl Chloride Pipe (PVC)

    a. PVC pipe 12-inch diameter or smaller shall be DR 18, or DR 14 where required, and shall conform to AWWA Standards C900. PVC pipe 14-inch diameter or larger shall be DR 18, or DR 14 where required, and shall conform to AWWA Standard C905.

    b. All PVC pipe shall be 20-foot laying lengths and shall have ductile iron outside diameter. PVC pipe joints shall have electromeric-gasket ends or couplings. The bell ends shall be an integral thickened bell ends or integral sleeve-reinforced bell end. The rubber rings (Electromeric-gaskets) shall be manufactured to conform with the requirements of ASTM F-477.

3. Steel Pipe

    a. Steel pipe shall be for above ground use only. Steel pipe shall conform to AWWA Standard C200, C207, and C213. Steel pipe shall be minimum of Schedule 40, "Standard", or ¼-inch, whichever is thickness is greater.

    b. Steel pipe shall be flanges, fusion-bonded and epoxy coated, inside and outside.

c. Flanges for steel pipe shall be Class D.

4. Water Main Fittings

Fittings shall be furnished with a joint type suitable for attaching to valves or other pressure pipe. Adaptor gaskets are not acceptable.

a. Bends, tees, and other fittings shall be ductile iron, AWWA C153, for to use with Ductile Iron Pipe. Ductile iron fittings shall be wrapped with an approved polyethylene encasement per AWWA Standard C105.

b. All fittings for use with connection to PVC pipe must use mechanical joints unless valve is shown adjacent in which case the fitting joint must be flanged.

c. Steel pipe fittings must be flanged, fusion-bonded and epoxy coated inside and outside. Flanges for steel pipe fittings shall be Class D.

d. Flange Fittings must conform to the AWWA Standard C110.

e. Mechanical Fittings must conform to the AWWA Standard C111.

f. Steel pipe fittings (for above ground use only) must conform to AWWA Standard C205, C207, and C213. Bolts shall be Type 316 stainless steel, Class 2, conforming to ASTM A193 for bolts and ASTM A194 for nuts.

g. All fittings required to maintain proposed alignment shall conform to these standards, whether or not they specifically indicated on the plans.

5. Thrust Blocking

a. Thrust blocking shall be constructed at bends, tees, dead-ends and where changes in pipe diameter occur. The Standard Details provide minimum requirements that will be allowed for thrust resistant. However, design engineer shall determine whether these minimum requirements are sufficient for the site conditions.

b. Thrust blocking shall be constructed using the concrete mix design specified elsewhere in these Standards. The minimum compressive strength for the concrete shall be 3,000 psi.

c. The blocking shall be placed so that the joints of the pipe and fittings will be accessible for repair.

d. All fittings in contact with concrete thrust blocks must be wrapped with a minimum of 6-mil polyethylene plastic. Water main shall not be in direct contact with thrust blocks.

6. Restrained Joints

a. Restrained flange adapters and mechanical joint restraint shall be made of ductile iron conforming to ASTM A536 and have flange bolt circles compatible with ANSI/AWWA C110/A21.10.

b. The restrained flange adapter or mechanical joint restraint shall consist of a plurality of individual actuated gripping wedges to maximize restrain capability. Torque limiting actuating screws shall be used to ensure proper initial set of gripping wedges.

c. The restrained flange adapter shall be capable of deflection during assembly, or allow lengths of pipe to be field cut and a minimum of 0.6 inch gap between the end of the pipe and the mating flange without affecting the integrity of the seal.

d. The restrained flange adapter and mechanical joint restraint coating shall consist of a minimum of two coats of liquid thermoset epoxy coating with heat cure to follow each coat.

e. Restrained flange adapter manufacturer and model: EBAA, Inc. Series 2100 Megaflange, or approved equal.

f. Mechanical joint restraint manufacturer and model: EBAA, Inc. Series 1100 Megalug, or approved equal.

7. Water Main Valves and Valve Boxes

a. All valves shown adjacent to fittings shall have one mechanical joint and one flange joint. The flange joint will bolt to the fitting.

b. All gate valves shall be the rubber-seated, tight-closing type conforming to AWWA Standard C509. Valves shall open left and

be equipped with a 2-inch AWWA operating nut and stainless steel stem.

1) Clow Model 2639,
2) AVK Series 45,
3) Mueller Series 2300,
4) Kennedy Model KS-FW, or approved equal

c. All butterfly valves shall conform to AWWA Standard C504. Butterfly valves may be installed on main runs only. Valves shall open left and be equipped with a 2-inch AWWA operating nut.

d. Valve boxes shall be a traffic valve box and lid rated for H-20 traffic loads. The overall depth of the concrete box shall be a minimum of 12 inches. The valve box lid shall be cast iron.

1) Valve cover lids must be labeled "WATER."
2) Fire Hydrant valve cover lids must be labeled "FIRE."
2) An acceptable valve box manufacturer and product is Oldcastle Precast Inc. – G05TBOX "Traffic Valve Box" or approved equal. Box cover/lid shall be Bingham & Taylor GRE 12LHVYWLS (26 lbs) or approved equal.
3) Materials to be used for extensions below valve box to valve operating nut shall be 8-inch diameter PVC pipe-SDR 35.

C. WATER SERVICE PIPE

1. Services shall conform to the latest AWWA C800 and C901 including all amendments.

2. 1-inch and 2-inch Water Service Pipe

a. Water services pipe shall be High Density Polyethylene (HDPE) Pipe. The pipe shall be ultra-high molecular weight polyethylene flexible pipe constructed from PE 3408/3608 polyethylene for potable water systems. The minimum pressure class rating shall be 200 psi.

b. For 1-inch services, the HDPE pipe diameter shall conform to outside diameter-controlled Iron Pipe Size (IPS). The maximum standard dimension ratio shall be SDR 7.

c. For 2-inch services, the HDPE pipe diameter shall conform to outside diameter-controlled Copper Tube Size (CTS). The maximum standard dimension ratio shall be SDR 9.

d. Acceptable HDPE Pipe manufacturers and products:

1) Endot Industries, Inc. – Endopure Pipe,
2) Performance Pipe – DriscoPlex 5100 Ultra-Line Pipe,
3) JM Eagle – High Density Polyethylene Water and Sewer, or approved equal.

3. 4-inch and Larger Water Service Pipe

a. Water services pipe shall be Polyvinyl Chloride (PVC) Pipe. The pipe materials, fittings and valves shall conform to the requirements of the specifications for water mains and any referenced standards therein.

4. 1-inch and 2-inch Water Service Fittings and Valves

a. All fittings and valves must be constructed from **"No Lead"** materials.

b. Service saddles shall be sized to match the outside diameter of the pipe being tapped. The tap size shall be 1-inch or 2-inch to match the nominal service size. The saddle shall be a double strap style with a Female Iron Pipe Threaded (FIPT) coupling. Service saddle can be Ford Brass Service Saddle Style S90 or approved equal.

c. For C900 PVC pipe, acceptable saddle manufacturers and products are James Jones Co. – Bronze Saddle J-996 Series, or approved equal.

d. Ball corporation stop, curb stop, coupling, and meter coupling sizes shall match the diameter of the service pipe. Reducing fittings will not be allowed. Inserts for use with pack joint couplings shall be stainless steel. Fitting sizes shall be National Pipe Threads (NPT) or Copper Tube Size (CTS) pack joints where required.

1) Quick Joint or Grip Joint fittings and couplings will not be allowed instead of pack joint fittings and couplings.

2) Acceptable manufacturers for all water service fittings are Ford, Jones, Mueller, McDonald, Cambridge Brass or equal.

5. 1-inch and 2-inch Meter Box and Lid

   a. The meter box lid shall be

      1) Non-Vehicle Areas: Composite material composed of polyester resin, fiberglass and calcium carbonate.

      2) Vehicle Areas: Galvanized steel checker plate with a 6-inch round, self-closing reading lid.

      3) Lids must be labeled "WATER"

   b. Acceptable meter box and lid manufacturers and products shall be as listed below or approved equal:

      1) 1-inch Service – Oldcastle Precast Inc. – N 30 Utility Box with FL30D lid or N 30 Utility Box with B30-61G (Vehicle) lid.

      2) 2-inch Service – Oldcastle Precast Inc. – N 36 Utility Box with FL36D lid or N 36 Box with B36-61G (Vehicle) lid.

D. FIRE HYDRANT ASSEMBLY

1. Fire hydrants shall be installed at the locations shown on the plans in conformance with City Standard Details. Hydrants shall be a "traffic type" with a replaceable breakaway section immediately above the groundline. The Contractor shall adjust the "bury length" of the hydrant to provide proper installation. The pumper nozzle shall be rotated to face the street after installation.

2. The bury section shall be one piece consisting of a straight midsection (spool) and a 90-degree elbow. The bury section shall be ductile iron pipe, flanged above ground, mechanical joint below ground with fittings conforming to ANSI/AWWA C110/A21.10.

3. Fire hydrants shall be wet-barrel style and conform to AWWA Standard C503. Fire hydrants shall be Clow Model 960, or approved equal and shall conform to the latest AWWA Standard, C-503, for wet-barrel fire hydrants. All hydrants shall be furnished with a factory traffic yellow enamel finish coat followed by two coats of "Rust-Oleum 7543, Safety Yellow". Any fittings or pipes visible

above ground shall also be painted with the same color as fire hydrant to match. Private fire hydrants shall be painted with two coats of Fire Engine Red enamel finish.

4. Prior to applying the non-factory paint coats, the surface shall be free of any deleterious material by hand cleaning with solvents, wire brushes and or sandpaper to remove all oil, grease, dirt, loose rust, dead paint or paint that is not firmly bonded to the hydrant surfaces. Any areas where metal is exposed following the cleaning process shall be painted with one coat of "Rust-Oleum 7780, Clean Metal Primer".

E. BLOW-OFFS

Blow-offs shall be constructed using the materials and manufacturers of fittings as specified for 2-inch water services. Blow-off shutoff valves shall be ball corporation style valve. A 2-inch blow-off shall be used in mains 12 inch and smaller. A 4-inch blow-off shall be used on mains 16 inches or larger.

F. BACKFLOW PREVENTION ASSEMBLIES

1. Reduced-Pressure Principle Backflow-Prevention Assemblies shall conform to the latest AWWA Standard C511 and Double Check Valve Backflow-Prevention Assemblies shall conform to the latest AWWA Standard C510.

2. All backflow assemblies must be approved by the City and Foundation for Cross-Connection Control and Hydraulic Research, University of Southern California.

G. SAMPLE STATIONS

Sample stations shall be installed within the public right-of-way at locations shown on the Plans and/or as directed by the City Engineer. Sample station shall be No-Lead Resetter Sampling Station A.Y. McDonald Mfg. Co. 710 Series including inline duel check and quick connect faucet, or approved equal.

H. AIR RELEASE VALVES

1. Air release valves (ARV) shall conform to AWWA Standard C512. The ARV shall operate (open) while pressurized, allowing entertained air to escape from the water pipeline through air release

orifice. After entrained air escapes through the water air release orifice, the valve orifice shall close by a lever mechanism actuated by a concave float to prevent water from escaping. The ARV shall stay closed until more air accumulates and the opening cycle will repeat automatically.

2. An acceptable air release valve manufacture is Val Matic and Crispin, or approved equal.

I. TRACER WIRE

1. Tracer wire for water mains and services shall be soil copper, soft drawn wire No. 12 American Wire Gauge (AWG). For all pipe materials provide THWN insulated wire at all locations.

2. For splices at valves and fittings, remove insulations, use solid copper split-bolt style or field soldered connections and wrap all exposed copper with appropriate electrical tape. Minimum 1' slack of wire in each box installed.

J. PIPE MARKING TAPE

Pipe marking tape shall blue in color and 3" wide, 4 mil non-detectable.

K. NUTS, BOLTS, AND WASHERS

Nuts, bolts, and washers shall be 316 stainless steel for all bolted connections. Bolts shall be Type 316 stainless steel, Class 2, conforming to ASTM A193 for bolts and ASTM A194 for nuts.

L. PORTLAND CEMENT CONCRETE

Portland cement concrete for hydrant bases, thrust blocks and anchors shall conform to the requirements of Section 90, "Portland Cement Concrete," of the State Standard Specifications and specified herein. The concrete shall be Class "B" containing six (6) sacks of Portland cement per cubic yard of concrete. The grading of the combined aggregate shall conform to the requirements of three quarter inches (3/4") maximum. See Section 90, "Portland Cement Concrete," of the Standard Specifications for required slump.

6.11 INSTALLATION

A. GENERAL

Water main shall be installed in accordance with City Standards and AWWA Standards for pipe installation.

B. TRENCH EXCAVATION

The Contractor shall, prior to beginning construction, obtain from the Division of Industrial Safety the permit required by California Labor Code, Section 6500, and pay any fee charged for such permit. In addition thereto, whenever the work under the Contract involves trench excavation 5 feet or more in depth, the Contractor shall submit for approval to a registered civil or structural engineer representing the City, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer. Nothing in this section shall be deemed to allow the use of shoring, sloping or other protective system less effective than that required by the Construction Safety Orders. Nothing in this section shall be construed to impose tort liability on the City, City Engineer, or any of their officers, agents or employees.

The pipe trench shall be dug with side walls sloped or otherwise supported in a safe manner in accordance with the Department of Industrial Relations, Division of Occupational Safety and Health Administration regulations pertaining to trenching.

Excavated material shall be placed on only one side of the trench unless otherwise directed. Separation distance between piles of excavated material and trench shall be consistent with the Construction Safety Orders.

The alignment and grade for the bottom of the trench shall be properly established before the trench is excavated and shall be approved by the City before the pipe is laid. Trenches shall be true to line and grade, and the bottom shall be even and free from all objectionable material.

C. WATER IN TRENCH

When water is encountered in the trench, it shall be removed by draining or by pumping. Should water get into the trench before the pipe is laid, the laying of pipe shall be postponed until the trench has dried

sufficiently to provide a firm foundation for the pipe or else, the mud or softer material shall be removed and grade re-established by backfilling and compacting with suitable material as determined by the City.

D. HANDLING OF PIPES AND APPURTENANCES

1. Proper implements, tools, equipment and facilities satisfactory to the City Engineer shall be provided and used by the Contractor for the safe and efficient execution of the work.

2. All pipe, fittings, valves, hydrants and appurtenances shall be lowered into the trench to prevent damage to pipe materials fittings. Under no circumstance shall pipe or appurtenances be dropped or dumped into the trench. Special care shall be exercised so that the coating on pipe, valves and fittings are not damaged. If such damage occurs, the coating shall be repaired per the manufacturer's recommended procedures and to the satisfaction of the City Engineer. Chain slings are not permitted.

3. Pipe loaded on trucks or stacked one upon another shall be supported on wood blocking. Pipe handled sideways shall not be skidded or rolled against pipe already on the ground. All foreign matter, including soil, shall be removed from the interior of pipe before lowering into position in the trench. Pipe and appurtenances shall be kept clean before, during and after laying the material in the trench.

4. All pipe and appurtenances shall be inspected for defects prior to lowering into trench. Any defective, damaged or unsound pipe or appurtenance shall be replaced at no additional cost to the City.

E. LAYING AND JOINING PIPE

1. The Contractor shall field verify by potholing, the size, depth and alignment of all existing water mains and services shown on the Improvement Plans or marked in the field by the Underground Service Alert (USA) markings prior to construction. If any existing utility is not exactly as shown on the Improvement Plans or otherwise omitted, the Contractor shall notify the City Engineer before proceeding with the installation of any new work until instructions for how to proceed are issued by the City Engineer.

2. Laying and jointing of pipe shall be in accordance with the manufacturer's recommendations and as approved by the City. Joint

deflections shall not exceed 80% of the maximum recommendations of the manufacturer.

3. Where rubber gaskets are used for jointing pipe, a feeler gauge shall be used to check the position of the rubber gasket upon each closure. The interior of the pipe shall be cleared of all debris, and exposed pipe ends shall be closed by a suitable pipe plug when pipe laying is not in progress.

4. The pipe shall be laid on a trench bottom shaped to provide adequate and uniform support of the pipe except at coupling or bell holes. The use of prepared mounds to facilitate laying of the pipe is not approved.

5. When work is stopped at the ends of the work day, the open ends of all water mains shall be closed with watertight blind flange. The blind flange shall not be removed unless the trench is dry.

F. THRUST BLOCKS

1. Thrust blocks shall be cast-in-place concrete between undisturbed ground and the fitting to be anchored. The trust block area for bearing against the soil shall be determined by the City Standard Details. Prior to pouring concrete for thrust blocks, the ground must be properly moistened to prevent the ground from absorbing moisture from the concrete.

2. Thrust blocking shall be placed so that the joints of the pipe and fittings shall be accessible for future repairs. All wood forms and foreign materials used for forming thrust blocks and not suitable for backfill must be removed prior to backfilling.

3. Backfill may be placed but not compacted, on thrust blocks after the concrete surface has cured sufficiently to resist the weight of the backfill. Concrete shall be allowed to cure a minimum of 24 hours prior to compaction of backfill.

G. 1-INCH AND 2-INCH WATER SERVICES

1. Excavate the entire trench for the service. Services shall be as close to perpendicular as possible to the water main. Thoroughly clean the outside surface of the water main.

2. If the water main is newly installed and not considered an "active" or "existing" water main by the City Water Division, the Contractor will tap the water main at the proper angle and location for the new service. If the water main is "active" or "existing" according the City Water Division, the Contractor must coordinate and schedule with the City all connections to the water main.

3. Once the water main tap is complete, immediately open the service valve to flush the valve and tapping hole thoroughly. Service pipe shall be installed using proper fittings to maintain vertical and horizontal alignment. The slope of the service pipe shall match the slope of the final grade to maintain minimum cover required.

4. All connections between metal fittings and HDPE service pipe must use metal reinforcing sleeve inserts. Fitting connections must be properly tightened according to the manufacturer's specifications. Heat-flaring of service pipe is not permitted.

5. Service pipe crossing below gutter, curb and sidewalk shall be installed using horizontal boring or pushing methods. Water pressure washing methods are not permitted.

6. Special care shall be exercised to insure proper compaction is made under curb stop so it is vertical and the meter idler is level. Compaction shall be made under and around the meter box so it remains level and at the finished sidewalk grade.

H. WATER METER AND METER BOX

1. Special care shall be exercised to ensure proper compaction is made under curb stop so it is vertical and the meter register is level. The meter automated meter reader (AMR) register must be installed with the maximum clearance of 1 inches from the top of the register to the bottom side of the meter box lid. This clearance can be adjusted as required by the City Water Division and/or as required for the automated meter reader (AMR) system to function properly.

2. Compaction shall be made under and around the meter box so it remains level. The meter box shall be installed with a brick at the base of each corner to provide a stable footing for the box.

3. The meter box shall be installed at the correct elevation to match finals grade of the adjacent sidewalk and curb.

I. 4-INCH AND LARGER WATER SERVICE PIPE

Water services shall be installed to the same specifications for water mains and any reference standards herein. Also, water meters of size 4-inch or larger shall be installed in line with backflow device.

J. FIRE HYDRANTS

Fire hydrants lateral runs shall be installed to the same specifications for water mains and any referenced standards therein. Fire hydrant assemblies shall be installed per the City Standard Details.

K. PERMANENT BACKFLOW PREVENTION ASSEMBLIES

The backflow prevention assembly must be installed above ground with proper air gap provided. The backflow prevention assembly must be visible for inspection at any time and located per these Standards.

The backflow prevention assembly requires a minimum of 3 inspections by the City Water Division Cross Connection Specialist prior to acceptance:

a. Proper configuration and installation per City Standards
b. Testing for proper functioning
c. Final inspection once all the newly installed water mains have successfully passed the hydrostatic pressure test, been disinfected with passing negative bacteriological results and flushed.

6.12 CONNECTIONS WITH EXISTING WATER LINES

The Contractor shall make all excavations for connection to existing water lines and shall make connections to existing water line in the presence of the City.

Developer shall use an approved double check backflow preventer between the existing water main and the new line to fill lines with water for testing and disinfection purposes. City personnel must be the only ones to open or close existing water valves.

Hot tap branch size shall be at least one size smaller than the main, and all materials of stainless steel. All new connections shall have shut off valves on the branch, and may require an additional valves on the main, as determined by the City. All connections to water mains shall be properly supported to eliminate stress on existing pipe. No taps or connections shall

be within 6 feet of a pipe joint, unless approved by the City. All materials shall be clean of dirt and debris, and the inside swabbed or sprayed with the a 50+ ppm chlorine solution at least 15 minutes, but not more than 30 minutes, in advance of assembly.

Connections shall be made at such times as designated by the City and in such a manner as to insure the least inconvenience to water users. No connection shall be made until the new work has been tested and disinfected as specified hereinafter. The Contractor shall be responsible for safeguarding the existing system from all damage and possible contamination in the performance of his work.

6.13 INSPECTION

1. All water lines shall be inspected for proper installation by the City Engineer, prior to backfilling of trenches.

2. HYDROSTATIC TEST

   After installing pipe and prior to complete backfilling of trenches, the entire length of each line shall be subjected to a hydrostatic pressure of not less than 150 psi for a period of not less than 2 hours. Curb stops, idler fittings and fire hydrant units shall also be included in the hydrostatic test. No pipe installation will be accepted if leakage for the section is greater than the allowable leakage determined by using one of the following formulas, as applicable:

$$\text{For Polyvinyl Chloride Pipe - } L = \frac{ND\sqrt{P}}{7400}$$

   (L = Allowable leakage in gallons per hour. N = Number of joints in length of pipeline. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.), or

$$\text{For Ductile Iron Pipe - } L = \frac{SD\sqrt{P}}{148{,}000}$$

   (L = Allowable leakage in gallons per hour. S = Length of pipe tested in feet. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.)

   Water for testing may be taken from the nearest blow-off, fire hydrant or other approved source. All pipe, fittings, valves,

couplings, and other materials needed to fill the test lines with water shall be supplied and installed by the Developer or Contractor. Care shall be taken not to contaminate the existing system.

The pump, gauge, pipe connection, and all necessary apparatus and equipment needed for the test shall be supplied by the Developer or Contractor.

The Developer or Contractor shall permanently stop all leaks. After repairing all defective items, the line shall be tested again to determine final acceptability of the installation.

3. DISINFECTING WATER MAINS

Water mains shall be disinfected in conformance with the procedure specified in the current standards for AWWA C651 "Disinfecting Water Mains" or other procedure satisfactory to the City Engineer. Only one connection shall be made between the existing City system and the system being disinfected unless otherwise approved by the Public Works Director. A temporary backflow prevention device as approved by the Director shall be installed between the two systems. Upon successful completion of the disinfection process, the temporary backflow prevention device shall be removed.

Chlorine shall be introduced into the lines at service connections or at such locations along the line that uniform distribution of chlorine throughout the line is ensured, including services, fire hydrants and stubs.

After final flushing, a testing laboratory, approved by the Director, shall take two consecutive sets of water samples from the system at least 24 hours apart. All samples shall be drawn from locations designated by and in the presence of the Public Works Inspector.

The system must pass both consecutive negative bacteriological tests prior to removal of the backflow prevention device.

Valves or other connections between the existing system and new system shall not be opened or completed until certification of the passing bacteriological tests have been received and reviewed by the Director.

The Contractor shall be responsible for all testing costs.

6.14 BEDDING AND BACKFILL OF TRENCHES

Bedding and backfill shall be as shown on Drawing No. W-15.

6.15 RESTORING SURFACE

The surface of all trenches shall be filled and compacted so that the surface will conform to the condition of the surrounding ground. The repaving requirements of the plans shall be met regardless of type of existing surfacing.

Existing pavement shall be cut in neat parallel lines as shown on Drawing No. W-15.

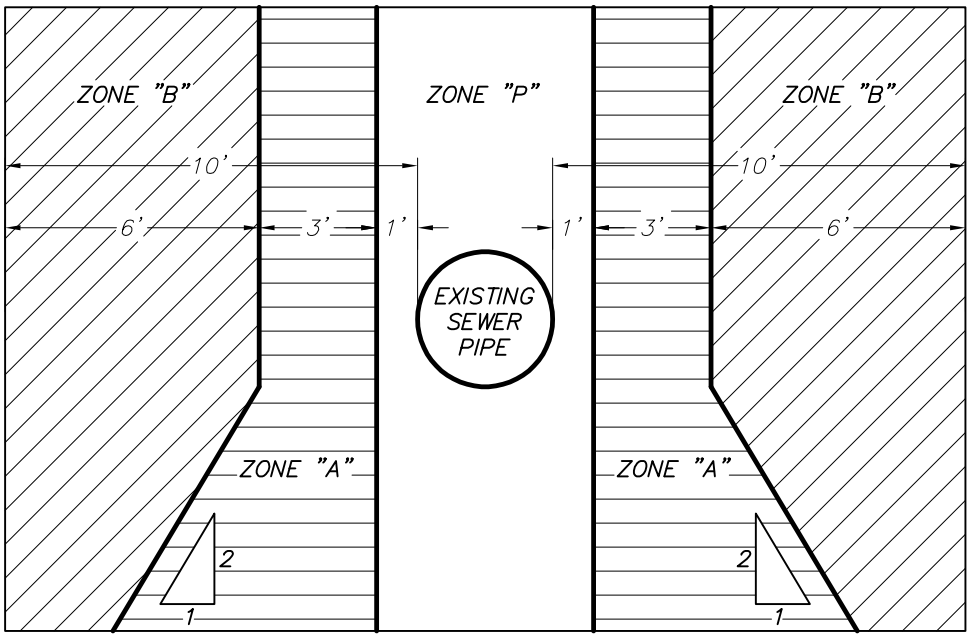
Aggregate base shall be Class II compacted to 95% relative compaction. Aggregate base shall have 3/4-inch maximum combined grading.

Asphalt concrete shall be Type B, AR 8000 with 1/2-inch maximum aggregate, medium grading.

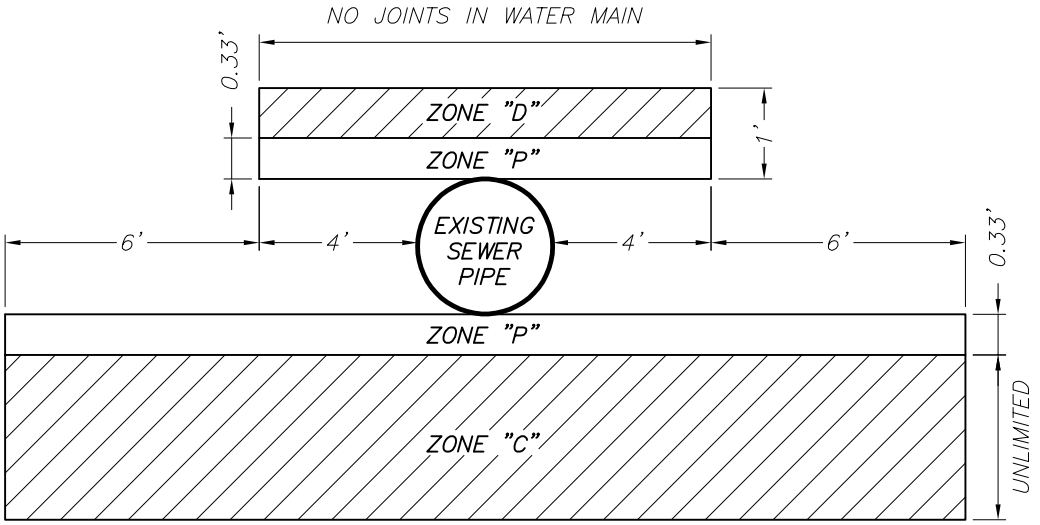
A paint binder of asphaltic emulsion shall be applied to all surfaces in conformance with Section 39 of the State Standards.

ALTERNATE DESIGN FOR REDUCED SEPARATION

(TO BE USED ONLY WHERE REQUIRED 10 FT. SEPARATION CANNOT BE OBTAINED)
NEW WATER LINE BEING INSTALLED



PARALLEL CONSTRUCTION



PREPENDICULAR CONSTRUCTION

NOTES:

1. ZONE "A" REQUIRES SPECIAL PIPE AND SPECIAL PERMISSION FROM THE PUBLIC HEALTH AGENCY.
2. ZONE "B" REQUIRES SPECIAL PIPE.
3. ZONE "C" REQUIRES SPECIAL PIPE AND PIPE JOINTS ARE NOT ALLOWED.
4. ZONE "D" REQUIRES STANDARD PIPE AND PIPE JOINTS ARE NOT ALLOWED.
5. ZONE "P" IS A PROHIBITED ZONE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

WATER MAIN SEPARATION REGULATIONS

DRAWING NO. W - 1
NTS

Oct 28, 2020 - 11:06am
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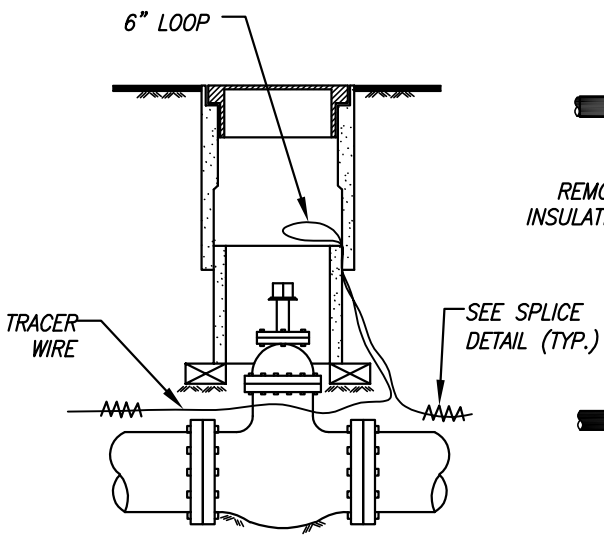
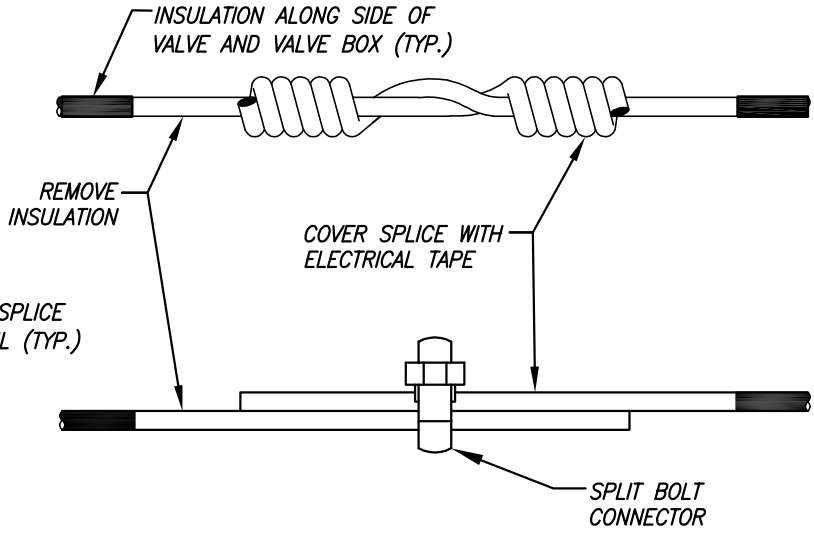
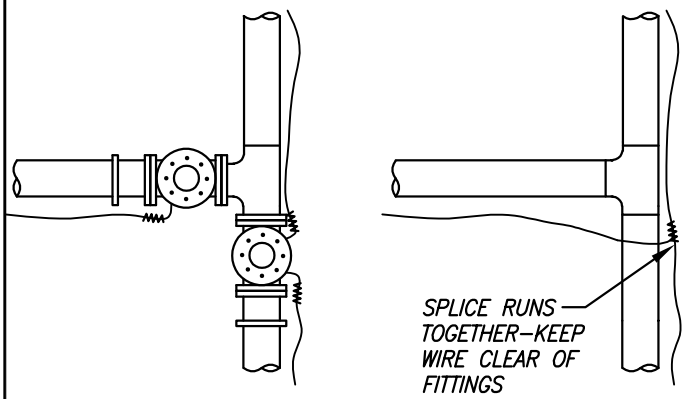
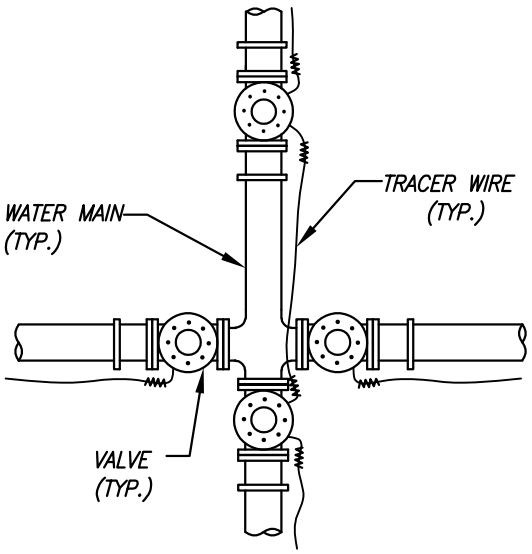




SPLICE DETAIL

INSTALLATION AT VALVE BOX





TYPICAL WIRE CONNECTIONS AT MAIN INSTERSECTIONS

NOTES:

1. *WIRE TO BE CONTINUOUS BETWEEN VALVE BOXES, EXCEPT AS NOTES.*
2. *CONTRACTOR SHALL RUN A CONTINUITY TEST ON ALL WIRE SPLICES.*
3. *BARE WIRE NOT TO TOUCH METAL VALVES OR FITTINGS.*
4. *TRACER WIRE TO BE LAID AT TOP OF THE PIPE.*
5. *PROVIDE ACCESS BOX FOR TRACER WIRE WHERE NO VALVES LOCATED WITHIN 400'.*

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

TRACER WIRE INSTALLATION DETAIL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. W - 2

NTS

Oct 28, 2020 - 11:07am
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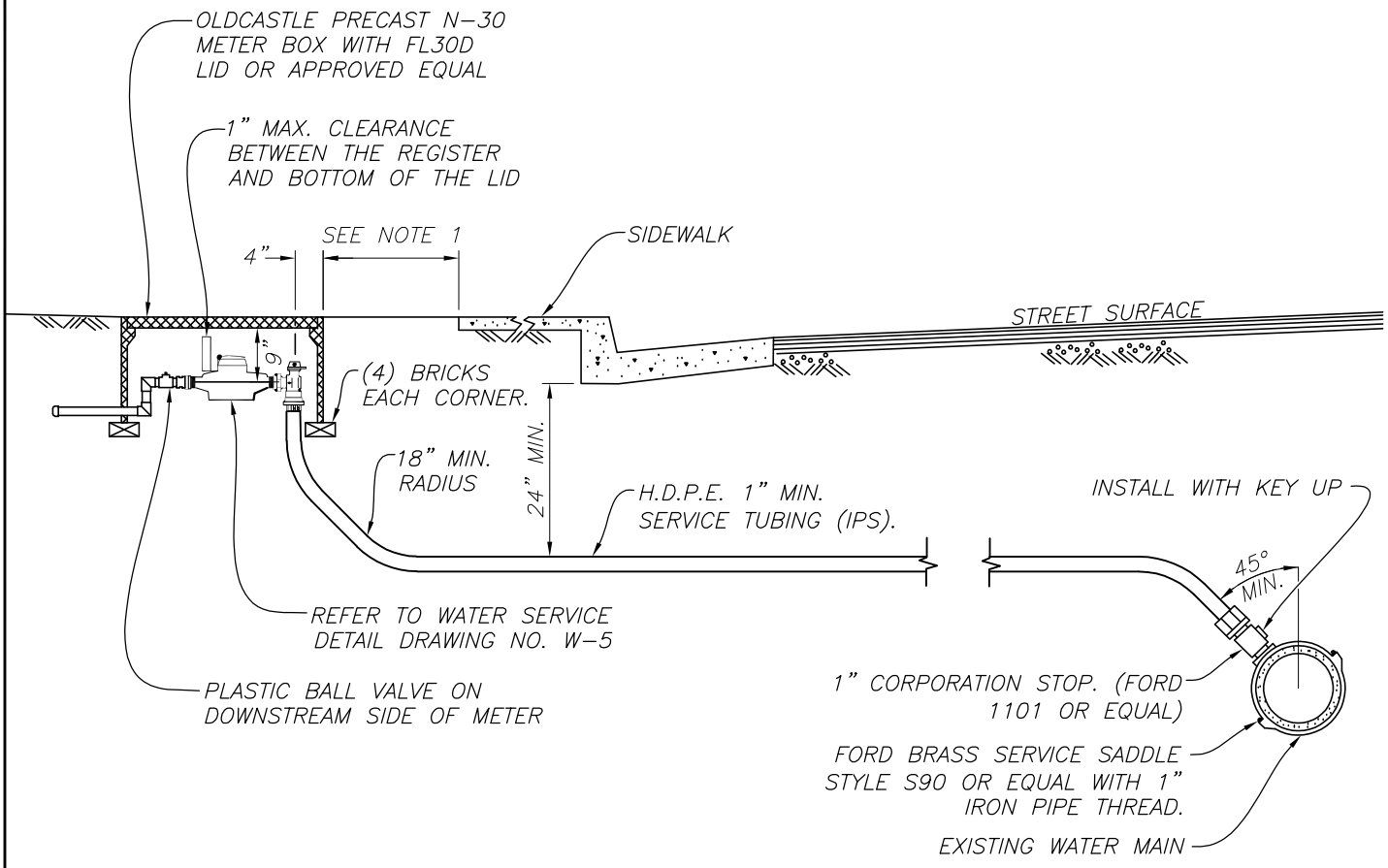

NOTES:

1. ONE FOOT FROM BACK OF SIDEWALK FOR ATTACHED CURB AND SIDEWALK. FOR AREAS WITH SEPARATED CURB AND SIDEWALK ONE FOOT FROM BACK OF CURB.
2. SERVICE LATERALS SHALL BE POLYETHYLENE PLASTIC PIPE (PE3408, SDR7, PR160 P.S.I.) IN IRON PIPE SIZES AND SHALL BE SUITABLE FOR TRANSPORTING POTABLE WATER. POLYETHYLENE PIPE SHALL COMPLY WITH A.S.T.M. STANDARD D2239.
3. TRAFFIC LID REQUIRED IF LOCATED IN TRAVELED AREA AT CUSTOMER'S EXPENSE.
4. STAINLESS STEEL INSERT STIFFENERS SHALL BE USED INSIDE P.E. TUBING AT ALL PACK JOINT CONNECTIONS.
5. CURB STOPS SHALL BE DIRECTLY OPPOSITE SERVICE SADDLES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
6. INSTALL TRACER WIRE ALONG SERVICE FROM MAIN TO METER.
7. 1" BADGER METER, MODEL 70 BRONZE METER WITH BRONZE BOTTOM AND ORION AMR REGISTER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

1" DIAMETER WATER SERVICE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO.
W - 3

NTS

Oct 28, 2020 - 11:09am
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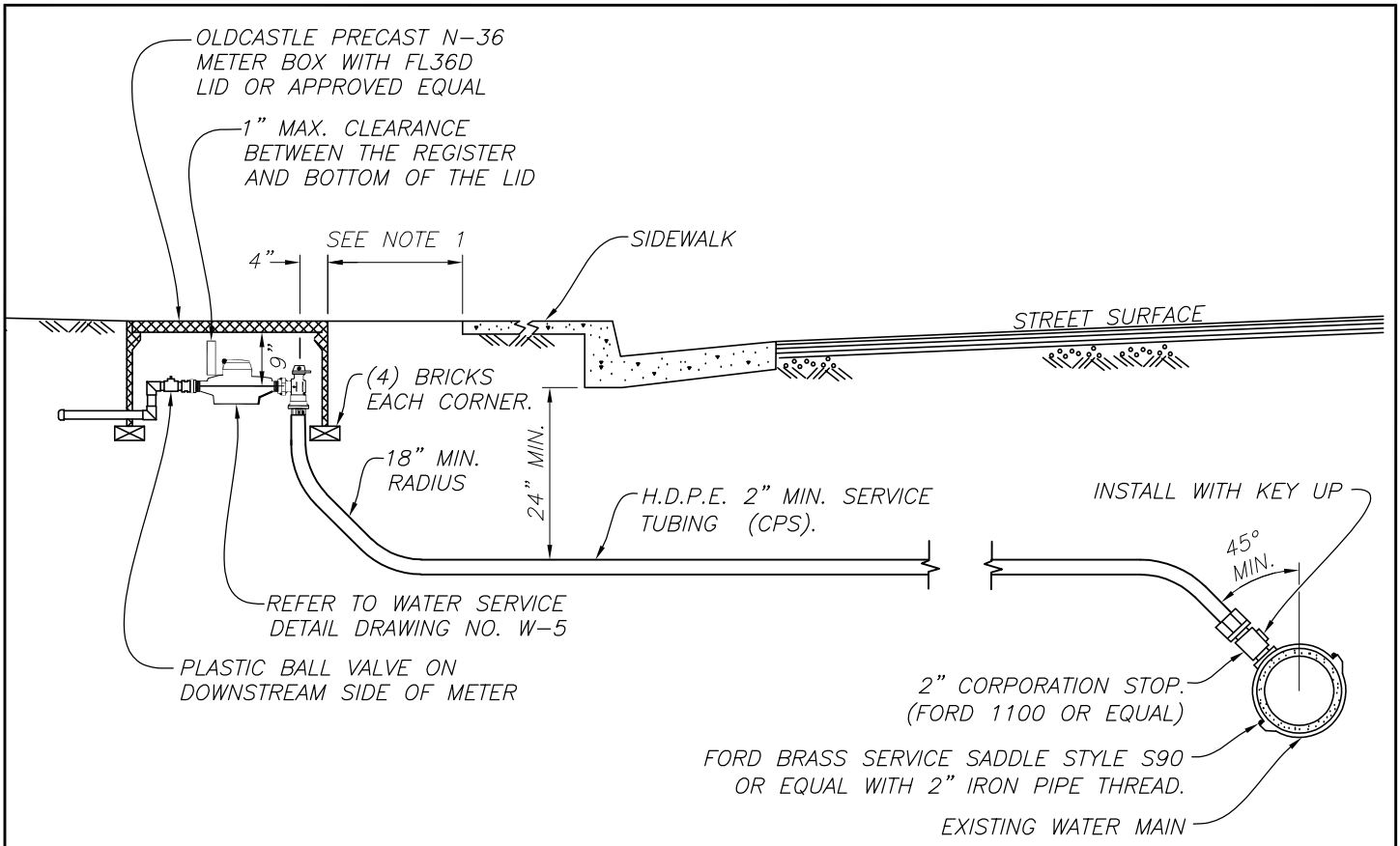

NOTES:

1. ONE FOOT FROM BACK OF SIDEWALK FOR ATTACHED CURB AND SIDEWALK. FOR AREAS WITH SEPARATED CURB AND SIDEWALK ONE FOOT FROM BACK OF CURB.
2. SERVICE LATERALS SHALL BE POLYETHYLENE PLASTIC PIPE (PE3408, SDR7, PR160 P.S.I.) IN COPPER TUBING SIZES AND SHALL BE SUITABLE FOR TRANSPORTING POTABLE WATER. POLYETHYLENE PIPE SHALL COMPLY WITH A.S.T.M. STANDARD D2239.
3. TRAFFIC LID REQUIRED IF LOCATED IN TRAVELED AREA AT CUSTOMER'S EXPENSE.
4. STAINLESS STEEL INSERT STIFFENERS SHALL BE USED INSIDE P.E. TUBING AT ALL PACK JOINT CONNECTIONS.
5. CURB STOPS SHALL BE DIRECTLY OPPOSITE SERVICE SADDLES UNLESS OTHERWISE APPROVED BY THE CITY ENGINEER.
6. INSTALL TRACER WIRE ALONG SERVICE FROM MAIN TO METER.
7. 2" BADGER METER, MODEL 170 BRONZE METER WITH TEST PLUG AND ORION REGISTER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

2" DIAMETER WATER SERVICE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. W - 4

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Oct 28, 2020 - 11:10am
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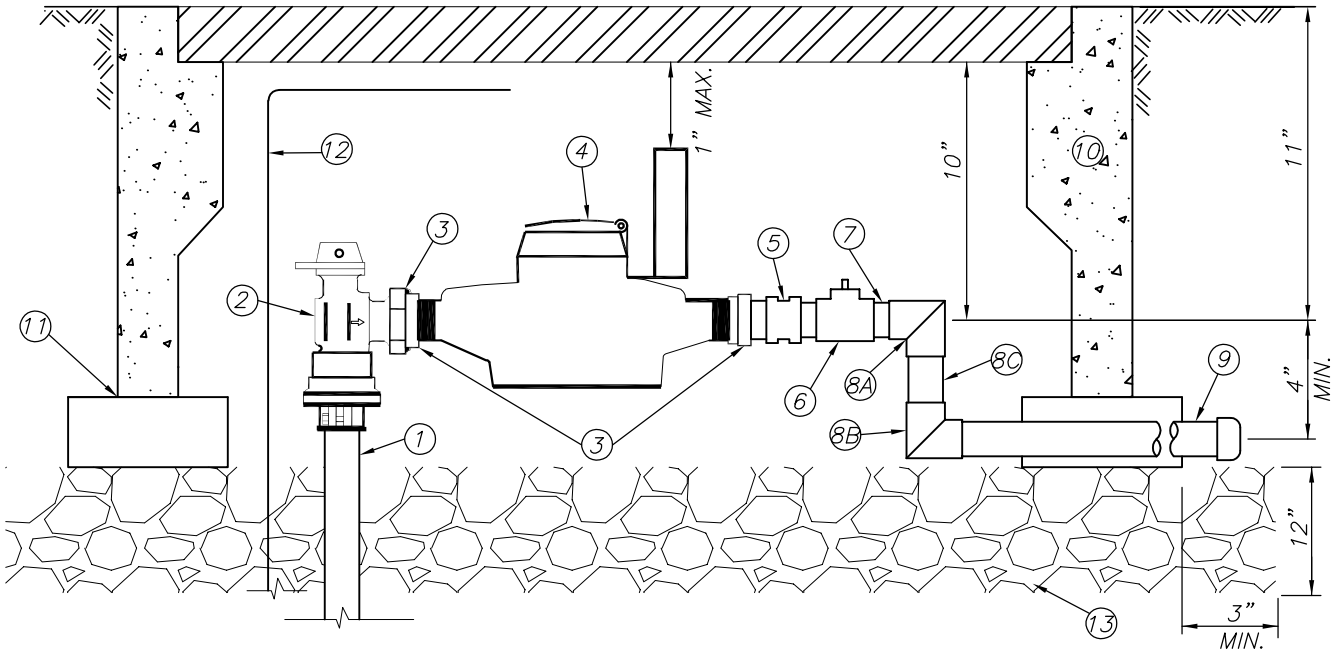

NOTES

1. SERVICE FROM MAIN
2. ANGLE METER VALVE (FORD BA63 – 444W OR EQUAL FOR 1" SERVICE. FORD BFA43–777W OR EQUAL FOR 2" SERVICE)
3. 1" x ¾" METER ADAPTER (FORD A34 OR EQUAL) FOR 1" SERVICE
4. BADGER ORION READ METER
5. 1" STRAIGHT METER COUPLING (MUELLER H–10896 OR EQUAL) FOR 1" SERVICE. 2" METER FLANGE BY 2" FEMALE IRON PIPE THREAD FOR 2" SERVICE.
6. PLASTIC BALL VALVE THREAD X THREAD
7. SCHEDULE 80 THREADED PVC NIPPLE
8A. SCHEDULE 40 THREADED X SLIP PVC ELBOW
8B. SCHEDULE 40 SLIP X SLIP PVC ELBOW
8C. SCHEDULE 40 SLIP X SLIP NIPPLE
9. SCHEDULE 40 PVC WITH CAP
10. METER BOX, LID MARKED "WATER"
11. BRICK (EACH CORNER OF BOX)
12. TRACER WIRE
13. 12" DEEP, 1/2" CRUSHED GRAVEL MIN. 3" OUTISDE OF BOX ON ALL SIDES

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

WATER METER SERVICE DETAIL

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. W - 5

NTS

Oct 28, 2020 – 11:11am
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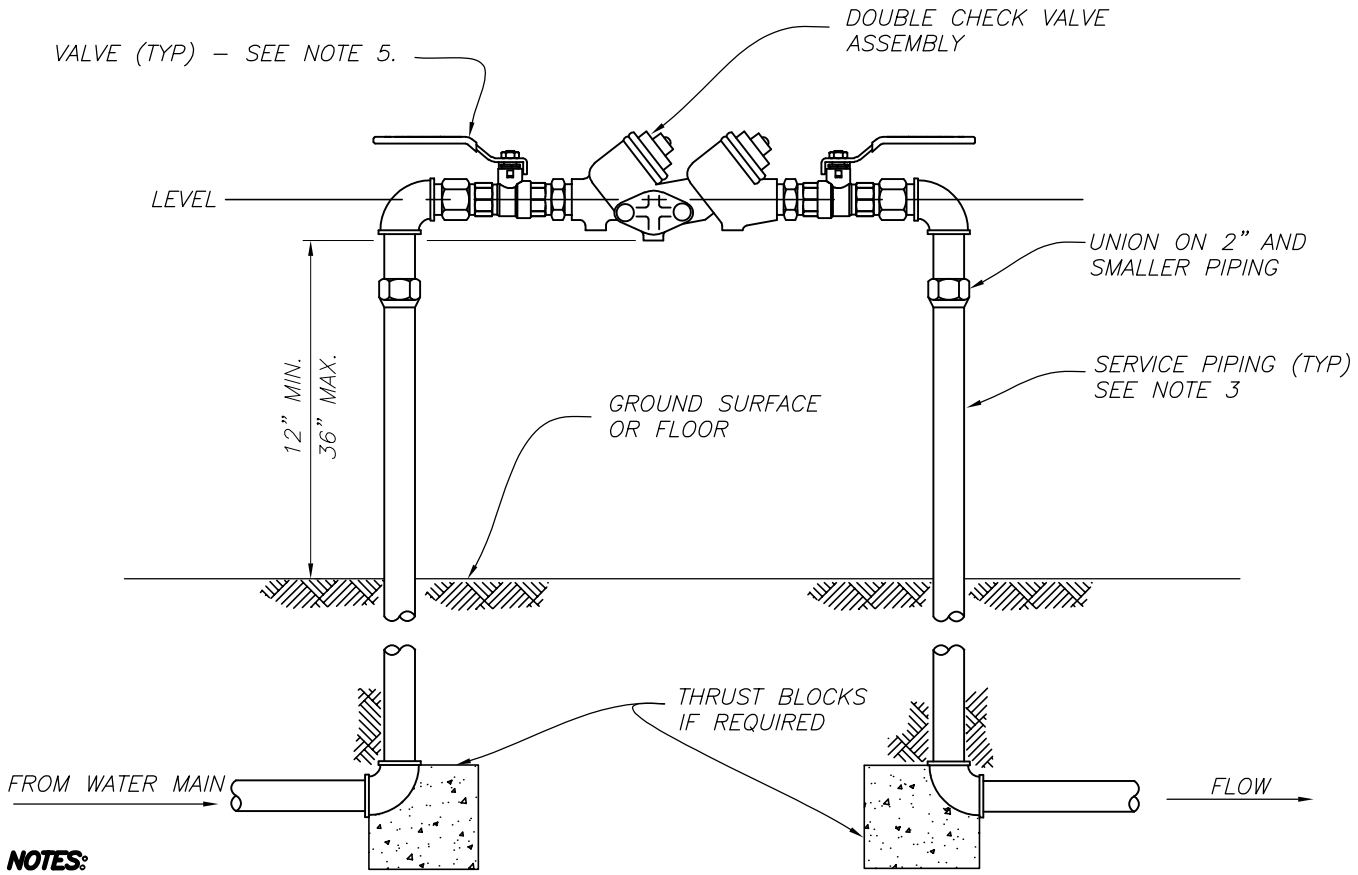

NOTES:

1. DEVICES SHALL BE FABCO, WATTS, OR APPROVED EQUAL & APPROVED BY THE U.S.C. TESTING LABORATORY.
2. MANUFACTURING AND MODEL NUMBER OF BACKFLOW PREVENTION ASSEMBLY SHALL BE LEAD FREE AND APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
3. ABOVE GROUND SERVICE PIPING FOR BACKFLOW PREVENTION DEVICES 2 INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER OR BRASS. SERVICE LINES 4–INCH DIAMETER AND SMALLER BUT LARGER THAN 2–INCHES IN DIAMETER SHALL BE GALVANIZED STEEL. WRAP ALL METALLIC PIPING BELOW GROUND AND WITHIN 6–INCHES OF GROUND SURFACE WITH 2 LAYERS OF 10–MIL CALPICO TAPE.
4. SUPPORTS WHERE PROVIDED SHALL NOT INTERFERE WITH TESTING AND MAINTENANCE.
5. BALL VALVES SHALL BE INSTALLED ON 2–INCH AND SMALLER BACKFLOW PREVENTION ASSEMBLIES. GATE VALVES SHALL BE UTILIZED ON BACKFLOW PREVENTION ASSEMBLIES LARGER THAN 2–INCH.
6. INSTALL AN LOCKABLE INSULATED COVER AS APPROVED BY PW DIRECTOR AROUND ASSEMBLY. CAGE PROTECTION IS REQUIRED WHEN INSTALLED IN PARKS OR AS REQUIRED BY THE CITY.
7. DEVICE SHALL BE LOCATED IMMEDIATELY BEHIND WATER METER.
8. DEVICE SHALL BE TESTED BY A CERTIFIED TESTER APPROVED BY THE CITY AND TEST RESULTS SHALL BE SUBMITTED TO THE CITY. AFTER THE INSPECTION TEST COCKS SHALL BE PLUGGED WITH BRASS TEST PLUGS.
9. BACKFLOW PREVENTION ASSEMBLY SHOWN IS FOR NON–FIRE FLOW APPLICATION. BACKFLOW PREVENTION INSTALLATIONS FOR FIRE PREVENTION SHALL BE AS APPROVED BY THE FIRE CHIEF.
10. ALL BACKFLOW DEVICES WILL NEED TO BE SCREENED FROM PUBLIC VIEW BY UTILIZING A COMBINATION OF BLACKWALL, STEEL SCREEN, AND/OR LANDSCAPING ETC.
11. **A DOUBLE CHECK VALVE ASSEMBLY WILL ONLY BE PERMITTED FOR REPLACEMENT AND RETROFIT SERVICES AND MUST BE APPROVED BY THE CITY. DOUBLE CHECK VALVE CAN BE USED ON FIRE LINES WITH THE APPROVAL OF FIRE DEPARTMENT.**

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

2" OR SMALLER DOUBLE CHECK VALVE BACKFLOW PREVENTER

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. W - 6

NTS

Apr 28, 2021 – 10:43am
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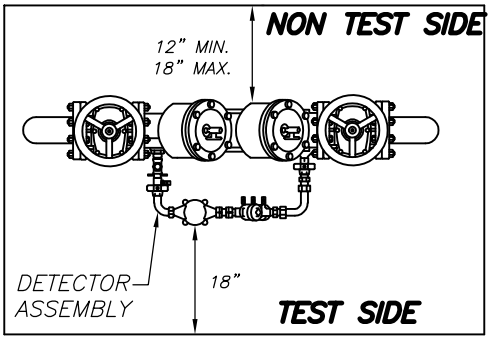
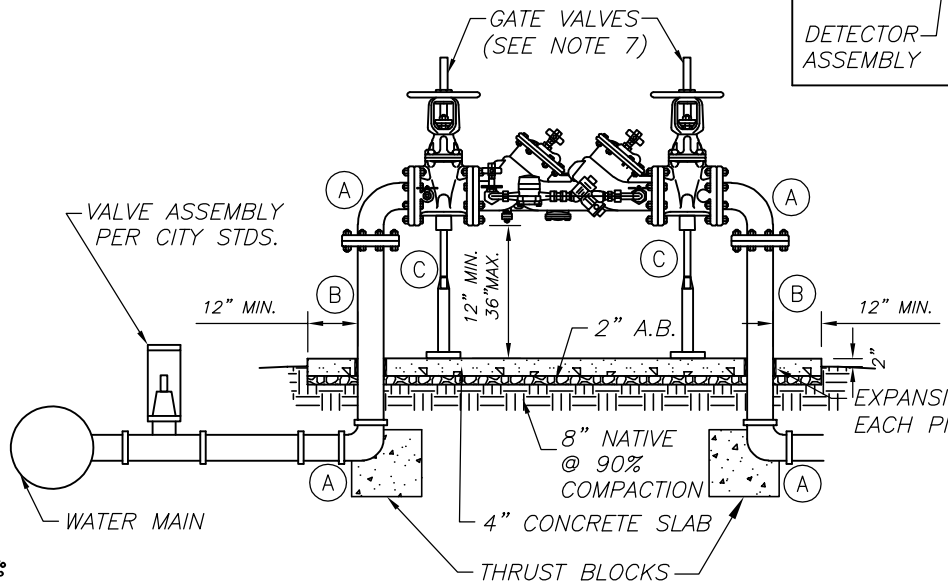
SERVICE LINE SHALL HAVE A WATER METER IMMEDIATELY BEFORE THE BACKFLOW ASSEMBLY.

DETECTOR ASSEMBLIES ARE ONLY REQUIRED FOR NON-METERED FIRE LINES.





LEGEND:

- (A) 90° ELBOW
- (B) SPOOL
- (C) PIPE SUPPORT, ANVIL FIG. 264 OR APPROVED EQUAL

NOTES:

1. DEVICE SHALL BE FABCO, WATTS, OR APPROVED EQUAL, & APPROVED BY THE U.S.C. TESTING LABORATORY.
2. MANUFACTURING AND MODEL NUMBER OF BACKFLOW PREVENTION ASSEMBLY SHALL BE LEAD FREE AND APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
3. SPOOLS 4-INCH DIAMETER AND SMALLER BUT LARGER THAN 2-INCHES IN DIAMETER SHALL BE GALVANIZED STEEL. SPOOLS LARGER THAN 4-INCH DIAMETER SHALL BE DUCTILE IRON AND FLANGED BOLTED.
4. THE DEVICE SHALL BE TESTED BY A CERTIFIED TESTER APPROVED BY THE CITY AND TEST RESULTS SHALL BE SUBMITTED TO THE CITY. AFTER THE INSPECTION, TEST COCKS SHALL BE SECURED WITH BRASS TEST PLUGS OR CAPS.
5. GATE VALVES SHALL BE SECURED WITH 1/4" GRADE 30 GALVANIZED CHAIN. LOCK SUPPLIES BY THE CITY.
6. DEVICES 3" SHALL INCLUDE FREEZE PROTECTION (FABRICATED INSULATED COVER APPROVED BY THE CITY).
7. WHEN A TEMPER ALARM IS REQUIRED IT SHALL BE INSTALLED WITH A TOOGLE STPE SWITCH ON THE STEM OF EACH GATE VALVE.
8. VALVES SHALL BE OF RESILIENT WEDGE CONSTRUCTION.
9. PAINT ALL PIPING, FITTINGS, AND DEVICES WITH RUST RESISTANT GLOSS ENAMEL PAINT FOR SIZES 4" AND LARGER.
10. BACKFLOW PREVENTION ASSEMBLY SHOWN IS FOR NON-FIRE FLOW APPLICATION. BACKFLOW PREVENTION INSTALLATIONS FOR FIRE PREVENTION SHALL BE AS APPROVED BY THE FIRE CHIEF.
11. ALL BACKFLOW DEVICES WILL NEED TO BE SCREENED FROM PUBLIC VIEW BY UTILIZING A COMBINATION OF BLACKWALL, STEEL SCREEN, AND/OR LANDSCAPING ETC.
12. **A DOUBLE CHECK VALVE ASSEMBLY WILL ONLY BE PERMITTED FOR REPLACEMENT AND RETROFIT SERVICES AND MUST BE APPROVED BY THE CITY. DOUBLE CHECK VALVE CAN BE USED ON FIRE LINES WITH THE APPROVAL OF FIRE DEPARTMENT.**

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

3" OR LARGER DOUBLE CHECK BACKFLOW PREVENTION DEVICE

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. W - 7

NTS

Apr 28, 2021 - 10:44am
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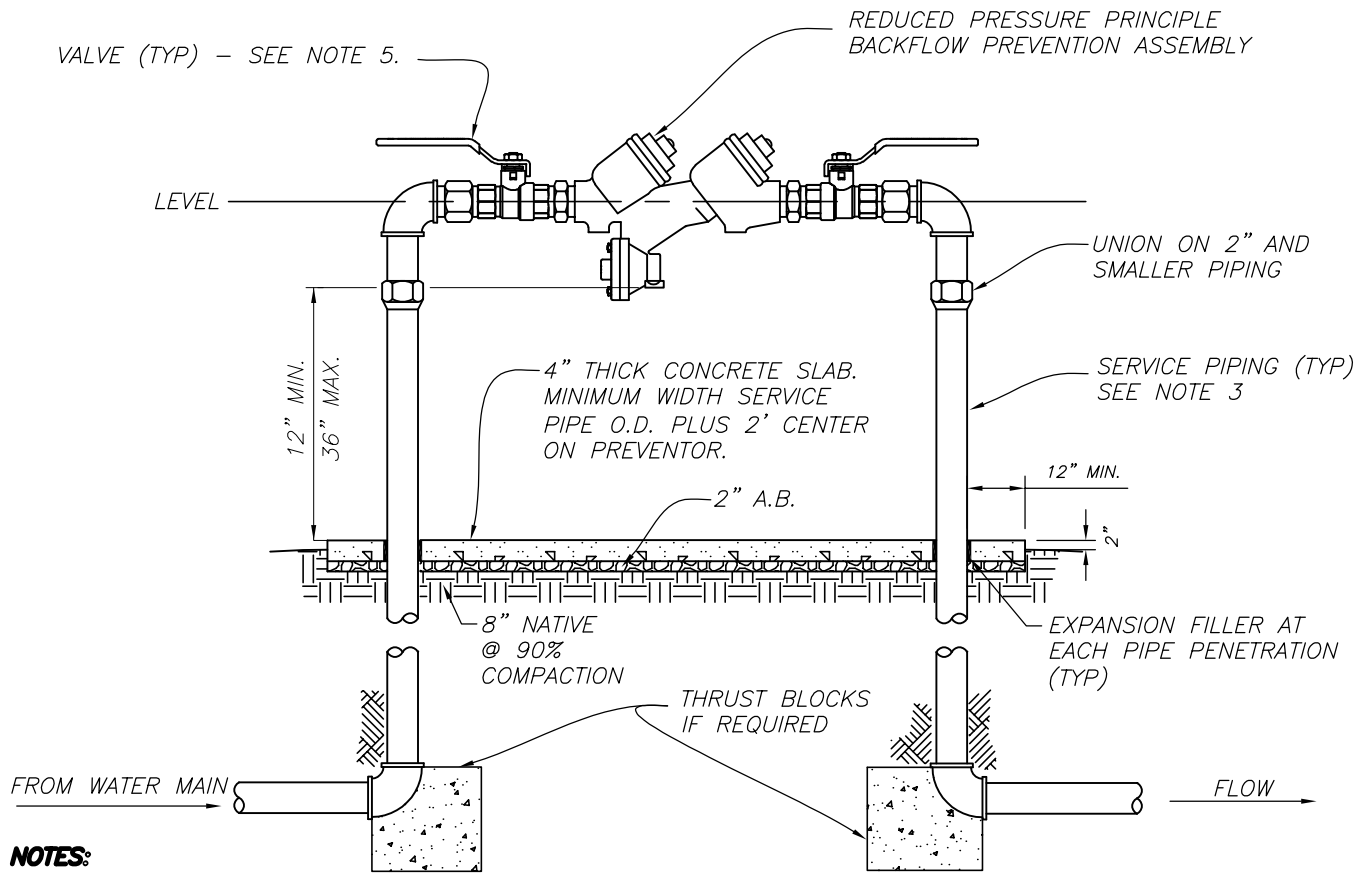

NOTES:

1. DEVICES SHALL BE FABCO, WATTS, OR APPROVED EQUAL & APPROVED BY THE U.S.C. TESTING LABORATORY.
2. MANUFACTURING AND MODEL NUMBER OF BACKFLOW PREVENTION ASSEMBLY SHALL BE LEAD FREE AND APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
3. ABOVE GROUND SERVICE PIPING FOR BACKFLOW PREVENTION DEVICES 2 INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER OR BRASS. SERVICE LINES 4–INCH DIAMETER AND SMALLER BUT LARGER THAN 2–INCHES IN DIAMETER SHALL BE GALVANIZED STEEL. WRAP ALL METALLIC PIPING BELOW GROUND AND WITHIN 6–INCHES OF GROUND SURFACE WITH 2 LAYERS OF 10–MIL CALPICO TAPE.
4. SUPPORTS WHERE PROVIDED SHALL NOT INTERFERE WITH TESTING AND MAINTENANCE.
5. BALL VALVES SHALL BE INSTALLED ON 2–INCH AND SMALLER BACKFLOW PREVENTION ASSEMBLIES. GATE VALVES SHALL BE UTILIZED ON BACKFLOW PREVENTION ASSEMBLIES LARGER THAN 2–INCH.
6. INSTALL AN LOCKABLE INSULATED COVER AS APPROVED BY PW DIRECTOR AROUND ASSEMBLY. CAGE PROTECTION IS REQUIRED WHEN INSTALLED IN PARKS OR AS REQUIRED BY THE CITY.
7. DEVICE SHALL BE LOCATED IMMEDIATELY BEHIND WATER METER.
8. DEVICE SHALL BE TESTED BY A CERTIFIED TESTER APPROVED BY THE CITY AND TEST RESULTS SHALL BE SUBMITTED TO THE CITY. AFTER THE INSPECTION TEST COCKS SHALL BE PLUGGED WITH BRASS TEST PLUGS.
9. BACKFLOW PREVENTION ASSEMBLY SHOWN IS FOR NON–FIRE FLOW APPLICATION. BACKFLOW PREVENTION INSTALLATIONS FOR FIRE PREVENTION SHALL BE AS APPROVED BY THE FIRE CHIEF.
10. ALL BACKFLOW DEVICES WILL NEED TO BE SCREENED FROM PUBLIC VIEW BY UTILIZING A COMBINATION OF BLACKWALL, STEEL SCREEN, AND/OR LANDSCAPING ETC.
11. **BACKFLOW PREVENTION ASSEMBLY MUST BE A REDUCED PRESSURE PRINCIPLE ASSEMBLY TYPE AND MUST BE APPROVED BY THE CITY.**

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

2" OR SMALLER REDUCED PRESSURE BACKFLOW PREVENTER

DRAWING NO. W - 8

NTS

Apr 28, 2021 – 10:47am
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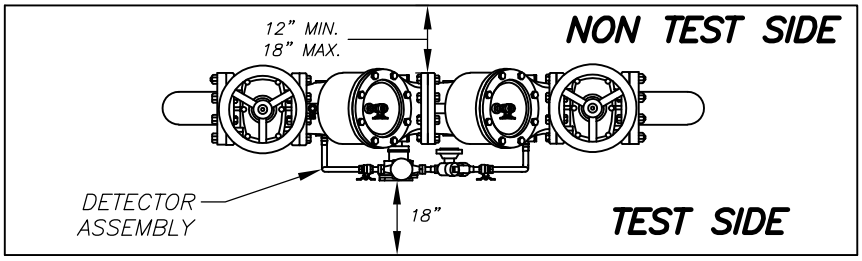
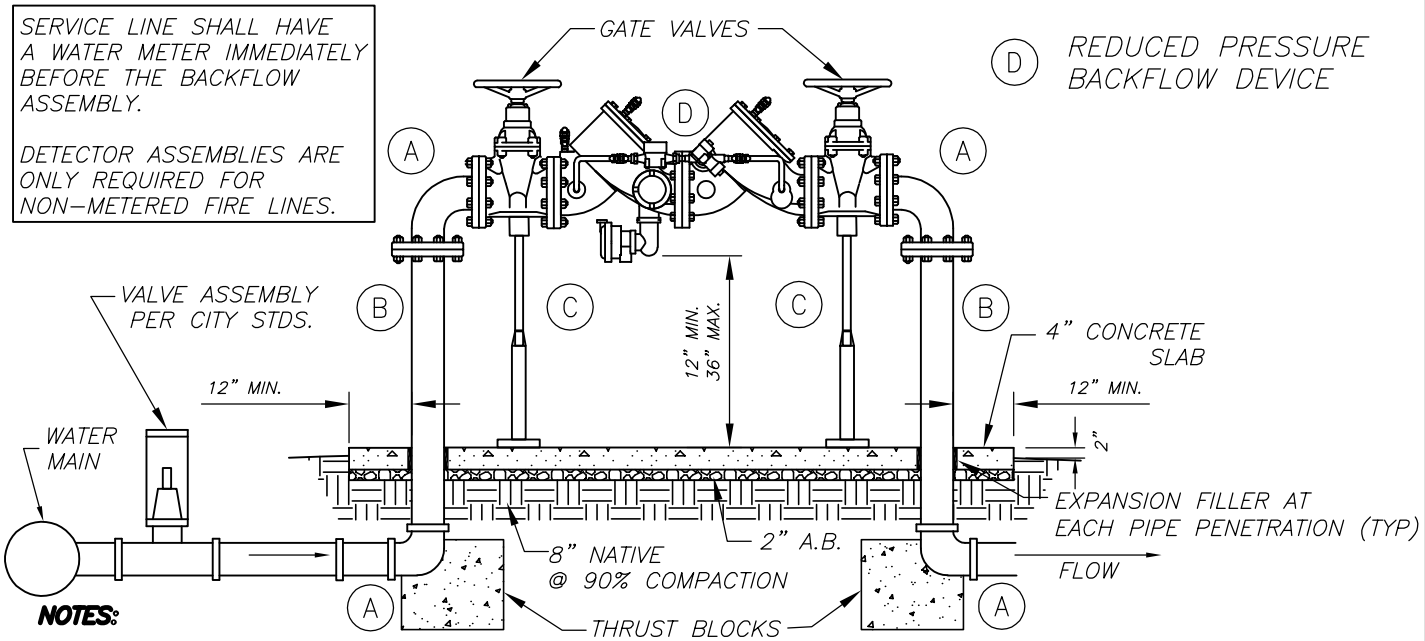


LEGEND:

- (A) 90° ELBOW
- (B) SPOOL
- (C) PIPE SUPPORT, ANVIL OR APPROVED EQUAL
- (D) REDUCED PRESSURE BACKFLOW DEVICE

SERVICE LINE SHALL HAVE A WATER METER IMMEDIATELY BEFORE THE BACKFLOW ASSEMBLY.

DETECTOR ASSEMBLIES ARE ONLY REQUIRED FOR NON-METERED FIRE LINES.



NOTES:

1. DEVICE SHALL BE FABCO, WATTS, OR APPROVED EQUAL, & APPROVED BY THE U.S.C. TESTING LABORATORY.
2. MANUFACTURING AND MODEL NUMBER OF BACKFLOW PREVENTION ASSEMBLY SHALL BE LEAD FREE AND APPROVED BY THE CITY ENGINEER PRIOR TO INSTALLATION.
3. SPOOLS 4-INCH DIAMETER AND SMALLER BUT LARGER THAN 2-INCHES IN DIAMETER SHALL BE GALVANIZED STEEL. SPOOLS LARGER THAN 4-INCH DIAMETER SHALL BE DUCTILE IRON AND FLANGED BOLTED.
4. THE DEVICE SHALL BE TESTED BY A CERTIFIED TESTER APPROVED BY THE CITY AND TEST RESULTS SHALL BE SUBMITTED TO THE CITY. AFTER THE INSPECTION, TEST COCKS SHALL BE SECURED WITH BRASS TEST PLUGS OR CAPS.
5. GATE VALVES SHALL BE SECURED WITH 1/4" GRADE 30 GALVANIZED CHAIN. LOCK SUPPLIES BY THE CITY.
6. DEVICES 3" SHALL INCLUDE FREEZE PROTECTION (FABRICATED INSULATED COVER APPROVED BY THE CITY).
7. WHEN A TEMPER ALARM IS REQUIRED IT SHALL BE INSTALLED WITH A TOOGLE STPE SWITCH ON THE STEM OF EACH GATE VALVE.
8. VALVES SHALL BE OF RESILIENT WEDGE CONSTRUCTION.
9. PAINT ALL PIPING, FITTINGS, AND DEVICES WITH RUST RESISTANT GLOSS ENAMEL PAINT FOR SIZES 4" AND LARGER.
10. BACKFLOW PREVENTION ASSEMBLY SHOWN IS FOR NON-FIRE FLOW APPLICATION. BACKFLOW PREVENTION INSTALLATIONS FOR FIRE PREVENTION SHALL BE AS APPROVED BY THE FIRE CHIEF.
11. ALL BACKFLOW DEVICES WILL NEED TO BE SCREENED FROM PUBLIC VIEW BY UTILIZING A COMBINATION OF BLACKWALL, STEEL SCREEN, AND/OR LANDSCAPING ETC.
12. **BACKFLOW PREVENTION ASSEMBLY MUST BE A REDUCED PRESSURE PRINCIPLE ASSEMBLY TYPE AND MUST BE APPROVED BY THE CITY.**

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

3" OR LARGER REDUCED PRESSURE BACKFLOW PREVENTION DEVICE

10/26/20 DATE

62736 R.C.E. NO.

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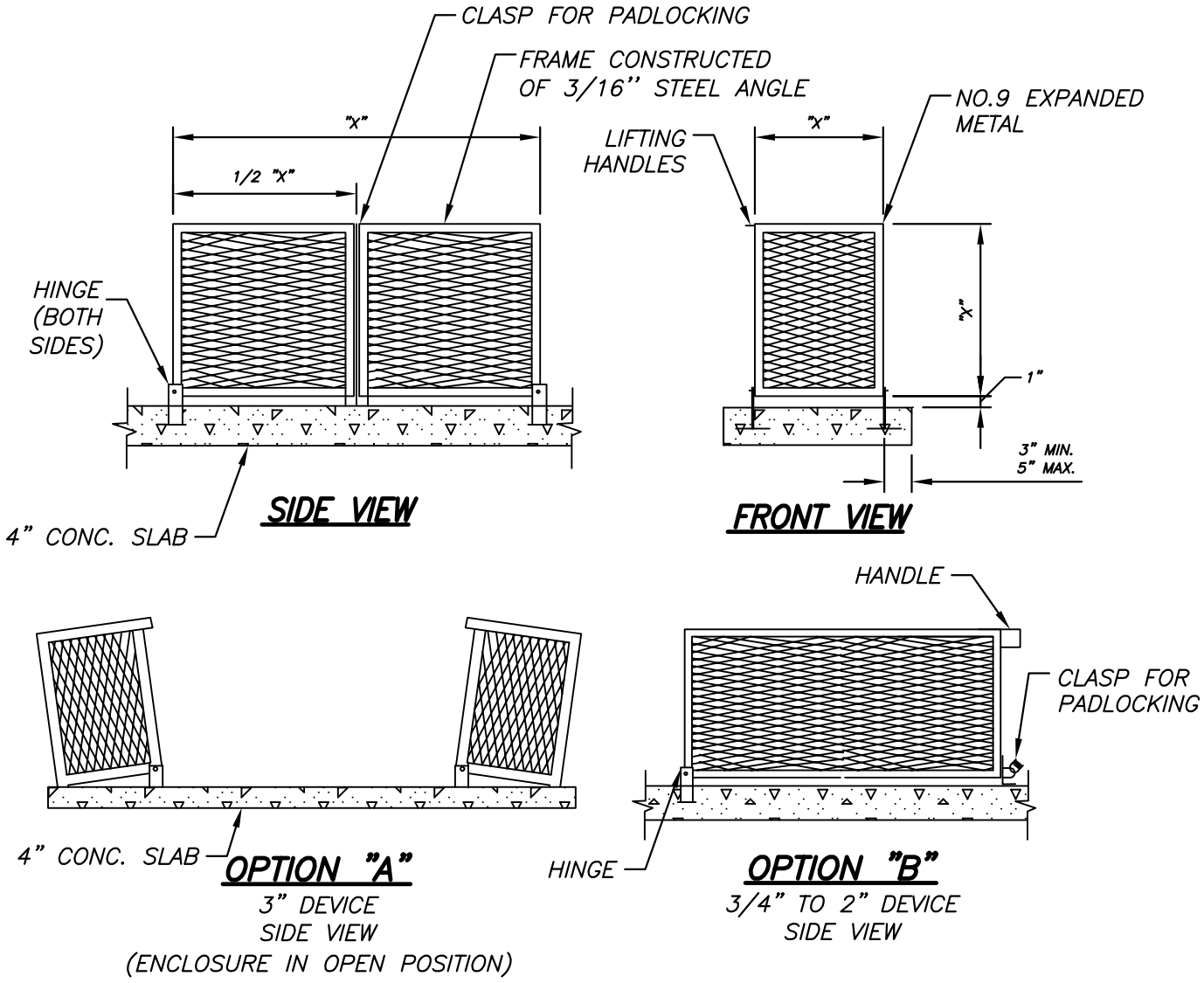

"X" = REFER TO DIMENSIONS ON CONSTRUCTION PLANS

NOTES:

1. REFER TO MANUFACTURER'S CATALOG FOR CORRECT DIMENSIONS TO FIT SIZE OF SPECIFIED BACKFLOW DEVICE.

2. CONCRETE FOUNDATION DIMENSIONS TO SUIT EACH INDIVIDUAL INSTALLATION, MINIMUM 4'' THICK, OR AS PER MANUFACTURER'S RECOMMENDATION.

3. OPTION SELECTION:

   OPTION "A": 3" DEVICE
   OPTION "B": 3/4" TO 2" DEVICES

4. PAINT ALL METAL SURFACES WITH RUST RESISTANT GLOSS ENAMEL PAINT (FOREST GREEN COLOR).

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

BACKFLOW ASSEMBLY CAGE

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

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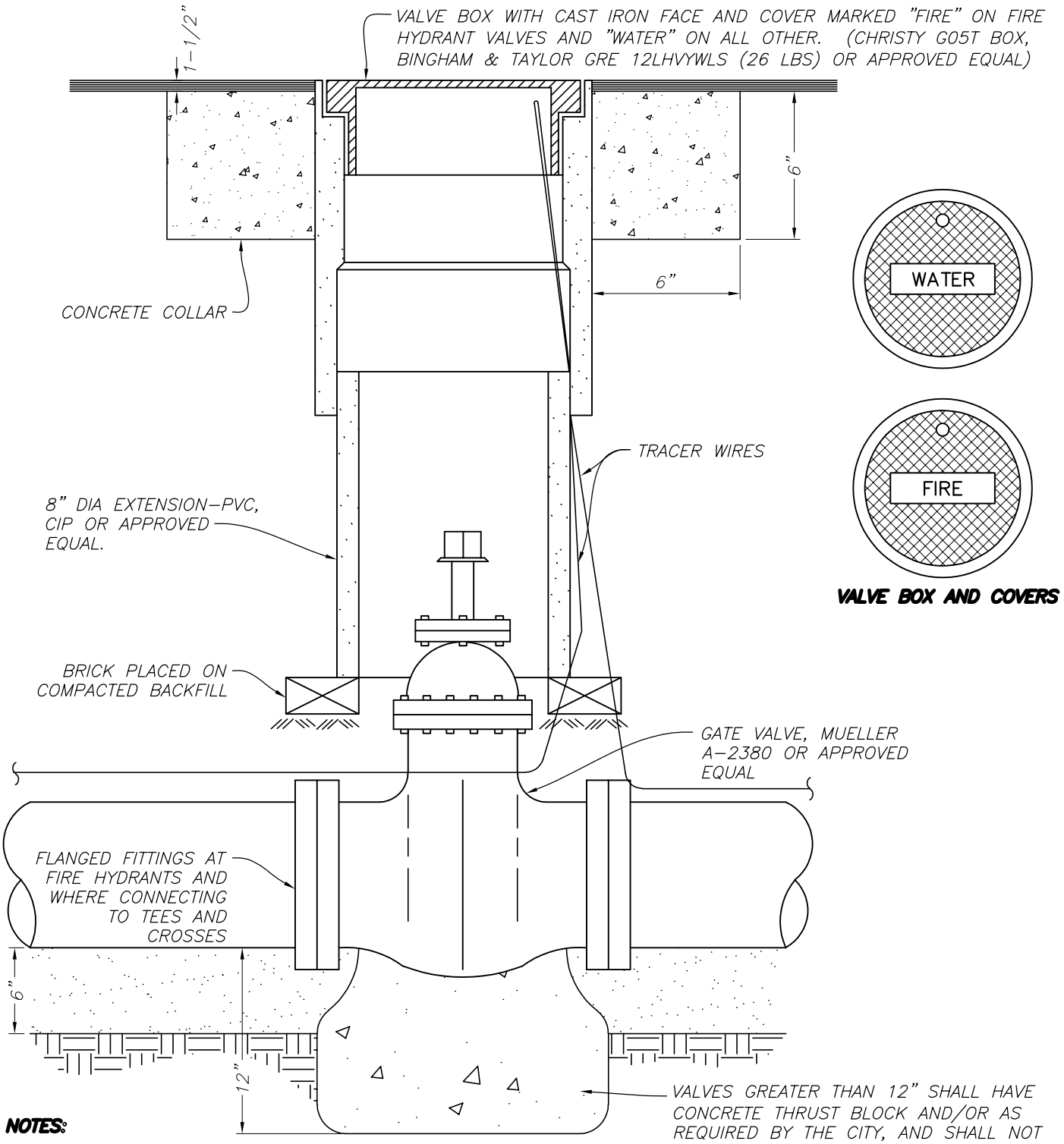

VALVE BOX AND COVERS

NOTES:

1. SAME INSTALLATION APPLIES TO BUTTERFLY VALVES.
2. IF DISTANCE FROM TOP OF OPERATING NUT TO VALVE BOX COVER EXCEEDS 3'–0", INSTALL OPERATING NUT EXTENSION TO WITHIN 2'–0" OF VALVE BOX COVER.
3. OPERATING NUT EXTENSION SHALL BE APPROVED BY THE CITY.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

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WATER LINE GATE VALVE ASSEMBLY

10/26/20
DATE

62736
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DRAWING NO. W - 11

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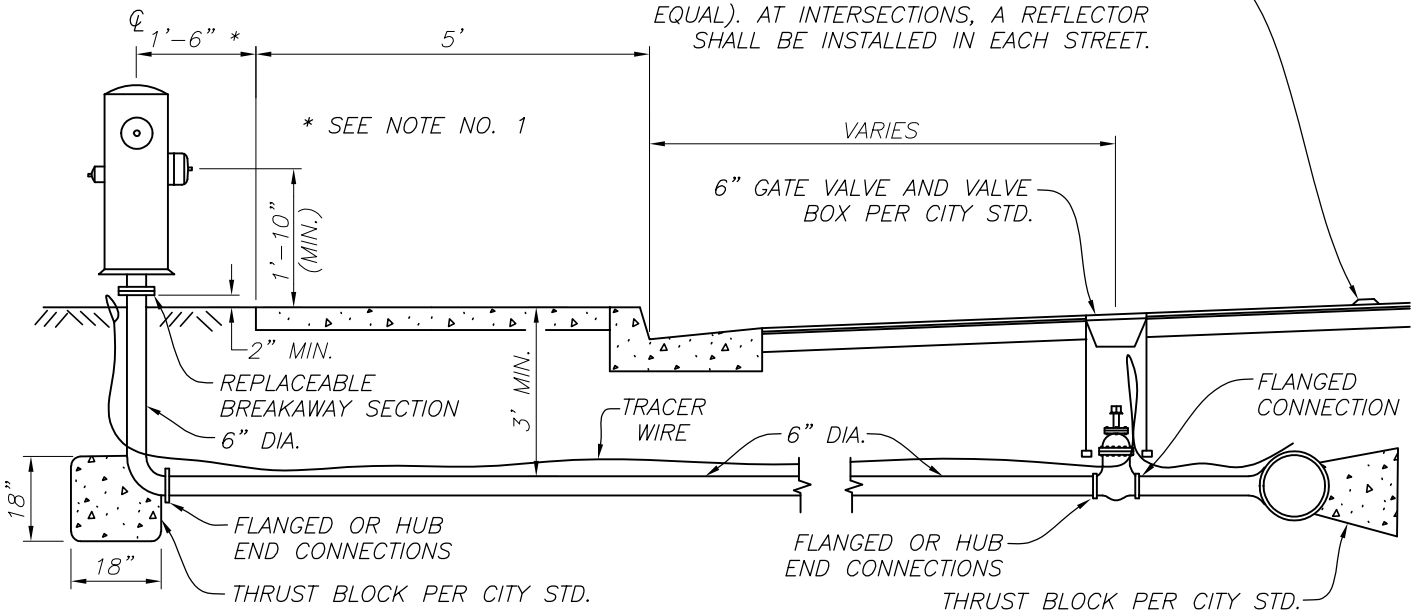
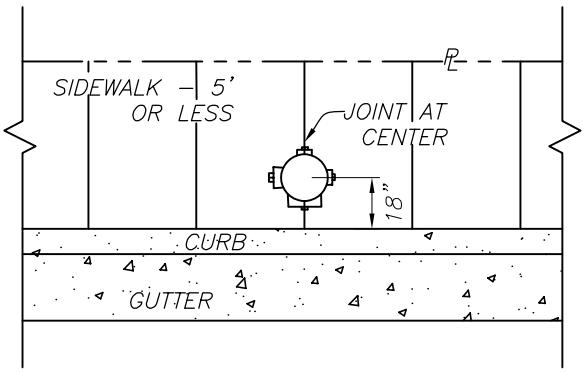
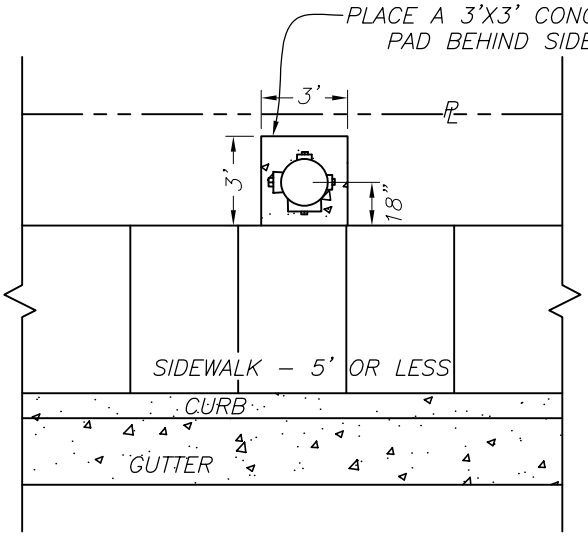
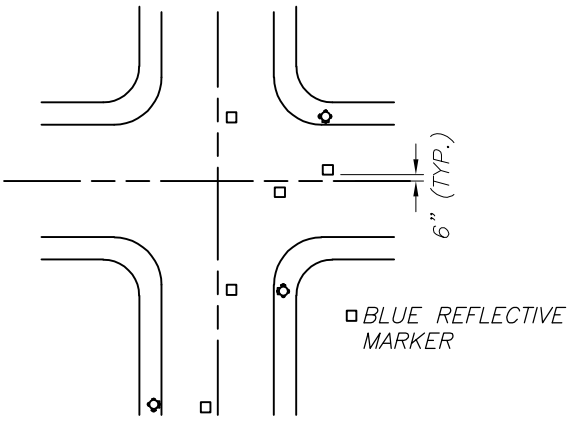
CLOW BREAK OFF CHECK VALVE OR APPROVED EQUAL SHALL BE INSTALLED, WHEN REQUIRED BY THE CITY ENGINEER

INSTALL A BLUE PAVEMENT REFLECTOR AT EACH FIRE HYDRANT, 6-INCHES FROM STREET CENTERLINE (RAY-O-LITE DOUBLE BLUE OR EQUAL). AT INTERSECTIONS, A REFLECTOR SHALL BE INSTALLED IN EACH STREET.









NOTES:

1. FIRE HYDRANT LOCATION SHOWN IS FOR 5-FOOT OR LESS ATTACHED AND SEPARATED CURB AND SIDEWALK. FOR ATTACHED CURB AND SIDEWALK 7-FOOT IN WIDTH OR WIDER AND FOR SEPARATED CURB AND SIDEWALK CENTER FIRE HYDRANT 2'-6" BEHIND FACE OF CURB.
2. FACE 4-½ INCH OUTLET PERPENDICULAR TO GUTTER LINE.
3. HYDRANTS SHALL BE CLOW MODEL 960 OR APPROVED EQUAL.
4. FOR BOLLARD INSTALLATION SEE DRAWING TC-12. FOUR (4) BOLLARDS SHALL BE INSTALLED ON THE CORNERS OF 48" SQUARE, FH BEING IN THE CENTER.
5. ALL HYDRANTS NOT IN SERVICE SHALL BE BAGGED OR IDENTIFIED BY AN APPROVED MEANS.
6. PRIVATE HYDRANTS SHALL BE FIRE ENGINE RED AND, IF SUPPORTED BY FIRE PUMP, HYDRANTS SHALL BE SPECIFIED AS "CONNECTED TO FIRE PUMP" WITH A SIGN OR APPROVED MEANS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

FIRE HYDRANT ASSEMBLY

10/26/20
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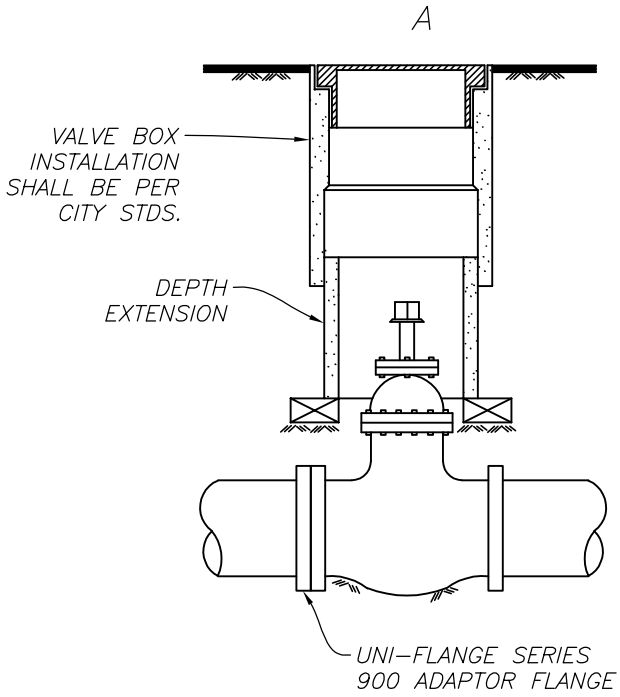


GATE VALVE

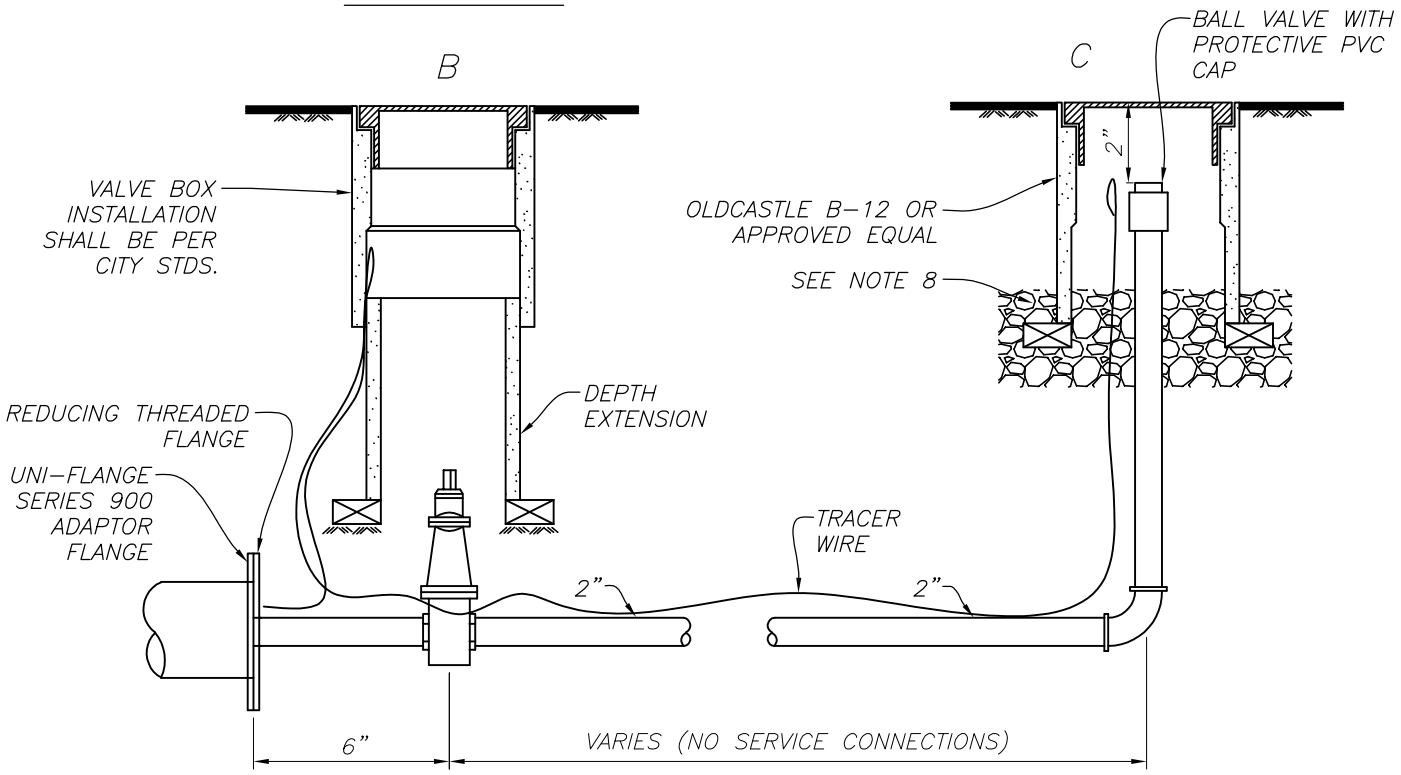
NOTES:

MATERIALS:

1. 2" GATE VALVE MUELLER A2380 WITH 2" HUB NUT
2. ALL FITTINGS SHALL BE BRASS
3. OLYMPIC 66 C.I. TAPPED PLUG 2"

INSTALLATION REQUIREMENTS:

4. CUL–DE–SAC INSTALL
   A. STANDARD BLOW–OFF ASSEMBLY (B & C).
   B. FIRE HYDRANT END OF LINE, NO BLOW–OFF REQUIRED.
5. END OF WATER MAINS
   A. TO BE EXTENDED LATER – INSTALL GATE VALVE AND BLOW–OFF RISER (A & C).
   B. NOT TO BE EXTENDED – INSTALL BLOW–OFF ASSEMBLY (B & C)
6. INSTALL SERIES 1350 JOINT RESTRAINTS AS RECOMMENDED BY UNI–FLANGE OR DESIGN ENGINEER.
7. WRAP ALL METALLIC PIPING BELOW GROUND WITH 2 LAYERS OF 10–MIL CALPICO TAPE.
8. 3/4" CRUSHED ROCK SHALL BE INSTALLED TO A DEPTH OF 4" BELOW THE BOX AND WITHIN THE BOX TO A DEPTH TO SUPPORT THE VALVE.



BLOW–OFF VALVE

BLOW–OFF RISER

BLOW OFF VALVE ASSEMBLY

CITY OF PATTERSON IMPROVEMENT STANDARDS

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WATER LINE BLOW-OFF ASSEMBLY

DRAWING NO. W - 13

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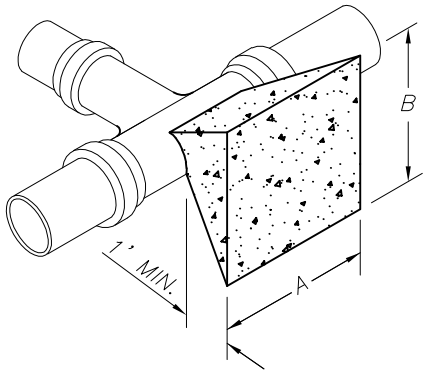
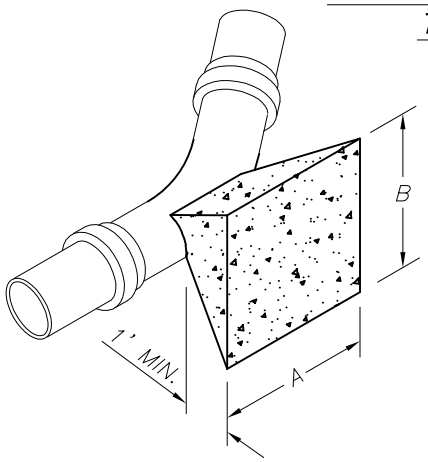
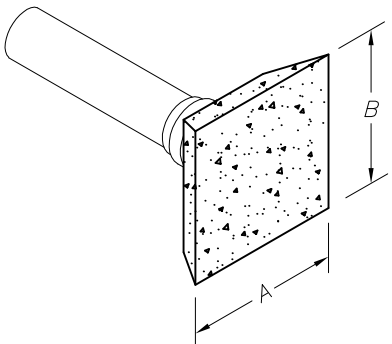


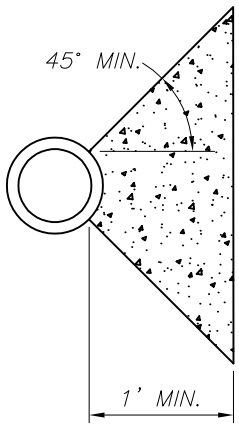
TYPICAL THRUST BLOCK
TEE OUTLET



TYPICAL THRUST BLOCK
CAST IRON BEND



TYPICAL THRUST BLOCK
DEAD END



TYPICAL SECTION THROUGH
THRUST BLOCK

THRUST BLOCK AREA REQUIRED		
FITTINGS	ALLOWABLE SOIL BEARING VALUE	
	1,500 LBS. PER SQ. FT.	
6" LINE	"A"	"B"
22-½°	1'-6"	1'-0"
45°	2'-0"	1'-3"
90°	3'-0"	1'-6"
TEE OUTLET	2'-0"	1'-6"
DEAD END	2'-0"	1'-6"
8" LINE	"A"	"B"
22-½°	1'-6"	1'-6"
45°	2'-6"	1'-6"
90°	4'-0"	2'-0"
TEE OUTLET	2'-9"	2'-0"
DEAD END	2'-9"	2'-0"
10" LINE	"A"	"B"
22-½°	2'-3"	1'-6"
45°	3'-0"	2'-0"
90°	5'-0"	2'-6"
TEE OUTLET	3'-3"	2'-6"
DEAD END	3'-3"	2'-6"
12" LINE	"A"	"B"
22-½°	2'-6"	2'-0"
45°	4'-0"	2'-6"
90°	6'-0"	3'-0"
TEE OUTLET	4'-0"	3'-0"
DEAD END	4'-0"	3'-0"

NOTE:

1. ALL VALUES SHOWN ARE MINIMUM FOR A HYDROSTATIC PRESSURE OF 150 P.S.I. AND A SOIL RESISTANCE OF 1,500 LBS./SQ. FT. WITH A MINIMUM PIPELINE COVER OF 2'-6".
2. REDUCTION OF THE THRUST BLOCK SURFACE AREA WILL BE CONSIDERED UPON SUBMITTAL OF APPROVED SOIL BEARING TEST RESULTS GREATER THAN 1,500 LBS./SQ. FT.
3. ALL THRUST BLOCKS SHALL BE POURED AGAINST UNDISTURBED SOIL.
4. THRUST BLOCKS SHOWN ARE FOR HORIZONTAL THRUST RESTRAINT. FOR VERTICAL THRUST RESTRAINT, DETAILS SHALL BE PROVIDED BY DESIGN ENGINEER.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
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THRUST BLOCK DETAILS

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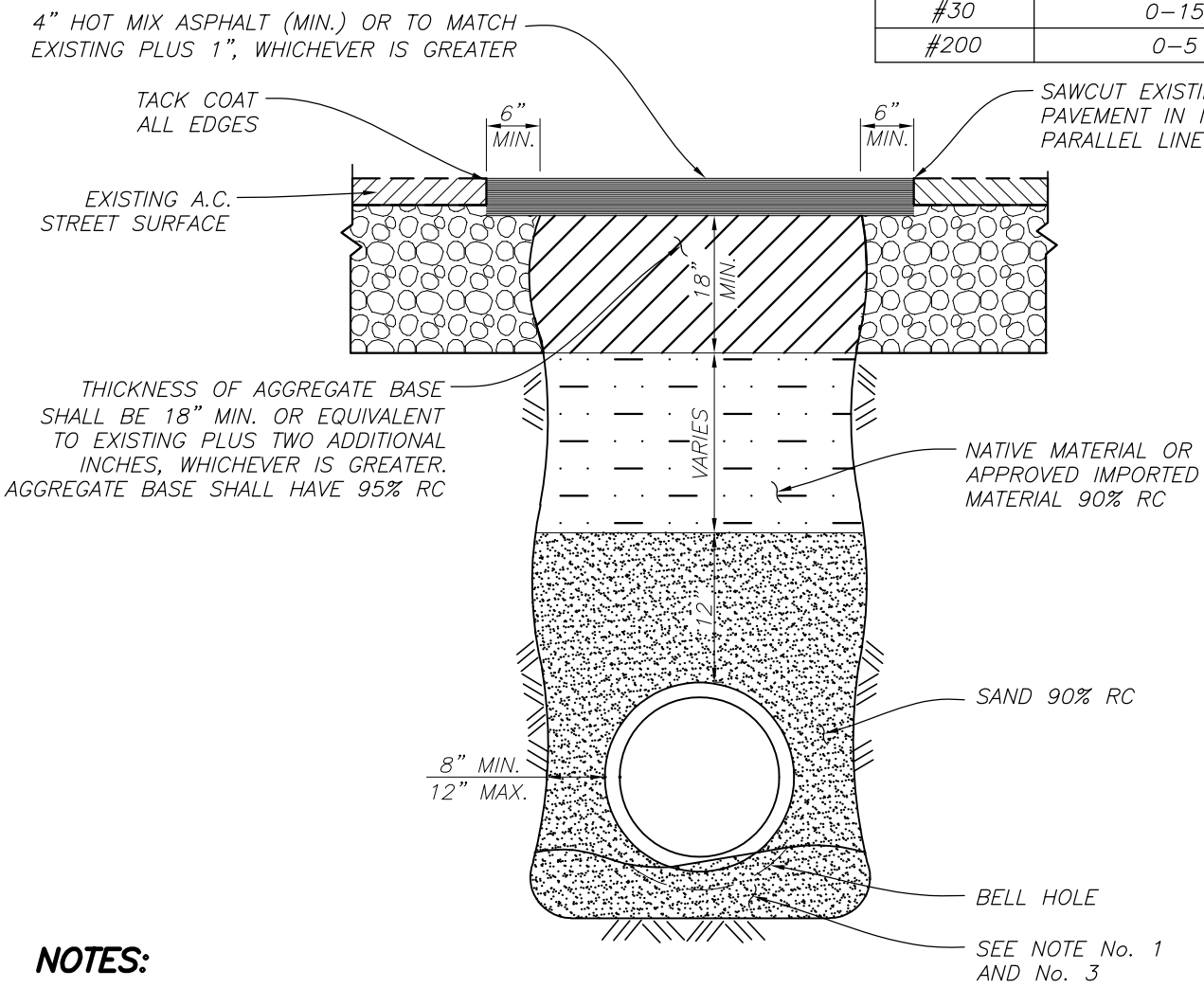
NOTE

TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.

SAND SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:	
SIEVE SIZE	PERCENTAGE PASSING
#4	100
#16	0–70
#30	0–15
#200	0–5



NOTES:

1. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTALLED.
2. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
3. FOR PVC PRESSURE PIPE PROVIDE 4 INCHES OF SAND BEDDING.
4. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
5. GEOTEXTILE FABRIC AND NON–WOVEN REINFORCEMENT FABRIC SHALL BE INSTALLED WHEN REQUIRED BY THE CITY ENGINEER.
6. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
7. ALL CUTS IN THE MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN NEW AND EXISTING PAVEMENT SHALL BE SEAMLESS BY USING A HEATER–REMIX PROCESS.
8. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12–INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

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APPROVED BY:

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TRENCH BACKFILL IN EXISTING PAVED AREAS

10/26/20 DATE

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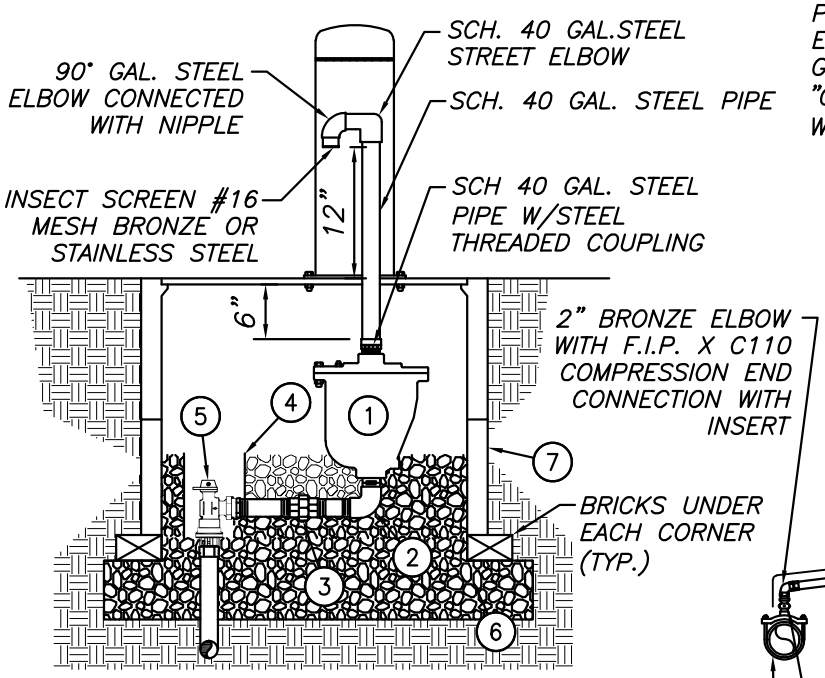
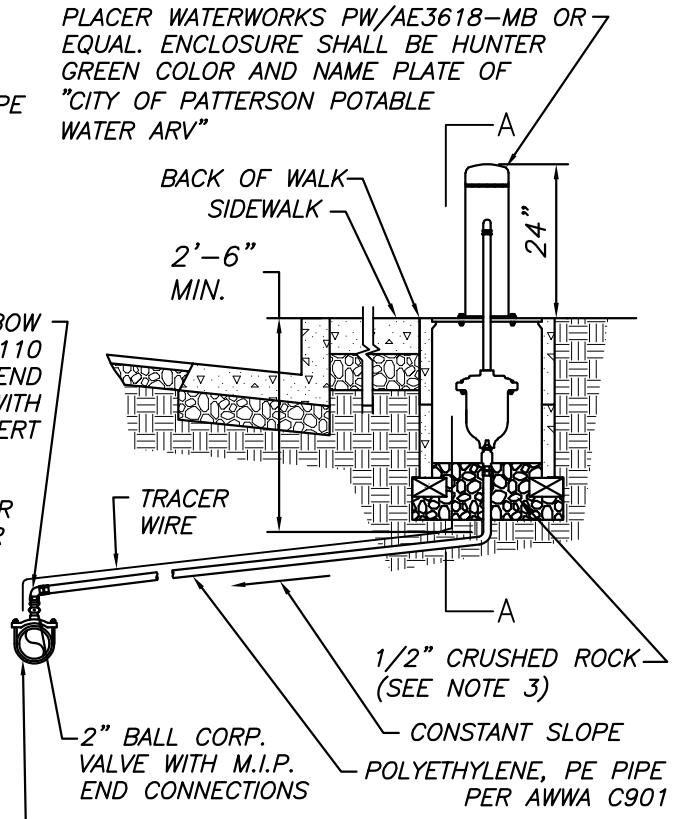


SECTION A–A



ELEVATION

LEGEND:

1. 1" OR 2" COMBINATION AIR VACUUM RELEASE VALVE, APCO, VALMATIC, OR APPROVED EQUAL
2. 2"–90° BRONZE FITTING AND NIPPLE
3. BRONZE THREADED UNION
4. 6" DIAMETER PVC SLEEVE
5. BRONZE ANGLED CURB STOP VALVE TYPE: FORD OR JONES, OR APPROVED EQUAL
6. 1/2" CRUSHED ROCK FOR DRAINAGE
7. CHRISTY B36 BOX OR APPROVED EQUAL WITH BOLT DOWN OPTIONS.

6" CONCRETE COLLAR SHALL BE INSTALLED AROUND THE BOX, IF INSTALLED IN THE DIRT AREA

NOTES:

1. ALL PIPING, VALVES, AND FITTINGS SHALL BE BRASS .
2. THE SERVICE LINE SHALL BE ENCASED IN SAND TO A DEPTH OF 3" BELOW AND 6" ABOVE THE PIPE. THE SAND SHALL HAVE A MINIMUM SAND EQUIVALENCY OF 30.
3. 1/2" CRUSHED ROCK SHALL BE INSTALLED TO A DEPTH OF 4" BELOW THE BOX AND WITHIN THE BOX TO SUPPORT THE BOX. THE LENGTH OF PE SERVICE PIPING WITHIN THE LIMITS OF THE CRUSHED ROCK SHALL BE WRAPPED WITH 10 MIL VINYL TAPE.
4. LOCK NUTS SHALL BE WELDED TO THE UNDERSIDE OF THE LID, AND LID SHALL BE MARKED "ARV".
5. COMPRESSION JOINTS ARE ACCEPTABLE.
6. THIS DETAIL IS NOT TO USE IN ROADWAYS. FOR ROADWAY LOCATIONS PROVIDE H–20 TRAFFIC RATED BOX AND LID.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

1" OR 2" AIR RELEASE VALVE

10/26/20
DATE

62736
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SECTION 7 – NON-POTABLE WATER

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NP - 2 NON-POTABLE WATER LINES CONSTRUCTION NOTES

SECTION 7

NON-POTABLE WATER

7.1 GENERAL

The City operates and maintains a non-potable distribution system for landscape irrigation of commercial, industrial, public grounds and parks. Developments within the City where it has been determined that non-potable water will be used or used in the future, will install non-potable facilities.

These Improvement Standards apply to all public water facilities designed for installation within public right-of-way (ROW) or public utility easements (PUE) in the City and are limited to mains and services 12 inches or less in diameter. Standards and requirements for larger sizes will be determined by the City Engineer.

Non-potable facilities shall be designed in accordance with acceptable engineering principles; California OSHA Standards, Department of Public Health Regulations (DPH), American Water Works Association (AWWA) Standards, California Plumbing Code, California Code of Regulations Title 22, Division 4; Department of Water Distribution and Transmission Health Guidance Manual for Cross Connection Control; California Code of Regulations Title 17, Division 1, Chapter 5 and these Improvement Standards.

7.2 DESIGN SUBMITTALS

Prior to submittal of Improvement Plans for the first phase of construction, a master water plan for the entire development shall be submitted to the City Engineer for review and approval. The plan shall include water flow and pressure calculations.

A Hardy-Cross network hydraulic analysis of any proposed distribution system shall be provided to the City Engineer upon request. All design submittals shall show all lines necessary for the development including pipe sizes, pipe materials, appurtenant materials, valves (isolation, air relief, blow-off etc.) and lateral locations. Submittals shall show size and locations of water meters, backflow devices and intended used of non-potable water.

7.3 DESIGN FLOWS

Non-potable water demands/flows shall be determined on a case by case basis by the City Engineer.

7.4 EASEMENTS

If non-potable water mains are to be located outside of the public street right of way, legal descriptions of the permanent easement shall be submitted with the plans for review by the City. Easements executed by the appropriate property owners shall be submitted to the City prior to the approval of the Project Plans.

The minimum easement width shall be 15 feet. The pipe shall be located in the center of the easement unless the easement will contain multiple utility lines. No permanent structures shall be constructed in such easements, except fences and utilities that are subject of any overlapping easement. Where easement are parallel to a property line, they shall be on one property and not split by the property line.

Non-potable water mains shall not be placed in easements across low density or medium density residential lots.

7.5 NON-POTABLE WATER MAIN SEPARATION REGULATIONS

A minimum of ten (10) feet horizontal separation must be maintained at all times between the constant pressure potable water, sewer and non-potable water lines. A minimum of one (1) foot vertical separation must be maintained at all the times between the potable and non-potable water lines with the non-potable waterline below the potable.

All crossings between potable and non-potable water lines shall be as near to perpendicular as possible and the non-potable water lines shall be sleeved a minimum of five (5) feet on both sides of the potable water lines.

Local conditions, such as available space, limited slope, existing structures, etc., may create situation where there is no alternative but to install non-potable water main or potable lines at a distance less than the required basic separation. In such cases, the Design Consultant must obtain approval from the California Department of Health (CDPH). Also, special pipe materials are required to construct potable and non-potable water lines. Special pipe materials permissible for the City of Patterson water system are:

a) Ductile Iron Pipe with hot dip bituminous coating
b) Polyvinyl Chloride Pipe, DR 14

The selection of pipe materials may be further restricted by the City of corrosive conditions are likely to exist. These conditions may be due to soil type and/or the nature of fluid conveyed in existing pipeline.

7.6 PIPE DESIGN

A. GENERAL

The minimum size pipe used shall be 6 inches. Industrial and commercial areas minimum size 8-inch diameter distribution mains. Larger water lines may be required based on service demand or planned extension of the City's distribution/transmission system. For detailed technical specifications refer to Section 6 of these Specifications.

The Hazen-Williams formula shall be used to calculate design flow, pressure loss, velocity and pipe diameter relationships. The coefficient of friction, "C", shall be 130.

Non-potable water mains normal operating pressures shall be in the target range of 55 to 65 pounds per square inch, and shall not be greater than 80 pounds per square inch.

Maximum velocities shall not exceed 10 ft/sec. in design.

B. ALIGNMENT

The minimum cover over mains shall be 5 feet 6 inches in both paved and unpaved areas. Where potable and non-potable water mains are installed in the same street or easement, the top of the non-potable main shall be at least 12 inches below the bottom of the potable water main. When crossing other laterals including non-potable laterals, the Engineer shall indicate on the plans the elevation of the top of the non-potable waterline and the elevation of the bottom of the utility line or vice versa.

Curved water mains are allowed; however, joint deflection or pipe curvature shall not exceed the pipe manufacturer's recommendations.

There are no slope requirements for water mains. However, inverts and pipe slopes shall be shown on the profile sheets of the Improvement Plans.

C. IDENTIFICATION

All new buried transmission/distribution piping in the non-potable water system, including service lines should be colored purple (Pantone 522C or equal) and integrally stamped/marked "**CAUTION: NON-POTABLE WATER – DO NOT DRINK"** on both sides and shall be buried the written part facing up.

Buried Ductile Iron Pipe and fittings shall be wrapped with a 8 mils thick purple colored polyethylene membrane conforming to ANSI A21.5 and installed in accordance with AWWA C105.

All above ground pipe and appurtenances shall be identified as Non-Potable facilities. Purple Warning Signs and Labels shall be mounted aluminum, or vinyl, self-adhesive with peel off paper backing, or tag type labels bearing the warning as "WARNING: NON-POTABLE WATER – DO NOT DRINK" and in Spanish as well. The sign shall also have international "DON NOT DRINK" symbol.

7.7 VALVES AND VALVE BOXES

A. DESIGN

Valves on mains shall be spaced and located in conformance with the following criteria:

1. Water mains shall be valved on each side of railroad, highway and canal right-of-way crossings. (These valves shall be located outside of the right-of-way being crossed unless otherwise approved by the City Engineer.)

2. At all branches or intersections of mainlines in each direction from such branches or intersections, unless otherwise approved by the City.

3. A minimum, every 2,500 feet of continuous mainline 12 inches in diameter or larger and every 1,000 feet of continuous mainline 10 inches in diameter or smaller.

4. A shutoff valve is required for fire hydrants, inline with the hydrant run and immediately adjacent to the hydrant tee at the water main.

5. A shutoff valve is required at the property line for each water service.

For detailed technical specifications refer to Section 6 of these Specifications. The valving requirements mentioned above are minimum. Additional valves may be required.

B. INSTALLATION

Valves and valve boxes shall be installed at the locations shown on the plans.

All valves shall be Dresser "450" or resilient seated gate valve or Mueller A-2380 gate valve, or approved equal, and shall be the rubber-seated, tight-closing type conforming to the current AWWA Standard C-509. Valves shall open left and be equipped with a 2-inch AWWA approved operating nut.

All valves, control valves, isolation valves, quick couplers, regulators, and appurtenances shall be tagged with purple weatherproof plastic tags 3-inches by 4-inches and imprinted with "WARNING: NON-POTABLE WATER – DO NOT DRINK" in English and Spanish.

Valves shall receive a band of purple colored tape applied circumferentially at the ends of the fittings adjacent to connections to the adjoining pipe sections and to the operator portions of the valves.

Valve boxes shall be Christy G4 with Christy Iron Triangular Covers or approved equal. Lids shall be embossed with the inscription "NON-POTABLE WATER". All lids shall be factory painted purple.

7.8 PIPE MATERIAL

The following standard pipe materials shall be used for non-potable water main construction and shall conform to the latest edition of appropriate American Water Works Association (AWWA) Standards:

Pipe Materials	Standard
Ductile Iron	AWWA C151

w/Cement Mortar Lining & Seal (std. thickness)	AWWA C104
Polyethylene Encasement	AWWA C105
PVC (iron pipe O.D.)	AWWA C900, DR 18 (Class 150) minimum

PVC waterlines shall be purple in color. All ductile iron pipe shall be polyethylene encased per AWWA C105. Encasement shall be purple in color.

For detailed technical specifications refer to Section 6 of these Specifications.

A minimum 3" wide continues purple warning tape shall be installed over the non-potable water mains. A purple tape, pantone 522C or equal with black or white lettering stating "CAUTION: NON-POTABLE WATER LINE BELOW – DO NOT DRINK" in English and Spanish and should be placed between the top of the bedding zone and bottom of the backfill zone.

7.9 FITTINGS

Bends, tees and other fittings shall be ductile iron conforming to AWWA C153.

Fittings shall be furnished with a joint type suitable for attaching to valves or other pressure pipe. Adaptor gaskets are not acceptable. Thrust blocking shall be constructed at bends, tees, dead-ends and where changes in pipe diameter occur. Blocking shall be made of Class 3 concrete, and shall be placed between undisturbed ground and the fitting to be anchored. The area of bearing on the pipe and on the ground shall be that required by Section 6 Standard Drawings. The blocking shall be placed so that the joints of the pipe and fittings will be accessible for repair.

Fittings shall receive a band of purple colored tape applied circumferentially at the ends of the fittings adjacent to connections to the adjoining pipe sections. The identification tape shall also be used to secure the polyethylene wrap.

7.10 SERVICE LINES

All non-potable water services shall be metered.

Size of service is to be determined by the Design Engineer for the parcel being served. (Minimum size is 1-inch.) For City maintained landscape areas, parks and detention basins, minimum non-potable water service sizes are as follows:

Parcel Size	Non-Potable Water service
Parcels less than 1.5 acres	2-inch
1.5 acres - 4.5 acres	3-inch
4.5 acres - 9.5 acres	4-inch
Parcel greater than 9.5 acres	To be determined

For detailed technical specifications refer to Section 6 of these Specifications.

All service laterals and pipe going on-site shall be identified as non-potable water pipes and shall be purple color as manufactured. Service laterals that are not available in the color purple shall be identified in the field as non-potable water by means of utility identification tape applied to the tubing or lateral. Services larger than 2 inches in diameter shall be polyethylene encased. (Encasement color shall be purple.) Valves, fittings, and similar items shall have a purple band of the tape applied circumferentially at the ends of the fittings.

The services shall be installed per Drawings in Section 6 of these Specifications.

7.11 NON-POTABLE WATER METER AND METER BOX

Non-potable water meters shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

Non-potable water meter's AMR resistor shall be colored purple as manufactured. In addition, meters or meter valves shall be identified as non-potable by T. Christy's tag ID.MAX.P2.NP006 or approved equal.

Non-potable water meter boxes and covers shall be colored purple as manufactured. At minimum, all the covers shall be purple and shall be imprinted "NON-POTABLE" thereon. Existing boxes can be retrofitted by means of Christy's Model No. 3800 Recycled/Reclaimed Water Nameplates.

7.12 TEMPORARY AND PERMANENT BLOW-OFFS

Temporary and permanent blow-offs shall be installed at the locations shown on the plans in conformance with the Section 6 of these Specifications, unless otherwise required by the City Engineer. The final length of pipe, prior to the blow-off, shall be 18 to 39 inches.

Permanent blow-off assemblies shall be purple as manufactured or painted after. In addition, blow-off assemblies shall be identified as non-potable by T. Christy's tag ID.MAX.P2.NP006 or approved equal.

Blow-off assembly boxes and covers shall be colored purple as manufactured. At minimum, all the covers shall be purple and shall be imprinted "NON-POTABLE" thereon. Existing boxes can be retrofitted by means of Christy's Model No. 3800 Recycled/Reclaimed Water Nameplates.

All salvaged temporary blow-offs shall become the property of the Developer or Contractor and shall be removed from the job site before completion.

7.13 AIR RELEASE VALVES

Air release valves, vacuum release valves, or other suitable means of air controls shall be installed at high points in a line or where extensive changes in line slope are present.

Air release valves shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

Air relief assemblies shall be purple as manufactured or painted after. In addition, air relief assemblies shall be identified as non-potable by T. Christy's tag ID.MAX.P2.NP006 or approved equal.

City Engineer may require the box cover and vent unit to be painted purple, depends on the location of the box.

7.14 BACKFLOW ASSEMBLIES

Normally backflow assemblies are not required on non-potable water system but City may require them to be installed on case to case basis. Backflow assemblies are required for booster pump sites.

Additionally, at premises where both non-potable and potable water lines are present a backflow prevention is required on potable water lines.

Backflow assemblies shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

Backflow assemblies shall be purple as manufactured or painted after. In addition, backflow assemblies shall be identified as non-potable by T. Christy's tag ID.MAX.P2.NP006 or approved equal.

7.15 FIRE HYDRANTS

Fire Hydrants shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

Fire hydrant assemblies shall be purple as manufactured or painted after. In addition, fire hydrant assemblies shall be identified as non-potable by T. Christy's tag ID.MAX.P2.NP006 or approved equal.

7.16 TRACER WIRE

Tracer wire shall be installed over all water mains (all material type), service lines, fire hydrant runs, air reliefs, and blow-offs etc.

Tracer wire shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

7.17 CORROSION PROTECTION

In general, all new piping shall be PVC; however, for all steel, cast iron, or ductile iron replacements or new installations approved by the City, the applicant shall provide the City Engineer with a soil corrosion report of the work area conducted by a Corrosion Specialist certified by the National Association of Corrosion Engineers or a Corrosion Engineer registered by the State of California.

The soil corrosion report shall form the basis for proposed mitigation measures to be submitted with the plans and specifications for City review.

7.18 THRUST BLOCKING

Thrust blocking must be provided at all vertical alignment changes, horizontal alignment changes, bends, tee or tapping sleeve fittings, dead ends, at the back of fire hydrants buries and where changes in pipe diameter occurs.

Restrained joints may be used in areas requiring the use of fittings for vertical alignment changes or horizontal alignment changes with prior approval of City Engineer and Public Works Director.

Thrust Blocking shall be installed as per Section 6 of these Specifications. For detailed technical specifications refer to Section 6 of these Specifications.

7.19 QUICK COUPLING VALVES

Hose bibs are NOT allowed to be installed on non-potable water system. Instead, quick coupling valves shall be installed if necessary.

New quick coupling valves must be 3/4-inch or one-inch nominal size and of brass construction with a maximum working pressure of 150 psi. The covers on all new quick coupling valves must be permanently attached and made of purple rubber with words "RECYCLED WATER" or "NON-POTABLE WATER" imprinted on the locking cover. To prevent unauthorized use, the valve must only be operated by a special coupler key for opening and closing the valve. Quick coupling valves for non-potable water system must be installed in a valve box, when applicable, and a non-potable water identification tags must be permanently attached to it.

7.20 SIGNAGE AND PUBLIC NOTIFICATION

Adequate means of notification must be provided to inform the public, employees and others that non-potable water is being used.

Advisory signs must be placed where they can be easily seen. To the extent necessary to advise passerby, signs must be posted at the property line near crosswalks, at driveway entrances, at outdoor eating areas, or as otherwise determined by the City. For streetscapes (parkways, frontage or backup

landscaping), place signs at street corners as appropriate to notify passerby. Signs must be placed no further than 1,000 feet apart. For medians, a sign is usually placed at the beginning and end of every median, and another approximately equidistant from the ends of the median for longer median areas.

All above ground pipe and appurtenances (pumps, valves, risers etc.) shall be identified as "Non-potable" facilities and shall have warning signs be post mount aluminum, or vinyl self-adhesive with peel off paper backing. Warning signs shall be purple in color and have a language as "WARNING: NON-POTABLE WATER – DO NOT DRINK" in English and Spanish along with international "DO NOT DRINK" symbol.

All parks, landscapes, medians, park strips and other facilities irrigated by non-potable water shall have warning signs at each entrance. City may require additional signage as necessary. Signs shall be a minimum of 9" x 12" with 1" lettering. Warning sign decals shall be UV fade resistant, purple in color with white text. Warning Sign shall state "IRRIGATED WITH NON-POTABLE WATER" and "NON-POTABLE WATER – DO NOT DRINK" in English and Spanish along with international "DO NOT DRINK" symbol.

For the sites where both non-potable and potable water lines are installed, all potable water meters and above ground water pipes/devices (backflow preventers, hose bibs etc.) shall be labeled with tags, labels, or tape reading: "POTABLE WATER" in black letters on blue background.

7.21 NON-POTABLE WATER FOR CONSTRUCTION USE

A. **Permits**: Whenever available, non-potable water shall be used for construction purposes. To use of non-potable water for construction purposes requires approval of the City. The permit shall be obtained prior to beginning of construction.

B. **Uses:** Non-potable water used for construction purposes may only be used for soil compaction during grading operations, dust control and consolidation and compaction of backfill in non-potable water, sanitary sewer, storm drain, gas and electric pipeline trenches. Non-potable water may not be used for water jetting and consolidation or compaction of backfill in potable water pipeline trenches.

C. **Equipment:** Equipment operators shall be instructed about the requirements contained herein and the potential health hazards involved with the use of non-potable water. Water trucks, hoses, drop

tanks, etc. shall be identified as containing non-potable water, and not suitable for drinking.

Non-potable water shall not be introduced into any domestic water piping system. No unprotected connection shall be made between equipment containing non-potable water and any part of a domestic water system as per Title 17 Division 1, Chapter 5, Group 4, Articles 1 and 2.

Ponds used for storage of construction non-potable water shall be posted to limit public access.

D. **Equipment and Facilities Cleaning:** Any equipment or facilities such as tanks, temporary piping or valves, and portable pumps which have been used with non-potable water shall be cleaned and disinfected before removal from the approved use area for use at another job site. This disinfection and cleaning shall ensure the protection of public health in the event of any subsequent use.

Disinfection of storage tanks shall be performed per AWWA C52 Standards.

7.22 NON-POTABLE WATER FOR IRRIGATION

Whenever non-potable water is used for irrigation purposes, followings standards should apply:

1) Irrigate in a manner that will minimize run-off, pooling and ponding. The application rate shall not exceed the infiltration rate of the soil. Timers must be adjusted so as to be compatible with the lowest soil infiltration rate present. This procedure may be facilitated by the efficient scheduling of the automatic control clocks, (i.e. employing the repeat function to break up the total irrigation time into cycles that will promote maximum soil absorption).

2) Irrigation system shall be designed to meet with the peak moisture demand of all plant materials used within the design area. Moisture sensors shall be installed.

3) All non-potable water piping shall be purple in color and shall have marking as "WARNING: NON-POTABLE WATER – DO NOT DRINK" in English and Spanish along with nominal pipe size, pressure rating

and ASTM designation. Printing shall be placed continuously on both sides of the pipe.

4) Warning tapes and tracer wire shall be used on all constant pressure main line piping carrying non-potable water and potable water.

5) Horizontal and vertical clearances between the pipes shall be as stated above in this section.

6) All boxes and covers shall be purple in color as manufactured. The cover shall imprinted "NON-POTABLE WATER – DO NOT DRINK" in English and Spanish.

7) All valves, control valves, isolation valves, quick couplers, regulators, and appurtenances shall be tagged with purple weatherproof plastic tags 3-inches by 4-inches and imprinted with "WARNING: NON-POTABLE WATER – DO NOT DRINK" in English and Spanish.

8) Irrigation Valves shall have purple flow control handle.

9) All spray heads and rotors shall have purple body cover.

10) Drip System diffuser cap and dripline pipe shall be purple in color.

11) Root watering system shall have purple locking grate and cover.

7.23 RECORD (AS-BUILT) DRAWINGS

The applicant, customer, or owner shall submit as-built record drawings to the City before a request for service start-up is made. The record drawings must be a hard copy and as well as PDF & AutoCAD copy on CD.

All changes in the work constituting departures from the original drawings shall be accurately recorded on one set of drawings and submitted to the City for agreement and approval prior to construction. Such changes shall be approved by the City before any changes, modifications, or additions are made.

7.24 TRENCH EXCAVATION

The Contractor shall, prior to beginning construction, obtain from the Division of Industrial Safety the permit required by California Labor Code,

Section 6500, and pay any fee charged for such permit. In addition thereto, whenever the work under the Contract involves trench excavation 5 feet or more in depth, the Contractor shall submit for approval to a registered civil or structural engineer representing the City, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer. Nothing in this section shall be deemed to allow the use of shoring, sloping or other protective system less effective than that required by the Construction Safety Orders. Nothing in this section shall be construed to impose tort liability on the City, City Engineer, or any of their officers, agents or employees.

The pipe trench shall be dug with side walls sloped or otherwise supported in a safe manner in accordance with the Department of Industrial Relations, Division of Occupational Safety and Health Administration regulations pertaining to trenching.

Excavated material shall be placed on only one side of the trench unless otherwise directed. Separation distance between piles of excavated material and trench shall be consistent with the Construction Safety Orders.

The alignment and grade for the bottom of the trench shall be properly established before the trench is excavated and shall be approved by the City before the pipe is laid. Trenches shall be true to line and grade, and the bottom shall be even and free from all objectionable material.

7.25 WATER IN TRENCH

When water is encountered in the trench, it shall be removed by draining or by pumping. Should water get into the trench before the pipe is laid, the laying of pipe shall be postponed until the trench has dried sufficiently to provide a firm foundation for the pipe or else, the mud or softer material shall be removed and grade re-established by backfilling and compacting with suitable material as determined by the City.

7.26 LAYING AND JOINTING OF PIPE

The Contractor shall field verify by potholing, the size, depth and alignment of all existing water mains and services shown on the Improvement Plans or marked in the field by the Underground Service

Alert (USA) markings prior to construction. If any existing utility is not exactly as shown on the Improvement Plans or otherwise omitted, the Contractor shall notify the City Engineer before proceeding with the installation of any new work until instructions for how to proceed are issued by the City Engineer.

Laying and jointing of pipe shall be in accordance with the manufacturer's recommendations and as approved by the City. Joint deflections shall not exceed 80% of the maximum recommendations of the manufacturer.

Where rubber gaskets are used for jointing pipe, a feeler gauge shall be used to check the position of the rubber gasket upon each closure. The interior of the pipe shall be cleared of all debris, and exposed pipe ends shall be closed by a suitable pipe plug when pipe laying is not in progress.

The pipe shall be laid on a trench bottom shaped to provide adequate and uniform support of the pipe except at coupling or bell holes. The use of prepared mounds to facilitate laying of the pipe is not approved.

Where pipe is to be encased or have concrete bedding, suitable concrete blocks shall be used to support the pipe in the proper location while placing concrete.

7.27 HANDLING OF PIPE ACCESSORIES

Proper implements, tools, and facilities satisfactory to the City shall be provided and used by the Developer or Contractor for the safe and efficient execution of the work. All pipe, fittings, valves, hydrants and accessories shall be lowered into the trench in such a manner as to prevent damage to pipe fittings. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. All foreign matter or dirt shall be removed from the interior of pipe before lowering into position in the trench. Pipe shall be kept clean by means approved by the City Engineer during and after laying. All pipe and accessories shall be inspected for defects prior to lowering into trench. Any defective, damaged or unsound pipe or accessory shall be repaired or replaced at the Developer's or Contractor's expense.

7.28 CONNECTION WITH EXISTING NON-POTABLE WATERLINES

The Contractor shall make all connections to existing non-potable water lines in the presence of the City. City personnel shall be the only ones to open or close existing water valves.

Hot tap branch size shall be at least one size smaller than the main, and all materials of stainless steel. All new connections shall have shut off valves on the branch, and may require an additional valves on the main, as determined by the City. All connections to non-potable water mains shall be properly supported to eliminate stress on existing pipe. No taps or connections shall be within 6 feet of a pipe joint, unless approved by the City. All materials shall be clean of dirt and debris.

Connections shall be made at such times as designated by the City and in such a manner as to insure the least inconvenience to water users. No connection shall be made until the new work has been tested and disinfected, if required, as specified hereinafter. The Contractor shall be responsible for safeguarding the existing system from all damage and possible contamination in the performance of his work.

If connecting to an existing line carrying potable water, the Contractor shall use an approved double check backflow preventor between the existing main and the new line for testing and disinfection purposes.

7.29 INSPECTION

1. All water lines shall be inspected for proper installation by the City Engineer, prior to backfilling of trenches.

2. HYDROSTATIC TEST

   After installing pipe and prior to complete backfilling of trenches, the entire length of each line shall be subjected to a hydrostatic pressure of not less than 150 psi for a period of not less than 2 hours. Curb stops, idler fittings and fire hydrant units shall also be included in the hydrostatic test. No pipe installation will be accepted if leakage for the section is greater than the allowable leakage determined by using one of the following formulas, as applicable:

$$\text{For Polyvinyl Chloride Pipe - } L = \frac{ND\sqrt{P}}{7400}$$

   (L = Allowable leakage in gallons per hour. N = Number of joints in length of pipeline. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.), or

For Ductile Iron Pipe - $L = \frac{SD\sqrt{P}}{148{,}000}$

(L = Allowable leakage in gallons per hour. S = Length of pipe tested in feet. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.)

Water for testing may be taken from the nearest blow-off, fire hydrant or other approved source. All pipe, fittings, valves, couplings, and other materials needed to fill the test lines with water shall be supplied and installed by the Developer or Contractor. Care shall be taken not to contaminate the existing system.

The pump, gauge, pipe connection, and all necessary apparatus and equipment needed for the test shall be supplied by the Developer or Contractor.

The Developer or Contractor shall permanently stop all leaks. After repairing all defective items, the line shall be tested again to determine final acceptability of the installation.

3. CROSS CONNECTION TESTTING

Pressure testing must be successfully completed prior to cross connection testing. The non-potable water system shall be tested for cross-connection in accordance with Uniform Plumbing Code prior to use.

Tests shall be performed by AWWA-certified Cross-Connection Control Specialist.

7.30 BEDDING AND BACKFILL OF TRENCHES

Bedding and backfill shall be as shown on Drawing No. W-15.

7.31 RESTORING SURFACE

The surface of all trenches shall be filled and compacted so that the surface will conform to the condition of the surrounding ground. The repaving requirements of the plans shall be met regardless of type of existing surfacing.

Existing pavement shall be cut in neat parallel lines as shown on Drawing No. W-15.

Aggregate base shall be Class II compacted to 95% relative compaction. Aggregate base shall have 3/4-inch maximum combined grading.

Asphalt concrete shall be Type B, AR 8000 with 1/2-inch maximum aggregate, medium grading.

A paint binder of asphaltic emulsion shall be applied to all surfaces in conformance with Section 39-4.02 of the State Standards.

NON-POTABLE WATER SYSTEM GENERAL NOTES:

1. CONTRACTOR SHALL SECURE AN ENCROACHMENT PERMIT FROM THE CITY AND CALL UNDERGROUND SERVICE ALERT.
2. THE INSTALLATION OF THE NON-POTABLE WATER SYSTEM SHALL BE ACCOMPLISHED UNDER APPROVAL, INSPECTION, AND TO THE SATISFACTION OF THE CITY OF PATTERSON.
3. CONTRACTOR SHALL SCHEDULE A PRE-CONSTRUCTION MEETING WITH THE CITY TWO (2) WORKING DAYS PRIOR TO STARTING WORK.
4. CONNECTIONS TO THE EXISTING NON-POTABLE WATER SYSTEM SHALL BE DONE BY A LICENSED CONTRACTOR AND IN THE PRESENCE OF PUBLIC WORKS INSPECTOR.
5. THERE SHALL NEVER BE DIRECT CONNECTION BETWEEN THE POTABLE AND NON-POTABLE WATER SYSTEMS.
6. HOSE BIBS ARE PROHIBITED ON NON-POTABLE WATER SYSTEMS. QUICK-COUPLING VALVES SPECIFICALLY DESIGNED FOR NON-POTABLE WATER USE THAT ARE REVERSE-THREADED QUICK COUPLER KEYS MAY BE USED IN LIEU OF HOSE BIBS WITH THE APPROVAL FROM THE CITY ENGINEER.
7. THE NON-POTABLE WATER SYSTEM NORMALLY DOES NOT REQUIRE BACKFLOW PROTECTION. BACKFLOW PROTECTION IS REQUIRED FOR BOOSTER PUMPS AND OTHER PURPOSES AS DECIDED BY THE CITY. BACKFLOW PROTECTION IS REQUIRED FOR ALL POTABLE WATER SERVICES AT SITES WHERE NON-POTABLE WATER IS USED.
8. MINIMUM OF TEN (10) FEET HORIZONTAL SEPARATION MUST BE MAINTAINED AT ALL TIMES BETWEEN THE CONSTANT PRESSURE POTABLE AND NON-POTABLE WATER LINES. A MINIMUM OF ONE (1) FOOT VERTICAL SEPARATION MUST BE MAINTAINED AT ALL TIMES BETWEEN THE POTABLE AND NON-POTABLE WATER LINES. IF THE ABOVE CLEARANCE IS NOT POSSIBLE, PIPES AND MATERIAL SHALL BE DESIGNED AS PER SPECIAL CASE SCENARIO.
9. MINIMUM 3' WIDE CONTINUOUS PURPLE WARNING TAPE SHALL BE PLACED OVER THE PIPE IN ALL TRENCHES CARRYING NON-POTABLE WATER. REFER TO T. CHRIST'S OR APPROVED EQUAL.
10. NON-POTABLE WATER PIPING SHALL BE PURPLE AND IDENTIFIED AS NON-POTABLE WATER BY CONTINUOUS MARKING ON BOTH SIDES. THE MARKINGS SHALL INCLUDE THE FOLLOWING: "CAUTION NON-PTABLE WATER – DO NOT DRINK". NORMAL PIPE SIZE, PRESSURE RATING, AND ASTM DESIGNATIONS.
11. ALL NON-POTABLE WATER ISOLATION AND CONTROL VALVE BOXES SHALL BE WEATHERPROOF PURPLE PLASTIC AND MARKED "NON-POTABLE WATER".
12. ALL NON-POTABLE WATER SYSTEM CONTROL VALVES, ISOLATION VALVES, QUICK COUPLERS, REGULATORS, AND APPURTENANCES SHALL BE TAGGED. IDENTIFICATION SHALL BE WEATHERPROOF PURPLE PLASTIC, 3-INCHES BY 4-INCHES AND IMPRINTED WITH "WARNING NON-POTABLE WATER – DO NOT DRINK". IN ENGLISH, SPANISH. REFER TO T. CHRISTY'S OR APPROVED EQUAL.
13. ALL AREAS WHERE NON-POTABLE WATER IS USED SHALL BE POSTED WITH APPROVED SIGNAGE. EACH SIGN SHALL STATE "NON-POTABLE WATER – DO NOT DRINK" AND DISPLAY THE INTERNATIONAL "DO NOT DRINK" SYMBOL.
14. BEFORE ACTIVATION OF THE NON-POTABLE WATER SERVICE, A CROSS CONNECTION TEST AND FINAL INSPECTION AND APPROVAL OF THE SYSTEM SHALL BE PERFORMED AT THE DEVELOPER'S COST.
15. ALL SPRAY HEADS ON NON-POTABLE WATER SYSTEM SHALL BE ADJUSTED TO ELIMINATE OVERSPRAY AND RUNOFF ONTO THE ADJACENT HARDSCAPES, DRINKING FOUNTAINS OR WATER FEATURES, AND OUTDOOR FURNITURE SUCH AS PICNIC TABLES.
16. NON-POTABLE WATER VALVE BOXES IN STREETS SHALL BE CHRISTY G-4 OR APPROVED EQUAL WITH TRIANGULAR COVER. THE COVER SHALL HAVE INSCRIPTION "NON-POTABLE WATER – DO NOT DRINK" CAST THEREON. VALVES SHALL BE TAGGED IN ENGLISH AND SPANISH AS PER NOTE 12. ALL VALVES SHALL BE TAGGED WITH THE SIZE OF PIPE, MATERIAL AND PURPOSE (i.e. TRANSMISSION, SERVICE, MAIN ETC.).
17. ALL NON-POTABLE WATER VALVE COVERS SHALL BE PAINTED PURPLE (PANTONE 522C OR APPROVED EQUAL).
18. WHENEVER POSSIBLE AND/OR REQUIRED BY THE CITY, NON-POTABLE WATER SHALL BE USED FOR CONSTRUCTION AND DUST CONTROL PURPOSES. OBTAIN A PERMIT AND WATER METER FROM THE CITY PRIOR TO PULL WATER FRON NON-POTABLE WATER HYDRANTS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT	NON-POTABLE WATER LINES CONSTRUCTION NOTES		
CHECKED BY: M. WILLETT			
APPROVED BY: Fernando Ulloa			
FERNANDO ULLOA, CITY ENGR.	10/26/20 DATE	62736 R.C.E. NO.	DRAWING NO. NP - 1
			NTS

Oct 28, 2020 - 11:26am
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NON-POTABLE WATER SYSTEM GENERAL NOTES CONTINUED:

19. BURIED DUCTILE IRON PIPE AND FITTINGS SHALL BE WRAPPED WITH A PURPLE COLORED POLYETHYLENE MEMBRANE CONFORMING TO ANSI A21.5 AND INSTALLED IN ACCORDANCE WITH AWWA C105. THE POLYETHYLENE SHEETS SHALL BE 8 MILS THICK MINIMUM AND PURPLE IN COLOR SIMILAR TO PAMTONE 522C.

20. ALL ABOVE GROUND PIPE AND APPURTENANCES (PUMPS, VALVES, RISERS ETC.) SHALL BE IDENTIFIED AS "NON-POTABLE" FACILITIES. WARNING SIGNS AND LABELS SHALL BE POST MOUNTED ALUMINUM, OR VINYL, SELF ADHESIVE WITH PEEL OFF PAPER BACKING, OR TAG TYPE LABELS BEARING THE WARNING AS FOLLOWS: "WARNING: NON-POTABLE WATER DO NOT DRINK" AND "PELIGRO: AGUA IMPURA NO BEBER". ALONG WITH THE INTERNATIONAL "DO NOT DRINK" SYMBOL. WARNING LABELS AND SIGNS SHALL HAVE PURPLE BACKGROUND (PANTONE 522C, OR EQUAL).

21. BURIED ITEMS INCLUDING SERVICE LATERALS THAT ARE NOT AVAILABLE FROM THE MANUFACTURER IN THE PURPLE COLOR SHALL BE INDENTIFIED IN THE FIELD BY MEANS OF UTILITY IDENTIFICATION TAPE APPLIED TO THE SURFACE OF THE ITEM. VALVES, FITTINGS, AND SIMILAR ITEMS SHALL HAVE A BAND OF THE TAPE APPLIED CIRCUMFERENTIALLY AT THE ENDS OF THE FITTINGS ADJACENT TO THE CONNECTIONS TO THE ADJOINING PIPEING SECTIONS AND TO THE OPERATOR PORTIONS OF THE GATE AND BUTTERFLY VALVES. IDENTIFICATION TAPE SHALL ALSO BE APPLIED AND VISIBLY EXTEND INTO METER BOX.

22. NON-POTABLE WATER METER AND BLOW-OFF BOXES SHALL BE COLORED PURPLE AS MANUFACTURED. BOX COVERS SHALL BE PURPLE AND CAST THEREON "NON-POTABLE".

23. NON-POTABLE WATER METER AMR REGISTER SHALL BE PURPLE AS MANUFACTURED AND TAGGED AS SPECIFIED IN NOTE 12.

24. PONDS USED FOR STORAGE OF CONSTRUCTION NON-POTABLE WATER SHALL BE POSTED TO LIMIT PUBLIC ACCESS.

25. FIRE HYDRANTS CAN ONLY BE INSTALLED ON NON-POTABLE WATER SYSTEMS WITH THE APPROVAL OF CITY ENGINEER.

26. FIRE HYDRANTS ON NON-POTABLE WATER SYSTEM SHALL BE PURPLE IN COLOR AS MANUFACTURED.

27. AIR RELIEF AND BLOW OFF ASSEMBLIES FOR NON-POTABLE WATER SHALL BE PAINTED PURPLE (PANTONE 522C OR EQUAL).

28. TESTING AND CONSTRUCTION EQUIPMENT USED FOR NON-POTABLE SYSTEM SHALL BE DISINFECTED WITH THE CITY APPROVED METHOD PRIOR TO BE USED ON POTABLE SYSTEM.

29. ALL BACKFLOW PREVENTION DEVICES SHALL BE PAINTED PURPLE AND SHALL HAVE A SIGN AFFIXED STATING "NON-POTABLE WATER – DON NOT DRINK" AS SPECIFIED IN NOTE 12.

30. PRIOR TO DISCONNECTING THE IRRIGATION SYSTEM FROM ITS POTABLE WATER SOURCE AND CONNECTING IT TO NON-POTABLE WATER, THE SITE MUST PASS A CROSS-CONNECTION TEST PERFORMED BY A CERTIFIED AWWA CROSS-CONNECTION SPECIALIST.

31. EXISTING BURIED PIPING THAT WILL BE CONVERTED TO NON-POTABLE WATER USE NEED NOT TO BE MARKED UNLESS THE PIPING BECOMES EXPOSED. THE EXPOSED SECTION SHALL BE MARKED AS INDICATED ABOVE. IN EITHER CASE, ANY EXPOSED VALVES, FITTINGS ECT. SHALL BE MARKED AS SPECIFIED ABOVE.

32. FOR THE SITES WHERE NON-POTABLE WATER AND POTABLE WATER LINES ARE INSTALLED, ALL POTABLE WATER METERS AND ABOVE GROUND WATER PIPES/DEVICES (BACKFLOW PREVENTERS, HOSE BIBS, ETC.) SHALL BE LABELED WITH TAGS, LABELS, OR TAPE READING: "POTABLE WATER" IN BLACK LETTERS ON BLUE BACKGROUND.

33. ALL VEHICLES USED IN TRANSPORTING NON-POTABLE WATER MUST BE CLEARLY MARKED WITH TYPICAL SIGNAGE THAT READS: "CAUTION: RECYCLED WATER – DO NOT DRINK" IN ENGLISH AND SPANISH.

34. CITY OF PATTERSON RESERVES THE RIGHT TO MAKE ADDITIONAL REQUIREMENTS IN THE USE PERMIT WHERE IT DEEMS NECESSARY TO PROTECT PUBLIC HEALTH AND SAFETY.

35. ALL WORK SHALL CONFORM TO EXISTING REGULATIONS INCLUDING, BUT NOT LIMITED TO, THE CITY'S RULES AND REGULATIONS, CALIFORNIA DEPARTMENT OF HEALTH REGULATIONS, AND THE CALIFORNIA PLUMBING CODE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

NON-POTABLE WATER LINES CONSTRUCTION NOTES

10/26/20
DATE

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DRAWING NO. NP - 2

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SECTION 8 – SANITARY SEWER

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SS - 9 FLEXIBLE WALL PIPE BACKFILL
SS - 10 RIGID WALL PIPE BACKFILL

SECTION 8

SANITARY SEWER

8.1 GENERAL

This work shall include the furnishing of all the labor, materials, tools and equipment to construct and complete the installation of sanitary sewer mains and laterals in accordance with the approved plans, City of Patterson Improvement Standards. Sewers shall be installed by a Developer or Contractor holding the appropriate license for such work under the provisions of the State of California Business and Professions Code. All sewer lines shall conform to the Department of Health Regulations, Uniform Plumbing Code, and California Code of Regulations.

These guidelines establish minimum acceptable design criteria. More stringent requirements may be imposed by the City Engineer based on specific project conditions.

8.2 DESIGN SUBMITTALS

Sewer system for developing areas shall be designed to include provisions for size and capacity to adequately convey all domestic and industrial waste that can be reasonably anticipated under conditions of full ultimate development. Engineering calculations to support the sewer system design must be submitted to the City Engineer for approval.

Prior to submittal of Improvement Plans for the first stage of construction, a master sanitary sewer plan for the entire development shall be submitted to the City Engineer for review and approval. The plan shall include the following:

- A plan with a scale of 1″ to 100′ showing the proposed system, preliminary pipe sizes, tributary sub-areas and existing and future tributary areas outside the project area.
- Design flow at major junction points.
- A description and preliminary sketch of any pump stations. This information shall include number and size of pumps, wet well volumes and operating levels.
- Size and slope of each pipe between appurtenant structures.

- Invert/Rim elevations of each pipe.

8.3 SERVICE POLICY

The construction, maintenance and repair of the Single Family Residential Sewer Line (service lateral) from the property line cleanout to the main sewer line shall be the City's responsibility. The construction, maintenance and repair of the service lateral from the property line into the house is the property owner's responsibility.

The construction, maintenance and repair of the Industrial and Commercial service lateral from the property line to the main shall be the property owner's responsibility.

8.4 EASEMENTS

Sanitary sewer pipes shall be placed within street rights-of-way unless placement in an easement is specifically approved by the City Engineer. Alignment shall be parallel to the street centerline whenever possible.

Permanent easements shall be provided for all mains not located in public rights-of-way. The minimum easement width shall be 15 feet. Wider easements may be required by the City Engineer for any lines over 12 inches in width or with an invert elevation 5 feet or greater below ground line. The line shall be located in the center of the easement unless otherwise required by the City Engineer.

In a residential cul-de-sac where sewer is extended through the cul-de-sac to another street, a dedicated right-of-way shall be constructed with a 10' wide drive (6" concrete) and landscaped on both sides of the drive. Removable bollards shall be installed at each end of the dedicated right-of-way. Drive approaches to accommodate the drive will not be allowed.

8.5 SEWER MAIN SEPARATION REGULATIONS

Sanitary sewer design shall comply with the standards for the separation of water mains and sanitary sewer as stipulated by the California Department of Public Health and outlined in Section 64572, Title 22, of the California Administrative Code.

There shall be a minimum horizontal clearance of 10 feet between parallel water, non-potable water, and sanitary sewer mains. A minimum horizontal clearance of 5 feet shall be maintained between sewer mains,

parallel storm drains, and other utilities. Sanitary sewer mains shall be laid with a minimum 12" vertical clearance from all improvements and utilities, unless otherwise approved by the City Engineer. Potable water and non-potable lines shall be placed minimum 12 inches above the sewer line.

Local conditions, such as available space, limited slope, existing structures, etc., may create a situation where there is no alternative but to install water main or sewer lines at a distance less than that required. In such cases alternative design criteria for reduced separation shall be followed with the special pipe material approved by the City Engineer in writing. Also, written approval from California Department of Health through permit action is required.

Sewer lines shall maintain a minimum 100-foot separation from all public or private wells (properly abandoned wells are not included). If a clearance of less than 100 feet is approved, the pipe material shall be approved by the City Engineer. In no case, shall the clearance be less than 50 feet.

8.6 ALIGNMENT AND DEPTH OF SEWERS

A. VERTICAL

1. Minimum pipe cover and clearance shall be maintained in the design of sewer lines. If certain conditions exist which make it impractical to meet the minimum cover and clearance requirements, the conditions and locations shall be specifically noted above the sewer profile on the plans. Each location not meeting the minimum cover and clearance requirements will require special pipe, bedding and/or backfill and shall be approved by the City Engineer.

2. Under no conditions or circumstances shall other utilities be allowed to be installed directly over and parallel to any sanitary sewer installation.

3. The minimum cover for sanitary sewer lines shall be 42 inches from the top of pipe to the finished grade below the street pavement section. Any deviation from this cover requirement shall require special design and approval from the City Engineer. Where the preceding minimum cover cannot be provided, the City Engineer may require submittal of pipe load calculations.

4. Less than 42 inches of cover shall require the use of ductile iron pipe or approved bedding or encasement specifically designed for cover conditions and must be approved by the City Engineer.

5. Sewer laterals shall have a minimum depth of 3' from the top of the pipe to the finished grade at the right-of-way and a maximum depth of 5' at right-of-way for residential subdivisions. Commercial, industrial, and multi-family shall have a minimum depth of 5' to the finish grade at right-of-way and shall be increased by 1' for every 250' of lot depth.

6. At points of convergence of sewer pipes of the same size, the invert of the incoming pipe shall be a minimum of 0.1 feet higher than the outflowing pipe. (This 0.1 foot of elevation difference does not apply for laying of pipe through a manhole.) Under no circumstances shall the crown of the incoming pipe be below the crown of the outflowing pipe.

B. HORIZONTAL

1. All curve data shall be shown on the plans. Radius and delta of all curves shall be indicated on the plans adjacent to the curve.

2. Radius of curvature and joint deflections shall be 80% of the maximum deflection as recommended by the pipe manufacturer and approved by the City Engineer; however, in no case shall the radius be less than 200 feet.

3. All deflections shall be at the pipe joints or by specially metered pipe sections. Actual bending of the pipe itself will not be allowed.

4. A manhole shall be constructed at both beginning of curves (B.C.) and end of curves (E.C.) where the length of curve exceeds 100 feet, otherwise a manhole shall be required at one end of the curve only.

5. Sewer mains and laterals that are stubbed for future development shall be stubbed the greater distance of 5 feet or 2 feet for every 1 feet of depth below finished grade beyond the termination of developed landscaping or pavement (if right-of way is available). Green carsonite marker shall be installed at the end of the stub.

8.7 TRENCH LOADING CONDITIONS

The loading condition and pipe design criteria for conduits are as follows:

A. Rigid Conduit Loading – On rigid conduits, Marston's formula shall be used to determine the load placed on the pipe by backfill. The procedure for rigid pipe is described in the ASCE Manual and Report of Engineering Practice No. 60, the Clay Pipe Engineering Manual, and in similar handbooks. Minimum strength requirements for vetrified clay pipe shall be as specified per ASTM C-700 "extra strength" VCP.

B. Safety Factor – On rigid conduits, a safety factor of 1.5 shall be used for all pipe. The three edge bearing strength of the pipe shall be used in the computation for rigid pipe.

C. Bedding and Initial Backfill – Unless otherwise noted on the plans, bedding and initial backfill shall be per the City Standards. Special backfill requirements shall be noted on the plans.

D. Special Pipe Strength Requirements – For sewer mains greater than 12 feet deep or mains requiring extra support strength, pipe material shall be approved by the City Engineer. Ductile iron pipe shall be used if cover is less than 42 inches or insufficient clearance exists between the sewer pipe and the rigid load transmitting structures. Such structures include large diameter storm drains and other structures subject to settlement. The ductile iron pipe shall extend 5 feet each side of the structure crossing.

E. Loads - Design Engineer shall consider impact and dead loads imposed upon the pipe both during and after construction. Trench design calculations shall be submitted to the City Engineer for approval for all trenches.

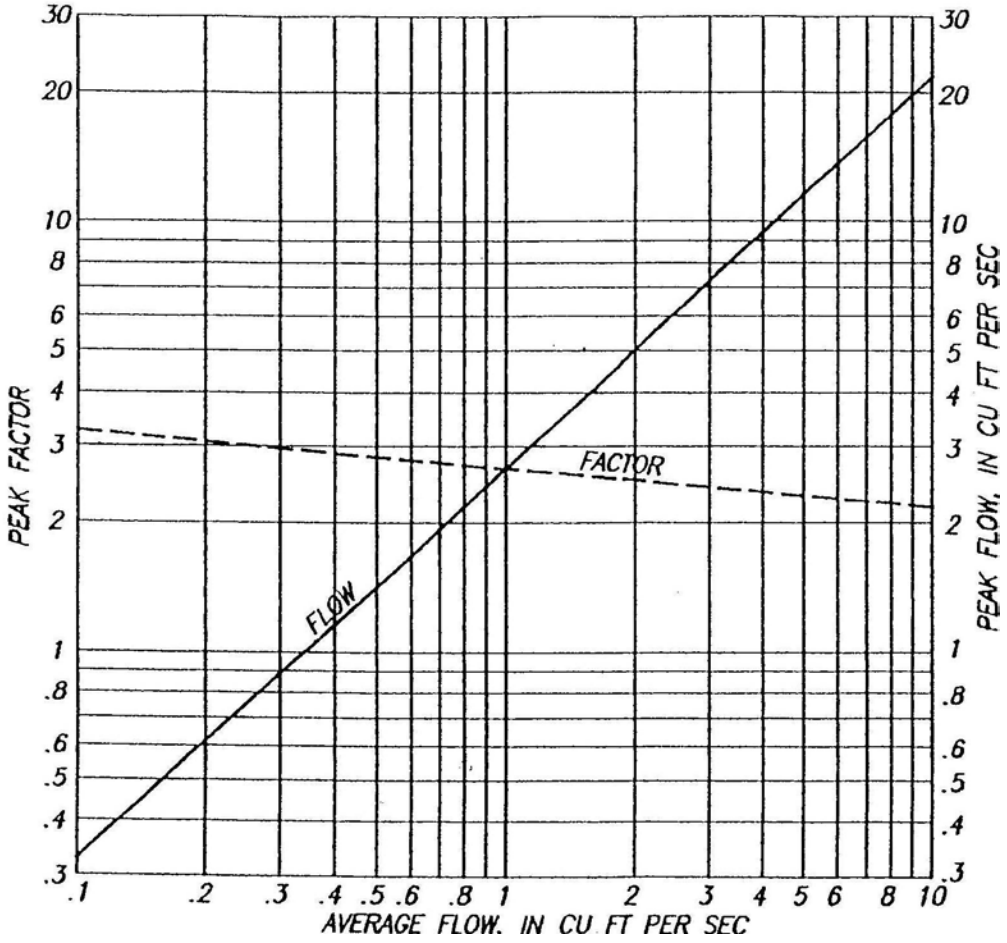
8.8 DESIGN

A. GENERAL

Main sewers shall be designed and constructed to transmit the design flow, which will result from the ultimate development of the entire tributary area even though said area may not be within the project boundaries.

Peak flow shall be obtained by multiplying the average flow by the peaking factor. The peaking factor is 3.0 for commercial flows and 2.0 for industrial flows.

Peaking factors for residential flow shall be selected from the following figure based upon total upstream average flow.



B. LINE SIZE AND SERVICE POLICY

1. Minimum size of any new public sewer main shall be 8″ in diameter. It shall be 10″ for commercial and 12″ for industrial.

2. All intersecting sewer pipe 8″ in diameter and larger shall be connected at a manhole.

3. Minimum service lateral size is 4″ for residential and 6″ or larger service laterals shall be installed where the intended use is industrial, commercial or greater than single family residential flows. Joint use

of laterals will not be permitted except in multi-family residential uses.

C. VELOCITY AND PIPE CAPACITY

Sewer velocity shall be equal to or greater than 2 feet per second for all sewers when flowing full. Design velocities for sewer mains shall not exceed 10 feet per second.

The slope of sewer lines between manholes shall be constant.

Minimum slopes for sewer lines are as follows:

Diameter (inches)	Minimum Slope (ft/ft)
6	.0049
8	.0034
10	.0025
12	.0019
15	.0014
18	.0011
21	.0009
24	.0008

The above slopes are intended to provide velocities of not less than 2.0 feet per second when flowing full based on Manning's equation utilizing an "**n**" value of 0.013.

Manning's Formula $Q = A\left(\frac{1.49}{n}\right)R^{2/3}S^{1/2}$ shall be used to determine pipe capacity. All main sewers shall be sized to carry the design flows at 70% of pipe capacity.

Design capacities for trunk sewers shall require approval by the City Engineer.

If it is impractical to meet these velocity standards, the minimum slopes can be waived by the City Engineer.

D. FLOW

The design sanitary sewer flow shall be computed using the following formula:

$$Q_D = Q_P + I$$

Where: Q_D = design flow (gallons per day)

Q_P = peak flow (residential only)

I = infiltration

Infiltration and inflow (I & I) shall be computed by using 500 gallons per inch diameter mile per day for sewer mains and laterals. Residential laterals shall be assumed to be a minimum of 75 feet in length.

The peak flow (Q_P) for residential service is defined as peak factor times the average flow, with the average flow for the service area being computed from following assumptions:

Residential Development	Average Flow
Single Family - Detached	300 gpud
Single Family - Attached	300 gpud
Multi Family - 2-4 Units	250 gpud
Multi Family - 5 Units or More	200 gpud

gpud = gallons per unit per day

Unless specific sanitary sewer discharges are required or approved by the City, the above sewage discharges shall be used for design of residential developments.

For commercial, industrial and other types of development, anticipated sewage discharges shall be determined as following:

Proposed Development	Average Flow (Gal./Acre/Day)	Peak Flow (Gal./Acre/Day)
Commercial Areas	1,500	4,500
Office	1,000	3,000
Light Industrial	1,800	3,600
Heavy Industrial	-	*Note 1
School	25 gal/student	*Calculate*

***Note 1: Sewage flow rate shall be considered on a case-by-case basis and may require special design.**

Sanitary sewer calculations shall be submitted to the City Engineer for review.

8.9 SEWER LATERLS

A. General

In general, only one sanitary service is allowed per parcel served. Additional services may be approved by the City Engineer in order to eliminate the need for on-site lift stations or monitoring requirements.

The minimum diameter for services (sewer laterals) shall be 4 inches for residential and 6 inches for commercial and industrial. Laterals shall be wye type and shall be complete fittings.

A sewer lateral installed concurrently with a main sewer shall be of the same type and class of pipe material as the sewer main with the following exceptions:

- Where PVC pipe is utilized, services shall conform to ASTM D-3034, SDR-26 or approved equal.

- Where cover or water main separation require otherwise.

B. Cleanouts

Cleanouts shall be constructed in the lateral sewer within the City right-of-way at the back of sidewalk. Cleanouts shall be constructed in conformance with the City Standard Details. Construction of cleanout is the responsibility of developer.

C. Grease Interceptor

A grease interceptor is required for any business having the potential of producing grease as specified in Patterson Municipal Code. Minimum size of the interceptor shall be 750 gallons. Sizing of interceptor shall be based on latest edition of California Plumbing Code.

City Engineer may require dedicated grease lines for future use for General Commercial/Retail buildings. A location of the future grease interceptor shall be identified on the improvement plans. Interceptors shall have a sample point and shall be constructed outside the building where they can be easily inspected for proper operation by the City.

D. Oil/Sand Interceptor

An oil/sand interceptor shall be installed for any business having potential of producing oil and sand waste resulting from routine maintenance as specified in Patterson Municipal Code. Minimum size shall be 450 gallons. Sizing of interceptor shall be based on the latest edition of California Plumbing Code. Interceptors shall have a sample point and shall be constructed outside the building where they can be easily inspected for proper operation by the City.

E. Automatic Car Wash

A City approved interceptor and/or oil/water clarifier shall be installed for an automatic car wash. The car wash shall use Brine System instead of Salt Tank system. The car wash shall recycle a minimum of 75% of the water used prior to discharging into the City's sewer system.

F. Sample Stations & Screens

With the required interceptor, additional on-site sampling structures and screens may be required by the City Engineer. It shall be decided on case-to-case basis by the City where sampling stations and screens shall be required.

G. Additional Requirements

Including all the above requirements, additional requirement for sewer laterals are as following:

1. Service laterals shall not connect directly into manholes without prior approval from the City Engineer.

2. If planned sewer discharge will cause high pH levels or other harmful chemicals discharge into the sewer system, City may require on-site primary treatment measures before discharging into the City Sewer System.

3. Building drains (i.e. floor drains, roof leaders, etc.) shall not be connected to the sanitary sewer system.

4. Sewers shall be designed to preclude the backflow of sewage into service laterals. If it is infeasible to install the waste receptacles in any building at least 1 foot higher than the rim elevation of the next upstream manhole, or other structure providing hydraulic relief, then backflow prevention devices shall be installed in the building waste line on the property side of the service lateral cleanout.

5. The location of all sewer service laterals shall be marked by an "S" cast into the concrete of the curb at completion of construction.

6. Unused existing services shall be abandoned at the right-of-way by potholing and installing a watertight plug or cap at the end of lateral. Prior to backfilling a concrete seal shall be placed over the end of the lateral using a 50-pound bag of concrete mix.

8.10 MANHOLES

1. Manholes shall be placed at the intersections of all sewer mains and/or laterals 6 inches in diameter or larger and at sections where changes in slope, pipe size, pipe alignment, grade or direction, and beginning and end of curves.

2. In addition, manholes shall be installed at the upstream ends of all mains. Manholes shall be installed at the termination of all sewer mains including cul-de-sacs and those lines which may extended in future. Laterals may be connected to this manhole for services to adjacent properties within the cul-de-sac.

3. Manholes shall have a maximum spacing of 350 feet on 6 inch and 8 inch mains and 450 feet on mains 10 inches and larger.

4. Manholes shall have an inside diameter of 4 feet when the largest pipe entering or exiting the manhole is less than 24 inches in diameter. Where the nominal pipe diameter is 24 inches or larger, the inside diameter of the manhole shall be 5 feet. All mains and trunk lines deeper than 10 feet shall require 5 feet inside diameter. For larger trunk lines City Engineer may require 6 feet manholes.

5. Drop manholes shall be provided wherever the invert of the incoming pipe is higher than 2 feet above the invert of the outflowing pipe.

6. When two lines of the same size enter a manhole, or if flow in a single line must change direction by more than 20 degrees, the invert grade at the exit must be at least 0.1 foot below that of the entrance pipe.

7. Manholes installed in unimproved areas and areas outside of the street, shall have bolted manhole covers. Rim elevations shall be a minimum of 1 foot above ground. The exposed manhole above existing ground shall be constructed entirely of grade rings. If the manhole is outside of an existing street, but in a future street area, then grade rings shall extend below ground at least 18 inches. Four (4) bollards per City Standards shall be installed to protect the manhole. City Engineer may require all weather access roads with turnarounds for manholes installed in undeveloped areas. If required, the access road shall be 3 inches of hot-mix asphalt over 6 inches aggregate base and 12 feet wide.

8.11 FORCE MAINS

1. Force main piping shall be sized to provide a minimum velocity of 3 feet per second at the design flowrate of the lift station.

2. There are no slope requirements for force mains. However, inverts and pipe slopes shall be shown on the profile sheet of the Improvement Plans.

3. Force mains shall enter the gravity sewer system through a manhole. The invert of the force main shall be 1 foot above the flow line of the outflow pipe.

4. Cleanouts or automatic air release valves shall be installed as required and/or as required by the City Engineer.

5. Tracer #12 wire insulated copper wire shall be laid on top of and along the entire length of all pipes. Tracer wire shall be extended to the surface at all box locations and manholes sufficiently for locator equipment to be attached.

6. Locator boxes shall be placed at every horizontal change on alignment or maximum of every 500 feet.

7. Minimum 3" wide warning tape shall be laid on top of the bedding.

8.12 MATERIALS

A. General

Submittals for all the material supply shall be submitted to the City for approval, prior to start construction. Written certification, by the manufacturer, shall be submitted showing that all pipe and fittings meet the requirements herein. Flexible pipe not installed within 120 days of the latest test shall not be used without prior written approval from the City Engineer.

B. Gravity Sewer Pipe

1. **Vitrified Clay Pipe** (VCP) shall only be used when prior **written** authorization from the City Engineer is provided. When used, VCP pipe shall be "extra strength" conforming to ASTM C700. All VCP pipe shall be first quality bell and spigot end compression type, unless otherwise noted on the plans.

   Vitrified clay pipe joints shall be conforming to the requirements of ASTM C425.

2. **Ductile Iron Pipe** (DIP) shall be Pressure Class 350 and shall conform to ANSI/AWWA C151. All DIP shall be protected by a polyethylene encasement meeting the requirements of ANSI/AWWA C105. Fittings shall conform to ANSI/AWWA C110.

   DIP pipe joints shall be conforming to the requirements of ANSI/AWWA C111.

   Coating and Lining shall be Cement Mortar Lining & Seal conforming to AWWA C104 and/or when required by the City Engineer it shall be Protecto 401 Ceramic Epoxy Liner or equal.

3. **Polyvinyl Chloride Pipe** (PVC) solid wall pipe for sanitary sewer use shall be at least SDR 26 cell classification 12454-B, conforming to ASTM Designation D3034. All PVC pipe shall be first quality bell and spigot type. PVC pipe shall have factory installed elastomeric gaskets and push-on joints, providing a watertight seal, conforming to the requirements of ASTM Designation D3212 "Joints for Drain and Sewer Pipes using Flexible Elastomeric Seals" or approved equal.

PVC pipe larger than twelve inches (12") in diameter may be used upon approval by the City Engineer. Larger PVC pipe and fitting shall conform to ASTM F679. PVC larger diameter ribbed pipes shall conform to ASTM F794, gaskets shall conform to ASTM F477.

The Contractor shall not install any pipe that is more than 2 years old from the date of manufacture. Written certification, by the manufacturer, shall be submitted showing that all pipe and fittings meet the requirements herein.

4. **PVC Lined Concrete Reinforced Pipe** (RCP) for larger trunk lines shall conform to ASTM C76 and ASTM 655. Pipe interior shall be lined PVC sheet liner, T-lock or approved equal. RCP shall be Class III, Wall B, minimum or stronger to suit design conditions. Joint assembly shall be reinforced concrete bell and spigot type incorporating a fully retained, single or double gasket in accordance with ASTM C361. Steel joints will not be allowed.

C. Sewer Force Main Pipe

1. **Ductile Iron Pipe** (DIP) shall be Pressure Class 350 and shall conform to C151 and C150. All DIP shall be protected by a polyethylene encasement meeting the requirements of ANSI/AWWA C105. Flanged end pipe shall be Class 53, minimum. Fittings shall conform to ANSI/AWWA C110 and C111. Interior and exterior coatings shall conform to AWWA C210.

   Force mains shall be securely anchored by acceptable means of all tees, plugs, caps, and valves, and at all other locations where unbalanced forced exist or as directed by the City Engineer. Restrained joints shall be used in accordance with manufacturer's specifications.

2. **Polyvinyl Chloride Pipe** (PVC) for sewer force main shall be PVC iron pipe (O.D.) type and shall conform to AWWA C900, DR18 (Class 200) minimum. City Engineer may require DR14 or other pipes as decided on case-to-case basis.

D. Service Laterals

1. Pipe material shall be the same type and class as that used for the main unless approved by the City Engineer. Where PVC pipe for main is utilized, services shall conform to ASTM D-3034, SDR-26.

2. Joints can couplings for laterals shall be the same type and specification used for main unless specified on plans and/or approved by the City Engineer.

3. Existing service laterals may be replaced using any approved material, except where depth from the top of the pipe to the finished grade at the right-of-way is less than 3 feet. Ductile iron pipe must be used replacing service laterals with less than 3 feet depth and must have approval from the City Engineer.

E. Manholes

1. **General –** All manholes shall be installed as per City Standard Details. City Engineer may require different design for manholes as decided on case-to-case basis.

2. **Standard Precast** - Sanitary sewer manholes components shall be precast reinforced concrete conforming to ASTM C 478, except that the Portland cement shall be Type II cement. The manhole base, riser and cone shall have a minimum compressive strength of 4,000 psi at 28 days. Manholes shall be constructed in accordance with the City Standard Details. Manhole bases shall be pour-in-place concrete unless prior approval from the City Engineer has obtained to use precast bases. City Engineer may be require precast manholes to be mortar lined.

3. **Lined Manholes –** Manholes on large sewer trunk lines shall be PVC lined or Calcium Aluminate lined as required by the City Engineer on case-to-case basis. City Engineer may require sewer lines slope greater than 5% and/or force main terminal manholes to be lined with approved method.

   PVC Lined (T-Lock): Liner shall be Amer-Plate T-Lock as manufactured by Ameron Protective Linings Division or approved equal. The material used in the liner, welding strips and other accessory items, shall be a combination of poly-vinyl chloride resin, pigments and plasticizers, specially compounded to remain flexible. Poly-vinyl chloride resin shall constitute not less than 99 percent by weight, of the resin used in the formulation. Copolymer resins will not be permitted.

All plastic liner plate sheets, welding strips and other accessory items, shall have the following physical properties when tested at 77°F±5°.

Property	Value
Tensile Strength	2200 psi min.
Elongation at break	200% min.
Shore Durometer, Type D (with respect to initial test results)	1-sec. 50-60 10-sec. 35-50
Weight Change	±1.5%

Linings shall be supplied as pipe-size sheets, fabricated by shop-welding the basic-size sheets together. Shop welds shall be made by lapping sheets a minimum of ½ inch and applying heat and pressure to the lap to produce a continuous welded joint. Tensile strength measured across shop-welded joints in accordance with ASTM D412 shall be at least 2000 psi.

Calcium Aluminates Motor Lining: SewperCoat 200 HS lining, or approved equal, shall be applied by a licensed product applicator and in accordance with the manufacturer recommendations. The lining material shall be composed entirely of calcium aluminates, fiber reinforced and high strength dry gunite material. The depth of the application shall be ¾" to 1" minimum.

F. Frames and Cover

Sewer manhole frames and cover shall be installed as per City Standard Details. All frames and covers shall conform to ASTM A48 Class 30 and AASHTO H20 load ratings.

City Engineer may require manhole covers to be anti-theft covers. Also, manholes outside of roadway shall have bolted covers.

In areas within the flood way or flood plain or in areas where water intrusion is a factor, PAMTIGHT or approved equal lids shall be installed.

G. Drop Manholes

Drop manholes shall be used where the difference in elevation between the top of the outlet pipe and invert of the pipe exceeds 2 feet. Pipes for the drop inlet must be the same material as the sewer main unless

approved adaptors are used. If two or more drop inlets are required in a single manhole, each shall be constructed separately. Drop inlets shall be constructed per City Standard Details.

H. Cleanouts

Pipe for cleanout shall be of same material as the sewer lateral. Cleanout frames and covers shall be manufactured, tested and furnished in accordance with the Standard Specification of Gray Iron Castings ASTM A 48, Class 30 when installed within the public right-of-way. The contact surfaces of frames and cover shall be machine surfaced to eliminate rattling and other movement under traffic. Castings shall be equal in materials and construction to Christy F08, or approved equal. Concrete shall be Grade B and have a 28-day compressive strength of 2,500 psi.

I. Carrier or Casing Pipe

Pipe used as a conductor pipe under a highway or railroad shall be welded steel pipe. The Pipe shall conform to the Standard Specifications for Public Works 5-13 Construction SSPWC (Greenbook) Section 207-10, "Steel Pipe". The protective lining and coating, if any, shall be as shown on the plans or specified in the Special Provisions.

When the conductor pipe is to be installed by boring and jacking, the wall thickness shall be ¼" for sizes up to and including 24" in diameter, and 5/16" for sizes 27" to 36" in diameter, unless otherwise specified.

J. Sewer Air Release Valves

Sewer air release valves shall not be installed unless **absolutely necessary** on fore mains. The design engineer shall endeavor to provide a system which rises continuously from the pump station to discharge point. Where absolutely necessary, sewer air release valves shall be provided to vent accumulating air or gas during pumping operation. Air release valve shall be installed at high points of the piping system. The air or gas vent located at the pump station shall discharge to the wet well.

Sewer air release valve shall be as manufactured by APCO (Valve and Primer Corporation), Val-Matic (Valve Manufacturing Company), or approved equal.

8.13 INSTALLATION

A. Trench Excavation

1. The Contractor shall, prior to beginning construction, obtain from the Division of Industrial Safety the permit required by California Labor Code, Section 6500, and pay any fee charged for such permit. In addition thereto, whenever the work under the Contract involves trench excavation 5 feet or more in depth, the Contractor shall submit for approval to a registered civil or structural engineer representing the City, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer. Nothing in this section shall be deemed to allow the use of shoring, sloping or other protective system less effective than that required by the Construction Safety Orders. Nothing in this section shall be construed to impose tort liability on the City, City Engineer, or any of their officers, agents or employees.

2. The pipe trench shall be dug with side walls sloped or otherwise supported in a safe manner in accordance with the Department of Industrial Relations, Division of Occupational Safety and Health Administration regulations pertaining to trenching.

3. Excavated material shall be placed on only one side of the trench unless otherwise directed. Separation distance between piles of excavated material and trench shall be consistent with the Construction Safety Orders.

4. The alignment and grade for the bottom of the trench shall be properly established before the trench is excavated and shall be approved by the City before the pipe is laid. Trenches shall be true to line and grade, and the bottom shall be even and free from all objectionable material.

B. Water in Trench

When water is encountered in the trench, it shall be removed by draining or by pumping. Should water get into the trench before the pipe is laid, the laying of pipe shall be postponed until the trench has dried

sufficiently to provide a firm foundation for the pipe or else, the mud or softer material shall be removed and grade re-established by backfilling and compacting with suitable material as determined by the City.

C. Laying and Joining Pipe

1. The Contractor shall field verify by potholing, the size, depth and alignment of all existing water mains and services shown on the Improvement Plans or marked in the field by the Underground Service Alert (USA) markings prior to construction. If any existing utility is not exactly as shown on the Improvement Plans or otherwise omitted, the Contractor shall notify the City Engineer before proceeding with the installation of any new work until instructions for how to proceed are issued by the City Engineer.

2. Laying and jointing of pipe shall be in accordance with the manufacturer's recommendations and as approved by the City. Joint deflections shall not exceed 80% of the maximum recommendations of the manufacturer.

3. Where rubber gaskets are used for jointing pipe, a feeler gauge shall be used to check the position of the rubber gasket upon each closure. The interior of the pipe shall be cleared of all debris, and exposed pipe ends shall be closed by a suitable pipe plug when pipe laying is not in progress.

4. The pipe shall be laid on a trench bottom shaped to provide adequate support of the pipe except at coupling or bell holes. The use of prepared mounds to facilitate laying of the pipe is not approved.

5. Where pipe is to be encased or have concrete bedding, suitable concrete blocks shall be used to support the pipe in the proper location while placing concrete.

D. PVC Pipe Installation

1. PVC pipe and fittings shall be installed in accordance with ASTM D-2321 and City Standards. All rubber rings shall conform to ASTM F-477.

2. PVC sewer pipes shall be over excavated a minimum of 4 inches below the pipe or bell, whichever is lower in elevation.

3. Connections of PVC pipe and fitting to a manhole shall be water tight. The use of manhole water stops per manufacturer's requirement shall be approved by engineer prior to the installation of any pipe or fitting.

4. All pipe shall be unloaded in the original packaging using a forklift with fork arms long enough to reach beyond the last pipe bundle. Care shall be taken during transporting of the pipe to insure that the binding and tie down methods do not cut the pipe in any manner. Pipe bowed, deformed or otherwise damaged during shipping or storage shall be rejected.

5. Do not roll the pipe off of the truck. Pipe shall not be handled or secured using chains or cables; a nylon or textile strap is recommended.

E. Service Laterals

1. Service laterals shall be installed as per City Standard Details. Install wye for all laterals, Tee connections are only permitted where, in the opinion of the City Engineer, it is impractical to connect or to install a manhole or wye branch.

2. The lateral line shall have a cleanout at back edge of sidewalk as shown on the Standard Details. A box shall be installed as noted on detail. Said cleanout shall consist of a combination wye and eighth bend. Laterals and cleanouts shall not be located in the driveway.

3. Where required, an approved backwater valve shall be installed ahead of the cleanout and behind the sidewalk. An appropriately sized valve box with adequate clearance to access and maintain the said device, along with the correct number of grade rings, (to bring the lid to finish grade), shall be installed.

4. The wye branches, unless otherwise specified, shall be inclined at any angle not greater than 45^{o} degrees from the horizontal.

5. Residential Service Laterals shall not be connected directly to manholes, unless approved by City Engineer.

6. Connection to mains, 18 inches in diameter or larger, shall be at manholes only, unless otherwise approved by the City Engineer.

7. **VCP Laterals:** VCP pipe shall only be used when prior **written** authorization from the City Engineer is provided. Services shall be new factory manufactured vitrified clay pipe wye and bend for each service connection on vitrified clay pipe sewer mains. The sewer

couplings to connect the bend to the lateral shall be a band seal type with outside stainless steel shear ring as supplied by Gladding McBean and Company or approved equal. Calder couplings will not be allowed.

a. Cut-in wye connections are only allowed in mains less than 12 inches.

b. A neat opening shall then be cut in the main sewer which shall form a snug fit with the spigot of the saddle. The saddle shall then be installed and secured in accordance with the manufacturer's recommendations. The ends of the lateral shall be securely stopped with plugs or caps which can easily be removed without damage to the pipe end.

c. When joining the cut ends of the existing main to the wye or tee, a "BAND SEAL" with stainless steel shear type sewer repair couplings, or equal; shall be used. Calder couplings, No-Hub couplings or plastic couplings will not be permitted on the "run" of the pipe.

d. Saddles shall have a skirt to prevent the saddle from entering the sewer main beyond the inside surface of the main, and shall be located so the invert of the saddle branch is at the same elevation as the crown of the main sewer.

8. **PVC Laterals**: Services shall be new factory manufactured PVC SDR26 wye and bend for each service connection on sewer mains. Reducing wyes for service laterals shall be in-line bell and spigot type, factory molded. Tee connections to PVC Pipe will not be allowed. Solvent type fittings are not allowed. Solvent type joints for pipe, wyes, and tees will not be allowed.

F. Manholes

1. **Precast Manhole Construction –** All joints of precast section and face of manhole base shall be thoroughly clean prior to setting precast sections. These various sections shall be set in performed plastic sealing gaskets of material conforming to the requirements of FEDERAL SPECIFICATION SS-S-00210.

a. Installation of gaskets - Apply one (1) coat of primer to clean, dry joint surface (both tongue and groove) and of the two-piece

wrapper on the gasket. The outside paper will protect the gasket and assure against stretching. Before setting the manhole section in the trench, attach the plastic gasket strips end-to-end to the tongue or groove of each joint, forming a continuous gasket around the entire circumference of the manhole joint.

b. Handling of barrel sections after the plastic gasket has been affixed shall be carefully controlled to avoid bumping the gasket and thus displacing it or contaminating it with dirt or other foreign material. Any gaskets so disturbed shall be removed and replaced if damaged and repositioned if displaced.

c. Care shall be taken to properly align the manhole section with the previously set section before it is lowered into position.

d. Grouting of all manhole joints and rings shall be using high strength non-shrink concrete grout.

e. During cold or wet weather, pass direct heat over the concrete joint surface lightly until ice, frost and moisture are removed and surface to be primed is dry and warm immediately before application of primer. Direct heat shall also be passed over plastic gasket strips immediately prior to attaching them to joint surfaces and immediately prior to insertion of tongue into groove.

2. Where sewer lines pass through manholes, the pipe shall be laid continuously as a whole pipe. After the manhole base and precast sections have been placed and sufficient time has elapsed to allow all concrete and grout to set, the top half of pipe within the manhole shall be carefully cut off and the sides mortared. All channels so formed shall be checked with a template and shall form a smooth flowing channel at all flow depths.

3. Penetrations for connections to existing manholes shall be core drilled by the contractor. Larger cores shall be performed by the contractor drilling multiple small diameter cores no larger than 1 inch in diameter and use pneumatically powered chipping hammer to knock out.

4. Sealing the pipe shall be performed by the contractor inserting the pipe through the cored hole in the manhole wall to the penetration depth required, contouring the end of the pipe (if required) and

packing the annular space between the pipe and the edge of the cored opening (inside and outside of the manhole wall) with a stiff mix of concrete mortar thoroughly compacted or preferably premixed high strength non-shrink concrete grout. The mortar shall be composed of one (1) part of type 2 Portland cement and three (3) parts of clean sand. Brick, stone or other material shall not be used as filler or blocking. The interior mortared area shall have a smooth finish similar to the adjacent barrel section of the manhole wall which follows the contour of that interior wall. The exterior mortared area should fully cover the entire cut area and shall conform to approximately the same contour as the exterior wall of the manhole barrel. This exterior mortared area shall exceed the dimensions of the cored area and may extend to, but not beyond the first pipe joint. The exterior grout seal SHALL NOT BE aggregate based concrete. Connections shall be watertight.

5. Before any work is started on adjusting or repairing a manhole, the channels in the base shall be covered with strips of wood, and the entire base covered with a heavy piece of canvas. This cover shall be kept in place during all work. Upon completion of the work the wood strips and the canvas shall be removed from the manhole, allowing no debris to fall or remain in the manhole.

6. **Lined Manholes Construction –** Installation of the PVC (T-Lock Liner, Calcium Aluminates Mortar Liner (SewperCoat) shall conform to the requirements as specified by manufacturer.

   PVC Liner Field Joints - All joints between lined pipe and lined structures shall be either Type C-1 or Type C-2 as defined in Section 311-1 of the Standard Specifications for Public Works Construction SSPWC (Greenbook). Field joints between sections of lined pipe shall be Type P-1 as defined in Section 311-1 of the SSPWC specifications. When transitioning between lined and unlined pipe, a factory "turn back" shall be used or a type 316 stainless steel band and neoprene gasket/termination secured with type 316 stainless steel wedge anchors provided at the transition for the full pipe circumference. Contractor shall provide transition details to the Engineer for review prior to installation. Unless shown otherwise, field joints in lined structures shall be one (1) of the following types defined in the SSPWC: Type C-1, Type C-2 or Type C-3.

   Calcium Aluminate (SewperCoat) Liner shall be used for existing manholes. It can also be used for new manholes with prior approval

form the City Engineer. Preparation of the surface to be coated should be performed in accordance with applicable industry standards and specific project specification requirements. Sandblasting and/or hydro-demolition with high-pressure water may be used to remove existing deterioration and debris. The immediate bonding surface should be rough, damp and free of any existing coatings, sewer residue and running water. The structure itself should be fully saturated prior to a lining installation. Refer to manufacturer's specification language for detailed surface preparation recommendations. Clean, potable water should be used for mixing per manufacturer's recommended specifications for mixing water. Lining shall be designed to be applied with dry gunite equipment. Lining shall not be used as a "build-out" mix or underlayment for any other product. Lining shall not be used in conjunction with or adjacent to any inert or organic coatings, including but not limited to epoxy, polyurethane, and fiberglass. Curing should be implemented as soon as the surface begins to harden and dry (as early as one hour after application). Several layers of ASTM C309 liquid membrane curing compound or a 100%-humid moisture cure may be used. Equipment used must always be clean and free of Portland cement buildup to avoid accelerated set. Generally accepted concreting practices (water ratio per bag, compaction, curing, etc.) should be employed to obtain the best quality installation with respect to mechanical strength and corrosion resistance.

G. Cleanouts

Cleanouts shall be constructed 1 feet inside the City right-of-way in accordance with the Standard Details.

8.14 BACKFILL

Initial backfill shall be the material between the top of the bedding material and 12 inches above the top of the pipe. After the sewers and appurtenances have been properly constructed and inspected, the trench shall be backfilled and compacted as shown on Drawing No. SS-9 for flexible walled pipe and as shown on Drawing No. SS-10 for rigid walled pipe.

Compaction tests shall be performed by a testing laboratory approved by the City. The laboratory shall be retained by the Developer and all testing expenses shall be paid by the Developer.

Jetting of backfill will not be allowed except in special cases as approved by the City Engineer.

During the compaction operation, the Contractor must exercise extreme caution so as not to damage or disturb the pipe.

8.15 TESTING OF SEWER LINES

All leakage tests shall be completed and approved after backfilling and prior to placing permanent resurfacing material.

A. Cleaning and Flushing

After all backfilling is completed and manhole frames and covers set, but prior to placement of paving material, the Contractor shall clean and flush all sanitary sewer mains.

To clean and flush sewer pipes 12-inches or less in diameter, the Contractor shall furnish and use a heavy rubber ball manufactured for this purpose and approved by the Director. When inflated with air it should have an outside diameter equal to the interior diameter of the pipe to be cleaned. The ball shall be placed in the uppermost structure of the line to be cleaned and then water shall be introduced into the structure in back of the ball. The ball shall pass through the pipe with only the pressure of the water behind it. The rate at which the ball is allowed to pass through the pipe shall be controlled by a rope attached to the ball at all times. This procedure shall be utilized on each section of pipe installed. Care shall be exercised to feed the ball slow enough to allow debris to be removed in a manner acceptable to the Director. The work shall be done in such a manner as to prevent flooding of adjacent properties due to sewage back-up.

Sewer pipes over 12-inches in diameter may be cleaned by means other than the above described ball method, with the approval of the City Engineer.

B. Low-Pressure Air Test for Gravity Sewer

After completing backfill of a section of sewer line, the Contractor shall at his/her expense, conduct a Line Acceptance Test using low-pressure air. The test shall be performed in conformance with SSPWC 306-1.4.4.The Test shall be performed using the equipment listed below,

according to stated procedures and under the supervision of the City Engineer.

Procedure: The section of pipe to be tested shall be isolated by completely blocking all outlets in the section under test. Careful attention must be given to the bracing of all plugs, as the line will be under pressure. One (1) of the plugs used at the manhole must be equipped for an inlet to fill the line from the air compressor. The compressor which feeds air into the pipe section must be equipped to control the air entry rate and to prevent the pressure from exceeding 5.0 psig. The air compressor shall be fitted with a blow-off valve to operate at 5.0 psig to prevent an increase in pressure, which could be hazardous to the pipeline.

After the pipe has been wetted, the air shall be allowed to slowly fill the pipeline until a constant pressure of 4.0 psig is maintained. At this point, the air compressor shall be controlled so that the internal pressure in the line is maintained between 4.0 and 3.5 psig for at least two (2) minutes to permit the temperature of the entering air to equalize with the temperature of the pipe wall. If it is necessary to bleed off the air to repair a faculty plug, a new two (2) minute interval must be allowed when the line has been refiled.

When the temperature of the air has reached equilibrium with that of the pipe wall, the air source shall be disconnected. Before disconnecting the air supply, the pressure shall be at 4.0 psig. The gauge is then watched until the air pressure reached 3.5 psig. When the pressure has reached 3.5 psig, a stopwatch will be started and stopped when the pressure has reached 2.5 psig. The time required, as shown on the watch, for the loss of 1.0 psig drop shall be in accordance with ASTM C 828 or NCPI Low Pressure Air Tables for Sanitary Sewer. The portion of line being tested shall be considered "Acceptable" if the time for the 1.0psig drops in air pressure from 3.5 psig to 2.5 psig is greater than given by:

$$\mathbf{T}\ (\text{minutes}) = \frac{0.0119}{60} \times D^2 \times L, \text{ Where:}$$

D = pipe diameter in inches,
L = length of pipe tested in feet

The air test shall be performed after the completion of backfill and compaction and prior to final paving and pouring of the curbs, gutters and sidewalks.

If the installation fails to meet this requirement, the Contractor shall, at his/her own expense, determine the source of leakage and then repair or replace all defective material and perform the test again.

C. Deflection Testing

All deflection tests shall be completed by the Contractor in accordance with ASTM D 3034, D 2321 and D 3839 or as modified herein by City Engineer. All reports and records of deflection testing shall be given to the City Engineer. The cost of the deflection testing shall be at the expense of the Contractor.

PVC sewer pipe shall be tested after cleaning and flushing using a mandrel or other approved testing device. Maximum deflection shall not exceed 5% of the average inside diameter of the pipe.

For all pipes less than 24-inch (I.D.), a mandrel shall be pulled through the pipe by hand. Prior to use, the mandrel shall be approved by the City Engineer. If the mandrel fails to pass, the pipe will be deemed to be over-deflected.

Any over-deflected pipe shall be re-laid.

Mandrels shall be rigid, nonadjustable, odd-numbering-leg (9 legs minimum), having an effective length not less than its nominal diameter. The minimum diameter of the mandrel at any point along its full length shall be as follows:

Pipe Material	Nominal Size (Inches)	Minimum Mandrel Diameter (Inches)
PVC – ASTM D3034 (SDR35)	6	5.455
	8	7.282
	10	9.085
	12	10.793
	15	13.203
PVC – ASTM F679 (T-1 Wall)	18	16.748
	21	19.744
	24	22.212
	27	25.033
PVC – ASTM F794	18	16.768
	21	19.713
	24	22.325
	27	25.175
	30	28.025

Mandrels shall be fabricated from steel, fitted with pulling rings at each end, and stamped or engraved on some segment, other than the runner, with the pipe material, specifications, nominal size and mandrel O.D.

For pipes with a nominal diameter of 24 inches or larger, deflections shall be determined by a method submitted to and approved by the City Engineer. If a mandrel is selected, the minimum diameter, length and other requirements shall conform to the dimensions and requirements previously stated.

All sanitary sewer lines shall be pressure tested by a low-pressure air test. Each section of PVC pipe shall be tested in accordance with UNI-B-6. VCP shall be tested in accordance with ASTM C828. Any section of sewer pipe failing the air test shall be repaired and retested until leakage is reduced to acceptable leakage.

D. Pressure Testing Sewer Force Mains

After installing sewer force main pipe and prior to complete backfilling of trenches, the entire length of each line shall be subjected to a hydrostatic pressure of not less than 150 psi for a period of not less than 2 hours. No pipe installation will be accepted if leakage for the section

is greater than the allowable leakage determined by using one of the following formulas, as applicable:

$$\text{For Polyvinyl Chloride Pipe - } L = \frac{ND\sqrt{P}}{7400}$$

(L = Allowable leakage in gallons per hour. N = Number of joints in length of pipeline. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.), or

$$\text{For Ductile Iron Pipe - } L = \frac{SD\sqrt{P}}{148{,}000}$$

(L = Allowable leakage in gallons per hour. S = Length of pipe tested in feet. D = Nominal diameter of the pipe in inches. P = Average test pressure in pounds per square inch.)

Water for testing may be taken from the nearest blow-off, fire hydrant or other approved source. All pipe, fittings, valves, couplings, and other materials needed to fill the test lines with water shall be supplied and installed by the Developer or Contractor. Care shall be taken not to contaminate the existing system.

The pump, gauge, pipe connection, and all necessary apparatus and equipment needed for the test shall be supplied by the Developer or Contractor.

The Developer or Contractor shall permanently stop all leaks. After repairing all defective items, the line shall be tested again to determine final acceptability of the installation.

E. Television Inspection

Prior to placing the final street surfacing, the Contractor, will inspect all new sewer systems with a closed circuit television system. This will be done after the pipe has been installed true to the prescribed lines and grades, the trench backfilled and compacted, the manhole and cleanout covers set to proper grade, the roadway subgrade compacted, aggregate subbases and bases placed and compacted, and the sewer system cleaned of all debris.

At the start of each sanitary sewer section, the Contractor shall record the manhole location by street intersections the inspection is beginning and ending at. This information shall appear in typewritten letters on the videotape. A gauge shall be attached to and dragged behind the camera to indicate the depth of any standing water within the line. The gauge shall have a diameter of 10% of the pipe diameter being televised.

Pulling of the camera shall be stopped and locations recorded in typewritten letters on the video tape at the following locations:

- The beginning and ending locations of all areas where the depth of standing water exceeds 10% of the pipe diameter.
- All wye locations.
- Any problem areas.

Camera pulling speed shall not exceed 100 ft. per minute.

CD/DVD copy in .mpg unprotected digital format shall be delivered to the City for review. The Contractor shall make all necessary repairs and corrections to the pipeline as required by the City Engineer prior to paving.

8.16 LIFT STATIONS

Lift stations shall be specifically approved by the City Engineer. The lift station shall be of the wet well - dry well arrangement and shall be provided with fencing, paved access road, and potable water for cleaning purposes.

The following criteria shall be used for design:

- Wet well capacity shall be adequate to provide a minimum pump cycle time of 10 minutes.
- Wet wells shall be reinforced concrete with a polyurethane lining.
- A stainless steel debris basket with a stainless steel slide rail system shall be provided on the wet well influent pipe.
- Aluminum access frames and covers shall be provided for the wet well.

- Dry well shall be Smith and Loveless Custom Series with a steel shell. Minimum diameter of the wet well shall be 8 feet.

- Dry wells shall be protected from corrosion through usage of an anode current cathodic protection system designed by a corrosion specialist certified by the National Association of Corrosion Engineers (N.A.C.E.). Minimum anode life shall be 20 years.

- Two non-clog sewer pumps, each capable of pumping 100% of the design flowrate, shall be provided.

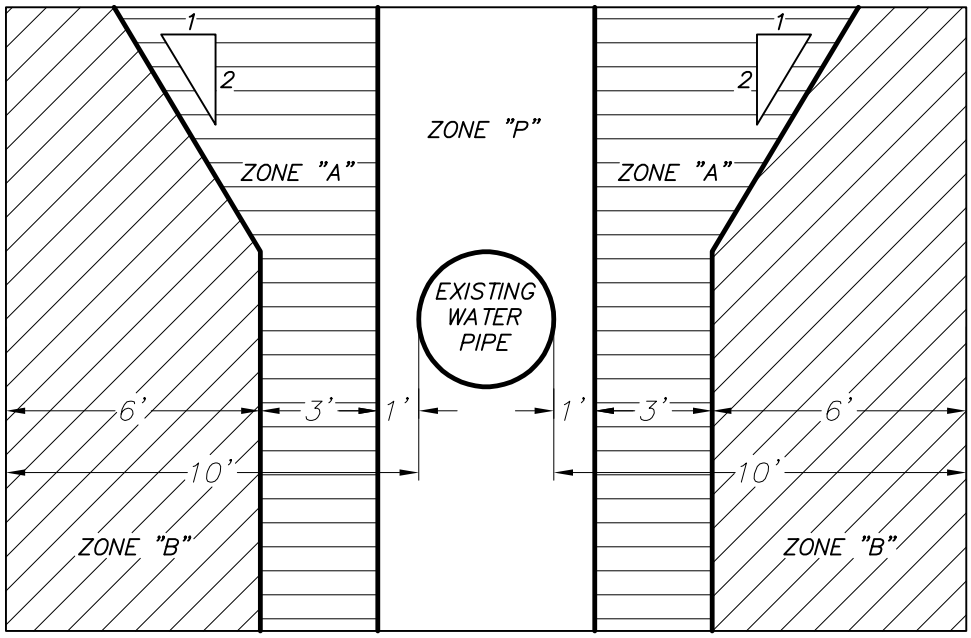
- A TESCO 24-200 LB service pedestal with a Liquitronics III-SL sump level control monitor shall be provided. Contactors for high level alarm and power failure shall be provided in the telemetry portion of the cabinet. Monitoring of the pump station shall be integrated into the City's SCADA system.

- Manual power transfer switch and a receptacle with closing plug shall be provided to allow connection of an emergency power generator.

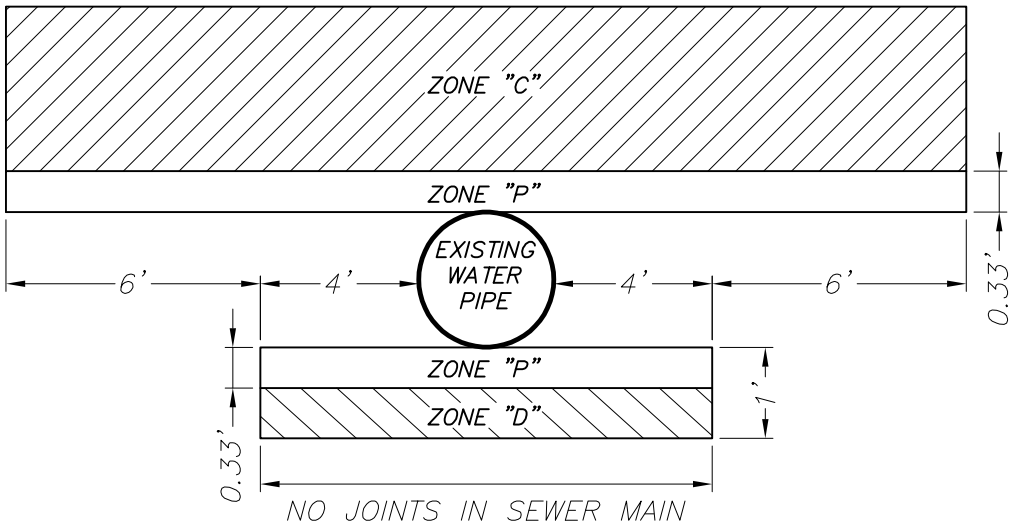
- Provide a pole mounted yard light and alarm light.

ALTERNATE DESIGN FOR REDUCED SEPARATION

(TO BE USED ONLY WHERE REQUIRED 10 FT. SEPARATION CANNOT BE OBTAINED)
NEW SEWER LINE BEING INSTALLED



PARALLEL CONSTRUCTION



PREPENDICULAR CONSTRUCTION

NOTES:

1. ZONE "A" REQUIRES SPECIAL PIPE AND SPECIAL PERMISSION FROM THE PUBLIC HEALTH AGENCY.
2. ZONE "B" REQUIRES SPECIAL PIPE.
3. ZONE "C" REQUIRES SPECIAL PIPE AND PIPE JOINTS ARE NOT ALLOWED.
4. ZONE "D" REQUIRES SPECIAL PIPE AND PIPE JOINTS ARE NOT ALLOWED.
5. ZONE "P" IS A PROHIBITED ZONE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

SEWER MAIN SEPARATION REGULATIONS

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SS - 1

NTS

Oct 29, 2020 - 7:47am
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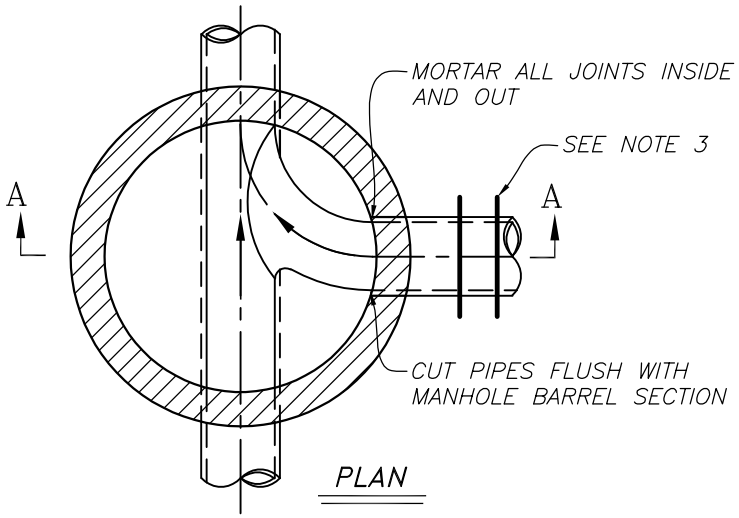
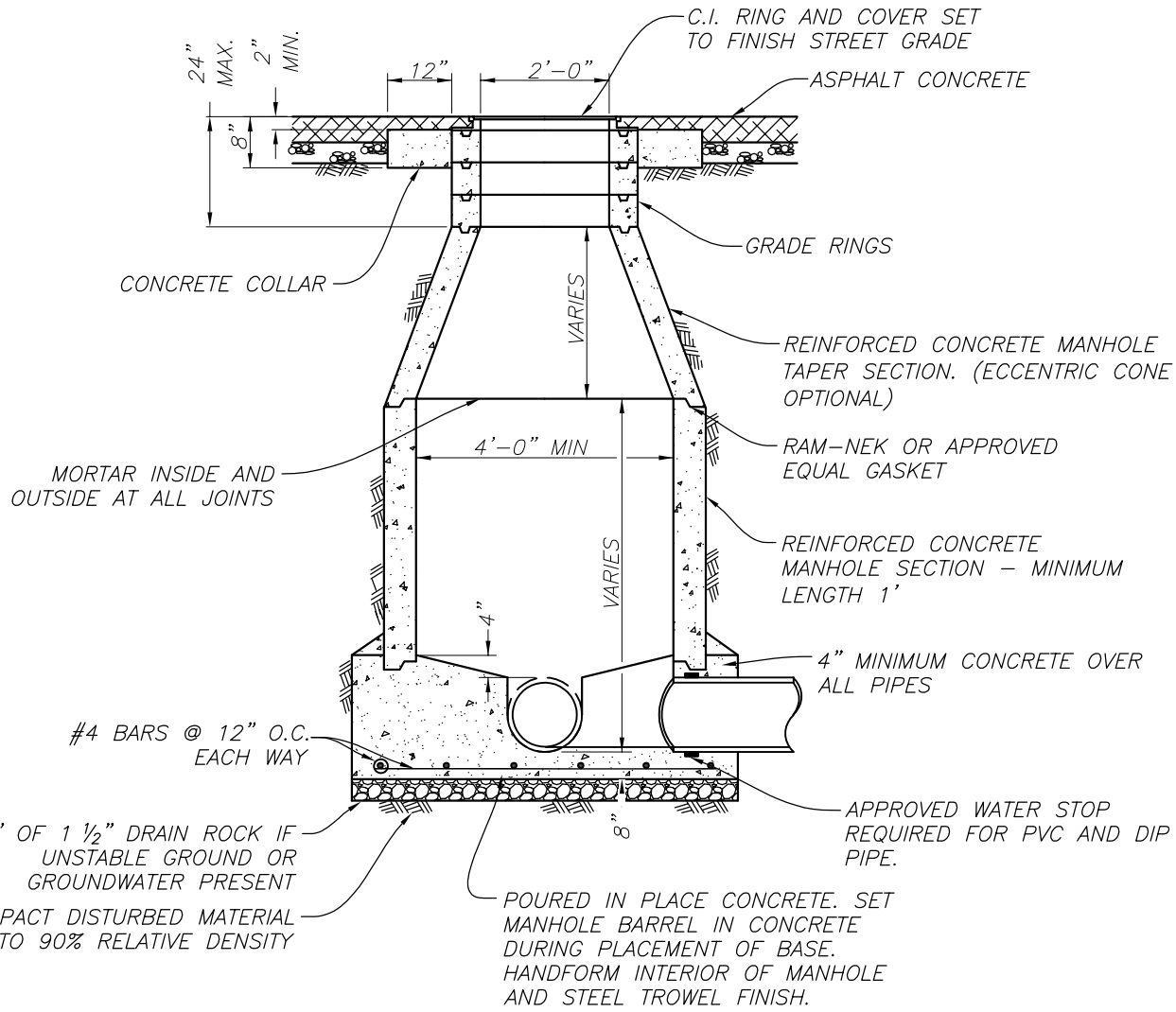
NOTES:

1. COAT INSIDE OF MANHOLE WITH "XYPEX" OR "1000 CONSEAL" OR APPROVED EQUAL.
2. WHERE CORROSION–RESISTANT MANHOLES AND FORCE MAIN MANHOLES ARE REQUIRED, PROVIDE AN APPROVED LINER OR SEWER GAS RESISTANT EPOXY COATING INSIDE OF MANHOLE.
3. FLEXIBLE PIPE COUPLING FOR RIGID PIPE 12" AND LESS. A BELL JOINT IS NOT ACCEPTABLE.



PLAN



SECTION "A–A"

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

SANITARY SEWER MANHOLE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SS - 2

NTS

Oct 29, 2020 – 7:49am
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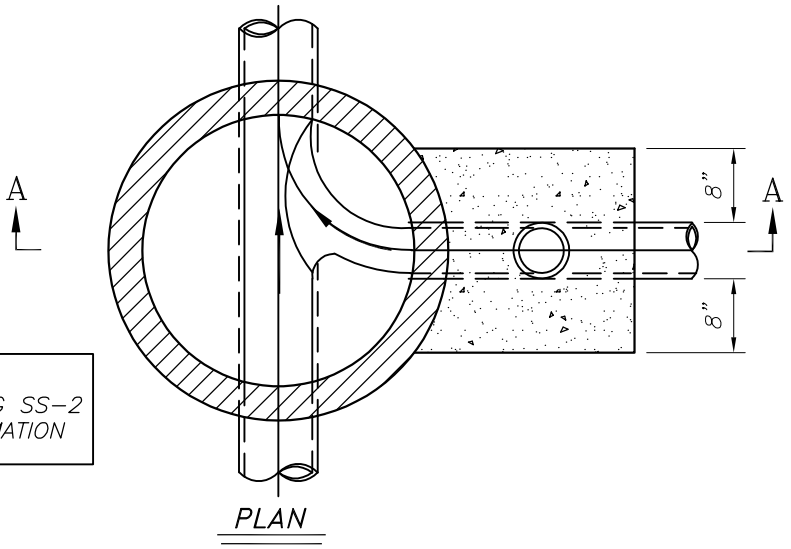
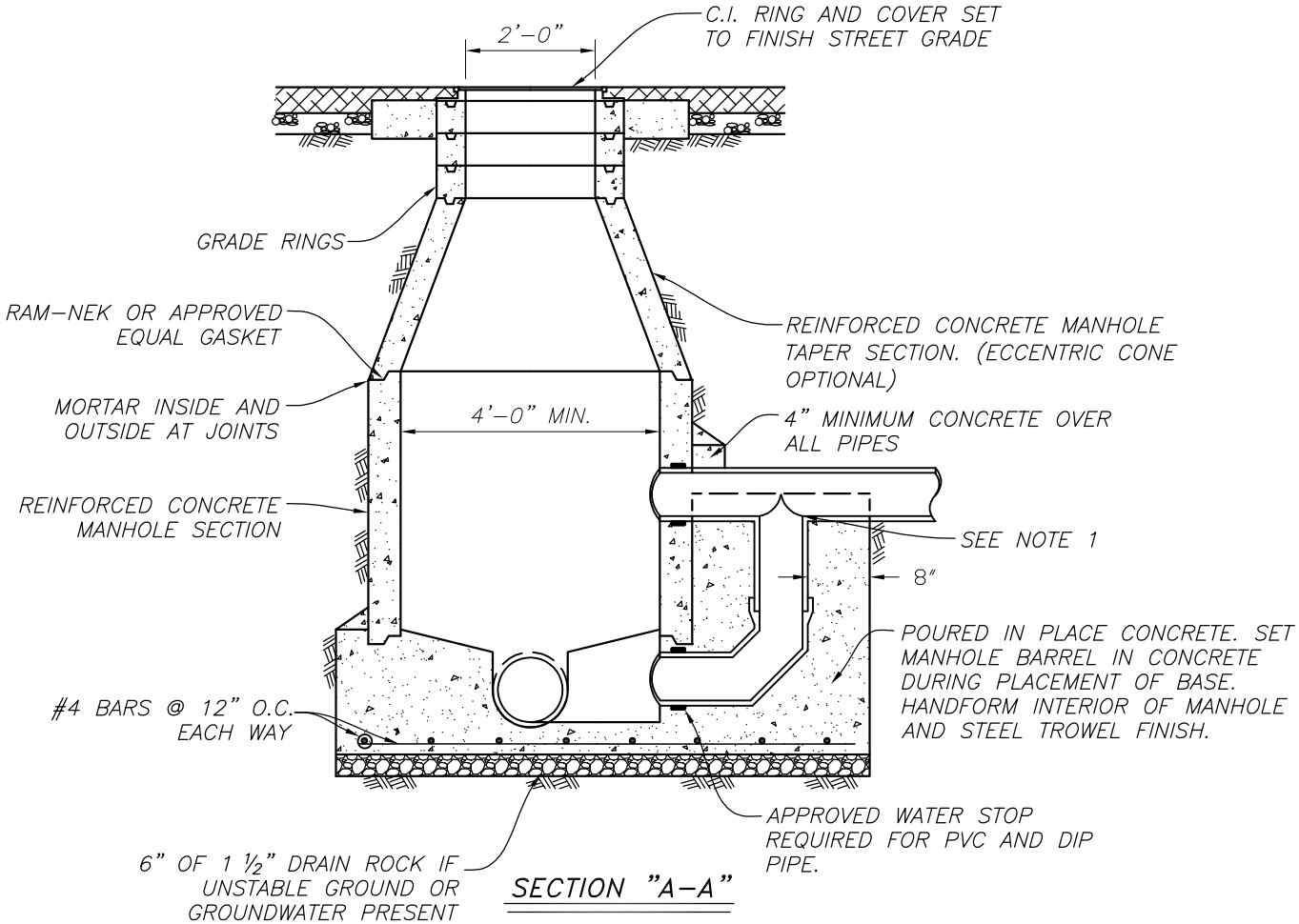


NOTE:
SEE STANDARD DRAWING SS–2 FOR ADDITIONAL INFORMATION

PLAN



SECTION "A–A"

NOTES:

1. CITY ENGINEER MAY REQUIRE CROSS FITTING WITH CLEANOUT ON DROP DOWN MANHOLE.
2. DROP TYPE CONNECTION SHALL BE USED IF THE DIFFERENCE IN ELEVATION BETWEEN THE MAIN AND INTERSECTING PIPES IS GREATER THAN OR EQUAL TO 2 FEET.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

SANITARY SEWER DROP MANHOLE

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. SS - 3
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Oct 29, 2020 - 7:50am
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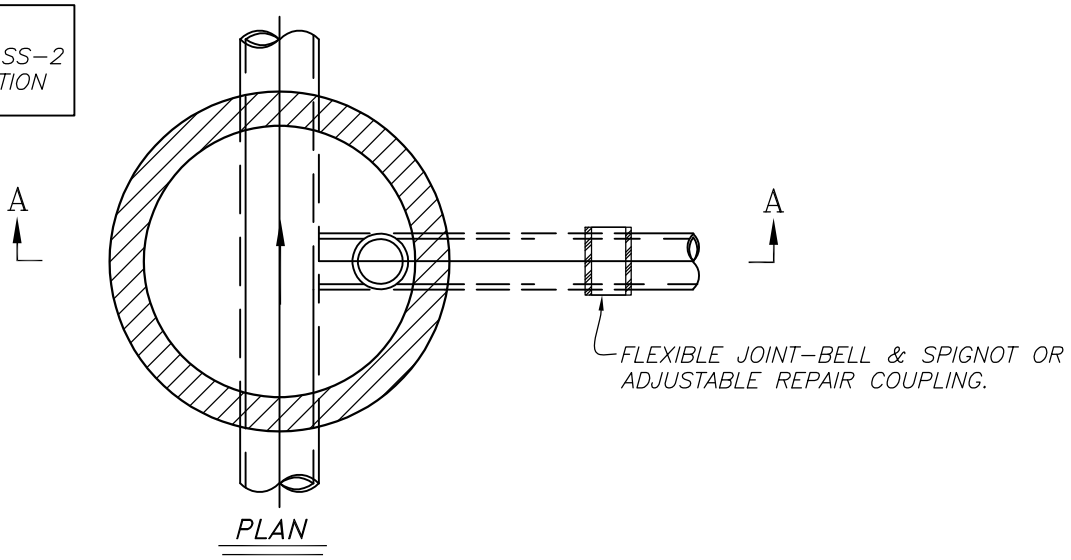
NOTE:
SEE STANDARD DRAWING SS–2
FOR ADDITIONAL INFORMATION



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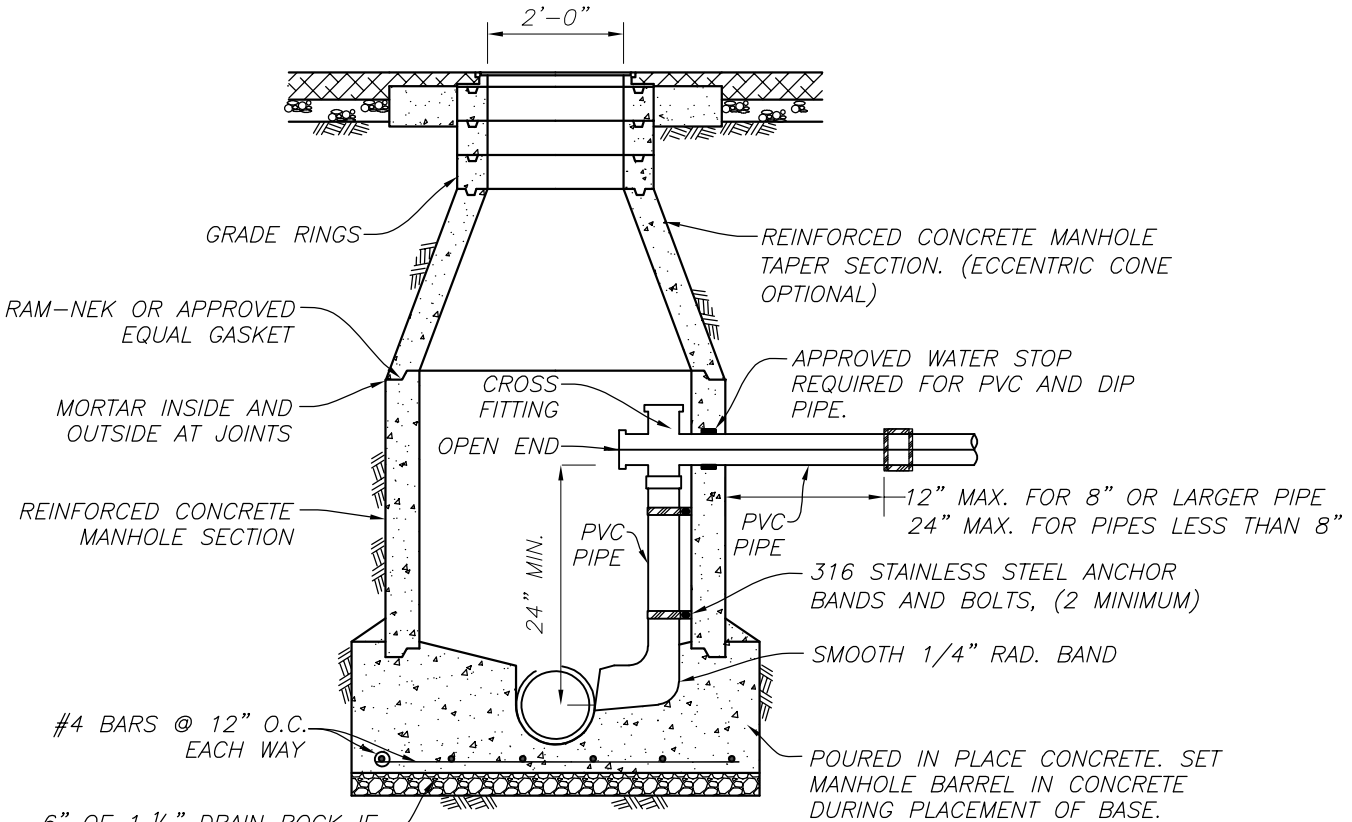

SECTION "A–A"

NOTES:

1. THE INTERNAL DROP MANHOLES CAN ONLY BE INSTALLED WITH THE PRIOR APPROVAL FROM THE CITY ENGINEER IN SPECIAL CIRCUMSTANCES.
2. DROP TYPE CONNECTION SHALL BE USED IF THE DIFFERENCE IN ELEVATION BETWEEN THE MAIN AND INTERSECTING PIPES IS GREATER THAN OR EQUAL TO 2 FEET.
3. ONE DROP PIPE PER MANHOLE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

SANITARY SEWER INTERNAL DROP MANHOLE

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

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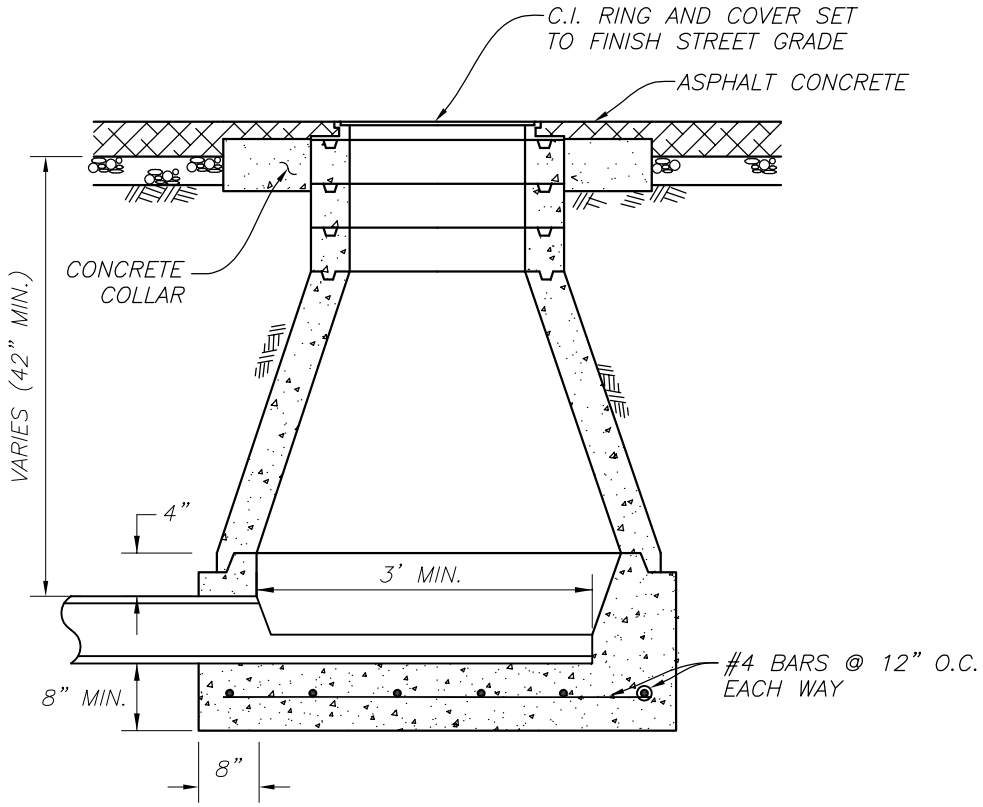

MANHOLE SECTION

NOTE:

SEE DRAWING NO. SS-2 FOR ADDITIONAL INFORMATION.

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CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

TERMINAL MANHOLE

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SS - 5

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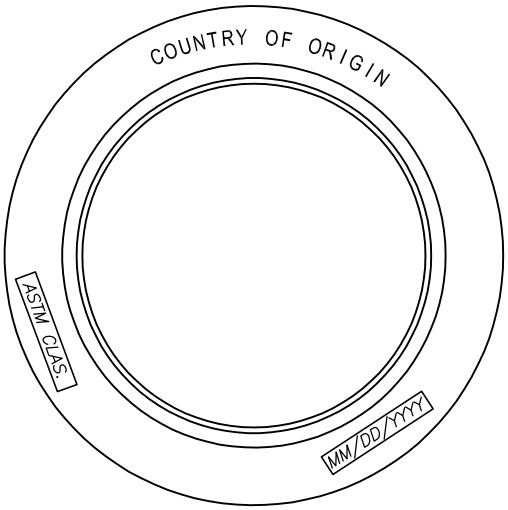

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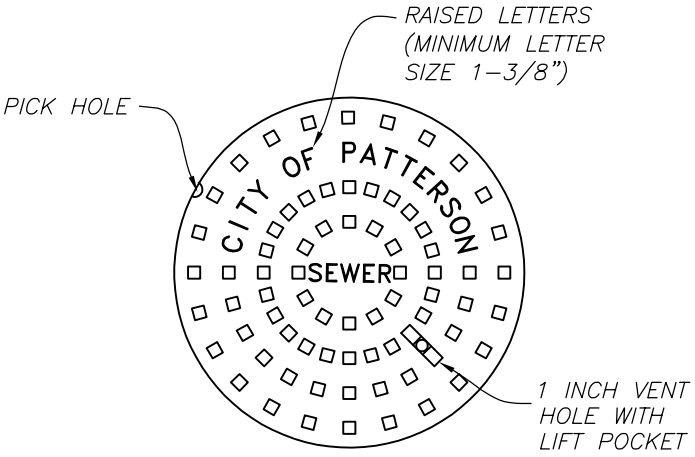

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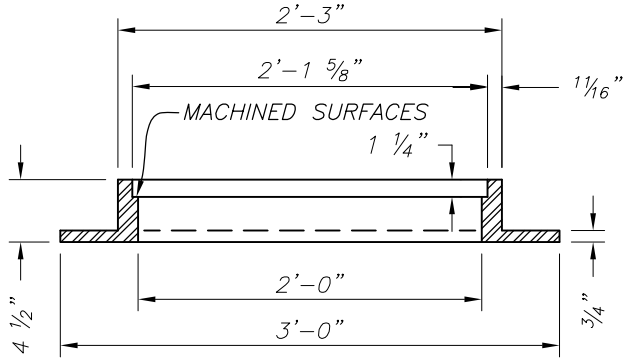
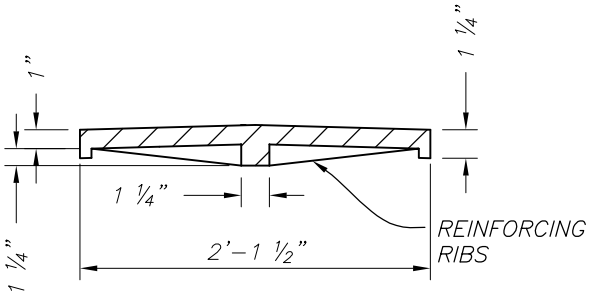


MANHOLE FRAME DETAIL

MINIMUM WEIGHT OF FRAME AND COVER: 280 lbs.



SECTION

MANHOLE COVER DETAIL

NOTES:

1. AREAS WITHIN FLOOD PLAIN, DIRT AREAS OR AREAS WHERE WATER INTRUSION IS A FACTOR "PAMTIGHT" OR APPROVED EQUAL BOLT DOWN LIDS SHALL BE INSTALLED.
2. CITY ENGINEER MAY REQUIRE MANHOLE COVERS TO BE ANTI-THEFT COVERS. MANHOLES OUTSIDE OF ROADWAY SHALL HAVE BOLTED COVERS AND CONCRETE COLLAR.
3. MANHOLE COVER SHALL HAVE THE WORDS "SEWER" AND "CITY OF PATTERSON" CASTED IN THE MANHOLE COVER AT THE LOCATION SHOWN ABOVE.
4. FRAME AND COVER SHALL BE MANUFACTURED OF CAST IRON CONFORMING TO ASTM A-48 CLASS 30 AND H20-44 RATED. FRAME AND COVER COATING SHALL BE BITUMINOUS MATERIAL CONFORMING TO AWWA C203.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

CAST IRON MANHOLE FRAME AND COVER

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. SS - 6

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Oct 29, 2020 - 7:54am
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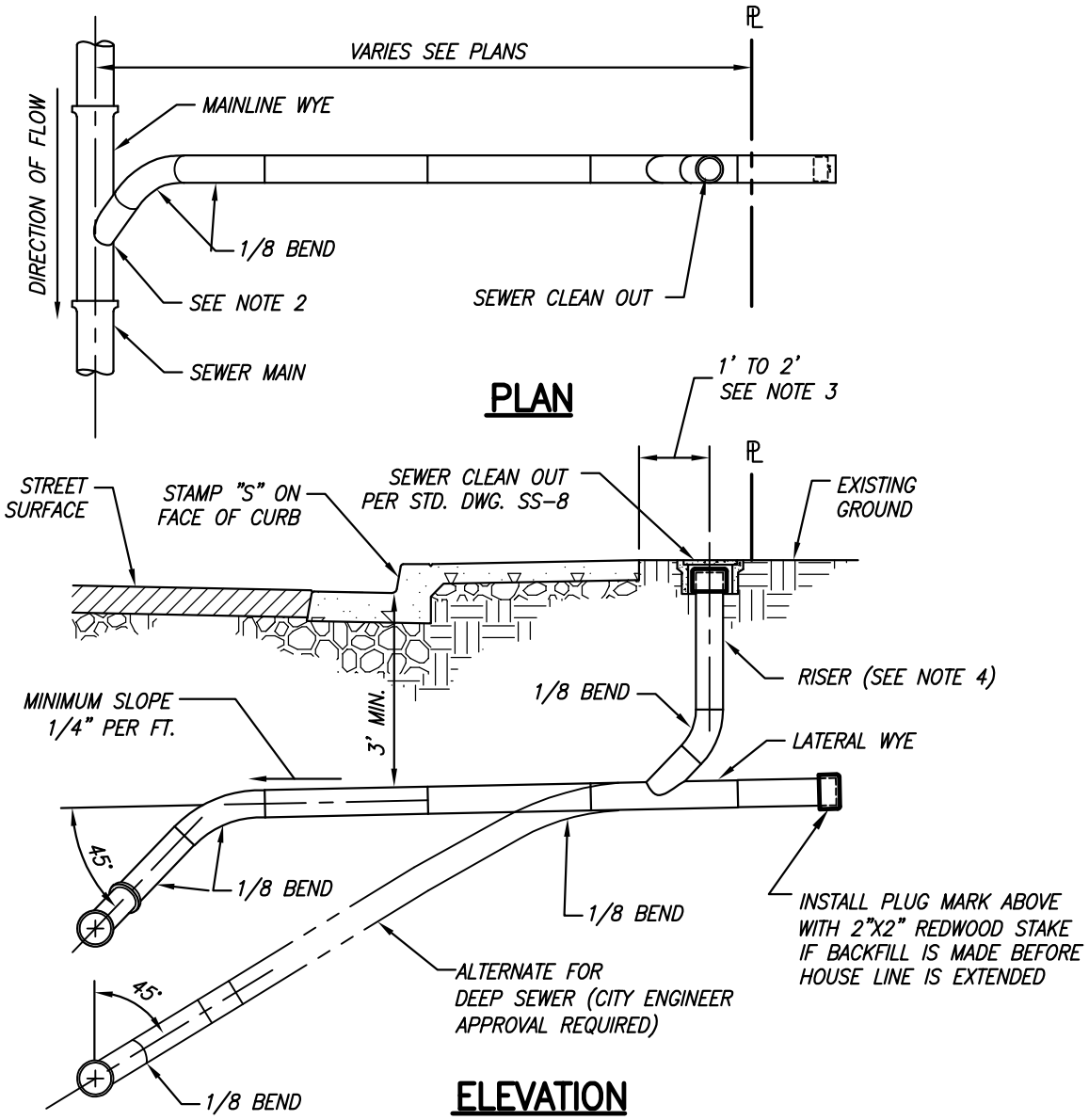

NOTES:

1. LATERAL WYE, 1/8 BEND AND FITTINGS SHALL BE EITHER PVC (MINIMUM SDR26) OR VCP (EXTRA STRENGTH).
2. IF MAIN AND LATERAL ARE DISSIMILAR MATERIAL CUT OFF BELL ON BRANCH SIDE OF MAINLINE WYE AND INSTALL A FLEXIBLE RUBBER COUPLING WITH STAINLESS STEEL SHEAR BAND.
3. THE CENTER OF CLEANOUT SHALL BE LOCATED 1' TO 2' BEHIND FACE OF CURB WHERE THE SIDEWALK IS NOT ATTACHED TO THE CURB.
4. THE RISER SHALL BE THE SAME MATERIAL AS THE SERVICE LATERAL. SEE SEWER CLEAN OUT STANDARD DRAWING SS-8.
5. WHEN THE LATERAL SEWER DEPTH IS SUCH THAT 3 FEET COVER CANNOT BE MET, THE LATERAL MUST BE ENCASED IN CONCRETE IN TRAVELED RIGHT-OF-WAY OR PVC PIPE MEETING THE STANDARDS OF AWWA C900 CLASS 150 SHALL BE USED.
6. LATERALS SHALL HAVE BEDDING AND BACKFILL AS SEWER MAIN. TRENCH WIDTH SHALL BE AUFFICIENT TO ALLOW MECHANICAL COMPACTION OF BACKFILL AROUND CONDUIT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

SEWER SERVICE LATERAL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SS - 7

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Oct 29, 2020 - 7:55am
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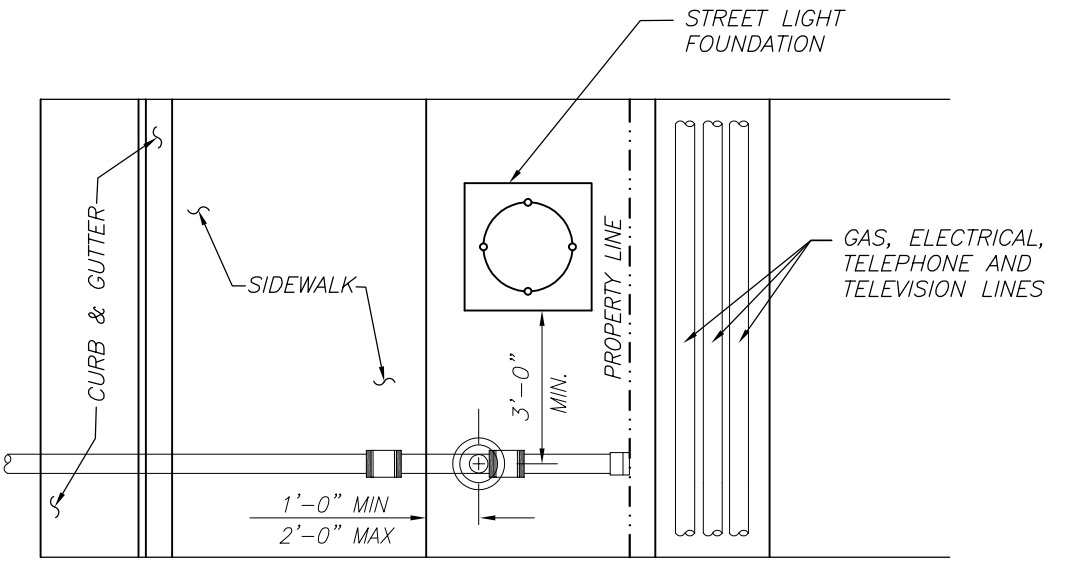
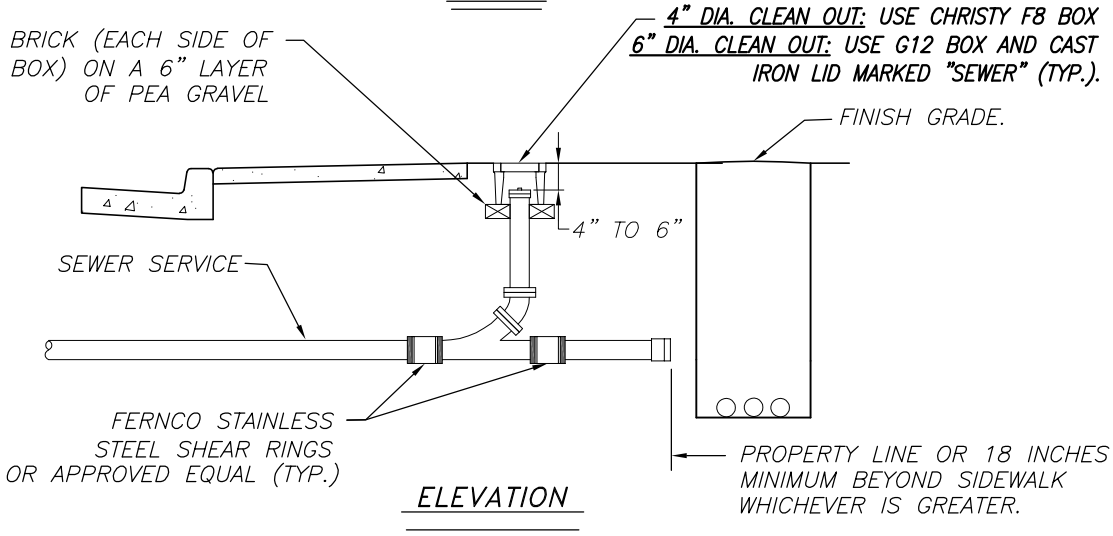


PLAN



ELEVATION

NOTES:

1. NO CLEANOUTS SHALL BE LOCATED IN DRIVEWAYS.
2. THE RISER SHALL BE TERMINATED APPROXIMATELY 6 INCHES BELOW GRADE WITH A SOLVENT WELD CAP. THE CLEANOUT CAP, PLUG AND CURB VALVE SHALL BE INSTALLED WHEN CONNECTION TO THE SEWER SERVICE IS MADE.
3. CLEANOUT LOCATION IS SHOWN BASED ON ATTACHED CURB AND SIDEWALK, FOR SEPARATED CURB AND SIDEWALK, INSTALL CLEANOUT 2 FEET BEHIND CURB IN PLANTING STRIP.
4. CLEAN OUTS LOCATED IN SIDEWALK OR DRIVEWAY AREA MUST BE APPROVED BY THE CITY ENGINEER AND SHALL INCLUDE A TRAFFIC RATED BOX AND LID.
5. NEW CLEAN OUT INSTALLED WITH NEW LATERAL SHALL BE OF THE SAME MATERIAL AS THE SERVICE LATERAL, VCP (EXTRA STRENGTH), PVC (SDR 26) PIPING AND FITTINGS, OR DIP.
6. NEW CLEAN OUT ON EXISTING LATERAL SHALL BE PVC RUBBER GASKETED PUSH ON JOINTS OR VCP WITH BELL AND SPIGOT COMPRESSION JOINTS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

SEWER SERVICE CLEANOUT

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. SS - 8

NTS

Oct 29, 2020 - 7:54am
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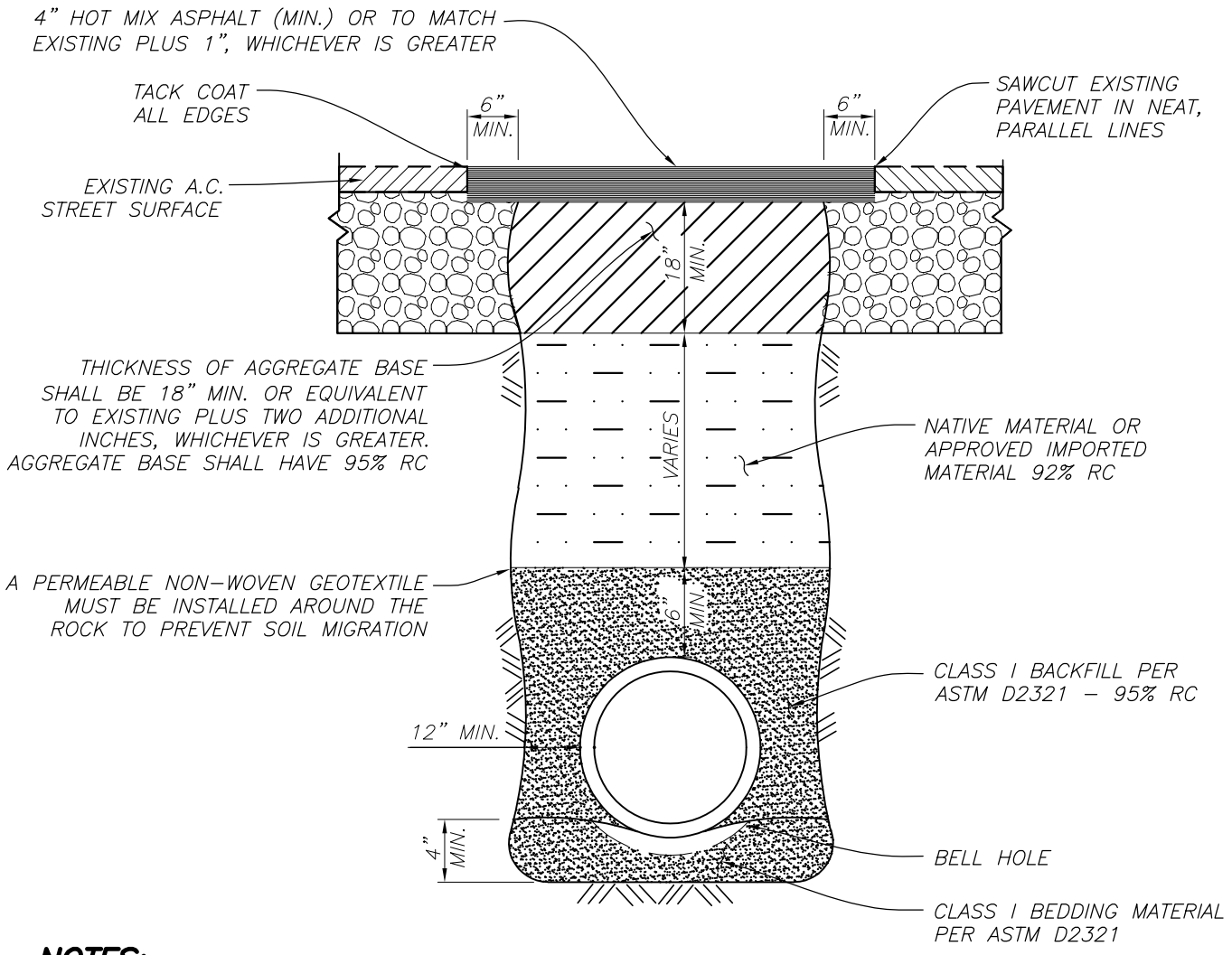
NOTE

TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.



NOTES:

1. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTAL
2. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
3. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
4. ALL CUTS IN MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN EXISTING AND NEW PAVEMENT SHALL BE SEAMLESS BY USING A HEATER-REMIX PROCESS.
5. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
6. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12-INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

FLEXIBLE WALL PIPE BACKFILL

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. SS - 9

NTS

Oct 29, 2020 - 7:56am
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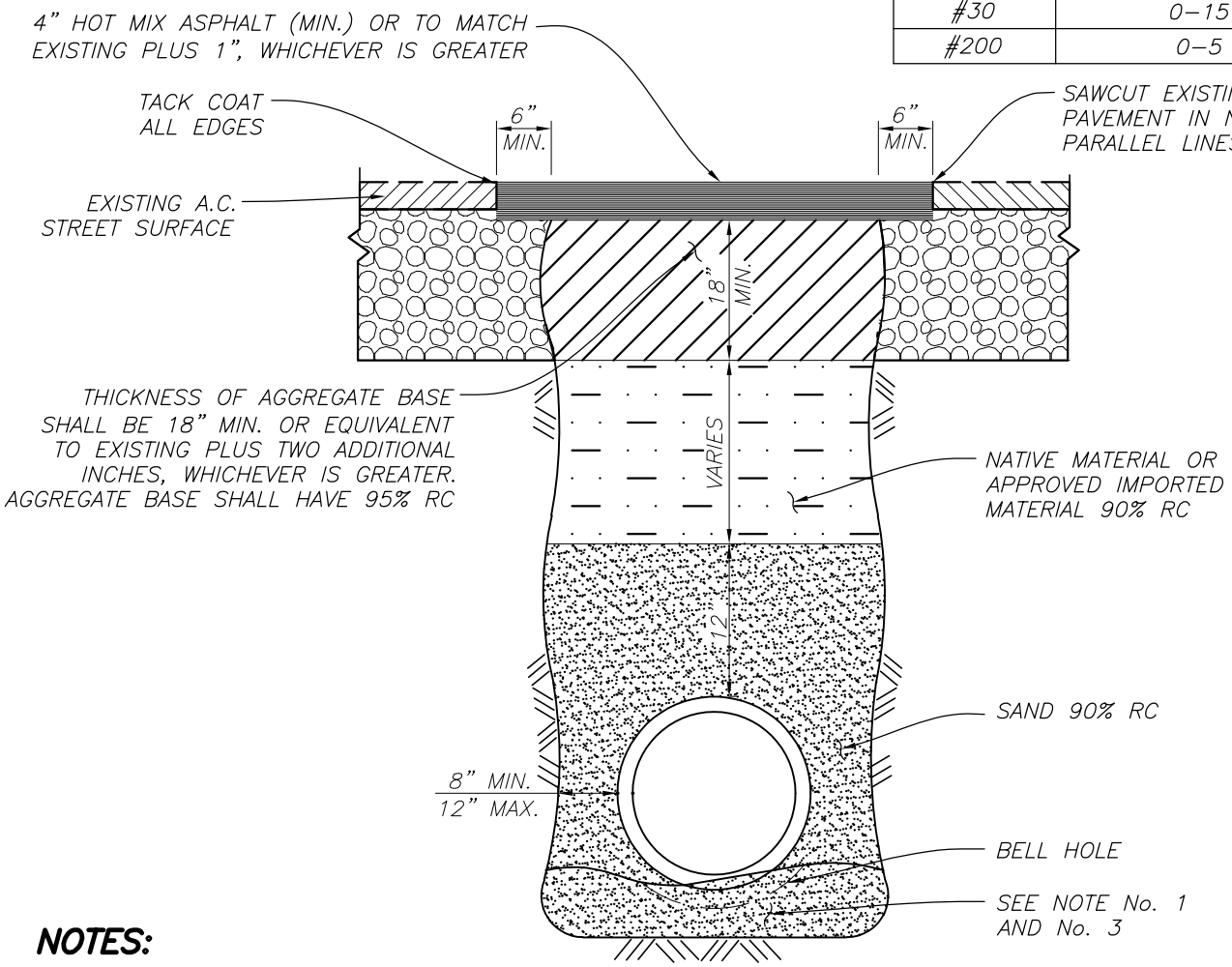
NOTE

TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.

SAND SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:	
SIEVE SIZE	PERCENTAGE PASSING
#4	100
#16	0–70
#30	0–15
#200	0–5



NOTES:

1. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTALLED.
2. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
3. FOR PVC PRESSURE PIPE PROVIDE 4 INCHES OF SAND BEDDING.
4. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
5. GEOTEXTILE FABRIC AND NON–WOVEN REINFORCEMENT FABRIC SHALL BE INSTALLED WHEN REQUIRED BY THE CITY ENGINEER.
6. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
7. ALL CUTS IN THE MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN NEW AND EXISTING PAVEMENT SHALL BE SEAMLESS BY USING A HEATER–REMIX PROCESS.
8. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12–INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

RIGID WALL PIPE BACKFILL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SS - 10

NTS

Oct 29, 2020 - 7:57am
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SECTION 9 – STORM DRAINAGE

SPECIFICATIONS:

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SD - 2 RAIN INTENSITY FREQUENCY CURVES
SD - 3 FLEXIBLE WALL PIPE BACKFILL
SD - 4 RIGID WALL PIPE BACKFILL
SD - 5 C.I.P.P. STORM DRAIN AND TRENCH
SD - 6 STORM DRAIN MANHOLE FOR 30” – 48” C.I.P.P.
SD - 7 STORM DRAIN MANHOLE FOR 54” – 96’ C.I.P.P.
SD - 8 STORM DRAIN MANHOLE PLAN VIEW (C.I.P.P.)
SD - 9 STORM DRAIN MANHOLE
SD - 10 CAST IRON MANHOLE FRAME AND COVER
SD - 11 DRAIN INLETS

SECTION 9

STORM DRAINAGE

9.1 PURPOSE

The storm drainage standards are intended to establish the minimum standards for the design and construction of storm drainage pipes, ditches, berms, channels, detention and retention basins, gutters, curbs, inlets, outlets, outfalls and other storm drainage appurtenances associated with new development projects. All design and construction of new storm drain facilities shall be in accordance with accepted engineering practices, current BMPs (Best Management Practices), and these minimum design standards.

9.2 GENERAL

All drainage design shall be in accordance with the following requirements and shall provide a positive means of drainage to the discharge point designated by the City. The use of retention basins or storage basins will be permitted only with specific prior approval by the City. All drainage calculations shall be submitted to the City Engineer for review. Drainage calculations shall cover all drainage facilities required to deliver run-off to a certain location and hydraulic grade line elevation as approved by the City Engineer. Drainage flow calculations shall be submitted on Drawing No. SD-1. Output of computerized calculations will not be accepted unless all the data required on Drawing No. SD-1 is provided in the same format as Drawing No. SD-1.

Retention or storage basins are required when downstream facilities are incapable of accepting the higher storm drainage runoff associated with direct discharge. Even with reduced discharges associated with basins, there are times when basin discharges must be reduced or halted due to downstream capacity constraints. Whenever basins are installed with discharge facilities, automated controls for the outlet facilities including SCADA operation are required.

9.3 LOW IMPACT DEVELOPMENT, TRASH SEPARATOR AND BEST MANAGEMENT PRACTICES

All new developments of any size and re-development shall incorporate the requirements of the City's Post-Construction Stormwater Standards Manual and the current Phase 2 MS4 NPDES permit. Applicable projects must incorporate into their plans the mandatory minimum BMPs, low impact development measures. The Post-Construction Stormwater Standards Manual is available to download on the City of Patterson's website.

All inlet structures shall meet Cal-OSHA Standards that will prevent access by small children and prevent clogging of structures. This will include the

installation of trash racks, rebars, or screens across the open areas of said structures and pipes. No particle 5 mm or greater shall flow into the City's Storm System. California State Water Board approved trash control devices must be installed where storm water flows to the City's Storm System from private properties.

The California Stormwater Quality Association (CASQA) Stormwater Best Management Practice Handbook for New Development and Redevelopment contains design standards and detailed information on stormwater treatment and source controls. The CASQA handbook can be viewed online at: www.cabmphandbooks.com.

9.4 SUBMITTALS

Prior to submittal of Improvement Plans for the first phase of construction, a storm drainage master plan for the entire development shall be submitted to the City Engineer for review and approval. The plan shall include the following:

a. A plan with a scale of 1" to 100' showing the proposed system, preliminary pipe sizes, tributary sub-areas (including offsite drainage) and existing and future tributary areas outside the project area. All flow rates shall be in cubic feet per second (cfs).

b. The Hydraulic calculations shall show as a minimum the Hydraulic Grade Line (HGL), the proposed storm drain, including slopes and sizes, the flow in the pipes, velocities in pipes, elevation of pipe inverts at structures, top of structure elevation at each structure and top of the curb elevations (or freeboard at structures).

c. Project Stormwater plan as per the Post-Construction Stormwater Standards Manual must be submitted with the submittal.

d. Detention basin design calculations and conceptual drawings of the basin and access road. The drawings shall include approximate groundwater elevation, basin inverts, maximum water surface elevations and hydraulic grade line control elevations.

e. A description and preliminary sketch of any pump stations or gravity outlet facilities. This information shall include number and size of pumps, sump volumes and pump operating levels.

9.5 EASEMENTS

Publicly owned drainage pipelines and channels must be installed in the public right-of-way, unless a dedicated public easement is provided on private property. Easement option is not preferred, and must be approved by the City Engineer

prior to the approval of the Improvement Plans. The minimum easement width shall be 15 feet. Wider easements may be required by the City Engineer for any lines over 18-inches in diameter or with invert elevation 5 feet or greater below ground line. The line shall be located in the center of the easement unless otherwise required by the City Engineer.

Drainage easements for open channels shall have sufficient width to contain the open channel and a 15 feet wide service road. The toe of a bank shall not be within 5' of an easement boundary. Easement boundary lines shall, at changes of alignment, have a radius sufficient enough to provide turning room for vehicles operating on the service road.

9.6 FLOW RATES

Flow rates shall be determined by using the Rational Formula, Q=CIA. Where Q represents the quantity of run-off in cubic feet per second; A, the total run-off area in acres; I, the intensity of the rainfall in inches per hour as determined from the intensity duration curves shown on Drawing No. SD-2; the coefficient of run-off also shown on Drawing No. SD-2.

Roof to gutter time shall be assumed to be 20 minutes.

9.7 PIPE DESIGN

1. GENERAL

Storm drainage piping shall be designed to handle a storm with a minimum return period of ten (10) years. The minimum size of any storm drainage pipe shall be 15 inches in diameter except for pipes terminated in cul-de-sacs and catch basin laterals which shall be a minimum of 12 inches in diameter.

Manning's formula shall be used to calculate design flow, velocity, slope and pipe diameter. Manning's roughness coefficient "**n**" varies with the type of pipe used according to the following table:

Pipe Material	n
Plastic	0.012
Reinforced Concrete	0.013
Cast-In-Place Concrete	0.015

2. MATERIAL

Plastic pipe up to and including 15-inch diameter shall conform to ASTM Designation D3034. Pipe dimension ratio shall be SDR35. Plastic pipe

18-inch to 27-inch in diameter shall conform to ASTM Designation F679 (PS115). Rubber gasket joints shall be factory installed and conform to ASTM F477.

Reinforced concrete pipe shall be the minimum class required to serve the purpose intended but in no case shall be less than Class III conforming to the specifications for Reinforced Concrete Culvert, Storm Drain and Sewer Pipe, ASTM Designation C76. Any Reinforced Concrete storm drain pipe which lies wholly or in part within the structural section of a street shall be Class V. The pipe shall be manufactured using the packer head method or shall be centrifugally spun. The pipe shall utilize a Bureau of Reclamation Type R-4 bell and spigot. Use of elliptical reinforcement is not allowed.

Cast-in-place concrete pipe shall only be used if approved by the City Engineer. Cast-in-place concrete pipe shall conform to Section 63 of the State Standards and these Improvement Standards. Concrete shall be minimum of 4,000 psi.

3. SLOPE

Minimum slopes are as follows:

Diameter (inches)	Minimum Slope (ft/ft)
12	0.0019
15	0.0014
18	0.0011
21	0.0009
24	0.0008
30	0.0006
36	0.0006
42	0.0005
48 or larger	0.0004

The above slopes are intended to provide velocities of not less than 2.0 feet per second when flowing half full regardless of the slope of the hydraulic grade line. (Where the City's system is surcharged, velocities based on the design hydraulic grade line are well below 2 feet per second except in trunk lines.)

If it is impractical to meet these velocity standards, the minimum slopes can be waived by the City Engineer.

The slope of storm drains between manholes shall be constant.

Catch basin laterals shall have a minimum fall of 0.10 feet between the catch basin and the manhole. Desired fall is 0.30 feet or more.

Siphons are not permitted.

3. VERTICAL ALIGNMENT

The minimum cover for storm drains shall be 36-inches. When crossing a water main, the storm drain line should be installed below the water main with a minimum clearance of 12-inches. At points of convergence of pipes, the invert of the inflowing pipe shall be a minimum of 0.1 foot higher than the invert of the outflowing pipe. (This 0.1 foot of elevation difference does not apply for laying of pipe through a manhole.)

4. HORIZONTAL ALIGNMENT

Drainage pipes shall be placed within street rights-of-way unless placement in an easement is specifically approved by the City Engineer. Alignment shall be parallel to the street centerline whenever possible.

A minimum horizontal clearance of 10 feet shall be maintained between drain lines and water mains, unless otherwise approved by the City Engineer. If the 10-foot separation is waived, the requirements of the California State Department of Health Services for separation between water mains and sanitary sewers shall be adhered to.

9.8 DRAIN INLETS

Drain inlets shall be designed and spaced as such that they capture 10-year storm. Drain inlets shall be as shown on Standard Drawing 8-K. The structural channel iron shall be galvanized to conform to the requirements Section 75-1.05 of the State Standards.

Spacing of drain inlets shall be such that the surface flow to the drain inlet does not encroach into vehicular travel ways.

City Engineer may require installation of trash screens in the drain inlets.

9.9 MANHOLES

Manholes shall be located on storm trunk and lateral pipelines. Manholes shall be placed at all storm drain intersections, at sections where changes in slope, pipe size and alignment occur, and at the upstream ends of all storm drains.

Manholes shall have a maximum spacing of 500 feet along the alignment and 300 feet intervals along the curve.

Manholes in dirt or unimproved areas must have a concrete collar and bolt-down covers. Pressure manhole covers must be installed, when required by the City Engineer.

Invert elevation drop across each manhole shall equal the difference in pipe diameter where there is a change in pipe size and a minimum of 0.1 foot at all bends.

9.10 TRENCH EXCAVATION

The Contractor shall, prior to beginning construction, obtain from the Division of Industrial Safety the permit required by California Labor Code, Section 6500, and pay any fee charged for such permit. In addition thereto, whenever the work under the Contract involves trench excavation 5 feet or more in depth, the Contractor shall submit for approval to a registered civil or structural engineer representing the City, in advance of excavation, a detailed plan showing the design of shoring, bracing, sloping, or other provisions to be made for worker protection from the hazard of caving ground during the excavation. If such plan varies from the shoring system standards established by the Construction Safety Orders of the Division of Industrial Safety, the plan shall be prepared by a registered civil or structural engineer. Nothing in this section shall be deemed to allow the use of shoring, sloping or other protective system less effective than that required by the Construction Safety Orders. Nothing in this section shall be construed to impose tort liability on the City, City Engineer, or any of their officers, agents or employees.

The pipe trench shall be dug with side walls sloped or otherwise supported in a safe manner in accordance with the Department of Industrial Relations, Division of Occupational Safety and Health Administration regulations pertaining to trenching.

Excavated material shall be placed on only one side of the trench unless otherwise directed. Separation distance between piles of excavated material and trench shall be consistent with the Construction Safety Orders.

The alignment and grade for the bottom of the trench shall be properly established before the trench is excavated and shall be approved by the City before the pipe is laid. Trenches shall be true to line and grade, and the bottom shall be even and free from all objectionable material.

9.11 WATER IN TRENCH

When water is encountered in the trench, it shall be removed by draining or by pumping. Should water get into the trench before the pipe is laid, the laying of pipe

shall be postponed until the trench has dried sufficiently to provide a firm foundation for the pipe or else, the mud or softer material shall be removed and grade re-established by backfilling and compacting with suitable material as determined by the City.

9.12 LAYING AND JOINTING OF PIPE

Laying and jointing of pipe shall be in accordance with the manufacturer's recommendations and as approved by the City. Joint deflections shall not exceed 80% of the maximum recommendations of the manufacturer.

Where rubber gaskets are used for jointing pipe, a feeler gauge shall be used to check the position of the rubber gasket upon each closure. The interior of the pipe shall be cleared of all debris, and exposed pipe ends shall be closed by a suitable pipe plug when pipe laying is not in progress.

The pipe shall be laid on a trench bottom shaped to provide adequate support of the pipe except at coupling or bell holes. The use of prepared mounds to facilitate laying of the pipe is not approved.

Where pipe is to be encased or have concrete bedding, suitable concrete blocks shall be used to support the pipe in the proper location while placing concrete.

9.13 BACKFILL

After the storm drains have been properly constructed and inspected, the trench shall be backfilled and compacted as shown on Drawing No. 8-C for flexible walled pipe, Drawing No. 8-D for rigid walled pipe and Drawing No. 8-E for cast-in-place pipe.

Compaction tests shall be performed by a testing laboratory approved by the City. The laboratory shall be retained by the Developer and all testing expenses shall be paid by the Developer.

Jetting of backfill will not be allowed except in special cases as approved by the City Engineer.

During the compaction operation, the contractor must exercise extreme caution so as not to damage or disturb the pipe.

9.14 DEFLECTION TESTING

PVC storm drain pipe shall be tested using a mandrel or other approved testing device. Maximum deflection shall not exceed 5% of the average inside diameter of the pipe.

For all pipes less than 24-inch (I.D.), a mandrel shall be pulled through the pipe by hand. Prior to use, the mandrel shall be approved by the Director. If the mandrel fails to pass, the pipe will be deemed to be over-deflected.

Mandrels shall be rigid, nonadjustable, odd-numbering-leg (9 legs minimum), having an effective length not less than its nominal diameter. The minimum diameter of the mandrel at any point along its full length shall be as follows:

Pipe Material	Nominal Size (Inches)	Minimum Mandrel Diameter (Inches)
PVC-ASTM D3034 (SDR35)	12	10.793
	15	13.203
PVC-ASTM F679 (T-1 Wall)	18	16.748
	21	19.744
	24	22.212
	27	25.033

Mandrels shall be fabricated from steel, fitted with pulling rings at each end, and stamped or engraved on some segment, other than the runner, with the pipe material, specifications, nominal size and mandrel O.D.

For pipes with a nominal diameter of 24-inches or larger, deflections shall be determined by a method submitted to and approved by the Director. If a mandrel is selected, the minimum diameter, length and other requirements shall conform to the dimensions and requirements previously stated.

9.15 CLOSED CIRCUIT TV INSPECTION

Prior to placing the final street surfacing, the Contractor will inspect all new storm drain piping and manholes with a closed-circuit television system. This will be done after the pipe has been installed true to the prescribed lines and grades, the trench backfilled and compacted, the manhole and cleanout covers set to proper grade, the roadway subgrade compacted, aggregate subbases and bases placed and compacted, and the sewer system cleaned of all debris. All inspection, equipment time and costs for the inspection shall be the responsibility of the Contractor.

At the start of each storm drain section, the Contractor shall record the manhole location by street intersections the inspection is beginning and ending at. This information shall appear in typewritten letters on the videotape. A gauge shall be attached to and dragged behind the camera to indicate the depth of any standing water within the line. The gauge shall have a diameter of 10% of the pipe diameter being televised.

Pulling of the camera shall be stopped and locations recorded in typewritten letters on the videotape at the following locations:

- The beginning and ending locations of all areas where the depth of standing water exceeds 10% of the pipe diameter.

- Any problem areas.

Camera pulling speed shall not exceed 100 ft. per minute.

Videos shall be delivered to the City Engineer for his/her review. The Contractor shall make all necessary repairs and corrections to the pipeline as required by the City Engineer prior to paving.

9.16 DETENTION BASINS

Detention basins shall be designed with a capacity to hold the total run-off from a 10-year frequency, 24-hour event if gravity discharge is used. For pump discharge, the capacity shall be large enough to hold the total run-off from a 50-year frequency, 24-hour event.

The maximum design water surface of the basin shall be 1-foot below the elevation of the top of the curb at the lowest catch basin inlet within the tributary area.

Hydraulic grade line control elevation, if not established, shall be the elevation at which 50 percent of the design containment occurs.

Basin bottoms shall be provided with a minimum slope of 0.008 toward approved drainage facilities. Maximum sideslopes of detention basins shall be 6 horiz:1 vert. unless otherwise approved by the City Engineer.

Basin inlet/outlet piping shall enter the basin through a reinforced concrete inlet/outlet structure installed in the sideslope of the basin.

Storm drainage piping shall be designed such that nuisance water flows less than the discharge capacity of the basin shall be evacuated without first entering the basin. Detention basins shall be provided with outlet facilities capable of draining a full basin within 48 hours.

9.17 SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA)

1. GENERAL

The City of Patterson presently has a SCADA system for monitoring and remote operation of gates and pump stations associated with discharge of water from storm drainage basins. A RTU shall be provided at each outlet facility and shall be linked to the City SCADA system for remote monitoring and operation. To provide a complete operation system, the

services of a system integrator specified by the City is required and design drawings for the system shall be prepared by an electrical engineer licensed in the State of California.

As a minimum, the SCADA system shall be capable of monitoring the water levels in the basin(s) and discharge facilities; opening or closing of discharge gates automatically or manually; monitoring of gate positions; and manual or automatic operation of pumps.

Electrical design drawings shall include:

- Electrical Site Plan
- Power Distribution and Control Diagram
- PLC I/O Wiring Diagram
- Miscellaneous Details

2. MATERIALS

Due to the custom nature of the SCADA system design, shop drawings and product data submittals are required on the system components. (See Section 1.7)

Controls shall be mounted in a deadfront free standing self contained NEMA 3R metal enclosure with a padlockable door. The control center and all electrical components shall bear the Underwriters Laboratory (UL) label.

9.18 PUMP STATION

3. GENERAL

Pumping stations shall be designed to efficiently handle the calculated run-off from a storm with a 50-year return period unless utilized in conjunction with a detention basin. Pumps designed in conjunction with basins shall be capable of draining 100 percent of the basin's storage capacity within 48 hours.

Pump stations shall be designed with a separator to remove settling and floating debris from the water entering the pump sump. They will also be designed with the following criteria:

- Pump stations shall be duplex style stations with non-clog submersible FLYGT (or approved equal) sewer pumps and slide rail systems or non-clog low RPM vertical turbine or mixed flow pumps. (Slide rails shall be 2-inch schedule 40 steel pipe with stainless steel hardware.) Each pump shall be capable of pumping 100 percent of the design flow.

- Reinforced concrete pump sump of a hydraulic design that meets the recommendations of the pump manufacturer and the City.

- Minimum pump cycle time of 15 minutes.

2. CONTROLS

Controls shall be mounted in a deadfront free standing self-contained NEMA 3R metal enclosure with a padlockable door. The control center and all electrical components shall bear the Underwriters Laboratory (UL) label.

For each pump, there shall be included, a NEMA combination circuit breaker/overload protector with adjustable protection, short circuit protection, reset and disconnect for all phases; across the line magnetic contactor; hand/off/automatic pump operation selector switch; overload relay to be pre-calibrated to match motor characteristics and factory sealed to ensure trip setting is tamper proof and 120 volt control circuitry.

The control center shall also have a pump alternator, pump run lights, condensation heater with thermostat and a 120 volt, 15 amp, GFI duplex receptacle mounted on the inner door.

A UL listed manual generator power transfer switch and a receptacle with closing plug, as specified by the Director, shall be provided to allow connection of an emergency power generator.

Monitoring and operation of the pump station shall be integrated into the City's existing SCADA system.

The water level sensor for pump control shall be as specified by the Director.

3. DISCHARGE PIPING

Discharge piping shall be ductile iron or steel. Plastic piping may be allowed below ground where approved by the City Engineer.

The design velocity in the discharge piping shall not exceed 8 foot per second. All internal piping in the pumping station shall be properly anchored and restrained. Expansion joints and flanged connections shall be provided to facilitate dismantling and maintenance of the equipment.

Valves, couplings and additional flanges as required for proper maintenance of the pumping facilities shall be readily accessible.

9.19 TRASHRACKS

Trashracks shall be installed on all basin inlet/outlet structures and pump stations utilizing vertical turbine or mixed flow pumps.

Trashracks shall be constructed of flat steel bars a minimum of 2 inches deep and 0.25 inches wide. Centerline to centerline spacing of bars shall be 2 inches maximum.

Bars shall be held in a parallel, equally spaced position by a flat toe plate welded across their lower ends and by horizontal spacing bars welded to the rack's downstream side. These horizontal bars shall not interface with raking the racks.

Trashracks shall be inclined 30 to 45 degrees from the horizontal and shall extend from the floor to the top of the structure. A walkway, platform or other suitable level surface shall be provided at the top of all structures to allow for proper maintenance operations. Guardrails meeting the Industrial Safety Orders shall be provided. Sufficient clearance shall be provided between trashracks and surrounding fences or other obstacles to permit handling of cleaning rakes.

9.20 ACCESS

Pump Station layout shall allow for proper access of maintenance vehicles. Vehicular access route from the adjacent travelway throughout the site and back onto the public travelway shall be shown on the site plan. Access roads to pump stations shall be concrete or asphalt concrete paved as required by the City Engineer. Minimum outer and inner turning radii for maintenance vehicles of 42 feet and 24 feet respectively, are required. Minimum access road pavement width shall be 12 feet.

9.21 COMMUNITY FACILITIES DISTRICT (CFD)

All facilities that will be maintained as part of a designated CFD shall include the cost of repair/replacement of pipe, manholes drain inlets, pump maintenance, structural integrity, mowing and planting of grasses, weed control, vector control, periodic removal of sediments and an irrigation system.

STORM DRAINAGE CALCULATIONS
CITY OF PATTERSON

PAGE _____ OF _____

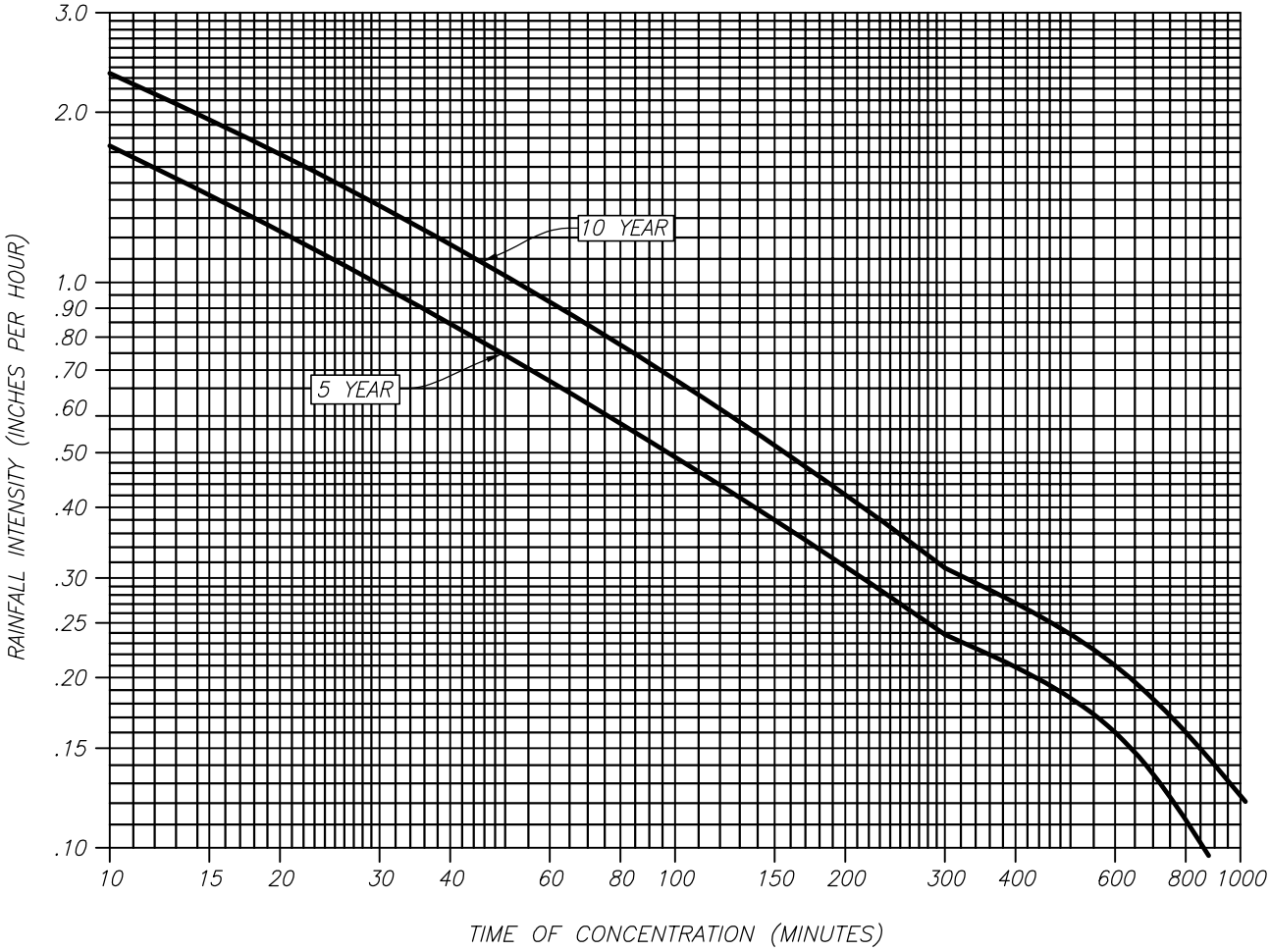
PROJECT: _____

COMPANY NAME: _____

DESIGNED BY: _____ DATE: _____

CHECKED BY: _____ DATE: _____

INLET OR M.H.		CONTRIB. Ac (A)	RUN OFF COEFF. (C)	CA	Σ CA	INTEN-SITY (I)	Q cfs (Σ CA x I)	PIPE DIA.	n	V (fps)	HGL SLOPE ft./ft.	PIPE LENGTH (ft.)	Δ ELEV. (ft.)	HGL ELEVATION		CROWN ELEVATION		T. MIN. IN PIPE	T. MIN. TOTAL	REMARKS
FROM	TO													UPSTREAM	DOWNSTREAM	UPSTREAM	DOWNSTREAM			



NOTES:

1. ALL STORM DRAINAGE PIPING SHALL BE DESIGNED TO HANDLE A STORM WITH A MINIMUM RETURN INTERVAL OF 5 YEARS.
2. ROOF TO GUTTER TIME SHALL BE ASSUMED TO BE 20 MINUTES.
3. THE 10 YEAR–24 HOUR RAINFALL IS 1.73 INCHES.
4. THE 50 YEAR–24 HOUR RAINFALL IS 2.24 INCHES.

RUNOFF COEFFICIENTS

ZONING	"C"
R1, R2	0.50
R3	0.60
COMMERCIAL	0.80
INDUSTRIAL	0.70

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

RAIN INTENSITY FREQUENCY CURVES

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SD - 2

NTS

Oct 29, 2020 - 8:02am
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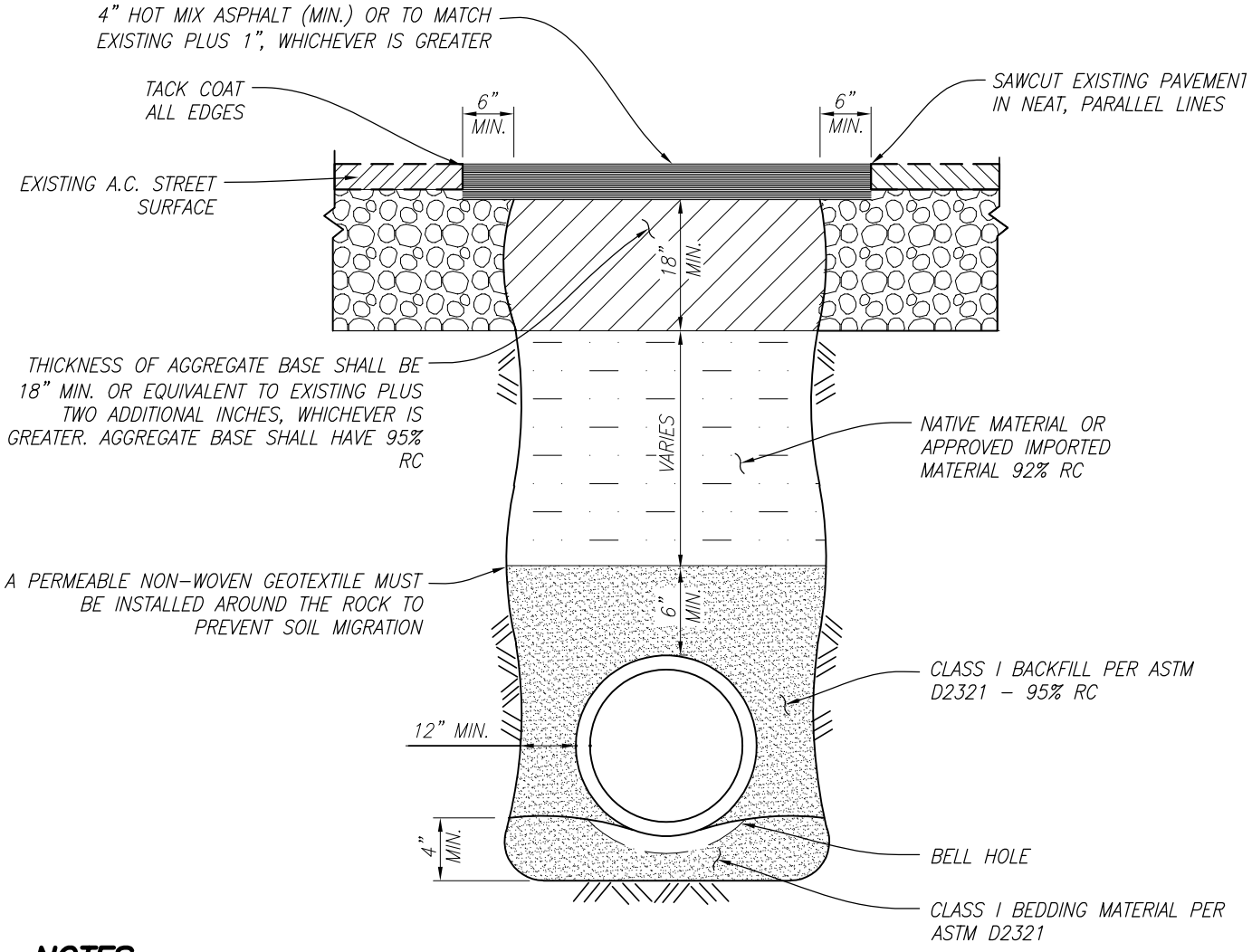
NOTE

TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.



NOTES:

1. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFIL WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTALLED.
2. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
3. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
4. ALL CUTS IN MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN EXISTING AND NEW PAVEMENT SHALL BE SEAMLESS BY USING A HEATER-REMIX PROCESS.
5. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
6. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12-INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

FLEXIBLE WALL PIPE BACKFILL

10/26/20 DATE

62736 R.C.E. NO.

DRAWING NO. SD - 3

NTS

Oct 29, 2020 - 8:03am
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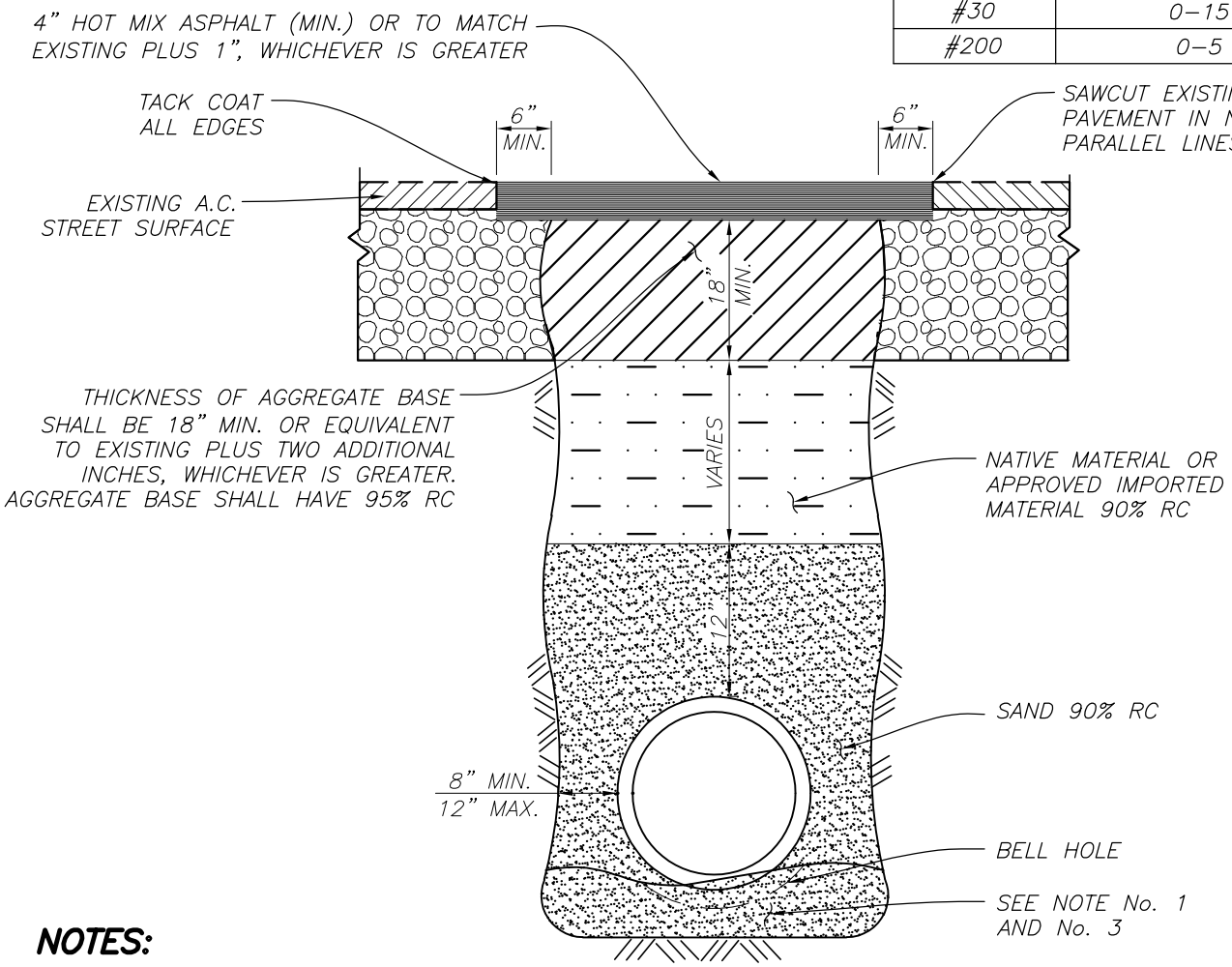
NOTE

TRENCHES NOT IN PAVED AREAS SHALL BE RESTORED TO MATCH EXISTING SURFACE CONDITIONS.

SAND SHALL CONFORM TO THE FOLLOWING GRADING REQUIREMENTS:	
SIEVE SIZE	PERCENTAGE PASSING
#4	100
#16	0–70
#30	0–15
#200	0–5



NOTES:

1. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTALLED.
2. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
3. FOR PVC PRESSURE PIPE PROVIDE 4 INCHES OF SAND BEDDING.
4. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
5. GEOTEXTILE FABRIC AND NON–WOVEN REINFORCEMENT FABRIC SHALL BE INSTALLED WHEN REQUIRED BY THE CITY ENGINEER.
6. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
7. ALL CUTS IN THE MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN NEW AND EXISTING PAVEMENT SHALL BE SEAMLESS BY USING A HEATER–REMIX PROCESS.
8. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12–INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

RIGID WALL PIPE BACKFILL

10/26/20
DATE

62736
R.C.E. NO.

DRAWING NO. SD - 4

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Oct 29, 2020 - 8:03am
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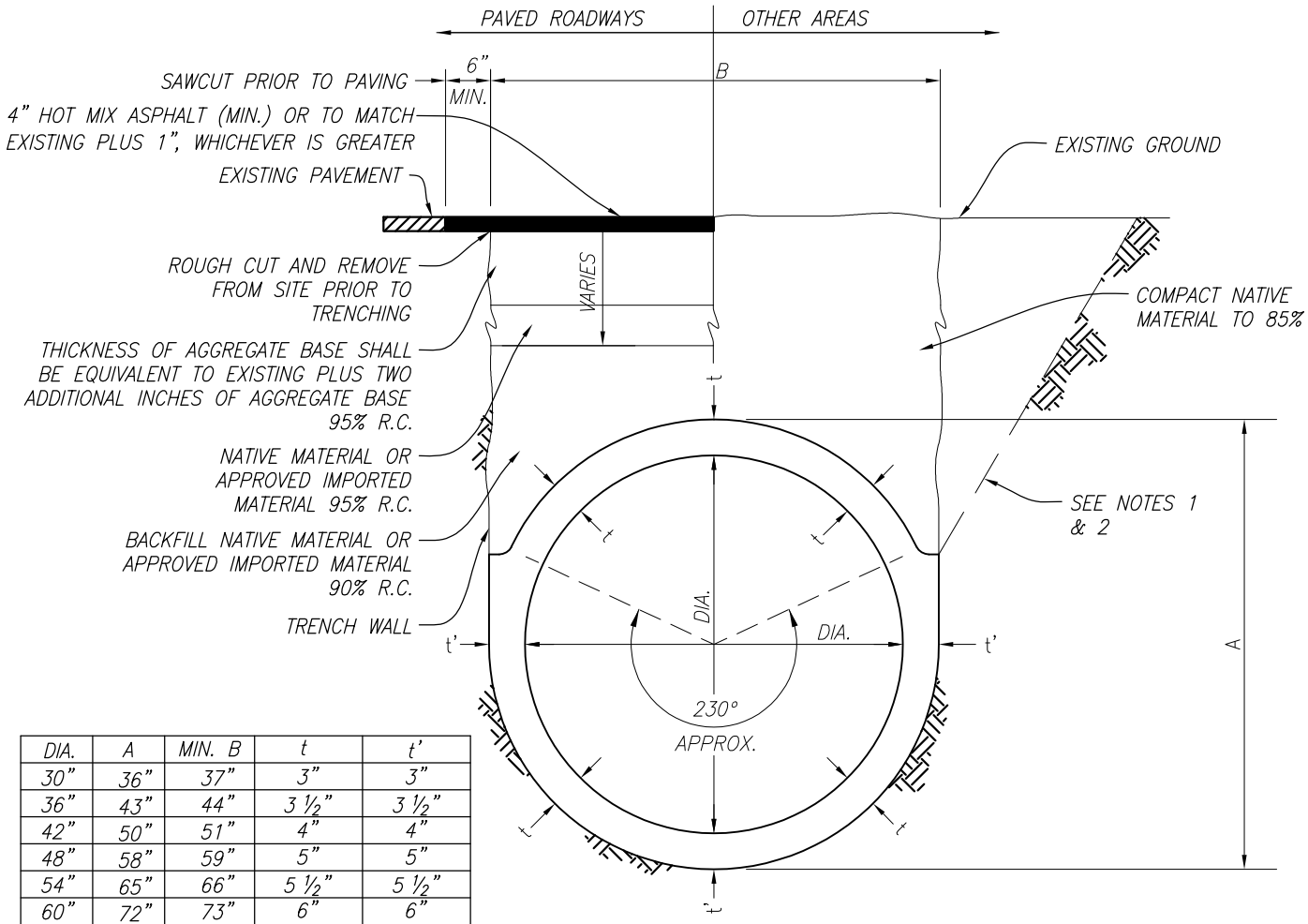

TYPICAL PIPE SECTION
30" THRU 96"

DIA.	A	MIN. B	t	t'
30"	36"	37"	3"	3"
36"	43"	44"	3 ½"	3 ½"
42"	50"	51"	4"	4"
48"	58"	59"	5"	5"
54"	65"	66"	5 ½"	5 ½"
60"	72"	73"	6"	6"
66"	79"	80"	6 ½"	6 ½"
72"	86"	87"	7"	7"
84"	100"	101"	8"	8"
96"	114"	115"	9"	9"

NOTES:

1. THE CONTRACTOR SHALL SUBMIT A DETAILED PLAN TO THE CITY ENGINEER PRIOR TO EXCAVATION, SHOWING DESIGN OF SHORING, BRACING, SLOPING OR OTHER PROVISIONS TO BE MADE FOR WORKER PROTECTION, IN ACCORDANCE WITH SECTION 6422 OF THE LABOR CODE OF CALIFORNIA.
2. THE MINIMUM REQUIRED WORKER PROTECTION SHALL BE AS DESCRIBED IN THE CONSTRUCTION SAFETY ORDERS OF THE DIVISION OF INDUSTRIAL SAFETY. VARIANCES THEREFROM SHALL BE PREPARED AND SIGNED BY A REGISTERED CIVIL ENGINEER OF THE STATE OF CALIFORNIA.
3. IF BOTTOM OF TRENCH IS SOFT OR UNSTABLE, IT SHALL BE OVEREXCAVATED A MINIMUM OF 1 FOOT BELOW GRADE AND BACKFILLED WITH APPROVED IMPORTED MATERIAL AND GEOTEXTILE FILTER FABRIC MUST BE INSTALLED.
4. TACK COAT BETWEEN EXISTING AND NEW PAVEMENT IS REQUIRED. ALSO, SEAL THE JOINTS OF NEW AND EXISTING PAVEMENT AREAS.
5. ONE SACK OR TWO SACK SLURRY CAN BE USED WITH THE APPROVAL OF CITY ENGINEER OR/AND WHENEVER REQUIRED BY THE CITY ENGINEER.
6. IF TRENCH IS WITHIN 36" OF EXISTING GUTTER OR CONCRETE FLATWORK, CONTRACTOR SHALL REMOVE AC AND PAVE TRENCH AND ADJACENT PIECE AS ONE COMPLETE TRENCH RESTORATION.
7. ALL CUTS IN THE MORATORIUM STREETS AND/OR WHEN REQUIRED BY THE CITY ENGINEER, JOINTS BETWEEN NEW AND EXISTING PAVEMENT SHALL BE SEAMLESS BY USING A HEATER-REMIX PROCESS.
8. WHEN PLACING PIPE WITHIN EXISTING STREETS, NO NATIVE BACKFILL SHALL BE USED IN THE TRENCH. CONTRACTOR SHALL USE SAND BACKFILL UP TO 12-INCHES ABOVE TOP OF THE PIPE AND AGGREGATE BASE TO THE BOTTOM OF AC PAVEMENT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

C.I.P.P. STORM DRAIN AND TRENCH

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. SD - 5
NTS

Oct 29, 2020 - 8:05am
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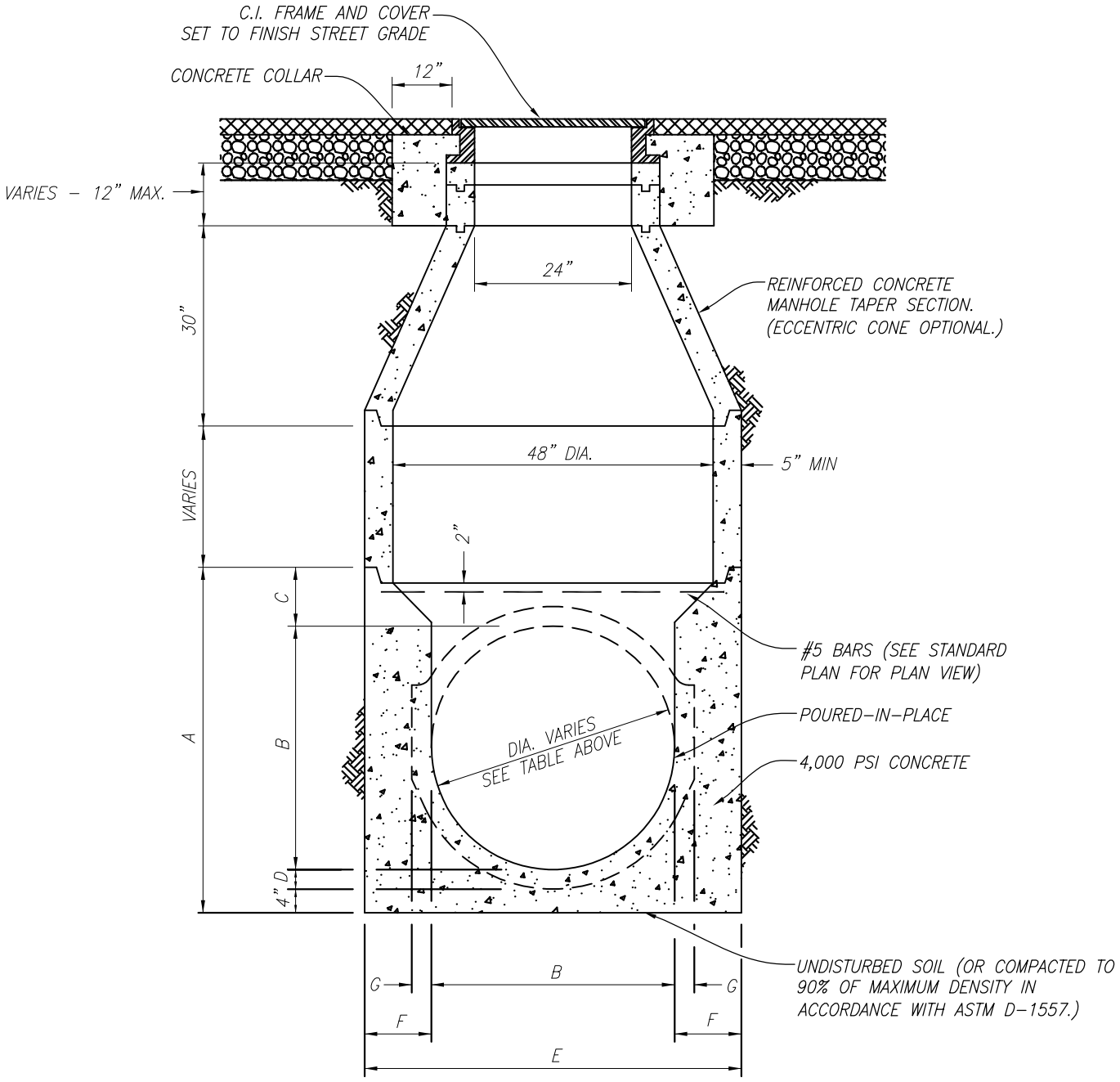
DIA.	A	B	C	D	E	F	MIN. G
30"	46"	30"	9"	3"	56"	13"	3"
36"	53"	36"	9 ½"	3 ½"	56"	10"	3 ½"
42"	60"	42"	10"	4"	60"	9"	4"
48"	68"	48"	11"	5"	66"	9"	5"



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DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

STORM DRAIN MANHOLE FOR 30" - 48" C.I.P.P.

DRAWING NO. SD - 6

NTS

Oct 29, 2020 – 8:06am
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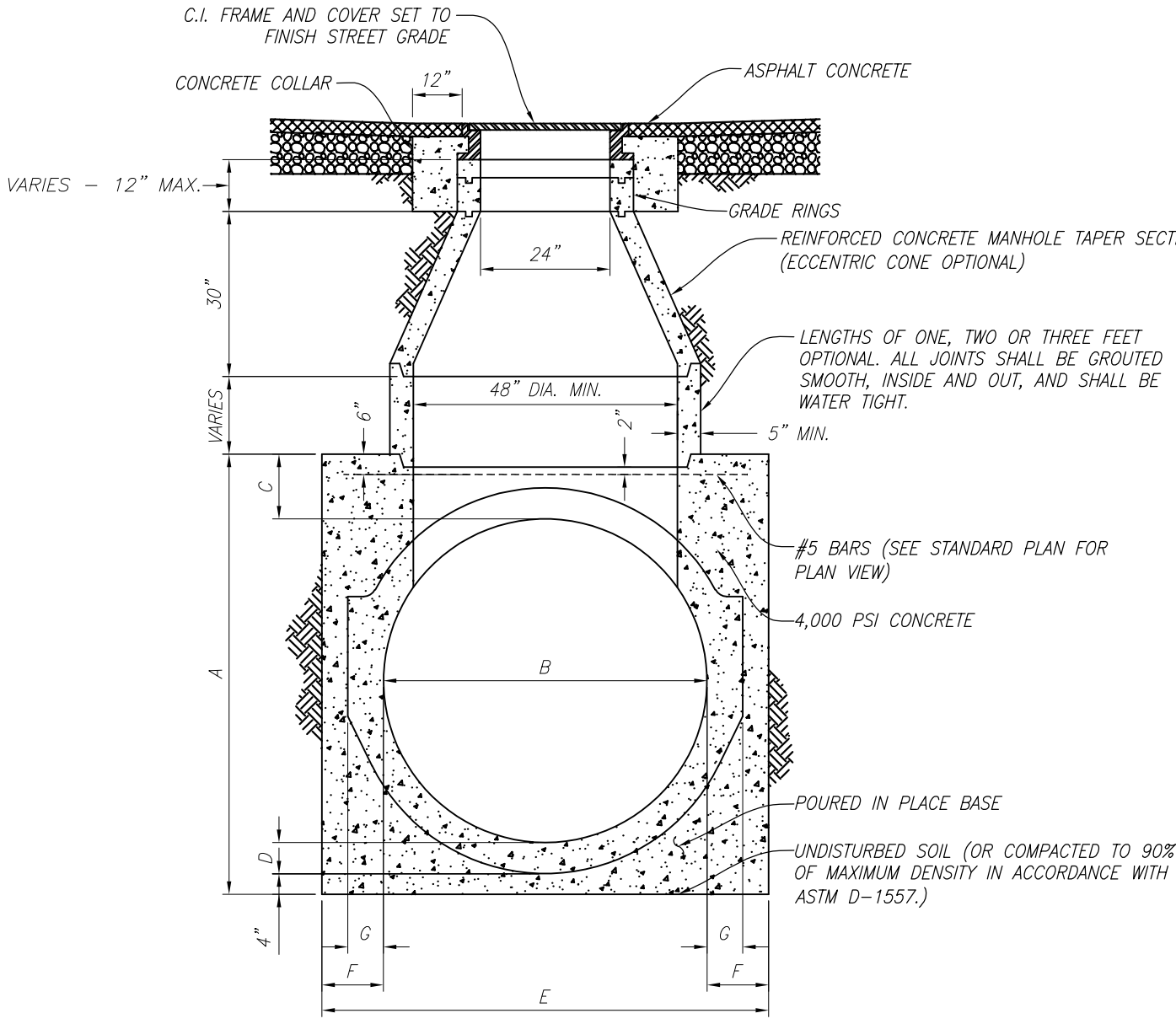
DIA.	A	B	C	D	E	F	MIN. G
54"	75"	54"	11 ½"	5 ½"	75"	10 ½"	5 ½"
60"	82"	60"	12"	6"	82"	11"	6"
66"	89"	66"	12 ½"	6 ½"	89"	11 ½"	6 ½"
72"	96"	72"	13"	7"	96"	12"	7"
84"	110"	84"	14"	8"	110"	13"	8"
96"	124"	96"	15"	9"	124"	14"	9"



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DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

STORM DRAIN MANHOLE FOR 54" - 96" C.I.P.P.

DRAWING NO. SD - 7

NTS

Oct 29, 2020 – 8:07am
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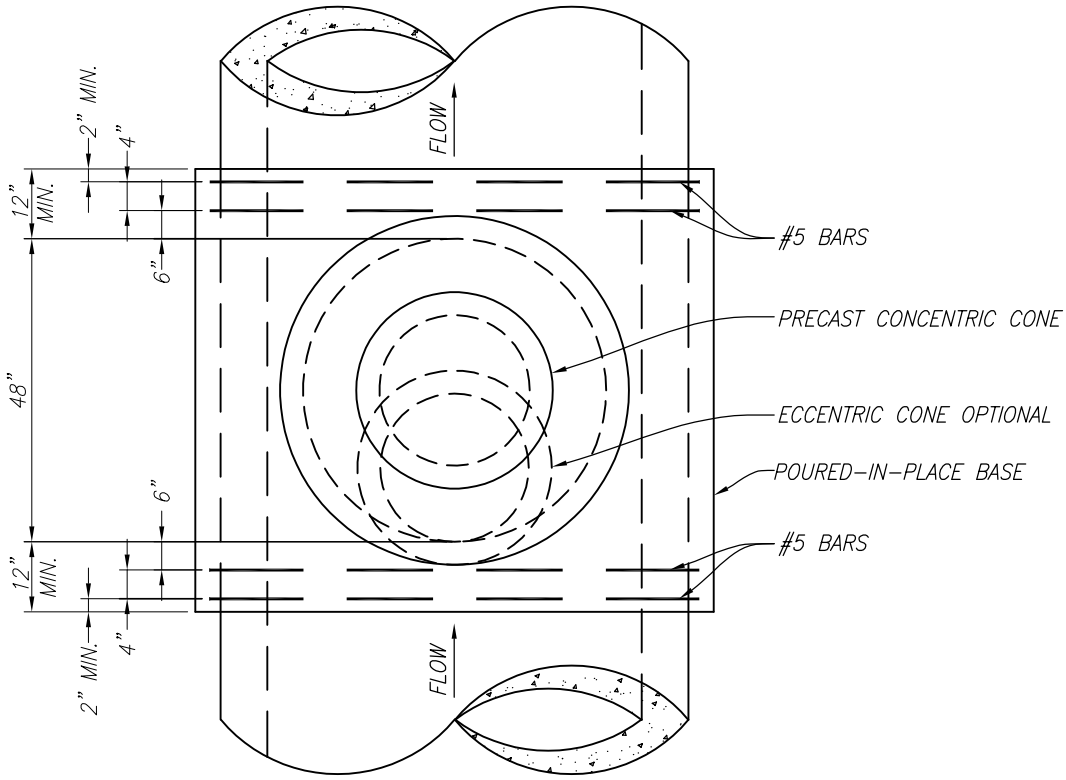
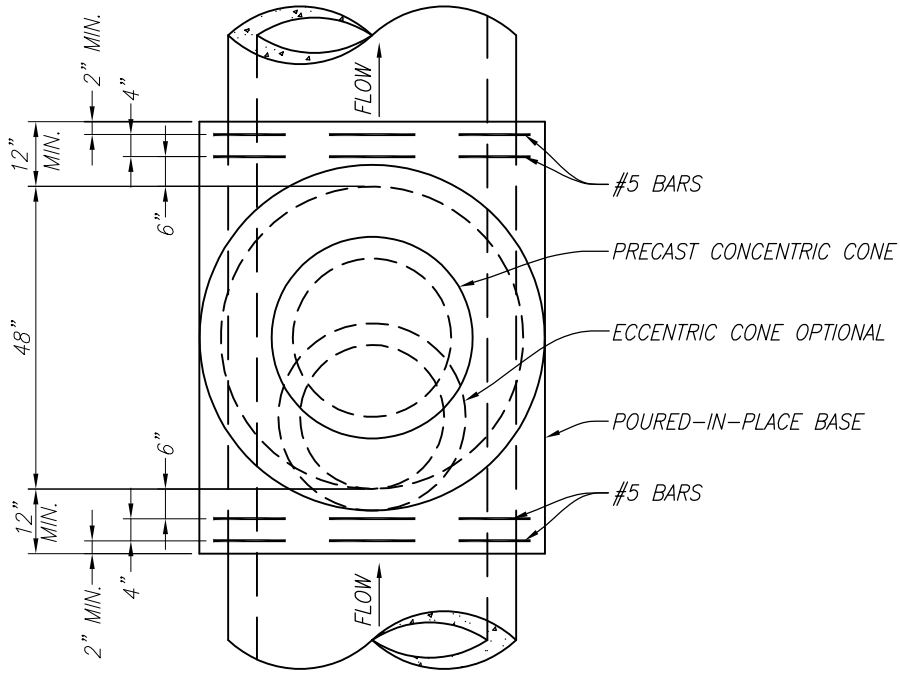


MANHOLE FOR 54"-96" C.I.P.P.



MANHOLE FOR 30"-48" C.I.P.P.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
DATE

62736
R.C.E. NO.

STORM DRAIN MANHOLE PLAN VIEW (C.I.P.P.)

DRAWING NO. SD - 8

NTS

Oct 29, 2020 - 8:08am
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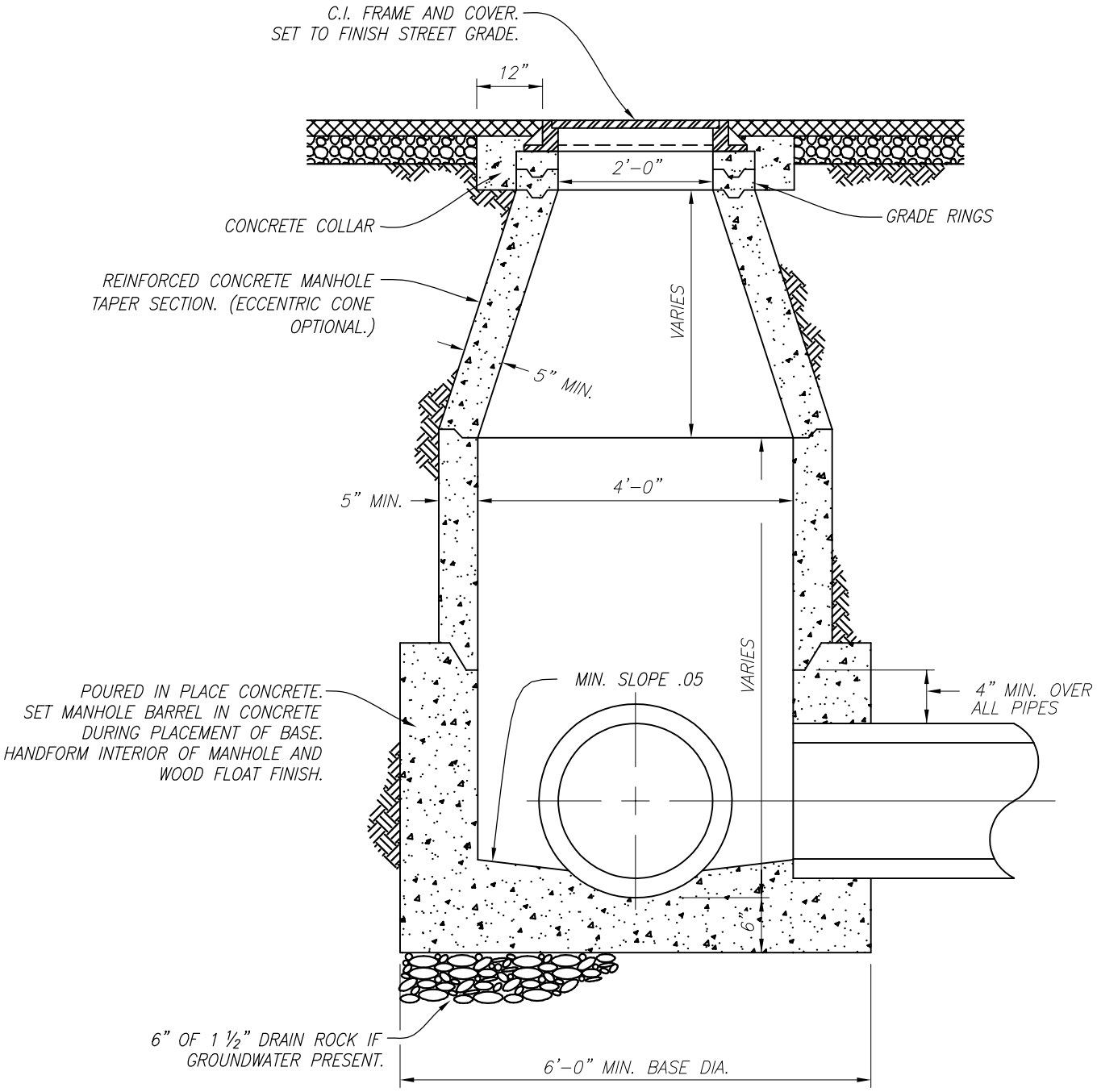

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

STORM DRAIN MANHOLE

DRAWING NO. SD - 9

NTS

Oct 29, 2020 - 8:09am
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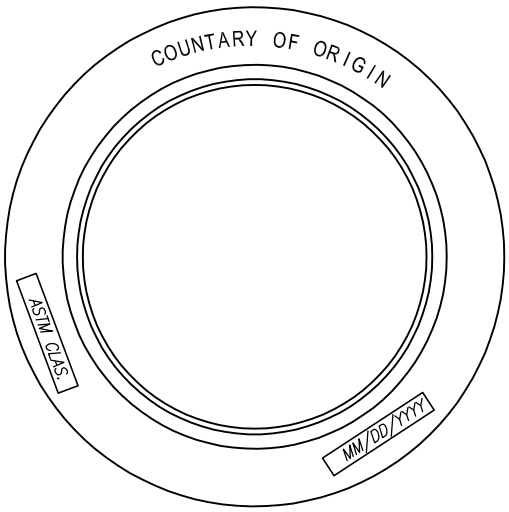
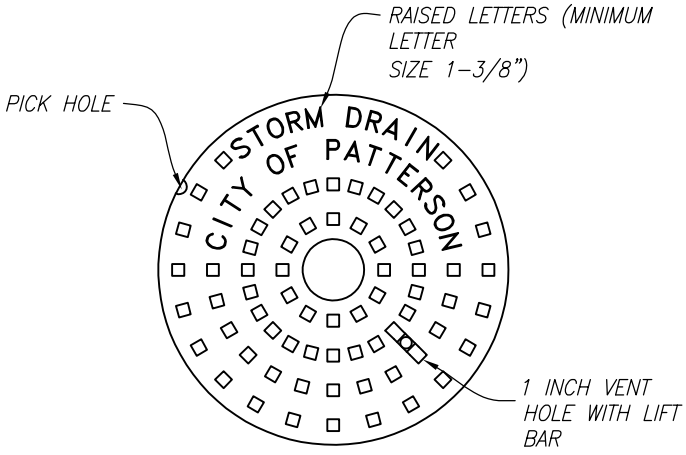


PLAN



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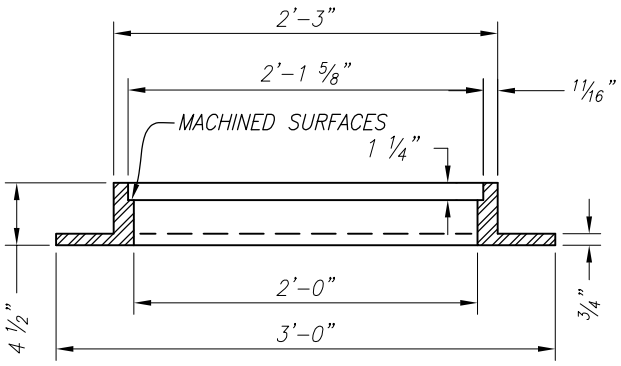
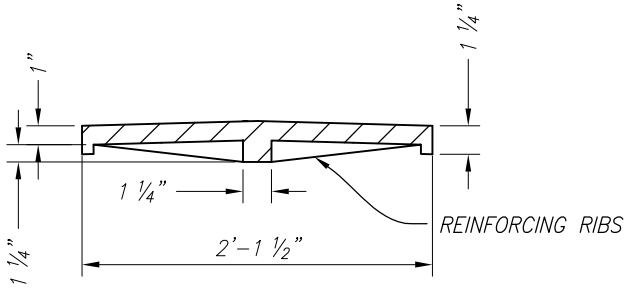


SECTION

MANHOLE FRAME DETAIL

MINIMUM WEIGHT OF FRAME AND COVER: 280 lbs.



SECTION

MANHOLE COVER DETAIL

NOTES:

1. AREAS WITHIN FLOOD PLAIN, DIRT AREAS OR AREAS WHERE WATER INTRUSION IS A FACTOR "PAMTIGHT" OR APPROVED EQUAL BOLT DOWN LIDS SHALL BE INSTALLED.
2. CITY ENGINEER MAY REQUIRE MANHOLE COVERS TO BE ANTI-THEFT COVERS. MANHOLES OUTSIDE OF ROADWAY SHALL HAVE BOLTED COVERS AND CONCRETE COLLAR.
3. MANHOLE COVER SHALL HAVE THE WORDS "STORM" AND "CITY OF PATTERSON" CASTED IN THE MANHOLE COVER AT THE LOCATION SHOWN ABOVE.
4. FRAME AND COVER SHALL BE MANUFACTURED OF CAST IRON CONFORMING TO ASTM A-48 CLASS 30 AND H20-44 RATED. FRAME AND COVER COATING SHALL BE BITUMINOUS MATERIAL CONFORMING TO AWWA C203.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

10/26/20
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CAST IRON MANHOLE FRAME AND COVER

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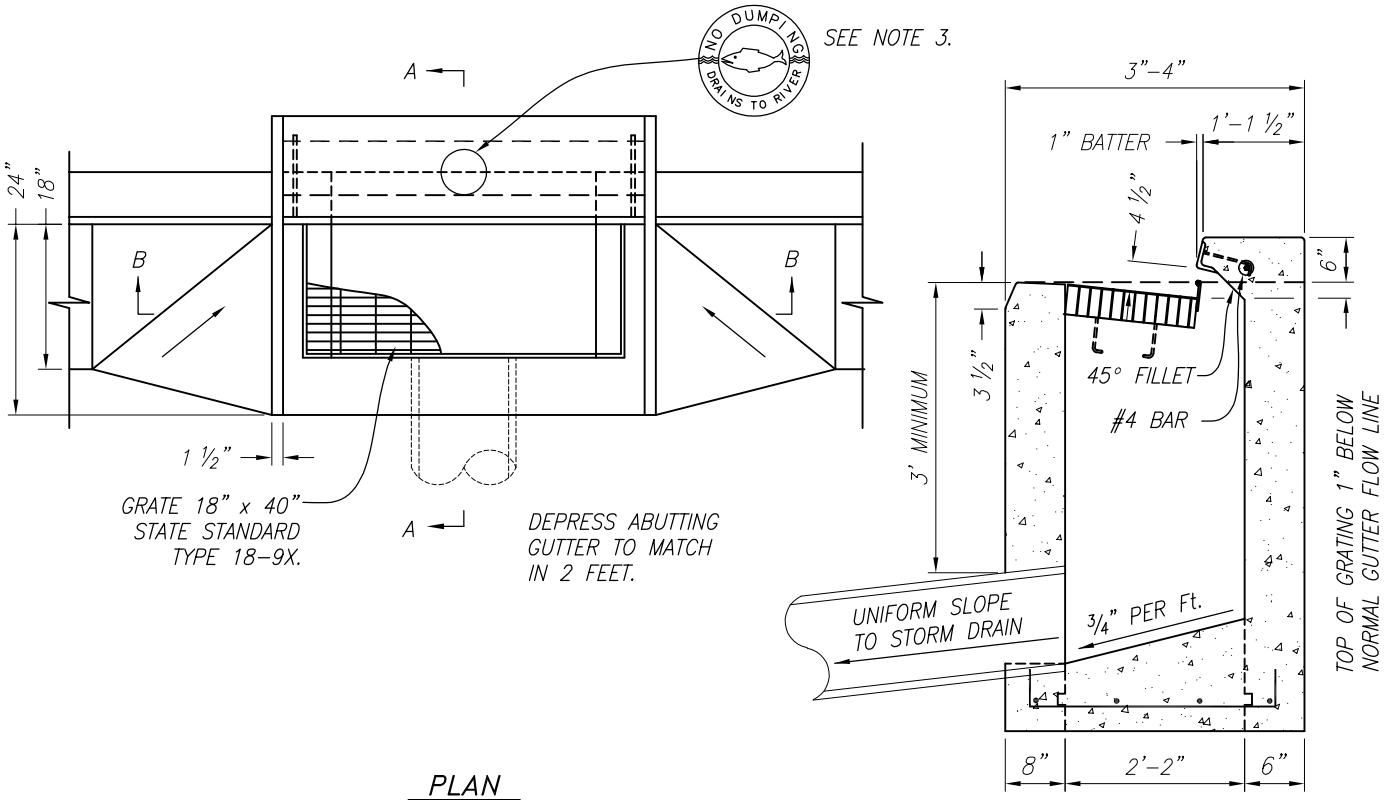

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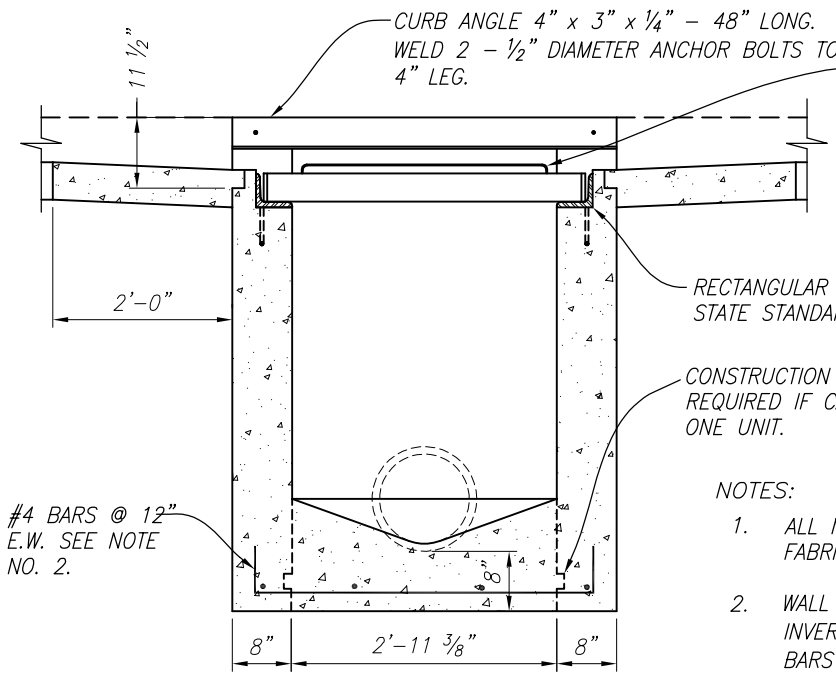

SECTION A–A

SECTION B–B

NOTES:

1. ALL METAL SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. WALL AND FLOOR REINFORCING NOT REQUIRED IF INVERT LESS THAN 8' DEEP, OTHERWISE USE No. 4 BARS AT 12" EACH WAY, CENTER IN WALLS.
3. ALMETEK INDUSTRIES INC. STAINLESS STEEL CURB MARKER OR APPROVED EQUAL. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

DRAIN INLET

FERNANDO ULLOA, CITY ENGR.

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SECTION 10 – PARKING

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TE - 1 TRASH ENCLOSURE NOTES
TE - 2 TRASH ENCLOSURE DETAIL
TE - 3 TRASH ENCLOSURE DETAILS

SECTION 10

PARKING STANDARDS

10.1 GENERAL

Parking lots shall be provided for commercial, industrial facilities and multi-family dwelling units containing more than four dwelling units located within the City. The minimum number of parking spaces for each use shall conform to the standards set forth in the Patterson Municipal Code. All parking stalls shall be marked to clearly delineate the parking spaces.

End stalls shall be protected from the turning movements of other vehicles through the use of raised curbing and landscaping. Raised end islands or peninsulas shall extend a maximum of 13 feet past the parking base line to minimize pedestrian tripping.

All areas not utilized for parking and vehicular circulation shall be landscaped. Landscaped and paved areas shall be separated by 6-inch high concrete curbs.

10.2 PARKING DESIGN GUIDE

To aid in the design of parking layouts, the following information is offered as a guide to meet the minimum requirements for off-street parking and the layout design of driver-parking lots under normal use conditions.

The following factors should be considered:

A. Sizes and Access: Each standard size off-street parking space shall have a minimum width of 9 feet and a minimum depth of 19 feet, exclusive of access drives or aisles, and shall be of useable shape, location, and condition. Compact spaces having a minimum width of 7-1/2 feet and a minimum depth of 15 feet, exclusive of access drives and aisles, shall be permitted, not to exceed 30% of the total required parking stalls. Small car spaces shall have “compact” or “small car” painted on the pavement at the entrance of each stall. End stalls and stalls adjacent to raised curbing shall be a minimum of 1 foot wider than the normal stall width. The length of the space may be reduced by 2 feet if landscaped planters of sufficient width are used as curb stops.

B. Entrances, exits and location of nearest intersection, in each direction.

C. The width of the parking area normally determines the parking angle to be used.

D. Right angle (90 degrees) parking is usually more efficient and provides two-way movement in the aisles and shorter cruise distance. However, it generally requires more turning effort.

E. Angle parking (other than 90 degrees) affords greater ease in parking and allows for narrower aisles but it requires one-way circulation.

F. Delineating Striping: All parking spaces shall be clearly delineated using double 4 inch wide striping. Length of striping shall be 17 feet for standard parking spaces and 13 feet for compact parking spaces. Length of striping may be reduced by 2 feet if landscaped planters of sufficient width are used as curb stops.

With these factors in mind, an accurate drawing of the proposed parking area should be prepared showing such details as sidewalks, curb cuts for driveways, use of abutting properties, immoveable obstacles, flow of on-street traffic in the area, and other pertinent information. This drawing can be used to aid in the determination of a layout pattern based on selection of the best of all possible parking arrangements. The best arrangement should provide the maximum number of parking spaces with aisles and stalls designed for one-turn driver parking.

10.3 DISABLED PARKING REQUIREMENTS

A. Each parking area associated with any type of land use listed in the Patterson Zoning Code, except for single-family and two-family residential dwellings, shall include a number of parking spaces specifically reserved for vehicles licensed or authorized by the State of California for use by physically challenged/disabled drivers in accordance with the following:

Total Spaces in Parking Area	Minimum Number of Spaces Required for Physically Challenged/Disabled Drivers
1 - 25	1 Van Accessible Space
26 - 50	2 including 1 Van Accessible Space
51 - 75	3 including 1 Van Accessible Space
76 - 100	4 including 1 Van Accessible Space
101 - 150	5 including 1 Van Accessible Space
151 - 200	6 including 1 Van Accessible Space
201 - 300	7 including 1 Van Accessible Space
301 - 400	8 including 1 Van Accessible Space
401 - 500	9 including 1 Van Accessible Space
501 - 1000	2% including 3 Van Accessible Spaces

One space for each 200 spaces thereafter.

B. Such parking spaces shall be located within a reasonable proximity of any conveniently accessible entrance to the building served by the parking area.

10.4 PAVEMENT

All parking stalls and drive aisles shall be paved with either asphalt concrete or Portland cement concrete.

A. Asphalt Concrete

Minimum slope for asphalt concrete shall be 1.5 percent. This slope requirement may be reduced to 1 percent by the City Engineer if it can be shown that meeting the 1.5 percent requirement is not practical.

B. Portland Cement Concrete

Unreinforced and reinforced Portland cement concrete pavement shall be designed and constructed in accordance with the recommendations of the American Concrete Institute set forth in ACI 330R-87, "Guide For Design And Construction Of Concrete Parking Lots." Design calculations meeting the criteria set forth in the above ACI guide shall be submitted to the City Engineer for review and approval.

Minimum finished grade slope shall be 1.0 percent. If it can be shown that meeting the 1.0 percent requirement is not practical, the slope may be reduced to 0.75 percent with the approval of the City Engineer.

10.5 STORM DRAINAGE

Design of storm drainage piping for parking lots shall be based on predicted run-off from a 5 year storm using the Rational Formula Q = CIA. Where Q equals the predicted run-off in cubic feet per second; C the coefficient of run-off; I the intensity of the rainfall in inches per hour; and A the drainage area tributary to the parking lot in acres. Run-off coefficients and intensity of rainfall shall be determined from Drawing SD-2.

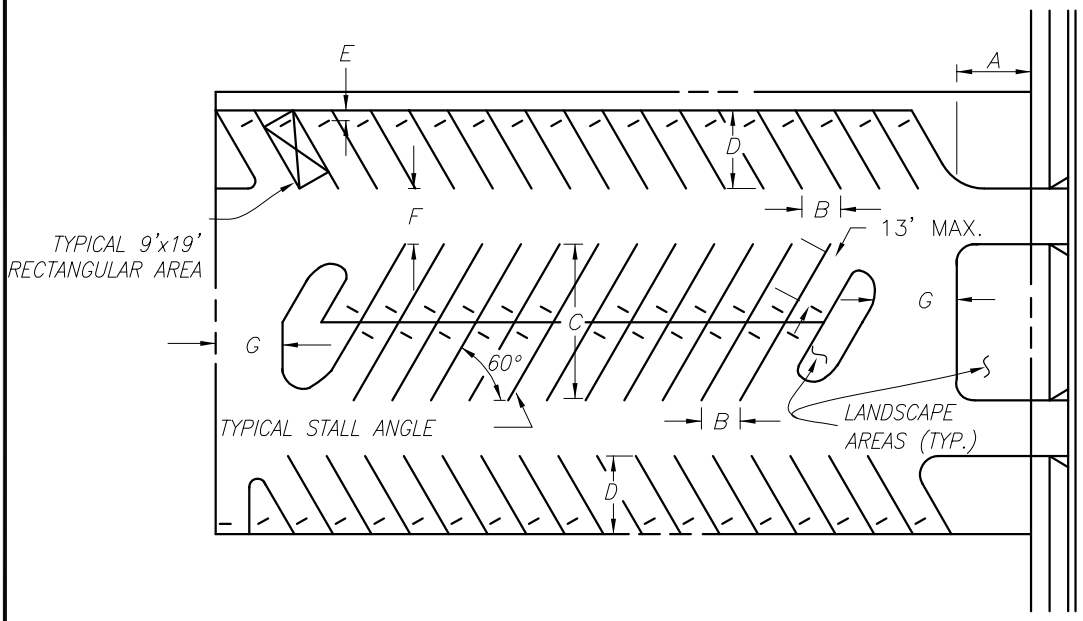
Roof to parking lot time shall be assumed to be 10 minutes. Manning's equation shall be used for pipe flow design. When using smooth walled plastic pipe, the roughness coefficient, "n" value, shall be 0.010. Local entrance and exit losses shall be included in the calculation of head loss. Local loss coefficients (K) shall be as follows:

LOCAL LOSS COEFFICIENTS

Local Loss	K
Re-entrant Inlets	1.0
Square Edge and Beveled Inlets	0.5
All Exits	1.0
90° Elbow	0.3
45° Elbow	0.2
Line Flow Tee	0.2
Branch Flow Tee	1.0

If curb drains are used, all grate elevations shall be a minimum of 0.6 feet above the invert of the discharge pipe at the curb (exit).

If drain basin lines discharge into the City's storm drain system at the back of a City catch basin, the grate elevations in the parking lot shall be a minimum of 0.3 feet above the City's catch basin grate.



THE REQUIRED FRONT SETBACK DIMENSION (A) IS AS SPECIFIED IN THE ORDINANCE(S) CITY OF PATTERSON FOR THE ZONING DISTRICT IN WHICH THE PARKING LOT IS TO BE LOCATED

PARKING ANGLE TO DRIVEWAY		45°	50°	55°	60°	70°	80°	90°
STALL WIDTH	B	12.7'	11.8'	11.0'	10.4'	9.6'	9.1'	9.0'
STALL DEPTH	C	33.2'	34.8'	36.3'	37.5'	38.7'	39.0'	38.0'
STALL DEPTH	D	19.8'	20.7'	20.7'	21.0'	20.9'	20.3'	19.0'
DRIVEWAY WIDTH	F	8.8'	11.6'	11.6'	15.0'	18.2'	22.4'	27.0'

NOTES:

1. ANY DRIVEWAY USED FOR BOTH INGRESS AND EGRESS TO AND FROM A PARKING LOT AND NOT DIRECTLY SERVING PARKING STALLS SHALL HAVE A MINIMUM WIDTH OF TWENTY FOUR (24) FEET. ANY DRIVEWAY USED ONLY FOR EITHER INGRESS OR EGRESS TO OR FROM A PARKING LOT AND NOT DIRECTLY SERVING PARKING STALLS SHALL BE A MINIMUM OF TWELVE (12) FEET IN WIDTH.
2. THE ABOVE TYPICAL PARKING LOT DIAGRAM, PARKING STALL AND DRIVEWAY DIMENSION TABLE SHALL DETERMINE THE MINIMUM REQUIREMENTS FOR A PARKING LOT PLAN.
3. THE MINIMUM DRIVEWAY WIDTH (F) AT ANY PARKING STALL ANGLE LESS THAN 45°, INCLUDING PARALLEL STALLS, IS 8.8 FEET.
4. THE TURNAROUND OR END DRIVEWAY WIDTH (G) SHALL BE A MINIMUM OF 18 FEET.
5. THE WHEELSTOP SET BACK DIMENSION (E) SHALL BE A MINIMUM OF 2 FEET FOR ANY PARKING PLAN.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

OFF-STREET PARKING STANDARDS

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. PA - 1

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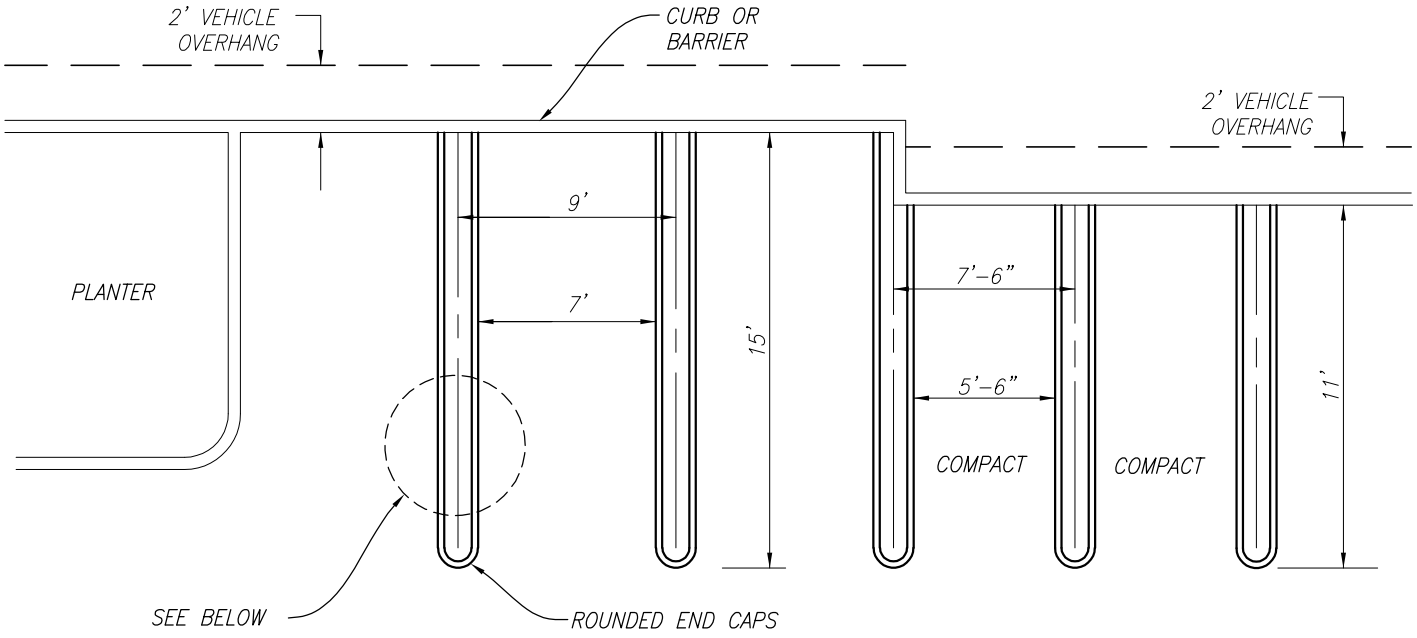

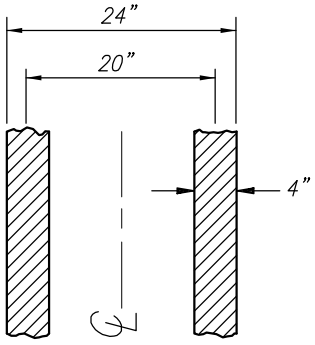

STRIPING DETAIL

NOTE:

STALLS SHALL BE DOUBLE STRIPED AS SHOWN IN THE DIAGRAM. PAINTED LINE WIDTH SHALL BE 4". IF BUTTONS ARE USED THEY SHALL BE 3 ¼" – 4" IN DIAMETER SPACED NO MORE THAN 3' ON CENTER. THE LINES SHALL BE LAID OUT AS PER DIAGRAM. EITHER SEMICIRCULAR CAP OR A STRAIGHT CAP MAY BE USED.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

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TYPICAL PARKING STALL STRIPING

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TRASH ENCLOSURE NOTES:

1. THE DESIGN OF THE TRASH ENCLOSURE SHALL INCORPORATE THE SAME MATERIALS AND ARCHITECTURAL INTEREST USED IN THE DESIGN OF THE PRIMARY BUILDING FOR A COORDINATED LOOK AND FEEL THE DEVELOPMENT.
2. WASTE BINS TO BE SIZED TO ACCOMMODATE PROPERTY WASTE, RECYCLING AND ORGANIC WASTE. THE DETAIL SHOWN HERE IS FOR TWO 4 YARD BINS ONLY.
3. FOOD RELATED FACILITIES MUST PROVIDE A GREASE COLLECTION RECEPTACLE.
4. WASTE BINS SHALL BE CONFIGURED TO ALLOW FULL ACCESS TO THE FRONT OF THE BIN.
5. CURBS, 6" MIN WIDTH AND 8" MIN HEIGHT, CAN BE INSTALLED AROUND ALL INTERIOR WALLS TO PREVENT STRUCTURAL DAMAGE FROM BIN LOADING.
6. SCREEN/BARRIER CAN BE INSTALLED TO PREVENT ILLEGAL DUMPING AND IS REQUIRED IF OPEN SPACE BETWEEN WALL AND ROOF IS GREATER THAN 1.5'.
7. IRRIGATED LANDSCAPE STRIP, 5' MIN. WIDTH, WITH PLANTED VEGETATION WITH CLIMBING VINES TO SHIELD ENCLOSURE WALLS REQUIRED IF ENCLOSURE IS VISIBLE FROM ROADWAY.
8. GRADING AROUND THE ENCLOSURE SHALL BE DESIGNED TO DRAIN STORMWATER AWAY FROM THE ENCLOSURE AT A 1% TO 2% SLOPE. THE INTERIOR ENCLOSURE PAD SHALL BE GRADED SUCH THAT NO RUNOFF OCCURS FROM INSIDE THE PAD.
9. ENCLOSURES SERVICING FOOD SERVICE FACILITIES ARE REQUIRED TO HAVE A HOSE BIB. ENCLOSURE PAD SURFACE OF ENCLOSURES WITH A HOSE BIB SHALL SLOPE AT A 1% TO 2% TO AN INTERIOR FLOOR DRAIN CONNECTED TO THE SANITARY SEWER INTERCEPTOR AND SHALL COMPLY WITH ALL OTHER REQUIREMENTS OF HEALTH DEPARTMENT.
10. IF HOSE BIB IS USED PROVIDE CAGE, BUMPER, OR OTHER PROTECTION.
11. DIRECT ROOF DRAINAGE TO STORMWATER CONTROL MEASURE OR LANDSCAPED AREA.
12. PEDESTRIAN ACCESS GATE ON THE SIDE OR THE BACK OF ENCLOSURE SHALL BE PROVIDED, NOT IN THE DIRECT SIGHT OF CUSTOMERS AND NOT VISIBLE FROM ROADWAY.
13. PARKING SHALL BE PROHIBITED IN DOOR SWING AREA AND IT SHALL BE STRIPED AS PER CITY OF PATTERSON STANDARDS.
14. ROOF SHALL BE MINIMUM 20 GAUGE METAL ROOF DECK PRIME AND PAINTED BOTH PACES TO MATCH THE BUILDING.
15. TRASH ENCLOSURE SIZE AND DESIGN CAN BE CHANGED WITH THE APPROVAL OF THE CITY ENGINEER. MATERIAL SUBMITTALS SHALL BE SUBMITTED TO ENGINEERING DEPARTMENT FOR REVIEW.
16. LIGHTNING INSIDE AND AROUND THE AREA OF THE TRASH ENCLOSURE MUST BE INSTALLED WITH MOTION SENSOR.
17. AN ACCESSIBLE PATH OF TRAVEL SHALL BE PROVIDED FROM MAIN BUILDING TO THE PEDESTRIAN DOOR.
18. IF POSSIBLE, DIRECT ACCESS TO THE COLLECTION TRUCK SHALL BE PROVIDED SO THAT TRUCK CAN DRIVE STRAIGHT UP TO THE FRONT OF THE ENCLOSURE FOR SERVICING.
19. THE GATE DOORS MUST BE CONSTRUCTED WITH A MECHANISM THAT WILL PROVIDE A MEANS OF SECURING THE GATE DOORS IN BOTH AN OPENED AND CLOSED POSITION.
20. ALL GATES MUST BE LOCKABLE USING A STANDARD PADLOCK.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

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TRASH ENCLOSURE NOTES

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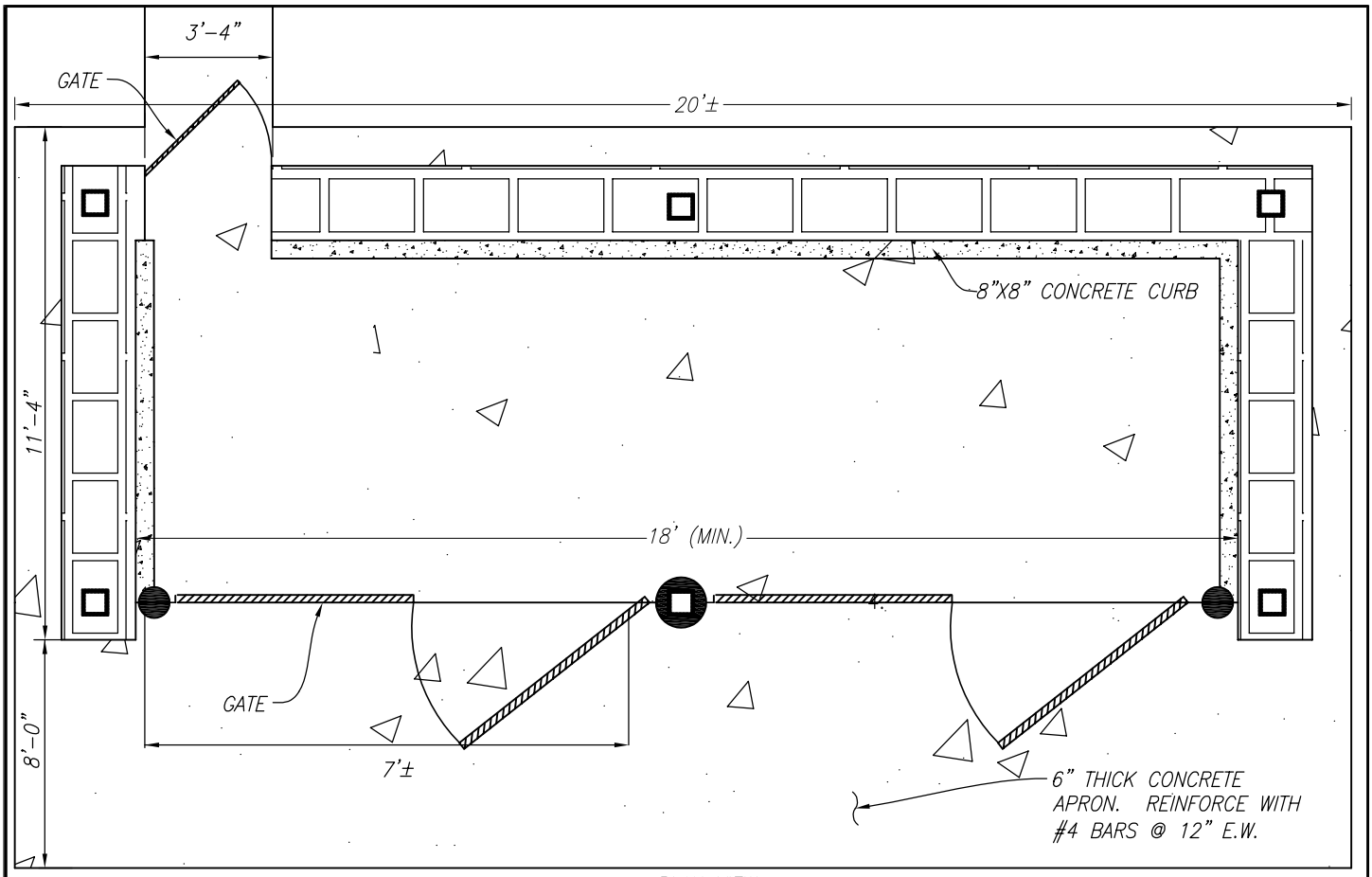
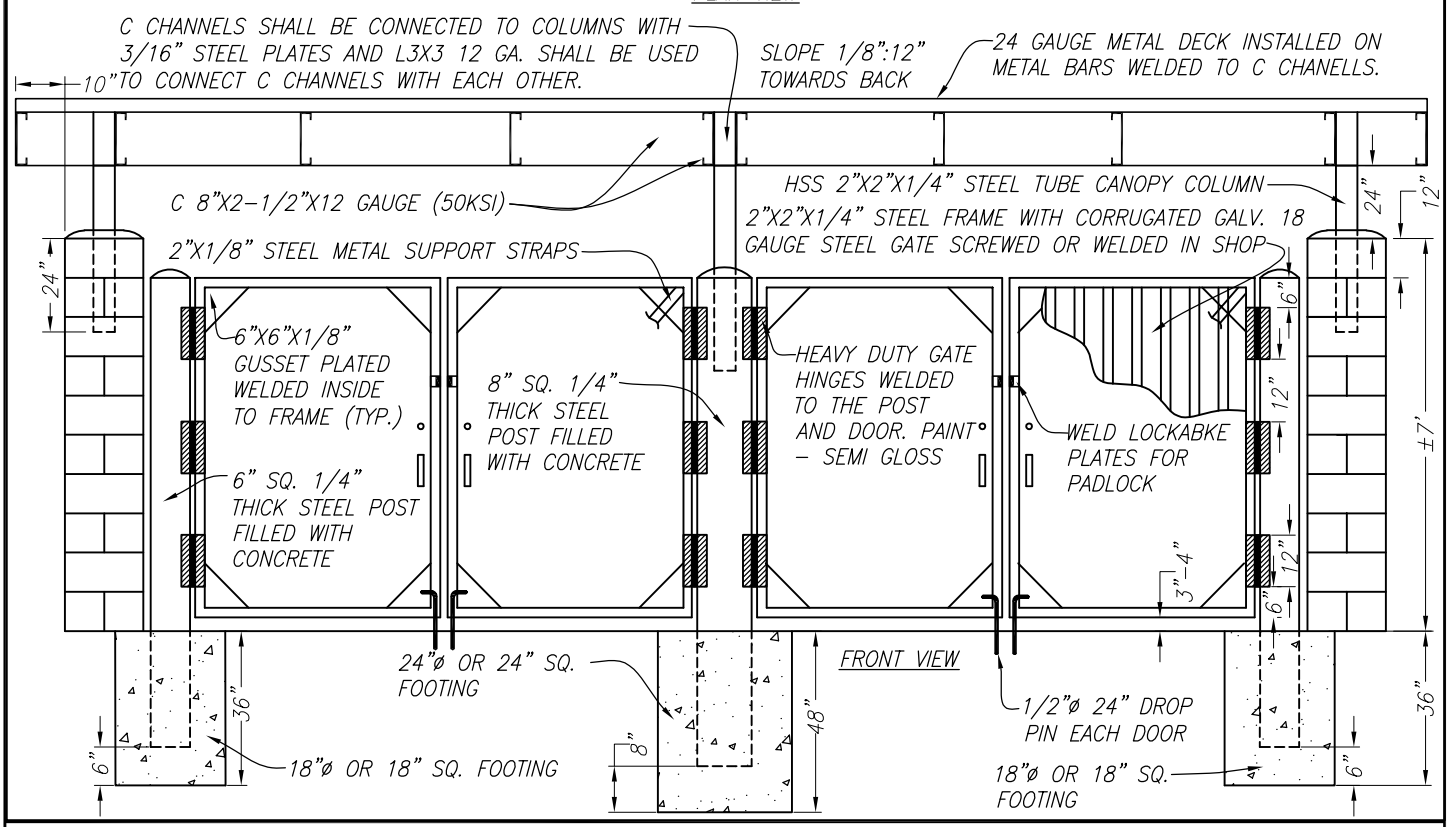


PLAN VIEW



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TRASH ENCLOSURE DETAIL

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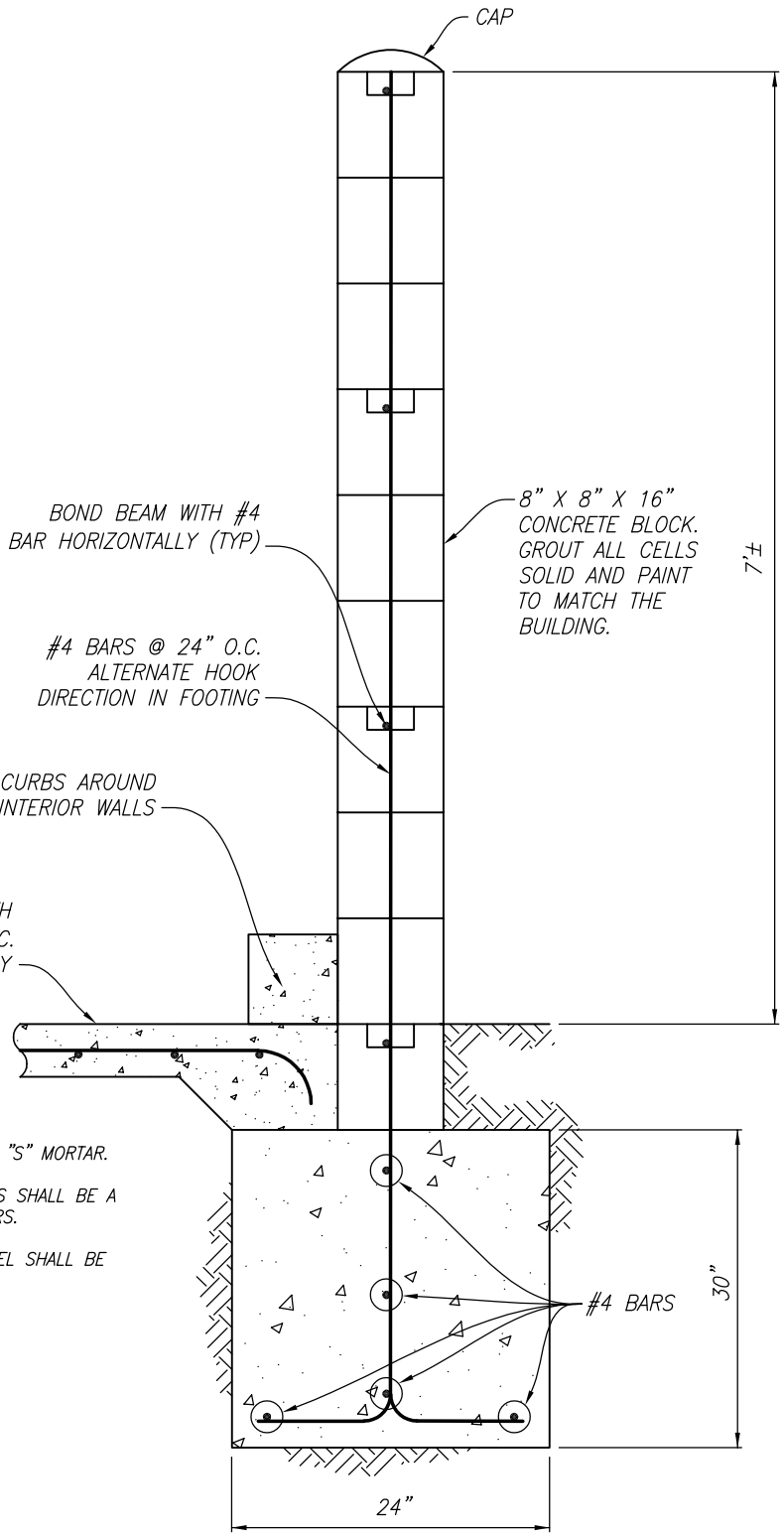

NOTES:

1. FOR MASONRY BLOCKS TYPE "S" MORTAR.
2. ALL REINFORCING BAR SPLICES SHALL BE A MINIMUM OF 40 BAR DIAMETERS.
3. HORIZONTAL REINFORCING STEEL SHALL BE CONTINUES AROUND CORNERS.

TYPICAL WALL SECTION WITH FOOTING

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT

CHECKED BY: M. WILLETT

APPROVED BY:

TRASH ENCLOSURE DETAILS

FERNANDO ULLOA, CITY ENGR. | 10/26/20 DATE | 62736 R.C.E. NO.

DRAWING NO. TE - 3

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P-8 GROUNDCOVER SPACING
P-9 PLANT OFFSETS
P-10 VEGETATED SWALE

HARDSCAPE / SURFACING

H-1 STANDARD CONCRETE FLATWORK
H-2 STANDARD CONCRETE FLATWORK (STRUCTURAL)
H-3 CONCRETE JOINTING
H-4 CONCRETE MOW STRIP
H-5 ASPHALT PAVING
H-6 DECOMPOSED GRANITE SURFACING
H-7 STEEL EDGING
H-8 COBBLE SET IN CONCRETE
H-9 COBBLE INSTALLATION

FENCING / WALLS

F-1 CHAIN LINK FENCE 4′ HIGH
F-2 CHAIN LINK FENCE 6′ HIGH
F-3 CHAIN LINK FENCE – PEDESTRIAN GATE
F-4 CHAIN LINK FENCE – SERVICE GATE 6′ HIGH
F-5 TUBULAR STEEL FENCE
F-6 TUBULAR STEEL GATE
F-7 TUBULAR STEEL FENCE AT PLAYGROUND
F-8 SPORTS COURT FENCING
F-9 MASONRY UNIT WALL

PLAYGROUND

P-1 1′ WIDE PLAYGROUND CURB WITH WOOD FIBER
P-2 MONOLITHIC SIDEWALK & PLAYCURB WITH WOOD FIBER
P-3 CONCRETE PLAYGROUND ACCESS RAMP
P-4 DRAIN/CURB FOR SAFETY SURFACING

MISCELLANEOUS SITE FEATURES

M-1 ADA COMPLIANT DRINKING FOUNTAIN WITH OPTIONAL DOG BOWL
M-2 BIKE RACK
M-3 ADA COMPLIANT CONCRETE TABLE
M-4 METAL PICNIC TABLE WITH OPTIONAL ADA COMPLIANT EXT.
M-5 CONCRETE BENCH
M-6 METAL BENCH
M-7 DUMOR BBQ GRILL
M-8 GROUP BBQ

M-9 METAL TRASH RECEPTACLE
M-10 PARK ENTRY SIGN
M-11 MULTI-USE FIELD LAYOUT PLAN
M-12 SOFTBALL FIELD LAYOUT PLAN
M-13 INFIELD SURFACING
M-14 BASES LAYOUT
M-15 DOG PARK NOTICES SIGN
M-16 DOG PARK RULES SIGN
M-17 LARGE DOG AREA SIGN
M-18 SMALL DOG AREA SIGN
M-19 DOG WASTE STATION
M-20 BASKETBALL SPORT COURT LAYOUT PLAN
M-21 BASKETBALL HOOP
M-22 TENNIS COURT LAYOUT PLAN
M-23 PERMANENT BOLLARD
M-24 METAL KNOCKDOWN BOLLARD

11.1 INTRODUCTION

The purpose of these Landscape Development Standards and Specifications is to set a minimum standard for design and construction in order to establish and maintain a standard of design principles and maintenance practices that will contribute to the quality of built landscape development projects in the City of Patterson.

These Standards shall be applied to landscape and park projects in the City of Patterson, including but not limited to City-maintained areas, park areas and facilities, rights-of-way and median areas, landscape maintenance districts or other management districts, and open space landscape improvements. To maintain consistent standards, these Standards shall apply to all design and engineering consultants, contractors, and developers working on landscape development projects within the City of Patterson. Designers, engineers, and contractors should therefore be familiar with these Standards.

The data contained herein is not intended for use as Contract Documents for contracts between the City and a Contractor, or for contracts between a subdivider or private person and a Contractor. Rather, separate Contract Documents must be prepared for each project, with each such document containing a Special Provisions section applicable to that particular project.

All Plans and Specifications for construction of improvements to be accepted by the City of Patterson shall be prepared in accordance with these Standards. The City recognizes that these Standards cannot anticipate the needs of all projects built within the City. Therefore, a City representative will review each project on a case-by-case basis. It is recommended that work which is to be submitted to the City and which is not covered by these Standards be reviewed with the City Engineer prior to the design phase in order to establish appropriate design criteria. Design criteria will be based on current codes and regulations applicable to the work and accepted industry best practices.

These Standards are designed to be a dynamic set of guidelines that will be updated administratively to accommodate additional fixtures and changes in industry best practices as deemed necessary. All changes and additions will be approved by the Director of Public Works.

These standards are intended to complement, not replace, other applicable standards publications. These include the latest versions of the State of California Department of Transportation (Caltrans) Standard Specifications, the Uniform Building Code, and the City of Patterson Public Works Standard Plans and Specifications. Nothing in these Standards is intended to reduce or modify

applicable Federal, State or local laws, or to create a standard to be applied retroactively to existing improvements except where specifically noted. In the case of discrepancy between the City's Standards and those listed by State or Federal agencies, the stricter of the two shall apply. In all cases, the protection of public health, safety and welfare shall override the application of required standards.

City Engineer shall be the final authority on all questions that may arise as to the interpretation of the Standards. The City Engineer's decision shall be final and he/she shall have authority to enforce and make effective such decisions for design, construction, and repair of streets, utilities, drainage, sewerage, and water supply. Appeals of the City Engineer's decisions may be made to the City Council.

This Standards document is organized as follows:

- The first section includes definitions and abbreviations used within the Standards.
- The second section details the submittals process for landscape development projects.
- The third section describes plan sheet/layout preparation and general notes.
- The fourth section contains landscape design guidelines.
- The fifth section contains standard landscape construction specifications.
- The sixth section contains the Water Efficient Landscape Ordinance (WELO) Requirements.
- The seventh section contains the Standard Landscape Construction Details.

City of Patterson Key Contacts

Department	**Phone Number**	**Fax Number**
Community Development	(209) 895-8020	(209) 895-8019
Building Department	(209) 895-8030	(209) 895-8039
Engineering & Capital Projects	(209) 895-8033	(209) 895-8069
Public Works	(209) 895-8060	(209) 895-8069

11.1.1 DEFINITIONS

APPLICANT. Any person, association, corporation, entity, or government agency requesting approval for design and construction of public infrastructure, often a subdivider or developer.

AutoCAD. The latest computer aided design/drafting program by AutoDesk currently being used by the City.

BACKFILL. Soil which is replaced in a hole after excavation and placement of new materials such as irrigation or plant materials.

BIDDER. Any person or persons, firms, partnerships, joint ventures, corporation or combination thereof submitting proposal for work contemplated, acting directly or through a duly authorized representative.

BIOSWALE. An open shallow depression with grassy or non-grassy vegetation on the sides and bottom that collects and conveys stormwater runoff from driveways, parking lots, roads, and/or walkways in a manner that slows the flow of water and encourages natural infiltration into the underlying soil.

CALTRANS. Shall mean California Department of Transportation.

CITY. The City of Patterson or any persons to whom the power of the City has been delegated.

CITY COUNCIL. The City Council of the City of Patterson, State of California.

CITY ENGINEER. The City Engineer of the City of Patterson acting either directly or through properly authorized agents, such agents acting within the scope of the particular duties delegated to them.

CITY MAINTAINED STREET. A street for which the City has accepted maintenance responsibilities.

CONTRACT. Written agreement covering the performance of work.

CONTRACTOR. An individual, firm, corporation, partnership or association duly licensed by the State of California who does work for City acceptance.

COUNTY. Stanislaus County.

DESIGN ENGINEER. The registered engineer licensed by the State of California responsible for preparation of plans and specifications for work to be accepted by the City.

DEVELOPER. Shall mean any person, firm, corporation, partnership or association engaged in the development of property in part or in whole by the placing of any improvements thereon, whether the property was previously developed in whole, in part, or at all.

DIRECTOR. The Director of Public Works for the City of Patterson.

DROUGHT TOLERANT PLANTS. Plants from ecosystems similar to that present in the City of Patterson which can survive on very little water, such as the amount which falls in Central California in normal rainfall years.

EASEMENT. Shall mean an easement dedicated to the City or Public Utility which shall be continuing and irrevocable unless formally abandoned.

ENGINEER OF WORK. The registered engineer licensed by the State of California in responsible charge of the project. (Normally this is the Design Engineer.)

ENGINEER'S ESTIMATE. The list of estimated quantities of work and the estimated cost to perform the work.

EROSION. The transportation of soil particles or mass movement of soil by means of water, wind, or mechanical means.

EXOTIC PLANTS. Plants introduced to Central California from other places.

FRICTION LOSS. A measurable amount of pressure lost in irrigation systems and other water piping as water passes through pipes, fittings, valves, and other plumbing components. Usually calculated from standard charts based on pipe materials and length, friction loss determines design requirements and, ultimately, irrigation application rates.

GEOMEMBRANE. Synthetic liner comprised of polymer resins, plasticizers, and various additives.

GROUNDCOVER PLANTS. Low, dense-growing plants.

INFILTRATION. The percolation of water into the surface of the soil and downward through the soil horizon.

IMPROVEMENT PLANS. Plans of proposed improvements prepared by the Landscape Architect, after they have been approved by the City Engineer.

IMPROVEMENT STANDARDS. The Improvement Standards of the City of Patterson which include design standards, construction standards and specifications and standard drawings.

INSPECTOR. The authorized representative of the City Engineer and/or the Public Works Director assigned to a jobsite.

INVASIVE PLANTS. Plants introduced to Central California from other places which become established without cultivation and which may cause economic or environmental harm, or harm to human health.

LABORATORY. Any testing agency or testing firm approved by the City.

LANDSCAPE AREA. All planting areas, turf areas, and water features in a landscape design; area subject to the Maximum Allowable Water Allowance calculations. Un-irrigated spaces for purposes of the MAWA calculations are included in the "Landscape Area" definition.

LANDSCAPE ARCHITECT. The registered landscape architect licensed by the State of California responsible for preparation of plans and specifications for landscape development work to be accepted by the City.

LANDSCAPE IRRIGATION. Irrigation for parks, schoolyards, playgrounds, medians, greenbelts, parkways, roadside landscaping, etc.

LID. Low-Impact Development; the application of technical design and planning tools to mimic natural processes to filter and encourage infiltration of stormwater in order to reduce negative impacts of stormwater runoff and pollution and to improve the sustainability of natural water systems.

MAXIMUM DRY DENSITY. The density obtained by compaction of soil from a given site at its optimum moisture content. Maximum Dry Density, typically determined by Proctor Compaction Test, determines acceptable compaction rates for structural load bearing purposes.

MEDIAN. The portion of a divided roadway separating the traveled way for traffic in opposite directions. A median may be raised, landscaped or painted.

MWELO. Model Water Efficiency Landscape Ordinance; in 2010 the State of California created, by Executive Order, a Model Ordinance for water conservation in landscape irrigation use, with the intent that local agencies would utilize the language or adopt their own ordinance with more stringent measures. MWELO was updated in 2015 and the scope was widened to include greywater, on site stormwater capture/reuse, and the limiting of turf areas.

NON-POTABLE WATER. Water that is not fit for human consumption but which meets approved water quality standards for other uses, such as landscape irrigation and use in decorative fountains.

NPDES. National Pollutant Discharge Elimination System.

ORNAMENTAL PLANTS. Plants cultivated in the local ecosystem for the purpose of creating interest in landscape installations.

PARKWAY. The area adjoining the outer edge of the roadbed or curb, extending to the right-of-way in which sidewalks, plantings, utilities, bank slopes and related facilities may be located.

PRODUCT DATA. All illustrations, standard schematics, performance charts, instructions, brochures, diagrams and other information furnished by the CONTRACTOR to illustrate a material, product or system for some portion of the work.

RECYCLED WATER. Treated waste water captured from a prior use that undergoes treatment to make it safe for either potable or non-potable uses.

RIGHT-OF-WAY. Land within a corridor identified for a specific public use such as transportation or public/private utilities, upon which a legal right for use or passage is granted to the public.

SIGHT DISTANCE TRIANGLE. Describes the calculation used to maintain minimum sight distances and remove obstructions at roadway intersections.

SLOPE. Change in elevation over a given distance, measured in percentage or degrees.

SOILS ANALYSIS REPORT. The project geotechnical report prepared by an engineer legally licensed to prepare a "Soils Report" in the State of California. The report includes information on soil fertility, pH, nutrient composition, and other data.

SHOP DRAWINGS. All drawings, diagrams, schedules and other data which are specifically prepared for the work by the Contractor, a subcontractor, manufacturer, supplier or distributor, which illustrates how specific portions of the work shall be fabricated or installed.

SPECIFICATIONS. Directions, provisions and requirements prepared by the Design Engineer pertaining to performance of the work.

STREET TREES. Trees planted in the public right of way on City streets.

SUBDIVISION ORDINANCE. Shall mean the Subdivision Ordinance of the City of Patterson.

SWPPP. Storm Water Pollution Prevention Plan.

TOPSOIL. Surface layer of soil, necessary for normal plant growth, containing the organic layer in which plants have most of their roots.

WATER CONSERVATION. Water management techniques, including design and maintenance procedures, which encourage efficient water use and reduce wasted water.

WATER QUALITY DEVICE. A custom-designed or pre-manufactured mechanism used to pre-treat pollutants in stormwater runoff prior to discharge into water conveyance mechanism such as a storm drain or bioswale.

XERISCAPE. A landscape design technique incorporating the use of drought-tolerant plants and water-saving irrigation design to minimize the need for supplemental irrigation on a designed landscape area.

ZONING ORDINANCE. Shall mean the zoning ordinance of the City of Patterson.

11.1.2 ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
ADA	Americans with Disabilities Act
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
BMP	Best Management Practices
CASQA	California Stormwater Quality Association
CD	Construction Document(s)
CFD	Community Funding District
CPSC	Consumer Product Safety Commission
CPSI	Certified Playground Safety Inspector
CPTED	Crime Prevention Through Environmental Design
DG	Decomposed Granite
ESCP	Erosion Sediment Control Plan
ETWU	Estimated Total Water Use
FC	Foot Candle
GPM	Gallons Per Minute
HA	Hydrozone Area

IPEMA	International Play Equipment Manufacturers Association
LA	Landscape Area
LED	Light Emitting Diode
LID	Low Impact Design
LMD	Landscape Maintenance District
MAWA	Maximum Applied Water Allowance
MDD	Maximum Dry Density
MWELO	Model Water Efficient Landscape Ordinance
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
PSI	Pounds per Square Inch
PVC	Polyvinyl Chloride
SWPPP	Stormwater Pollution Prevention Plan
WUCOLS	Water Use Classification of Landscape Species

11.2 LANDSCAPE DEVELOPMENT SUBMITTAL STANDARDS

11.2.1 GENERAL

The City requires strict compliance with the California Business and Professionals Code. All plans, specifications, reports, and documents required by the City shall be signed and stamped with the wet seal of the Landscape Architect or Registered Engineer, currently licensed to practice in the State of California.

If Standards, Specifications, Plans, Drawings, and Details referenced conflict with each other, the most stringent shall prevail at the discretion of the City Engineer.

11.2.2 IMPROVEMENT PLAN REQUIREMENTS

(A) All plans submitted shall be prepared under the direct supervision of a Landscape Architect registered in the State of California, with all drawings bearing the appropriate professional's stamp and signature.

(B) Improvement plans shall show all existing activities and all improvements to be constructed. Improvements are permanent and of a nature and quality to allow low cost and low maintenance.

(C) Proposed planting shall meet requirements as set forth in these Standards. Proposed plant material shall be ecologically and aesthetically suitable for the project site.

(D) Installation or alteration of irrigation systems on City-owned property, including rights-of-way, shall not take place until plan submittals have been reviewed and approved by the City of Patterson.

(E) Owner/developer shall consult with the City to determine whether the water on site may be non-potable water, in order to determine whether non-potable system components and signage will be required.

(F) Proposed irrigation systems will be designed and constructed in accordance with this document and adequate to properly irrigate proposed landscape areas.

(G) A geotechnical investigation and report will be required for projects including structures (buildings, shade structures, retaining walls, or any element requiring a building permit).

(H) Approval for occupancy shall be contingent upon acceptance of installation by City of Patterson Public Works/Engineering.

(I) Owner or Developer shall submit to the City of Patterson the required documents for all projects where landscape maintenance districts or other general maintenance districts are required as part of the project's development.

11.2.3 CITY STANDARD NOTES

All plans must include the note "All construction and material shall conform to the updated City of Patterson Landscape Development Standards and the latest edition of State and Federal code."

The following City Standard Notes shall be placed on the plans, where applicable:

(A) These plans have been checked by the City of Patterson and/or its authorized representative, but such checking and/or approval does not relieve the developer from its responsibility to correct errors, omissions or make changes required by conditions discovered in the field during the course of construction.

(B) All revisions to this plan must be reviewed by the City Engineer prior to construction and shall be accurately shown in revised plans stamped and signed by the City prior to the installation of the improvements.

(C) The improvements are subject to the inspection and approval of City of Patterson Engineering and Public Works Department. Contact Engineering and Public Works Department at least three (3) working days prior to start any work to arrange for inspection.

(D) Notify Underground Service Alert (USA) at 800-227-2600 at least two (2) working days prior to excavation.

(E) If necessary to confirm field locations of facilities, exploratory trenching or potholing shall be done at the expense of contractor.

(F) If a conflict occurs between the City of Patterson Landscape Development Standards and the recommendations by the Landscape Architect, the more stringent shall apply as directed by the City Engineer.

(G) Existing utilities shall not be interrupted until the utility company has provided alternative service facilities. The contractor shall cooperate and coordinate his work with appropriate agencies and utility companies.

(H) All areas undergoing grading, and all other construction activities shall be watered, or other dust-palliative measures used, to prevent dust, as conditions warrant. Water trucks shall be available at all times.

(I) Prior to receiving/taking any water from the City of Patterson water system the Contractor shall acquire a city water meter or city fire hydrant meter. All water usage shall be metered.

(J) All lines abandoned during construction shall be removed unless otherwise noted on the plans.

(K) Any damage caused by trenching to existing underground utilities shall be the sole responsibility of the Contractor and shall be replaced at his/her expense.

(L) Disposal of water to city sanitary sewer system is prohibited.

(M) Prior to begin work, Contractor shall attend a pre-construction meeting with the City of Patterson.

11.2.4 LANDSCAPE DEVELOPMENT PLAN CHECK PROCEDURES

(A) Notes Regarding Initial Plan Submissions

a. All Improvement Plan documents are subject to review.
b. Improvement Plans for landscape development projects submitted for preliminary review to the City or City Engineer shall be stamped and complete.
c. Allow 6-8 weeks for initial Plan Check for stand-alone submittals.
d. Landscape submittals which are part of a building review shall be reviewed in a parallel track with the building permit review schedule.
e. Partial submittals are not acceptable. If Improvement Plans are found to be incomplete during Plan Check review, they will be returned to the Landscape Architect/Design Engineer for completion.

(B) Initial Plan Review

Landscape Development Plan submittals to the City of Patterson shall include:

a. Six (6) full sets of plans
b. Three (3) sets Specifications
c. Two (2) sets MWELO calculations, if not included in plans
d. Two (2) sets Irrigation calculations, if not included in plans
e. One (1) set Civil Engineering plans (for parks, or as required by City Engineer)
f. One (1) set Grading and Drainage plans (for parks or as required by City Engineer)
g. Two (2) sets Soils Report (if required due to structural elements on site improvement plans)
h. Two (2) sets signed and stamped Geotechnical Engineer's Report (if required)
i. Two (2) sets project cost estimate
j. One (1) set Conditions of Approval (if applicable)
k. One (1) copy of City of Patterson approved Preliminary Landscape Plan
l. Two (2) electronic copies of all above required documents

(C) Subsequent Plan Review

Following Preliminary Landscape Development Plan submittal, subsequent submittals to the City of Patterson shall include:

a. Six (6) full sets of plans (corrected, if required)
b. Three (3) sets Specifications (revised, if required)
c. Two (2) sets MWELO calculations, if not included in plans (revised, if required)
d. One (1) set Civil Engineering plans (revised, if required)
e. One (1) set Grading and Drainage plans (revised, if required)
f. Two (2) sets project cost estimate (revised, if required)
g. Two (2) electronic copies of all above required documents (all revised/corrected, if required)
h. Response letter addressing corrections made to all City comments on prior plan submittals.

(D) Notes on Subsequent Plan Submissions

a. Marked sets of plans and specifications will be returned to applicant if corrections are required following the Initial Plan Review.
b. Allow 6-8 weeks for subsequent Plan Check for stand-alone submittals.

(E) Approved Plans

Following City of Patterson approval of Landscape Development Plans, the project Owner/Developer shall submit:

a. One (1) complete set of Mylar reproducible plans, 24"x36" size, signed
b. Four (4) sets of stamped and signed bond copies. One set of signed approved plans will be returned to the Owner/Applicant and the other three will be retained by the City.
c. Owner/Applicant shall provide electronic copies of the signed approved plans in PDF and AutoCAD formats to the City

(F) Notes on Approved Plans

a. All Landscape Development Plan approvals must be completed prior to commencing landscape improvement work or issuing any building permits.
b. Approved, signed plans must be used during construction.

(G) Record Set of Drawings

a. A set of approved plans shall be kept at the jobsite at all times and as-built items shall be updated daily.
b. The City may conduct random inspections, in which the jobsite plan set will be checked for accuracy and record of updates.
c. Owner/Developer shall provide the following items to the City prior to City acceptance of landscape improvements:
    i. One (1) plan set marked up to show as-built changes.
    ii. One (1) electronic copy of as-built plans in PDF format.
    iii. One (1) electronic copy of color-coded irrigation legend indicating each station in PDF format.
    iv. Two (2) laminated copies of color-coded irrigation legend indicating each station (11"x17").
    v. Any outstanding documentation required to satisfy MWELO requirements.

(H) Notes on Record Set of Drawings

a. Any annotations made on the as-built drawings shall be transferred on the City's set of Mylar plans.
b. All final Mylar and PDF plan sets must be returned to the City of Patterson prior to project acceptance.

(I) Landscape Development Plan Reviews by Others

a. It is the responsibility of the applicant to check with any public utility agencies if the landscape plan overlays any utility easements.

(J) Revisions to the Landscape Development Plans

a. No work may be performed that is inconsistent with the signed and approved Landscape Development Plan without specific approval by the City of Patterson Public Works/Engineering Department.
b. Two (2) sets of revised plan sets, plus one (1) electronic copy in PDF format, must be submitted to the City for review.

11.2.5 PRIOR TO COMMENCING CONSTRUCTION

(A) Product Submittals
a. All products for irrigation and landscape construction must be submitted for review and approval prior to commencing improvement work.
b. Submittals shall be made in PDF format and submitted all at one time.

(B) Pre-Construction meetings
a. All Contractors must attend a pre-construction conference arranged by the Owner/Developer at the Department of Public Works and Engineering for construction and inspection coordination prior to any on site construction activities.
b. The City of Patterson must be contacted for the following on site pre-construction meetings at least 48 hours in advance to schedule each meeting.
    i. Pre-construction meeting prior to any landscape work.
    ii. Pre-construction meeting prior to any irrigation well drilling.
    iii. Pre-construction meeting prior to any civil engineering work.

11.3 PLAN PREPARATION

11.3.1 GENERAL REQUIREMENTS

(A) Landscape development plans submitted in order to fulfill a requirement set forward by the City Planning Commission or City Council must include the complete map area of the proposed project. While it is acceptable for landscape improvements to occur in a phased manner, the landscape development plan may not be submitted in partial or phased components such as may reflect construction phasing and must be submitted in entirety. Landscape development plans for these submittals must include:

a. Standard size sheets, with all plans of the same size (per section 2.4 (E) a., final signed Mylars shall be 24"x36" sheets).
b. Sheets shall be numbered consecutively (i.e., "Sheet xx of xx").
c. Each sheet shall include a descriptive name in the sheet titleblock (i.e., "Planting Plan").
d. Include both a graphic and a written scale on each sheet.
e. Include North arrow on each sheet.
f. Depict any match lines clearly and label for clear plan reference.
g. Include a location map on the title sheet. Identify on the location map streets within the property as well as those immediately adjacent.
h. Only plans which are complete will be checked. Incomplete designs, details, or other components of the landscape improvement plans will not be accepted.

(B) Landscape development plans for these submittals must include the following items on all sheets:

a. Project limits.
b. Limit of work.
c. Building footprints.
d. Existing and proposed sidewalks.
e. Walls, fences and gates to be constructed; specify height and materials for each type on site.
f. Other pertinent information related to the area of landscape development, including utilities, easements, fire hydrants, street lighting, etc.
g. Clearly show areas for which different parties (i.e. City, HOA, private) will be responsible for maintenance.

h. Include on associated sheets summary information such as total square feet landscape area, total square feet of surfacing by type (i.e. concrete, paver, decomposed granite, etc.), linear feet of fencing or walls, etc.
i. Include signature block for City approvals on each sheet.

(C) The following note is required to be placed on the title sheet of all Landscape Development Plans:

CITY OF PATTERSON WATER EFFICIENT LANDSCAPE REQUIREMENTS

Changes or field substitutions to the approved plans shall not be permitted without prior written approval from the project Landscape Architect/Design Engineer and the City of Patterson. Unauthorized deviations from the approved plans will require the Owner/Contractor to bring the built product into compliance with the City of Patterson water efficient landscape ordinance.

Per the City of Patterson water efficient landscape ordinance, submittal of the following items is required in order for the project to receive a certificate of completion so that the project may be accepted/occupied:

- Project Applicant
- Project Address
- Date of Submittal
- Project Type (new, rehabilitated, public, private)
- Total Landscape Area (SF)
- Breakdown of Turf/Other Plant Material Areas (SF)
- Water Supply Type (potable, recycled, well)
- Water Purveyor
- Property Owner/Applicant Contact Information
- Applicant Signature with MWELO Statement: "I agree to comply with the requirements of the prescriptive compliance option to the MWELO."

See Section 6 of these Standards and Specifications for more information on the City of Patterson WELO requirements.

(D) Any revisions to plans which have already been approved by the City of Patterson will be reviewed and approved by the City and noted on the title sheet prior to implementation.

11.3.2 TITLE SHEET

The first sheet of the Landscape Development plan set shall be the Title Sheet. The Title Sheet shall include:

(A) Vicinity map

(B) Location map, showing:
   a. Project limits;
   b. Street configuration within and adjacent to the project site;
   c. Street names;
   d. North arrow;
   e. Match lines, if applicable

(C) Sheet index

(D) General notes:
   a. All work shall comply with the City of Patterson Landscape Development Standards.
   b. Revisions and change orders to the approved Landscape Development plans are subject to review and approval by the City Engineer/Public Works Department before work may continue. Minor changes may be transmitted to the City via email; major changes must be submitted via three updated plan sets submitted to the City for approval.
   c. Contractor shall notify Underground Service Alert (USA) before start of construction at (800) 322-4133.
   d. The California Public Utilities Code requires that the gas company be notified a minimum of two (2) days prior to the start of construction.
   e. An approved plan set must be kept at the job site at all times and updated with as-built information daily.

(E) Signature block for City approval

(F) Title block to contain the following:
   a. Project title.
   b. Project address.
   c. Project tract number/tentative tract number and parcel numbers, in conformance with the City's approved tract map.

(G) Landscape Architect's firm name, with address, telephone number, the date plans were prepared, stamp and signature of the Registered Landscape Architect.

(H) Owner/Developer's name, address, and telephone number.

(I) Total square footage of landscape area.

(J) Date and number of each plan check submittal to the City of Patterson.

(K) WELO Standard notes (see section 3.1 (C)).

(L) Landscape Development plans for Landscape Maintenance Districts, Community Facilities Districts, or Benefit Assessment Districts, must also include on the title sheet notes summarizing the square footage of the following areas:

a. Overall square footage of project.
b. Total square footage of turf areas.
c. Total square footage of shrub/planter areas.
d. Total square footage of hardscaped surfaces, including sidewalks, sports courts, etc.
e. Total square footage of permeable surfaces, including decomposed granite, stone cobble, and permeable pavement.
f. Total square footage of alternative surfaces, such as playground surfacing.
g. Linear feet of fencing, retaining walls, or sound walls on the project site.

11.3.3 GENERAL NOTES

Following the Title Sheet shall be a General Notes Sheet. The General Notes Sheet shall include (and are not limited to):

(A) Standard General Notes

a. The Contractor is responsible for obtaining approved plan submittals/building permits prior to commencing construction.
b. The Contractor is responsible for scheduling a pre-construction meeting with the City two weeks prior to the beginning of construction.
c. All submittals must be approved prior to the pre-construction meeting.
d. Contractor/Developer is required to fully maintain all landscape elements until the City of Patterson accepts all improvements within the City-maintained area(s).

(B) City of Patterson Standard Notes

a. All work shall be in accordance with the City of Patterson Landscape Development Standards and any applicable City of Patterson Public Works Standards.
b. Sloped City-maintained areas must be designed to be at a slope shallower than 4:1.
c. Soil testing shall be obtained prior to plan check review unless mass grading is planned. Any recommendations for soil treatment shall be included in the plans submitted prior to plan check review. If deferred soil analysis testing is to be performed after plans have been approved and after mass grading is complete, then the Contractor shall submit results of the report to the Landscape Architect for additional comment.
d. Contractor shall verify PSI on site prior to installation of the landscape irrigation system. The City of Patterson Water Division shall verify the PSI.
e. Owner/Developer shall provide concrete mow strip where mowed turf grass areas are immediately adjacent to shrub/groundcover areas. Concrete mow strip shall also be installed at project limits of work where no walls or fencing exist, and within the landscape area as needed to separate maintenance responsibility areas. City shall approve use of 6" or 12" wide mow strip constructed per City Standard Details.

(C) Construction Notes

a. Contractor is responsible for repair or replacement of all items damaged by Contractor's work at the discretion of the City of Patterson.
b. Contractor is responsible for locating and staking all utility lines, including sewer and water main lines, prior to commencing work. Contractor shall be responsible for any damage caused to existing on site utilities.
c. When field conditions are identified that make the construction of the approved landscape improvement plans impractical or impossible, bring these discrepancies to the attention of the City immediately prior to commencing work. Contractor shall be responsible for any changes necessary if installation proceeds per approved plans despite obvious conflicts.
d. The intent of the approved irrigation plan is to provide full irrigation coverage to all planted areas identified in the project scope of work. In order to provide this service, the Contractor may need to supply additional products or altered layouts to deliver full

coverage with a minimum of overspray in a manner that will satisfy the WELO irrigation audit. Any Contractor-identified changes to the irrigation plan shall be brought to the attention of the City prior to engaging in work different than that which is included in the approved plan set.

e. Plant materials shall be installed during seasons which are favorable to the survival rate of each species, to the extent possible.
f. Contractor shall provide temporary fencing during all stages of construction.
g. I have complied with the criteria of the ordinance and applied these criteria accordingly for the efficient use of water.

11.3.4 PLAN SHEETS

The Landscape Development Plans shall be submitted in plan sheets with the following general naming conventions and sheet order (as applicable):

1. Cover Sheet
2. Existing Conditions/Demolition Plans
3. Grading & Drainage
4. Utility Plans
5. Striping & Signage
6. Horizontal Control/Construction Plans
7. Site Furnishings & Finishes Plans
8. Irrigation Plans
9. Planting Plans
10. Lighting/Electrical Plans
11. Construction Details

(A) Existing Conditions/Demolition

a. Demolition plans are required for Landscape Development projects which occur within an existing park or streetscape.
b. Demolition within existing City-owned/maintained landscape areas must be discussed with the City and approved prior to submittal of the design package.
c. Demolition plans shall show the extent of demolition work.
d. The following notes shall be included on Demolition plans:
    i. The Contractor is responsible for scheduling a pre-construction meeting with the City two weeks prior to the beginning of construction.
    ii. Prior to the pre-construction meeting, the Contractor is responsible for field marking all trenching and construction

work proposed as part of the project. At the pre-construction meeting, a site walk will be conducted with City representatives in order to review the potential impact of the proposed work on existing conditions (existing hardscape, utilities, trees, etc.).

iii. The Contractor shall install temporary chain link fencing around the perimeter of the construction area. No construction equipment or materials will be allowed outside of the temporary fencing area. Construction area limits will be determined at the pre-construction meeting.

iv. Existing trees within the construction area shall be protected in place for the duration of construction with orange construction fencing placed around the trunk of the tree at the distance of the canopy drip line.

v. Trees authorized for removal shall be replaced at the Contractor's expense with a minimum 24" box tree of the City's selection and planted per City of Patterson Landscape Development Standards.

vi. The City of Patterson Parks Division shall be notified no less than 4 days prior to the start of any work. The Parks Division is responsible for setting/adjusting the existing irrigation controller to accommodate construction work on site. Contractor shall be responsible for supplemental watering to existing landscape areas within the construction site.

vii. The Contractor, in coordination with the Parks Division, shall mark the location of existing irrigation mainlines, laterals, and wiring that exist within the construction area prior to any trenching.

viii. Existing irrigation lines shall be shown on project demolition plans. To the extent possible, existing irrigation mainline and wiring should be protected in place.

ix. If cut, existing lateral piping shall be capped to prevent soil or other debris from entering the line.

x. Trenching near existing irrigation mainline must be hand-dug to avoid damaging existing mainline or wiring.

xi. Any damages to existing irrigation piping or wiring not marked for removal shall be repaired at the expense of the Contractor. Repairs shall be made by a City-approved contractor and supervised by Parks Division staff.

xii. Existing irrigation fittings such as sprinkler heads and valves which are to be removed from the construction area shall be re-used to the extent possible, determined by the

City Inspector. Materials deemed fit for re-use shall be cleaned and stored until re-installed.

xiii. Any piping, fittings, or other equipment which was removed for trenching shall be replaced in the same location, or as determined by the City Inspector.

xiv. Any irrigation circuits impacted by construction activity shall be flushed completely. All filters in sprinkler fittings shall be washed clean or replaced.

xv. Sprinkler heads shall be adjusted as needed for proper coverage and to avoid overspray.

xvi. Backfilling of trenches shall be completed in lifts of minimum 8" to soil compaction equal to that of adjacent soil and shall be brought level to existing surface grade. City Inspector will supervise backfilling.

xvii. Backfilled trenches and any areas damaged by construction activities/lack of irrigation during construction work must be graded smooth and replanted with new sod, seed, or other plant material as approved by the Parks Division. Sod shall be installed with clean, straight edges and shall be flush with the existing turf. Sod and seed varieties must be approved by the Parks Division. Temporary fencing shall remain around replanted areas until accepted by the City.

xviii. Planter areas affected by construction activities shall receive a new layer of bark mulch topdressing, as determined by the Parks Division.

xix. New landscaping, turf, and irrigation work shall be subject to a minimum 90-day maintenance period. New and existing trees within the construction area shall be warrantied for 12 months.

xx. All irrigation or landscaping items shall be submitted to and approved by the City of Patterson prior to the start of work.

xxi. All irrigation work shall conform to current City of Patterson Landscape Development Standards and Details.

(B) Grading & Drainage

a. All grading and drainage proposed within the public right of way is subject to the approval of the City Engineer.
b. Indicate existing and proposed grades with contours and spot elevations.
c. Note all grades, flow lines, and other key information within the public right of way.

d. Per State of California Title 24, accessible grades must not exceed 8.3%; less than 5% slope is preferred.
e. Slopes in turf, planter, or drainage basin sides shall not exceed 6:1.
f. Where possible, include a flat "bench" area at least 8' wide between walkways and the top of slope leading into a basin and where a toe of slope meets and impervious surface maintain a flat space of 24" between the toe of slope and the impervious surface.
g. Retaining walls shall be used as needed to keep slopes within acceptable ranges; heights, materials, and construction details must be acceptable to the City of Patterson.
h. Transitions between shallow and steep grades shall be gradually sloped to minimize sharp angles within the landscape.
i. A minimum 2% grade is required within turf and groundcover areas to maintain proper drainage. Sports fields may be constructed at 1.5% but 2% is preferred.
j. Walkways and other non-permeable surfaces shall be designed to drain entirely to the adjacent landscape.
k. Grading must ensure all irrigation and normal rainfall applied to a site remains within property lines.
l. Grading plans must meet WELO requirements for allowable slopes.

(C) Horizontal Control/Construction Plans

a. Walls and Structures
    i. Retaining walls are to be engineered and submitted to the City of Patterson Building Department for approval.
    ii. Structures requiring foundations and/or building permits are to be submitted to the City of Patterson Building department for approval.
b. Fencing
    i. Fencing shall be constructed in compliance with the City of Patterson standard details and specifications.
    ii. Ornamental iron fencing is the preferred material within parks or streetscapes.
    iii. Chain link fencing is suitable for use in sports fencing applications and other utilitarian applications such as dog parks.
    iv. Masonry wall designs shall be submitted to the City of Patterson Building Department for approval.
c. Concrete Walkways
    i. Concrete walkways shall be constructed in compliance with the City of Patterson standard details and specifications.

ii. Concrete walkways shall be constructed with a minimum width of 5′ and a minimum thickness of 4″.
iii. All concrete walkways shall achieve a minimum strength of 2,000 psi at 28 days of curing.
iv. Welded wire mesh or rebar reinforcement shall be installed as approved by the City Engineer.
v. Aesthetic treatments such as stamped concrete, etching, coloring, etc. shall be submitted for approval on a case-by-case basis.

(D) Irrigation

a. A complete automatic sprinkler irrigation design is required for all landscape areas within the project development area.
b. Irrigation systems shall be designed and installed in compliance with the City of Patterson WELO requirements.
c. Installation of the irrigation system shall conform to State Department of Water Resources and Uniform Plumbing Code (UPC) regulations.
d. Irrigation systems shall be designed and operated in a manner that prevents discharge and run-off of irrigation water onto roadways, driveways, walkways, adjacent properties, and any areas not under City jurisdiction.
e. Irrigation systems shall be constructed in compliance with the City of Patterson standard details and specifications.
f. Construction details must be provided which show installation procedures and materials required for installation of all major components used in the irrigation design, per the City of Patterson standard details and specifications.
g. Irrigation systems shall be designed to allow for emergency watering in the event of well or pump failure. Under such circumstances, the system shall be able to water at least one valve at a time.
h. Irrigation drawings shall include a legend indicating:
    i. Sprinkler head manufacturer and model number
    ii. Sprinkler radius (in feet)
    iii. Sprinkler operating pressure (in PSI)
    iv. Sprinkler flow (in GPM)
    v. Sprinkler precipitation rates
    vi. Other equipment, also with manufacturer, model number, size, and brief description

i. Irrigation drawings shall also indicate hydrozones and the anticipated watering schedule, with estimates for establishment and post-establishment periods.
j. Irrigation drawings shall indicate locations of irrigation water meters, points of connection, and electrical points of connection for controllers.
k. Irrigation drawings shall indicate party responsible (owner, contractor, utility service company, etc.) for coordination and installation of water and service connections.
l. Irrigation drawings shall include for each irrigation water meter or irrigation point of connection the following information:
    i. Location
    ii. Static and residual water pressure
    iii. Point of connection, electrical and water
    iv. Meter size
    v. Peak irrigation demand (in GPM)
    vi. Finish grade at backflow unit
    vii. Finish grade at highest head served
    viii. Maximum operating pressure for each valve (in GPM)
m. Water movement in irrigation system shall not exceed 5′ per second for pressure main line piping and 5′ per second for non-pressure lateral line piping.
n. Water pressure calculations shall be submitted for the worst hydraulic condition at each point of connection.
o. Pressure loss due to friction in lateral lines should not exceed 20% of sprinkler head optimum operating pressure.
p. Check valves are required to prevent drainage of irrigation water from the irrigation system due to elevation changes.
q. Irrigation systems shall be designed to provide for all plant materials within the design area under peak moisture demand conditions.
r. Irrigation system components shall be designed in such a way as to minimize vandalism and accidental damage.
s. Irrigation heads shall be spaced at 80% of the manufacturer's recommendations to avoid exceeding the effective radius of coverage. In no case shall sprinkler spacing exceed the manufacturer's recommendations. Site-specific wind conditions shall be taken into consideration when designing spacing of sprinklers.
t. Pop-up sprinklers are required. No above-grade sprinklers allowed unless approved in writing by City Engineer. Rigid risers shall not be permitted but may be considered in special situations as approved by the City Engineer.

u. Pop-up sprinkler heads shall be of sufficient height in operational mode so as to be operational without need for trimming around individual sprinkler heads.
v. Irrigation systems shall be designed and operated to meet the following efforts geared toward water conservation:
    i. The irrigation system shall not operate longer than the required to meet the landscape's water requirement. If irrigation water run-off occurs before the landscape's water requirement is met, then the irrigation system's automatic controls shall be reprogrammed with multiple short watering cycles to meet landscape requirements (cycle-soak method).
w. Valves shall be designed into irrigation system to provide uniform irrigation water coverage and system pressure (GPM).
x. Gate valves shall be designed into the irrigation system to allow for intermittent sections of the irrigation system to be shut down without shutting down the entire system.
y. Remote Control Valves shall be located above high-water lines of basins, swales, and other low-lying landscaped areas.
z. Irrigation main lines in basins, swales, and other low-lying landscaped areas shall be located above the high-water line.
aa. A master valve/flow sensor control valve is a required element of the irrigation system.
bb. Irrigation system water lines shall run parallel to contour lines when placed in sloped areas. Valves installed in sloped areas shall be placed at the top or toe of slope for ease of access.
cc. Irrigation systems shall be designed to the lowest static system pressure available, allowing for an additional 20% cushion for system fluctuation.
dd. If irrigation system pressure exceeds 80 PSI, then install pressure reducing valve at the point of connection to maintain pressure at no more than 20% above system design pressure.
ee. Irrigation system components shall be selected and designed in such a way as to ensure maximum performance and efficiency.
ff. Reduced pressure backflow preventers are required for irrigation systems utilizing domestic water.
    i. All backflow preventer devices shall be tested and approved by a City-approved tester and the City Water Division following installation. A copy of the test shall be submitted to the City Construction Inspector and City Parks Division.
    ii. A reduced pressure backflow preventer with lead-free rating shall be required when a drinking fountain is installed.

iii. Backflow preventers shall be installed with an approved enclosure, per City of Patterson standard details and specifications.

gg. Backflow preventers are not required for irrigation systems utilizing non-potable water.

hh. Quick coupler valves shall be required at regular intervals along irrigation mainline (see irrigation guideline notes on Standard Detail I-0.1). Quick couplers shall be installed adjacent to hardscape for ease of access. Quick couplers utilizing potable water shall have a reduced pressure backflow preventer with lead-free rating.

ii. Irrigation plans shall contain current standard notes from the water purveyor.

jj. No overhead irrigation shall be permitted in mulched landscape areas per MWELO.

kk. Irrigation plans shall contain all required WELO notes, schedules, calculations, hydrozones, forms, etc. per the most current standards.

ll. Irrigation plans shall identify any recycled or non-potable water piping installed.

mm. Any special conditions related to irrigation system design or installation shall be submitted to the City of Patterson for review at the earliest possible date.

(E) Planting

a. Planting plans shall accurately describe the actual plant materials to be installed on the project site. Site inspections shall enforce plant types and quantities shown on plans. Substitutions must be approved by the Landscape Architect and City of Patterson; revisions to WELO calculations may be required.

b. All ornamental planting of trees/shrubs within the right-of-way/public streetscape shall be in conformance with City ordinances and conditions. In no event shall trees or other ornamental landscaping be placed in such a manner as to obstruct the vision of pedestrians or drivers within the public right of way.

c. All planting plans shall be in conformance with any appropriate specific plan or design standard requirements.

d. Trees and shrubs shall be installed per City of Patterson standard details and specifications.

e. Trees shall be planted in landscape areas sufficient in size to accommodate tree species at maturity.

f. Planters less than 8' wide shall require low-flow irrigation. Minimum width of planters shall be 4'.
g. The minimum size of streetscape trees shall be 15 gallon container size. Larger container sizes may be appropriate in some areas.
h. New street trees shall maintain consistent spacing with the existing street tree pattern and species unless otherwise directed by the City of Patterson Parks Division. Refer to the City of Patterson street tree plan.
i. Trees must be spaced at least ½ the mature diameter away from irrigation main lines, lateral lines, valve boxes, master vales, and flow meters.
j. Trees placed within eight (8') feet of any hardscape surface shall receive a root barrier. Root barriers shall be installed shall be installed per City of Patterson Standard Details and Specifications.
k. Trees to be staked using Reddy-Stake system, to be installed per City of Patterson standard details and specifications.
l. The minimum size of shrubs when planted shall be 5 gallon container size; see planting notes.
m. Plants such as grasses, groundcovers, and other perennials may be installed in a minimum container size of 1 gallon; see planting notes.
n. Mulch shall be installed at a depth of 3" in any non-turf planting areas and around trees planted in turf areas. Mulch may be natural brown wood mulch, cobble, decomposed granite, or rock blankets.
o. Weed control/herbicide methods for publicly maintained areas shall be subject to approval by the City of Patterson Parks Division.

(F) Lighting

a. All lighting systems located within the public right of way shall be designed by a Registered Electrical Engineer.
b. Lighting plans shall include a site plan with photometric calculations. Lighting plans shall be submitted with landscape improvement plans and are subject to approval by the City of Patterson.
c. The City of Patterson shall be consulted for preference of lighting controls.
d. Typical lighting within parks, playgrounds, trails, and walkways shall be LED and 0.5 FC. Activation shall be by photocell device.
e. Features such as timers with astronomic clock features, dimmers, or other controls may be required pending City of Patterson review.
f. Solar-powered light fixtures will be reviewed and approved on a case-by-case basis.

g. The illumination range of sports field lighting shall provide participant and spectator safety. Sports field lighting design shall include environmental controls to prevent light and glare from spilling onto adjacent properties.

(G) Signage

a. All graphics and signage within the public right of way shall be created in accordance with relevant zoning ordinances and subject to approval by the City of Patterson Planning Director and Parks Division.
b. Each park shall have a sign including the park name. The sign shall be placed at the primary adjacent street intersection.
c. Regulatory signage shall be located at each pedestrian entry point to the park and at other locations as requested by the City of Patterson Parks Division. Regulation signs shall include park rules, hours of operation, and key regulations from the City of Patterson Municipal Code, section 12.24 (i.e. prohibition of alcoholic beverages, dogs must be on leash and cleaned up after, etc.).
d. Bicycle paths which cross arterial and connector streets shall receive pavement markings, striping, and signage as required by the State of California.

11.3.5 INSPECTION AND ACCEPTANCE OF LANDSCAPE INSTALLATION

The following meetings and inspections shall be required for landscape development projects.

(A) Pre-Construction Meetings

a. The City Construction Inspector shall be contacted at least 48 hours in advance to schedule each of the following meetings:
    i. Pre-construction meeting prior to the start of any landscape work.
    ii. Pre-construction meeting prior to any other work that is to be performed in an existing park, streetscape, or City owned and maintained property.

(B) Construction Inspections

a. The City Construction Inspector shall be contacted at least 48 hours in advance to schedule each of the following inspections:
    i. Prior to any irrigation well drill operations.
    ii. Following stripping/stockpiling.
    iii. Following rough grade and staking.
    iv. Following completion of rough grade.
    v. During installation of irrigation system.
    vi. Prior to hydrostatic pressure test of irrigation lines.
    vii. During Irrigation Auditor-conducted irrigation coverage test.
    viii. During soil amendment/incorporation of fertilizers.
    ix. Prior to planting, for approval of final grade in planters.
    x. Prior to application of hydroseed/sod, for approval of final grade in landscape area to receive same.
    xi. Prior to pouring concrete, during concrete forming/footing installation phase.
    xii. Prior to final placement of site furnishings.
b. Inspections may occur at random; inspection may include review of as-built plan record updates and product documentation.

(C) Pre-Maintenance Inspections

a. Owner shall maintain irrigation and landscape areas to the satisfaction of the City Parks Division for a minimum of one hundred twenty (120) days. This maintenance period shall be preceded by a City inspection of the completed landscape. The

City Construction Inspector shall be contacted at least 48 hours in advance to schedule this inspection.

b. The pre-maintenance period inspection shall include but not be limited to review of the following:
    i. Documentation required for MWELO Certificate of Completion.
    ii. Irrigation controller certification and irrigation audit documentation demonstrating all irrigation system components function as designed and that design pressures/flow rates are met.
    iii. Compliance with approved landscape plans, specifications and details.
    iv. Any special conditions/approvals attached to the project.

(D) Final Inspection and Acceptance

a. Owner shall contact City for final inspection at the conclusion of the 120-day maintenance period. All warranties, manuals, and documentation must be submitted to the City at this time.
b. Following acceptance by the City Parks Division, the City will assume maintenance responsibility. Acceptance of a specific project by the City does not imply acceptance of a larger development, subdivision, or other improvement.

11.4 LANDSCAPE DESIGN GUIDELINES

11.4.1 MINIMUM PARK PROGRAM BY PARK TYPE

The City of Patterson Parks and Recreation Master Plan identifies two types of parks within the City of Patterson, Neighborhood Park and Community Parks. Please refer to the Parks and Recreation Master Plan for detailed definitions of each park classification. The following guidelines apply for programming of each park type.

(A) Neighborhood Parks should include a variety of activities to serve the local population, including the following:

a. Playground for 2-5 year olds
b. Playground for 5-12 year olds
c. Walking paths
d. Benches
e. Picnic tables
f. Multi-use turf sports fields
g. Sports courts

(B) Community Parks should include specialty elements that will attract people from throughout the community, including the following:

a. Competition sports fields
b. Aquatic center
c. Community Center
d. Amphitheater
e. Natural area
f. Equestrian center
g. Civic park/formal event space

11.4.2 PARK DESIGN GENERAL GUIDELINES

(A) General Design Guidelines

a. Parks shall be located centrally within the neighborhoods they will serve. The City of Patterson Parks Division shall approve the preliminary park location during review of subdivision concept plans.
b. Parks shall not be bounded by major streets/arterials.
c. Parks shall be designed with an emphasis on inclusion and have options for users of all ages and abilities.
d. Sports fields shall be located in optimum orientation with relation to the solar axis.

e. Drinking fountains, benches, trash/recycling receptacles, trail lighting, and bicycle racks shall be installed at each park.
f. Restroom facilities shall be installed at all community parks and at heavily used neighborhood parks.
g. Play areas shall be designed with perimeter "trap" fencing, typically a decorative tubular steel fence 4' in height, with limited entrances to support safe play environments.
h. Any structural elements including stairs or walls shall be designed in accordance with the most recent edition of the California Building Code.
i. Above-ground utilities, including pump stations and wells, shall be located outside of the active recreational area.
j. City properties shall include signage related to park regulations. A separate signage system shall be developed for trails, showing routes, distances, and regulations.
k. Community parks shall be designed to include off-street parking.
l. Park design shall emphasize unique character and aesthetic for each park site. Sites of historic, cultural, or natural significance within or near the park shall be included where possible in the design of the park.
m. Specific elements included in the park design shall reflect needs/programming elements not met by existing nearby parks.
n. Park design shall foster a safe environment through the use of Crime Prevention Through Environmental Design (CPTED) principles and strategies.
o. Park design shall provide for adequate access for fire, emergency, and maintenance equipment.

(B) Circulation

a. All sidewalks and pathways within parks must be designed to meet ADA requirements.
    i. Slope of sidewalks and pathways shall not exceed 20:1.
    ii. Cross-slope of walks and pathways shall be a maximum of 1.8%.
b. Sidewalks and pathways shall be designed and constructed per City of Patterson standard details and specifications unless otherwise approved by the City.
c. Class 1 or multi-use trails (i.e. those designed for use by pedestrians and bicyclists concurrently) shall be designed to a minimum of 10' width with a minimum radius of 15' unless otherwise approved by the City.

d. Bicycle trails shall be designed in accordance with AASHTO guidelines for bicycle facilities and shall include City-approved signage.
e. Drainage shall be designed on the uphill side of walks and trails in order to prevent the flow of water across the surface.
f. Park design shall include one main park entry; City standard park sign shall be located at this entrance to the park. Where feasible, main park entry shall be located near a bus stop or crosswalk.
g. Regulatory signage shall be located at the main entry to the park per section 3.4 (G).
h. Play areas shall be located on main circulation routes and near accessible parking lot spaces.
i. Shaded areas with seating shall be provided at intervals along circulation routes. Trees and overhead structures are both acceptable methods of providing shade.
j. Park design shall provide direct pedestrian access along an ADA compliant path of travel to the play area(s), restroom(s), and sports field(s).

(C) On Site Water Management

a. Park design shall minimize water use and maintenance demands pursuant to the City's Water Conservation Ordinance, the State of California MWELO, and Cal Green.
b. Park design shall use turf in large contiguous areas appropriate for multi-use active recreation or sports playing fields, pending the size/programming of the park. Parks shall avoid use of turf in small ornamental patches.
c. Any LID (Low Impact Design) features shall be approved by the Parks Division and Public Works during the preliminary design review phase.
d. All LID features shall be warrantied for a period of 3 years from the date of final acceptance by the City.
e. Stormwater detention basin areas shall be designed per the City of Patterson Water Management guidelines.
f. Parks designed to include a detention basin shall provide a minimum of one acre of upland area outside the flood basin for use for playgrounds and other recreational amenities.
g. Any equipment associated with detention basin operation shall be placed on a concrete pad and located near the exterior boundary of the park near a maintenance vehicle access point.

11.4.3 PLAYGROUND DESIGN GUIDELINES

(A) General Playground Design Guidelines

a. Parks shall be designed with separate play areas for 2-5 year olds and 5-12 year olds where possible. Combined play areas may be permitted with City approval where limited area limits separation of play spaces.
b. The design of play areas shall include a variety of elements to maximize active and intellectual play opportunities for different ages and user abilities.
c. Each play area within a park shall be designed with an ADA ramp to the safety surfacing area and active play elements. Play equipment shall be oriented such that the ADA ramp is closest to the play equipment transfer station.
d. All playgrounds shall be designed to comply with the Consumer Product Safety Commission Technical Guidelines for equipment, surfacing, and area requirements for Public Playground Safety.
e. All playgrounds shall be designed to comply with the ASTM standards for equipment and surfacing and shall comply with ADA requirements.
f. Play areas shall be designed to include overhead shade to the maximum extent possible. Shade may be provided by overhead structures, roofs attached to play structure elements, or trees, or a combination of these methods.
g. Shaded seating areas for caregivers shall be incorporated within or immediately adjacent to the play area.
h. Contractor shall provide the City of Patterson with a passing playground inspection certification as completed by an independent Certified Playground Safety auditor.
i. Contractor shall verify compliance and report any discrepancies to the City of Patterson.
j. Standards for minimal play value include the following:
    i. Comprehensive and balanced sensory play opportunities: Sight, Smell, Sound, Touch, Taste, Interoceptive, Vestibular, and Proprioceptive.
    ii. Cozy spaces: Areas designed to escape sensory overload and re-engage after self-regulation.
    iii. Majority unitary system impact attenuating surfaces: For unimpeded access to recreation (note: engineered wood fiber does not qualify as unitary).
    iv. Shade: Play areas must have ample shade to provide respite from the Valley heat.

v. Allergens: Plant species in and near playgrounds and parks should be selected from those that produce low levels of allergens and that are not irritating to skin when touches. The Ogren's Allergy Scale or OPALS Scale can be used to determine this.
vi. Cognitive simplicity: Play spaces should be easy to navigate with recognizable landmarks and wayfinding.
vii. Social play: Opportunities for social interaction and play that promote multi-users.
viii. Diversity: Provide diversity in play opportunities that exceed ADA minimums (i.e. types, materials, grasping requirements, level of difficulty, elevated vs. ground level).
ix. Fencing: Some children with disabilities and on the autism spectrum have a tendency to bolt from the playground. The playground should be fenced to keep children from running into nearby roads, canals, and/or other hazards. See ASTM standards for play area fencing.

11.4.4 GRADING AND DRAINAGE GUIDELINES

(A) General Grading

a. All grading work performed on site shall comply with the State of California Construction General Permit.
b. All landscaped areas shall have a 1% minimum slope.
c. Slopes in landscaped areas shall not exceed 4:1.
d. Where needed, retaining walls shall be included in the design to keep slopes within acceptable ranges. Retaining walls shall be approved by the City.
e. Provide a minimum 4' width level bench between top of slope and back of walk.
f. Provide a minimum 4' width level bench between bottom of slope and back of walk.
g. Sports fields (i.e. baseball, softball, and soccer) shall be crowned at a minimum of 1.5%.
h. Hard sports court surfaces shall be graded at a maximum of 1%.
i. Adequate level areas shall be provided for spectator seating near sports fields/courts.
j. Walkways shall be graded in compliance with ADA requirements and California Title 24 Building Code.
k. Handrails shall be provided as required by ADA but grading should avoid this necessity where possible.
l. Cross-slope of walkways shall not exceed 1.8%. Perimeter sidewalks shall slope inward toward the park for drainage.

m. Grading shall be designed such that all normal rainfall and irrigation water remains within property lines and does not drain onto non-permeable surfaces.
n. Park site earthwork shall be designed to balance cut and fill on site.
o. Drain clean-outs shall be located within planting areas or turf areas only. Do not locate inlets or clean-outs within or adjacent to sports fields.
p. Landscape areas shall be designed to not drain across paved areas.
q. Refer to Public Works standards and details for information related to sewer clean-outs, connection requirements, and other related requirements.

11.4.5 LANDSCAPE AREA GUIDELINES

(A) Site Irrigation

a. Irrigation design shall utilize City-approved controllers and system components per City of Patterson standard details.
b. City-approved irrigation component manufacturers are Rain Bird and Hunter. The City of Patterson Parks Division may approve alternative manufacturers on a case-by-case basis.
c. Controllers shall be smart controllers with moisture and evapotranspiration rate sensors that automatically shut off during rain events.
d. Flow sensors and master valves shall be triggered by flow differentials to control water loss in the event of broken irrigation lines/components.
e. The irrigation system and schedule shall be designed to prevent runoff or application of excessive irrigation water.

(B) Planting Design

a. A variety of plant materials shall be used within the project site, consisting of varied textures and colors and providing for year-round interest.
b. Plant material shall be non-toxic. Plants which attract bees shall be avoided in the immediate vicinity of play areas.
c. Plant materials shall be selected that will minimize the amount of fertilizer or pesticides required to sustain growth.
d. Plant materials shall be selected in order to avoid excessive maintenance required to sustain growth/aesthetics.
e. Plants shall be non-invasive species.
f. Vegetative barriers are desirable along the property boundary

g. Planting design shall incorporate CPTED techniques to avoid visibility/safety hazards within the project site.
h. The plant legend submitted with the plan set shall indicate State WUCOLS water rating for the Patterson area for each plant species specified.
i. All landscaping shall comply with City Zoning Ordinances in all respects.

11.4.6 PARK AND STREETSCAPE FURNISHINGS DESIGN GUIDELINES

(A) Site Furnishings

a. Park design shall include site furnishings (benches, waste receptacles, picnic tables, bike racks) of polyvinyl powder-coated metal material. Wood or plastic furniture shall be unacceptable except specifically required to match existing site furniture and shall be approved by the City Parks Division.
b. City-approved polyvinyl powder-coat color is black. Other colors may be permitted with approval of the City Parks Division.
c. City-approved equipment manufacturer is DuMor, strap metal bench type 93/95, receptacle type 84. The City of Patterson Parks Division may approve alternative products/manufacturers on a case-by-case basis.
d. Site furnishings shall be surface-mounted unless otherwise approved by the City of Patterson.
e. Benches and picnic tables shall be 8′ length unless otherwise approved by the City of Patterson.
f. Picnic tables shall be sited per ADA and Title 24 standards on an accessible ADA route and on an accessible ADA compliant surface, with 4′ minimum clearance on all sides.
g. Benches shall be placed adjacent to park facilities such as play areas, sports courts, and along walkways. These seating options shall include ADA compliant seating.
h. At least one trash and one recycling receptacle shall be required at each park site. Receptacles shall be placed centrally on concrete surfacing.
i. Trash and recycling receptacles shall be placed adjacent to all high-use areas, including sports fields, play areas, picnic areas, and dog parks.
j. Trash and recycling receptacles shall match other site furniture within a given site.
k. Bicycle racks shall be provided at minimum near the main park entry.

l. Drinking fountains shall be located at minimum in a central location near play areas, sports courts, and picnic areas. Additional drinking fountains may be located at restrooms and at intervals along pathways, or at special interest areas such as dog parks and sports fields.
m. All drinking fountains shall meet ADA standards.
n. Barbecue Grills shall be placed in picnic areas only. Grills shall not be placed adjacent to play areas. Locations shall be approved by City Parks Division.
o. Group barbecues shall be constructed of precast concrete with steel grates.
p. Individual barbecues shall be non-toxic coated steel and pedestal-mounted.
q. Shade structures shall be provided at picnic areas. Owner/developer shall be required to obtain a building permit from the City of Patterson prior to construction of each structure.
r. Collapsible bollards shall be placed in locations where vehicle traffic is prohibited, such as at facility entrance, driveway entrances, or trails, or where needed to protect facility entrances or utilities.
s. All signage proposed for use on public properties and park lands in the City of Patterson shall be submitted to the City for review and approval. Signage shall comply with current Public Works standards, Caltrans, ADA, and City landscape development standards and details.

11.5 STANDARD LANDSCAPE CONSTRUCTION SPECIFICATIONS

The following written specifications include the technical requirements for bidding and construction of public domain and private park projects within the boundaries of the City of Patterson. These specifications are not all-inclusive given unique individual site conditions; therefore supplementary sections may be necessary.

Microsoft Word files for these specifications may be found on the City of Patterson Parks Division website and may be used as a template for preparation of individual project specifications. It is requested that track changes be used upon submittal to the City so that plan check staff can clearly identify any modifications to the City Standards.

11.5.1 LANDSCAPE IMPROVEMENTS

5.1.1 Purpose

The purpose of these Standard Landscape Improvement Specifications is to ensure that landscape areas within the City of Patterson are of consistently high quality construction, utilize water-wise design techniques, and provide maintainable outdoor environments throughout the City. These Standards and Specifications describe how specific portions of each project must be designed, installed, cultivated, maintained, and inspected.

5.1.2 Scope

This section addresses Landscape Development Standards and Specifications for City-maintained areas including but not limited to parks, trails, drainage/detention areas, rights-of-way and median areas, landscape maintenance districts, and open space landscape improvements.

5.1.3 Variances

(A) The provisions of these Standards and Specifications are not intended to limit the use of materials or methods not specifically prescribed herein.

a. Any alternate to these Standards and Specifications may be approved in writing by the City's authorized representative. The City's authorized representative shall require sufficient evidence to be submitted to substantiate any request that may be made regarding an alternate method or material.
b. Details relating to any action approving an alternate shall be recorded and filed with the City.

(B) In the event of practical difficulties encountered in carrying out the provisions of these Standards and Specifications, the City's authorized representative may grant variances for individual cases.

a. Any variance must be in conformance with the intent and purpose of these Standards and Specifications and shall provide a level of safety and quality equal to or greater than that intended by the minimum requirements of these Standards and Specifications.
b. Details relating to any action approving a variance shall be recorded and filed with the City.

5.2 GENERAL PROVISIONS

5.2.1 Description

(A) These Standards and Specifications address Landscape Development Standards and Specifications for City-maintained areas including but not limited to parks, trails, drainage/detention areas, rights-of-way and median areas, landscape maintenance districts, and open space landscape improvements as constructed by private interests. It is anticipated that additional specifications shall be prepared for each project as needed.

5.2.2 Order of Work

(A) Landscape development work shown on plans shall be constructed in a sequence. Prior to commencement of work, the Owner/Contractor shall submit for approval the schedule and plans as required for work within the project area.

5.2.3 Permits and Fees

(A) Contractor shall prepare applications for and obtain all required permits for project completion. Examples of such permits include building permits, SWPPP, NOI, etc.

a. All permits shall be obtained at the Contractor's expense.
b. Contractor shall be responsible for determining and verifying the extent and time limits of permits and of obtaining and complying with necessary permits.
c. Copies of all permits shall be submitted to the City of Patterson prior to the commencement of work.
d. Copies of all permits shall be held on site during project construction.

e. Prior to commencement of construction work, the Contractor shall obtain coverage under and comply with the General Permit for Discharges of Storm Water Associated with Construction Activity, and shall provide data required by the permit until the City prepares the Notice of Termination.
f. Contractor shall comply with the most recent update of CASQA California Stormwater BMP Handbook for Construction, CALTRANS Handbook, and Public Works Bluebook Specifications.
g. Contractor shall complete application documentation to obtain the MS4 permit and shall comply with all pollution prevention measures, prevention of discharge during construction, etc. contained within that permit.

5.2.4 Quality Assurance

(A) Owner/Contractor shall comply with all applicable local, state, and federal requirements regarding materials, methods of work, and disposal of waste materials. The City shall not be held responsible for any consequences of the Owner/Contractor's non-compliance with these Standards and Specifications or local, state, or federal regulations.

5.2.5 Preparation

(A) Any existing records and drawings of existing site work, services, utilities, and adjacent work which may affect site work operations, shall be consulted prior to beginning construction work. On site underground utility locations shall be verified prior to excavation.

5.2.6 Final Acceptance

(A) Following the 120-day maintenance period, Owner/Contractor shall provide:
a. SWPPP Notice of Termination (NOT).
b. Operation manuals.
c. As-built technical files.
d. Documentation of inspection and certification of backflow devices, controllers, and playground equipment.
e. Irrigation audit documentation.
f. WELO Certificate of Completion.
g. Removal of erosion control devices.
h. Keys.
i. Request for final acceptance, submitted in written form to the City.

(B) A formal written response to the request for final acceptance shall be provided by the City which states the date of final acceptance.

5.3 SITE PREPARATION

5.3.1 General

(A) Contractor shall provide all labor, materials, and equipment necessary to complete site preparation work as stipulated in these Standards and Specifications and as shown on the approved drawings.

5.3.2 Clearing and Grubbing

(A) Clearing and grubbing of site shall be subject to the same standards set forward in the City of Patterson Public Works Standards and Specifications. In addition to these Standards and Specifications, the following apply:

a. Contractor shall immediately backfill and compact areas where removal of material creates an open hole, pit, trench, or depression. If not immediately filled, protective fencing or barricades shall be utilized for safety.
b. Contractor shall be responsible for items to remain as identified either on the plans or while in the field. Contractor shall be liable for damage to any existing facilities or improvements.
c. Contractor is responsible for repair/replacement of any items damaged or removed, and such items shall be of equal or better construction as the original at the Contractor's expense.
d. Contractor is responsible for documenting and bringing to the City's attention at the pre-construction meeting any pre-existing damage.
e. Areas designated for removal shall be stripped to a minimum depth of two (2") inches below existing grade and disposed off site prior to beginning work.
f. Topsoil shall be stripped to its full depth and stockpiled on site. If topsoil cannot be used on site, then the Contractor shall arrange for its removal and disposal.

5.3.3 Protection of Existing Features and Plant Material

(A) Features to be retained shall be protected properly in a manner approved by the City's authorized representative. Contractor shall identify and stake all surface and subsurface site features, including property corners.

(B) A plant material protection plan shall be submitted to the City of Patterson for review prior to beginning work, if applicable. The existing condition of existing plant material present on site shall be inspected and noted by the Contractor and City's authorized representative prior to beginning of construction.

(C) The City shall not permit any construction activity deemed to be injurious to existing plant material unless an approved impact mitigation plan is provided. Plant material damaged during construction which is not included in the approved impact mitigation plan shall be counted toward additional replacement plant material in accordance with current industry standards.

(D) Contractor shall receive approval from the City prior to trimming of existing plant material as may be required to preserve the plant during construction.

(E) Plant material to be preserved on site shall be enclosed by protective fencing, orange in color and four (4') feet in height, secured with metal posts and signed to indicate purpose for plant protection. Protective fencing shall extend to the plant's natural dripline or be a minimum of five (5') feet from trunks of plants to be protected, whichever is greater.

(F) Excavation shall occur in a manner that will cause minimum damage to existing root systems of plants to be preserved. Any injured roots shall be pruned cleanly and backfilled immediately. Do not cut any root over two (2") inches in diameter within the dripline unless specifically approved by the City's authorized representative.

(G) Existing trees shall not be used for any purpose such as guy anchors, crane stays, etc.

(H) Tree protection during construction activities shall comply with the City of Patterson Urban Forest Management Plan (UFMP).

5.3.4 Grading of Landscape Areas

(A) All landscape areas compacted during construction shall be ripped to a minimum depth of 24" prior to the beginning of site specific soil preparation, soil amendment, and rough grading.

5.3.5 Protection from Harmful Substances

(A) Any spill of paint, oil, concrete, volatile materials, or any other substance which may cause damage to existing or future vegetation shall be immediately removed and properly disposed of per the direction of the City's authorized representative.

5.4 SITE GRADING AND DRAINAGE

5.4.1 General

(A) Contractor shall provide all labor, materials, and equipment necessary to complete site preparation work as stipulated in these Standards and Specifications and as shown on the approved drawings.

(B) Refer to City of Patterson Public Works Standards and Specifications for related grading information. In addition, the following general design standards shall apply:

a. Earthwork shall be designed to balance cut and fill on site. In the event materials must be imported to or removed from the project site, Contractor/Owner shall be responsible for all costs of transport and materials.
b. All on site and off site areas disturbed due to grading operations shall be restored to original conditions or left in an appropriately tidy manner for the next phase of construction.
c. All existing and proposed drainage ways shall maintain positive drainage at a gradient suitable for the surface material. Ponding of water shall be limited to designated detention areas.
d. Slopes in landscaped areas shall not exceed 4:1.
e. Where needed, retaining walls shall be included in the design to keep slopes within acceptable ranges. Retaining walls shall be approved by the City.
f. Provide a minimum 4' width level bench between top of slope and back of walk.
g. Provide a minimum 4' width level bench between bottom of slope and back of walk.
r. Sports fields (i.e. baseball, softball, and soccer) shall be crowned at a minimum of 1.5%.
s. Hard sports court surfaces shall be graded at a maximum of 1%.
t. Cross-slope of walkways shall not exceed 1.8%. Perimeter sidewalks shall slope inward toward the park for drainage.
u. Walkways shall be graded in compliance with ADA requirements and California Title 24 Building Code.
v. Handrails shall be provided as required by ADA but grading should avoid this necessity where possible.

5.4.2 Drainage

(A) Refer to City of Patterson Public Works Standards and Specifications for related drainage information and for information related to sewer clean-outs, connection requirements, and other related requirements. In addition, the following general design standards shall apply:

a. Drain clean-outs shall be located within planting areas or turf areas only. Do not locate inlets or clean-outs within or adjacent to sports fields.
b. Do not place inlets closer than three (3') feet from hardscape.
c. Landscape areas shall be designed to not drain across paved areas.
d. Minimum flow line gradient in landscape areas shall be 2%.
e. Drop inlets within landscape areas shall be not less than 16" in diameter. Drop inlets located in other surfacing areas shall be a minimum of 24" diameter. Drop inlets shall be concrete.
f. Catch basins may be required within play areas upon request by the City of Patterson. Installation of catch basins shall be per City Standards and Specifications.
    i. Play area sub-grade shall be sloped at a minimum of 1% toward a play area catch basin.
    ii. Catch basin shall be located so as to not interfere with any play equipment footings.

5.4.3 Testing

(A) Classification testing shall be performed by an independent testing laboratory under the inspection of a registered Professional Engineer specializing in soils engineering.

a. Testing shall be at the expense of the Contractor.
b. Contractor shall fully comply with all recommendations made by the testing agency.
c. Test results and any recommendations shall be provided to and approved by the City's authorized representative.

5.4.4 Materials

(A) All materials and methods of construction shall comply with the City of Patterson Standards and Specifications, with the State Department of Transportation, and with the standards set forward in ASTM and AASHTO.

(B) Soils from on site shall be used when possible. If off site soils must be imported, then such materials shall be subject to testing and approval by the City's authorized representative before such soils may be imported onto the project site.

(C) Any unacceptable materials identified on the project site shall be removed by the contractor and disposed of properly off site.

5.4.5 Execution

(A) All applicable safety standards shall be followed for grading operations.

(B) Grading operations shall adhere to these Standards and Specifications, including the following:

a. Contractor shall establish horizontal and vertical limits of grading through the use of labeled stakes. Staking shall be approved by the City's authorized representative.
b. Turf grass areas, detention basins, and sports fields shall require laser grading to ensure proper drainage.
c. Any areas where fill is required shall receive lifts in not more than six (6") inch increments loose depth. Fill materials shall be mixed to provide uniform moisture content, density, and compaction. Each lift shall be thoroughly compacted using roller or vibratory equipment suitable for the type of material, to densities suitable for final surface material.
d. Compaction shall be to minimum standard proctor density of 80% for planted landscape areas and 95% for areas to receive pavement.
e. Backfilling against buildings shall meet requirements of engineered soils report for that location. The City of Patterson reserves the right to have graded areas tested at the Contractor's expense.
f. Contractor shall perform survey and staking of final rough grade. Final rough grade shall be inspected by the City's authorized representative prior to soil preparation operations.
g. No grading operations shall be permitted on soft, spongy, frozen, unstable, or otherwise unacceptable subgrade.
h. All disturbed soils shall be wetted periodically to minimize blowing dust.

5.4.6 Cleanup

(A) Contractor shall protect all graded areas from unnecessary disturbance.

(B) Contractor shall repair all areas which may become eroded, settled, or rutted during the warranty period to meet original specifications. Warranty period shall be considered one year following initial acceptance of project.

5.4.7 Inspections

(A) The following inspections shall be required:

a. Pre-construction.
b. Following herbicide application/prior to weed eradication.
c. Following weed eradication.
d. Following topsoil stripping and stockpiling.
e. Following initial rough grading staking.
f. Before rough grading operations and at phases during rough grading operations, to be agreed upon by Contractor and City's authorized representative.
g. Following completion of rough grading.

(B) Site work deemed to be faulty or not in accordance with the approved drawings and the City's Standards and Specifications shall be corrected promptly at Contractor's expense.

5.5 SOIL PREPARATION

5.5.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete soil preparation for all areas to be landscaped per approved drawings and City of Patterson Standards and Specifications.

a. Contractor shall obtain soil samples and submit to a state licensed soil testing laboratory. The results of the soil analysis and related recommendations shall be sent to the City's authorized representative for approval, along with Contractor's recommended soil amendments.
b. Statement of weed-free certification shall be provided for all imported soils.

5.5.2 Materials

(A) Organic Materials

a. All organic materials utilized in landscape areas shall be 1% nitrogen stabilized composted organic matter as approved by the City's authorized representative.
b. All organic materials shall be screened and free from lumps, stones, plant material, debris, and other material harmful to plant life.
c. A one-gallon sample of organic materials shall be submitted to the City's authorized representative at least 14 days prior to application on site in order to obtain approval of soil amendment prior to delivery.
d. All load tickets shall be submitted to City's authorized representative prior to installation on site.
e. Composted organic matter shall be incorporated at minimum in to the top 6"-8" of soil at a rate of six (6) cubic yards per 1,000 SF, or at a greater depth/rate per recommendations of the soils report. Incorporation shall be completed by roto-tilling or approved equal method.

(B) Fertilizer

a. At minimum, 15-15-15 fertilizer shall be incorporated into the top 6"-8" of soil at a rate of fifteen pounds per 1,000 SF, or at a greater rate per recommendations of the soils report. Incorporations shall be completed by roto-tilling or approved equal method.

5.5.3 Preparation

(A) Weed Control

a. Applicator of weed control materials shall be licensed by the State of California as a Pest Control Advisor and a Pest Control Operator in addition to any subcontractor licenses that are required.
b. Applicator shall submit to the City's authorized representative a list of all weed control materials and application rates for use on project site prior to installation of any weed control materials. Applicator shall provide data demonstrating the compatibility of proposed weed control methods with intended landscape plant materials on site. All materials and methods shall conform to local, State, and Federal regulations.
c. Weed control materials and methods shall not affect landscape plantings or seed germination.
d. Weed control materials shall be applied a minimum of ten days prior to stripping weeds/vegetation on site. Optimal application conditions include weather between 60 and 90 degrees Fahrenheit, minimal wind, and the presence of weeds actively growing in the target location.

e. Weed control materials shall be re-applied in the event rain occurs within 24 hours of application. Pest Control Advisor and City's authorized representative may determine additional applications are necessary.
f. City's authorized representative shall be contacted ten days after application of weed control materials to inspect the site and to authorize Contractor to proceed with stripping weeds/vegetation on site.

(B) Storm Basins

a. The bottom of drainage basins shall be cross-ripped in two directions at right angles to a minimum depth of 12" with minimum 36" wide (o.c.) intervals. Deeper ripping may be required pending soils conditions, to be determined by the City's authorized representative.
b. City shall be notified for inspection during ripping process.

(C) Incorporation of Amendments

a. In general, specified soil amendments shall be installed at a minimum rate of six (6) cubic yards per 1,000 SF and incorporated into the top 6"-8" of rough graded topsoil.
b. Soil amendments shall be distributed uniformly and mixed into the topsoil to achieve a minimum 25% organic matter rate per soil analysis.
c. Soil amendments to landscaped median areas shall be applied to a minimum depth of 12" and the top 6" of subgrade shall be scarified. Unsuitable soils in medians shall require contractor to remove and replace soils as needed.

(D) Planting areas shall be graded to desired finished grades to within tolerance of +/- 0.1' prior to topdressing. Contractor shall verify grades. Finished surface shall be even and uniform without visible lumps, stones, sticks, or debris larger than one inch in diameter.

(E) Areas to be planted with sod which abut hardscape surfaces shall be 1.5" below adjacent hardscape surfaces prior to sodding and shall be graded so as to drain away from non-permeable surfaces.

5.5.4 Inspections

(A) Materials Inspection

a. All organic soil amendments and fertilizer shall be inspected by the City's authorized representative upon delivery to the project site.

Inspection shall be for both quality and quantity of materials. Contractor shall retain delivery tickets for verification of source, materials, and quantities.

b. Materials deemed unsatisfactory by the City's authorized representative shall be removed and replaced with materials conforming to these Standards and Specifications.

(B) Soil Preparation Inspection

a. Soil preparation shall be inspected by the City's authorized representative during and immediately following each phase of the Contractor's work for conformance to project drawings an these Standards and Specifications.
b. Work deemed to be unsatisfactory shall be corrected by the Contractor.
c. The following list includes additional required inspections:
    i. During final grading.
    ii. After application of organic soil amendments, prior to tilling.
    iii. After final grading is completed, prior to planting/seeding.
    iv. Contractor shall submit the Soils Analysis report and all load tags for materials as required by these Specifications prior to planting.
    v. Irrigation audit report shall be submitted prior to planting/seeding to verify coverage.

5.6 SEEDING & HYDROSEEDING

5.6.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete seeding for all areas to be landscaped per approved drawings and City of Patterson Standards and Specifications.

5.6.2 Quality Assurance

(A) Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.

a. Experience: Five years' experience in turf installation.
b. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
c. Pesticide Applicator: State licensed, commercial.

5.6.3 Submittals

(A) Qualification Data: For landscape Installer.

(B) Certification of Grass Seed: From seed vendor for each grass-seed monostand or mixture, stating the botanical and common name, percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.

d. Certification of each seed mixture. Include identification of source, name and telephone number of supplier.

(C) Product Certificates: For fertilizers, from manufacturer.

(D) Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

(E) Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

5.6.4 Materials

(A) Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Rules for Testing Seeds" for purity and germination tolerances.

(B) Seed Species

a. Project specific. Of the type recommended by local reputable seed providers in the region to thrive in the City of Patterson.

5.6.5 Execution

(A) Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

a. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

b. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.

c. Uniformly moisten excessively dry soil that is not workable or which is dusty.

(B) Proceed with installation only after unsatisfactory conditions have been corrected.

(C) If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

(D) Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

(E) Protect adjacent and adjoining areas from overspray.

(F) Protect grade stakes set by others until directed to remove them.

(G) Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

(H) Hydroseed Area Preparation: Moisten prepared area before planting if soil is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

(I) Before planting, obtain City's acceptance of finish grading; restore planting areas if eroded or otherwise disturbed after finish grading.

(J) Hydroseeding (Hydro-stolonization): Mix specified stolons, 15-15-15 slow release fertilizer, fiber mulch and an organic binder in water, using equipment specifically designed for hydroseed application. Continue mixing until uniformly blended into homogeneous slurry suitable for hydraulic application.

a. Mix slurry with: stolons at 220 US bushels/acre, 15-15-15 slow release fertilizer at 300 lbs/acre, virgin wood fiber-mulch at 2,000 lbs/acre; and an organic biner at 100 lbs/acre.
b. Spray-apply slurry uniformly to all areas to be seeded in a one-step process.

(K) During first week after planting, water daily or more frequently as necessary to maintain moist soil to a minimum depth of 1-1/2 inches below hydroseed.

5.6.6 Maintenance

(A) General: Maintain and establish turf by watering, fertilizing, weeding, mowing, trimming, replanting, and performing other operations as required to establish healthy, viable turf. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth turf. Provide materials and installation the same as those used in the original installation.

a. Fill in as necessary soil subsidence that may occur because of settling or other processes. Replace materials and turf damaged or lost in areas of subsidence.

b. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch and anchor as required to prevent displacement.

c. Apply treatments as required to keep turf and soil free of pests and pathogens or disease. Use integrated pest management practices whenever possible to minimize the use of pesticides and reduce hazards.

(B) Watering: Install and maintain equipment to convey water from sources and to keep turf uniformly moist to a depth of 4 inches

a. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.

b. Water turf with fine spray at a minimum rate of 1 inch per week unless rainfall precipitation is adequate.

(C) Mow turf as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than one-third of grass height. Remove no more than one-third of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet. Schedule initial and subsequent mowings to maintain the following grass height:

(D) Turf Postfertilization: Apply commercial fertilizer after initial mowing and when grass is dry.

5.6.7 Satisfactory Turf

(A) Turf installations shall meet the following criteria as determined by City:

c. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90 percent over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

(B) Use specified materials to reestablish turf that does not comply with requirements, and continue maintenance until turf is satisfactory.

5.6.8 Pesticide Application

(A) Apply pesticides and other chemical products and biological control agents according to requirements of authorities having jurisdiction and manufacturer's written recommendations. Coordinate applications with Owner's operations and others in proximity to the Work. Notify Owner before each application is performed.

(B) Post-Emergent Herbicides (Selective and Nonselective): Apply only as necessary to treat already-germinated weeds and according to manufacturer's written recommendations.

5.6.9 Cleanup and Protection

(A) Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

(B) Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

(C) Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after plantings are established.

(D) Remove nondegradable erosion-control measures after grass establishment period.

5.6.10 Maintenance Service

(A) Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

a. Seeded Turf: 60 days establishment from date of planting completion, and 60 days maintenance following establishment.

i. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

5.6.7 Inspections

(A) The following inspections shall be required:
a. Pre-construction.
b. Before soil preparation and fine grading operations, to be agreed upon by Contractor and City's authorized representative.
c. Following soil preparation and fine grading.
d. Following completion of seed or hydroseed installation.

(B) Site work deemed to be faulty or not in accordance with the approved drawings and the City's Standards and Specifications shall be corrected promptly at Contractor's expense.

5.6.8 Warranty

(A) Special Warranty: Installer agrees to repair or replace sod planting and accessories that fail in materials, workmanship, or growth within specified warranty period.
a. Failures include, but are not limited to, the following:
i. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by City, or incidents that are beyond Contractor's control.
b. Warranty Periods: From date of Substantial Completion.
i. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
ii. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
c. Include the following remedial actions as a minimum:
i. Immediately remove dead areas of turf and replace unless required to plant in the succeeding planting season.

ii. A limit of one replacement of each turf area is required except for losses or replacements due to failure to comply with requirements.

5.7 SODDING

5.7.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete sodding for all areas to be landscaped per approved drawings and City of Patterson Standards and Specifications.

5.7.2 Quality Assurance

(A) Installer Qualifications: A qualified landscape installer whose work has resulted in successful turf and meadow establishment.

a. Experience: Five years' experience in turf installation.

b. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.

c. Pesticide Applicator: State licensed, commercial.

5.7.3 Submittals

(A) Qualification Data: For landscape Installer.

(B) Turfgrass Sod: complying with "Specifications for Turfgrass Sod Materials" in TPI's "Guideline Specifications to Turfgrass Sodding." Furnish viable sod of uniform density, color, and texture that is strongly rooted and capable of vigorous growth and development when planted.

(F) Product Certificates: For fertilizers, from manufacturer.

(G) Pesticides and Herbicides: Product label and manufacturer's application instructions specific to Project.

(H) Maintenance Data: Recommended procedures to be established by Owner for maintenance of turf during a calendar year. Submit before expiration of required maintenance periods.

5.7.3 Execution

(A) Examine areas to be planted for compliance with requirements and other conditions affecting installation and performance of the Work.

a. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.

b. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.

c. Uniformly moisten excessively dry soil that is not workable or which is dusty.

(B) Proceed with installation only after unsatisfactory conditions have been corrected.

(C) If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

(D) Protect structures; utilities; sidewalks; pavements; and other facilities, trees, shrubs, and plantings from damage caused by planting operations.

(E) Protect grade stakes set by others until directed to remove them.

(F) Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

5.7.4 Cleanup and Protection

(A) Promptly remove soil and debris created by turf work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

(G) Remove surplus soil and waste material, including excess subsoil, unsuitable soil, trash, and debris, and legally dispose of them off Owner's property.

(H) Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain

fencing and barricades throughout initial maintenance period and remove after plantings are established.

(I) Remove nondegradable erosion-control measures after grass establishment period.

5.7.5 Maintenance Service

(A) Turf Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Begin maintenance immediately after each area is planted and continue until acceptable turf is established, but for not less than the following periods:

a. Seeded Turf: 60 days establishment from date of planting completion, and 60 days maintenance following establishment.

i. When initial maintenance period has not elapsed before end of planting season, or if turf is not fully established, continue maintenance during next planting season.

5.7.5 Inspections

(J) The following inspections shall be required:

e. Pre-construction.
f. Before soil preparation and fine grading operations, to be agreed upon by Contractor and City's authorized representative.
g. Following soil preparation and fine grading.
h. Following completion of sod installation.

(K) Site work deemed to be faulty or not in accordance with the approved drawings and the City's Standards and Specifications shall be corrected promptly at Contractor's expense.

5.7.6 Warranty

(B) Special Warranty: Installer agrees to repair or replace sod planting and accessories that fail in materials, workmanship, or growth within specified warranty period.

b. Failures include, but are not limited to, the following:
ii. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by City, or incidents that are beyond Contractor's control.

b. Warranty Periods: From date of Substantial Completion.
iii. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.

iv. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

c. Include the following remedial actions as a minimum:

v. Immediately remove dead areas of turf and replace unless required to plant in the succeeding planting season.

vi. A limit of one replacement of each turf area is required except for losses or replacements due to failure to comply with requirements.

5.8 PLANTING

5.8.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete sodding for all areas to be landscaped per approved drawings and in accordance with City of Patterson Standards and Specifications.

5.8.2 Scope of Work

(A) This item shall include purchase, delivery and installation of all plant material excluding trees as indicated on the Drawings. The item also includes labor, materials and all other work required by City Standard Drawings and Specifications.

5.8.3 Testing

(A) Plant Material Observation: Architect may observe plant material either at place of growth or at site before planting for compliance with requirements for genus, species, variety, cultivar, size, and quality. Architect may also observe trees and shrubs further for size and condition of balls and root systems, pests, disease symptoms, injuries, and latent defects and may reject unsatisfactory or defective material at any time during progress of work. Remove rejected trees or shrubs immediately from Project site.

a. Notify City/Landscape Architect of sources of planting materials five days in advance of delivery to site.

5.8.4 Selection of Plant Material

(A) Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1.

a. Selection of plants purchased under allowances is made by City/Landscape Architect, who tags plants at their place of growth before they are prepared for transplanting.

5.8.5 Submittals

(A) Product Data: For each type of product.
   a. Plant Materials: Include quantities, sizes, quality, and sources for plant materials.
   b. Tree Photos: Contractor shall submit photos of each type of tree.

(B) Samples for Verification: For each of the following:
   a. Compost Mulch: 1-pint volume of each organic mulch required; in sealed plastic bags labeled with composition of materials by percentage of weight and source of mulch. Each Sample shall be typical of the lot of material to be furnished; provide an accurate representation of color, texture, and organic makeup.
   b. Mineral Mulch: 2 lb of each mineral mulch required, in sealed plastic bags labeled with source of mulch. Sample shall be typical of the lot of material to be delivered and installed on-site; provide an accurate indication of color, texture, and makeup of the material.

5.8.6 Project Conditions

(A) Field Measurements: Verify actual grade elevations, service and utility locations, irrigation system components, and dimensions of plantings and construction contiguous with new plantings by field measurements before proceeding with planting work.

(B) Interruption of Existing Services or Utilities: Do not interrupt services or utilities to facilities occupied by County or others unless permitted under the following conditions and then only after arranging to provide temporary services or utilities according to requirements indicated:

   a. Notify City no fewer than two days in advance of proposed interruption of each service or utility.
   b. Do not proceed with interruption of services or utilities without City's written permission.

(C) Planting Restrictions: Coordinate planting periods with maintenance periods to provide required maintenance from date of Substantial Completion.

(D) Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit planting to be performed when beneficial and optimum results may be obtained. Apply products during favorable weather conditions according to manufacturer's written instructions and warranty requirements.

5.8.7 Quality Assurance

(A) Provide quality, size, genus, species, and variety of plants indicated, complying with applicable requirements in ANSI Z60.1

a. Selection of plants purchased under allowances is made by City and Landscape Architect, who may tag plants at their place of growth before they are prepared for transplanting.
b. Notify City and Landscape Architect of sources of planting materials seven days in advance of delivery to site.

5.8.8 Products and Materials

(A) General: Furnish nursery-grown plants true to genus, species, variety, cultivar, stem form, shearing, and other features indicated in Plant List, Plant Schedule, or Plant Legend indicated on Drawings and complying with ANSI Z60.1; and with healthy root systems developed by transplanting or root pruning. Provide well-shaped, fully branched, healthy, vigorous stock, densely foliated when in leaf and free of disease, pests, eggs, larvae, and defects such as knots, sun scald, injuries, abrasions, and disfigurement.

a. Trees with damaged, crooked, or multiple leaders; tight vertical branches where bark is squeezed between two branches or between branch and trunk ("included bark"); crossing trunks; cut-off limbs more than 3/4 inch in diameter; or with stem girdling roots are unacceptable.
b. Collected Stock: Do not use plants harvested from the wild, from native stands, from an established landscape planting, or not grown in a nursery unless otherwise indicated.

(B) Provide plants of sizes, grades, and ball or container sizes complying with ANSI Z60.1 for types and form of plants required. Plants of a larger size may be used if acceptable to City and Landscape Architect, with a proportionate increase in size of roots or balls.

(C) Root-Ball Depth: Furnish trees and shrubs with root balls measured from top of root ball, which begins at root flare according to ANSI Z60.1. Root flare shall be visible before planting.

(D) Labeling: Label at least one plant of each variety, size, and caliper with a securely attached, waterproof tag bearing legible designation of common name and full scientific name, including genus and species. Include nomenclature for hybrid, variety, or cultivar, if applicable for the plant.

(E) If formal arrangements or consecutive order of plants is indicated on Drawings, select stock for uniform height and spread, and number the labels to assure symmetry in planting.

5.8.9 Execution

(A) Examine areas to receive plants, with Installer present, for compliance with requirements and conditions affecting installation and performance of the Work.

a. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
b. Verify that plants and vehicles loaded with plants can travel to planting locations with adequate overhead clearance.
c. Suspend planting operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
d. Uniformly moisten excessively dry soil that is not workable or which is dusty.

(B) If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by City or City Representative and replace with new planting soil.

(C) Proceed with installation only after unsatisfactory conditions have been corrected.

(D) Protect structures, utilities, sidewalks, pavements, and other facilities and turf areas and existing plants from damage caused by planting operations.

(E) Install erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

(F) Apply antidesiccant to trees and shrubs using power spray to provide an adequate film over trunks (before wrapping), branches, stems, twigs, and foliage to protect during digging, handling, and transportation.

(G) If deciduous trees or shrubs are moved in full leaf, spray with antidesiccant at nursery before moving and again two weeks after planting.

(H) Lay out individual tree and shrub locations and areas for multiple plantings. Stake locations, outline areas, adjust locations when requested, and obtain City or Landscape Architect's acceptance of layout before excavating or planting. Make minor adjustments as required.

(I) Lay out plants at locations directed by City or Landscape Architect. Stake locations of individual trees and shrubs and outline areas for multiple plantings.

(J) Planting Pits and Trenches: Excavate circular planting pits.

a. Excavate planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
b. Excavate approximately three times as wide as ball diameter for container-grown stock.
c. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
d. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
e. Maintain required angles of repose of adjacent materials as shown on Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
f. Maintain supervision of excavations during working hours.

g. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

(K) Backfill Soil: Subsoil and topsoil removed from excavations may be used as backfill soil unless otherwise indicated.

(L) Obstructions: Notify City or Landscape Architect if unexpected rock or obstructions detrimental to trees or shrubs are encountered in excavations.

(M) Drainage: City or Notify Landscape Architect if subsoil conditions evidence unexpected water seepage or retention in tree or shrub planting pits.

(N) Before planting, verify that root flare is visible at top of root ball according to ANSI Z60.1. If root flare is not visible, remove soil in a level manner from the root ball to where the top-most root emerges from the trunk. After soil removal to expose the root flare, verify that root ball still meets size requirements.

(O) Roots: Remove stem girdling roots and kinked roots. Remove injured roots by cutting cleanly; do not break.

(P) Container-Grown Stock: Set each plant plumb and in center of planting pit or trench with root flare 1 inch above adjacent finish grades.

a. Backfill: Planting soil. For trees, use excavated soil for backfill.
b. Carefully remove root ball from container without damaging root ball or plant.
c. Backfill around root ball in layers, tamping to settle soil and eliminate voids and air pockets. When planting pit is approximately one-half filled, water thoroughly before placing remainder of backfill. Repeat watering until no more water is absorbed.
d. Place planting tablets equally distributed around each planting pit when pit is approximately one-half filled. Place tablets beside the root ball about 1 inch from root tips; do not place tablets in bottom of the hole.
    i. Quantity: As indicated on Drawings.
e. Continue backfilling process. Water again after placing and tamping final layer of soil.

(Q) When planting on slopes, set the plant so the root flare on the uphill side is flush with the surrounding soil on the slope; the edge of the root ball on the downhill side will be above the surrounding soil. Apply enough soil to cover the downhill side of the root ball.

(R) Tree, Shrub, and Vine Pruning

a. Remove only dead, dying, or broken branches.
b. Prune, thin, and shape trees, shrubs, and vines only as directed by City or Landscape Architect.
c. Do not apply pruning paint to wounds.

5.8.10 Clean Up

(A) During planting, keep adjacent paving and construction clean and work area in an orderly condition. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

(B) Remove surplus soil and waste material including excess subsoil, unsuitable soil, trash, and debris and legally dispose of them off City's property.

(C) Protect plants from damage due to landscape operations and operations of other contractors and trades. Maintain protection during installation and maintenance periods. Treat, repair, or replace damaged plantings.

(D) After installation and before Substantial Completion, remove nursery tags, nursery stakes, tie tape, labels, wire, burlap, and other debris from plant material, planting areas, and Project site.

5.8.11 Inspections

(A) The following inspections shall be required:
a. Pre-construction.
b. After plant placement and before planting operations, to be agreed upon by Contractor and City's authorized representative.
c. Following planting installation.

(B) Planting installation deemed to be faulty or not in accordance with the approved drawings and the City's Standards and Specifications shall be corrected promptly at Contractor's expense.

5.8.12 Maintenance

(A) Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep plant materials free of insects and disease.

(B) Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

(C) Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

(D) Maintenance Service for Plant Materials: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Landscape Maintenance" Section – 5.11. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

(E) Maintenance Period: 120 days from date of Substantial Completion.

5.8.13 Warranty

(A) Special Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

a. Failures include, but are not limited to, the following:
    i. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by City, or incidents that are beyond Contractor's control.
    ii. Structural failures including plantings falling or blowing over.
    iii. Faulty performance of tree stabilization edgings and tree root barriers.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Warranty Periods: From date of Substantial Completion.
    i. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.

ii. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.

d. Include the following remedial actions as a minimum:
   i. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
   ii. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
   iii. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.

5.10 TREE PLANTING AND STAKING

5.10.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete tree planting and staking at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.10.2 Digging Tree Pit

(A) Planting Pits and Trenches: Excavate circular planting pits.

a. Excavate tree planting pits with sides sloping inward at a 45-degree angle. Excavations with vertical sides are unacceptable. Trim perimeter of bottom leaving center area of bottom raised slightly to support root ball and assist in drainage away from center. Do not further disturb base. Ensure that root ball will sit on undisturbed base soil to prevent settling. Scarify sides of planting pit smeared or smoothed during excavation.
b. Excavate approximately three times as wide as ball diameter for container-grown stock.
c. Do not excavate deeper than depth of the root ball, measured from the root flare to the bottom of the root ball.
d. If area under the plant was initially dug too deep, add soil to raise it to the correct level and thoroughly tamp the added soil to prevent settling.
e. Maintain required angles of repose of adjacent materials as shown on Drawings. Do not excavate subgrades of adjacent paving, structures, hardscapes, or other new or existing improvements.
f. Maintain supervision of excavations during working hours.

g. Keep excavations covered or otherwise protected when unattended by Installer's personnel.

5.10.3 Setting Tree

(A) Install trunk stabilization as follows unless otherwise indicated:

a. Upright Staking and Tying: Stake trees of less than 2-inch caliper only as required to prevent wind tip out. Use a minimum of two stakes of length required to penetrate at least 18 inches below bottom of backfilled excavation and to extend to the dimension indicated on Drawings above grade. Set vertical stakes and space to avoid penetrating root balls or root masses.
b. Trees within tree grates: Stake trees as indicated on City Standard Drawings.
c. Support trees with bands of flexible ties at contact points with tree trunk. Allow enough slack to avoid rigid restraint of tree.

5.10.4 Maintenance of Tree

(A) Maintain plantings by pruning, cultivating, watering, weeding, fertilizing, mulching, restoring planting saucers, adjusting and repairing tree-stabilization devices, resetting to proper grades or vertical position, and performing other operations as required to establish healthy, viable plantings. Spray or treat as required to keep trees free of insects and disease.

(B) Fill in, as necessary, soil subsidence that may occur because of settling or other processes. Replace mulch materials damaged or lost in areas of subsidence.

(C) Apply treatments as required to keep plant materials, planted areas, and soils free of pests and pathogens or disease. Use integrated pest management practices when possible to minimize use of pesticides and reduce hazards. Treatments include physical controls such as hosing off foliage, mechanical controls such as traps, and biological control agents.

(D) Maintenance Service for Trees and Palms: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Landscape Maintenance" Section – 5.11. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

(E) Maintenance Period: 120 days from date of Substantial Completion.

5.10.5 Inspections

(A) The following inspections shall be required:
   a. Pre-construction.
   b. After plant placement and before planting operations, to be agreed upon by Contractor and City's authorized representative.
   c. Following planting installation.

(B) Planting installation deemed to be faulty or not in accordance with the approved drawings and the City's Standards and Specifications shall be corrected promptly at Contractor's expense.

5.11 LANDSCAPE MAINTENANCE

5.11.1 General

(A) Contractor shall provide all labor, equipment, and materials, including water, necessary to complete landscape maintenance on all landscape areas indicated on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.11.2 Scope of Work

(A) This item shall include all costs for maintaining installed landscape areas for a period of 1 year as indicated on the Drawings as well as replacements for plant material and equipment. The item also includes labor, materials and all other work required by City Standard Drawings and Specifications.

5.11.3 Quality of Work

(A) Maintenance Service for landscape areas: Provide maintenance by skilled employees of landscape Installer. Maintain as required in "Plant Maintenance" Article. Begin maintenance immediately after plants are installed and continue until plantings are acceptably healthy and well established, but for not less than maintenance period below:

5.11.4 Maintenance Period

(A) Maintenance Period: 120 days from date of Substantial Completion.

5.11.5 Warranty

(A) Warranty: Installer agrees to repair or replace plantings and accessories that fail in materials, workmanship, or growth within specified warranty period.

a. Failures include, but are not limited to, the following:
    i. Death and unsatisfactory growth, except for defects resulting from abuse, lack of adequate maintenance, or neglect by City, or incidents that are beyond Contractor's control.
    ii. Structural failures including plantings falling or blowing over.
    iii. Faulty performance of tree stabilization edgings and tree root barriers.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering.
c. Warranty Periods: From date of Substantial Completion.
    i. Trees, Shrubs, Vines, and Ornamental Grasses: 12 months.
    ii. Ground Covers, Biennials, Perennials, and Other Plants: 12 months.
d. Include the following remedial actions as a minimum:
    i. Immediately remove dead plants and replace unless required to plant in the succeeding planting season.
    ii. Replace plants that are more than 25 percent dead or in an unhealthy condition at end of warranty period.
    iii. A limit of one replacement of each plant is required except for losses or replacements due to failure to comply with requirements.

5.12 IRRIGATION SYSTEMS

5.12.1 Layout and Design Criteria

(A) Irrigation layout and design at a minimum shall meet the following requirements:

a. City Standard Details
b. City Standard Specs
c. Current City water conservation requirements
d. Current State water efficient landscape ordinance (AB1881)

5.12.2 Scope of Work

(A) This item shall include purchase, delivery and installation of irrigation pipe, pipe fittings, pipe sleeving, equipment, wires, connection to existing systems as applicable and all other miscellaneous irrigation components

as indicated on the Drawings and required in the field for a fully functioning irrigation system. The item also includes labor, materials and all other work required by City Standard Drawings and Specifications.

5.12.3 Quality Assurance

(A) Manufacturer's Field Service: Engage a factory-authorized service representative to inspect, test, and adjust components, assemblies, and equipment installations, including connections.

(B) Perform tests and inspections.

a. Manufacturer's Field Service: Engage a factory-authorized service representative to inspect components, assemblies, and equipment installations, including connections, and to assist in testing.

(C) Tests and Inspections:

a. Leak Test: After installation, charge system and test for leaks. Repair leaks and retest until no leaks exist.
b. Operational Test: After electrical circuitry has been energized, operate controllers and automatic control valves to confirm proper system operation.
c. Test and adjust controls and safeties. Replace damaged and malfunctioning controls and equipment.

(D) Any irrigation product will be considered defective if it does not pass tests and inspections.

(E) Prepare test and inspection reports.

(F) Perform startup service.

a. Verify that controllers are installed and connected according to the Contract Documents.
b. Verify that electrical wiring installation complies with manufacturer's submittal.

(G) Adjust settings of controllers

(H) Adjust automatic remote control valves to provide flow rate at rated operating pressure required for each sprinkler circuit.

(I) Adjust sprinklers and devices, except those intended to be mounted aboveground, so they will be flush with, or not more than 1/2 inch above, finish grade.

(J) Train City's maintenance personnel to adjust, operate, and maintain automatic control valves and controllers.

5.12.4 Submittals

(A) Action Submittals

a. Product Data: For each type of product indicated. Include rated capacities, operating characteristics, and furnished specialties and accessories.

(B) Informational Submittals

a. Zoning Chart: Show each irrigation zone and its control valve.

(C) Closeout Submittals

a. Operation and Maintenance Data: For sprinklers controllers and automatic control valves to include in operation and maintenance manuals.

5.12.5 Warranty

The purpose of this warranty is to insure that the City receives irrigation materials of prime quality, installed and maintained in a thorough and careful manner.

(A) For a period of one year from commencement of the formal maintenance period, guarantee/warranty irrigation materials, equipment, and workmanship against defects. Fill and repair depressions. Restore landscape or structural features damaged by the settlement of irrigation trenches or excavations. Repair damage to the premises caused by a defective item. Make repairs within seven days of notification from the Owner's Representative.

(B) Contract documents govern replacements identically as with new work. Make replacements at no additional cost to the contract price.

(C) Guarantee/warranty applies to originally installed materials and equipment and replacements made during the guarantee/warranty period.

(D) Irrigation system shall be free of defects in materials and workmanship under normal use for a period of one (1) year from original date of installation.

5.13 IRRIGATION MATERIALS

5.13.1 General

(A) This item shall include purchase and delivery of irrigation pipe, pipe fittings, pipe sleeving, equipment, wires, and all other miscellaneous irrigation components as indicated on the Drawings and required in the field. The item also includes materials required by City Standard Drawings and Specifications.

5.13.2 Warranty

(B) All Irrigation products shall be free of defects in materials and workmanship under normal use for a period of one (1) year from original date of installation.

(C) During warranty period, Installer shall repair or replace any part found to be defective.

a. Warranty does not apply to Acts of God (e.g. lightning, flooding, vandalism, etc.)

5.14 IRRIGATION INSTALLATION

5.14.1 General

(A) Contractor shall provide all labor, equipment, and materials necessary to install a complete and fully functioning irrigation system and at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.14.2 Trenching

(A) Excavate trenches to indicated gradients, lines, depths, and elevations.

(B) Excavate trenches to uniform widths to provide the following clearance on each side of pipe or conduit. Excavate trench walls vertically from trench bottom to 12 inches higher than top of pipe or conduit unless otherwise indicated.

a. Clearance: As indicated on the Drawings.

(C) Trench Bottoms: Excavate and shape trench bottoms to provide uniform bearing and support of pipes and conduit. Shape subgrade to provide continuous support for bells, joints, and barrels of pipes and for joints, fittings, and bodies of conduits. Remove projecting stones and sharp objects along trench subgrade.

a. For pipes and conduit less than 6 inches in nominal diameter, hand-excavate trench bottoms and support pipe and conduit on an undisturbed subgrade.
b. For pipes and conduit 6 inches or larger in nominal diameter, shape bottom of trench to support bottom 90 degrees of pipe or conduit circumference. Fill depressions with tamped sand backfill.
c. For flat-bottomed, multiple-duct conduit units, hand-excavate trench bottoms and support conduit on an undisturbed subgrade.
d. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

(D) Trench Bottoms: Excavate trenches 4 inches deeper than bottom of pipe and conduit elevations to allow for bedding course. Hand-excavate deeper for bells of pipe.

a. Excavate trenches 6 inches deeper than elevation required in rock or other unyielding bearing material to allow for bedding course.

(E) Install warning tape directly above pressure piping, 12 inches below finished grades, except 6 inches below subgrade under pavement and slabs.

(F) Drain Pockets: Excavate to sizes indicated. Backfill with cleaned gravel or crushed stone, graded from 3/4 to 3 inches, to 12 inches below grade. Cover gravel or crushed stone with sheet of asphalt-saturated felt and backfill remainder with excavated material.

(G) Provide minimum cover over top of underground piping according to the following:

a. Irrigation Main Piping: Minimum depth of 18 inches below finished grade, or not less than 18 inches below average local frost depth, whichever is deeper.
b. Circuit Piping: 12 inches.
c. Sleeves: 24 inches.

5.14.3 Backfilling

(A) Place backfill and fill soil materials in layers not more than 8 inchesin loose depth for material compacted by heavy compaction equipment, and not more than 4 inches(in loose depth for material compacted by hand-operated tampers.

(B) Place backfill and fill soil materials evenly on all sides of structures to required elevations, and uniformly along the full length of each structure.

(C) Compact soil materials to not less than the following percentages of maximum dry unit weight according to ASTM D 698 ASTM D 1557:

a. Under turf or unpaved areas, scarify and recompact top 6 inches below subgrade and compact each layer of backfill or fill soil material at 85 percent.

5.14.4 Installation of Pipe

(A) Location and Arrangement: Drawings indicate location and arrangement of piping systems. Install piping as indicated unless deviations are approved on Coordination Drawings.

(B) Install piping at minimum uniform slope of 0.5 percent down toward drain valves.

(C) Install piping free of sags and bends.

(D) Install groups of pipes parallel to each other, spaced to permit valve servicing.

(E) Install fittings for changes in direction and branch connections.

(F) Install flanges adjacent to valves and to final connections to other components with NPS 2-1/2 or larger pipe connection.

(G) Install underground thermoplastic piping according to ASTM D 2774 and ASTM F 690.

(H) Install expansion loops in control-valve boxes for plastic piping.

(I) Lay piping on solid subbase, uniformly sloped without humps or depressions.

(J) Install PVC piping in dry weather when temperature is above 40 deg F. Allow joints to cure at least 24 hours at temperatures above 40 deg F before testing.

(K) Install piping in sleeves under all hardscape areas.

(L) Install sleeves made of Schedule 40 PVC pipe and socket fittings, and solvent-cemented joints.

(M) Joint Construction.

a. Ream ends of pipes and tubes and remove burrs. Bevel plain ends of steel pipe.
b. Remove scale, slag, dirt, and debris from inside and outside of pipe and fittings before assembly.
c. Threaded Joints: Thread pipe with tapered pipe threads according to ASME B1.20.1. Cut threads full and clean using sharp dies. Ream threaded pipe ends to remove burrs and restore full ID. Join pipe fittings and valves as follows:

    i. Apply appropriate tape or thread compound to external pipe threads unless dry seal threading is specified.
    ii. Damaged Threads: Do not use pipe or pipe fittings with threads that are corroded or damaged. Do not use pipe sections that have cracked or open welds.

d. PVC Piping Solvent-Cemented Joints: Clean and dry joining surfaces. Join pipe and fittings according to the following:

    i. Comply with ASTM F 402 for safe-handling practice of cleaners, primers, and solvent cements.
    ii. PVC Pressure Piping: Join schedule number, ASTM D 1785, PVC pipe and PVC socket fittings according to ASTM D 2672. Join other-than-schedule-number PVC pipe and socket fittings according to ASTM D 2855.
    iii. PVC Nonpressure Piping: Join according to ASTM D 2855.

5.14.5 Installation of Sprinklers

(A) Install in accordance with City Standard Irrigation Details and make sprinkler adjustments per standard spec section 5.12.3 Quality Assurance, in this document.

5.14.6 Installation of Equipment

(A) Install in accordance with City Standard Irrigation Details and the following specifications.

(B) Throttling Valves: Install in underground piping in boxes for automatic remote control valves.

(C) Equipment Mounting: Install interior controllers on concrete bases.

a. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
b. Install anchor bolts to elevations required for proper attachment to supported equipment.

(B) Equipment Mounting: Install exterior freestanding controllers on precast concrete bases.

1. Place and secure anchorage devices. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor bolts to elevations required for proper attachment to supported equipment.

(C) Install control cable in same trench as irrigation piping and at least 2 inches below or beside piping. Provide conductors of size not smaller than recommended by controller manufacturer. Install cable in separate sleeve under paved areas.

5.14.7 Testing and Inspection

(A) Refer to standard spec section 5.12.3 Quality Assurance, in this document for all testing and inspection requirements.

5.14.8 Maintenance

(A) Following the landscape establishment period, the landscape contractor shall maintain the installation for one hundred twenty (120) days including adjustments to the irrigation system for time and duration of flows and replacement and adjustments to heads and nozzles are also required.

5.14.9 Cleanup

(A) Flush dirt and debris from piping before installing sprinklers and other devices.

5.14.10 Record Drawings

(A) A laminated, waterproof, legible, chart of the irrigation system not exceeding 11”x17”, shall be provided to the owner and one adhered to the inside cover of the irrigation controller. All irrigation valves and their respective coverage areas shall be identified with separate and distinct colors.

(B) Contractor shall make daily record / as-built plans of mainline and wire. Contractor shall submit record drawings to City/Owner/Landscape Architect during mainline pressure testing and shall not bury mainline until record drawing set has been approved by City/Owner/Landscape Architect. Record drawings shall indicate color of electrical tape on each run/leg of wire to aid in future wire trouble shooting.

5.14.1 Final Observation and Acceptance

(A) At the completion of the project the contractor shall supply a "certificate of completion" document. the document shall include:

a. Project information sheet that contains:
   i. Date
   ii. Project name
   iii. Project applicant name, telephone number, and mailing address
   iv. Property owner name, telephone number and mailing address

b. Certification by either the signer of the landscape design plan, the designer of the irrigation design plan or the licensed landscape contractor that the landscape project has been installed per the approved landscape documentation package.

   i. Where there have been significant changes made in the field during construction these “as-built” or record drawings shall be included with the certification.
   ii. A diagram of the irrigation plan showing hydrozones shall be kept with the irrigation controller for subsequent management purposes.

c. Irrigation scheduling parameters used to set the controller.
d. Landscape and irrigation maintenance schedule
e. Irrigation audit report.

f. Soils analysis report if not submitted with landscape documentation package and documentation verifying implementation of soils report recommendations.

5.15 SITE FURNISHINGS

5.15.1 General

(A) Contractor shall provide all labor, equipment, and materials necessary to install site furnishings and all other related work at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.15.2 Quality Assurance

(A) Installer Qualifications: An employer of workers approved by manufacturer.

5.15.3 Submittals

(A) Action Submittals

a. Product Data: For each type of product.

(B) Shop Drawings: For each type of equipment.

a. Include structural calculations, plans, elevations, sections, attachments and details, for all site equipment in need of a building permit. Drawings and calculations shall be wet stamped by a CA State licensed structural engineer.

(C) Informational Submittals

a. Product Certificates: For each type of site equipment.
b. Material Certificates: For shop finishes.
c. Shop Drawings and structural calculations for all footings. See Action Submittals for additional requirements.
d. Field quality-control reports.
e. Sample Warranty: For manufacturer's special warranties.

(D) Closeout Submittals

a. Maintenance Data: For site furnishings and finishes to include in maintenance manuals.

b. Parts List: Provide a list of parts for each site furnishing.
c. Contact Information: Provide installation contractor and manufacturer name and address for repairs and servicing.

5.15.4 Materials

(A) Basis-of-Design Product: Subject to compliance with requirements, provide site furnishings from the following company:

a. As indicated on Drawings or approved equal.

(A) Nonshrink, Nonmetallic Grout: Premixed, factory-packaged, nonstaining, noncorrosive, nongaseous grout complying with ASTM C 1107/C 1107M; recommended in writing by manufacturer, for exterior applications.

(B) Erosion-Resistant Anchoring Cement: Factory-packaged, nonshrink, nonstaining, hydraulic-controlled expansion cement formulation for mixing with potable water at Project site to create pourable anchoring, patching, and grouting compound; resistant to erosion from water exposure without needing protection by a sealer or waterproof coating; recommended in writing by manufacturer, for exterior applications.

5.15.5 Inspections

(A) Examine areas and conditions, with Installer present, for compliance with requirements for correct and level finished grade, mounting surfaces, installation tolerances, and other conditions affecting performance of the Work.

(B) Proceed with installation only after unsatisfactory conditions have been corrected.

5.15.6 Installation

(A) Comply with manufacturer's written installation instructions unless more stringent requirements are indicated. Complete field assembly of site furnishings where required.

(B) Unless otherwise indicated, install site furnishings after landscaping and paving have been completed.

(C) Install site furnishings level, plumb, true, and securely anchored at locations indicated on Drawings.

(D) Post Setting: Set cast-in support posts in concrete footing with smooth top, shaped to shed water. Protect portion of posts above footing from concrete splatter. Verify that posts are set plumb or at correct angle and are aligned and at correct height and spacing. Hold posts in position during placement and finishing operations until concrete is sufficiently cured.

5.15.7 Cleanup

(A) Clean all surfaces of site furnishings exposed to view.

(B) Clean mortar, plaster, weld slag, and other deleterious material from surfaces of site furnishings and adjacent materials immediately.

(C) Clean exposed surfaces of precast concrete units after erection and completion of joint treatment to remove weld marks, other markings, dirt, and stains.

a. Perform cleaning procedures, if necessary, according to manufacturer recommendations. Clean soiled surfaces with detergent and water, using stiff fiber brushes and sponges, and rinse with clean water. Protect other work from staining or damage due to cleaning operations.
b. Do not use cleaning materials or processes that could change the appearance of site furnishings or damage adjacent materials.

5.15.8 Warranty

(A) Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of equipment that fails in material or workmanship within specified warranty period.

a. Failures include, but are not limited to, the following:
   i. Structural failures.
   ii. Deterioration of metals, metal finishes, excessive cracking and bowing in concrete, excessive cracking as a result of sagging in concrete, and other materials beyond normal weathering.

b. Warranty Period: Minimum of 2 years from date of Substantial Completion.

5.16 FENCING

5.16.1 General

(A) Contractor shall provide all labor, equipment, and materials necessary to install fencing and all other related work at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.16.2 Quality Assurance

(A) Installer Qualifications: Fabricator of products.

(B) Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, and to set quality standards for fabrication and installation.

1. Include 1 panel length of fence complying with requirements.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

5.16.3 Submittals

(A) Action Submittals

a. Product Data: For each type of product.
b. Shop Drawings: For fencing and gates. Include plans, elevations, sections, details, and attachments to other work.
c. Gate Operator: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
d. Wiring Diagrams: Include diagrams for power, signal, and control wiring.

5.16.4 Preparation

(A) Examine areas and conditions, with Installer present, for compliance with requirements for site clearing, earthwork, pavement work, construction layout, and other conditions affecting performance of the Work.

(B) Do not begin installation before final grading is completed unless otherwise permitted by City/Owner.

(C) Proceed with installation only after unsatisfactory conditions have been corrected.

(D) Stake locations of fence lines, gates, and terminal posts. Do not exceed intervals of 500 feet or line of sight between stakes. Indicate locations of utilities, irrigation system, underground structures, benchmarks, and property monuments as applicable to each project.

a. Construction layout and field engineering shall be reviewed and approved by the City/Owner.

5.16.5 Delivery

(A) Upon receipt, materials should be checked for damage that may have occurred in shipping to the job site.

(B) Each package shall bear the name of the manufacturer.

(C) Store products in manufacturer's unopened packaging.

(D) Store materials in a secure and dry area to protect against damage, weather, vandalism, and theft.

(E) Transport, handle and store products with care to protect against damage before installation

5.16.6 Cleaning

(A) The Contractor shall keep the jobsite clear of all excess materials. Post hole excavations shall be scattered uniformly away from posts.

(B) If necessary, clean fence system with mild household detergent and clean water. Excess concrete must be removed from posts and other fencing material before it hardens

(C) Stained and defective works shall be removed and replaced with material meeting specified requirements.

5.16.7 Warranty

(A) Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of equipment that fail in materials or workmanship within specified warranty period.

a. Failures include, but are not limited to, the following:

i. Structural failures

ii. Material finish, including cracking, peeling, chipping, blistering or corroding.

b. Warranty Period: Minimum of 1 year from date of Substantial Completion.

5.17 PAVING

5.17.1 General

(A) Contractor shall provide all installation, soil preparation forming, sub-grade compaction, aggregate base, concrete additives, pigments and sealers, pouring pavement, finishing, joints, and joint sealants in the areas approved drawings and in accordance with City of Patterson Standards and Specifications.

5.17.1 Concrete Walkways

(A) Install concrete flatwork per City Standard Drawings and per Spec Section 5.19 Concrete in this document.

5.17.2 Concrete Mow Strips

(A) Install concrete mow strips per City Standard Drawings and per Spec Section 5.18 Concrete in this document.

5.17.3 Stabilized Decomposed Granite (DG) Paving

(A) Install stabilized decomposed granite per City Standard Drawings and per the following:

a. Stabilized decomposed granite shall be flush with top of adjacent finish surface.
b. Source aggregates locally.
c. Install stabilizer per manufacturer instructions.
d. Use EPA-compliant, biodegradable stabilizer mix.

5.17.4 Asphaltic Concrete Paving

(A) Install Asphaltic Emulsions per current Caltrans Standard Specifications.

5.18 CONCRETE

5.18.1 General

(A) Contractor shall provide all installation, soil preparation forming, sub-grade compaction, aggregate base, concrete additives, pigments and sealers, pouring concrete pavement, finishing, joints, and joint sealants in the areas approved drawings and in accordance with City of Patterson Standards and Specifications.

5.18.2 Quality Assurance

(A) Installer Qualifications: A qualified installer who employs on Project personnel qualified as ACI-certified Flatwork Technician and Finisher and a supervisor who is an ACI-certified Concrete Flatwork Technician.

(B) Manufacturer Qualifications: A firm experienced in manufacturing ready-mixed concrete products and that complies with ASTM C 94/C 94M requirements for production facilities and equipment.

1. Manufacturer certified according to NRMCA's "Certification of Ready Mixed Concrete Production Facilities."

(C) Testing Agency Qualifications: An independent agency, acceptable to authorities having jurisdiction, qualified according to ASTM C 1077 and ASTM E 329 for testing indicated.

1. Personnel conducting field tests shall be qualified as ACI Concrete Field Testing Technician, Grade 1, according to ACI CP-1 or an equivalent certification program.
2. Personnel performing laboratory tests shall be ACI-certified Concrete Strength Testing Technician and Concrete Laboratory Testing Technician, Grade I. Testing agency laboratory supervisor shall be an ACI-certified Concrete Laboratory Testing Technician, Grade II.

(D) Welding Qualifications: Qualify procedures and personnel according to AWS D1.4/D 1.4M.

(E) Mockups: Cast concrete slab-on-grade and formed-surface panels to demonstrate typical joints, surface finish, texture, tolerances, floor treatments, and standard of workmanship.

1. Build panel approximately 20sq. ft. for slab-on-grade and 2 ln. ft. for formed surface in the location indicated or, if not indicated, as directed by Landscape Architect.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

5.18.3 Submittals

(A) Action Submittals

a. Product Data: For each type of product.

(B) Design Mixtures: For each concrete mixture. Submit alternate design mixtures when characteristics of materials, Project conditions, weather, test results, or other circumstances warrant adjustments.

a. Indicate amounts of mixing water to be withheld for later addition at Project site.

(C) Steel Reinforcement Shop Drawings: Placing Drawings that detail fabrication, bending, and placement. Include bar sizes, lengths, material, grade, bar schedules, stirrup spacing, bent bar diagrams, bar arrangement, splices and laps, mechanical connections, tie spacing, hoop spacing, and supports for concrete reinforcement.

(D) Construction Joint Layout: Indicate proposed construction joints required to construct the structure.

a. Location of construction joints is subject to approval of the City.

(E) Informational Submittals

a. Qualification Data: For Installer.
b. Welding certificates.
c. Material Certificates: For each of the following, signed by manufacturers:

i. Revise fourteen subparagraphs below to suit Project.
ii. Cementitious materials.
iii. Admixtures.
iv. Form materials and form-release agents.
v. Steel reinforcement and accessories.
vi. Curing compounds.
vii. Adhesives.
viii. Joint-filler strips.
ix. Repair materials.

d. Field quality-control reports.
e. Minutes of preinstallation conference.

5.18.4 Concrete and Related Products

(A) Source Limitations: Obtain each type or class of cementitious material of the same brand from the same manufacturer's plant, obtain aggregate from single source, and obtain admixtures from single source from single manufacturer.

(B) Cementitious Materials:

a. Portland Cement: ASTM C 150/C 150M, Type I/II,.
b. Fly Ash: ASTM C 618, Class F.
c. Slag Cement: ASTM C 989/C 989M, Grade 100 or 120.
d. Blended Hydraulic Cement: ASTM C 595/C 595M, Type IP, portland-pozzolan cement.
e. Silica Fume: ASTM C 1240, amorphous silica.

(C) Normal-Weight Aggregates: ASTM C 33/C 33M, Class 3S coarse aggregate or better, graded. Provide aggregates from a single source.

a. Maximum Coarse-Aggregate Size: 1 inch nominal.
b. Fine Aggregate: Free of materials with deleterious reactivity to alkali in cement.

(D) Lightweight Aggregate: ASTM C 330/C 330M, 1/2-inch nominal maximum aggregate size.

(E) Air-Entraining Admixture: ASTM C 260/C 260M.

(F) Chemical Admixtures: Certified by manufacturer to be compatible with other admixtures and that do not contribute water-soluble chloride ions exceeding those permitted in hardened concrete. Do not use calcium chloride or admixtures containing calcium chloride.

a. Water-Reducing Admixture: ASTM C 494/C 494M, Type A.
b. Retarding Admixture: ASTM C 494/C 494M, Type B.
c. Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type D.
d. High-Range, Water-Reducing Admixture: ASTM C 494/C 494M, Type F.
e. High-Range, Water-Reducing and Retarding Admixture: ASTM C 494/C 494M, Type G.
f. Plasticizing and Retarding Admixture: ASTM C 1017/C 1017M, Type II.

(G) Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete and complying with ASTM C 494/C 494M, Type C.

(H) Non-Set-Accelerating Corrosion-Inhibiting Admixture: Commercially formulated, non-set-accelerating, anodic inhibitor or mixed cathodic and anodic inhibitor; capable of forming a protective barrier and minimizing chloride reactions with steel reinforcement in concrete.

(I) Color Pigment: ASTM C 979/C 979M, synthetic mineral-oxide pigments or colored water-reducing admixtures; color stable, nonfading, and resistant to lime and other alkalis.

a. Color: As indicated on Drawings.

(J) Water: ASTM C 94/C 94M and potable.

(K) Expansion- and Isolation-Joint-Filler Strips: ASTM D 1751, asphalt-saturated cellulosic fiber.

(L) Semirigid Joint Filler: Two-component, semirigid, 100 percent solids, epoxy resin with a Type A shore durometer hardness of 80 according to ASTM D 2240.

(M) Bonding Agent: ASTM C 1059/C 1059M, Type II, nonredispersible, acrylic emulsion or styrene butadiene.

a. Epoxy Bonding Adhesive: ASTM C 881, two-component epoxy resin, capable of humid curing and bonding to damp surfaces, of class suitable for application temperature and of grade to suit requirements, and as follows:

b. Types I and II, nonload bearing, for bonding hardened or freshly mixed concrete to hardened concrete.

(N) Reglets: Fabricate reglets of not less than 0.022-inch-thick, galvanized-steel sheet. Temporarily fill or cover face opening of reglet to prevent intrusion of concrete or debris.

a. Dovetail Anchor Slots: Hot-dip galvanized-steel sheet, not less than 0.034 inch thick, with bent tab anchors. Temporarily fill or cover face opening of slots to prevent intrusion of concrete or debris.

5.18.5 Execution

(A) Before placing concrete, verify that installation of formwork, reinforcement, and embedded items is complete and that required inspections are completed.

(B) Install concrete work per City Standard Details and Specifications.

5.18.6 Inspections

(A) Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

(B) Inspections:

a. Steel reinforcement placement.
b. Verification of use of required design mixture.
c. Concrete placement, including conveying and depositing.
d. Curing procedures and maintenance of curing temperature.
e. Verification of concrete strength before removal of shores and forms from beams and slabs.

(C) Concrete Tests: Testing of composite samples of fresh concrete obtained according to ASTM C 172/C 172M shall be performed according to the following requirements:

a. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
b. Testing Frequency: Obtain at least one composite sample for each 100 cu. yd. or fraction thereof of each concrete mixture placed each day.

i. When frequency of testing provides fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.

c. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
d. Air Content: ASTM C 231/C 231M, pressure method, for normal-weight concrete;]one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
e. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below or 80 deg F and above, and one test for each composite sample.
f. Unit Weight: ASTM C 567/C 567M, fresh unit weight of structural lightweight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
g. Compression Test Specimens: ASTM C 31/C 31M.

    i. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
    ii. Cast and field cure two sets of two standard cylinder specimens for each composite sample.

h. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.

    i. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
    ii. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.

i. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
j. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
k. Test results shall be reported in writing to City, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing

and inspecting agency, location of concrete batch in Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

l. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by District but will not be used as sole basis for approval or rejection of concrete.

m. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by City. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by City.

n. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.

o. Correct deficiencies in the Work that test reports and inspections indicate do not comply with the Contract Documents.

(D) Measure floor and slab flatness and levelness according to ASTM E 1155 within 24 hours of finishing.

5.18.7 Cleaning

(A) Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

(B) Clean reinforcement of loose rust and mill scale, earth, ice, and other foreign materials that reduce bond to concrete.

(C) Remove dirt, debris, saw cuttings, curing compounds, and sealers from joints; leave contact faces of joints clean and dry.

(D) Defective Concrete: Repair and patch defective areas when approved by City. Remove and replace concrete that cannot be repaired and patched to City's approval.

5.19 PLAYGROUNDS

5.19.1 General

(A) Contractor shall provide for purchase and shipment, storage, preparation and installation of all manufactured and custom play equipment and all

other related work at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.19.2 Quality Assurance

(A) Manufacturer Qualifications: A firm whose playground equipment components have been certified by IPEMA's third-party product certification service.

(B) Installer Qualifications: An entity that employs installers and supervisors who are trained and approved by manufacturer.

(C) Source Limitations: Obtain playground surface system materials, including primers and binders, from single source from single manufacturer.

a. Provide secondary materials geosynthetics, and repair materials of type and from source recommended by manufacturer of playground surface system materials.

(D) Standards and Guidelines: Comply with CPSC No. 325, "Handbook for Public Playground Safety"; ASTM F 1292; and ASTM F 1487.

5.19.3 Warranty

(A) Special Warranty: Manufacturer agrees to repair or replace components of playground equipment and protective surfacing that fail in materials or workmanship within specified warranty period.

a. Failures include, but are not limited to, the following:

a. Structural failures.
b. Deterioration of metals, metal finishes, and other materials beyond normal weathering and use.

b. Warranty Period:
i. Play equipment: Five years from date of Substantial Completion.
ii. Protective surfacing: One year from date of Substantial Completion.

5.19.4 Playground Site Preparation

(A) General: Prepare substrates to receive surfacing products according to playground protective surfacing system manufacturer's written instructions. Verify that substrates are sound and without high spots, ridges, holes, and depressions.

5.19.5 Playground Drainage

(A) Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for maximum moisture content, subgrade and substrate conditions, subgrade elevations, slope, and drainage and for other conditions affecting performance of the Work.

(E) Hard-Surface Substrates: Verify that substrates are satisfactory for unitary, protective surfacing installation and that substrate surfaces are dry, cured, and uniformly sloped to drain within recommended tolerances according to protective surfacing manufacturer's written requirements for cross-section profile.

5.19.6 Playground Surfacing: Loose-Fill

(A) Surface System: Engineered Wood Fiber. Provide thickness as indicated on Drawings, for overall thickness indicated, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.

a. Manufacturer: Fibar or approved Equal
b. Critical Height: As indicated by Playground Manufacturer

5.19.7 Playground Surfacing: Poured-In-Place Surfacing

(A) Surface System: Poured-in-place cushion course. Provide manufacturer's standard thickness for each layer as required for overall thickness indicated, tested for impact attenuation according to ASTM F 1292 and for accessibility according to ASTM F 1951.

a. Base/Cushion Course: Formulation of SBR rubber particles, SBR rubber is 100% recycled tires and other rubber scrap that is processed, graded and free of contaminants.
b. Binder: Weather-resistant, UV-stabilized, flexible, nonhardening, 100 percent solids polyurethane complying with requirements of authorities having jurisdiction for non-toxic and low VOC content.
c. Retain "Lacquer Topcoat" Subparagraph below if required and offered by retained manufacturers; revise to suit Project.
d. Critical Height: As indicated on Drawings.

e. Primer/Adhesive: Manufacturer's standard primer and weather-resistant, moisture-cured polyurethane adhesive suitable for unit, substrate, and location indicated.
f. Base/Cushion Course Color(s):

i. Color: As indicated on Drawings

5.19.8 Play Area Vertical Curb

(A) Play Curb per City Standard Details.

(B) Refer to Section 5.19 Concrete in this document.

5.19.9 Play Equipment

(A) Source Limitations: Obtain playground equipment from single source from single manufacturer.

(B) Playground equipment and components shall have the IPEMA Certification Seal.

(C) Playground equipment and components shall have the IPEMA Certification Seal:

a. Basis-of-Design Product: Subject to compliance with requirements, provide play equipment from the following company:

i. Manufacturer: As indicated on Drawings or approved equal.
ii. Cut Sheet: Provide manufacturer's cutsheet for review and approval.
iii. Color: As indicated on Drawings.

(D) Safety Standard: Provide playground equipment according to ASTM F 1487.

5.20 SIGNAGE

5.20.1 General

(A) Contractor shall provide all labor, equipment, and materials necessary to install signage and all other related work at all locations shown on approved drawings and in accordance with City of Patterson Standards and Specifications.

5.20.2 Quality Assurance

(A) Installer Qualifications: Manufacturer of products.

5.20.3 Submittals

(A) Action Submittals

a. Product Data: For each type of product.

(B) Shop Drawings: For each type of equipment.

a. Include fabrication and installation details and attachments to other work for all signage.
b. Include structural calculations, plans, elevations, sections, attachments and details, for all signs indicated to comply with design loads. Drawings and calculations shall be wet stamped by a CA State licensed structural engineer.
c. Show sign mounting heights, locations of supplementary supports to be provided by other installers, and accessories.
d. Show message list, typestyles, graphic elements, and layout for each sign at least half size.
e. Show locations of electrical service connections.
f. Include diagrams for power, signal, and control wiring.

(C) Informational Submittals

a. Product Certificates: For each type of site equipment.
b. Material Certificates: For shop finishes.
c. Shop Drawings and structural calculations for all footings. See Action Submittals for additional requirements.
d. Sample Warranty: For manufacturer's special warranties.

(D) Closeout Submittals

a. Maintenance Data: For site furnishings and finishes to include in maintenance manuals.
b. Parts List: Provide a list of parts for each site furnishing.
c. Contact Information: Provide installation contractor and manufacturer name and address for repairs and servicing.

5.20.4 Products

(A) Basis-of-Design Product: Subject to compliance with requirements, provide signage from the following company:

a. As indicated on Drawings or approved equal.

5.20.5 Installation

(A) Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

(B) Verify that sign-support surfaces are within tolerances to accommodate signs without gaps or irregularities between backs of signs and support surfaces unless otherwise indicated.

(C) Verify that electrical service is correctly sized and located to accommodate signs.

(D) Proceed with installation only after unsatisfactory conditions have been corrected.

(E) General: Install signs using mounting methods indicated and according to manufacturer's written instructions.

a. Install signs level, plumb, true to line, and at locations and heights indicated, with sign surfaces free of distortion and other defects in appearance.
b. Before installation, verify that sign surfaces are clean and free of materials or debris that would impair installation.
c. Corrosion Protection: Coat concealed surfaces of exterior aluminum in contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

5.20.6 Adjusting and Cleaning

(A) Remove and replace damaged or deformed characters and signs that do not comply with specified requirements. Replace characters with damaged or deteriorated finishes or components that cannot be successfully repaired by finish touchup or similar minor repair procedures.

(B) Remove temporary protective coverings and strippable films as signs are installed.

(C) On completion of installation, clean exposed surfaces of signs according to manufacturer's written instructions, and touch up minor nicks and abrasions in finish. Maintain signs in a clean condition during construction and protect from damage until acceptance by City/Owner.

11.6 CITY OF PATTERSON WATER EFFICIENT LANDSCAPE ORDINANCE REQUIREMENTS

The purpose of Section 6 is to satisfy State of California requirements set forward by the Model Water Efficient Landscape Ordinance (MWELO). The following requirements ensure that landscape improvement projects within the City of Patterson are held to a water use performance standard consistent with MWELO.

6.1 WATER EFFICIENT LANDSCAPE ORDINANCE STANDARDS

Landscape development plans shall be submitted to the City which include the following elements (see forms for template and end of section 6).

Model Water Efficient Landscape Ordinance (MWELO) Project Information:

i. Project Applicant
ii. Project Address
iii. Date of Submittal
iv. Project Type (new, rehabilitated, public, private)
v. Total Landscape Area (SF)
vi. Breakdown of Turf/Other Plant Material Areas (SF)
vii. Water Supply Type (potable, recycled, well)
viii. Water Purveyor
ix. Property Owner/Applicant Contact Information
x. Applicant Signature with MWELO Statement: "I agree to comply with the requirements of the prescriptive compliance option to the MWELO."

(A) WELO Prescriptive Compliance Option (for projects greater than 500 SF and less than 2,500 SF)

Prescriptive requirements may be used as a compliance option to meet the requirements set forward in the MWELO. If the prescriptive method is selected, then compliance with the following items shall be mandatory and must be documented on landscape plans.

At the time of final inspection, the applicant shall provide the City of Patterson Parks Division with a certificate of compliance, including independent Irrigation Auditor report and controller parameters for setting, irrigation schedule, soil management report, and schedule of landscape and irrigation maintenance.

a. Soil Amendments

i. Incorporate compost at a rate of at least four cubic yards per 1,000 SF to a depth of six (6") inches in to the landscape area (unless contraindicated by a soils test).
ii. For projects with multiple landscape installations (i.e. production home developments), a soil sampling rate of 1 in 7 lots is required.

b. Plant material shall comply with the following:
   i. Planting design shall include climate-adapted plants that require occasional, little, or no supplemental water during the summer (WUCOLS plant factor 0.3) for 75% of the plant area in residential areas and 100% in non-residential areas, excluding areas of edible plants and areas using recycled water.
   ii. A minimum of 3" mulch shall be applied to all exposed soil surfaces within planting areas, except within turf areas or in direct seeding applications where mulch is contraindicated.

c. Turf shall comply with the following:
   i. Turf shall not exceed 25% of the landscape area in residential areas, and there shall be no turf in non-residential areas.
   ii. Turf is prohibited in parkways and narrow landscape areas less than 10' wide. All turf in parkways shall be irrigated by sub-surface irrigation or by other technology which produces no overspray and no runoff.
   iii. Turf shall not be planted on sloped areas which exceed a slope of 4:1.

d. Irrigation systems shall comply with the following:
   i. Automatic irrigation controllers are required and must use evapotranspiration OR soil moisture sensor data and utilize a weather sensor.
   ii. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
   iii. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturer's recommended pressure range.
   iv. Manual shut-off valves, such as gate valves, ball valves, or butterfly valves, shall be installed as close as possible to the point of connection of the water supply.
   v. Master valve devices shall be required for all projects.
   vi. Check valves and anti-drain valves are required on all sprinkler heads where low point drainage could occur.

vii. All irrigation emission devices shall meet the requirements set forward in ANSI standard ASABE/ICC 802-2014, "Landscape Irrigation Sprinkler and Emitter Standard."
viii. All sprinkler heads installed in the landscape must document a distribution uniformity of 0.65 or higher using the protocol defined in ASABE/ICC 802-2014.
ix. Areas less than 10' wide in any direction shall be irrigated by sub-surface irrigation or by other technology which produces no overspray and no runoff.
x. Overhead irrigation shall not be permitted within 24" of any non-permeable surface unless the adjacent non-permeable surface drains entirely to an adjacent landscape area.
xi. No overhead irrigation shall be permitted in mulched planting beds.
xii. Swing joints are required on all overhead irrigation devices adjacent to hardscape areas or high traffic areas.

(B) Water Efficient Landscape Performance Requirements

a. Each project plan set shall include the Water Efficient Landscape Worksheet (see forms for template and end of section 6). The worksheet shall contain project-specific information on the plant factor, irrigation method, irrigation efficiency, and area associated with each Hydrozone.
b. Plant factor is dictated by WUCOLS and varies by species and region of the State. Current WUCOLS data may be found online at www.water.ca.gov.
c. Plant factor ranges from 0-0.1 for very low water use plants, 0.1-0.3 for low water use plants, 0.4-0.6 for moderate water use plants, and 0.7-1.0 for high water use plants.
d. Turf shall not be planted on sloped areas which exceed a slope of 4:1.
e. High water use plants (plant factor of 0.7-1.0) are prohibited within street medians.
f. Prior to planting, soils shall be transformed to a friable condition. On engineered slopes, only amended planting holes need meet this requirement.
g. Soil samples shall be conducted on all projects. For projects with multiple landscape installations (i.e. production home developments), a soil sampling rate of 1 in 7 lots is required.
h. Soil analysis shall include:
    i. Soil Texture
    ii. pH

iii. Total Soluble Salts
iv. Sodium
v. Percent Organic Matter
vi. Recommendations.

i. If mass grading is planned, the soil analysis report may be deferred until after grading has been completed. A copy of the report shall be submitted to the architect for necessary adjustments and the report shall be included with the Certificate of Completion.
j. Incorporate compost at a rate of at least four (4) cubic yards per 1,000 SF to a depth of six (6") inches in to the landscape area, unless contraindicated by soils test).
k. A minimum three (3") inches of mulch shall be applied to all exposed soil surfaces within planting areas, except within turf areas or in direct seeding applications where mulch is contraindicated.
l. Hydrozones shall be shown on the irrigation plan. All Hydrozone water use ratings shall be dictated by the highest water-using plant or feature within a given Hydrozone (i.e. the presence of one plant of High water use within a Hydrozone otherwise planted with Low water use plants will cause that Hydrozone to become a High water use Hydrozone) OR use the proportion of the respective plant water uses and their plant factor by Hydrozone.
m. Hydrozones that mix high and low water use plants shall not be permitted.
n. Hydrozones shall be indicated by number, letter or other designation. A hydrozone information table shall be prepared that identifies the valve(s), water use classification and irrigation efficiency.
o. A dedicated water meter shall be installed for all non-residential irrigated landscapes.
p. Automatic irrigation controllers are required and must use evapotranspiration OR soil moisture sensor data and utilize a weather sensor.
q. Irrigation controllers shall be of a type which does not lose programming data in the event the primary power source is interrupted.
r. Pressure regulators shall be installed on the irrigation system to ensure the dynamic pressure of the system is within the manufacturer's recommended pressure range.
s. Manual shut-off valves, such as gate valves, ball valves, or butterfly valves, shall be installed as close as possible to the point of connection of the water supply.
t. Master valve and flow sensing devices shall be required for all non-residential projects. For residential projects master valves are

required, and when landscape area exceeds 5,000 SF the use of a flow sensor is required.

u. Check valves or anti-drain valves are required on all sprinkler heads where low point drainage could occur.
v. The irrigation system shall be designed to prevent runoff, low head drainage, overspray, or other similar conditions where irrigation water flows onto non-targeted areas, such as adjacent property, non-irrigated areas, hardscapes, roadways, or structures.
w. The irrigation system must be designed and installed to meet, at a minimum, the irrigation efficiency criteria regarding the Maximum Applied Water Allowance.
x. Overhead irrigation shall not be permitted within 24" of any non-permeable surface unless the adjacent non-permeable surface drains entirely to an adjacent landscape area.
y. No overhead irrigation shall be permitted in mulched planting beds.
z. Swing joints are required on all overhead irrigation devices adjacent to hardscape areas or high traffic areas.
aa. Areas less than 10' wide in any direction shall be irrigated by sub-surface irrigation or by other technology which produces no overspray and no runoff.
bb. Trees shall be placed on a separate valve from shrubs, groundcover, and turf.
cc. Valves shall identify: flow rate (gpm), application rate (inches per hour) and operating pressure (psi).
dd. Special Landscape Areas (SLAs) shall be areas which are dedicated solely to recreational purposes, areas irrigated by recycled water, or areas dedicated solely to growing edible plants.
ee. The Maximum Applied Water Allowance (MAWA) is calculated based on the maximum evapotranspiration adjustment factor (ETAF) allowed.
ff. Existing irrigation areas shall utilize techniques, equipment, and procedures to reduce water use to meet water budget requirements, including:
    i. Replace high volume sprinkler heads with newer low-flow heads.
    ii. Where feasible, convert landscape areas from overhead to drip irrigation.
    iii. Adjust irrigation spray pattern to eliminate overspray/runoff.
    iv. Reprogram existing controller to correct run times. Adjust monthly for seasonal changes.

v. Install a weather-based controller and/or soil moisture sensor.
vi. Regularly check for and repair any leaks or broken heads in the irrigation system.
vii. Replace or repair irrigation system equipment as recommended by an independent irrigation auditor.
viii. Replace turf grass or high water using plants with low water using plants where feasible/practical. Established plants which utilize minimal water shall not be removed in order to install new plants which will require more water for several years in order to become established.

(C) Water Efficient Landscape Worksheet Template

Estimated Total Water Use Calculation

(ETo)(0.62)[(ETAF x LA)+((1-ETAF) x SLA)]

Reference Evapotranspiration (ETo) rate for the City of Patterson: 57.3
ETAF Calculations: Residential Projects = 0.55; Non-Residential Projects = 0.45

Maximum Applied Water Allowance Calculation

Reference Evapotranspiration (ETo) rate for the City of Patterson: 57.3.
Hydrozone Plant Type: Lawn, Shrub, Tree
Irrigation Method: Spray, Rotor, Drip

Hydrozone Plant Type	**Plant Factor**	**Irrigation Method**	**Irrigation Efficiency**	**ETAF (PE/IE)**	**Landscape Area (SF)**	**ETAF x Area**	**Estimated Total Water Use (ETWU)**
Regular Landscape Areas							
				Totals	A	B	
Special Landscape Areas							
				1			
				1			
				Totals	C	D	
						ETWU Total	
MAWA (Max. Annual Gallons Allowed) = ETo x 0.62 x ETAF x Area						MAWA	
ETWU must be less than MAWA						Difference	

(D) Certificate of Completion Requirements

a. Each irrigation controller on a project site shall be provided with a color-coded and laminated irrigation plan showing Hydrozones within the landscape area.
b. An irrigation audit for new and existing landscape areas shall be performed by an independent Certified Landscape Irrigation Auditor not associated with the designer or contractor associated with a given project. Audits shall include inspection, report, verification of system repairs or tune-up (if applicable), preparation of an irrigation schedule, and configuring of the irrigation controller to conform to the project site water budget.
c. A copy of the soil analysis report, if not submitted with the initial landscape plan, and documentation verifying implementation of soil analysis report.
d. A copy of the Irrigation Audit report shall be submitted by the Owner with the Certificate of Compliance prior to the pre-maintenance inspection, per Section 3.5 (C) of the City of Patterson Landscape Development Standards.

MWELO PROJECT CHECKLIST

ON APRIL 1, 2015, GOVERNOR BROWN ISSUED EXECUTIVE ORDER, EO B-29-15 DIRECTING THE DEPARTMENT OF WATER RESOURCES TO UPDATE A PREVIOUS MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) TO BE MORE STRINGENT AND REDUCE LANDSCAPE WATER USE. EFFECTIVE DECEMBER 1, 2015, LOCAL AGENCIES ARE REQUIRED TO ENFORCE THE MWELO WITHIN THEIR JURISDICTIONS. MORE INFORMATION CAN BE FOUND AT HTTP://WWW.WATER.CA.GOV/wateruseefficiency/landscapeordinance/

PROJECT INFORMATION:

OWNER: _____ PHONE: _____

ADDRESS: _____ EMAIL: _____

SITE ADDRESS: _____ APN: _____

PROJECT TYPE: ☐ RESIDENTIAL ☐ NON-RESIDENTIAL ☐ LANDSCAPE REHABILITATION

☐ THIS CONSTRUCTION PROJECT IS EXEMPT BECAUSE THERE WILL NOT BE MORE THAN 500SQFT OF LANDSCAPE AREA INSTALLED. (THIS PROVISION IS APPLICABLE TO RESIDENTIAL AND NON-RESIDENTIAL PROJECTS)

☐ CURRENTLY, THIS PROJECT DOES NOT INCLUDE LANDSCAPING. I AM AWARE THAT FUTURE LANDSCAPE INSTALLATIONS MAY BE REQUIRED TO COMPLY WITH THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) REQUIREMENTS PER CALIFORNIA CODE OF REGULATIONS, TITLE 23, DIVISION 2, CHAPTER 2.7.

☐ THE PROJECT DOES INCORPORATE LANDSCAPING AND WILL COMPLY WITH AN MWELO MASTER PLAN SPECIFIC TO THE SUBDIVISION. SUBDIVISION NAME: _____

☐ THIS PROJECT DOES INCORPORATE LANDSCAPING IN EXCESS OF 500SQFT. (PLEASE PROVIDE INFORMATION BELOW AND SPECIFY THE COMPLIANCE METHOD TO BE USED):

TOTAL LANDSCAPE AREA (SQFT): _____ SPECIAL LANDSCAPE AREA (SQFT): _____

TURF AREA (SQFT): _____ NON-TURF AREA (SQFT): _____

(FOR RESIDENTIAL PROJECTS, THE TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS.)

COMPLIANCE METHOD:

☐ PRESCRIPTIVE (THE PRESCRIPTIVE COMPLIANCE METHOD, ALSO KNOWN AS APPENDIX D, MAY ONLY BE USED FOR LANDSCAPE AREAS 2500SQFT OR LESS. ITEMS INCLUDED IN APPENDIX D CHECKLIST ON THE REVERSE SIDE SHALL BE INCLUDED ON THE PLANS.)

☐ PERFORMANCE (SEE SEPARATE PERFORMANCE CHECKLIST AND INCLUDE INFORMATION ON THE PLANS.)

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

_____ _____

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE DATE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY: _____

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

MWELO PROJECT CHECKLIST (SECTION A)

DRAWING NO. I-0.4.0

NTS

May 28, 2020 - 12:28am
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MWELO PROJECT CHECKLIST

FOR STAFF USE ONLY

MWELO PRESCRIPTIVE APPROACH DOCUMENTATION CHECKLIST

- ☐ COMPLETED PROJECT INFORMATION WORKSHEET
- ☐ LANDSCAPE DESIGN PLAN
- ☐ LANDSCAPE WATER EFFICIENCY CHECKLIST
  - ☐ DEDICATED IRRIGATION SUB-METER FOR NON RESIDENTIAL WITH AGGREGATE AREA OF 1,000 ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL NON-RESIDENTIAL
- ☐ CERTIFICATE OF COMPLETION

MWELO PERFORMANCE APPROACH DOCUMENTATION CHECKLIST

- ☐ COMPLETED PROJECT INFORMATION WORKSHEET
- ☐ LANDSCAPE DESIGN PLAN
- ☐ GRADING DESIGN PLAN
- ☐ IRRIGATION DESIGN PLAN
  - ☐ DEDICATED IRRIGATION SUB-METER FOR NON-RESIDENTIAL WITH AGGREGATE AREA OF 1,000 ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL NON-RESIDENTIAL
  - ☐ DEDICATED IRRIGATION SUB-METER FOR RESIDENTIAL WITH AGGREGATE AREA ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL RESIDENTIAL WITH AGGREGATE AREA ≥ 5,000 SQFT
- ☐ WATER EFFICIENT LANDSCAPE WORKSHEET(S)
- ☐ SOIL ANALYSIS
  - ☐ SOIL TEXTURE
  - ☐ INFILTRATION RATE
  - ☐ PH, ORGANIC MATTER, ETC.
- ☐ CERTIFICATE OF COMPLETION: (REQUIRED AFTER INSTALLATION, PRIOR TO CERTIFICATE OF OCCUPANCY)
  - ☐ CERTIFICATE OF INSTALLATION
  - ☐ IRRIGATION SCHEDULING
  - ☐ LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULES
  - ☐ SOIL AMENDMENT DELIVERY TAGS
- ☐ IRRIGATION AUDIT REPORT (REQUIRED AFTER INSTALLATION, PRIOR TO CERTIFICATE OF OCCUPANCY)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

MWELO PROJECT CHECKLIST (SECTION B)

DRAWING NO. I-0.4.1
NTS

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MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION

ON APRIL 1, 2015, GOVERNOR BROWN ISSUED EXECUTIVE ORDER, EO B-29-15 DIRECTING THE DEPARTMENT OF WATER RESOURCES TO UPDATE A PREVIOUS MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) TO BE MORE STRINGENT AND REDUCE LANDSCAPE WATER USE. EFFECTIVE DECEMBER 1, 2015, LOCAL AGENCIES ARE REQUIRED TO ENFORCE THE MWELO WITHIN THEIR JURISDICTIONS. MORE INFORMATION CAN BE FOUND AT HTTP://WWW.WATER.CA.GOV/wateruseefficiency/landscapeordinance/

PROJECT INFORMATION:

OWNER: _____ PHONE: _____

ADDRESS: _____ EMAIL: _____

SITE ADDRESS: _____

PROJECT TYPE: ☐ RESIDENTIAL ☐ NON-RESIDENTIAL ☐ LANDSCAPE REHABILITATION

☐ THIS PROJECT IS EXEMPT BECAUSE THERE WILL BE LESS THAN 500SQFT OF LANDSCAPE AREA INSTALLED. (THIS PROVISION IS APPLICABLE TO RESIDENTIAL AND NON RESIDENTIAL PROJECTS)

☐ CURRENTLY, THIS PROJECT DOES NOT INCLUDE LANDSCAPING. I AM AWARE THAT FUTURE LANDSCAPE INSTALLATIONS MAY BE REQUIRED TO COMPLY WITH THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) REQUIREMENTS PER CALIFORNIA CODE OF REGULATIONS, TITLE 23, DIVISION 2, CHAPTER 2.7.

☐ THE PROJECT DOES INCORPORATE LANDSCAPING AND WILL COMPLY WITH AN MWELO MASTER PLAN SPECIFIC TO THE SUBDIVISION. SUBDIVISION NAME: _____

☐ THIS PROJECT DOES INCORPORATE LANDSCAPING IN EXCESS OF 500SQFT. (PLEASE PROVIDE INFORMATION BELOW AND SPECIFY THE COMPLIANCE METHOD TO BE USED):

TOTAL LANDSCAPE AREA (SQFT): _____

TURF AREA (SQFT): _____

(FOR RESIDENTIAL PROJECTS, THE TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS.)

COMPLIANCE METHOD:

☐ PRESCRIPTIVE (THE PRESCRIPTIVE COMPLIANCE METHOD, ALSO KNOWN AS APPENDIX D, MAY ONLY BE USED FOR LANDSCAPE AREAS 2500SQFT OR LESS. ITEMS INCLUDED IN APPENDIX D CHECKLIST ON THE REVERSE SIDE SHALL BE INCLUDED ON THE PLANS.)

☐ PERFORMANCE (SEE SEPARATE PERFORMANCE CHECKLIST AND INCLUDE INFORMATION ON THE PLANS.)

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

_____ _____

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE DATE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR. 02/03/16 DATE 62736 R.C.E. NO.

MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION (SEC. A)

DRAWING NO. I-0.4.2

NTS

May 28, 2020 - 12:28pm
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MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION, CONTINUED

LANDSCAPE WATER-EFFICIENCY (MWELO) PRESCRIPTIVE CHECKLIST
(CAN BE USED ONLY WHEN AGGREGATE LANDSCAPE AREAS ARE 2,500SQFT OR LESS)

LANDSCAPE PARAMETER	DESIGN MEASURES	LOCATION ON PLANS
COMPOST	INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR (4) CUBIC YARDS PER 1,000SQFT TO A DEPTH OF 6 INCHES INTO LANDSACPE AREA (UNLESS CONTRA-INDICATED BY A SOIL TEST)	
PLANT WATER USE	RESIDENTIAL: INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVERAGE WUCOLS PLANT FACTOR 0.3) FOR 75% OF THE PLANT AREA, EXCLUDING EDIBLES AND AREAS USING RECYCLED WATER. NON-RESIDENTIAL: INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVERAGE WUCOLS PLANT FACTOR 0.3) FOR 100% OF THE PLANT AREA, EXCLUDING EDIBLES AND AREAS USING RECYCLED WATER.	
MULCH	A MINIMUM 3-INCH LAYER OF MULCH SHOULD BE APPLIED ON ALL EXPOSED SOIUL SURFACES OF PLANTING AREAS, EXCEPT IN AREAS OF TURF OR CREEPING OR ROOTING GROUNDCOVERS	
TURF	TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS	
	TURF, IF UTILIZED, IS LIMITED TO SLOPES NOT EXCEEDING 25% AND IS NOT USED IN PARKWAYS LESS THAN 10 FT IN IWDTH	
	TURF, IF UTILIZED IN PARKWAYS, IS IRRIGATED BY SUB-SURFACE IRRIGATION OR OTHER TECHNOLOGY THAT PREVENTS OVERSPRAY OR RUNOFF	
IRRIGATION SYSTEM	IRRIGATION CONTROLLERS USE EVAPOTRANSPIRATION OR SOIL MOISTURE DATA AND UTILIZE A RAIN SENSOR	
	IRRIGATION CONTROLLER PROGRAMMING DATA WILL NOT BE LOST DUE TO AN INTERRUPTION IN THE PRIMARY POWER SOURCE	
	AREAS LESS THAN 10 FT IN ANY DIRECTION UTILIZE SUB-SURFACE IRRIGATION OR OTHER TECHNOLOGY THAT PREVENTS OVERSPRAY OR RUNOFF	
	A PRIVATE LANDSACPE SUB-METER IS INSTALLED AT NON-RESIDENTIAL LANDSCAPE AREAS OF 1,000 SQFT OR MORE	
CERTIFICATE OF COMPLETION	AT THE TIME OF FINAL INSPECTION, PARTS 1 AND 2 OF THE CERTIFICATE SHALL BE SIGNED AND EVIDENCE SHOWING COMPLIANCE WITH PARTS 3 AND 4 SHALL BE DEMONSTRATED	

NOTE
FOR THE PURPOSES OF THIS FORM LANDSCAPE AREA INCLUDES ALL THE PLANTING AREAS, TURF AREAS, AND WATER FEATURES IN A LANDSCAPE DESIGN PLAN SUBJECT TO THE MAXIMUM APPLIED WATER ALLOWANCE CALCULATION. THE LANDSCAPE AREA DOES NOT INCLUDE FOOTPRINTS OF BUILDINGS OR STRUCTURES, SIDEWALKS, DRIVEWAYS, PARKING LOTS, DECKS, PATIOS, GRAVEL, OR STONE WALKS, OTHER PERVIOUS HARDSCAPES, AND OTHER NON-IRRIGATED AREAS DESIGNATED FOR NON-DEVELOPMENT (E.G., OPEN SPACES AND EXISTING NATIVE VEGETATION).

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE | DATE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:
FERNANDO ULLOA, CITY ENGR.

MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION (SEC. B)

02/03/16 DATE
62736 R.C.E. NO.
DRAWING NO. I-0.4.3
NTS

May 28, 2020 - 12:17pm
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MWELO PRESCRIPTIVE SUBMITTAL CHECKLIST

SUBMITTAL DATE: _____ PROJECT ADDRESS: _____

APPLICANT NAME: _____ PHONE NUMBER: _____

THESE REQUIREMENTS MAY BE USED TO COMPLY WITH THE CITY'S WATER EFFICIENT LANDSCAPE ORDINANCE IF THE TOTAL LANDSCAPE AREA IS LESS THAN 2,500SQFT. COMPLIANCE WITH ALL ITEMS IS MANDATORY AND MUST BE DOCUMENTED ON A LANDSCAPE PLAN

COVER SHEET

- ☐ CONTACT INFORMATION FOR THE PROJECT APPLICANT AND PROPERTY OWNER, PROJECT ADDRESS AND PARCEL NUMBERS(S)
- ☐ TOTAL LANDSCAPE AREA (SQFT), INCLUDING A BREAKDOWN OF TURF AND PLANT MATERIAL
- ☐ PROJECT TYPE (E.G., NEW, REHABILITATED, PUBLIC, PRIVATE, CEMETERY, HOMEOWNER INSTALLED)
- ☐ WATER SUPPLY TYPE AND THE LOCAL RETAIL WATER PURVEYOR (CALIFORNIA WATER SERVICE COMPANY)
- ☐ APPLICANT SIGNATURE AND DATE WITH THE FOLLOWING STATEMENT: "I AGREE TO COMPLY WITH THE REQUIREMENTS OF THE PRESCRIPTIVE COMPLIANCE OPTION TO THE WATER EFFICIENT LANDSCAPE ORDINANCE"
- ☐ INCLUDE THE FOLLOWING NOTE: "ALL LANDSCAPE AREAS SHALL INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR CUBIC YARDS PER 1,000SQFT TO A DEPTH OF SIX INCHES"

PLANTING MATERIALS

- ☐ FOR RESIDENTIAL AREAS, INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVG. WUCOLS PLANT FACTOR 0.3) FOR 75% OF THE PLANT AREA, EXCLUDING EDIBLES.
- ☐ FOR NON-RESIDENTIAL AREAS, INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER FOR 100% OF THE PLANT AREA, EXCLUDING EDIBLES
- ☐ A MINIMUM THREE INCH (3") LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT IN TURF AREAS, CREEPING OR ROOTING GROUND COVERS, OR DIRECT SEEDING APPLICATIONS WHERE MULCH IS CONTRAINDICATED

TURF AREAS

- ☐ TURF SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA IN RESIDENTIAL AREAS, AND THERE SHALL BE NO TURF IN NON-RESIDENTIAL AREAS
- ☐ TURF SHALL NOT BE PLANTED ON SLOPED AREAS WHICH EXCEED A SLOPE OF 1 FOOT VERTICAL ELEVATION CHANGE FOR EVERY 4 FT OF HORIZONTAL LENGTH
- ☐ TURF IS PROHIBITED IN PARKWAYS LESS THAN 10 FT WIDE, UNLESS THE PARKWAY IS ADJACENT TO A PARKING STRIP AND USED TO ENTER AND EXIT VEHICLES. ANY TURF IN PARKWAYS MUST BE IRRIGATED BY SUB-SURFACE IRRIGATION OR BY OTHER TECHNOLOGY THAT CREATES NO OVERSPRAY OR RUNOFF

IRRIGATION SYSTEMS

- ☐ AUTOMATIC IRRIGATION CONTROLLERS ARE REQUIRED AND MUST EVATRANSPIRATION OR SOIL MOISTURE SENSOR DATA AND UTILIZE A RAIN SENSOR
- ☐ IRRIGATION CONTROLLERS SHALL BE A TYPE WHICH DOES NOT LOSE PROGRAMMING DATA IN THE EVENT THE PRIMARY POWER SOURCE IS INTERRUPTED
- ☐ PRESSURE REGULATORS SHALL BE INSTALLED ON THE IRRIGATION SYSTEM TO ENSURE THE DYNAMIC PRESSURE OF THE SYSTEM IS WITHIN THE MANUFACTURER'S RECOMMENDED PRESSURE RANGE
- ☐ MANUAL SHUT-OFF VALVES (SUCH AS GATE VALVE, BALL VALVE, OR BUTTERFLY VALVE) SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF CONNECTION OF THE WATER SUPPLY
- ☐ ALL IRRIGATION EMISSION DEVICES MUST MEET THE REQUIREMENTS OF SET IN THE ANSI STANDARD, ASABE/ICC 802-2014. "LANDSCAPE IRRIGATION SPRINKLER AND EMITTER STANDARD," ALL SPRINKLER HEADS INSTALLED IN THE LANDSCAPE MUST DOCUMENT A DISTRIBUTION UNIFORMITY LOW QUARTER OF 0.65 OR HIGHER USING THE PROTOCOL DEFINED IN ASABE/ICC 802-2014
- ☐ AREAS LESS THAN 10 FT IN WIDTH IN ANY DIRECTION SHALL BE IRRIGATED WITH SUBSURFACE IRRIGATION OR OTHER MEANS THAT PRODUCES NO RUNOFF OR OVERSPRAY

AT THE TIME OF FINAL INSPECTION, THE PERMIT APPLICANT MUST PROVIDE THE OWNER OF THE PROPERTY WITH A CERTIFICATE OF INSTALLATION, IRRIGATION SCHEDULE, AND A SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY: _____
FERNANDO ULLOA, CITY ENGR.

MWELO PRESCRIPTIVE SUBMITTAL CHECKLIST

02/03/16 DATE | 62736 R.C.E. NO.

DRAWING NO. I-0.4.4
NTS

May 28, 2020 - 12:28am
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WATER EFFICIENT LANDSCAPE WORKSHEET

THIS WORKSHEET IS TO BE FILLED OUT BY THE PROJECT APPLICANT AND IT IS A REQUIRED ELEMENT OF THE LANDSCAPE DOCUMENTATION PACKAGE.
PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION A: HYDROZONE INFORMATION TABLE

PLEASE COMPLETE THE HYDROZONE TABLE(S) FOR EACH HYDROZONE. USE AS MANY TABLES AS NECESSARY TO PROVIDE THE SQUARE FOOTAGE OF LANDSCAPE AREA PER HYDROZONE.

Hydrozone or Valve	Water Use*	Irrigation Method**	Area (sq.ft.)	% of Landscape Area
TOTAL:				**100%**

*Water Use:
HW = HIGH WATER USE PLANTS
MW = MODERATE WATER USE PLANTS
LW = LOW WATER USE PLANTS

**Irrigation Method
MS = MICRO-SPRAY
S = SPRAY
R = ROTOR
RN = ROTARY NOZZLE
B = BUBBLER
D = DRIP
O = OTHER

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY: _____
FERNANDO ULLOA, CITY ENGR.

WATER EFFICIENT WORKSHEET (SECTION A)

02/03/16 DATE
62736 R.C.E. NO.

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WATER EFFICIENT LANDSCAPE WORKSHEET

THIS WORKSHEET IS TO BE FILLED OUT BY THE PROJECT APPLICANT AND IT IS A REQUIRED ELEMENT OF THE LANDSCAPE DOCUMENTATION PACKAGE.
PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION B: WATER BUDGET CALCULATIONS MAXIMUM APPLIED WATER ALLOWANCE (MAWA)

THE PROJECT'S MAXIMUM APPLIED WATER ALLOWANCE SHALL BE CALCULATED USING THIS EQUATION:

MAWA = (ETo)(0.62) [(ETAF x LA) + (1−ETAF xSLA)]

WHERE:

MAWA	=	MAXIMUM APPLIED WATER ALLOWANCE (GALLONS PER YEAR)
ETo	=	REFERENCE EVAPOTRANSPORATION RATE − 57.3
0.62	=	CONVERSION FACTOR (TO GALLONS PER SQFT)
ETAF	=	RESIDENTIAL LANDSCAPES = 0.55, NON−RESIDENTIAL LANDSCAPES = 0.45
LA	=	PORTION OF THE IRRIGATED LANDSCAPE AREA (SQFT). NON−IRRIGATED SPACE IS NOT INCLUDED.
SLA	=	PORTION OF THE LANDSCAPE AREA IDENTIFIED AS SPECIAL LANDSCAPE AREA (SQFT)
EPPT	=	

MAXIMUM APPLIED WATER ALLOWANCE = _____GALLONS PER YEAR

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

(IF ADDITIONAL CALCULATIONS ARE NEEDED USE SHEET I−0.3.1

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

WATER EFFICIENT WORKSHEET (SECTION B)

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

(IF ADDITIONAL CALCULATIONS ARE NEEDED, COPY THIS SHEET)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
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WATER EFFICIENT WORKSHEET (SECTION B - CONTINUED)

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WATER EFFICIENT LANDSCAPE WORKSHEET

THIS WORKSHEET IS TO BE FILLED OUT BY THE PROJECT APPLICANT AND IT IS A REQUIRED ELEMENT OF THE LANDSCAPE DOCUMENTATION PACKAGE.
PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION C: WATER BUDGET CALCULATIONS ESTIMATED TOTAL WATER USE (ETWU)

THE PROJECT'S ESTIMATED TOTAL WATER USE SHALL BE CALCULATED USING THIS EQUATION:

ETWU = (ETO)(0.62) ETAF X LA

WHERE:
ETWU = ESTIMATED TOTAL WATER USE (GALLONS PER YEAR)
ETO = REFERENCE EVAPOTRANSPORATION RATE – 57.3
0.62 = CONVERSION FACTOR (TO GALLONS PER SQFT)
PF = PLANT FACTOR (HIGH WATER USE = 0.7–1.0, MODERATE WATER USE = 0.4–0.6, LOW WATER USE = 0.1–0.3)
IE = IRRIGATION EFFICIENCY (OVERHEAD SPRAY = 0.75, DRIP = 0.81)
ETAF = PLANT FACTOR / IRRIGATION EFFICIENCY
LA = PORTION OF THE IRRIGATED LANDSCAPE AREA (SQFT). NON–IRRIGATED SPACE IS NOT INCLUDED.
SLA = PORTION OF THE LANDSCAPE AREA IDENTIFIED AS SPECIAL LANDSCAPE AREA (SQFT)

Hydrozone or Valve	Plant Factor*	Irrigation Efficiency**	ETAF (PF/IE)	LA (Landscape Area)	ETAF x LA	ETWU (gallons)
Regular Landscape Areas						
REGULAR LANDSCAPE AREA ETWU TOTAL						
Special Landscape Areas						
	[redacted]		1			
			1			
			1			
			1			
SPECIAL LANDSCAPE AREA ETWU TOTAL						
ETWU TOTAL						
Maximum Allowed Water Allowance (MAWA) TOTAL						

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY: Fernando Ulloa
FERNANDO ULLOA, CITY ENGR.

WATER EFFICIENT WORKSHEET (SECTION C)

02/03/16 DATE
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CERTIFICATE OF COMPLETION

THIS CERTIFICATE IS FILLED OUT BY THE PROJECT APPLICANT UPON COMPLETION OF THE LANDSCAPE PROJECT

PART 1: PROJECT INFORMATION SHEET

Date		
Project Name		
Name of Project Applicant	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

PROJECT ADDRESS AND LOCATION:

Street Address		Parcel, Tract or Lot Number (If available)
City		Lattitude/Longitude (optional)
State	Zip Code	

PROPERTY OWNER OR THEIR DESIGNEE:

Name	Telephone No.	
	Fax No.	
Title	Email Address	
Company	Street Address	
City	State	Zip Code

"I/WE CERTIFY THAT I/WE HAVE RECEIVED COPIES OF ALL THE DOCUMENTS WITHIN THE LANDSCAPE DOCUMENTATION PACKAGE AND THE CERTIFICATE OF COMPLETION AND THAT IT IS OUR RESPONSIBILITY TO SEE THAT THE PROJECT IS MAINTAINED IN ACCORDANCE WITH THE LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULE."

Property Owner Signature — Date

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY: FERNANDO ULLOA, CITY ENGR.

CERTIFICATE OF COMPLETION

02/03/16 DATE | 62736 R.C.E. NO.

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CERTIFICATE OF COMPLETION

THIS CERTIFICATE IS FILLED OUT BY THE PROJECT APPLICANT UPON COMPLETION OF THE LANDSCAPE PROJECT

PART 2: CERTIFICATION OF INSTALLATION ACCORDING TO THE LANDSCAPE DOCUMENT PACKAGE

"I/WE CERTIFY THAT BASED UPON PERIODIC SITE OBSERVATIONS, THE WORK HAS BEEN SUBSTANTIALLY COMPLETED IN ACCORDANCE WITH THE ORDINANCE AND THAT THE LANDSCAPE PLANTING AND IRRIGATION INSTALLATION CONFORM WITH THE CRITERIA AND SPECIFICATION OF THE APPROVED LANDSCAPE DOCUMENT PACKAGE."

Signature*	Date	
Name (print)	Telephone No.	
	Fax No.	
Title	Email Address	
License No. or Certification No.		
Company	Street Address	
City	State	Zip Code

**SIGNER OF THE LANDSCAPE DESIGN PLAN, SIGNER OF THE IRRIGATION PLAN, OR A LICENSED LANDSCAPE CONTRACTOR.*

PART 3: IRRIGATION SCHEDULING

ATTACH PARAMETERS FOR SETTING THE IRRIGATION SCHEDULE ON CONTROLLER PER ORDINANCE SECTION 492.10.

PART 4: SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE

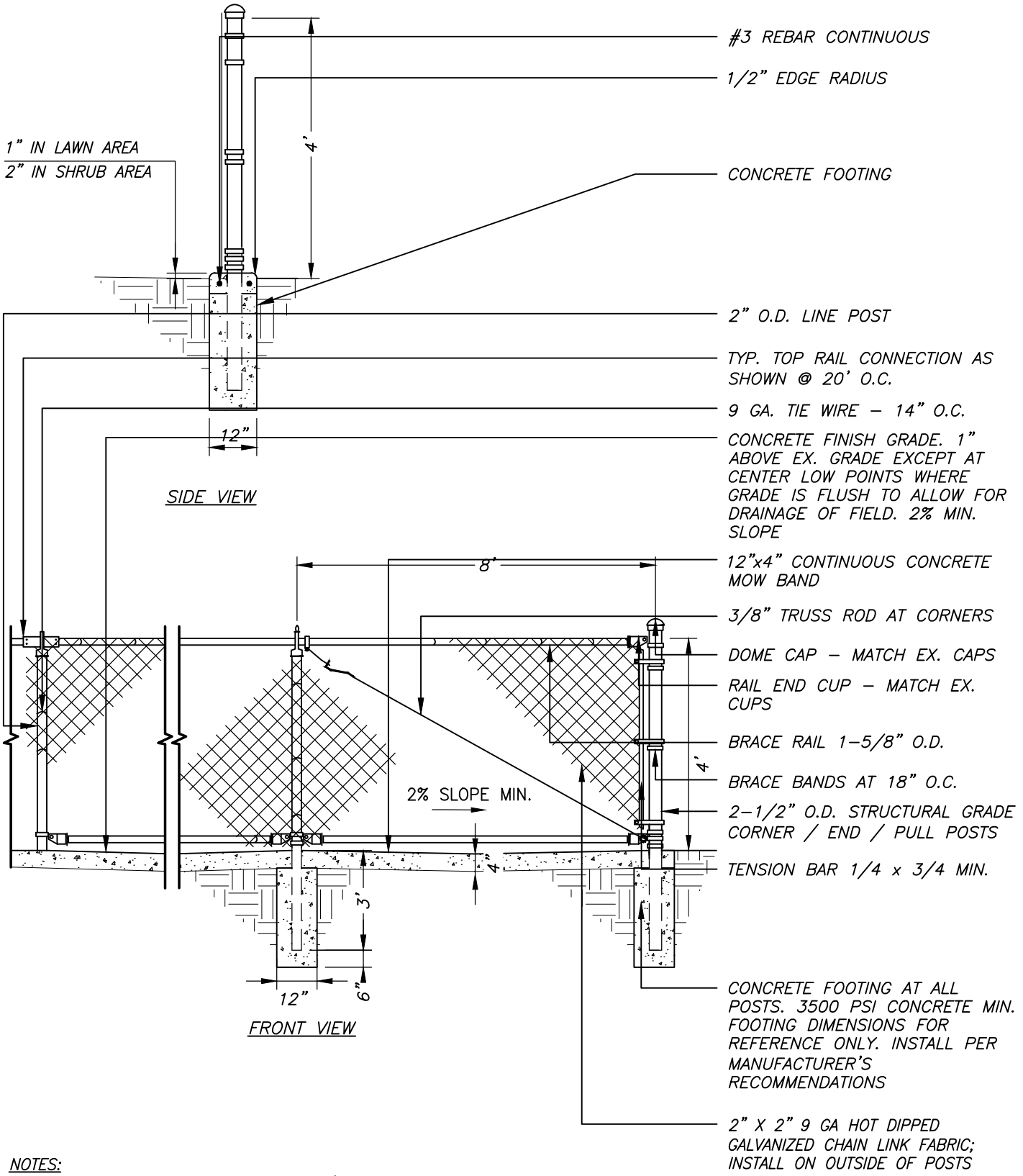
ATTACH SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE PER ORDINANCE SECTION 492.11.

PART 5: LANDSCAPE IRRIGATION AUDIT REPORT

ATTACH LANDSCAPE IRRIGATION AUDIT REPORT PER ORDINANCE SECTION 492.12.

PART 6: SOIL MANAGEMENT REPORT

ATTACH SOIL ANALYSIS REPORT, IF NOT PREVIOUSLY SUBMITTED WITH THE LANDSCAPE DOCUMENT PACKAGE PER ORDINANCE SECTION 492.5.
ATTACH DOCUMENTATION VERIFYING IMPLEMENTATION OF RECOMMENDATIONS FROM SOIL ANALYSIS REPORT PER ORDINANCE SECTION 492.5.



NOTES:

A. INSTALL FENCE PER MANUFACTURER'S RECOMMENDATIONS.
B. ALL POSTS, RAILS, AND HARDWARE TO BE HOT DIPPED GALVANIZED METAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

CHAIN LINK FENCE 4' HIGH

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

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NTS

May 28, 2020 – 3:24pm
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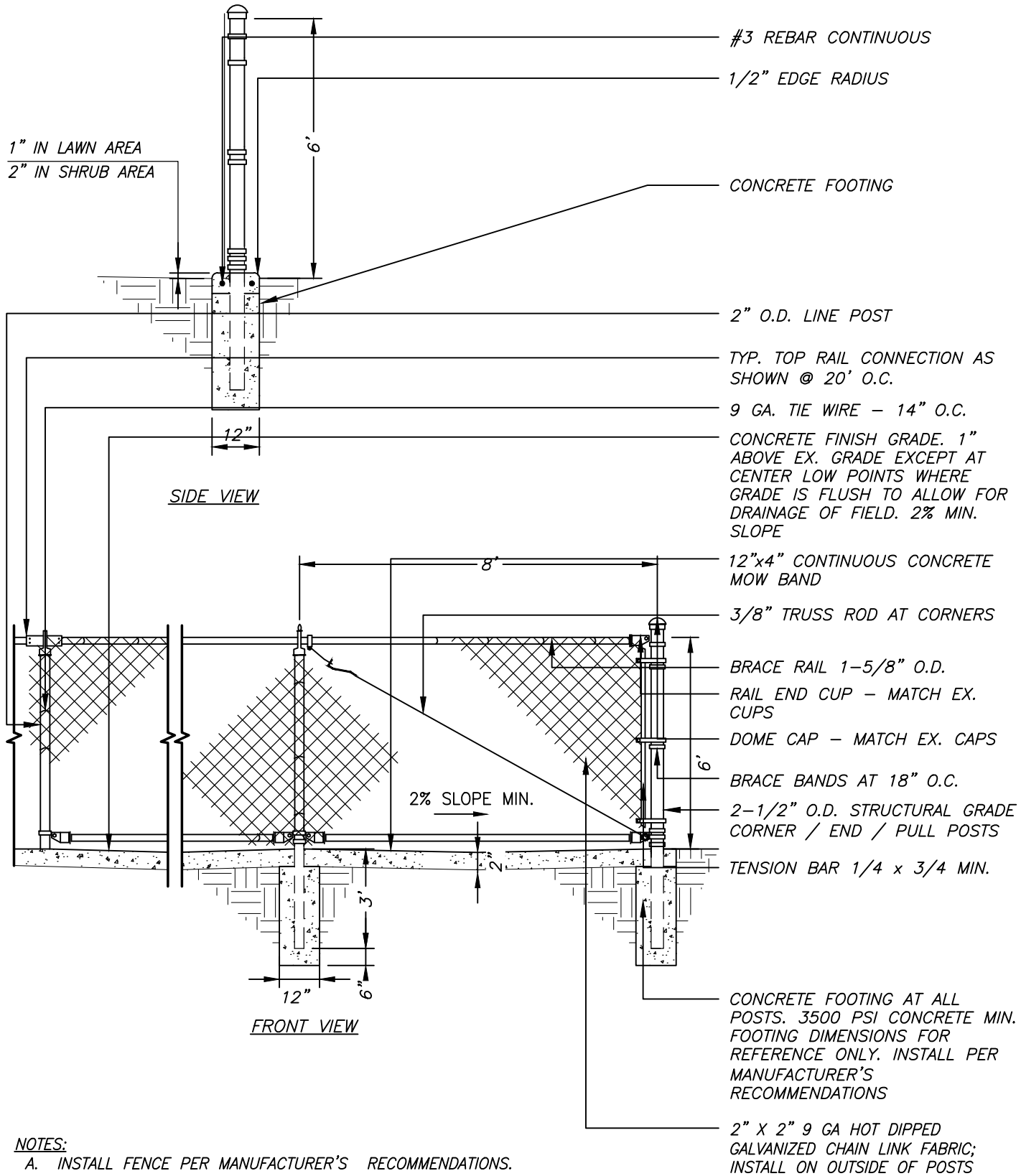

NOTES:

A. INSTALL FENCE PER MANUFACTURER'S RECOMMENDATIONS.
B. ALL POSTS, RAILS, AND HARDWARE TO BE HOT DIPPED GALVANIZED METAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

CHAIN LINK FENCE 6' HIGH

FERNANDO ULLOA, CITY ENGR.
02/03/16 DATE
62736 R.C.E. NO.
DRAWING NO. F-2
NTS

May 28, 2020 - 3:25pm
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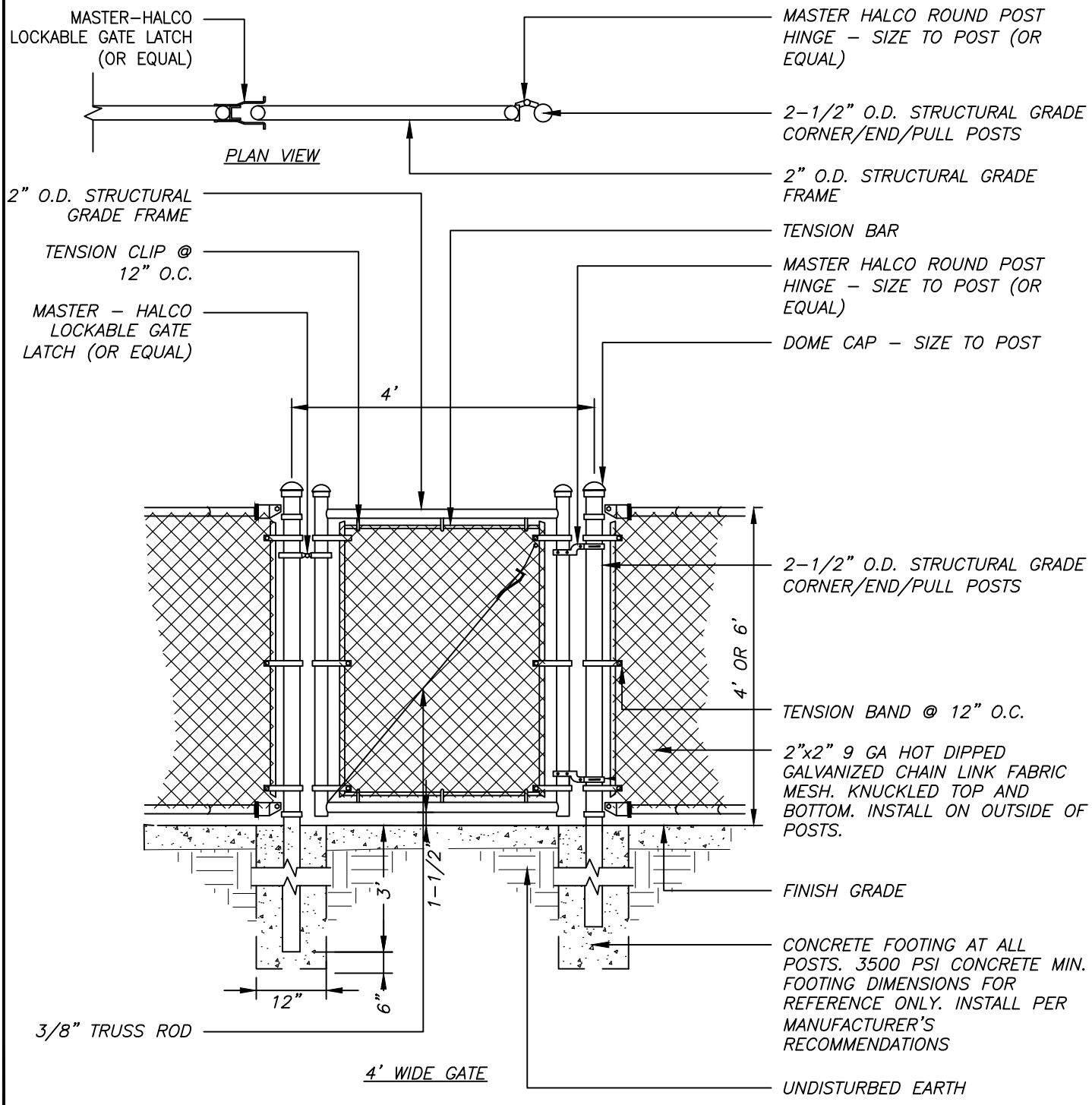

NOTES:
1. ALL POSTS, RAILS, AND HARDWARE TO BE HOT DIPPED GALVANIZED METAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

CHAIN LINK FENCE PEDESTRIAN GATE

DRAWING NO. F-3
NTS

May 28, 2020 – 3:25pm
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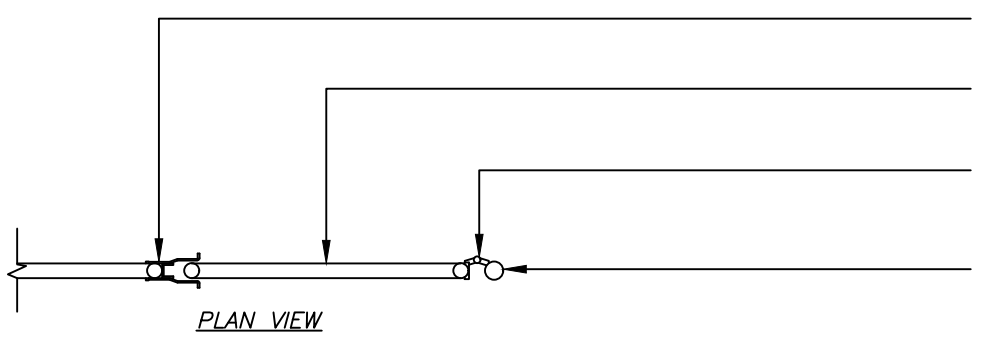
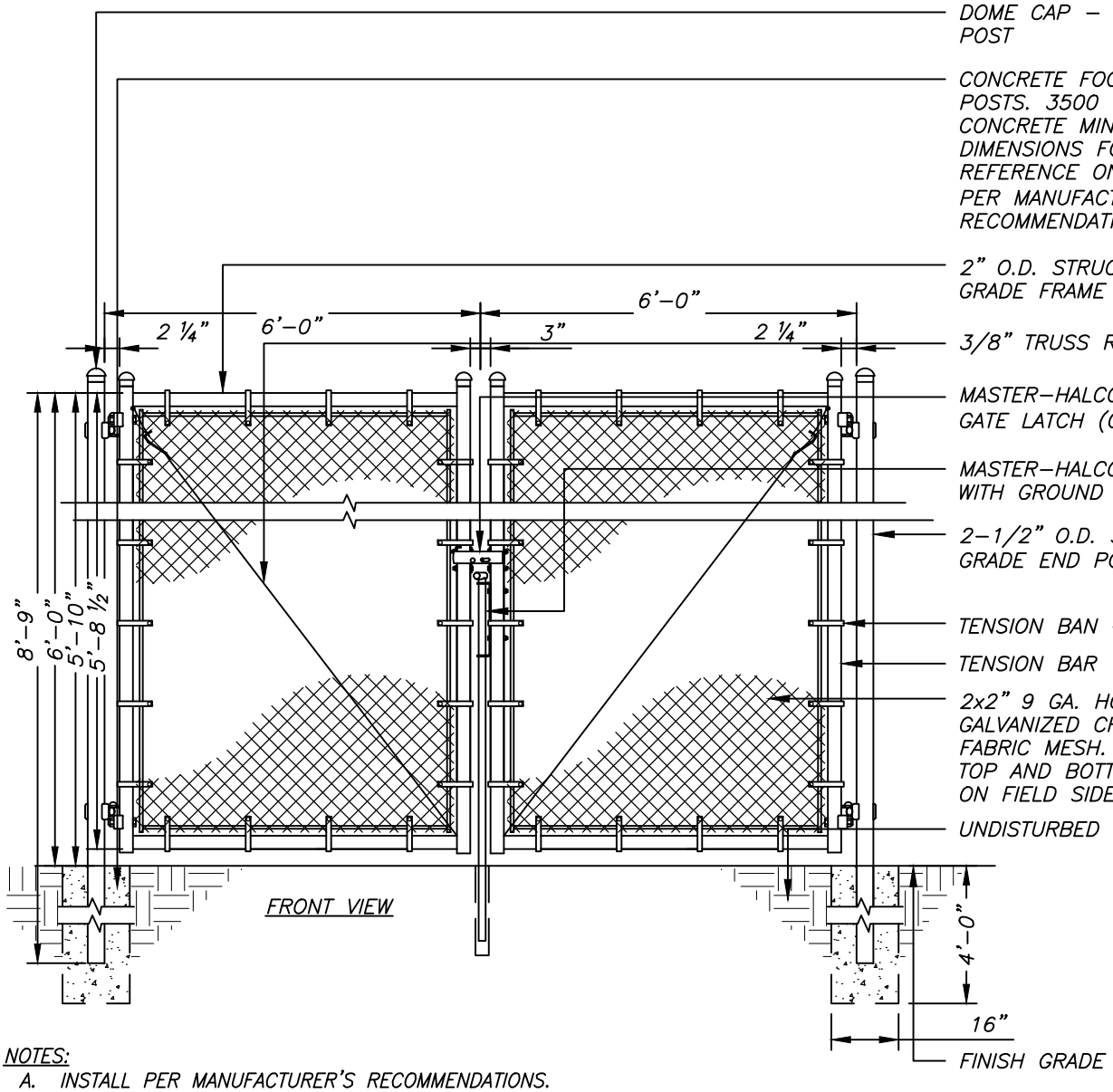


PLAN VIEW



FRONT VIEW

NOTES:

A. INSTALL PER MANUFACTURER'S RECOMMENDATIONS.
B. GATE TO TIE INTO AND MATCH EXISTING FENCING ON SITE. ANY DISCREPANCIES BETWEEN THESE DETAILS AND ACTUAL FENCING TO BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT BEFORE COMMENCING WORK.
C. ALL POSTS, RAILS, AND HARDWARE TO BE HOT DIPPED GALVANIZED MATERIAL.
D. DAMAGE TO EXISTING FENCING DURING CONSTRUCTION SHALL BE REPAIRED OR REPLACED BY CONTRACTOR. AT NO COST TO THE CITY.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

CHAIN LINK FENCE SERVICE GATE 6' HIGH

DRAWING NO. F-4
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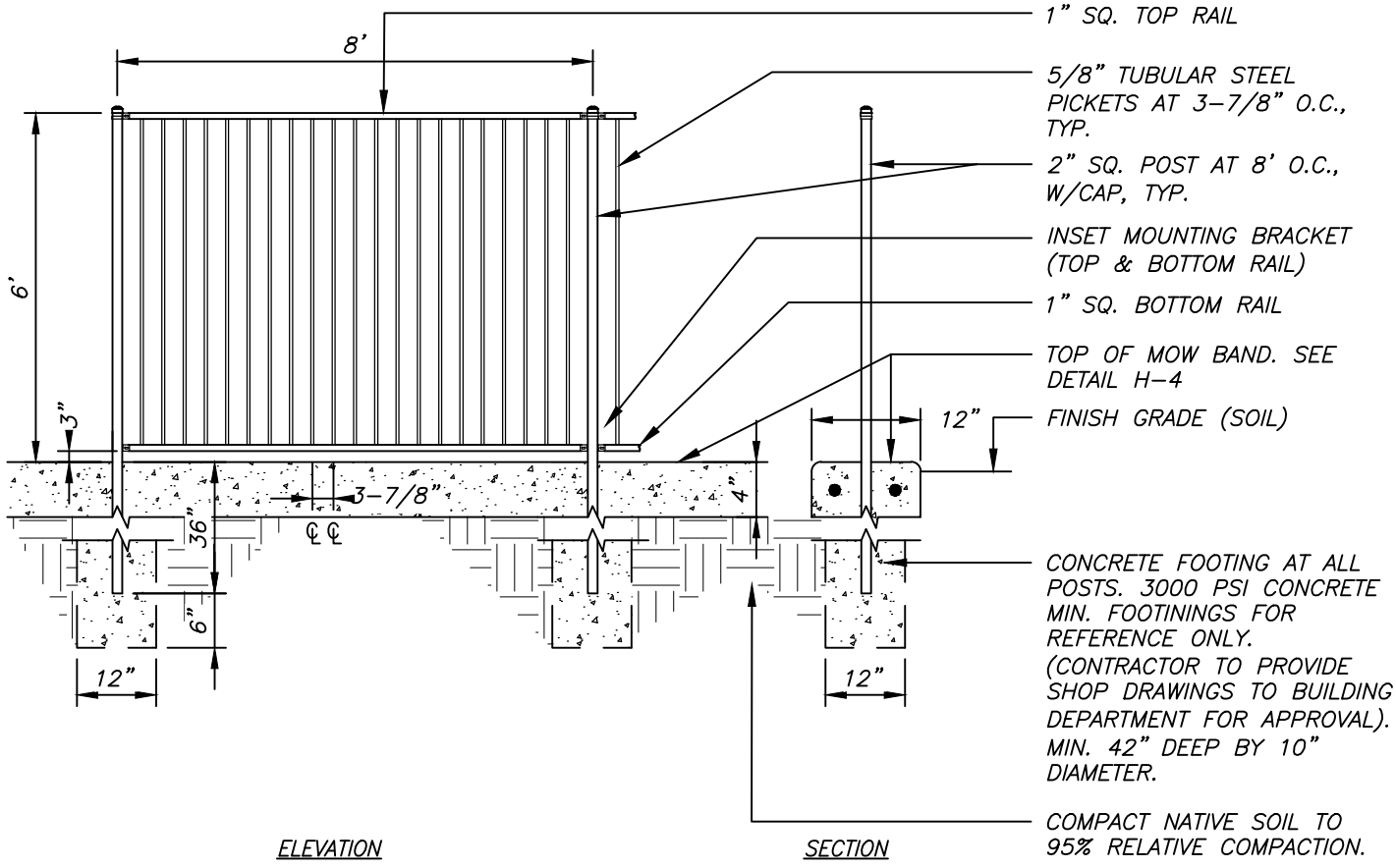

NOTES:

A. PRODUCT: BFC REGAL (LIGHT GALVAGUARD II) 6'.
B. ALL PARTS TO BE TUBULAR STEEL.
C. GRIND SMOOTH ALL WELDS.
D. PRIME AND APPLY 2 COATS OF BLACK PAINT TO MARRED COMPONENTS.
E. ALL PAINT AND PRIMER SHALL BE APPLIED TO CLEAN SURFACES IN 5 MIL. COATS.
F. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TUBULAR STEEL FENCE

FERNANDO ULLOA, CITY ENGR.
02/03/16 DATE
62736 R.C.E. NO.
DRAWING NO. F-5
NTS

May 28, 2020 - 3:25pm
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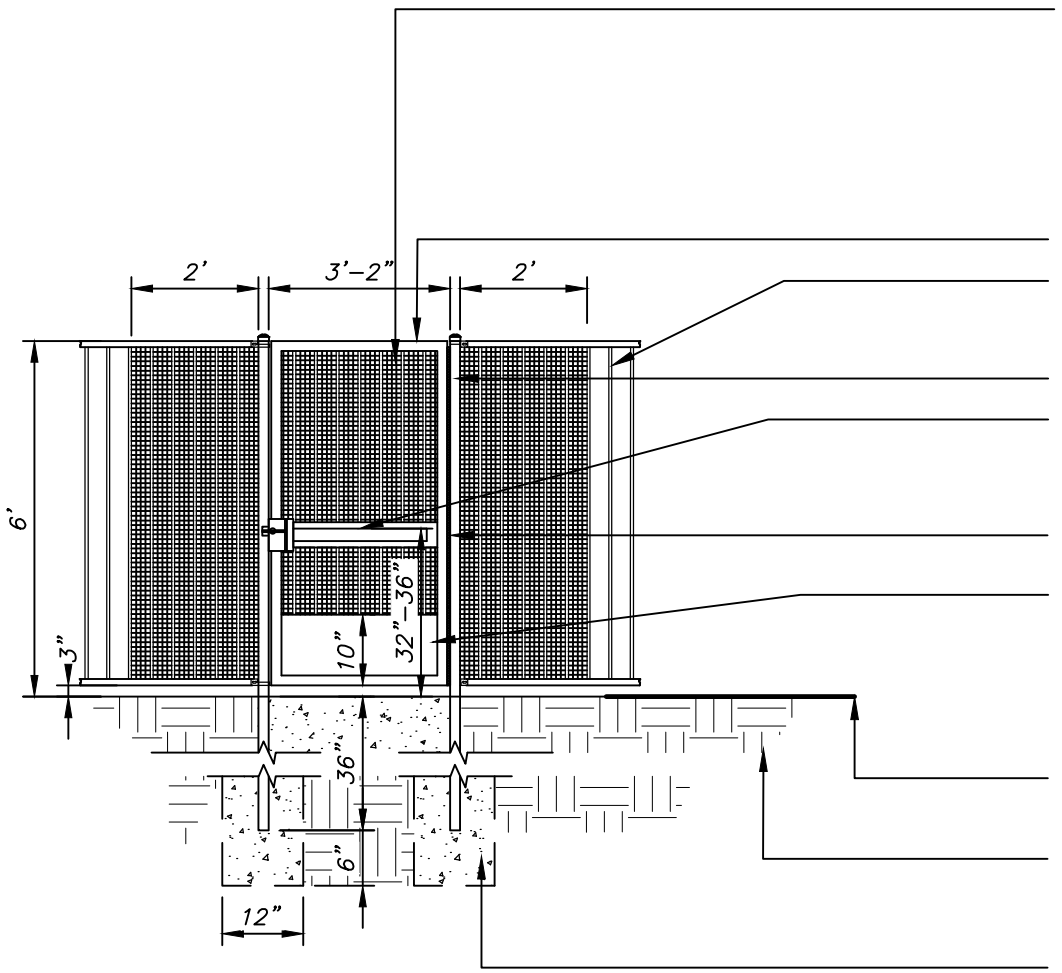

ELEVATION

#12 AWS STEEL SQUARE WEAVE WIRE MESH WITH 1" GRID OPENINGS ATTACHED WITH WELDED CONNECTION TO TOP RAIL, BOTTOM RAIL, AND POST/PICKETS AS NEEDED. PAINT TO MATCH FENCE.

2" SQ. GATE FRAME

5/8" TUBULAR STEEL PICKETS AT 3-7/8" O.C., TYP.

2" SQ. POST, TYP.

EXTERIOR PANIC BAR ON INSIDE OF GATE, WITH KEYED LOCKING HAND LEVER ON OUTSIDE

HEAVY DUTY SELF CLOSING HINGES.

10" HIGH STEEL KICK PLATE ON BOTH SIDES OF GATE. WELD AND GRIND SMOOTH.

FINISH GRADE (SOIL)

COMPACT NATIVE SOIL TO 95% RELATIVE COMPACTION.

CONCRETE FOOTING AT ALL POSTS. 3000 PSI CONCRETE MIN. FOOTININGS FOR REFERENCE ONLY. (CONTRACTOR TO PROVIDE SHOP DRAWINGS TO BUILDING DEPARTMENT FOR APPROVAL). MIN. 42" DEEP BY 10" DIAMETER.

NOTES:

A. PRODUCT: BFC REGAL (LIGHT GALVAGUARD II) 6'.
B. ALL PARTS TO BE TUBULAR STEEL.
C. GRIND SMOOTH ALL WELDS.
D. PRIME AND APPLY 2 COATS OF BLACK PAINT TO MARRED COMPONENTS.
E. ALL PAINT AND PRIMER SHALL BE APPLIED TO CLEAN SURFACES IN 5 MIL. COATS.
F. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

TUBULAR STEELGATE

DRAWING NO. F-6
NTS

May 28, 2020 - 3:25pm
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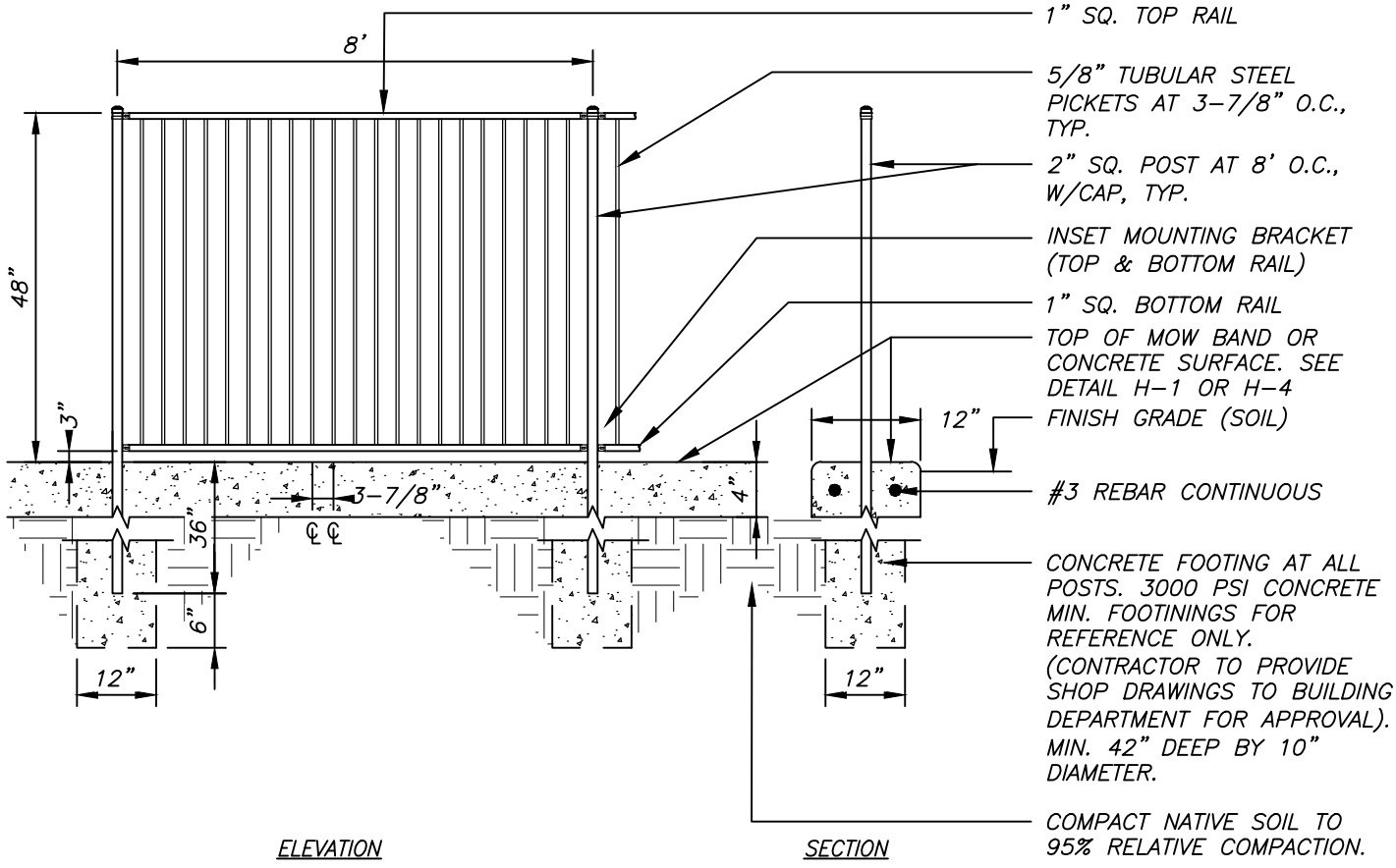

NOTES:

A. A 48" TALL FENCE SHALL BE INSTALLED BETWEEN THE PLAYGROUND AND AN ADJACENT STREET WHEN PLAYGROUND IS WITHIN 100' OF A STREET.
B. PRODUCT: BFC REGAL (LIGHT GALVAGUARD II) 6'.
C. ALL PARTS TO BE TUBULAR STEEL.
D. GRIND SMOOTH ALL WELDS.
E. PRIME AND APPLY 2 COATS OF BLACK PAINT TO MARRED COMPONENTS.
F. ALL PAINT AND PRIMER SHALL BE APPLIED TO CLEAN SURFACES IN 5 MIL. COATS.
G. FIELD VERIFY ALL DIMENSIONS PRIOR TO CONSTRUCTION.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

TUBULAR STEEL FENCE AT PLAYGROUND

DRAWING NO. F-7
NTS

May 28, 2020 - 3:25pm
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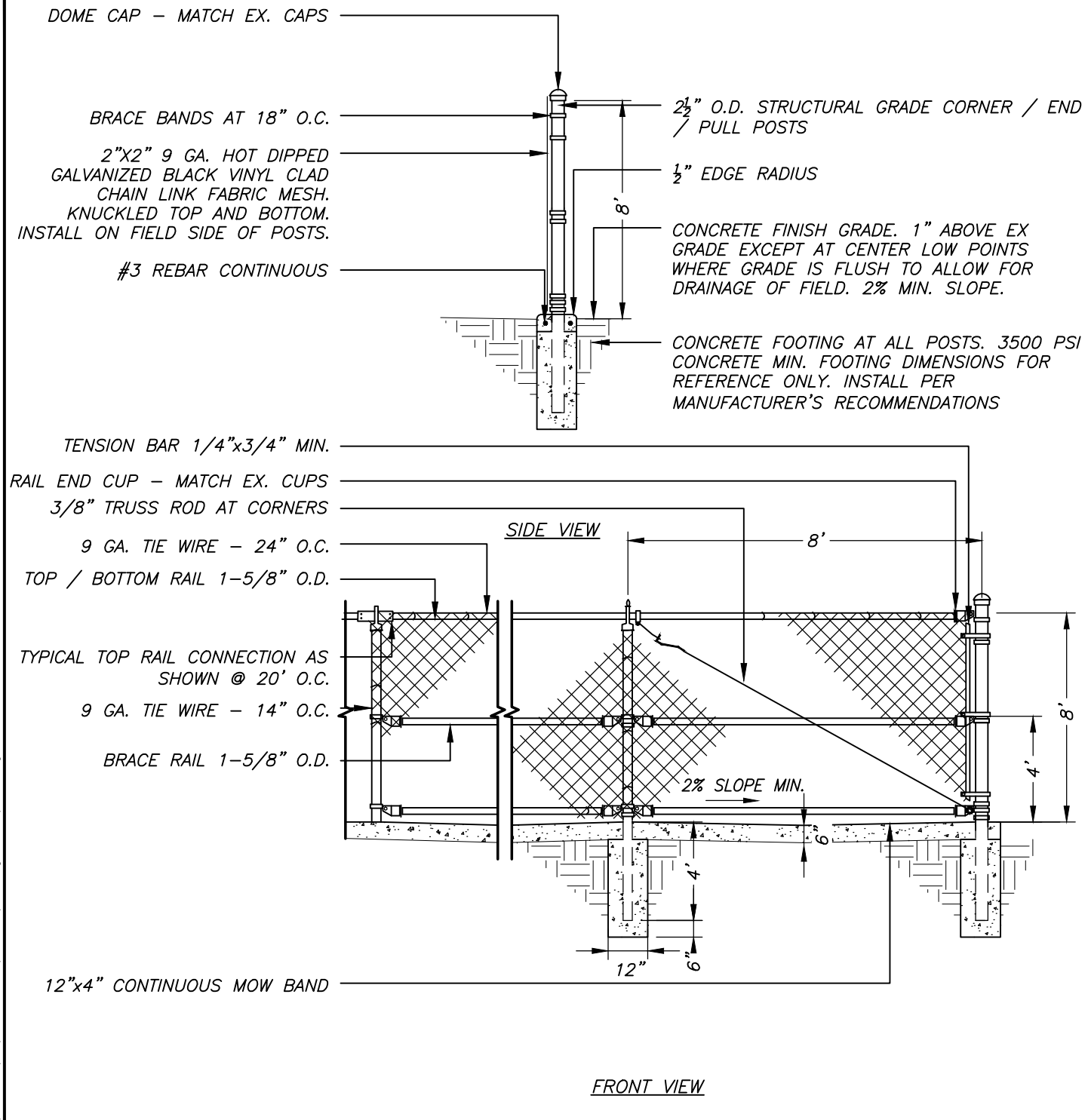

NOTES:

A. INSTALL FENCE PER MANUFACTURER'S RECOMMENDATIONS.
B. ALL POSTS, RAILS, AND HARDWARE TO BE HOT DIPPED GALVANIZED MATERIAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

SPORTS COURT FENCING

FERNANDO ULLOA, CITY ENGR.
02/03/16 DATE
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DRAWING NO. F-8
NTS

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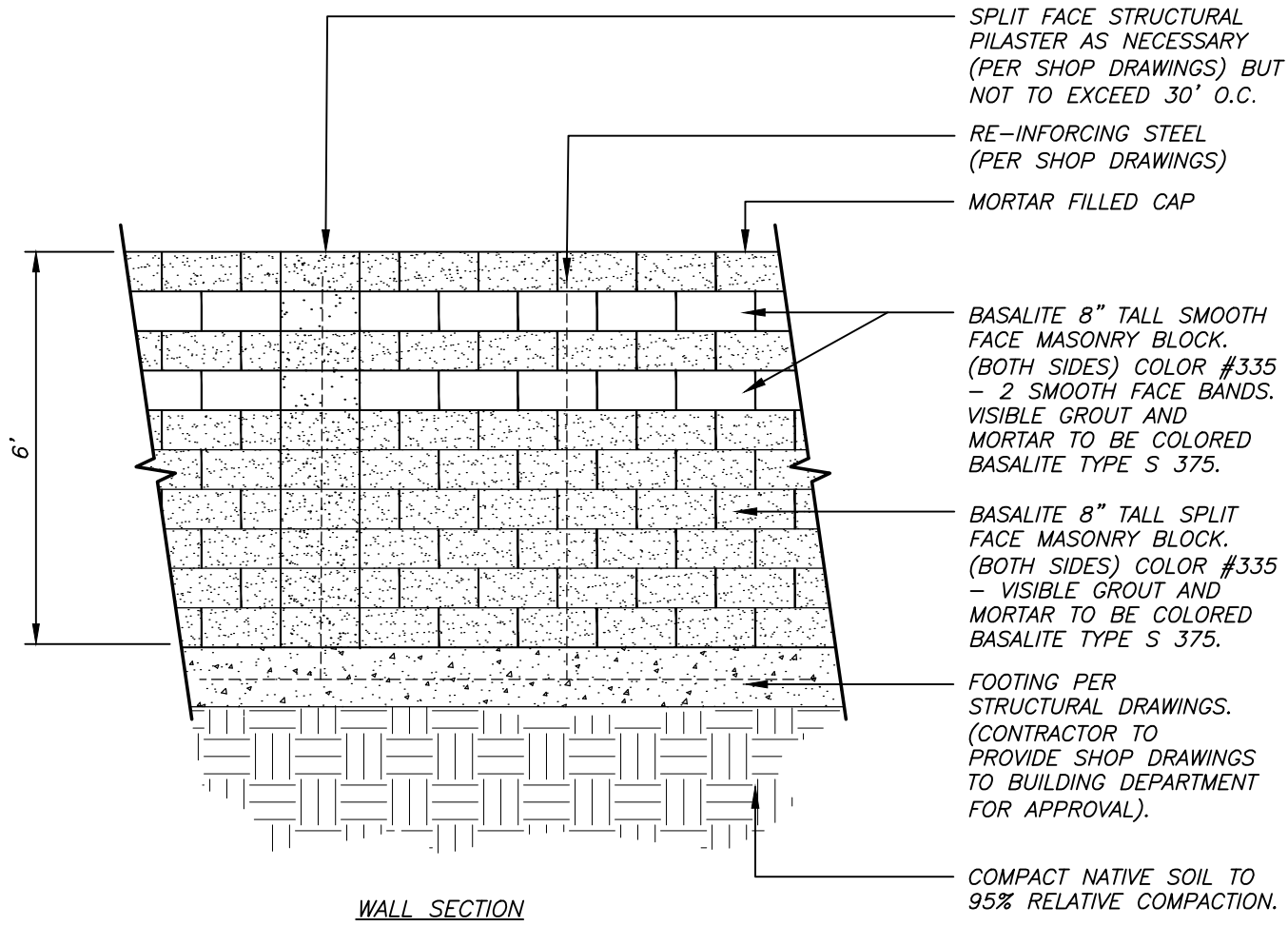

WALL SECTION

NOTES:

A. THIS DETAIL IS NOT PROVIDED FOR CONSTRUCTION PURPOSES. IT IS SHOWN FOR GUIDANCE PURPOSES ONLY. CONTRACTOR TO SUPPLY SHOP DRAWINGS FOR APPROVAL.

B. ONE COAT OF ANTI-GRAFFITI SEALANT TO BE APPLIED PRIOR TO PROJECT ACCEPTANCE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

MASONRY UNIT WALL

DRAWING NO. F-9

NTS

May 28, 2020 - 3:25pm
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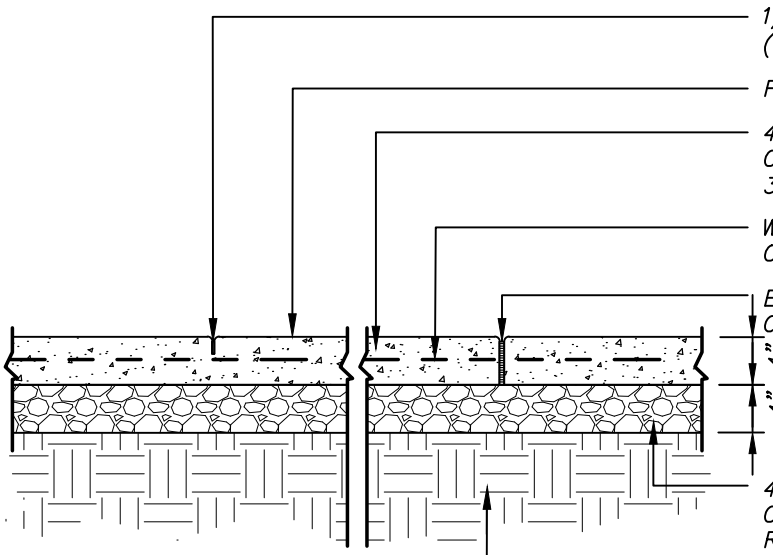

NOTES:

A. SEE SITE FEATURES PLANS AND LEGEND FOR CONCRETE COLOR & FINISH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

STANDARD CONCRETE FLATWORK

DRAWING NO. H-1

NTS

May 28, 2020 - 3:25pm
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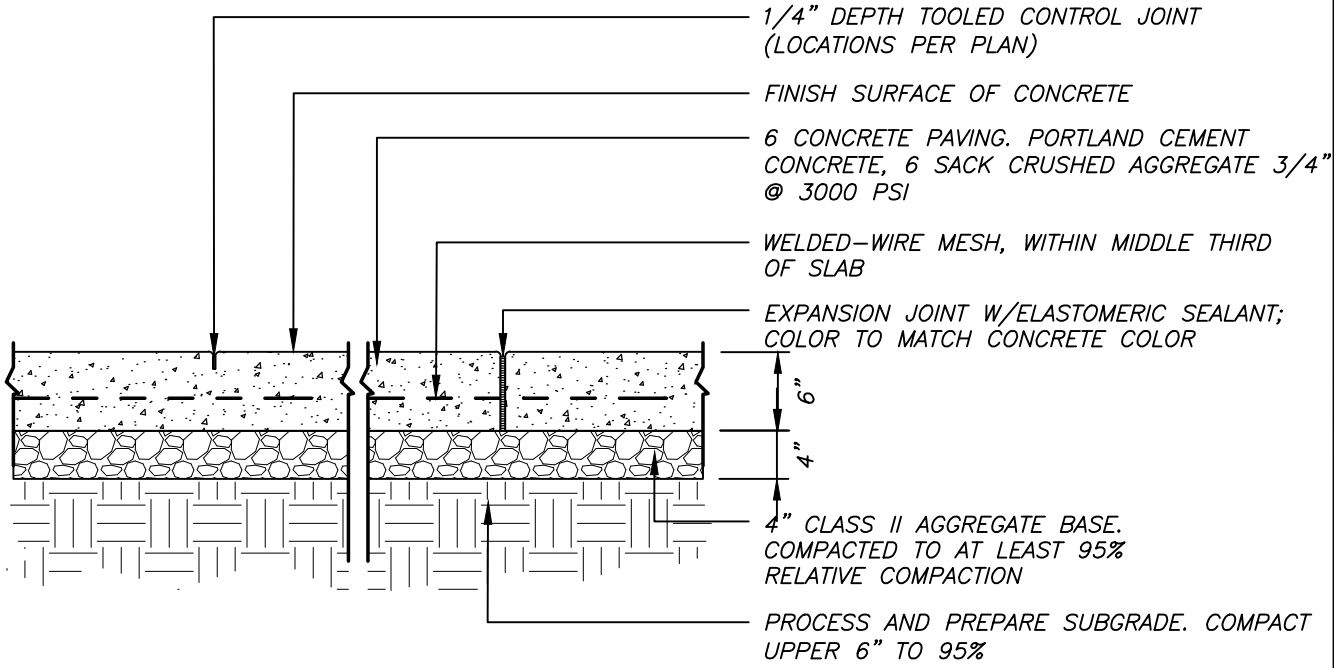

NOTES:

A. SEE SITE FEATURES PLANS AND LEGEND FOR CONCRETE COLOR & FINISH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

STANDARD CONCRETE FLATWORK (STRUCTURAL)

DRAWING NO. H-2

NTS

May 28, 2020 - 3:25pm
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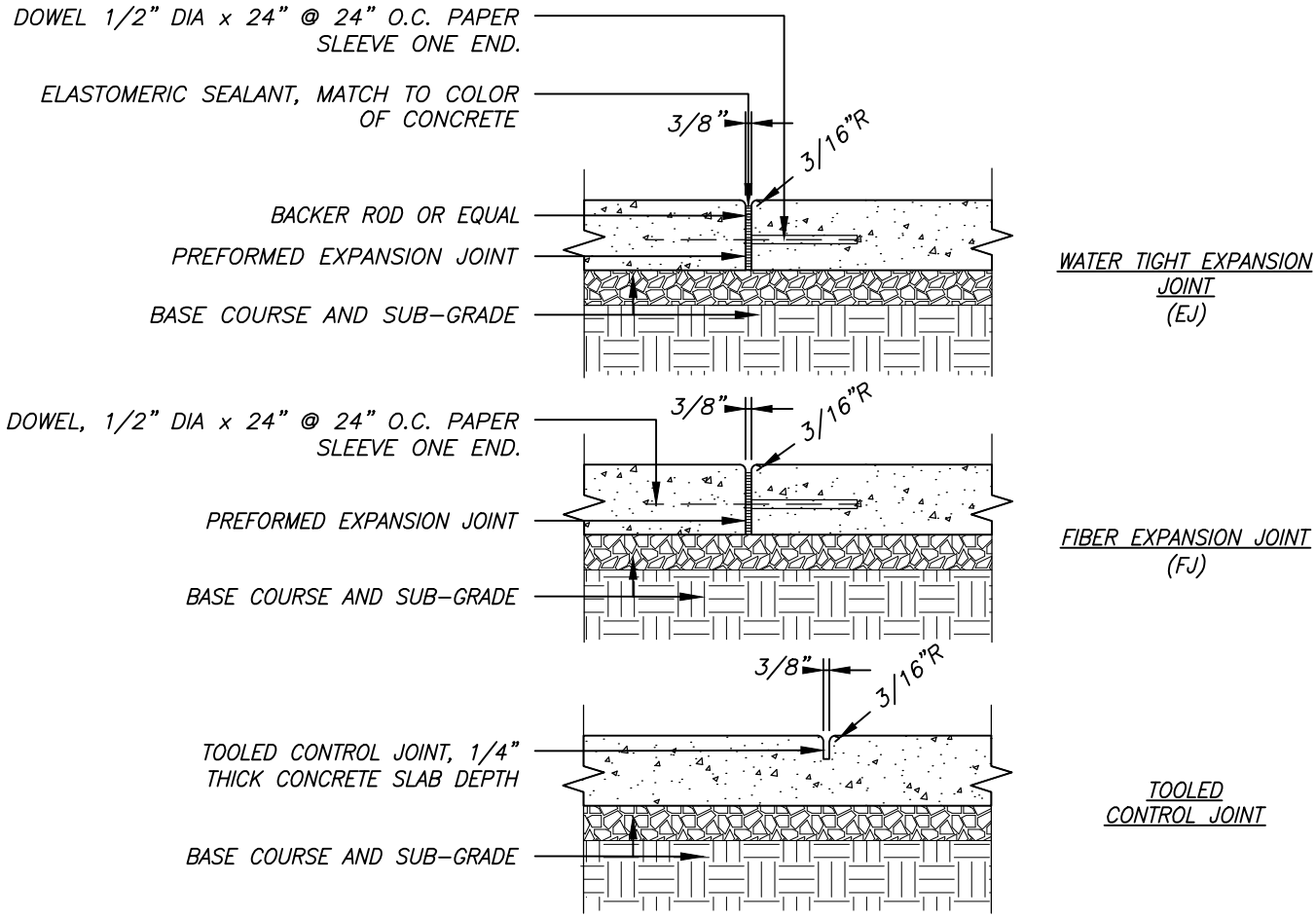

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
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62736
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CONCRETE JOINTING

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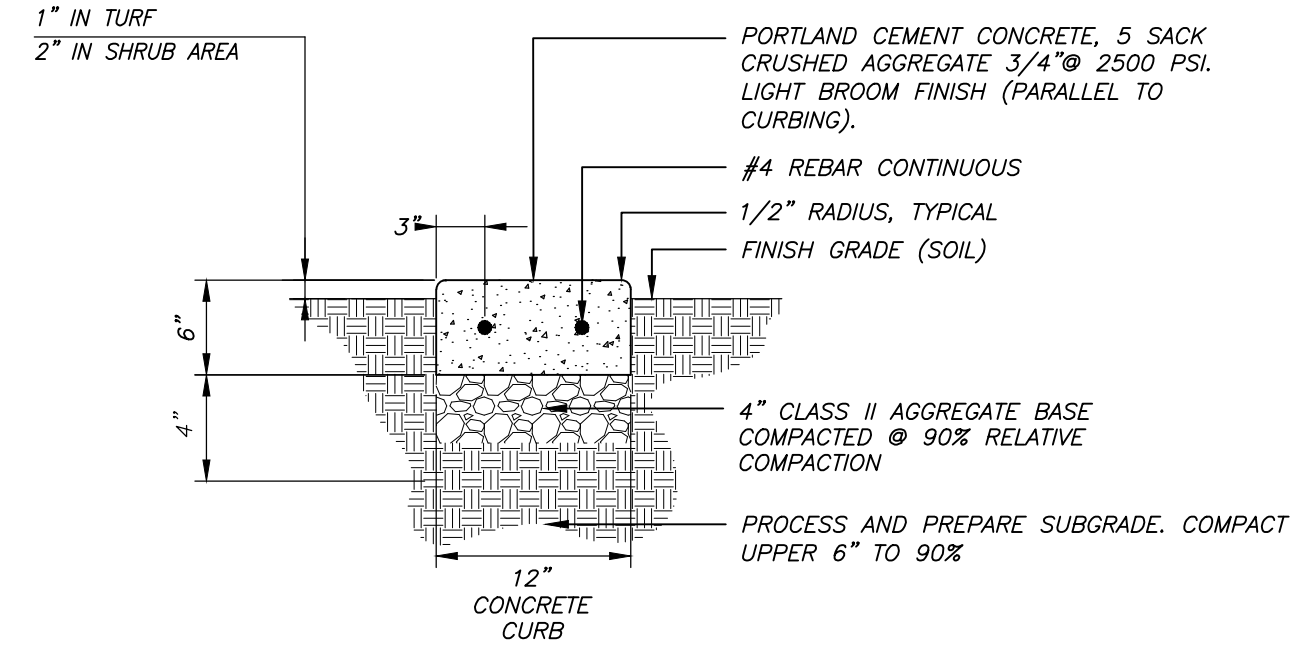

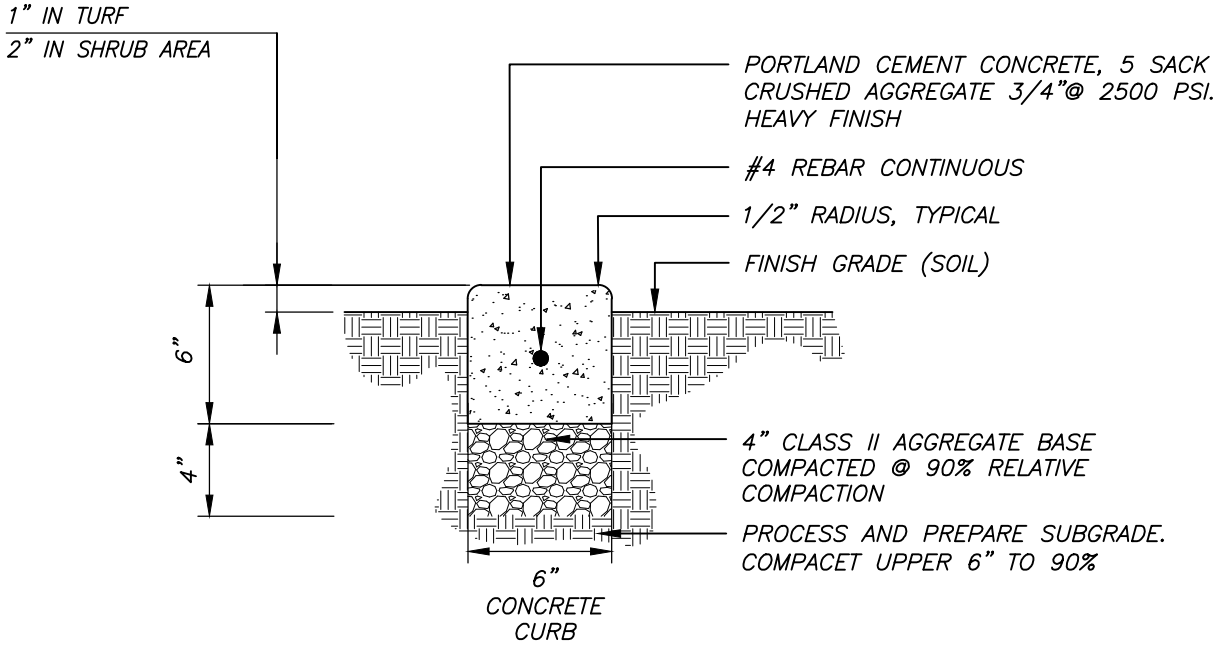

NOTES:

A. 3/8" ASPHALT IMPREGNATED EXPANSION JOINTS SHALL BE PLACED @ 20' O.C. TRIM 1/4" BELOW FINISH SURFACE, TYPICAL.

B. CONTROL JOINTS SHALL BE PLACED @ 10' O.C., TYPICAL.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

CONCRETE MOW STRIP

FERNANDO ULLOA, CITY ENGR.

02/03/16 DATE

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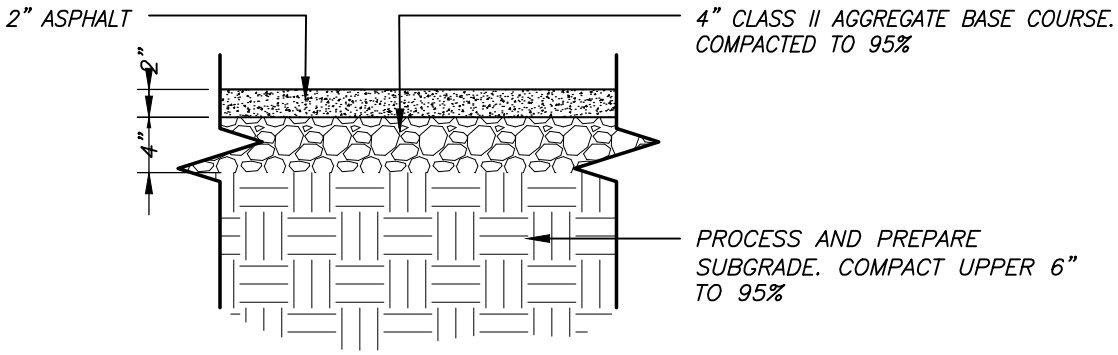

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

ASPHALT PAVING

FERNANDO ULLOA, CITY ENGR.

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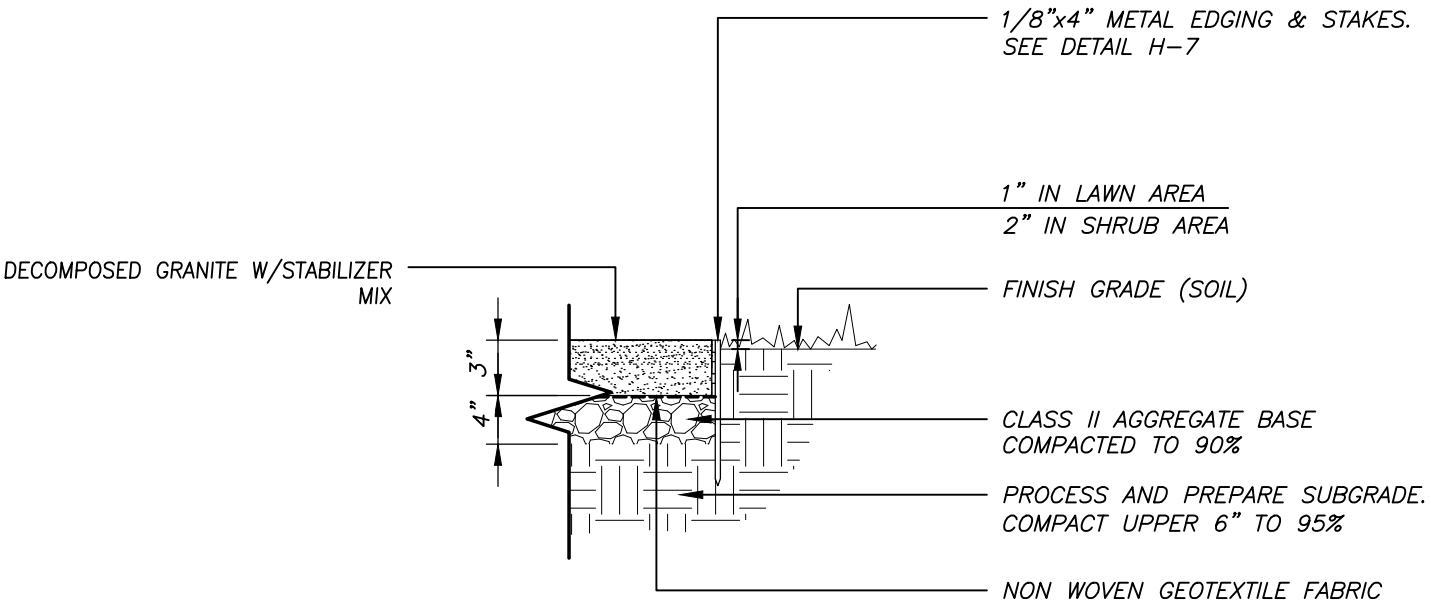

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DRAWN BY: O'DELL

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DECOMPOSED GRANITE SURFACING

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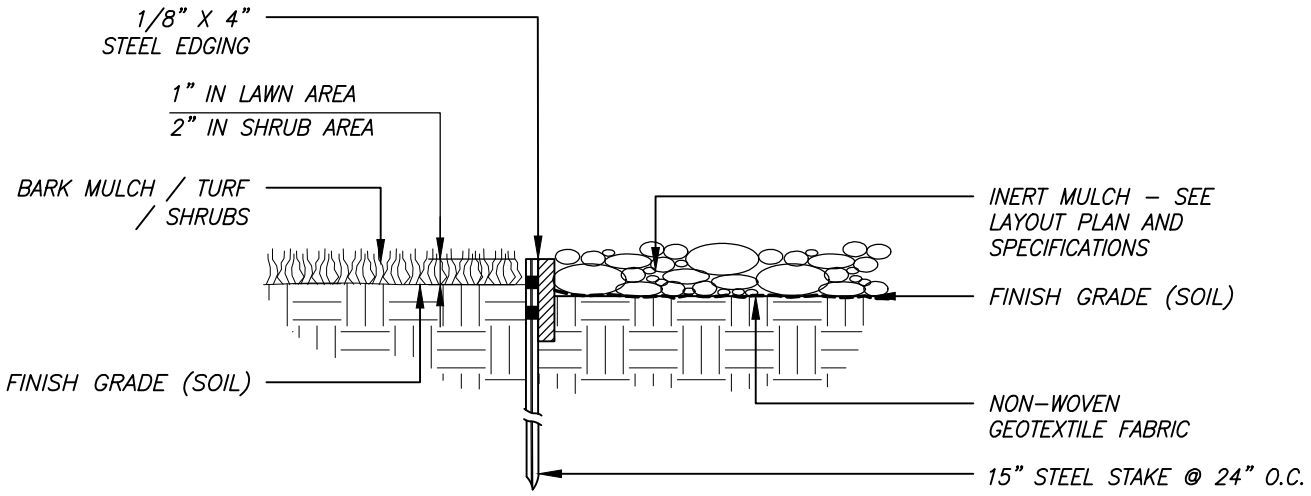

NOTES:

A. HOLD GRADE 3" LOWER @ COBBLE / INERT MULCH SIDE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

STEEL EDGING

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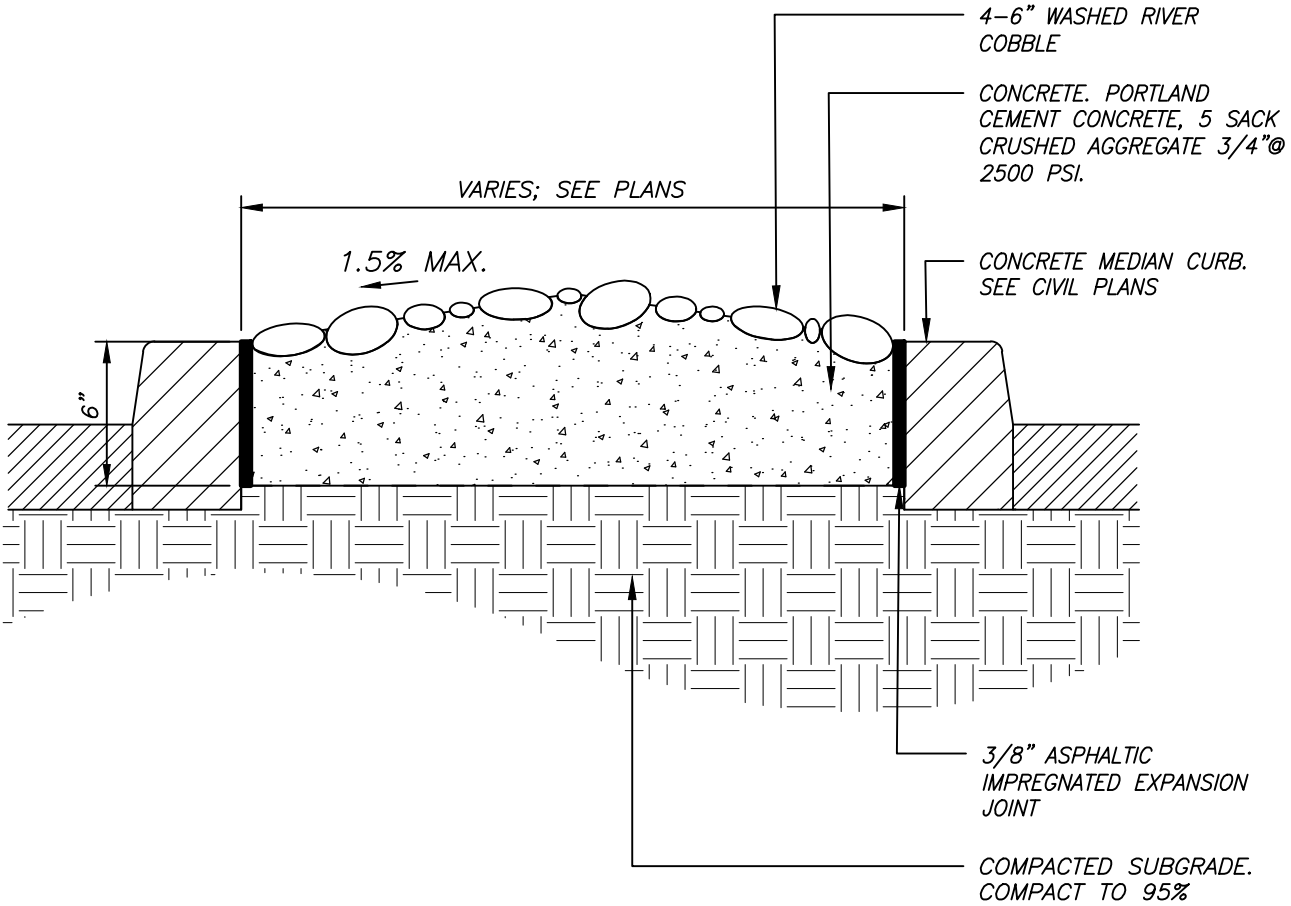

NOTES:

A. CONTRACTOR SHALL LAY ALL COBBLES WITH THE FLAT SIDE FACING UP. SELECT THE BEST SIZE COBBLE FOR THE AVAILABLE SPACE.
B. CONCRETE SHALL SET COBBLES TO 75% DEPTH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
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COBBLE SET IN CONCRETE

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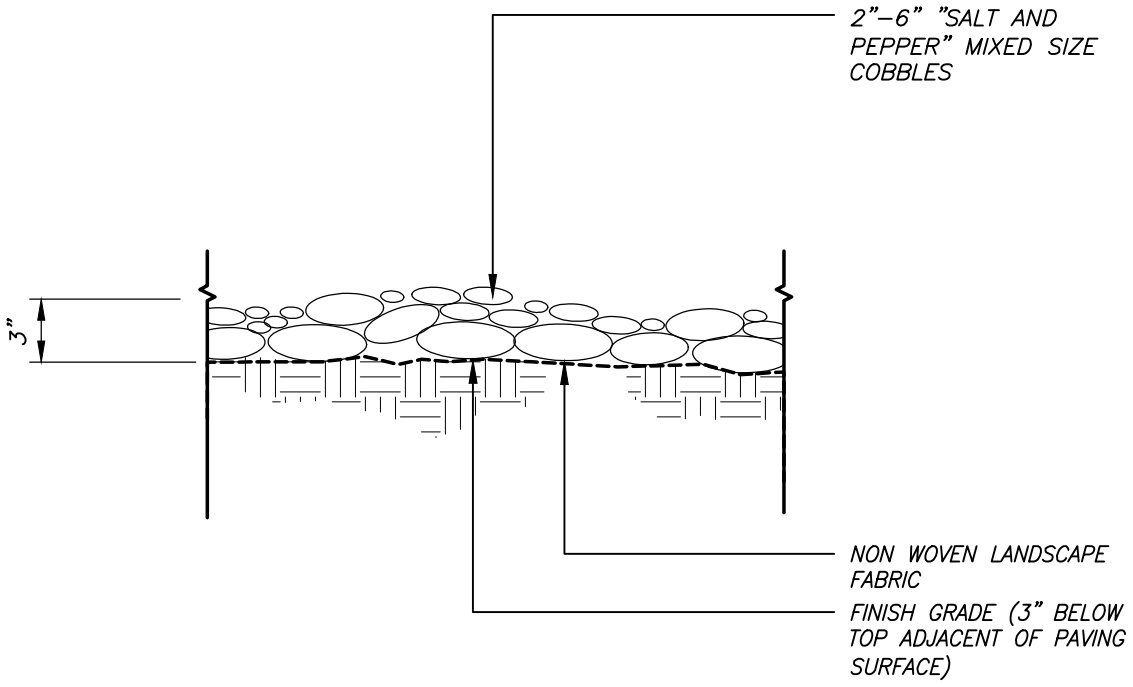

CITY OF PATTERSON IMPROVEMENT STANDARDS

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CHECKED BY: M. WILLETT

APPROVED BY:

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COBBLE INSTALLATION

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GENERAL IRRIGATION GUIDELINES

1. ALL IRRIGATION SYSTEMS SHALL BE INSTALLED WITH A REDUCED PRESSURE BACKFLOW PREVENTION ASSEMBLY WITHIN FIVE (5') FEET OF WATER METER. NO BACKFLOW PREVENTION ASSEMBLY IS REQUIRED ON NON-POTABLE SERVICES.
2. IRRIGATION MAIN LINES SHALL USE SCHEDULE 40 SOLVENT WELD PIPE WITH SCHEDULE 80 SOLVENT WELD FITTINGS FOR PIPE SIZES 3" AND SMALLER. FOR MAIN LINE 4" AND LARGER USE CLASS 315 GASKETED PIPE WITH LEEMCO STRAP FITTINGS. ALL MAIN LINE SHALL HAVE DETECTABLE TAPE ALONG FULL LENGTH OF MAIN LINE.
3. IRRIGATION LATERAL LINES SHALL USE SCHEDULE 40 SOLVENT WELD PIPE WITH SCHEDULE 40 SOLVENT WELD FITTINGS.
4. THRUST BLOCKS SHALL BE PROVIDED TO RESIST SYSTEM PRESSURE ON GASKETED PIPE AND FITTINGS.
5. QUICK COUPLERS SHALL BE PROVIDED AT INTERVALS OF 150' ON STREETSCAPES. QUICK COUPLERS SHALL BE SPACED AT 200' AND AT ALL FUNCTIONAL USE ZONES (PICNIC AREAS, PLAYGROUNDS, PLAY AREAS, ETC. WITHIN PARKS. QUICK COUPLERS SHALL BE INSTALLED WITH A PRE-MANUFACTURED SWING JOINT WITH DUAL "O"-RINGS AND THREAD STOPS.
6. REMOTE CONTROL VALVES SHALL ONLY CONTAIN ONE (1) VALVE PER PLASTIC BOX.
7. ALL THREADED PVC FITTINGS SHALL BE WRAPPED WITH TEFLON TAPE, MINIMUM THREE WRAPS. EXCEPTIONS ARE FOR PRE-MANUFACTURED SWING JOINTS WITH BUILT-IN "O"-RINGS. THE USE OF "PIPE DOPE" IS NOT ALLOWED ON ANY PLASTIC VALVES.
8. WIRE SPLICES AND CONNECTIONS SHALL BE MADE WITH 3M DBY/R CONNECTORS. ALL SPLICES SHALL BE MADE IN VALVE BOX ONLY AND SHALL BE LOCATED ON AS-BUILT DRAWINGS.
9. VALVE WIRE SHALL BE BURIED WITH MAIN LINE (18" MINIMUM COVER). COMMON WIRE TO BE WHITE, CONTROL WIRES TO EACH CONTROLLER SHALL BE THE SAME COLOR. INSTALL ONE (1) EXTRA WIRE FOR EVERY TEN (10) VALVES. EXTRA WIRE SHALL BE OF A DIFFERENT COLOR THAN COMMON AND CONTROL WIRES. MINIMUM WIRE SIZE TO BE 14 GAUGE.
10. FOR CONVENTIONAL WIRING PROJECTS (SINGLE STRAND); LEAVE A 36" COIL OF EXCESS WIRE AT EACH SPLICE BOX, AND AT EACH VALVE BOX. PIG TAIL 18" OF WIRE AT EACH SPLICE/CONNECTION. FOR 2-WIRE PROJECTS; LEAVE A 6' COIL OF EXCESS WIRE AT EACH SPLICE BOX AND AT EACH VALVE BOX WITH A DECODER; AND STRIP 24" OF THE OUTSIDE SHEATHING OF THE 2-WIRE BUNDLE; DO NOT PIG TAIL WIRES AT SPLICE/CONNECTION.
11. ALL VALVE WIRES SHALL BE LABELED BY NUMBER WITH PERMANENT MARKING IN THE CONTROLLER.
12. ALL VALVE BOXES SHALL BE HOT STAMPED OR ENGRAVED WITH 2" TALL LETTERS. BOXES SHALL BE MARKED AS FOLLOWS: MASTER VALVE = MV, FLOW SENSOR = FS, GATE VALVE = GV, QUICK COUPLER = QC, SPLICE BOX = SB, SURGE PROTECTOR = SP. FOR REMOTE CONTROL VALVES MARK THE BOXES WITH THE CORRESPONDING VALVE NUMBER: EXAMPLE: RCV A21.
13. THE CITY OF PATTERSON DOES NOT ACCEPT IN-LINE DRIP TUBING OR POINT SOURCE DRIP TUBING WITH SPAGHETTI TUBING AND EMITTERS WITHIN CITY MAINTAINED LANDSCAPE AREA.
14. NO OVERHEAD IRRIGATION DISTRIBUTION IS ALLOWED WITHIN MULCHED (SHRUB/GROUNDCOVER) BEDS.
15. ALL POP-UP SPRAY/ROTARY NOZZLE HEADS SHALL HAVE AN INTEGRAL CHECK VALVE TO PREVENT LOW HEAD DRAINAGE AND SHALL HAVE AN INTEGRAL PRESSURE REGULATING DEVICE. ACCEPTED MANUFACTURERS: RAIN BIRD & HUNTER
16. ALL POP-UP ROTOR HEADS SHALL HAVE AN INTEGRAL CHECK VALVE TO PREVENT LOW HEAD DRAINAGE AND SHALL HAVE AN INTEGRAL PRESSURE REGULATING DEVICE (IF AVAILABLE). ACCEPTED MANUFACTURERS: RAIN BIRD & HUNTER
17. ALL POP-UP OVERHEAD IRRIGATION DISTRIBUTION DEVICES SHALL BE INSTALLED WITH EITHER SCHEDULE 80 THREE-SWING ASSEMBLY OR A PRE-MANUFACTURED SWING JOINT WITH DUAL "O"-RINGS AND THREAD STOPS.
18. ALL SHRUBS/GROUNDCOVER SHALL BE IRRIGATED WITH BUBBLERS ON FLEXIBLE TUBING.
19. ALL TREES SHALL BE IRRIGATED SEPARATELY FROM SHRUB/GROUNDCOVER/LAWN AREAS.
20. ALL OVERHEAD IRRIGATION HEADS SHALL NOT BE PLACED WITHIN 24" OF ANY NON-PERMEABLE SURFACE UNLESS THE ADJACENT NON-PERMEABLE SURFACE DRAINS IMMEDIATELY TO A LANDSCAPE AREA.
21. NO OVERHEAD IRRIGATION SHALL BE INSTALLED IN AREAS LESS THAN TEN (10') FEET WIDE IN ANY DIRECTION.
22. NO OVERSPRAY ONTO NON-TARGET AREAS SHALL BE PERMITTED ADJUSTMENTS TO THE IRRIGATION SYSTEM SHALL BE MADE TO ENSURE THIS AND WILL BE VERIFIED AT THE TIME OF FINAL IRRIGATION AUDIT. ANY CHANGES SHALL BE MADE AT THE CONTRACTORS EXPENSE.
23. SPRINKLER HEADS AT THE TOP OF SLOPES SHALL BE VALVED SEPARATELY FROM SPRINKLERS AT THE BOTTOM OF SLOPES.
24. CONTROLLER SPEC.:
    (2-WIRE CELLULAR COMMUNICATION): RAIN MASTER EAGLE+ 2-WIRE CONTROLLER (MODEL #: EGP-TW-SPED/EGP-ICENTRAL/PMRKIT & TORO TWRS WIRELESS RAIN SENSOR).
    (CONVENTIONAL WIRE CELLULAR COMMUNICATION): RAIN MASTER EAGLE+ CONVENTIONAL CONTROLLER (MODEL #: EGP-8-SPED/EGP-ICENTRAL/PMRKIT & TORO TWRS WIRELESS RAIN SENSOR).
25. LOCATE WIRELESS RAIN SENSOR WITHIN 30' (LINE-OF-SITE). MOUNT SENSOR AT LEAST 6' HIGH WITH NO OVERHEAD OBSTRUCTIONS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

GENERAL IRRIGATION NOTES

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GENERAL IRRIGATION GUIDELINES (CONTINUED)

26. MAIN LINE IRRIGATION NEEDS TO BE CENTER LOADED WITH VALVES INSTALLED AND FITTING COMPLETELY VISIBLE. A WATER PRESSURE OF 125 PSI SHALL BE APPLIED AND HELD FOR 2.5 HOURS. ALL LEAKS SHALL BE REPAIRED AND ALL LINES APPROVED BY THE CITY BEFORE ANY OF THE SYSTEM IS BACKFILLED. ALL TESTING SHALL BE DONE IN THE PRESENCE OF A CITY OF PATTERSON REPRESENTATIVE.
27. CONTRACTOR SHALL KEEP AN AS-BUILT FIELD COPY OF IRRIGATION SYSTEM SHOWING ALL CHANGES INCLUDING ALL WIRING AND SPLICES. MAIN LINE SHALL NOT BE BACKFILLED UNTIL AS-BUILT DRAWINGS ARE APPROVED BY THE LANDSCAPE ARCHITECT AND/OR A CITY OF PATTERSON REPRESENTATIVE. MARKED UP AS-BUILTS SHALL BE TURNED OVER TO THE CITY BEFORE MAINTENANCE BEGINS. AS-BUILTS SHALL BE MADE WITH RED PEN AND SHALL BE DIMENSIONED FROM 2-POINTS OF PERMANENCE.
28. CONTRACTOR SHALL PROVIDE (2) COPIES OF AN 11"X17" COLOR CODED LAMINATED CONTROLLER CHART ON THE IRRIGATION PLAN.
29. ALL WATERING SHALL PROGRAMMED TO TAKE PLACE BETWEEN THE HOURS OF 10PM TO 7AM. IRRIGATION AUDIT SHALL PROVIDE PROOF OF PROGRAMMING WITHIN OPERATIONAL HOURS.
30. IRRIGATION SYSTEM MUST BE COMPLETE AND FULLY OPERATIONAL AND AN IRRIGATION AUDIT BE PERFORMED AND PASSED BEFORE ANY PLANTING BEGINS. ANY CHANGES TO THE IRRIGATION SYSTEM IN ORDER TO PASS THE IRRIGATION AUDIT WILL BE DONE AT THE CONTRACTORS EXPENSE.
31. IRRIGATION SYSTEM MUST BE DESIGNED WITH A WATER AUDIT FOR THE PLANT ESTABLISHMENT PERIOD AND LONG TERM MAINTENANCE. AUDIT SHALL INCLUDE APPLIED WATER IRRIGATION, IRRIGATION DAYS PER WEEK, CYCLES PER DAY, MINUTES OF RUN TIME PER CYCLE. CONSIDERATION SHOULD BE GIVEN TO THE FLOW RATE, AREA COVERED BY VALVE, AND PRECIPITATION RATE. WATER AUDIT REPORT SHALL BE SUBMITTED TO THE CITY ALONG WITH THE LANDSCAPE AND IRRIGATION AS-BUILTS AND CERTIFICATE OF COMPLETION BEFORE PROJECT WILL BE ACCEPTED BY THE CITY.
32. PRESSURE LOSS CALCULATIONS SHALL BE PROVIDED UPON FIRST IRRIGATION SUBMITTAL TO THE CITY. SHOW LOSSES BASED ON VALVE WITH POTENTIAL FOR GREATEST LOSS.
33. ALL WARRANTY REPAIRS ARE TO BE COMPETED WITHIN (72) HOURS OF NOTIFICATION, OR CITY MAY MAKE REPAIRS AT THE CONTRACTORS EXPENSE.
34. WHEN IRRIGATION SYSTEM USES RECLAIMED WATER; ADD ALL PERTINENT COMPONENTS, DETAILS AND NOTES.

WATER EFFICIENT LANDSCAPE WORKSHEET

THIS WORKSHEET IS TO BE FILLED OUT BY THE PROJECT APPLICANT AND IT IS A REQUIRED ELEMENT OF THE LANDSCAPE DOCUMENTATION PACKAGE.
PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION A: HYDROZONE INFORMATION TABLE

PLEASE COMPLETE THE HYDROZONE TABLE(S) FOR EACH HYDROZONE. USE AS MANY TABLES AS NECESSARY TO PROVIDE THE SQUARE FOOTAGE OF LANDSCAPE AREA PER HYDROZONE.

Hydrozone or Valve	Water Use*	Irrigation Method**	Area (sq.ft.)	% of Landscape Area
TOTAL:				**100%**

**Water Use:*
HW = HIGH WATER USE PLANTS
MW = MODERATE WATER USE PLANTS
LW = LOW WATER USE PLANTS

***Irrigation Method*
MS = MICRO-SPRAY
S = SPRAY
R = ROTOR
RN = ROTARY NOZZLE
B = BUBBLER
D = DRIP
O = OTHER

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

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WATER EFFICIENT WORKSHEET (SECTION A)

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WATER EFFICIENT LANDSCAPE WORKSHEET

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PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION B: WATER BUDGET CALCULATIONS MAXIMUM APPLIED WATER ALLOWANCE (MAWA)

THE PROJECT'S MAXIMUM APPLIED WATER ALLOWANCE SHALL BE CALCULATED USING THIS EQUATION:

$$MAWA = (ETo)(0.62)\ [(ETAF \times LA) + (1-ETAF \times SLA)]$$

WHERE:

MAWA	=	MAXIMUM APPLIED WATER ALLOWANCE (GALLONS PER YEAR)
ETo	=	REFERENCE EVAPOTRANSPORATION RATE – 57.3
0.62	=	CONVERSION FACTOR (TO GALLONS PER SQFT)
ETAF	=	RESIDENTIAL LANDSCAPES = 0.55, NON-RESIDENTIAL LANDSCAPES = 0.45
LA	=	PORTION OF THE IRRIGATED LANDSCAPE AREA (SQFT). NON-IRRIGATED SPACE IS NOT INCLUDED.
SLA	=	PORTION OF THE LANDSCAPE AREA IDENTIFIED AS SPECIAL LANDSCAPE AREA (SQFT)
EPPT	=	

MAXIMUM APPLIED WATER ALLOWANCE = _____ GALLONS PER YEAR

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

(IF ADDITIONAL CALCULATIONS ARE NEEDED USE SHEET I-0.3.1

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

WATER EFFICIENT WORKSHEET (SECTION B)

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

HYDROZONE # / DESCRIPTION:

(IF ADDITIONAL CALCULATIONS ARE NEEDED, COPY THIS SHEET)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

WATER EFFICIENT WORKSHEET (SECTION B - CONTINUED)

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WATER EFFICIENT LANDSCAPE WORKSHEET

THIS WORKSHEET IS TO BE FILLED OUT BY THE PROJECT APPLICANT AND IT IS A REQUIRED ELEMENT OF THE LANDSCAPE DOCUMENTATION PACKAGE.
PLEASE COMPLETE ALL SECTIONS (A, B AND C) OF THE WORKSHEET.

SECTION C: WATER BUDGET CALCULATIONS ESTIMATED TOTAL WATER USE (ETWU)

THE PROJECT'S ESTIMATED TOTAL WATER USE SHALL BE CALCULATED USING THIS EQUATION:

ETWU = (ETO)(0.62) ETAF X LA

WHERE:
ETWU = ESTIMATED TOTAL WATER USE (GALLONS PER YEAR)
ETO = REFERENCE EVAPOTRANSPORATION RATE – 57.3
0.62 = CONVERSION FACTOR (TO GALLONS PER SQFT)
PF = PLANT FACTOR (HIGH WATER USE = 0.7–1.0, MODERATE WATER USE = 0.4–0.6, LOW WATER USE = 0.1–0.3)
IE = IRRIGATION EFFICIENCY (OVERHEAD SPRAY = 0.75, DRIP = 0.81)
ETAF = PLANT FACTOR / IRRIGATION EFFICIENCY
LA = PORTION OF THE IRRIGATED LANDSCAPE AREA (SQFT). NON–IRRIGATED SPACE IS NOT INCLUDED.
SLA = PORTION OF THE LANDSCAPE AREA IDENTIFIED AS SPECIAL LANDSCAPE AREA (SQFT)

Hydrozone or Valve	Plant Factor*	Irrigation Efficiency**	ETAF (PF/IE)	LA (Landscape Area)	ETAF x LA	ETWU (gallons)
Regular Landscape Areas						
REGULAR LANDSCAPE AREA ETWU TOTAL						
Special Landscape Areas						
			1			
			1			
			1			
			1			
SPECIAL LANDSCAPE AREA ETWU TOTAL						
ETWU TOTAL						
Maximum Allowed Water Allowance (MAWA) TOTAL						

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

WATER EFFICIENT WORKSHEET (SECTION C)

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MWELO PROJECT CHECKLIST

ON APRIL 1, 2015, GOVERNOR BROWN ISSUED EXECUTIVE ORDER, EO B-29-15 DIRECTING THE DEPARTMENT OF WATER RESOURCES TO UPDATE A PREVIOUS MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) TO BE MORE STRINGENT AND REDUCE LANDSCAPE WATER USE. EFFECTIVE DECEMBER 1, 2015, LOCAL AGENCIES ARE REQUIRED TO ENFORCE THE MWELO WITHIN THEIR JURISDICTIONS. MORE INFORMATION CAN BE FOUND AT HTTP://WWW.WATER.CA.GOV/wateruseefficiency/landscapeordinance/

PROJECT INFORMATION:

OWNER: _____ PHONE: _____

ADDRESS: _____ EMAIL: _____

SITE ADDRESS: _____ APN: _____

PROJECT TYPE: ☐ RESIDENTIAL ☐ NON-RESIDENTIAL ☐ LANDSCAPE REHABILITATION

☐ THIS CONSTRUCTION PROJECT IS EXEMPT BECAUSE THERE WILL NOT BE MORE THAN 500SQFT OF LANDSCAPE AREA INSTALLED. (THIS PROVISION IS APPLICABLE TO RESIDENTIAL AND NON-RESIDENTIAL PROJECTS)

☐ CURRENTLY, THIS PROJECT DOES NOT INCLUDE LANDSCAPING. I AM AWARE THAT FUTURE LANDSCAPE INSTALLATIONS MAY BE REQUIRED TO COMPLY WITH THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) REQUIREMENTS PER CALIFORNIA CODE OF REGULATIONS, TITLE 23, DIVISION 2, CHAPTER 2.7.

☐ THE PROJECT DOES INCORPORATE LANDSCAPING AND WILL COMPLY WITH AN MWELO MASTER PLAN SPECIFIC TO THE SUBDIVISION. SUBDIVISION NAME: _____

☐ THIS PROJECT DOES INCORPORATE LANDSCAPING IN EXCESS OF 500SQFT. (PLEASE PROVIDE INFORMATION BELOW AND SPECIFY THE COMPLIANCE METHOD TO BE USED):

TOTAL LANDSCAPE AREA (SQFT): _____ SPECIAL LANDSCAPE AREA (SQFT): _____

TURF AREA (SQFT): _____ NON-TURF AREA (SQFT): _____

(FOR RESIDENTIAL PROJECTS, THE TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS.)

COMPLIANCE METHOD:

☐ PRESCRIPTIVE (THE PRESCRIPTIVE COMPLIANCE METHOD, ALSO KNOWN AS APPENDIX D, MAY ONLY BE USED FOR LANDSCAPE AREAS 2500SQFT OR LESS. ITEMS INCLUDED IN APPENDIX D CHECKLIST ON THE REVERSE SIDE SHALL BE INCLUDED ON THE PLANS.)

☐ PERFORMANCE (SEE SEPARATE PERFORMANCE CHECKLIST AND INCLUDE INFORMATION ON THE PLANS.)

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

_____ _____

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE DATE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY: _____

FERNANDO ULLOA, CITY ENGR.

02/03/16 DATE

62736 R.C.E. NO.

MWELO PROJECT CHECKLIST (SECTION A)

DRAWING NO. I-0.4.0

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MWELO PROJECT CHECKLIST

FOR STAFF USE ONLY

MWELO PRESCRIPTIVE APPROACH DOCUMENTATION CHECKLIST

- ☐ COMPLETED PROJECT INFORMATION WORKSHEET
- ☐ LANDSCAPE DESIGN PLAN
- ☐ LANDSCAPE WATER EFFICIENCY CHECKLIST
  - ☐ DEDICATED IRRIGATION SUB-METER FOR NON RESIDENTIAL WITH AGGREGATE AREA OF 1,000 ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL NON-RESIDENTIAL
- ☐ CERTIFICATE OF COMPLETION

MWELO PERFORMANCE APPROACH DOCUMENTATION CHECKLIST

- ☐ COMPLETED PROJECT INFORMATION WORKSHEET
- ☐ LANDSCAPE DESIGN PLAN
- ☐ GRADING DESIGN PLAN
- ☐ IRRIGATION DESIGN PLAN
  - ☐ DEDICATED IRRIGATION SUB-METER FOR NON-RESIDENTIAL WITH AGGREGATE AREA OF 1,000 ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL NON-RESIDENTIAL
  - ☐ DEDICATED IRRIGATION SUB-METER FOR RESIDENTIAL WITH AGGREGATE AREA ≥ 5,000 SQFT
  - ☐ FLOW SENSORS ON ALL RESIDENTIAL WITH AGGREGATE AREA ≥ 5,000 SQFT
- ☐ WATER EFFICIENT LANDSCAPE WORKSHEET(S)
- ☐ SOIL ANALYSIS
  - ☐ SOIL TEXTURE
  - ☐ INFILTRATION RATE
  - ☐ PH, ORGANIC MATTER, ETC.
- ☐ CERTIFICATE OF COMPLETION: (REQUIRED AFTER INSTALLATION, PRIOR TO CERTIFICATE OF OCCUPANCY)
  - ☐ CERTIFICATE OF INSTALLATION
  - ☐ IRRIGATION SCHEDULING
  - ☐ LANDSCAPE AND IRRIGATION MAINTENANCE SCHEDULES
  - ☐ SOIL AMENDMENT DELIVERY TAGS
- ☐ IRRIGATION AUDIT REPORT (REQUIRED AFTER INSTALLATION, PRIOR TO CERTIFICATE OF OCCUPANCY)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY: Fernando Ulloa

FERNANDO ULLOA, CITY ENGR.

02/03/16 DATE

62736 R.C.E. NO.

MWELO PROJECT CHECKLIST (SECTION B)

DRAWING NO. I-0.4.1

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MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION

ON APRIL 1, 2015, GOVERNOR BROWN ISSUED EXECUTIVE ORDER, EO B-29-15 DIRECTING THE DEPARTMENT OF WATER RESOURCES TO UPDATE A PREVIOUS MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) TO BE MORE STRINGENT AND REDUCE LANDSCAPE WATER USE. EFFECTIVE DECEMBER 1, 2015, LOCAL AGENCIES ARE REQUIRED TO ENFORCE THE MWELO WITHIN THEIR JURISDICTIONS. MORE INFORMATION CAN BE FOUND AT HTTP://WWW.WATER.CA.GOV/wateruseefficiency/landscapeordinance/

PROJECT INFORMATION:

OWNER: _____ PHONE: _____

ADDRESS: _____ EMAIL: _____

SITE ADDRESS: _____

PROJECT TYPE: ☐ RESIDENTIAL ☐ NON-RESIDENTIAL ☐ LANDSCAPE REHABILITATION

☐ THIS PROJECT IS EXEMPT BECAUSE THERE WILL BE LESS THAN 500SQFT OF LANDSCAPE AREA INSTALLED. (THIS PROVISION IS APPLICABLE TO RESIDENTIAL AND NON RESIDENTIAL PROJECTS)

☐ CURRENTLY, THIS PROJECT DOES NOT INCLUDE LANDSCAPING. I AM AWARE THAT FUTURE LANDSCAPE INSTALLATIONS MAY BE REQUIRED TO COMPLY WITH THE MODEL WATER EFFICIENT LANDSCAPE ORDINANCE (MWELO) REQUIREMENTS PER CALIFORNIA CODE OF REGULATIONS, TITLE 23, DIVISION 2, CHAPTER 2.7.

☐ THE PROJECT DOES INCORPORATE LANDSCAPING AND WILL COMPLY WITH AN MWELO MASTER PLAN SPECIFIC TO THE SUBDIVISION. SUBDIVISION NAME: _____

☐ THIS PROJECT DOES INCORPORATE LANDSCAPING IN EXCESS OF 500SQFT. (PLEASE PROVIDE INFORMATION BELOW AND SPECIFY THE COMPLIANCE METHOD TO BE USED):

TOTAL LANDSCAPE AREA (SQFT): _____

TURF AREA (SQFT): _____

(FOR RESIDENTIAL PROJECTS, THE TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS.)

COMPLIANCE METHOD:

☐ PRESCRIPTIVE (THE PRESCRIPTIVE COMPLIANCE METHOD, ALSO KNOWN AS APPENDIX D, MAY ONLY BE USED FOR LANDSCAPE AREAS 2500SQFT OR LESS. ITEMS INCLUDED IN APPENDIX D CHECKLIST ON THE REVERSE SIDE SHALL BE INCLUDED ON THE PLANS.)

☐ PERFORMANCE (SEE SEPARATE PERFORMANCE CHECKLIST AND INCLUDE INFORMATION ON THE PLANS.)

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

_____ _____

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE DATE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY: _____

FERNANDO ULLOA, CITY ENGR.

02/03/16 DATE

62736 R.C.E. NO.

MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION (SEC. A)

DRAWING NO. I-0.4.2

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MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION, CONTINUED

LANDSCAPE WATER-EFFICIENCY (MWELO) PRESCRIPTIVE CHECKLIST
(CAN BE USED ONLY WHEN AGGREGATE LANDSCAPE AREAS ARE 2,500SQFT OR LESS)

LANDSCAPE PARAMETER	DESIGN MEASURES	LOCATION ON PLANS
COMPOST	INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR (4) CUBIC YARDS PER 1,000SQFT TO A DEPTH OF 6 INCHES INTO LANDSACPE AREA (UNLESS CONTRA-INDICATED BY A SOIL TEST)	
PLANT WATER USE	RESIDENTIAL: INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVERAGE WUCOLS PLANT FACTOR 0.3) FOR 75% OF THE PLANT AREA, EXCLUDING EDIBLES AND AREAS USING RECYCLED WATER. NON-RESIDENTIAL: INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVERAGE WUCOLS PLANT FACTOR 0.3) FOR 100% OF THE PLANT AREA, EXCLUDING EDIBLES AND AREAS USING RECYCLED WATER.	
MULCH	A MINIMUM 3-INCH LAYER OF MULCH SHOULD BE APPLIED ON ALL EXPOSED SOIUL SURFACES OF PLANTING AREAS, EXCEPT IN AREAS OF TURF OR CREEPING OR ROOTING GROUNDCOVERS	
TURF	TOTAL TURF AREA SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA. TURF IS NOT ALLOWED IN NON-RESIDENTIAL PROJECTS	
	TURF, IF UTILIZED, IS LIMITED TO SLOPES NOT EXCEEDING 25% AND IS NOT USED IN PARKWAYS LESS THAN 10 FT IN IWDTH	
	TURF, IF UTILIZED IN PARKWAYS, IS IRRIGATED BY SUB-SURFACE IRRIGATION OR OTHER TECHNOLOGY THAT PREVENTS OVERSPRAY OR RUNOFF	
IRRIGATION SYSTEM	IRRIGATION CONTROLLERS USE EVAPOTRANSPIRATION OR SOIL MOISTURE DATA AND UTILIZE A RAIN SENSOR	
	IRRIGATION CONTROLLER PROGRAMMING DATA WILL NOT BE LOST DUE TO AN INTERRUPTION IN THE PRIMARY POWER SOURCE	
	AREAS LESS THAN 10 FT IN ANY DIRECTION UTILIZE SUB-SURFACE IRRIGATION OR OTHER TECHNOLOGY THAT PREVENTS OVERSPRAY OR RUNOFF	
	A PRIVATE LANDSACPE SUB-METER IS INSTALLED AT NON-RESIDENTIAL LANDSCAPE AREAS OF 1,000 SQFT OR MORE	
CERTIFICATE OF COMPLETION	AT THE TIME OF FINAL INSPECTION, PARTS 1 AND 2 OF THE CERTIFICATE SHALL BE SIGNED AND EVIDENCE SHOWING COMPLIANCE WITH PARTS 3 AND 4 SHALL BE DEMONSTRATED	

NOTE
FOR THE PURPOSES OF THIS FORM LANDSCAPE AREA INCLUDES ALL THE PLANTING AREAS, TURF AREAS, AND WATER FEATURES IN A LANDSCAPE DESIGN PLAN SUBJECT TO THE MAXIMUM APPLIED WATER ALLOWANCE CALCULATION. THE LANDSCAPE AREA DOES NOT INCLUDE FOOTPRINTS OF BUILDINGS OR STRUCTURES, SIDEWALKS, DRIVEWAYS, PARKING LOTS, DECKS, PATIOS, GRAVEL, OR STONE WALKS, OTHER PERVIOUS HARDSCAPES, AND OTHER NON-IRRIGATED AREAS DESIGNATED FOR NON-DEVELOPMENT (E.G., OPEN SPACES AND EXISTING NATIVE VEGETATION).

SIGNATURE:

I CERTIFY THE ABOVE INFORMATION IS CORRECT AND AGREE TO COMPLY WITH THE REQUIREMENTS OF THE MWELO

SIGNATURE OF PROPERTY OWNER OR AUTHORIZED REPRESENTATIVE _____ DATE _____

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY: _____
FERNANDO ULLOA, CITY ENGR.

MWELO PRESCRIPTIVE METHOD PROJECT INFORMATION (SEC. B)

02/03/16 DATE
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MWELO PRESCRIPTIVE SUBMITTAL CHECKLIST

SUBMITTAL DATE: _____ PROJECT ADDRESS: _____

APPLICANT NAME: _____ PHONE NUMBER: _____

THESE REQUIREMENTS MAY BE USED TO COMPLY WITH THE CITY'S WATER EFFICIENT LANDSCAPE ORDINANCE IF THE TOTAL LANDSCAPE AREA IS LESS THAN 2,500SQFT. COMPLIANCE WITH ALL ITEMS IS MANDATORY AND MUST BE DOCUMENTED ON A LANDSCAPE PLAN

COVER SHEET

- ☐ CONTACT INFORMATION FOR THE PROJECT APPLICANT AND PROPERTY OWNER, PROJECT ADDRESS AND PARCEL NUMBERS(S)
- ☐ TOTAL LANDSCAPE AREA (SQFT), INCLUDING A BREAKDOWN OF TURF AND PLANT MATERIAL
- ☐ PROJECT TYPE (E.G., NEW, REHABILITATED, PUBLIC, PRIVATE, CEMETERY, HOMEOWNER INSTALLED)
- ☐ WATER SUPPLY TYPE AND THE LOCAL RETAIL WATER PURVEYOR (CALIFORNIA WATER SERVICE COMPANY)
- ☐ APPLICANT SIGNATURE AND DATE WITH THE FOLLOWING STATEMENT: "I AGREE TO COMPLY WITH THE REQUIREMENTS OF THE PRESCRIPTIVE COMPLIANCE OPTION TO THE WATER EFFICIENT LANDSCAPE ORDINANCE"
- ☐ INCLUDE THE FOLLOWING NOTE: "ALL LANDSCAPE AREAS SHALL INCORPORATE COMPOST AT A RATE OF AT LEAST FOUR CUBIC YARDS PER 1,000SQFT TO A DEPTH OF SIX INCHES"

PLANTING MATERIALS

- ☐ FOR RESIDENTIAL AREAS, INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER (AVG. WUCOLS PLANT FACTOR 0.3) FOR 75% OF THE PLANT AREA, EXCLUDING EDIBLES.
- ☐ FOR NON-RESIDENTIAL AREAS, INSTALL CLIMATE ADAPTED PLANTS THAT REQUIRE OCCASIONAL, LITTLE OR NO SUMMER WATER FOR 100% OF THE PLANT AREA, EXCLUDING EDIBLES
- ☐ A MINIMUM THREE INCH (3") LAYER OF MULCH SHALL BE APPLIED ON ALL EXPOSED SOIL SURFACES OF PLANTING AREAS EXCEPT IN TURF AREAS, CREEPING OR ROOTING GROUND COVERS, OR DIRECT SEEDING APPLICATIONS WHERE MULCH IS CONTRAINDICATED

TURF AREAS

- ☐ TURF SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA IN RESIDENTIAL AREAS, AND THERE SHALL BE NO TURF IN NON-RESIDENTIAL AREAS
- ☐ TURF SHALL NOT BE PLANTED ON SLOPED AREAS WHICH EXCEED A SLOPE OF 1 FOOT VERTICAL ELEVATION CHANGE FOR EVERY 4 FT OF HORIZONTAL LENGTH
- ☐ TURF IS PROHIBITED IN PARKWAYS LESS THAN 10 FT WIDE, UNLESS THE PARKWAY IS ADJACENT TO A PARKING STRIP AND USED TO ENTER AND EXIT VEHICLES. ANY TURF IN PARKWAYS MUST BE IRRIGATED BY SUB-SURFACE IRRIGATION OR BY OTHER TECHNOLOGY THAT CREATES NO OVERSPRAY OR RUNOFF

IRRIGATION SYSTEMS

- ☐ AUTOMATIC IRRIGATION CONTROLLERS ARE REQUIRED AND MUST EVATRANSPIRATION OR SOIL MOISTURE SENSOR DATA AND UTILIZE A RAIN SENSOR
- ☐ IRRIGATION CONTROLLERS SHALL BE A TYPE WHICH DOES NOT LOSE PROGRAMMING DATA IN THE EVENT THE PRIMARY POWER SOURCE IS INTERRUPTED
- ☐ PRESSURE REGULATORS SHALL BE INSTALLED ON THE IRRIGATION SYSTEM TO ENSURE THE DYNAMIC PRESSURE OF THE SYSTEM IS WITHIN THE MANUFACTURER'S RECOMMENDED PRESSURE RANGE
- ☐ MANUAL SHUT-OFF VALVES (SUCH AS GATE VALVE, BALL VALVE, OR BUTTERFLY VALVE) SHALL BE INSTALLED AS CLOSE AS POSSIBLE TO THE POINT OF CONNECTION OF THE WATER SUPPLY
- ☐ ALL IRRIGATION EMISSION DEVICES MUST MEET THE REQUIREMENTS OF SET IN THE ANSI STANDARD, ASABE/ICC 802-2014. "LANDSCAPE IRRIGATION SPRINKLER AND EMITTER STANDARD," ALL SPRINKLER HEADS INSTALLED IN THE LANDSCAPE MUST DOCUMENT A DISTRIBUTION UNIFORMITY LOW QUARTER OF 0.65 OR HIGHER USING THE PROTOCOL DEFINED IN ASABE/ICC 802-2014
- ☐ AREAS LESS THAN 10 FT IN WIDTH IN ANY DIRECTION SHALL BE IRRIGATED WITH SUBSURFACE IRRIGATION OR OTHER MEANS THAT PRODUCES NO RUNOFF OR OVERSPRAY

AT THE TIME OF FINAL INSPECTION, THE PERMIT APPLICANT MUST PROVIDE THE OWNER OF THE PROPERTY WITH A CERTIFICATE OF INSTALLATION, IRRIGATION SCHEDULE, AND A SCHEDULE OF LANDSCAPE AND IRRIGATION MAINTENANCE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY: _____

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

MWELO PRESCRIPTIVE SUBMITTAL CHECKLIST

DRAWING NO. I-0.4.4

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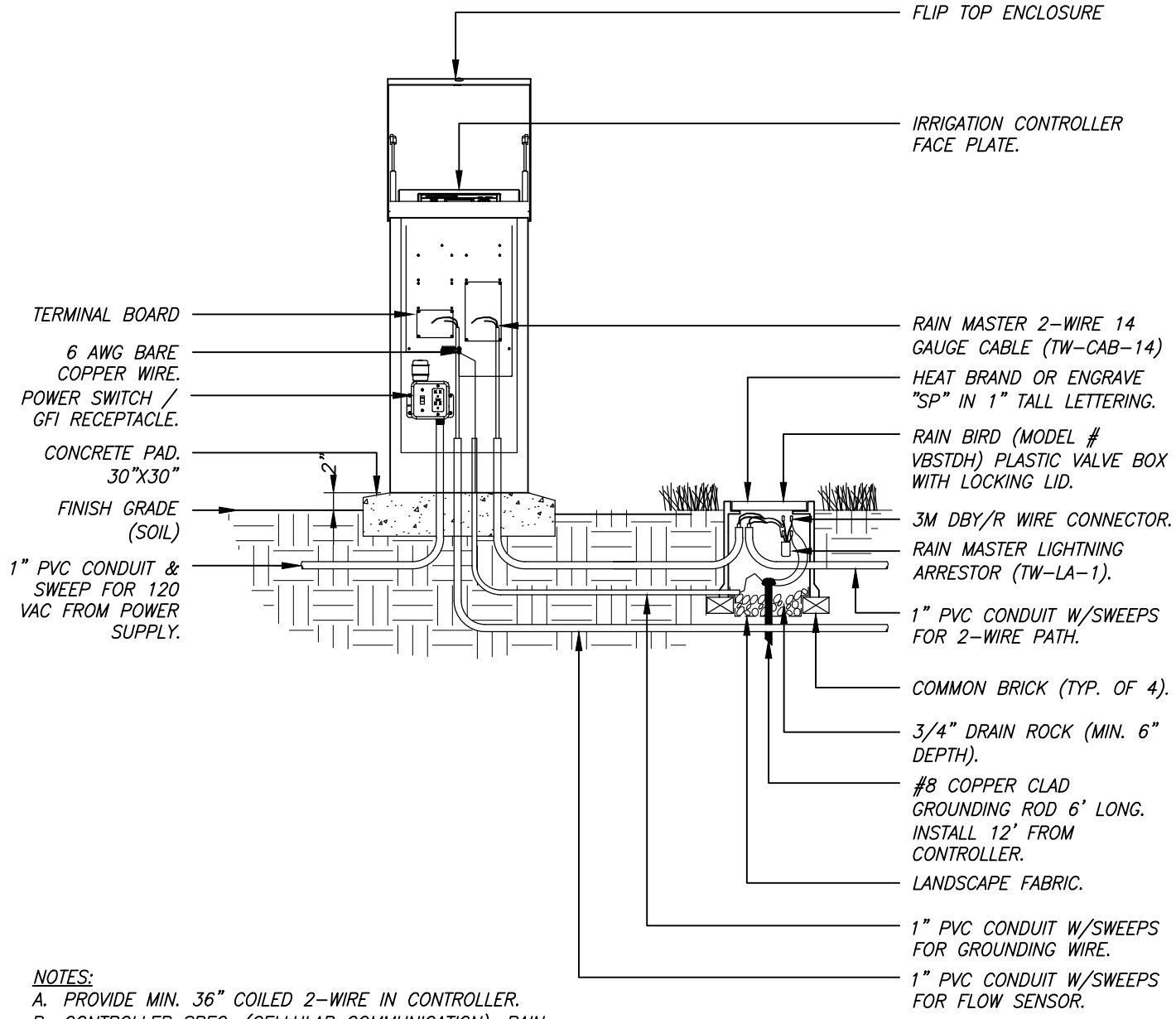

NOTES:

A. PROVIDE MIN. 36" COILED 2-WIRE IN CONTROLLER.
B. CONTROLLER SPEC. (CELLULAR COMMUNICATION): RAIN MASTER EAGLE+ 2-WIRE CONTROLLER (MODEL #: EGP-TW-SPED/EGP-ICENTRAL/PMRKIT & TORO TWRS WIRELESS RAIN SENSOR).
C. LOCATE WIRELESS RAIN SENSOR WITHIN 30' (LINE-OF-SITE). MOUNT SENSOR AT LEAST 6' HIGH WITH NO OVERHEAD OBSTRUCTIONS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

RAIN MASTER EAGLE+ CONTROLLER (2-WIRE)

DRAWING NO. I-1
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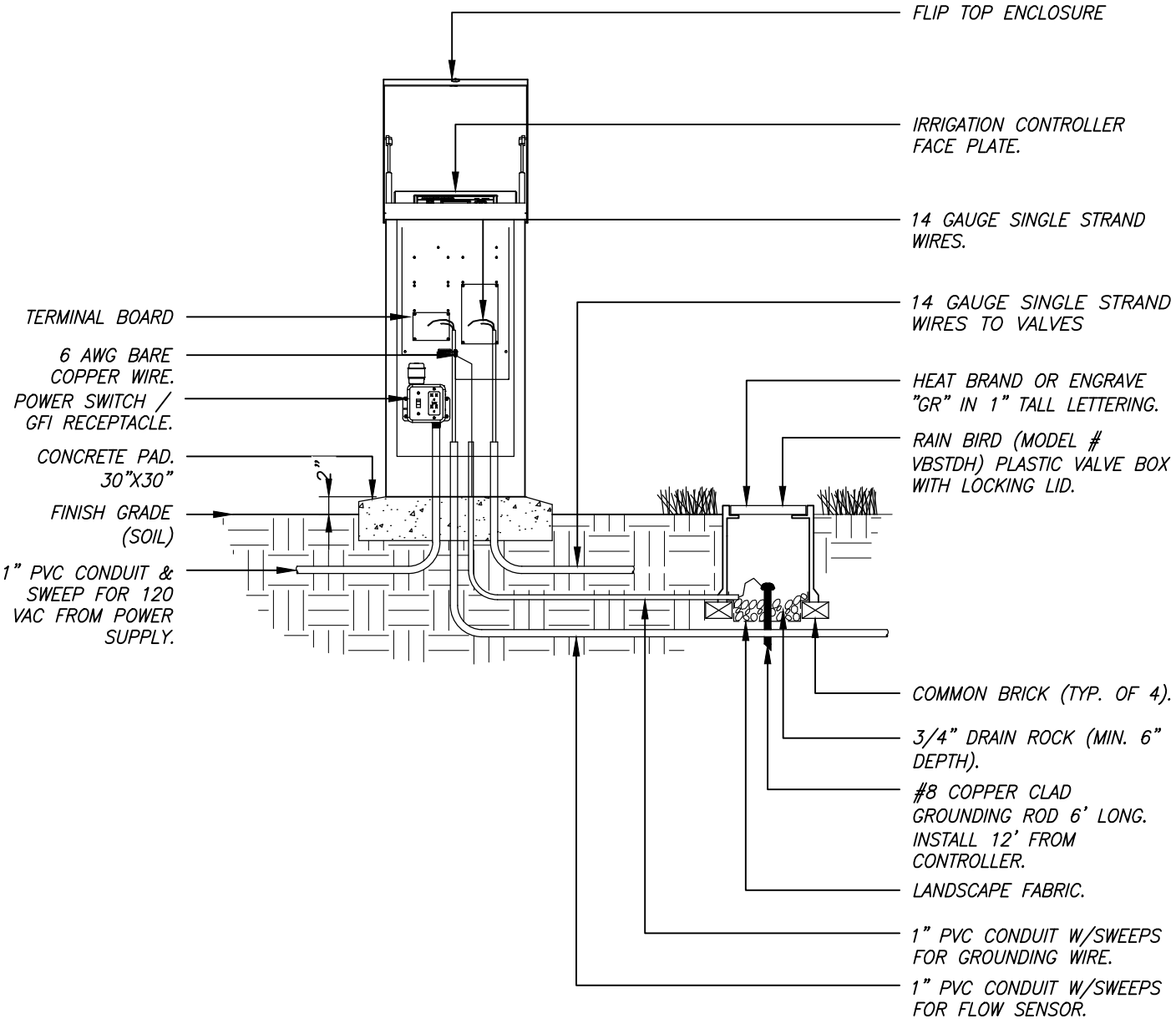

NOTES:

A. PROVIDE MIN. 36" COILED SINGLE STRAND WIRES IN CONTROLLER.
B. CONTROLLER SPEC. (CELLULAR COMMUNICATION): RAIN MASTER EAGLE+ CONVENTIONAL CONTROLLER (MODEL #: EGP-8-SPED/EGP-ICENTRAL/PMRKIT & TORO TWRS WIRELESS RAIN SENSOR).
C. LOCATE WIRELESS RAIN SENSOR WITHIN 30' (LINE-OF-SITE). MOUNT SENSOR AT LEAST 6' HIGH WITH NO OVERHEAD OBSTRUCTIONS

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

RAIN MASTER EAGLE+ CONTROLLER (CONVENTIONAL)

DRAWING NO. I-2
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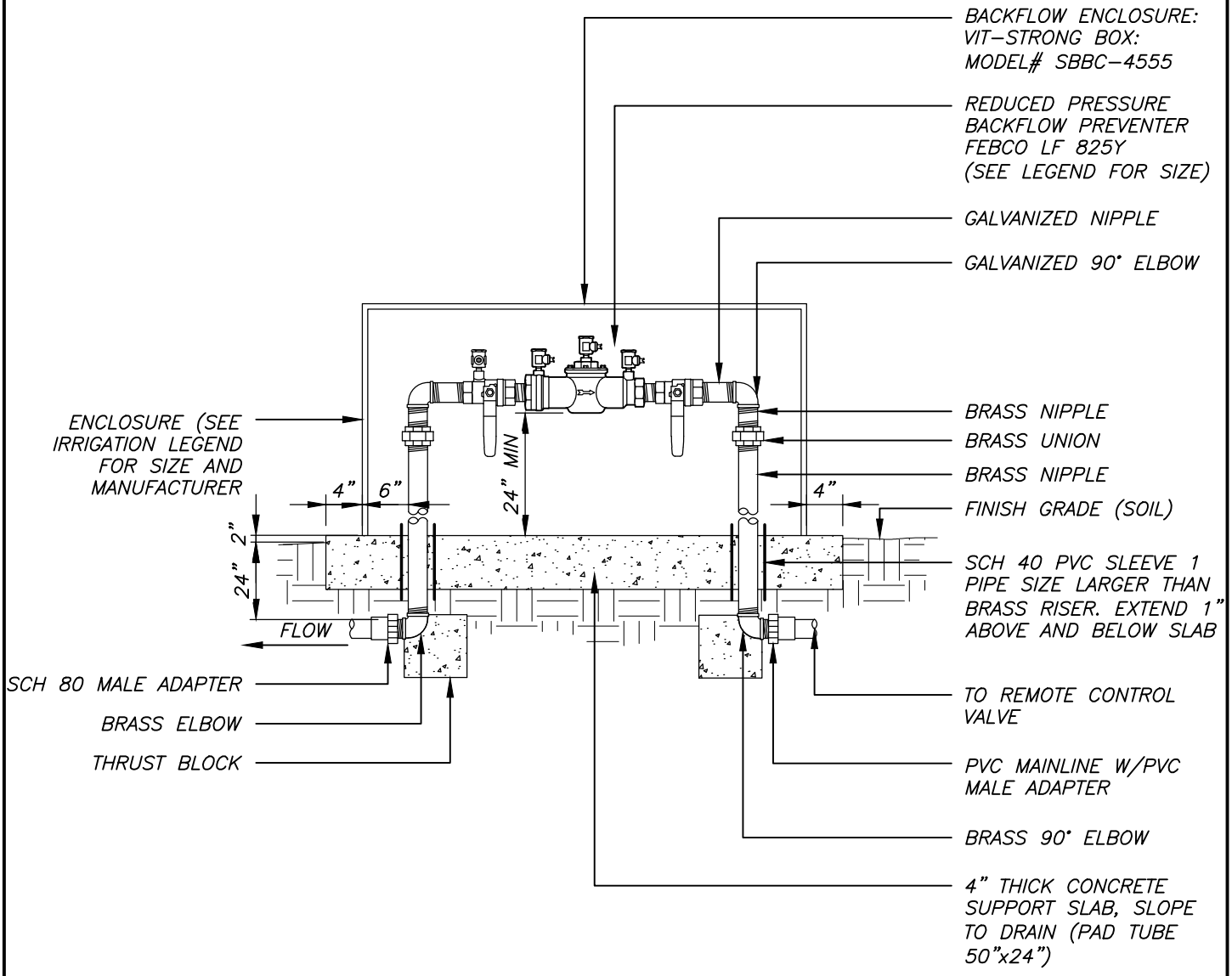

NOTES:

A. WRAP ALL METALLIC PIPING BELOW GROUND AND WITHIN 6" OF GROUND SURFACE WITH 2 LAYERS OF 10MM CALPICO TAPE
B. INSTALL POLAR PARKA (OR EQUAL) FOR WEATHER PROTECTION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

REDUCED PRESSURE BACKFLOW PREVENTER (2" & SMALLER)

02/03/16
DATE

62736
R.C.E. NO.

DRAWING NO. I-3

NTS

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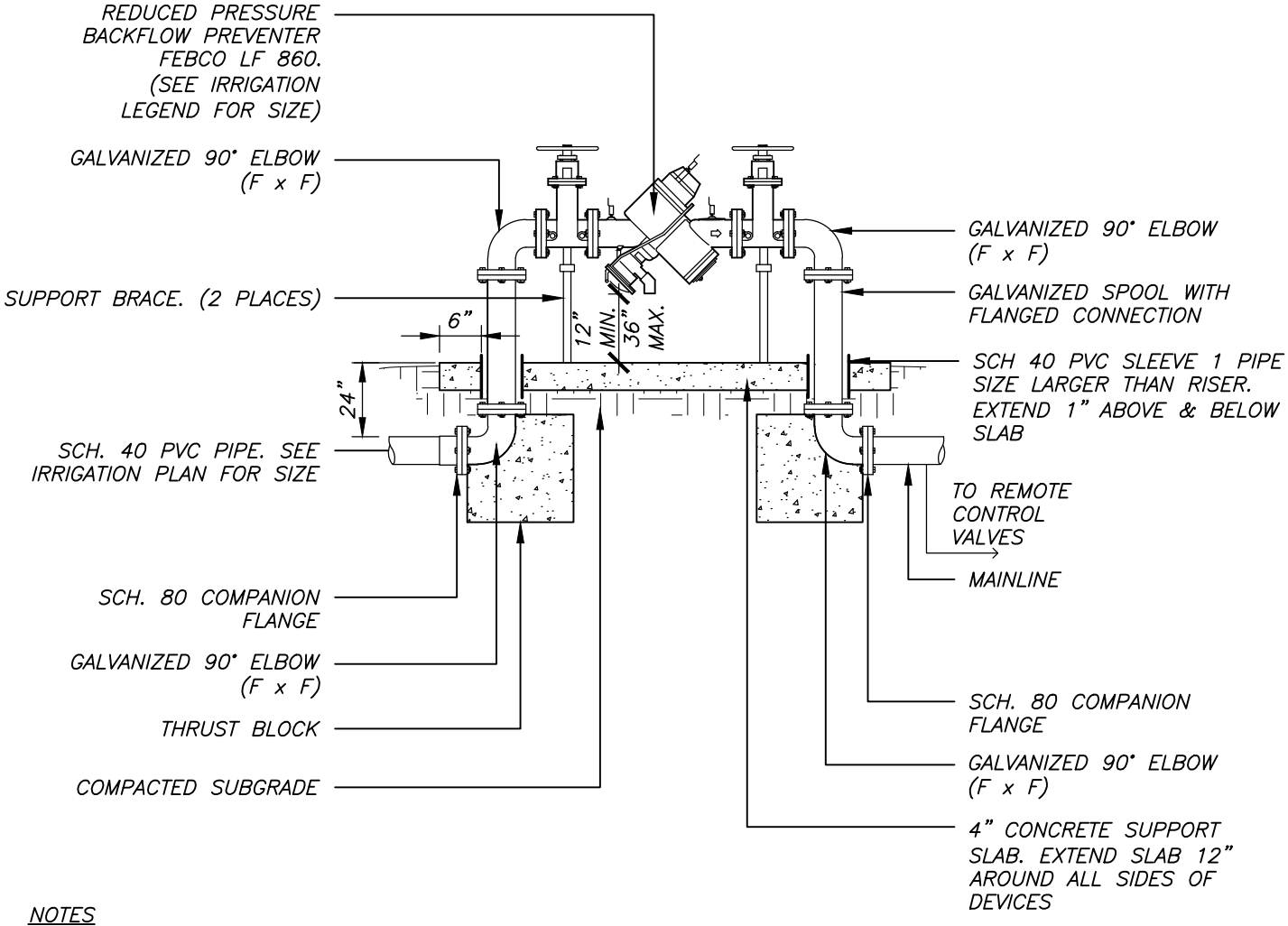

NOTES

A. MANUFACTURER AND MODEL NUMBER OF BACKFLOW ASSEMBLY SHALL BE APPROVED BY THE DIRECTOR PRIOR TO INSTALLATION
B. ALL PIPING 3"–4" IN DIAMETER SHALL BE GALVANIZED STEEL. WRAP ALL PIPING BELOW GROUND AND WITHIN 6" OF GROUND SURFACE WITH 2 LAYERS OF 10MM CALPICO TAPE.
C. SUPPORTS WHERE PROVIDED SHALL NOT INTERFERE WITH TESTING AND MAINT.
D. INSTALL INSULATING BLANKET AS APPROVED BY DIRECTOR AROUND DEVICE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

REDUCED PRESSURE BACKFLOW PREVENTER (3" AND LARGER)

DRAWING NO. I-4
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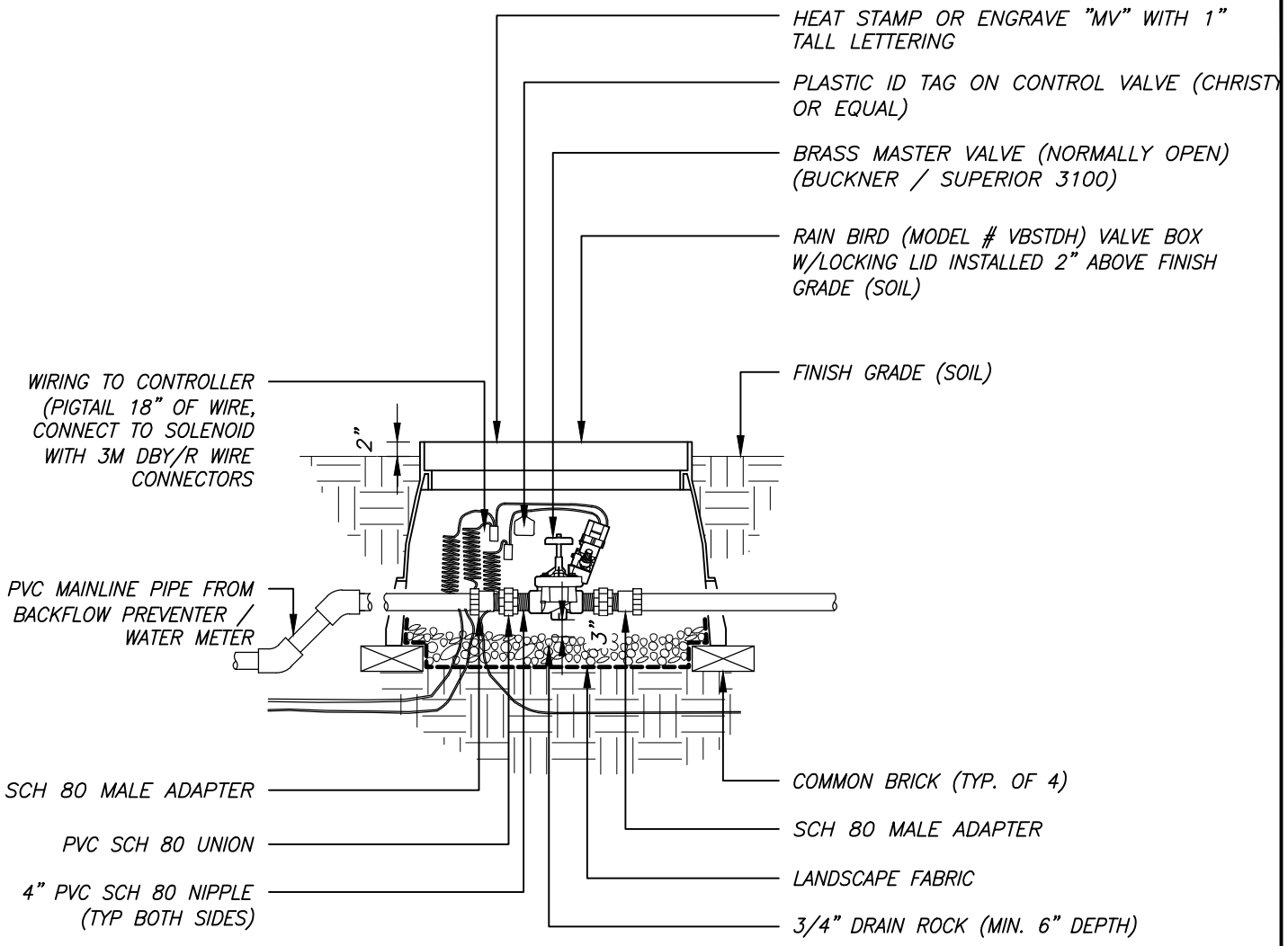

NOTES:

A. PROVIDE MIN. 36" COILED WIRE AT VALVE.
B. PIPE SIZE CHANGES SHALL OCCUR AT PVC UNION ON UP-STREAM AND DOWN-STREAM SIDED VALVE
C. PLACE FILTER FABRIC AROUND OUTSIDE AT PLASTIC BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
D. ALL FITTINGS SHALL BE SCH 80

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

MASTER VALVE (CONVENTIONAL)

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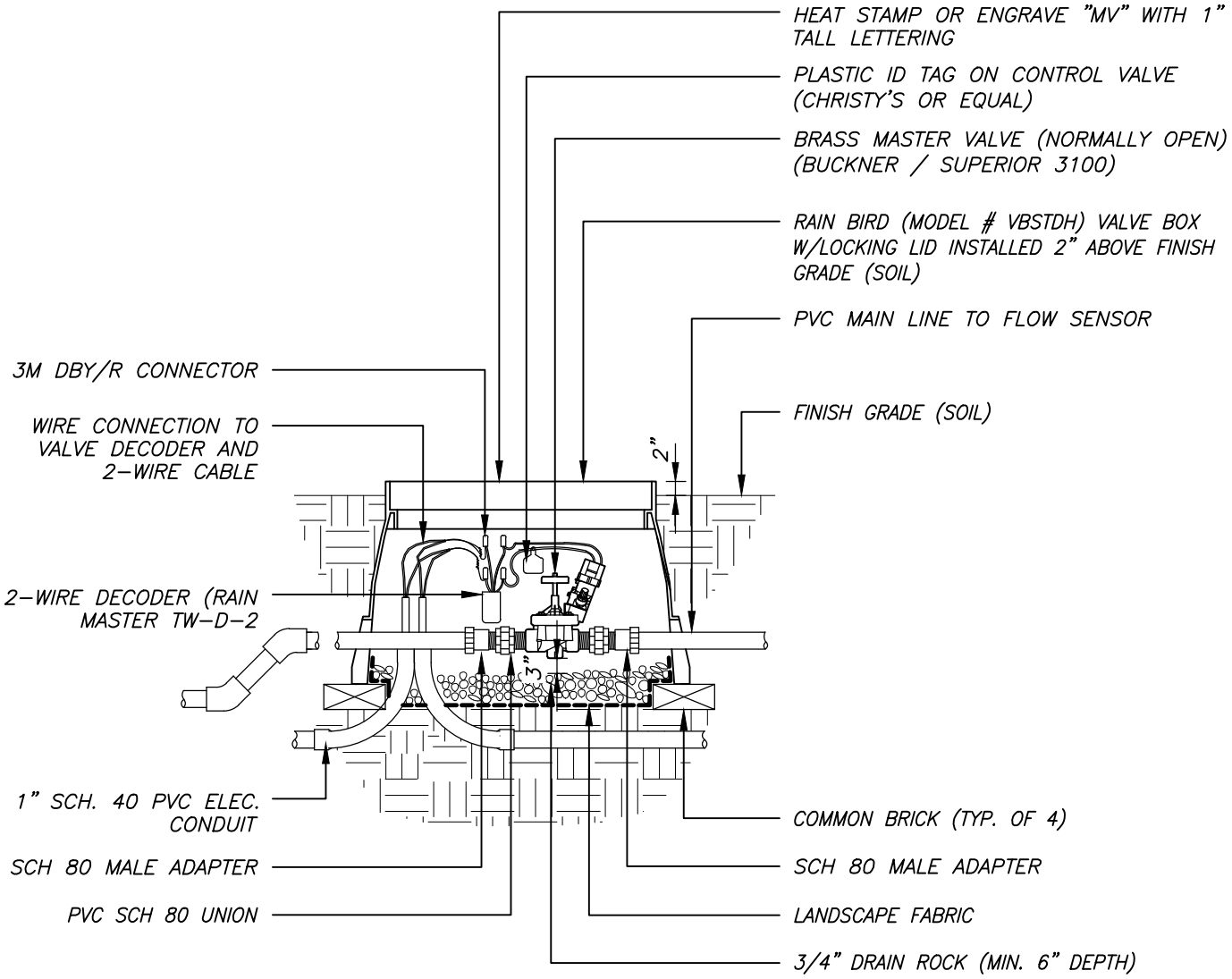

NOTES:

A. PROVIDE MIN 6' OF 2-WIRE COILED WIRE AT EACH VALVE. DO NOT PIG TAIL.
B. PIPE SIZE CHANGES SHALL OCCUR AT PVC UNION ON UP-STREAM AND DOWN-STREAM SIDED VALVE
C. PLACE FILTER FABRIC AROUND OUTSIDE AT PLASTIC BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
D. ALL FITTINGS SHALL BE SCH 80

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

MASTER VALVE (2-WIRE)

DRAWING NO. I-6
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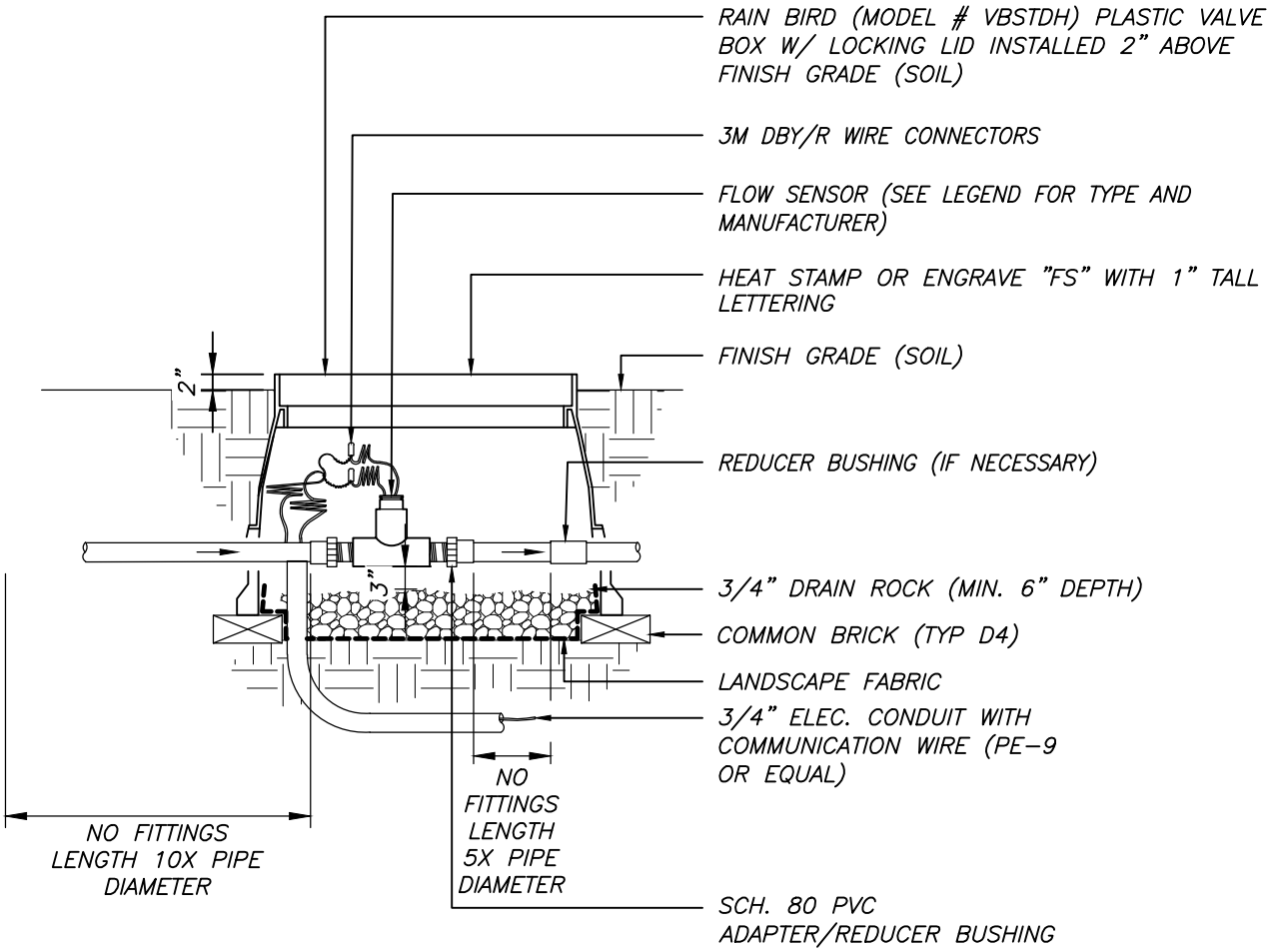

NOTES:

A. PROVIDE MIN 36" COILED WIRE AT VALVE.
B. PIPE SIZE CHANGES SHALL OCCUR AT MALE ADAPTER ON DOWNSTREAM SIDE OF MASTER VALVE AND SHALL HOLD SIZE UNTIL REDUCER BUSHING ON THE DOWNSTREAM SIDE OF THE FLOW SENSOR.
C. PLACE FILTER FABRIC AROUND OUTSIDE PLASTIC BOX TO COVER HOLES TO REDUCE SOIL INTRUSION.
D. ALL FITTINGS SHALL BE SCH. 80.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

FLOW SENSOR (CONVENTIONAL)

DRAWING NO. I-7

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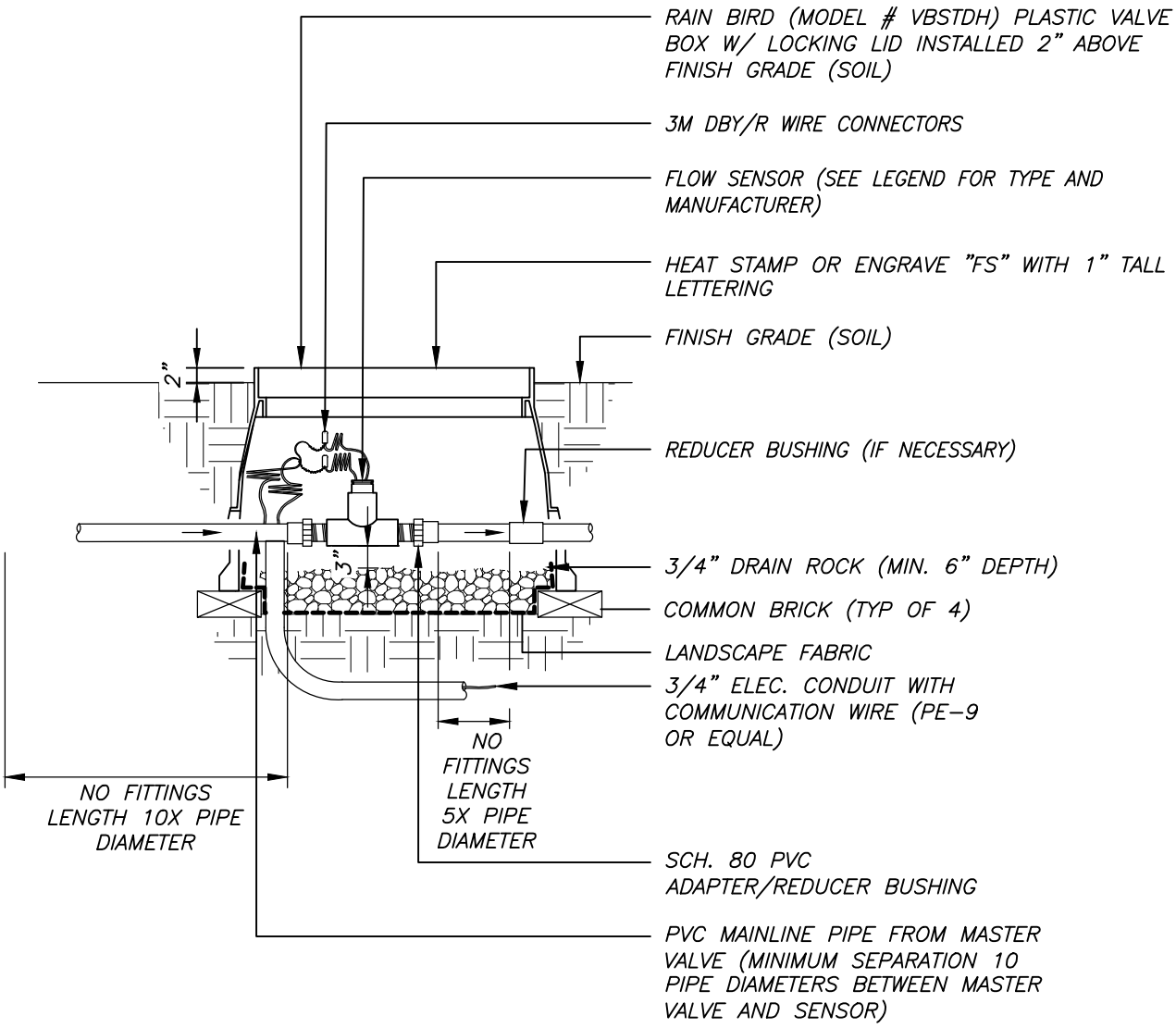

NOTES:

A. PROVIDE MIN 36" COILED WIRE AT VALVE.
B. PIPE SIZE CHANGES SHALL OCCUR AT MALE ADAPTER ON DOWNSTREAM SIDE OF MASTER VALVE AND SHALL HOLD SIZE UNTIL REDUCER BUSHING ON THE DOWNSTREAM SIDE OF THE FLOW SENSOR.
C. PLACE FILTER FABRIC AROUND OUTSIDE PLASTIC BOX TO COVER HOLES TO REDUCE SOIL INTRUSION.
D. ALL FITTINGS SHALL BE SCH. 80.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

FLOW SENSOR (2-WIRE)

DRAWING NO. I-8
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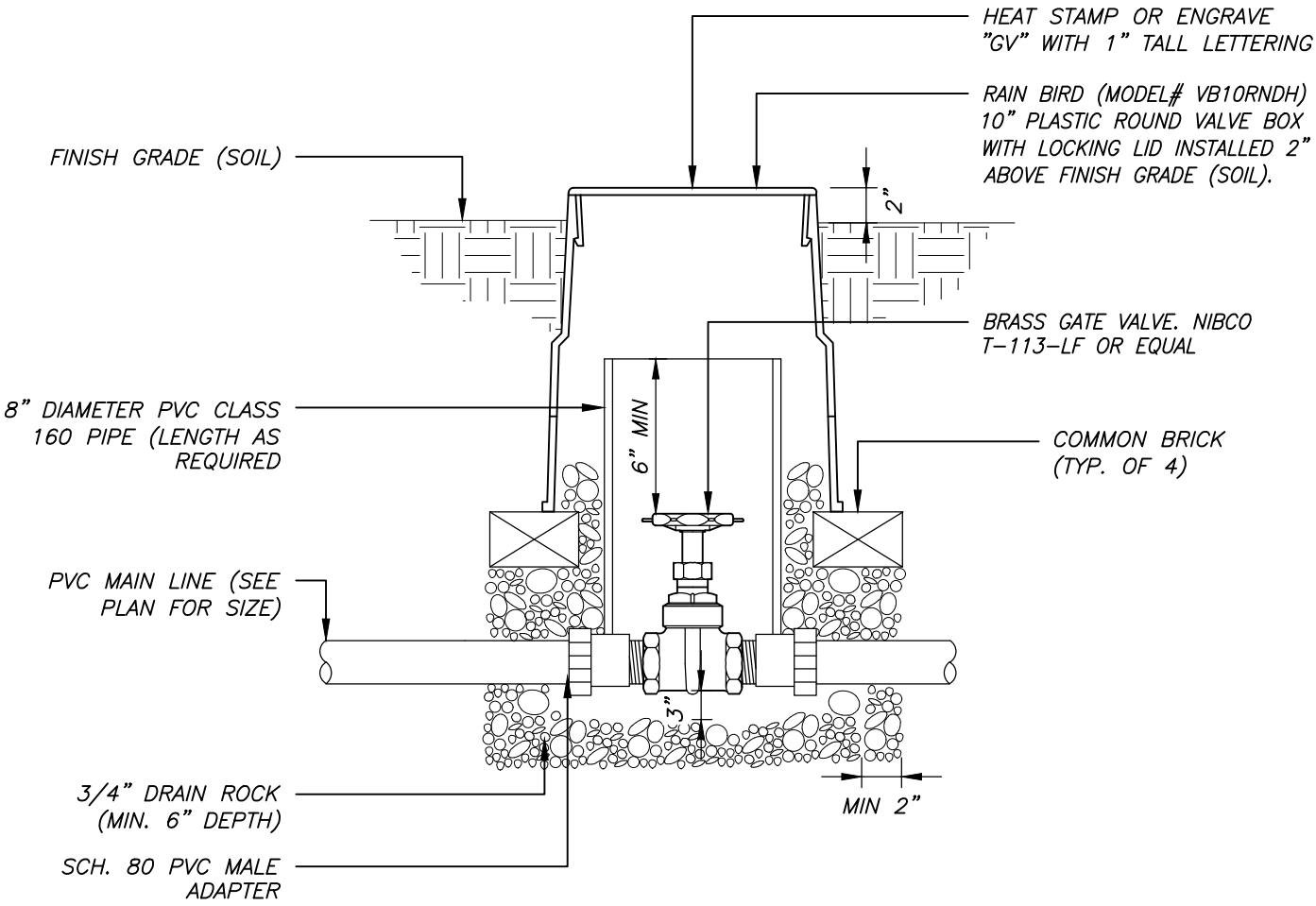

NOTES:

A. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
B. ALL FITTINGS SHALL BE SCH. 80
C. INSTALL DRAIN ROCK 2" MIN BEYOND PERIMETER
D. GATE VALVE SHALL BE SIZED THE SAME SIZE AS THE MAIN LINE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

GATE VALVE (2 1/2" AND SMALLER)

DRAWING NO. I-9

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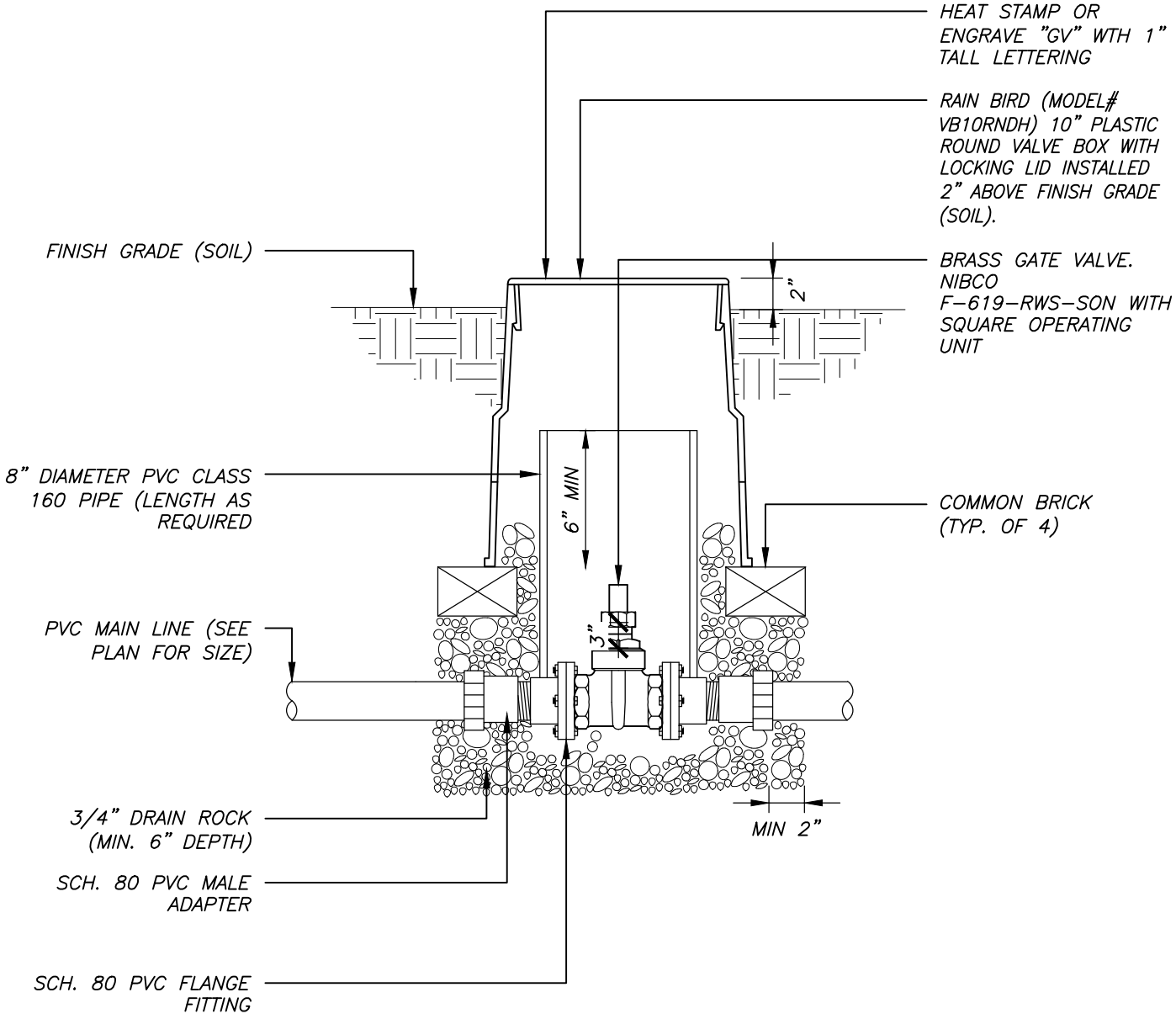

NOTES:
A. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
B. ALL FITTINGS SHALL BE SCH. 80
C. INSTALL DRAIN ROCK 2" MIN BEYOND PERIMETER
D. GATE VALVE SHALL BE SIZED THE SAME SIZE AS THE MAIN LINE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

GATE VALVE (3" AND LARGER)

02/03/16 DATE

62736 R.C.E. NO.

DRAWING NO. I-10

NTS

May 28, 2020 - 3:28pm
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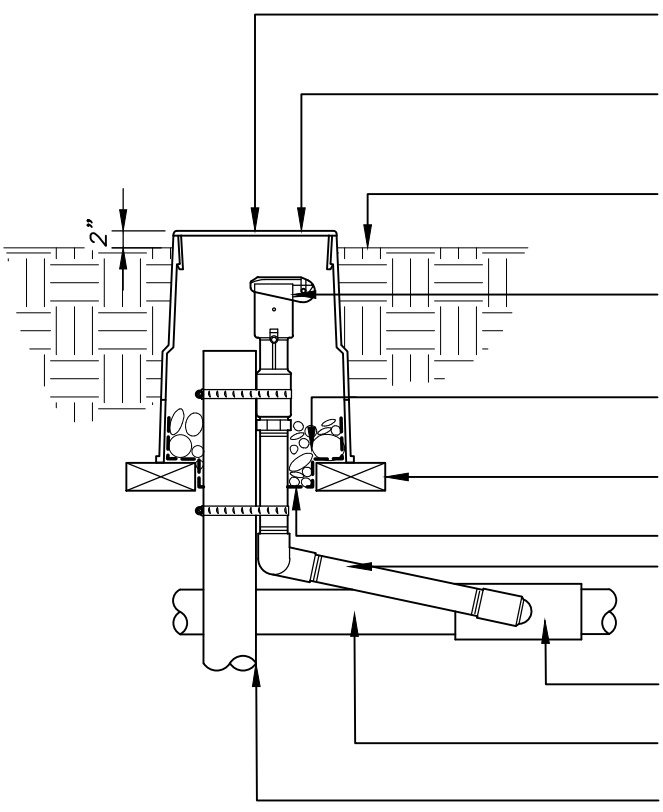

HEAT STAMP OR ENGRAVE "QC" WITH 1" TALL LETTERING.

10" RAIN BIRD (MODEL# VB10RNDH) ROUND VALVE BOX WITH LOCKING LID INSTALLED 2" ABOVE FINISH GRADE (SOIL)

FINISH GRADE (SOIL)

QUICK COUPLER W/ LOCKING RUBBER COVER (PARTS TO HAVE 1" QUICK COUPLER W/ LOCKING RUBBER COVER. MODEL RAIN BIRD 44-LRL/44-NP

3/4" DRAIN ROCK (MIN. 6" DEPTH)

COMMON BRICK (TYP. OF 4)

LANDSCAPE FABRIC

PRE-MANUFACTURED SWING JOINT W/ O-RING AND THREAD STOPS. RAIN BIRD TSJ12

PVC SCH 80 TEE (SxSxT), SIZE PER MAIN LINE

PVC MAINLINE, SEE IRRIGATION PLAN FOR SIZE

#5 REBAR 30" LONG MIN. W/ TWO STAINLESS STEEL GEAR CLAMPS

NOTES:

A. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION.
B. ALL FITTINGS TO BE SCH. 80 (EXCEPT PRE-MANUFACTURED SWING JOINT)
C. PROVIDE (1) CORRESPONDING VALVE KEY WITH SWIVEL TO CITY STAFF

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

QUICK COUPLER

02/03/16
DATE

62736
R.C.E. NO.

DRAWING NO. I-11

NTS

May 28, 2020 - 3:28pm
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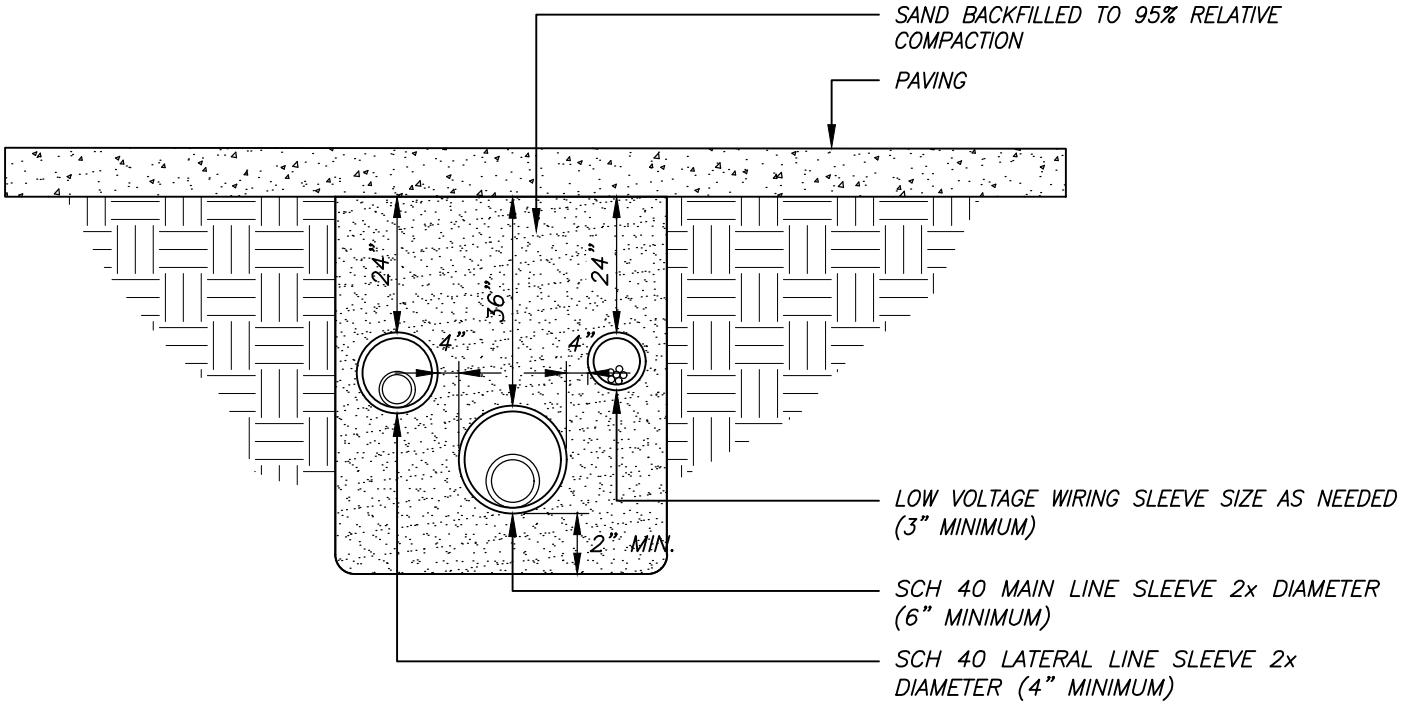

NOTES:
A. SIZE AND LOCATION OF SLEEVES PER IRRIGATION PLANS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TYPICAL SLEEVING

FERNANDO ULLOA, CITY ENGR.
02/03/16 DATE
62736 R.C.E. NO.
DRAWING NO. I-12
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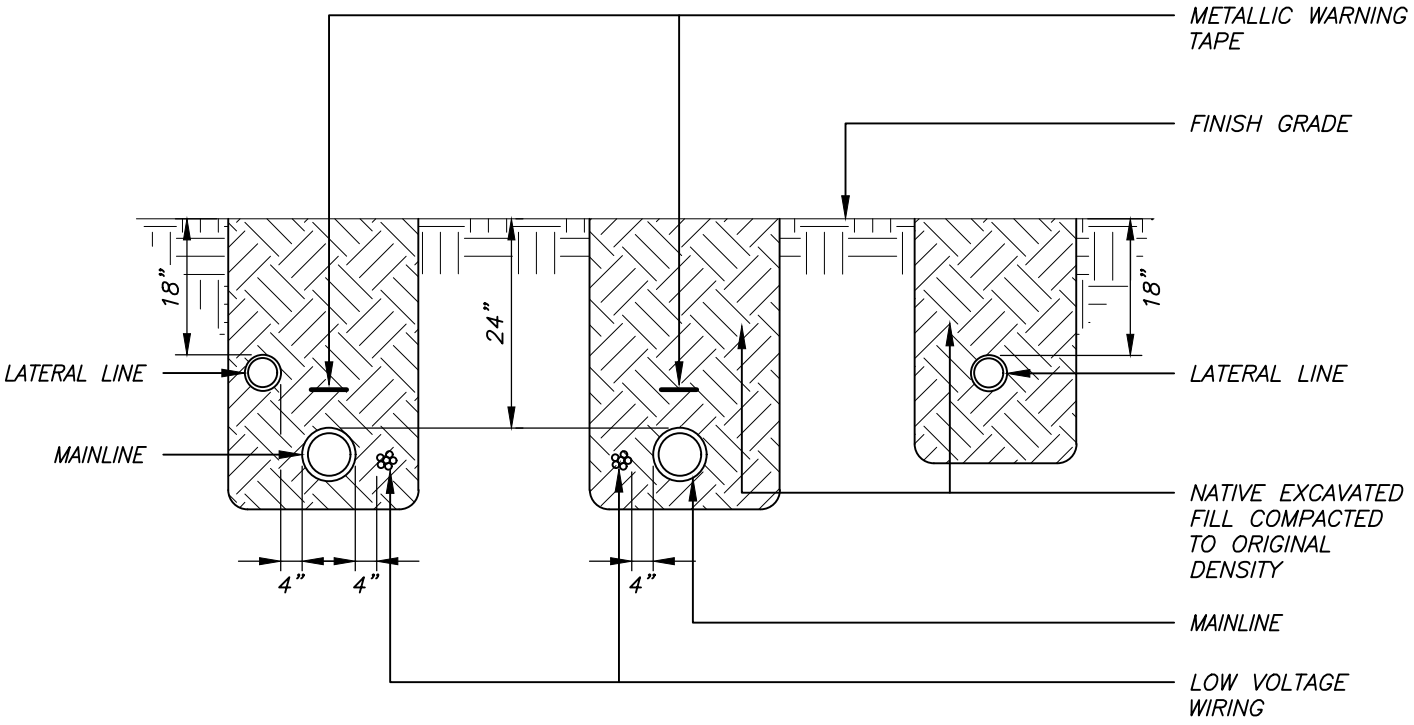

NOTES:

A. ALL MAIN LINE FITTINGS SHALL BE SCH 80. FOR PIPES 3" AND SMALLER, INSTALL LEEMCO STRAP FITTING WITH THRUST BLOCKS ON MAIN LINES 4" AND LARGER.
B. ALL LATERAL LINE FITTINGS SHALL BE SCH 40.
C. MAIN LINE SHALL BE SCH. 40 FOR PIPE SIZES 3" AND SMALLER. MAIN LINE PIPE 4" AND LARGER SHALL BE CLASS 315
D. LATERAL LINES SHALL BE SCH. 40 PVC PIPE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TYPICAL TRENCHING

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

DRAWING NO. I-13
NTS

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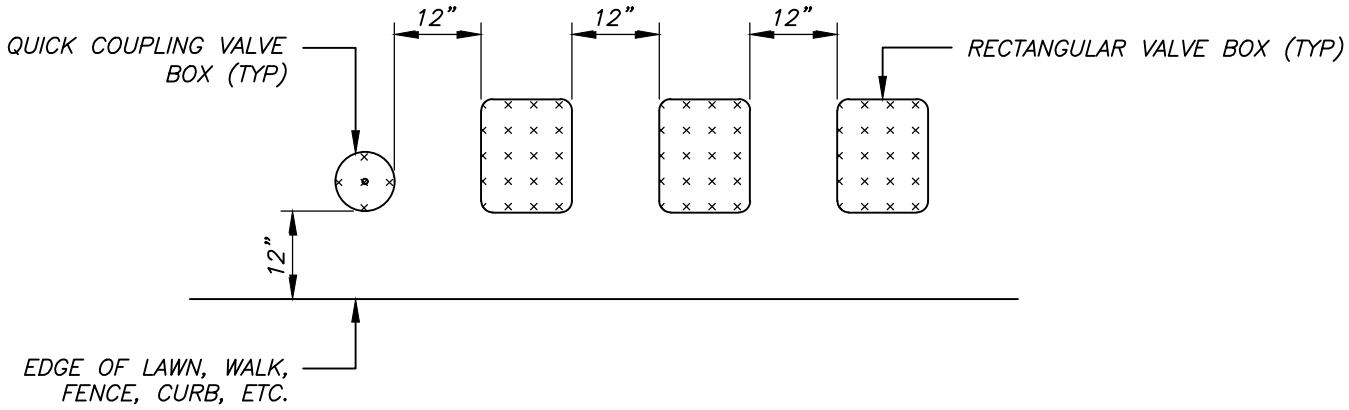

NOTES:

A. CENTER VALVE BOX OVER REMOTE CONTROL VALVE TO FACILITATE SERVICING VALVE.
B. SET REMOTE CONTROL VALVE AND VALVE BOX ASSEMBLIES IN SHRUB AREA WHEREVER POSSIBLE.
C. HEAT STAMP OR ENGRAVE THE TOP OF VALVE BOXES WITH 1" TALL LETTERING.
D. VALVE BOX SHALL BE RAIN BIRD BLACK VALVE BOX WITH GREEN LOCKING LID. FOR NON-POTABLE INSTALLATIONS, USE PURPLE LOCKING LID

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

VALVE BOX LAYOUT

DRAWING NO. I-14

NTS

May 28, 2020 - 3:28pm
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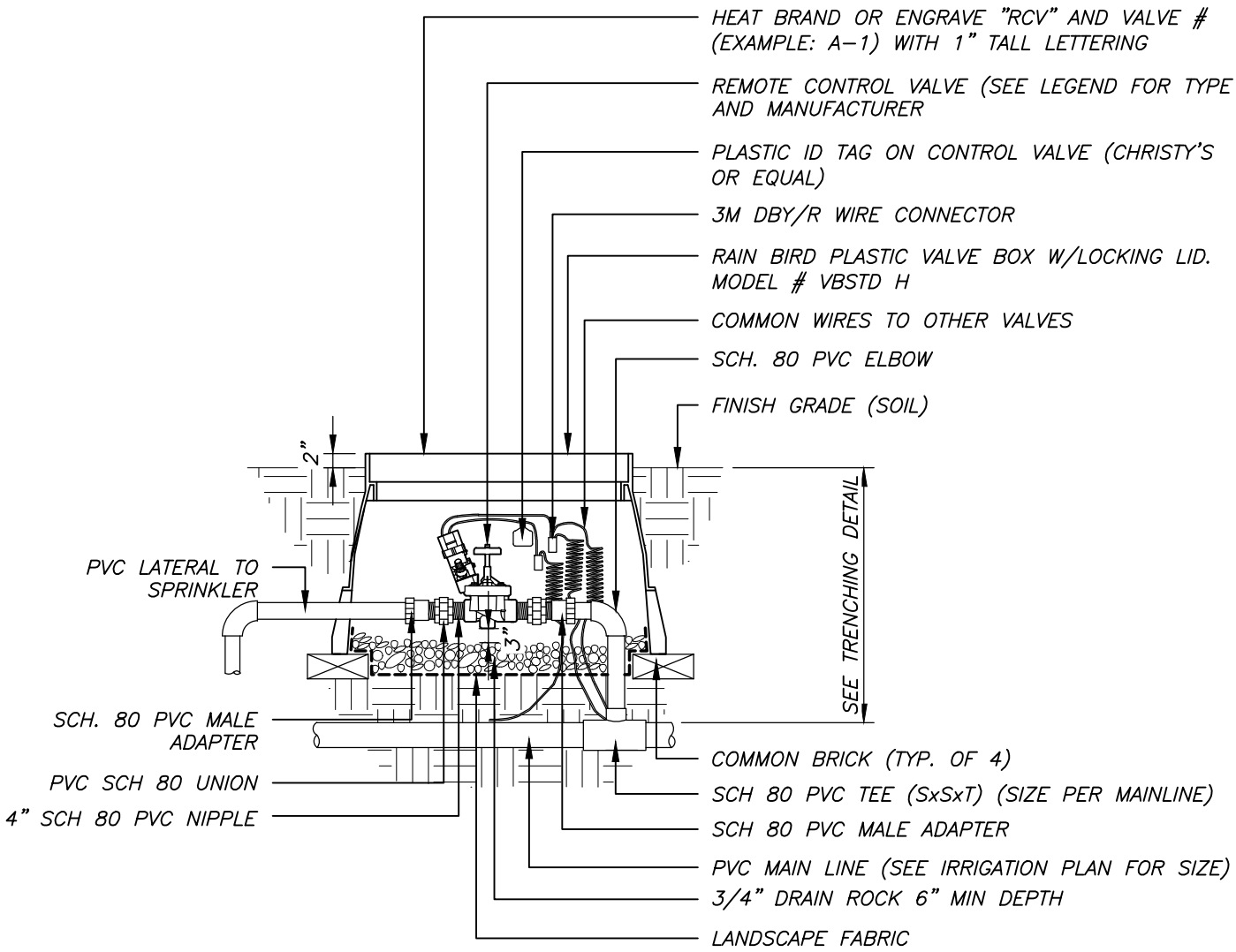

NOTES:

A. PROVIDE MIN 18" PIGTAILED WIRE AT EACH VALVE

B. ACCEPTABLE MANUFACTURERS/MODELS:

RAIN BIRD:

–PESB

–PRESBR (NON–POTABLE)

HUNTER:

–ICV–FS

–ICV–FS–R (NON–POTABLE)

C. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

REMOTE CONTROL VALVE (CONVENTIONAL)

DRAWING NO. I-15

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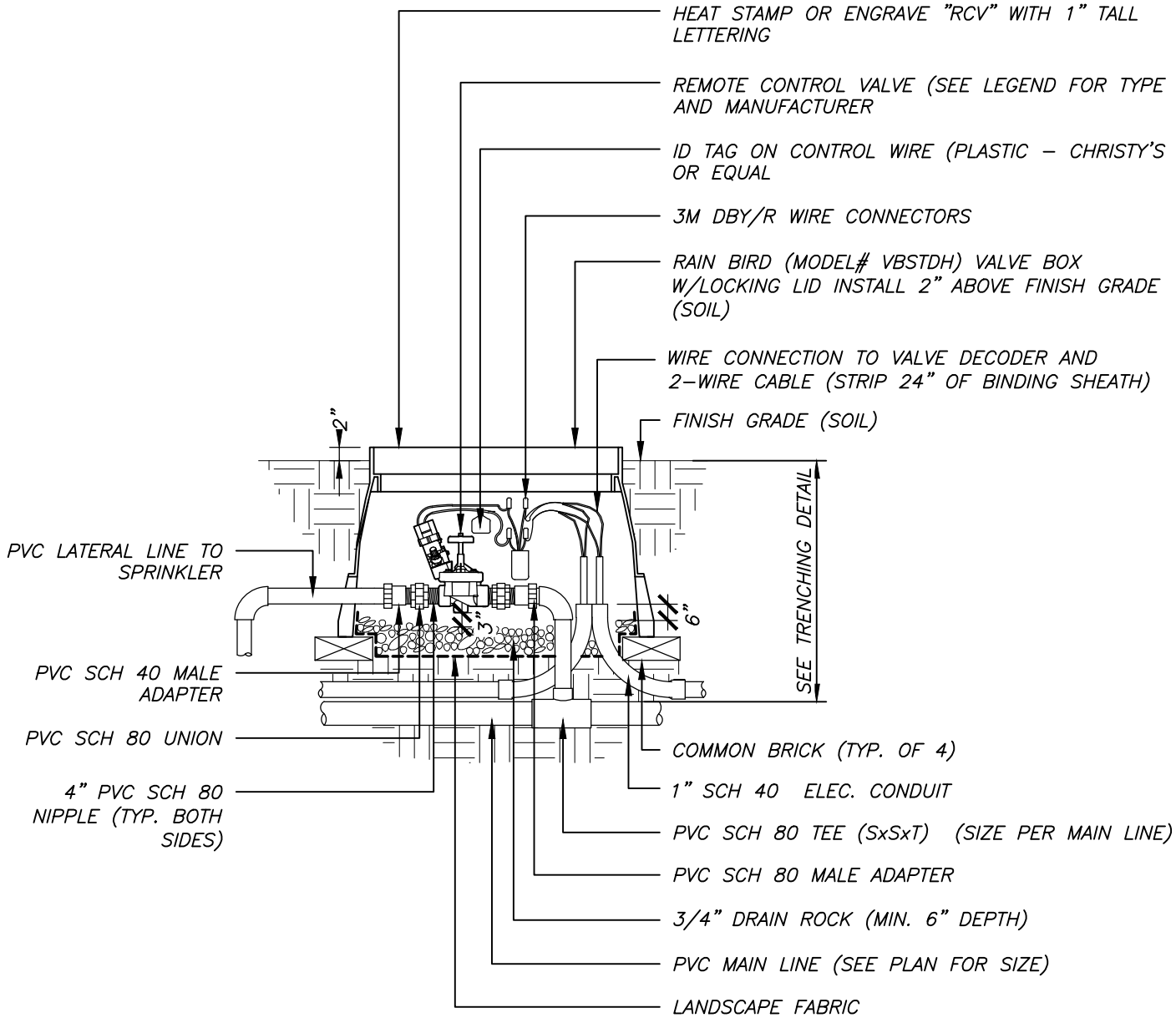

NOTES:

A. PROVIDE MIN 6' OF 2–WIRE COILED WIRE AT EACH VALVE. DO NOT PIGTAIL.

B. ACCEPTABLE MANUFACTURERS/MODELS:

RAIN BIRD

- PESB OR PESB–R

HUNTER

- ICV–FS OR ICV–FS–R

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

REMOTE CONTROL VALVE (2-WIRE)

DRAWING NO. I-16

NTS

May 28, 2020 – 3:28pm
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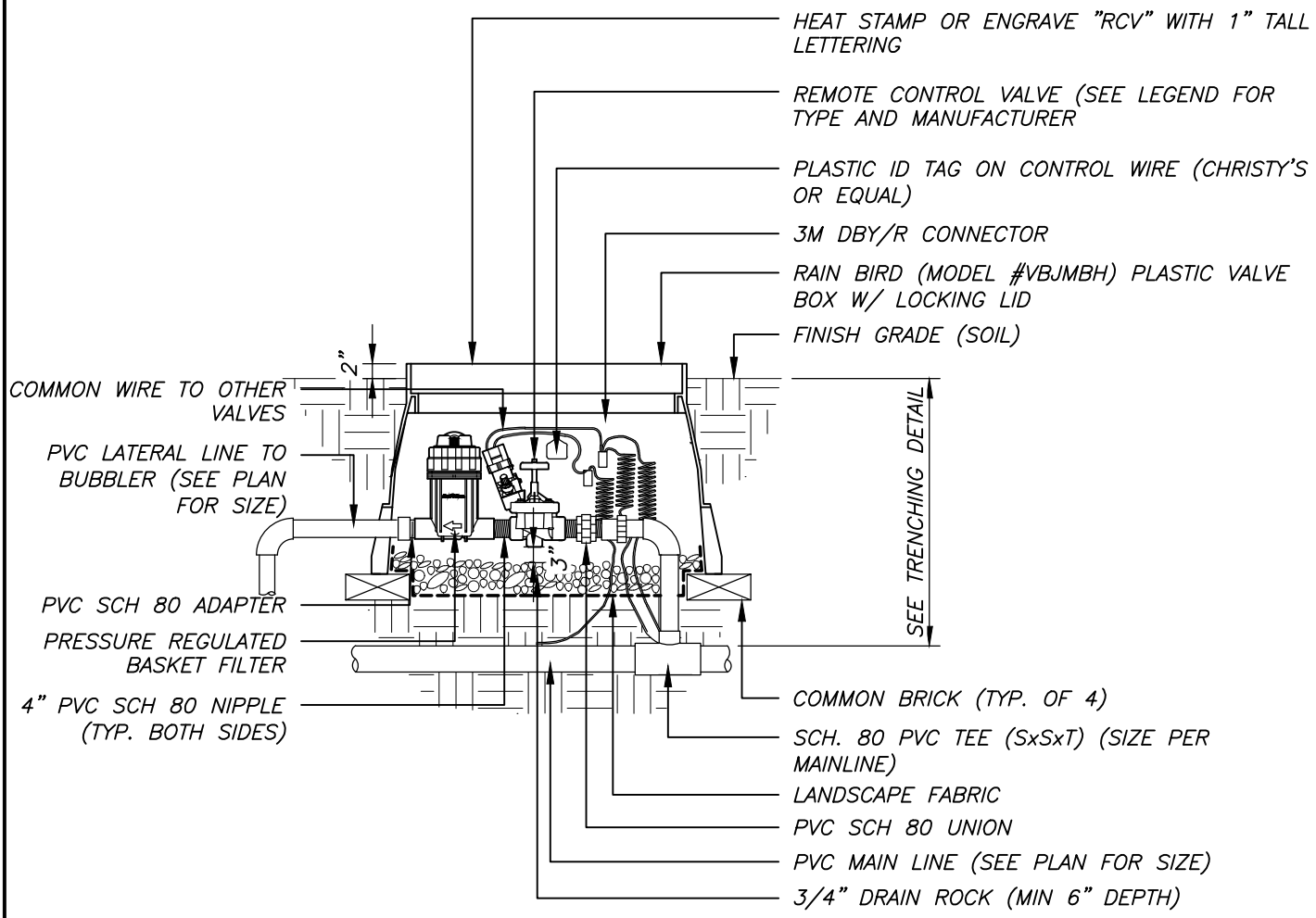

NOTES:

A. PROVIDE MIN 18" 'PIGTAIL' WIRE AT EACH VALVE
B. PROVIDE 36" MIN WIRE INTO EACH VALVE BOX
C. ACCEPTABLE MANUFACTURES/MODEL #:

RAIN BIRD

- XCZ-100-PRB-COM
- XCZ-100-PRB-COM W/PEB-NP-HANI (NON-POTABLE)

D. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

REMOTE CONTROL VALVE (CONVENTIONAL 0-14GPM)

DRAWING NO. I-17
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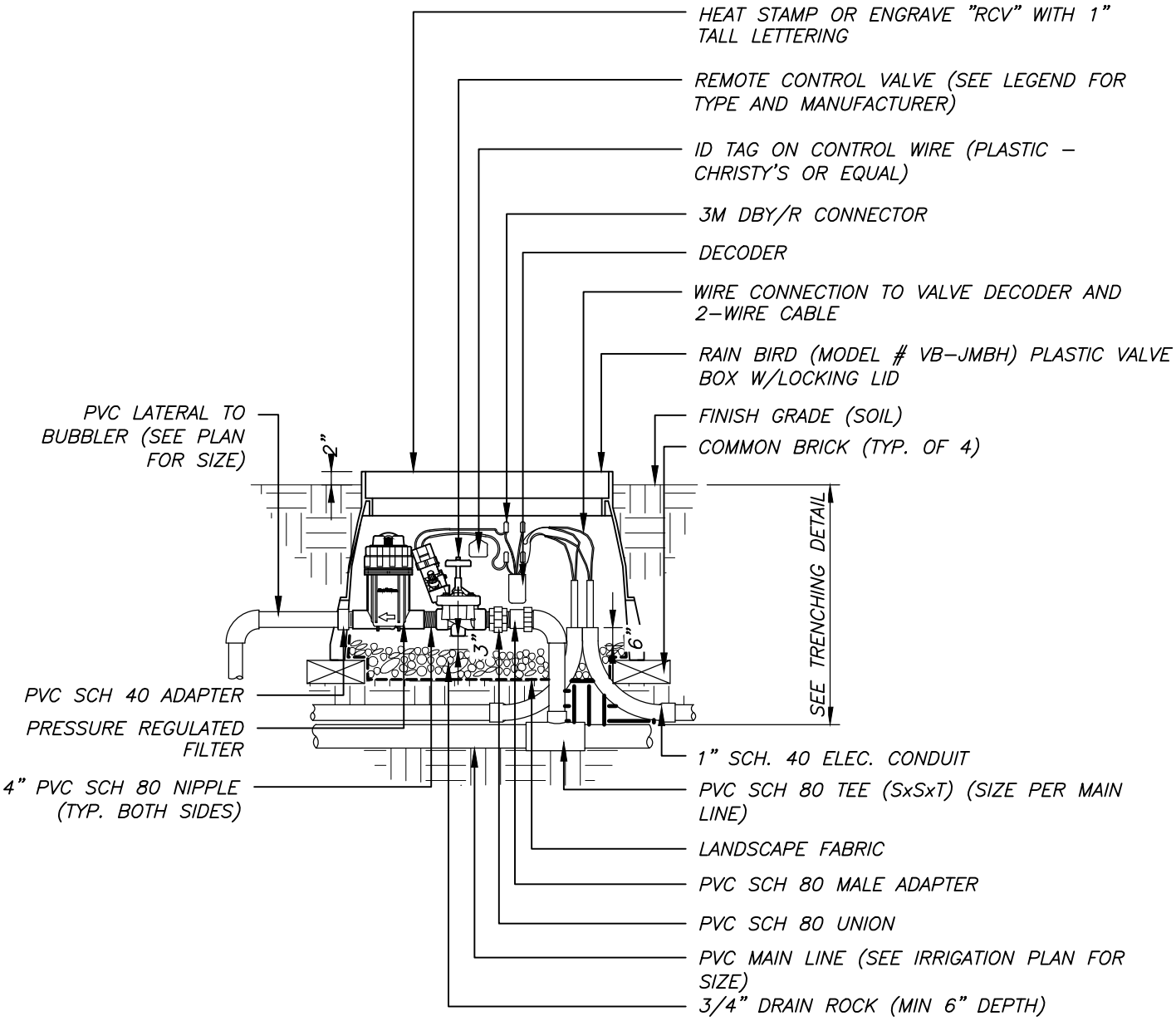

NOTES:

A. PROVIDE MIN 6' OF 2–WIRE COILED AT EACH VALVE

B. ACCEPTABLE MANUFACTURERS/MODEL#:

RAIN BIRD

- XCZ–100–PRB–COM
- XCZ–100–PRB–COM W/PEB–NP–HANI (NON–POTABLE)

C. 2–WIRE DECODERS RAIN MASTER MODEL#:

1–STATION–TW–D–1

2–STATION–TW–D–2

4–STATION–TW–D–4

D. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

REMOTE CONTROL VALVE (0-14GPM) (2-WIRE)

02/03/16 DATE

62736 R.C.E. NO.

DRAWING NO. I-18

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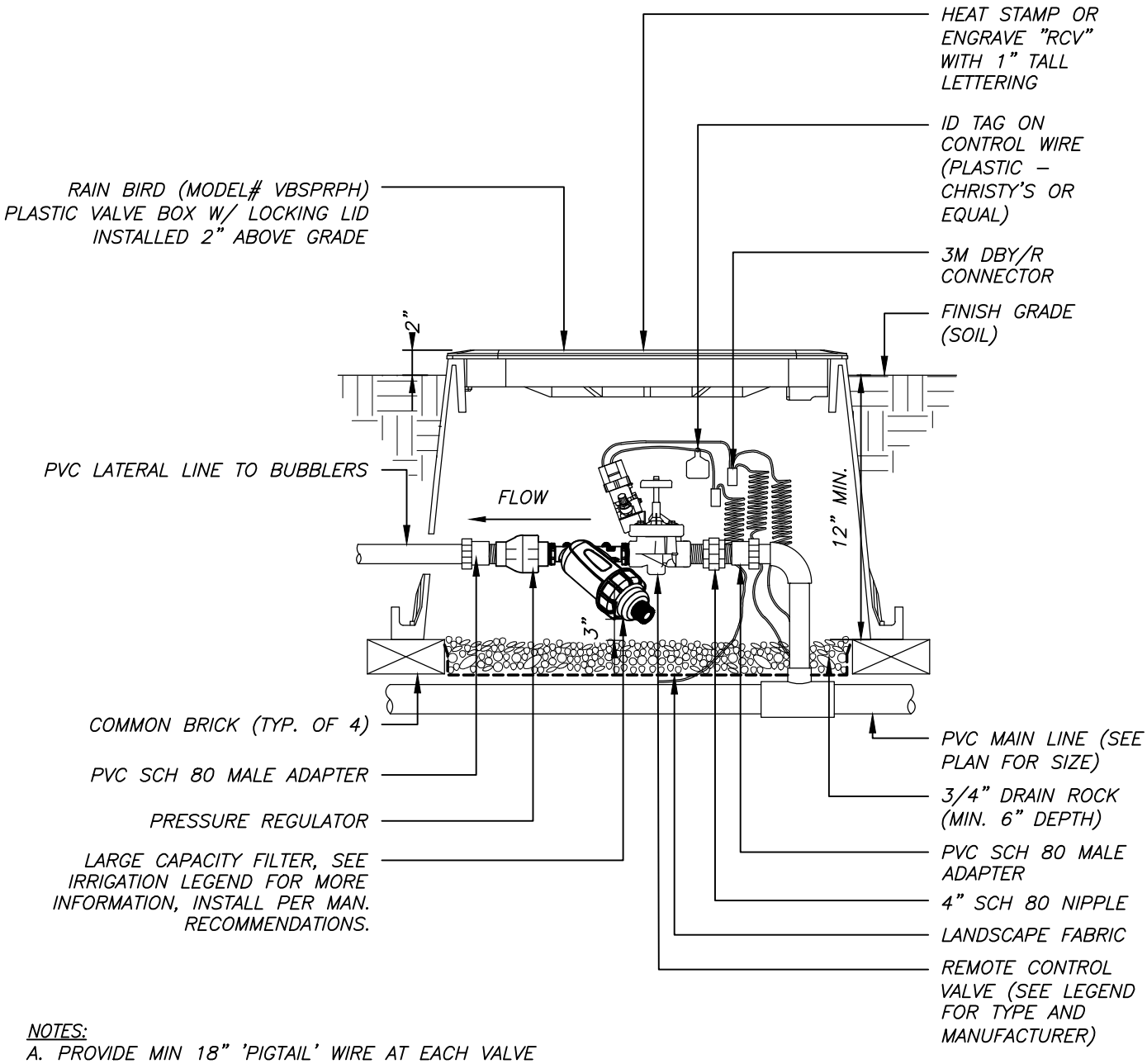

NOTES:

A. PROVIDE MIN 18" 'PIGTAIL' WIRE AT EACH VALVE
B. PROVIDE MIN 36" WIRE INTO EACH VALVE BOX
C. FILTER ASSEMBLY TO BE INSTALLED WITH SCREEN DIRECTION FACING A 45° DOWNWARD ANGLE WITH ENOUGH SPACE TO REMOVE SCREEN FOR MAINTENANCE. MAY REQUIRE RAIN BIRD VALVE BOX EXTENSION(S) TO ACHIEVE ACCEPTABLE SCREEN CLEARANCE.
D. PLACE FILTER FABRIC AROUND OUTSIDE AT PLASTIC BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
E. ACCEPTABLE MANUFACTURERS/MODEL#

RAIN BIRD

- XCZ–150–LCS
- XCZ–150–LCDR (NON–POTABLE)

HUNTER

- ICZ–151–XL
- ICZ–151–XL W/NP HANDLE (NON–POTABLE)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

REMOTE CONTROL VALVE (15-40GPM) (CONVENTIONAL)

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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NTS

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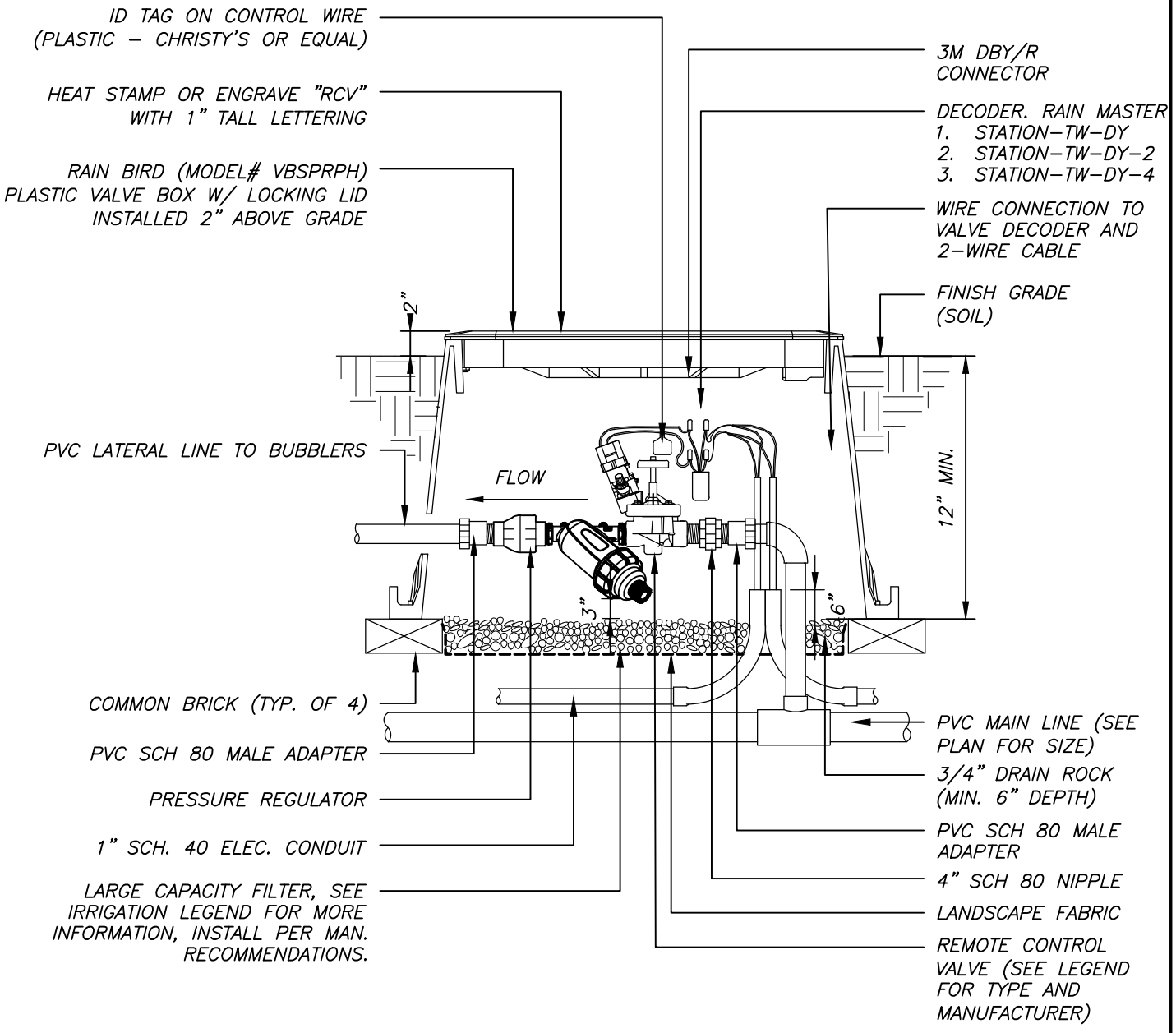

NOTES:

A. PROVIDE MIN 6' OF 2–WIRE COILED AT EACH VALVE
B. FILTER ASSEMBLY TO BE INSTALLED WITH SCREEN DIRECTION FACING A 45° DOWNWARD ANGLE WITH ENOUGH SPACE TO REMOVE SCREEN FOR MAINTENANCE. MAY REQUIRE RAIN BIRD VALVE BOX EXTENSION(S) TO ACHIEVE ACCEPTABLE SCREEN CLEARANCE.
C. PLACE FILTER FABRIC AROUND OUTSIDE AT PLASTIC BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION
D. ACCEPTABLE MANUFACTURERS/MODEL#

RAIN BIRD

- XCZ–150–LCS
- XCZ–150–LCDR (NON–POTABLE)

HUNTER

- ICZ–151–XL
- ICZ–151–XL W/NP HANDLE (NON–POTABLE)

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

REMOTE CONTROL VALVE (15-40GPM) (2-WIRE)

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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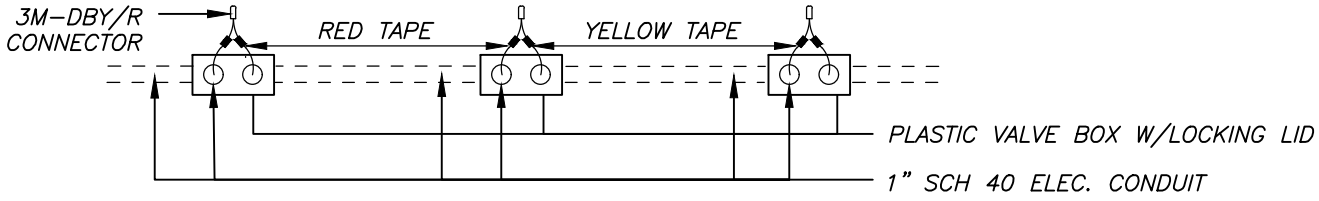
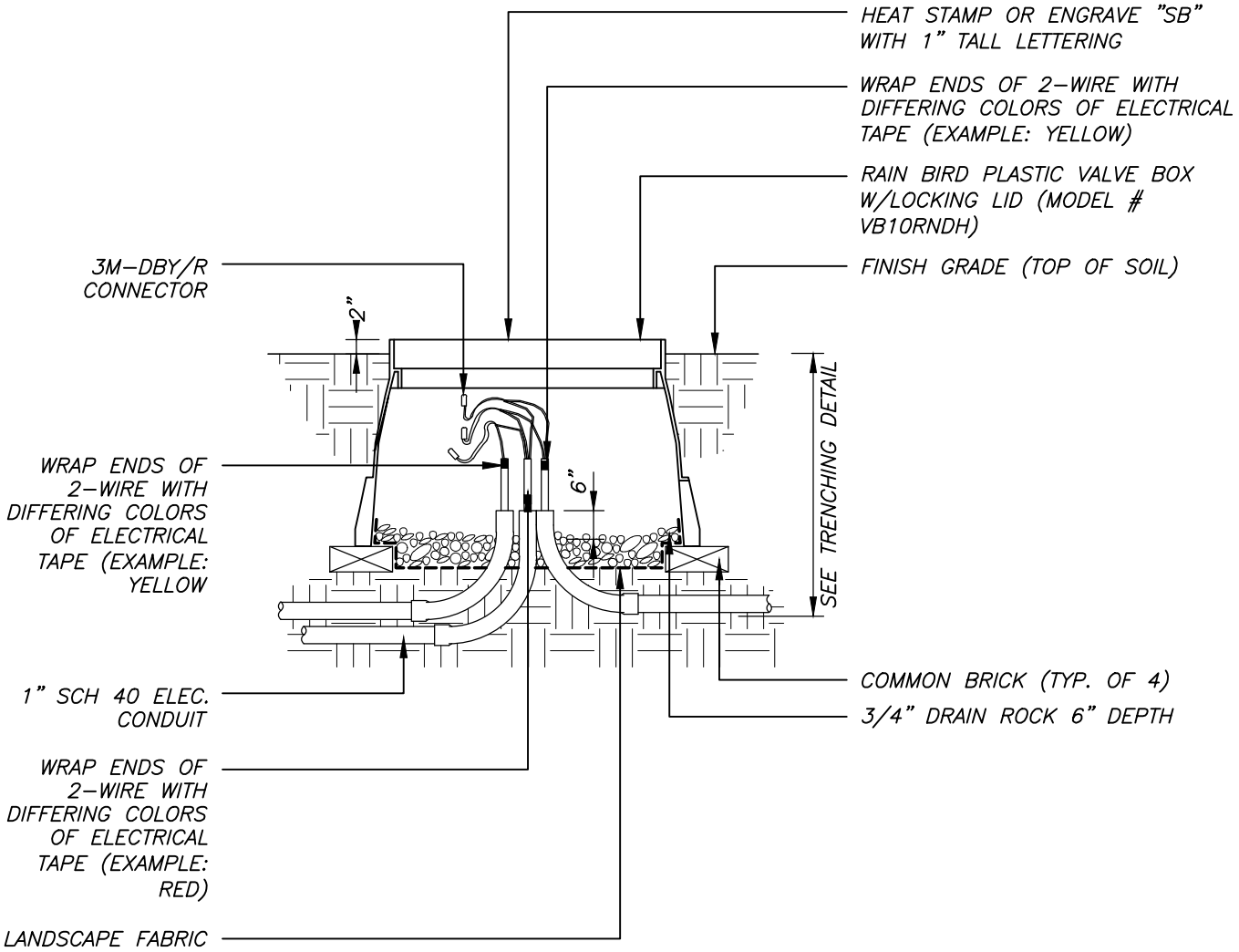


TAPING DIAGRAM



NOTES:
A. PROVIDE 6' OF 2–WIRE COILED IN VALVE BOX. DO NOT PIG TAIL
B. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

PULL BOX 2-WIRE SPLICING

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

DRAWING NO. I-21
NTS

May 28, 2020 – 3:29pm
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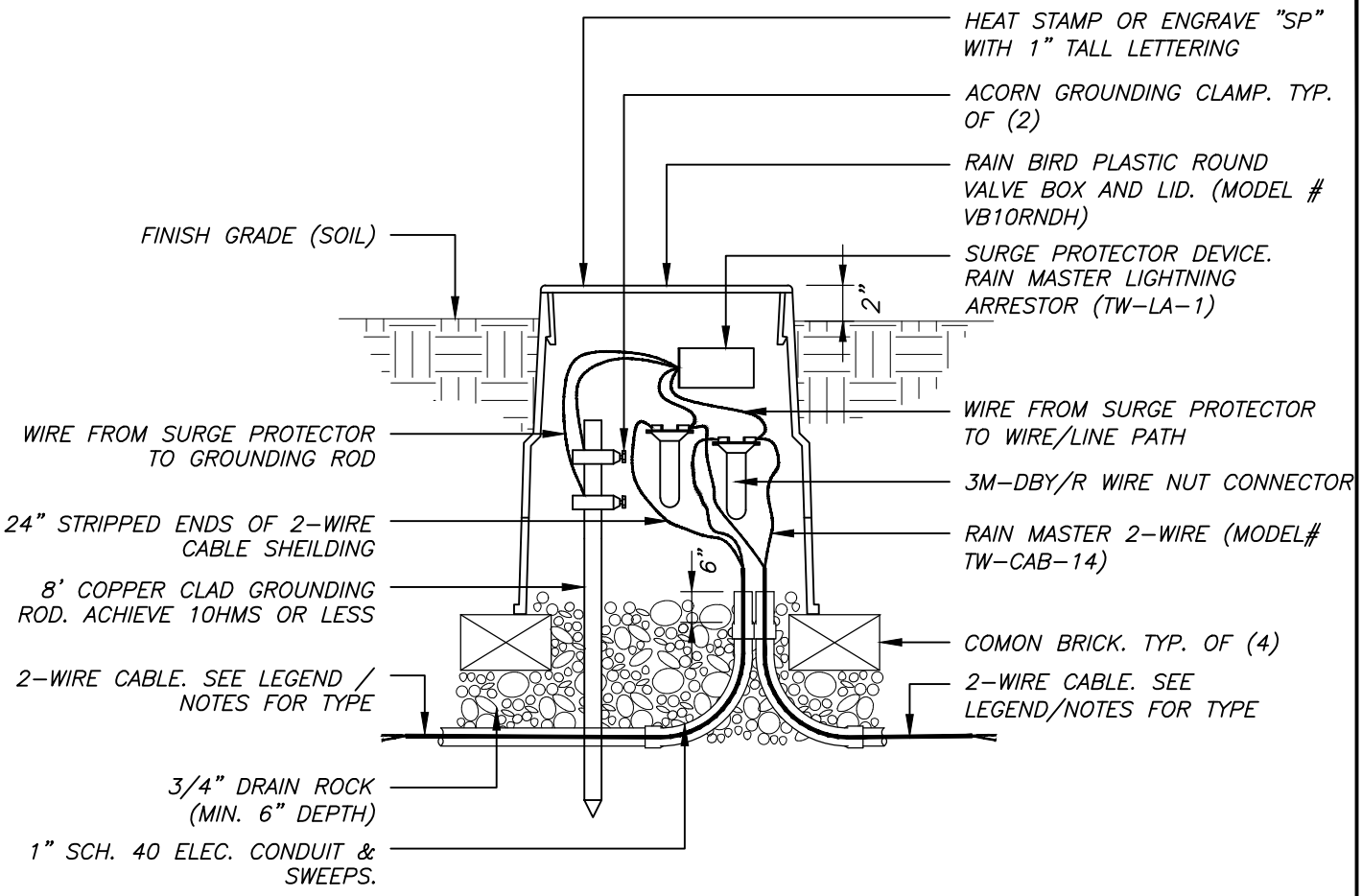

NOTES:

A. EXTEND 6' OF 2-WIRE PATH INTO VALVE BOX. DO NOT PIG TAIL

B. PLACE FILTER FABRIC AROUND VALVE BOX TO COVER ANY HOLES TO REDUCE SOIL INTRUSION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

SURGE PROTECTOR & GROUNDING ROD

DRAWING NO. I-22

NTS

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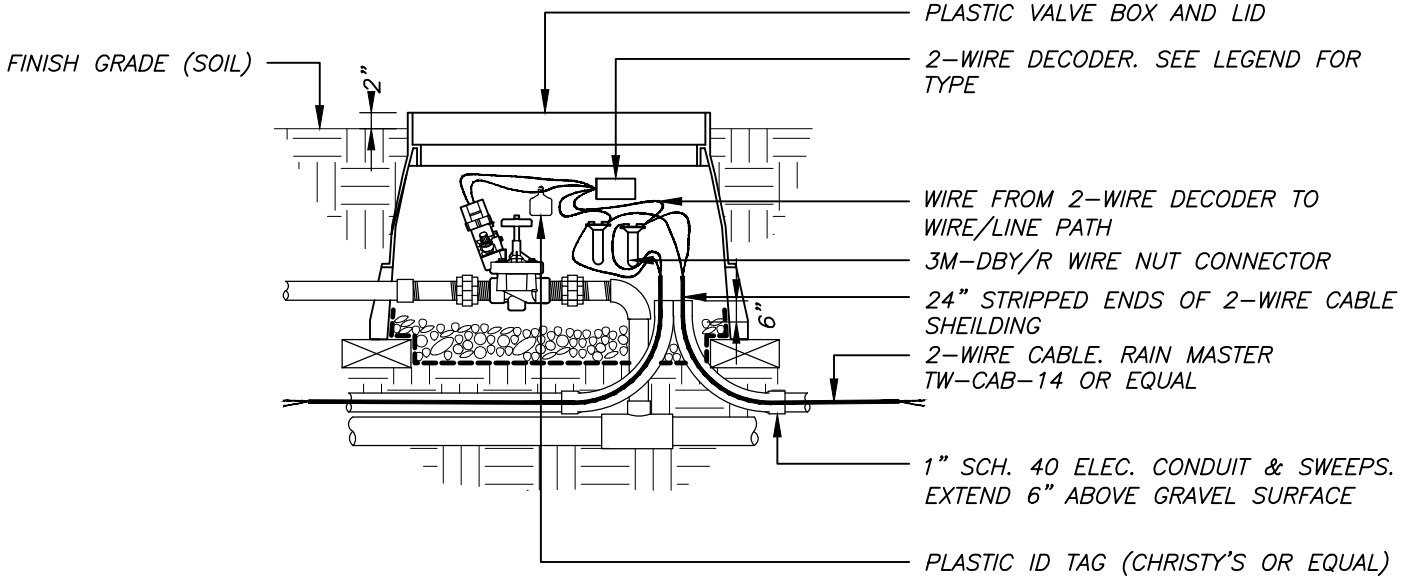

NOTES:

A. EXTEND 6' OF 2-WIRE PATH INTO VALVE BOX. DO NOT PIG TAIL WIRE.

C. 2-WIRE DECODERS RAIN MASTER MODEL#:

1-STATION-TW-D-1

2-STATION-TW-D-2

D. 4-STATION-TW-D-4

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

RCV 2-WIRE CONNECTION

02/03/16
DATE

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R.C.E. NO.

DRAWING NO. I-23

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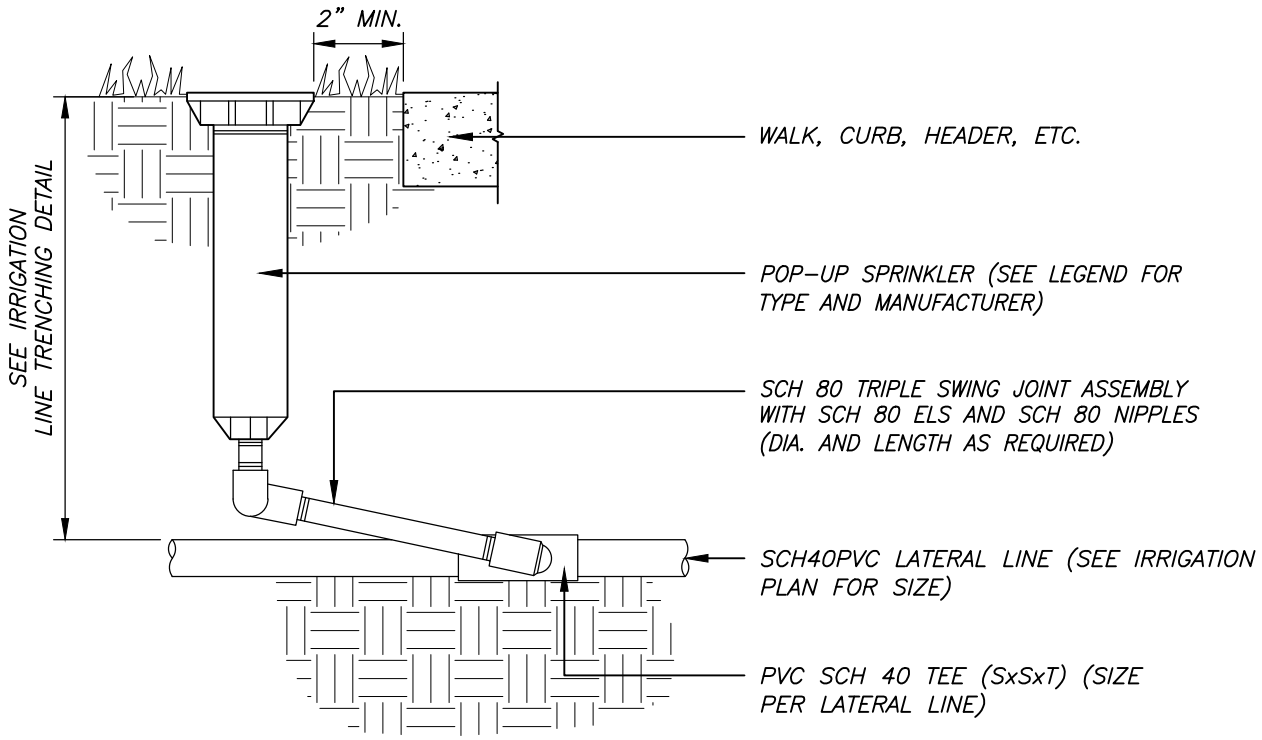

NOTES:

A. 6" POP-UP MINIMUM IN LAWN AREAS

B. ACCEPTABLE MANUFACTURERS/MODELS:

RAIN BIRD

- RD(6/12)-S-P30-F
- RD(6/12)-S-P30-F-NP
- RD(6/12)-S-P45-F
- RD(6/12)-S-P45-F-NP

HUNTER

- PROS(6/12)-PRS30-CV-F
- PROS(6/12)-PRS30-CV-F-R
- PROS(6/12)-PRS40-CV-F
- PROS(6/12)-PRS40-CV-F-R

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16 DATE

62736 R.C.E. NO.

POP-UP SPRAY HEAD

DRAWING NO. I-24

NTS

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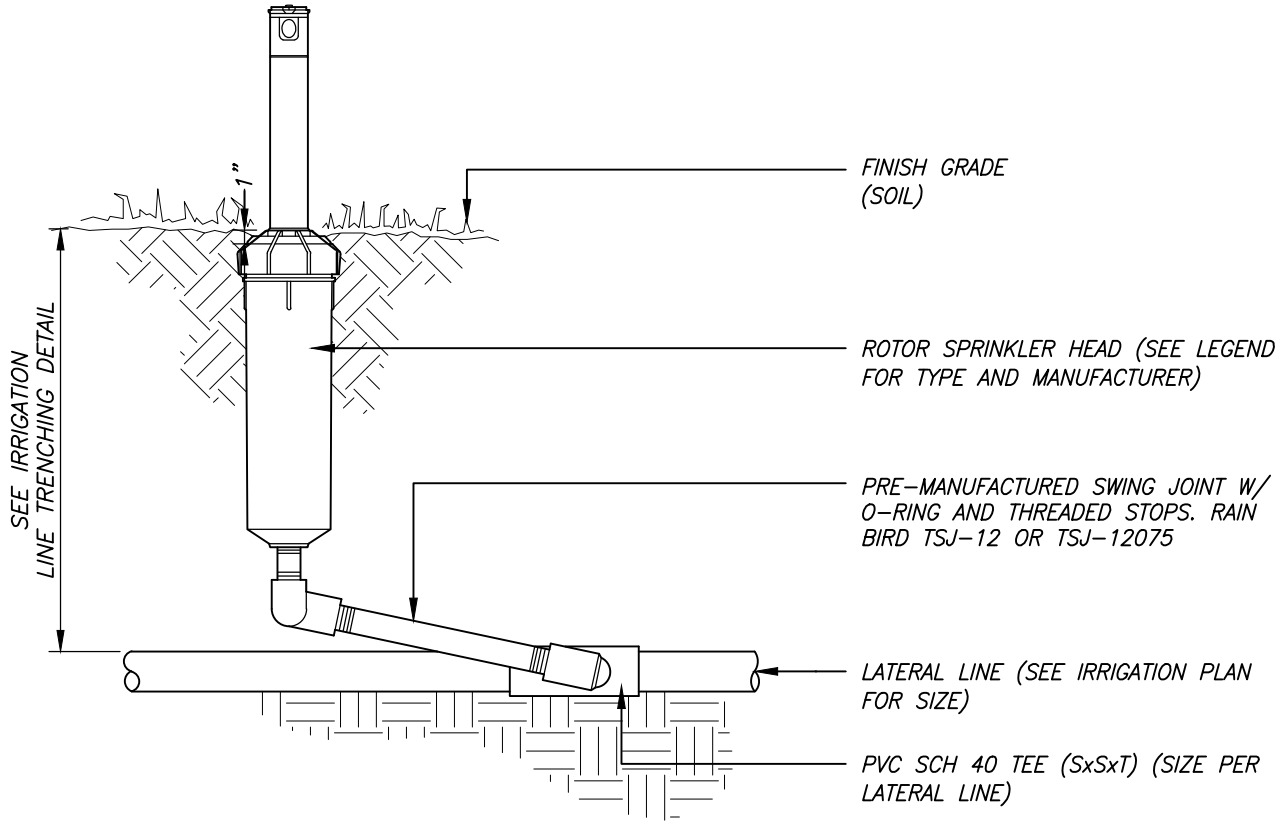

NOTES

A. 5" POP-UP MINIMUM IN LAWN AREAS
B. ACCEPTABLE MANUFACTURERS: RAIN BIRD OR HUNTER

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

GEAR-DRIVEN POP-UP ROTOR

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

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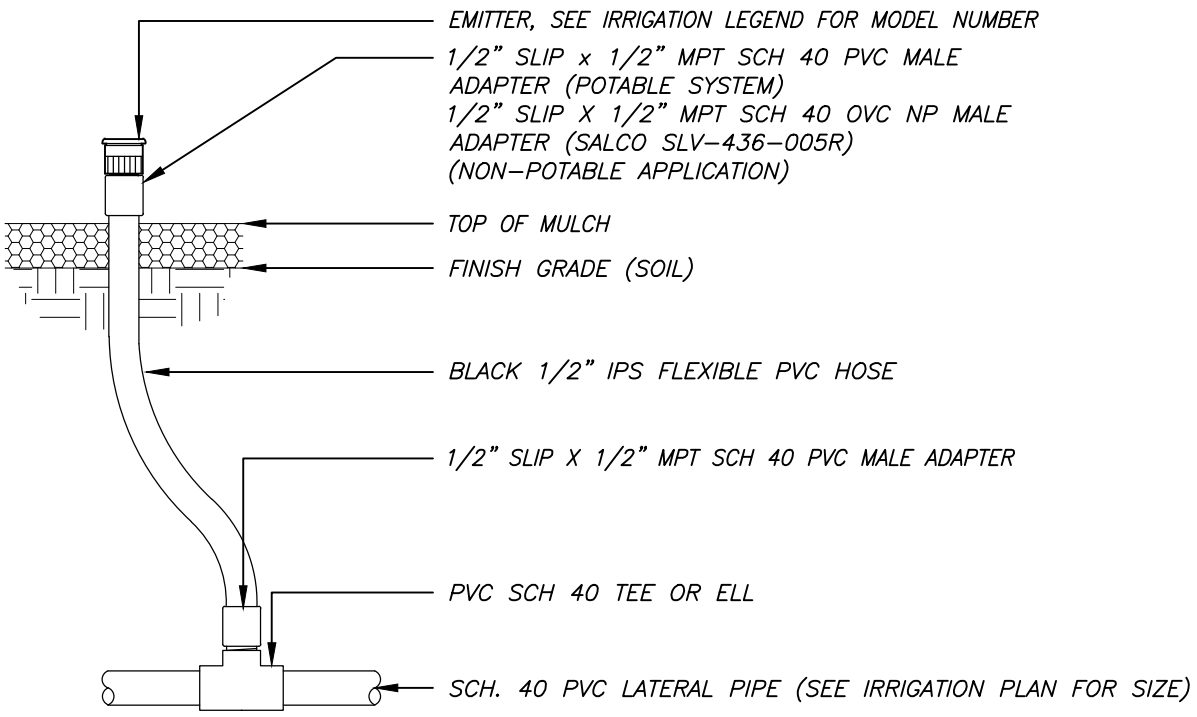

NOTES:
A. USE 795 GLUE OR OTHER MAN. RECOMMENDED GLUE FOR PVC FITTINGS TO IPS TUBING

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: J. MANGAT
CHECKED BY: M. WILLETT
APPROVED BY:

FLEXIBLE HOSE BUBBLER

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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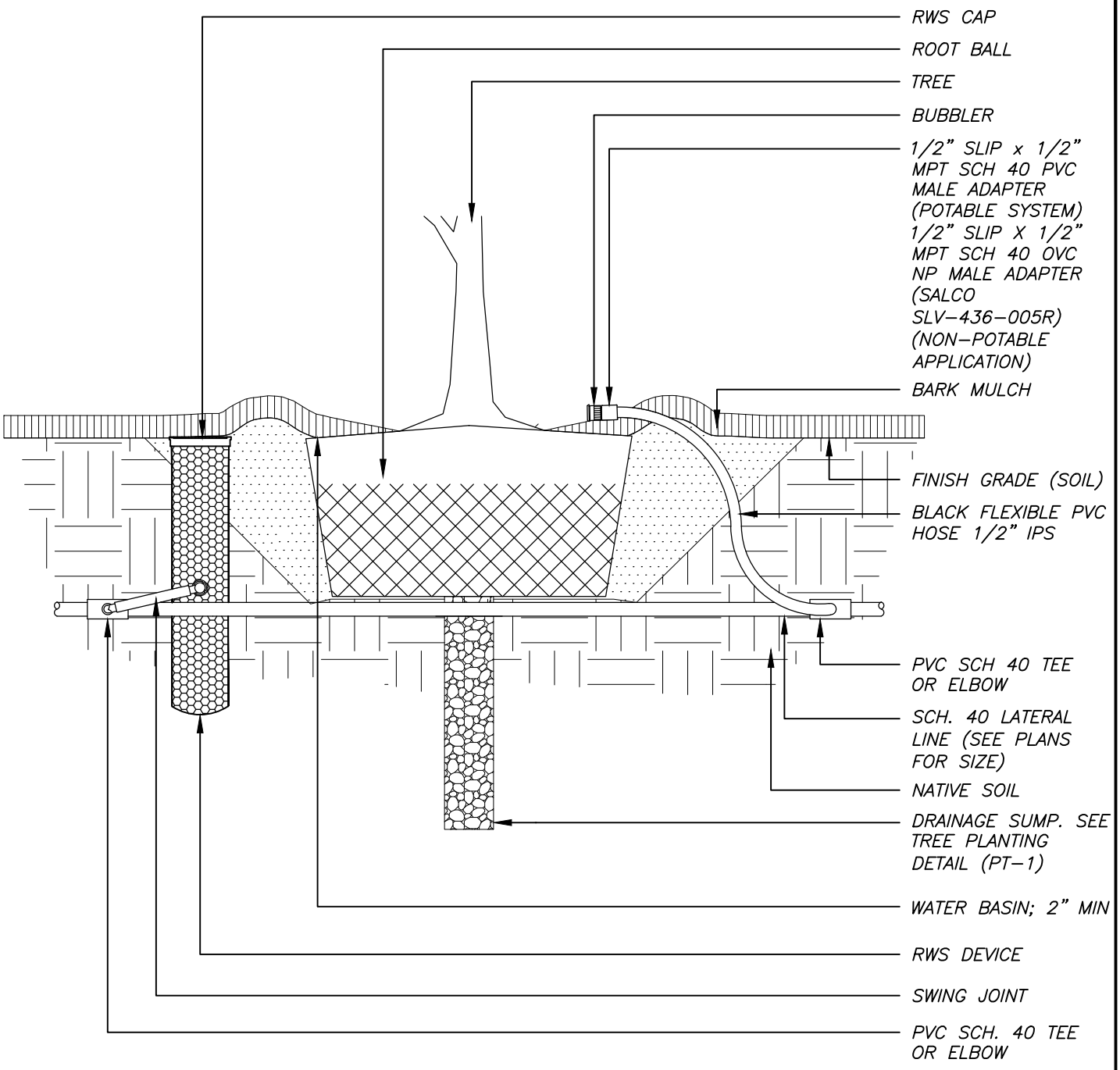

NOTES:

A. POSITION RWS & BUBBLER EVENLY SPACED AROUND TREE (OPPOSITE SIDES), NEAR ROOT BALL
B. INSTALL PRODUCT FLUSH WITH GROUND SURFACE.
C. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" GRAVEL UNDER AND AROUND THE ROOT WATERING UNIT.
D. ONCE RWS HAS BEEN INSTALLED, FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID
E. USE 795 GLUE RECOMMENDED FOR PVC TO IPS TUBING.
F. ACCEPTABLE MANUFACTURER/MODEL #

RAIN BIRD

- RWS-M-B-C-(1401/1402/1404/1408) W/ RWS-SOCK
- RWS-M-B-C-(1401/1402/1404/1408) W/ RWS-SOCK & RWS-GRATE-P

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TREE RWS IN SHRUB BED

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
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May 28, 2020 - 3:29pm
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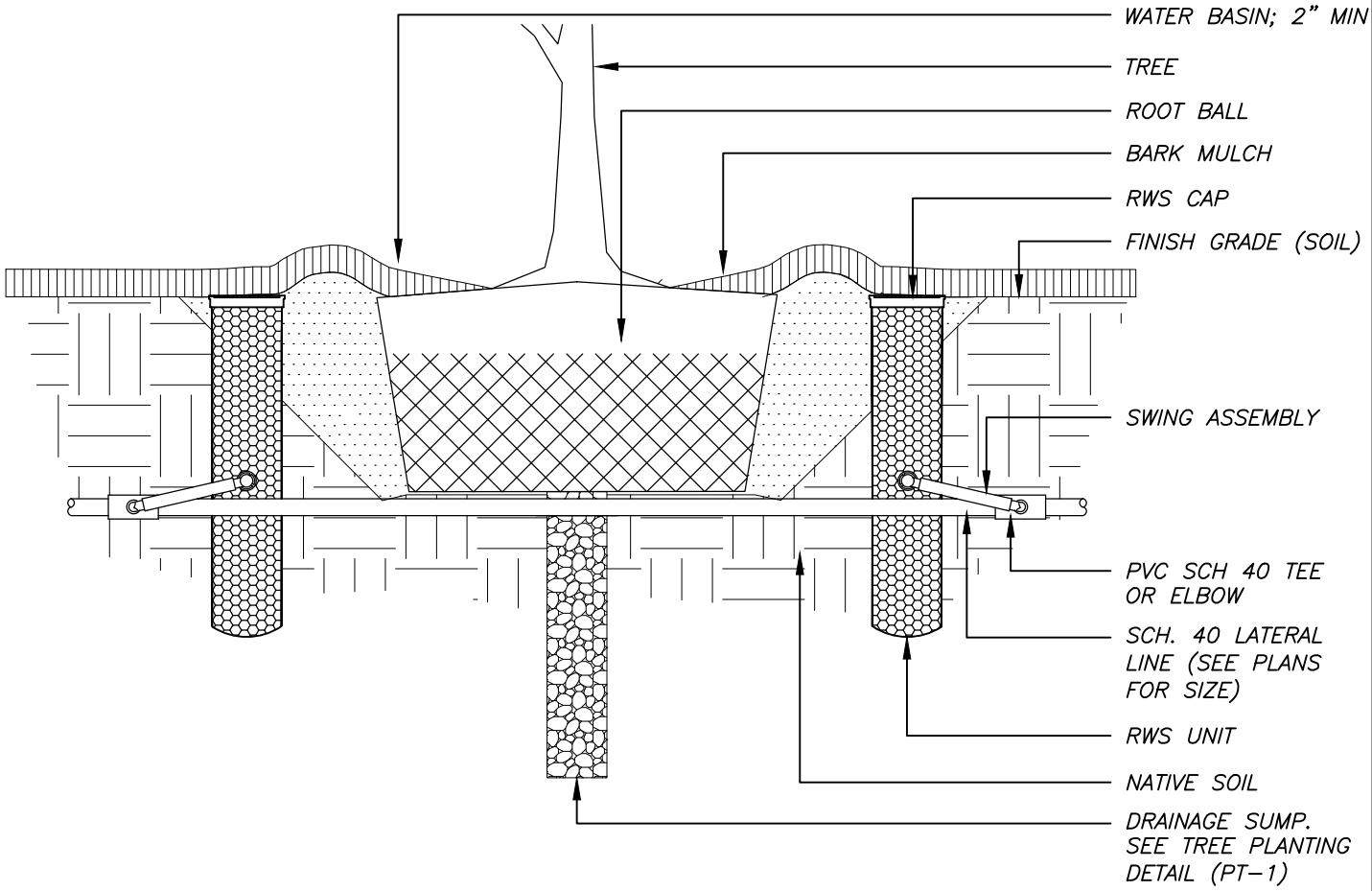

NOTES:

A. POSITION 2 RWS EVENLY SPACED AROUND PLANT, NEAR ROOT BALL
B. INSTALL PRODUCT FLUSH WITH GROUND SURFACE.
C. WHEN INSTALLING IN EXTREMELY HARD OR CLAY SOILS, ADD 3/4" GRAVEL UNDER AND AROUND THE ROOT WATERING UNIT.
D. ONCE RWS HAS BEEN INSTALLED, FILL THE BASKET WITH PEA GRAVEL BEFORE LOCKING LID
E. ACCEPTABLE MANUFACTURE/MODEL #

RAIN BIRD

- RWS-M-B-C-(1401/1402/1404/1408) W/ RWS-SOCK
- RWS-M-B-C-(1401/1402/1404/1408) W/ RWS-SOCK & RWS-GRATE-P

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TREE RWS IN LAWN

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

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May 28, 2020 - 3:29pm
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GENERAL PLANTING GUIDELINES

A. SOIL TESTING:

1. GENERAL: PRIOR TO THE PLANTING DESIGN PROVIDE A SOIL TEST AND RECOMMENDATIONS. IF MASS GRADING IS PLANNED, AFTER THE FINAL GRADE HAS BEEN ESTABLISHED FOR THE PROJECT, THE SOIL SHALL BE TESTED, AND THE SOILS AMENDMENTS DETERMINED AND REVIEWED FOR ADJUSTMENTS (IF NECESSARY) BY THE LANDSCAPE ARCHITECT. THE GUIDELINES FOR THE SOIL TESTING ARE AS FOLLOWS:
   1.1. PARKS: 1 SAMPLE PER 2 ACRES.
   1.2. PARKWAYS: 1 SAMPLE PER 2,000 LF. OF EACH SIDE OF THE STREET
   1.3. MEDIANS: 1 SAMPLE PER 2,000 LF.
2. TESTING SHALL BE DONE BY A REPUTABLE CERTIFIED LABORATORY FOR SOIL AND PLANT DISEASE DIAGNOSIS AND ANALYSIS, WITH A MINIMUM OF FIVE YEARS EXPERIENCE. SAMPLES MUST IDENTIFY: SOIL TEXTURE, INFILTRATION RATES, pH, TOTAL SOLUBLE SALTS, SODIUM, PERCENT ORGANIC MATTER, RECOMMENDATIONS FOR INITIAL SOIL AMENDMENTS WITH COMMERCIALLY AVAILABLE AMENDMENTS, AND RECOMMENDATIONS FOR 60–90 DAY MAINTENANCE.
3. SOIL TESTS SHALL BE TAKEN AT THE FOLLOWING DEPTHS: SHRUB/GROUNDCOVER AREAS = 6"–12" DEPTH; LAWN AREAS = 3"–6" DEPTH.
4. LANDSCAPE AREAS SHALL BE RIPPED AND CROSS RIPPED TO A DEPTH OF 12" PRIOR TO ESTABLISHMENT OF FINISH GRADE AND ROTOTILLED TO A DEPTH OF 6"

B. PLANTING:

1. PLANT MATERIAL SHALL BE SECURED FROM A NURSERY WITHIN (30) DAYS AFTER AWARD OF CONTRACT. IF UNAVAILABLE, SUBSTITUTIONS NEED TO BE REQUESTED DURING THIS TIME. AFTER (30) DAYS, NO SUBSTITUTIONS WILL BE ALLOWED UNLESS OTHERWISE APPROVED BY THE CITY AND ADDITIONAL FEES, IF ANY, WILL BE THE RESPONSIBILITY OF THE CONTRACTOR.
2. ALL TREES SHALL BE STAKED PER CITY DETAIL. A ROOTBALL ANCHORING SYSTEM MAY BE ALLOWED UNDER SPECIAL CIRCUMSTANCES AND MUST BE APPROVED BY THE CITY PRIOR TO INSTALLATION. MINIMUM TREE SIZE SPECIFIED SHALL BE 15–GALLON CONTAINER; MINIMUM SHRUB SIZE SHALL BE 1–GALLON FOR GROUNDCOVER AND ACCENT SPECIES AND 5–GALLON FOR ALL OTHER SHRUBS. FLATTED OR 'PLUG' GROUNDCOVER SIZES WILL BE CONSIDERED UNDER SPECIAL CIRCUMSTANCE.
3. PRIOR TO PLANTING, ALL ROOTBALLS SHALL BE SCARIFIED.
4. ALL PLANTING INSTALLATION CONTRACTS SHALL INCLUDE PROVISIONS FOR A 90–DAY MAINTENANCE PERIOD AND CONFORM TO THE CITY'S STANDARD MAINTENANCE SPECIFICATIONS. THE 90–DAY MAINTENANCE PERIOD SHALL NOT BEGIN UNTIL AFTER CITY HAS ACCEPTED ALL LANDSCAPING AND IRRIGATION FOR MAINTENANCE.
5. TURF SHALL NOT BE PERMITTED IN PLANTED AREAS 10' OR LESS IN WIDTH.
6. TURF SHALL BE CUT BACK 20" AROUND ALL TREE TRUNK BASES.
7. TURF SHALL NOT BE PLANTED ON SLOPES GREATER THAN 16% OF 1:6. THE TOE OR ANY SLOPING SECTION SHALL BE A MINIMUM OF 24" BEHIND A CURB OR SIDEWALK.
8. GRADES FOR SHRUB/GROUNDCOVER AREAS SHALL NOT EXCEED 33% OR 1:3. THE TOE OF ANY SLOPING SECTION SHALL BE A MINIMUM OF 24" BEHIND A CURB OR SIDEWALK.
9. SPORTS FIELDS AND LARGE AREAS SHALL BE LEVELED AND GRADED BY USE OF A LAND PLANE.

C. HYDROSEEDING:

1. HYDROSEEDED OR HYDRO–SPRIGGING MAY BE USED TO PLANT LAWN AREAS, AND MAY BE REQUIRED BY CITY FOR SPECIFIC PROJECTS WITH SOIL PREPARATION.
   HYDROSEED MIXTURE SHALL BE 90% TURF TYPE TALL FESCUE AND 10% BLUEGRASS SEED PER CITY.
   HYDRO–SPRIG HYBRID BERMUDA (TIFWAY II) SHALL BE USED FOR SPORTS FIELDS.

VIRGIN WOOD FIBER:	WEYERHEUSER SILVA CONFOR ECO–FIBER	2,000 LBS/ACRE
ORGANIC BINDER:	PER SPECIFICATIONS	100 LBS/ACRE
SEED:	90/10 DWARF FESCUE	435 LBS/ACRE
STOLONS:	TIFFWAY II	300 LBS/ACRE
FERTILIZER:	15–15–15	300 LBS/ACRE

2. SPRAY MIXTURE UNIFORMLY ON PLANTING AREA. USE A NOZZLE WHICH PRODUCES A SPRAY THAT DOES NOT CONCENTRATE OR ERODE THE MATERIAL. PROTECT BUILDINGS, TREES, SHRUBS, CARS, ETC. FROM SPRAY.
3. ALLOW LAWN TO GERMINATE AND GROW TO 3" BEFORE FIRST MOWING. MOW AT LEAST TWICE, AND THERE SHALL BE A 90% STAND PRIOR TO STARTING THE MAINTENANCE PERIOD. ENSURE NO MORE THAN 2% WEEDS. ALL AREAS MUST BE FULLY GERMINATED PRIOR TO BEING ACCEPTED..
4. HYDROSEEDING WILL ONLY BE ALLOWED TO BE APPLIED BETWEEN APRIL 1 AND OCTOBER 15. HYDRO–SPRIGGING WILL ONLY BE ALLOWED BETWEEN APRIL 1 AND SEPTEMBER 1. NO HYDRO–APPLICATIONS ARE PERMITTED DURING THE WINTER MONTHS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 06/02/20 DATE | 62736 R.C.E. NO.

GENERAL PLANTING NOTES

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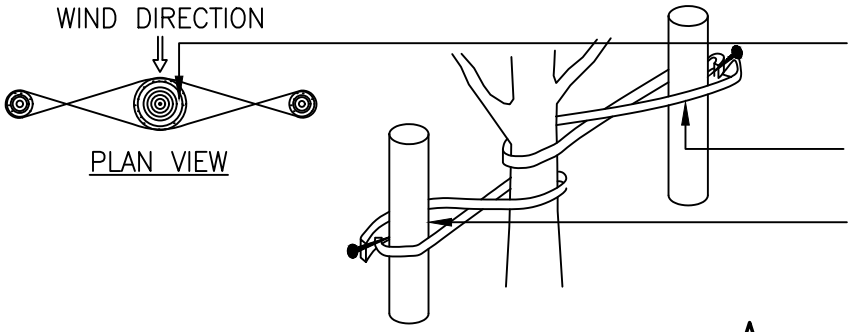

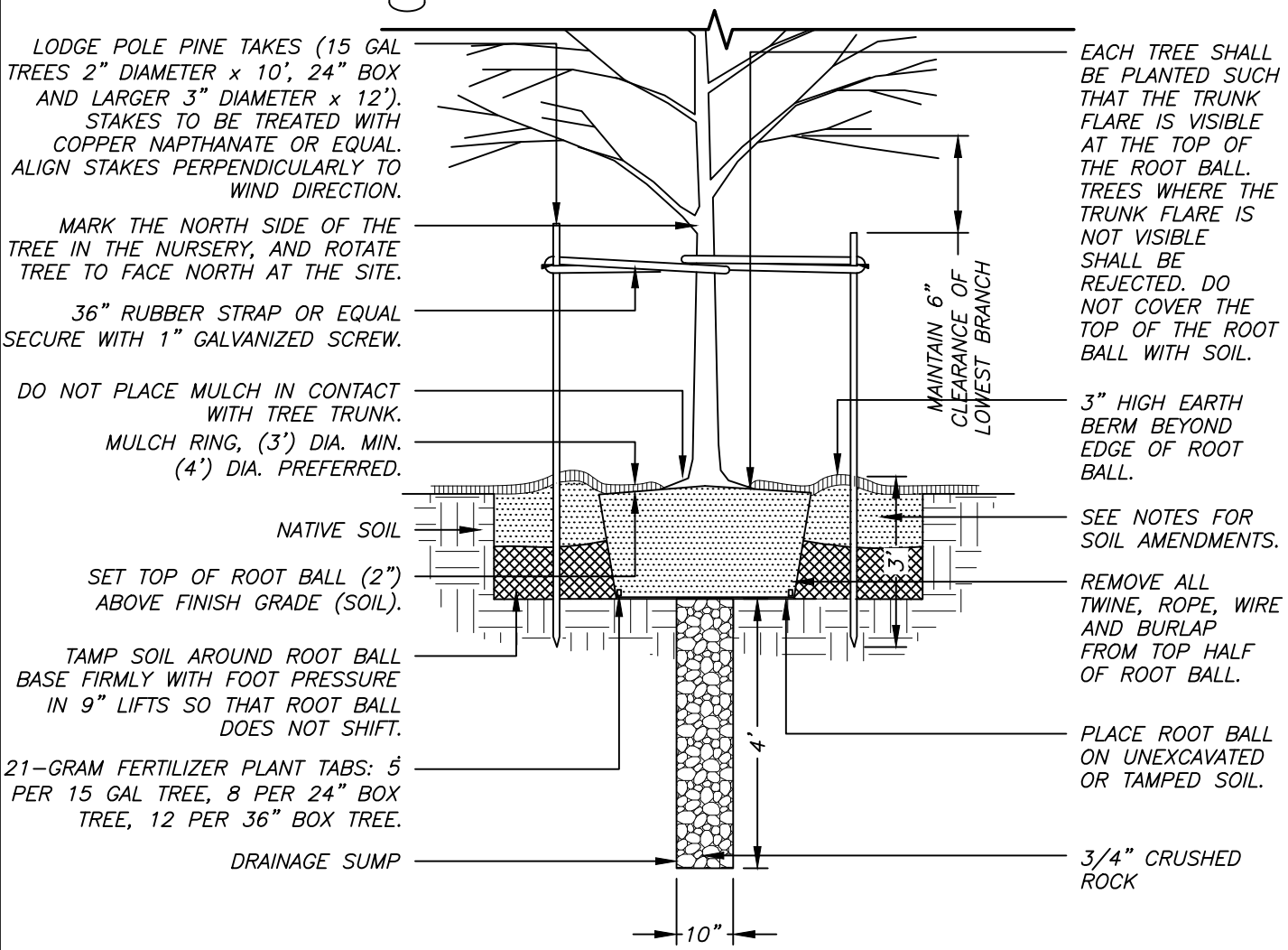

NOTES:

A. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
B. SEE STAKING DETAIL FOR STAKING INFORMATION
C. AMENDED SOIL MUST NOT BE SO COMPACTED AS TO IMPEDE ROOT GROWTH OR DRAINAGE. THE SOIL STRUCTURE SHALL NOT BE PLATY OR MASSIVE.
D. TREES WITH POOR QUALITY ROOT BALLS OR ROOT BALLS THAT HAVE BEEN CRACKED OR DAMAGED SHALL BE REJECTED.
E. TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN WEAK TRUNKS SHALL BE REJECTED.
F. BACKFILL MIX TO INCLUDE: 2/3 EXISTING AMENDED SOIL & 1/3 ORGANIC MULCH.
G. ADD 21 GRAM FERTILIZER TABLETS AT THE FOLLOWING RATES: 5/15GAL & 8/24" BOX

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

06/02/20
DATE

62736
R.C.E. NO.

TREE PLANTING

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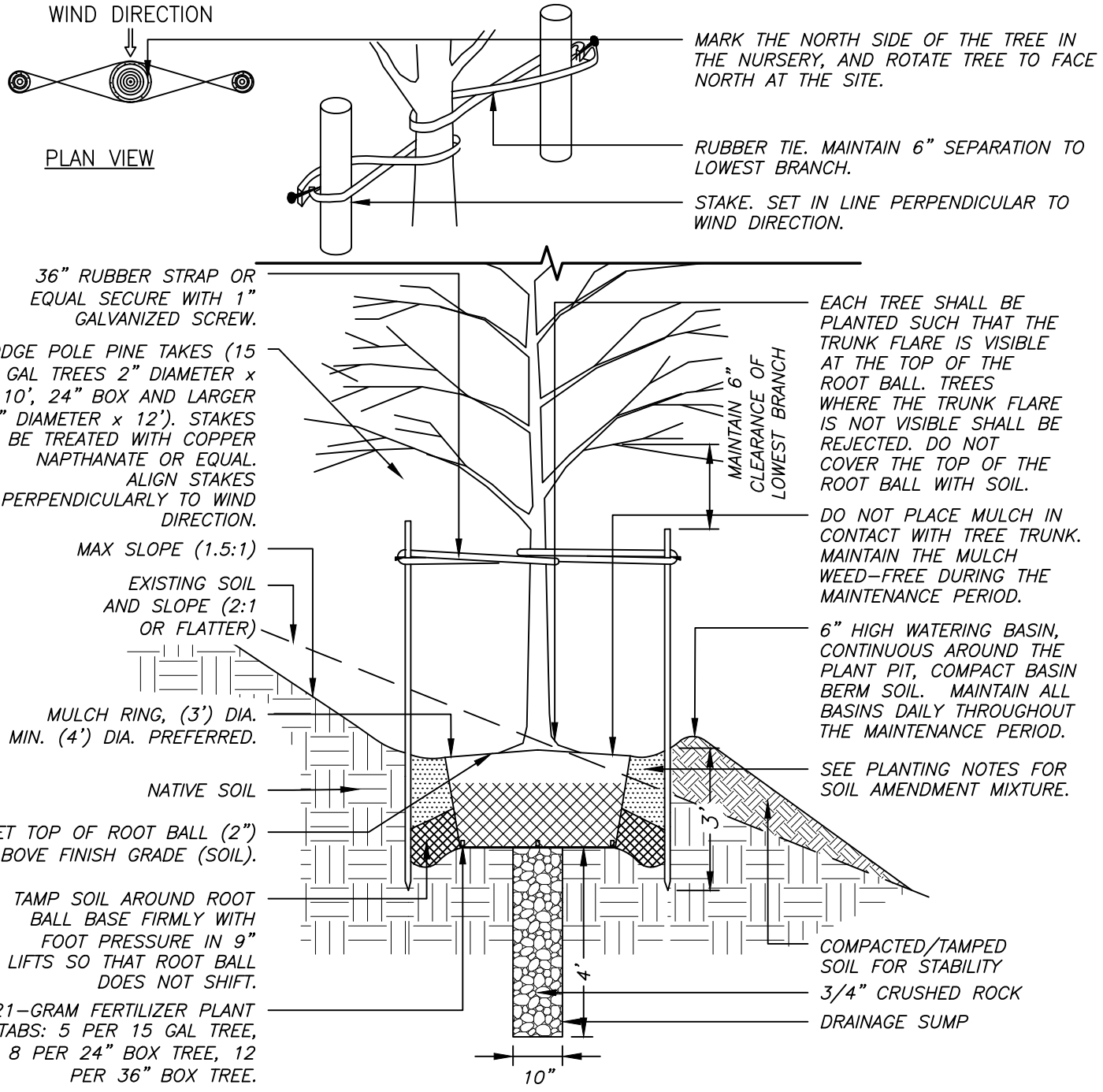

NOTES:

A. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO-DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
B. SEE STAKING DETAIL FOR STAKING INFORMATION
C. AMENDED SOIL MUST NOT BE SO COMPACTED AS TO IMPEDE ROOT GROWTH OR DRAINAGE. THE SOIL STRUCTURE SHALL NOT BE PLATY OR MASSIVE.
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E. TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN WEAK TRUNKS SHALL BE REJECTED.
F. BACKFILL MIX TO INCLUDE: 2/3 EXISTING AMENDED SOIL. 1/3 ORGANIC MULCH.
G. ADD 21 GRAM FERTILIZER TABLETS AT THE FOLLOWING RATES: 5/15GAL & 8/24" BOX

CITY OF PATTERSON IMPROVEMENT STANDARDS

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TREE PLANTING ON SLOPE

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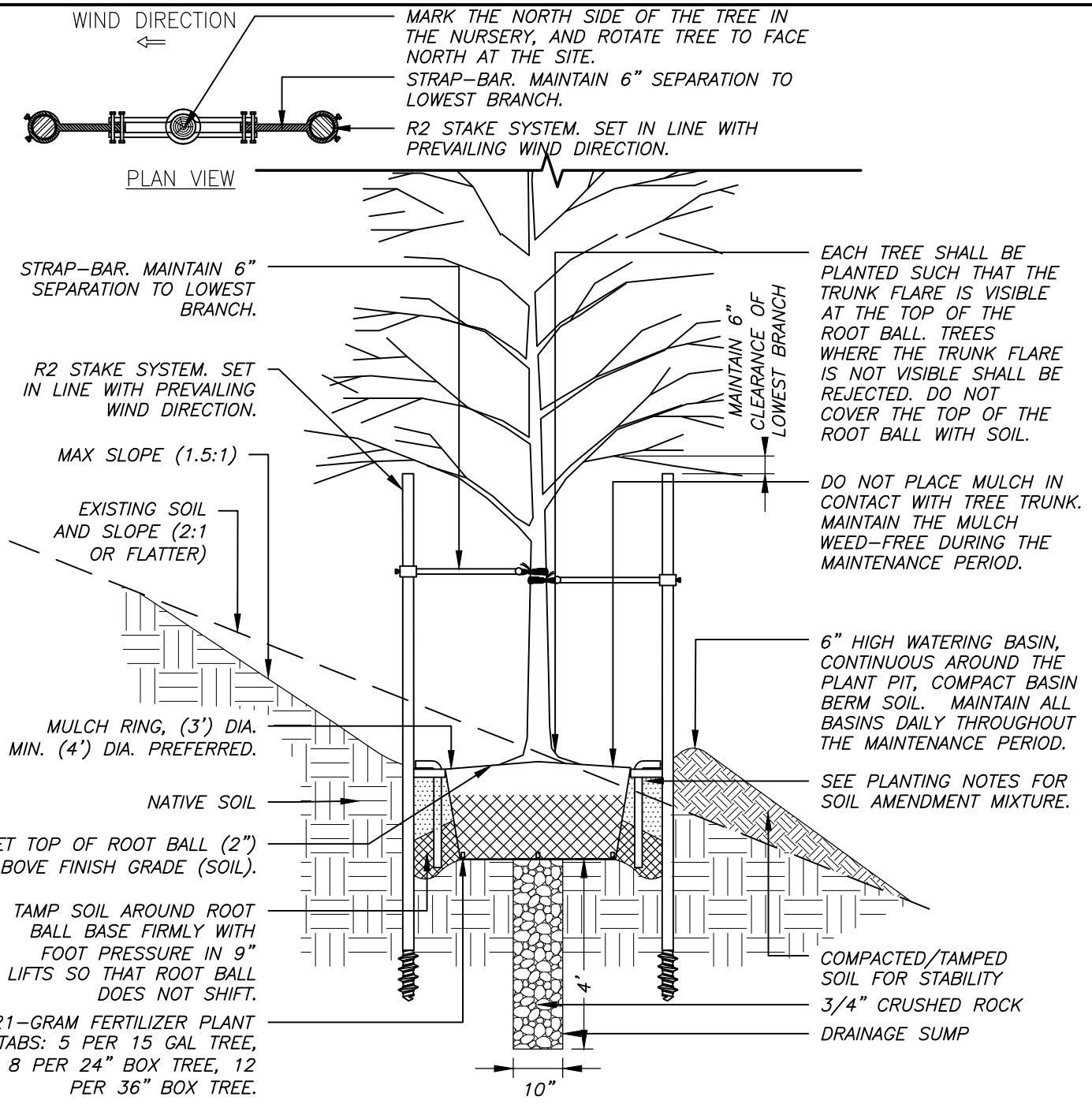

NOTES:

A. DO NOT HEAVILY PRUNE THE TREE AT PLANTING. PRUNE ONLY CROSSOVER LIMBS, CO–DOMINANT LEADERS, AND BROKEN OR DEAD BRANCHES. SOME INTERIOR TWIGS AND LATERAL BRANCHES MAY BE PRUNED; HOWEVER, DO NOT REMOVE THE TERMINAL BUDS OF BRANCHES THAT EXTEND TO THE EDGE OF THE CROWN.
B. SEE STAKING DETAIL FOR STAKING INFORMATION
C. AMENDED SOIL MUST NOT BE SO COMPACTED AS TO IMPEDE ROOT GROWTH OR DRAINAGE. THE SOIL STRUCTURE SHALL NOT BE PLATY OR MASSIVE.
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E. TREES THAT HAVE GROWN TOO CLOSE TOGETHER IN THE NURSERY, RESULTING IN WEAK TRUNKS SHALL BE REJECTED.
F. BACKFILL MIX TO INCLUDE: 2/3 EXISTING AMENDED SOIL. 1/3 ORGANIC MULCH.
G. ADD 21 GRAM FERTILIZER TABLETS AT THE FOLLOWING RATES: 5/15GAL & 8/24" BOX

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

TREE PLANTING ON SLOPE

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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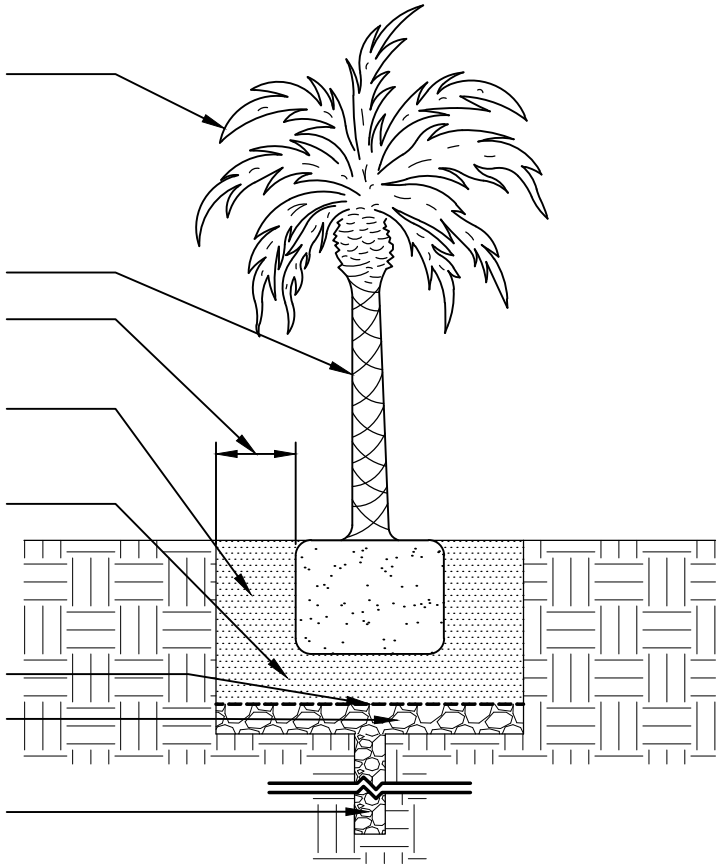

NOTE:

A. AMENDED BACKFILL IS HYDRO–SLURRIED INTO PIT. PEDESTAL SUPPORTS TREE PRIOR TO PLANTING.
B. PALM TREE VARIETY SHALL BE 'TRUE DATE PALM'

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

PALM TREE PLANTING

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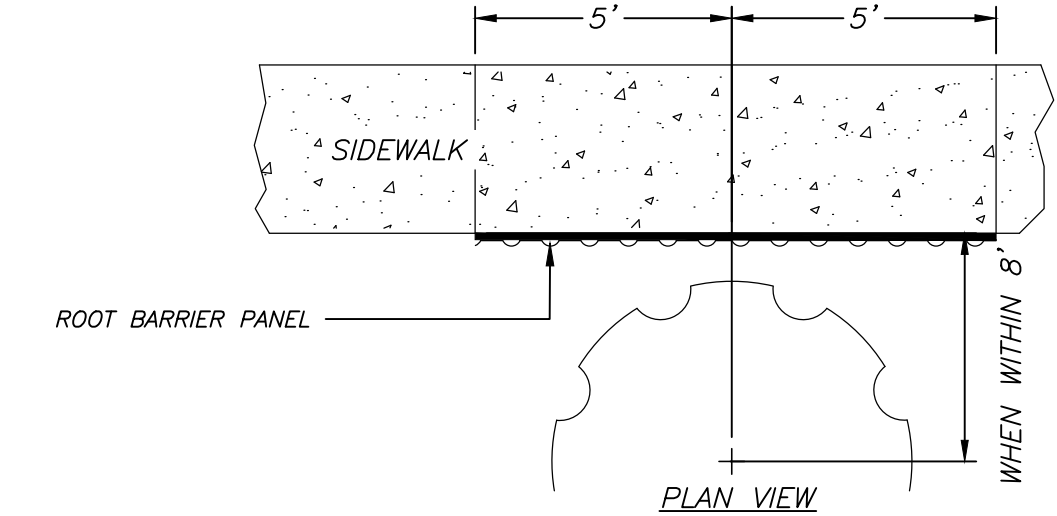

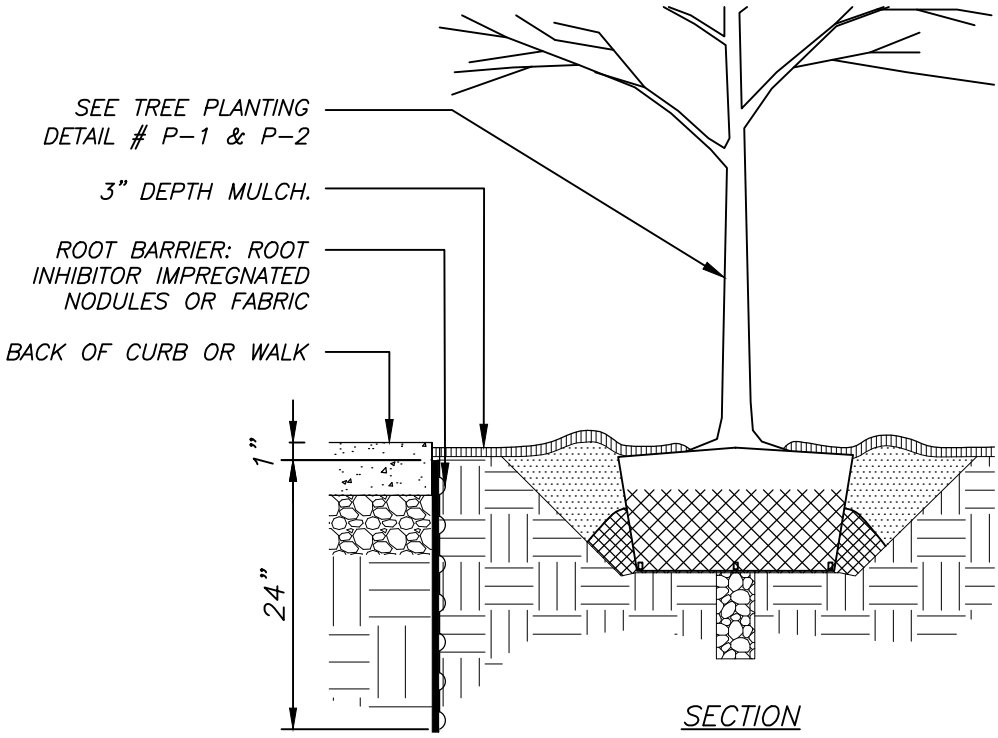

NOTES:

A. ALL TREES WITHIN 8' OF A CURB OR SIDEWALK SHALL HAVE ROOT BARRIER INSTALLED.
B. INSTALL ROOT BARRIERS PER MANUFACTURER'S RECOMMENDATIONS.
C. APPROVED MANUFACTURER: DEEP ROOT UB24-2

CITY OF PATTERSON IMPROVEMENT STANDARDS

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CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

TREE ROOT BARRIER

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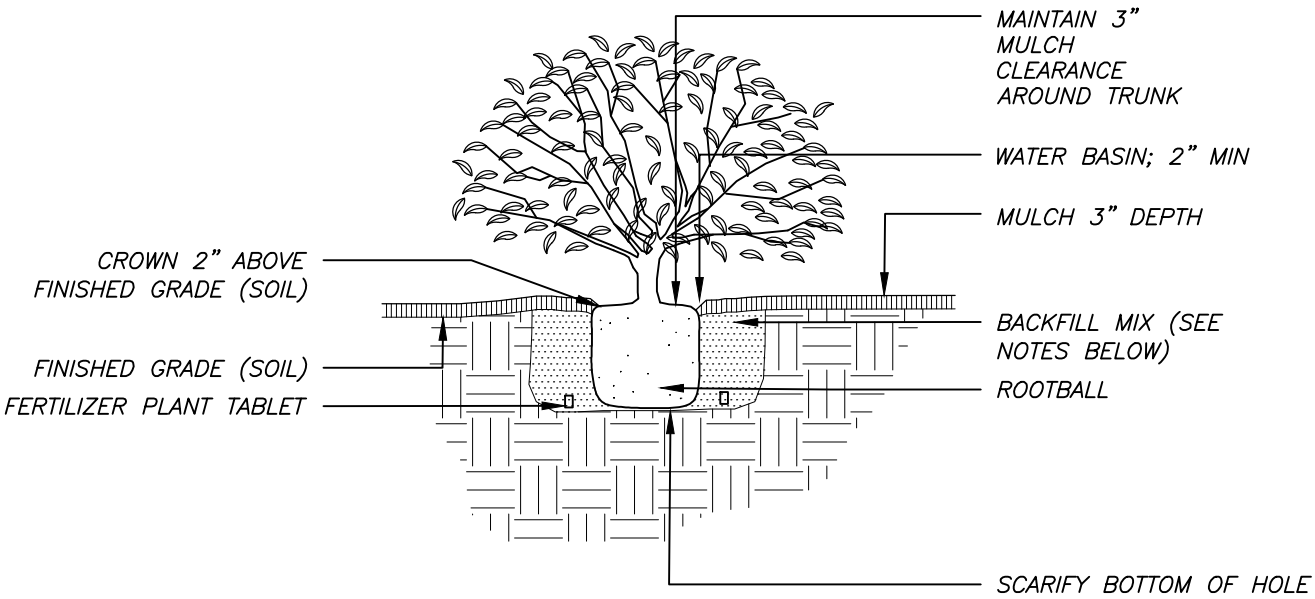

NOTES:

A. ADD 21 GRAM FERTILIZER TABLETS AT FOLLOWING RATES: 1/1GAL., 3/5 GAL.
B. BACKFILL MIX TO INCLUDE 2/3 EXISTING AMENDED SOIL & 1/3 ORGANIC MULCH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
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SHRUB PLANTING

FERNANDO ULLOA, CITY ENGR.

02/03/16
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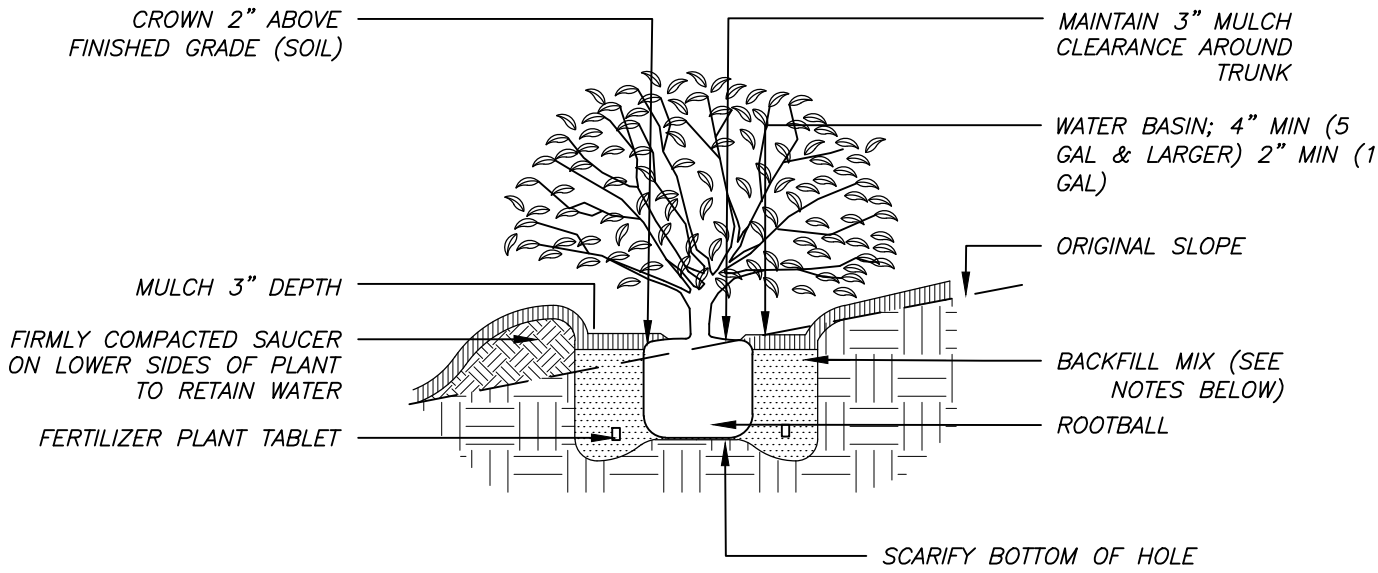

NOTES:

A. ADD 21 GRAM FERTILIZER TABLETS AT FOLLOWING RATES: 1/1GAL., 3/5 GAL.
B. BACKFILL MIX TO INCLUDE 2/3 EXISTING AMMENDED SOIL & 1/3 ORGANIC MULCH.

CITY OF PATTERSON IMPROVEMENT STANDARDS

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SHRUB PLANTING ON SLOPE

02/03/16
DATE

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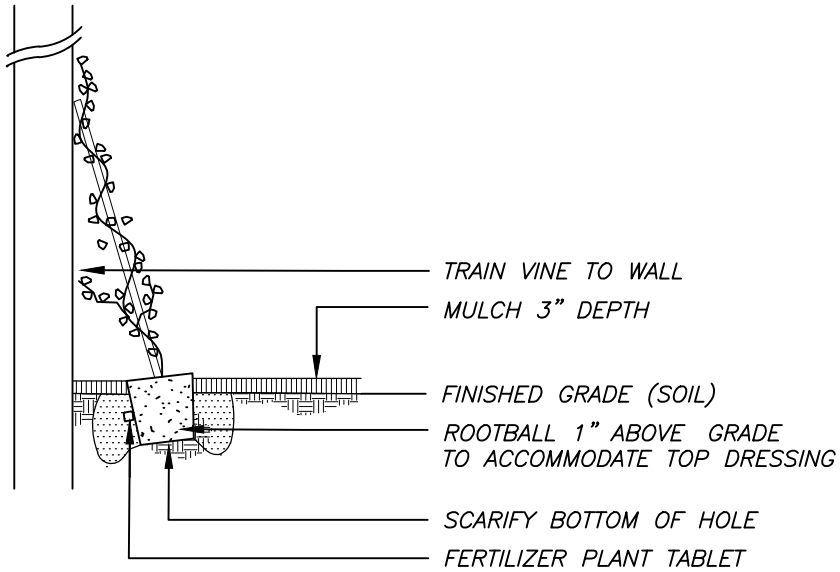

NOTES:

A. ADD 21 GRAM FERTILIZER TABLETS AT FOLLOWING RATES: 1/1GAL., 3/5 GAL.
B. BACKFILL MIX TO INCLUDE 2/3 EXISTING AMMENDED SOIL & 1/3 ORGANIC MULCH.
C. CENTER VINE 12"–18" FROM WALL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

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62736
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VINE PLANTING

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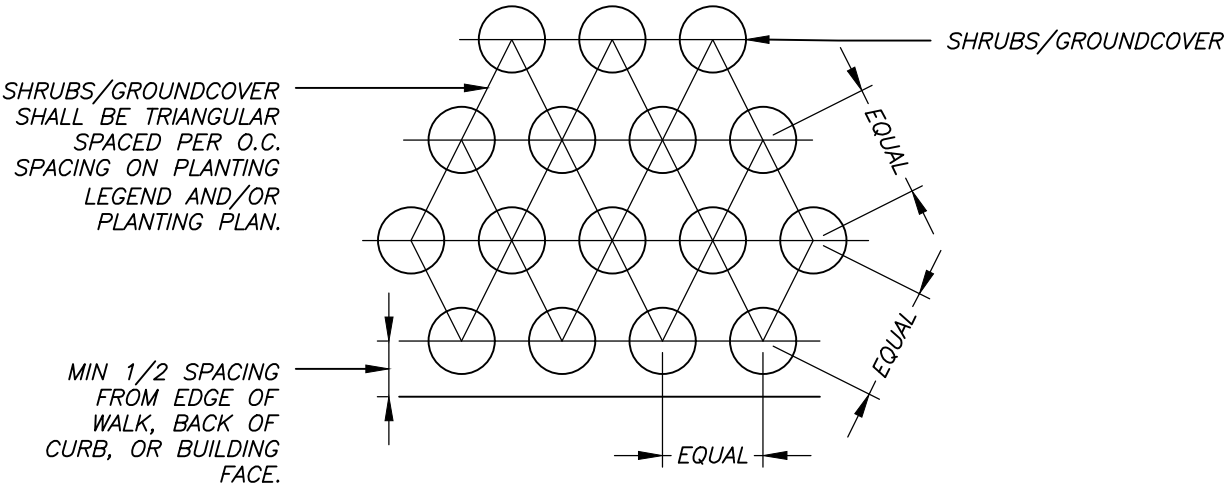

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02/03/16
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62736
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GROUNDCOVER SPACING

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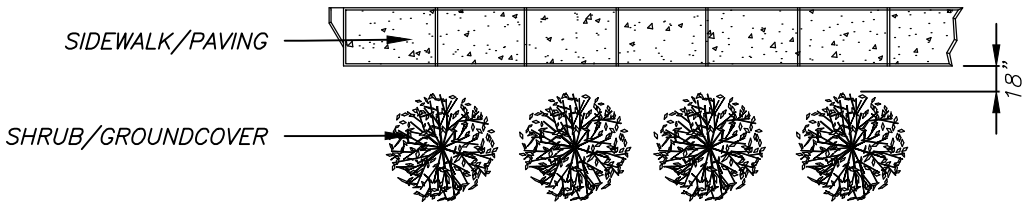

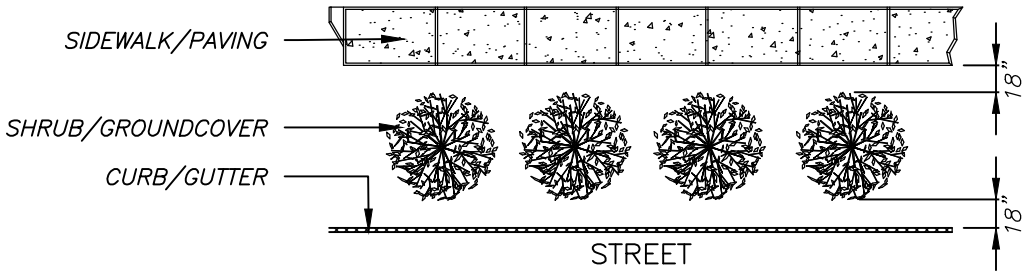

NOTES:
MAINTAIN AN 18" MIN. OFFSET FROM MATURE CANOPY SIZE OF SHRUB/GROUNDCOVER FROM ALL PAVED SURFACES.

CITY OF PATTERSON IMPROVEMENT STANDARDS

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CHECKED BY: M. WILLETT
APPROVED BY:

PLANT OFFSETS

FERNANDO ULLOA, CITY ENGR.
02/03/16 DATE
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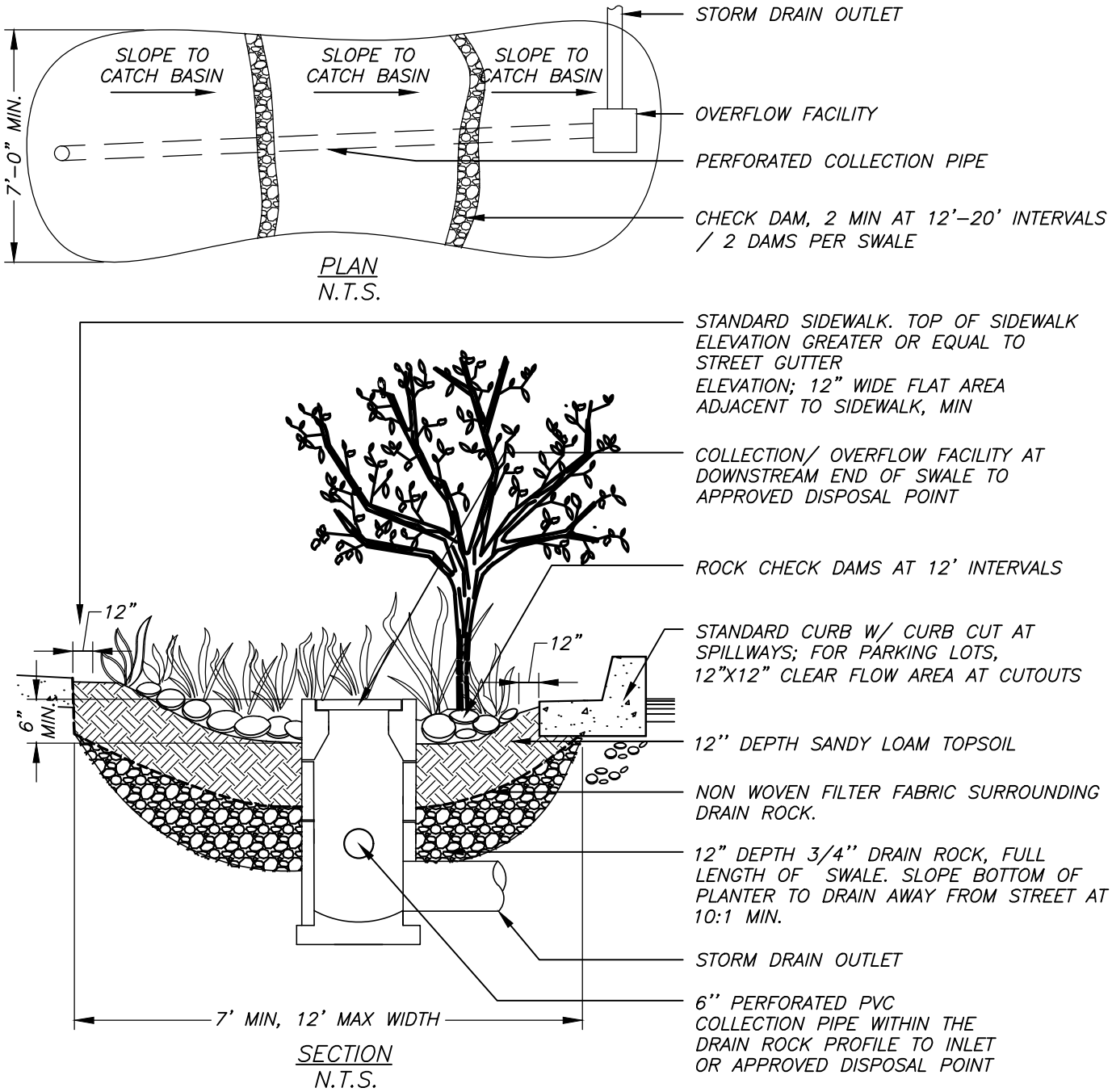

NOTES:

A. ROCK CHECK DAMS TO BE 3–5" SMOOTH COBBLE AT 12'–20' INTERVALS OR MIN. 2 DAMS PER SWALE.
B. REFER TO CIVIL PLANS FOR OVER FLOW CATCH BASIN INSTALLATION

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
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62736
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VEGETATED SWALE

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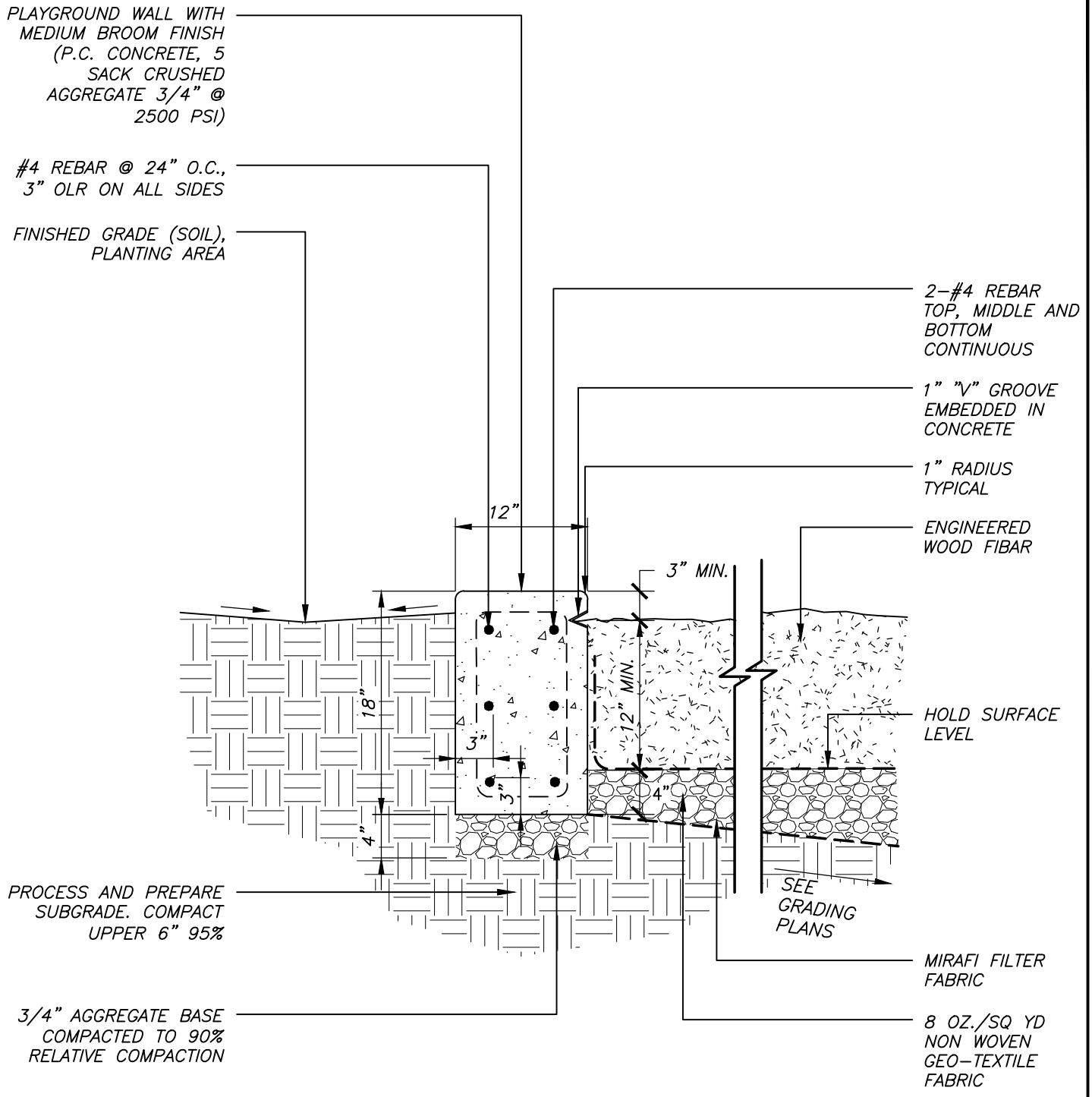

CITY OF PATTERSON IMPROVEMENT STANDARDS

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APPROVED BY:

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02/03/16
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62736
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1' WIDE PLAYGROUND CURB WITH WOOD FIBER

DRAWING NO. PY-1

NTS

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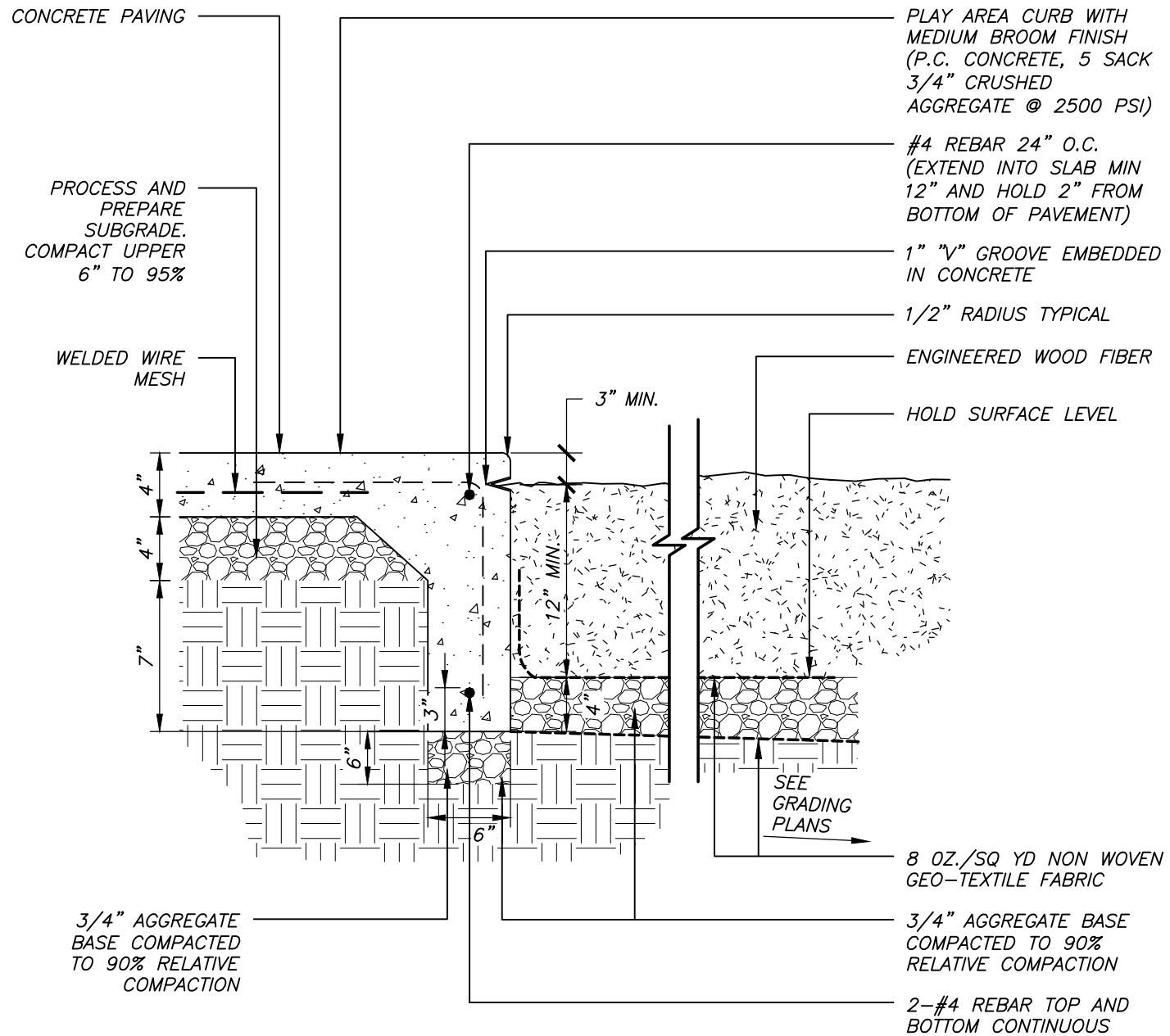

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

MONOLITHIC SIDEWALK & PLAYCURB WITH WOOD FIBER

02/03/16
DATE

62736
R.C.E. NO.

DRAWING NO. PY-2

NTS

May 28, 2020 - 3:30pm
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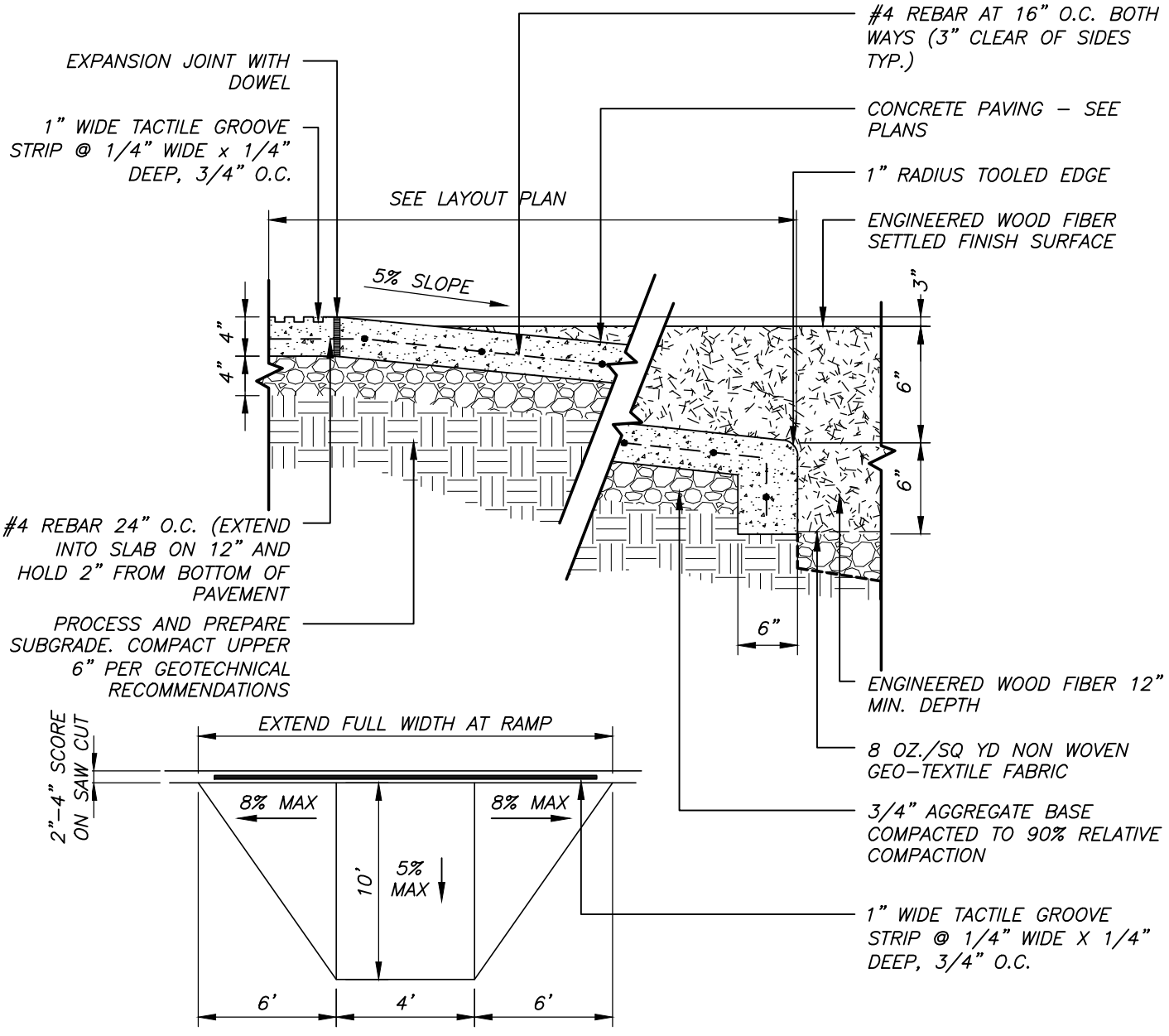

NOTES:
A. NO FALL ZONE SHALL ENCROACH UPON RAMP AREA

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
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CONCRETE PLAYGROUND ACCESS RAMP

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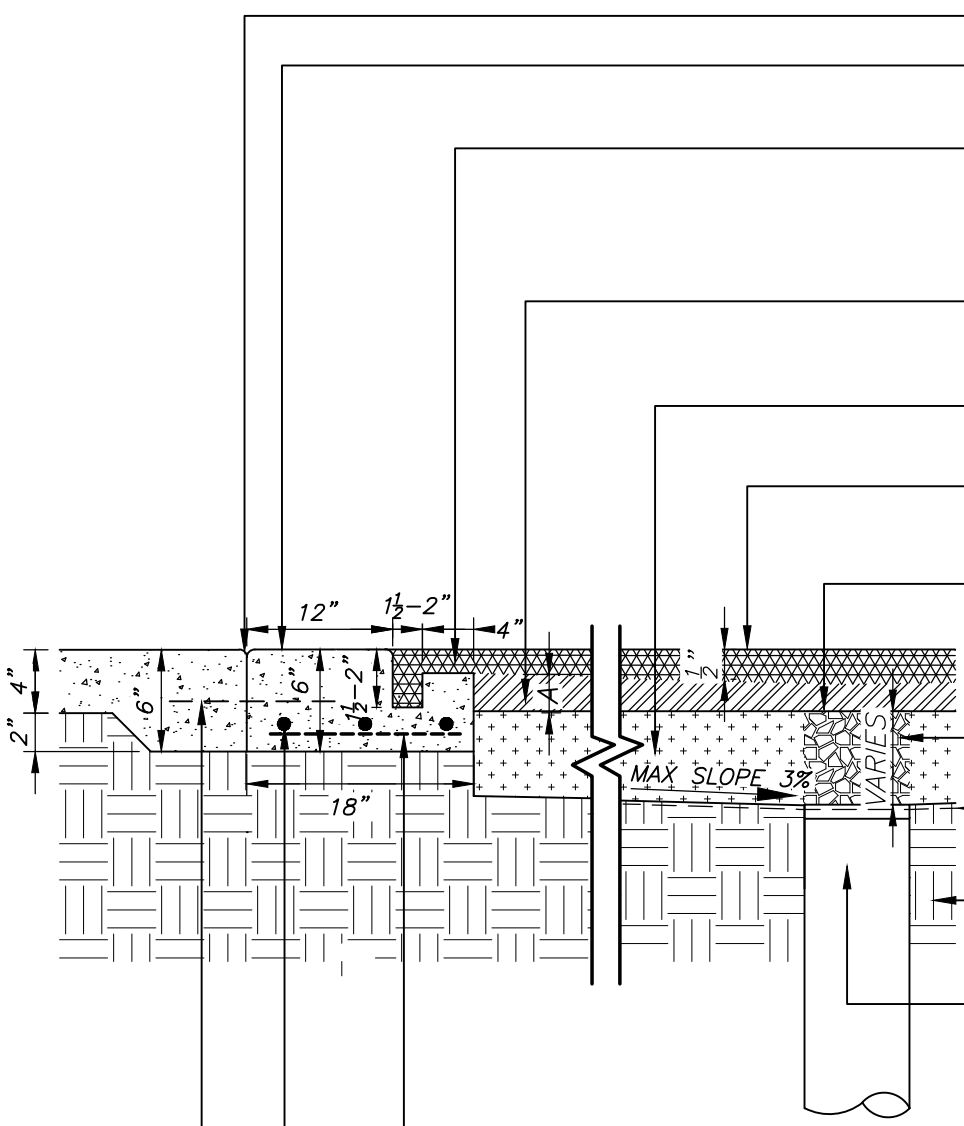

1/2" RADIUS TYPICAL

4" 5 SACK P.C. CONCRETE. CRUSHED AGGREGATE 3/4" @ 2500 PSI

WEAR LAYER (½" MIN.), FLUSH WITH CONCRETE CURB. COLOR PER PLAN, INSTALL PER MANUFACTURER'S RECOMMENDATION

CUSHION LAYER THICKNESS "A" (SEE TABLE FOR DEPTH, SEE LAYOUT FOR MANUFACTURER)

CLASS II AGGREGATE BASE PERM.

HOLD SURFACE LEVEL TO ALL ADJACENT SURFACES

8 OZ./SQ YD NON WOVEN GEO–TEXTILE FABRIC. TO EXTEND AT LEAST 18" BEYOND GRATE.

¾" CRUSHED ROCK

FILTER FABRIC. EXTEND 12" BEYOND DRAIN

SUBGRADE COMPACTED PER GEOTECHNICAL REPORT RECOMMENDATIONS

CATCH BASIN TO STORM DRAIN SYSTEM

(3) #4 REBAR CONTINUOUS

#4 REBAR @ 18" O.C.

#4 REBAR @ 24" O.C. (EXTEND INTO SLAB MIN 12" AND HOLD 2" FROM BOTTOM PORTION OF PAVEMENT)

DEPTH "A"	FALL HEIGHT
1–3/4	4'
2–1/4"	5'
2–1/2"	6'
3"	7'
3–1/2"	8'
4–1/4"	9'–10'

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
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DRAIN/ CURB FOR SAFETY SURFACING

DRAWING NO. PY-4

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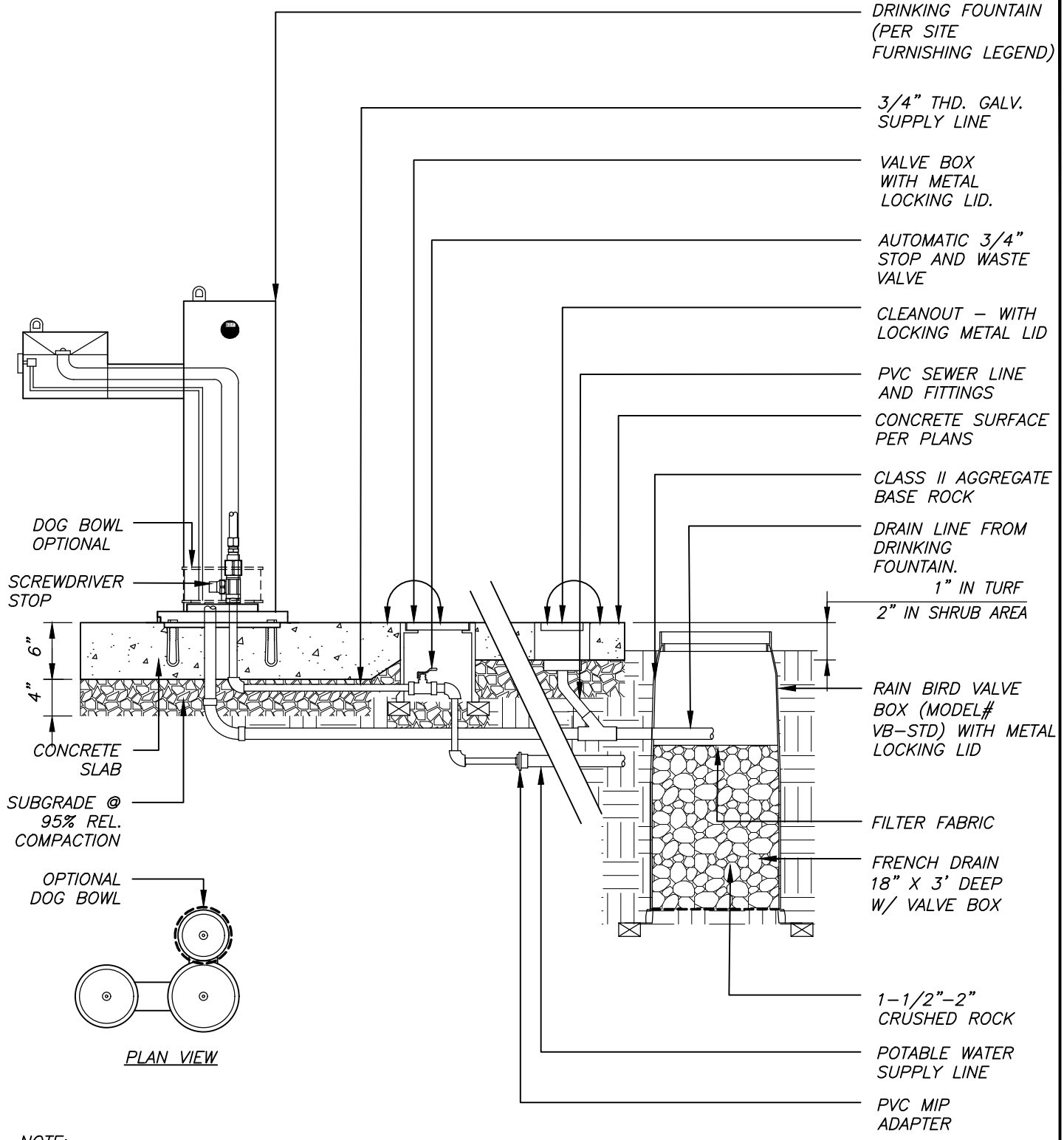

NOTE:

A. APPROVED MANUFACTURER; MOST DEPENDABLE FOUNTAINS, MODEL # 440 SM WITH OPTIONAL PET FOUNTAIN COLOR BLUE AS SPECIFIED ON PLAN

ATTENTION!!!

READ THIS DURING INSTALLATION OF THIS FOUNTAIN; DO NOT KINK SUPPLY LINE AND LINE FROM VALVE TO BUBBLER. ALLOW EXTRA SLACK FOR FRONT PLATE REMOVAL AND VALVE ACCESS.

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62736
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ADA COMPLIANT DRINKING FOUNTAIN WITH OPT. DOG BOWL

DRAWING NO. M-1

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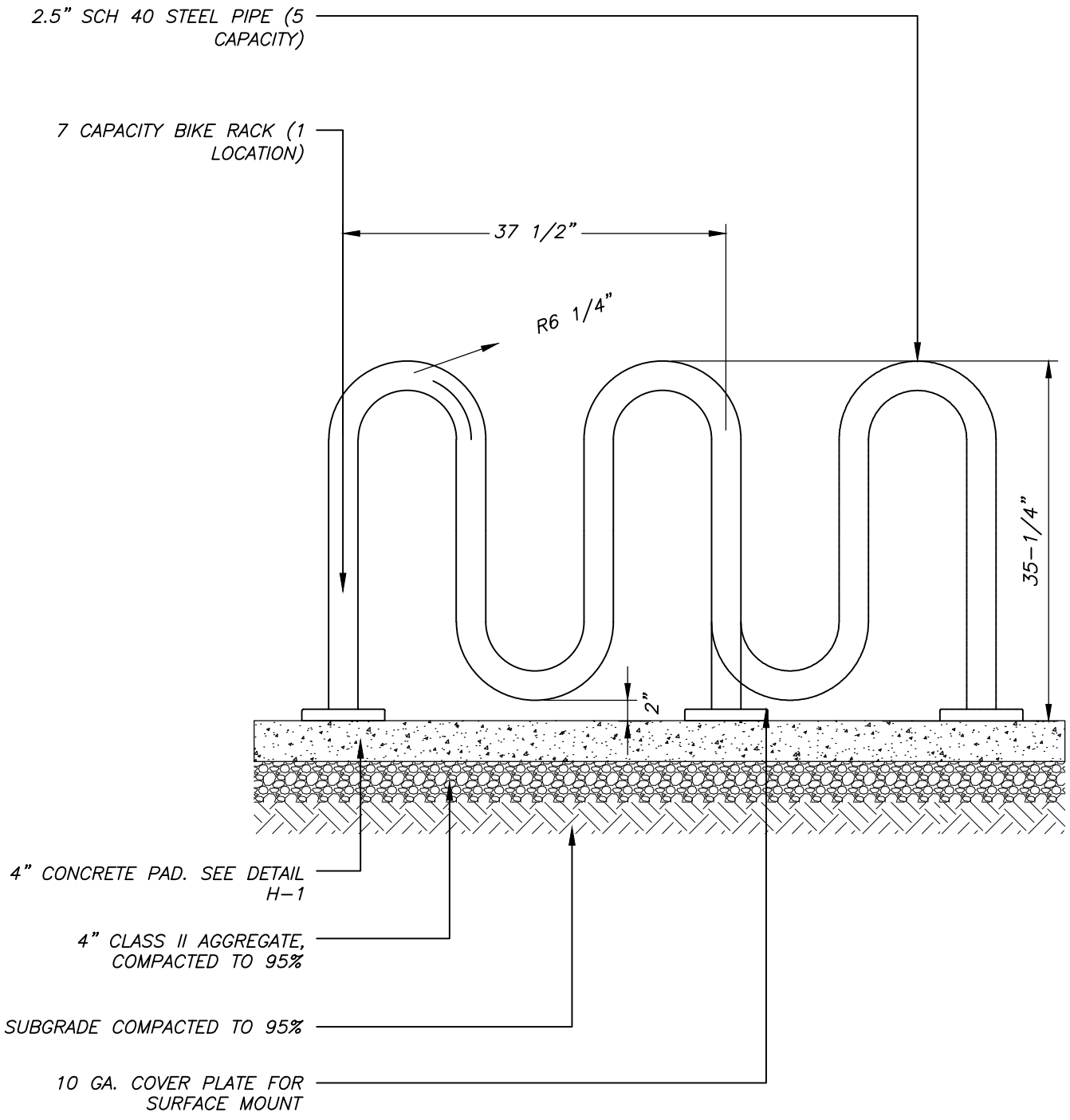

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DATE

62736
R.C.E. NO.

BIKE RACK

DRAWING NO. M-2

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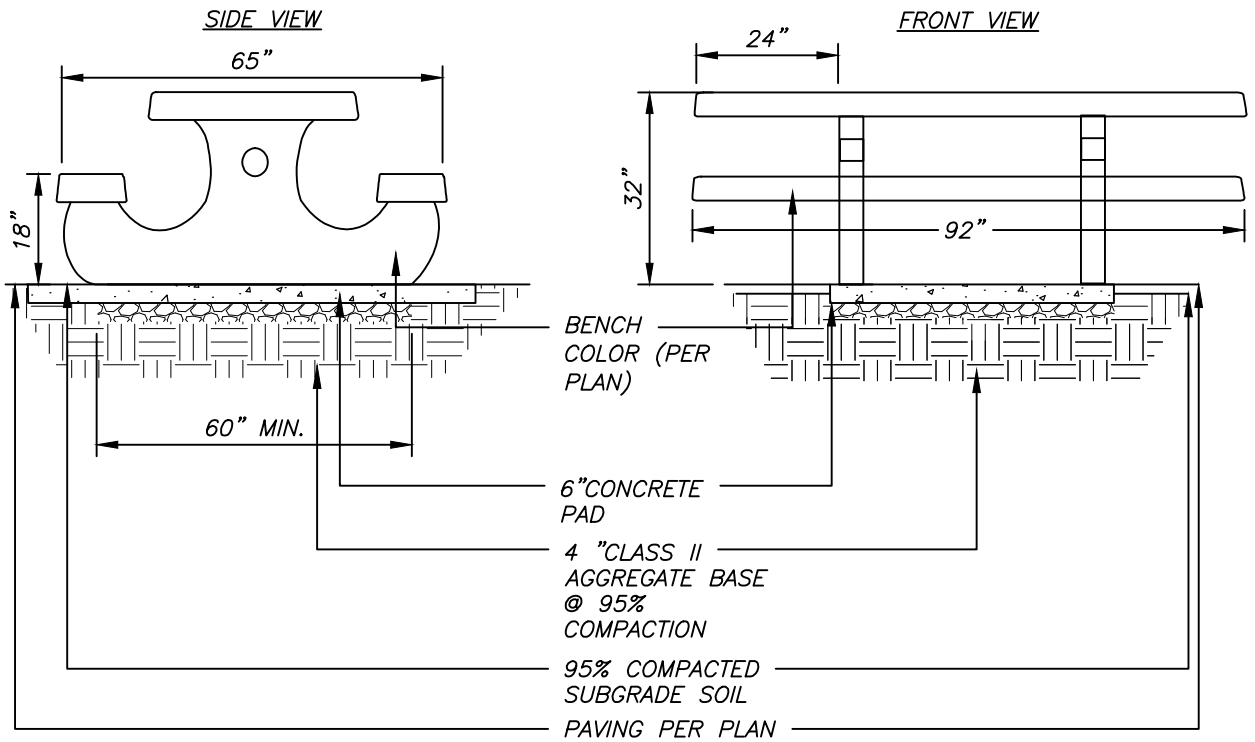

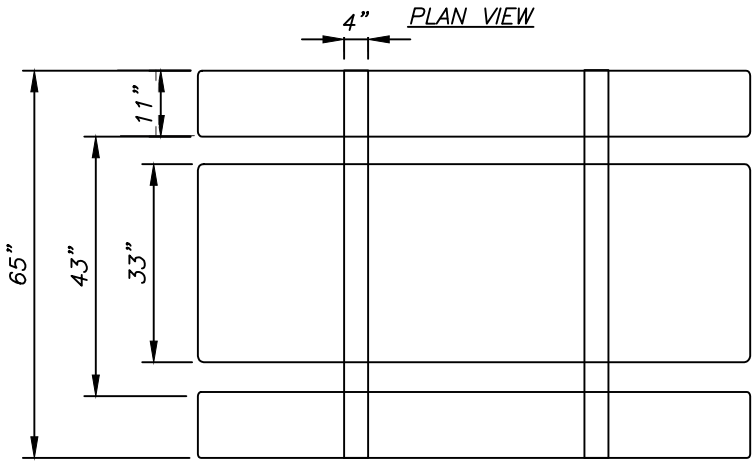

NOTES:

A. APPROVED MANUFACTURER; OUTDOOR CREATIONS, MODEL # 100S CONCRETE PICNIC TABLE
B. CONCRETE MIX DESIGN TO INCLUDE A MIXTURE OF PORTLAND CEMENT, WATER, COARSE AND FINE AGGREGATES, PURE MINERAL OXIDE COLORING AGENTS (WHEN APPLICABLE) TO YIELD A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
C. FINAL PRODUCT SHALL BE REINFORCED WITH #4 AND #5 REBAR GRID.
D. PRODUCT IS CAST IN 1–PIECE WITH NO ASSEMBLY REQUIRED.
E. HAIRLINE CRACKS MAY DEVELOP OVER TIME. THESE ARE NOT STRUCTURAL FAILURES, BUT INHERENT CHARACTERISTICS OF THE MATERIAL ITSELF.
F. AIR POCKETS ARE A COMMON OCCURRENCE IN PRECAST PRODUCTS, THE FREQUENCY AND SIZE OF AIR POCKETS ARE VARIABLE AND TO BE EXPECTED, ESPECIALLY ON VERTICAL SURFACES.
G. CONCRETE CORNERS AND EDGES WILL CHIP IF NOT HANDLED ACCORDING TO GUIDELINES. PATCH KITS ARE AVAILABLE BUT MAY OR MAY NOT BLEND AND CAN BE VARIABLE.
H. THERE IS A LEVEL OF CARE AND MAINTENANCE ASSOCIATED WITH YOUR PRODUCT AND IS THE RESPONSIBILITY OF THE END USER. CHOOSING THE RIGHT SEALER CAN HELP MINIMIZE THOSE COSTS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

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APPROVED BY:

ADA COMPLIANT CONCRETE TABLE

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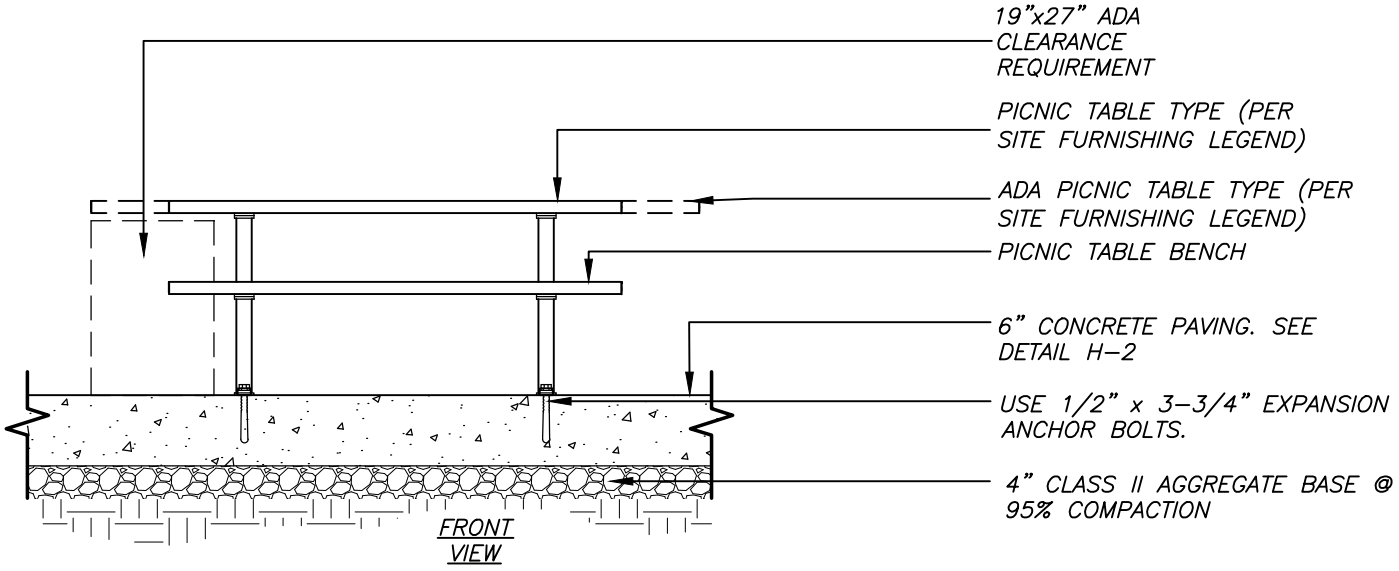

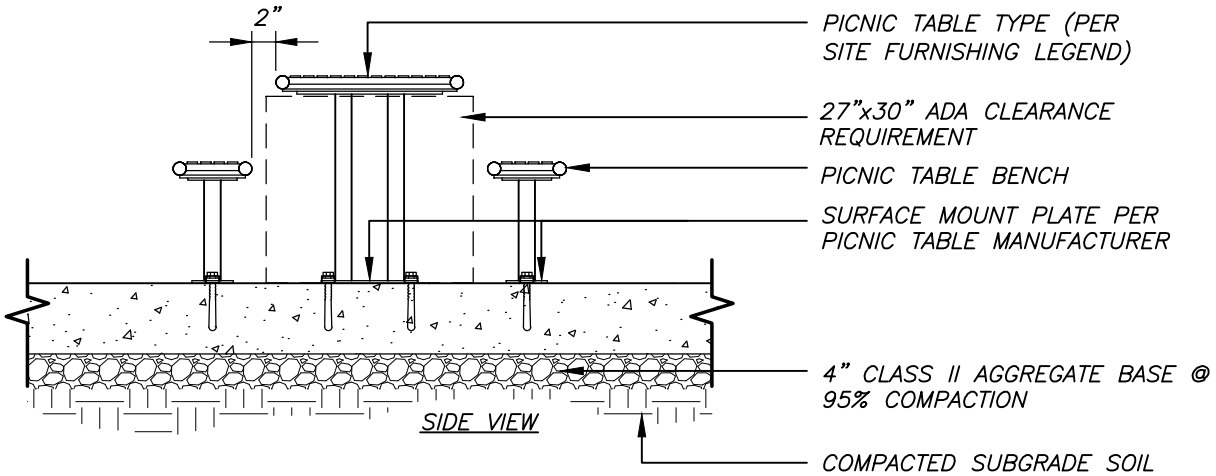

NOTES:

A. APPROVED MANUFACTURER; VICTOR STANLEY, MODEL #FBF-566 FTSM OR FBF-566 FTSM ADA (ACCESSIBLE) COLOR BLACK

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METAL PICNIC TABLE WITH OPTIONAL ADA COMPLIANT EXT.

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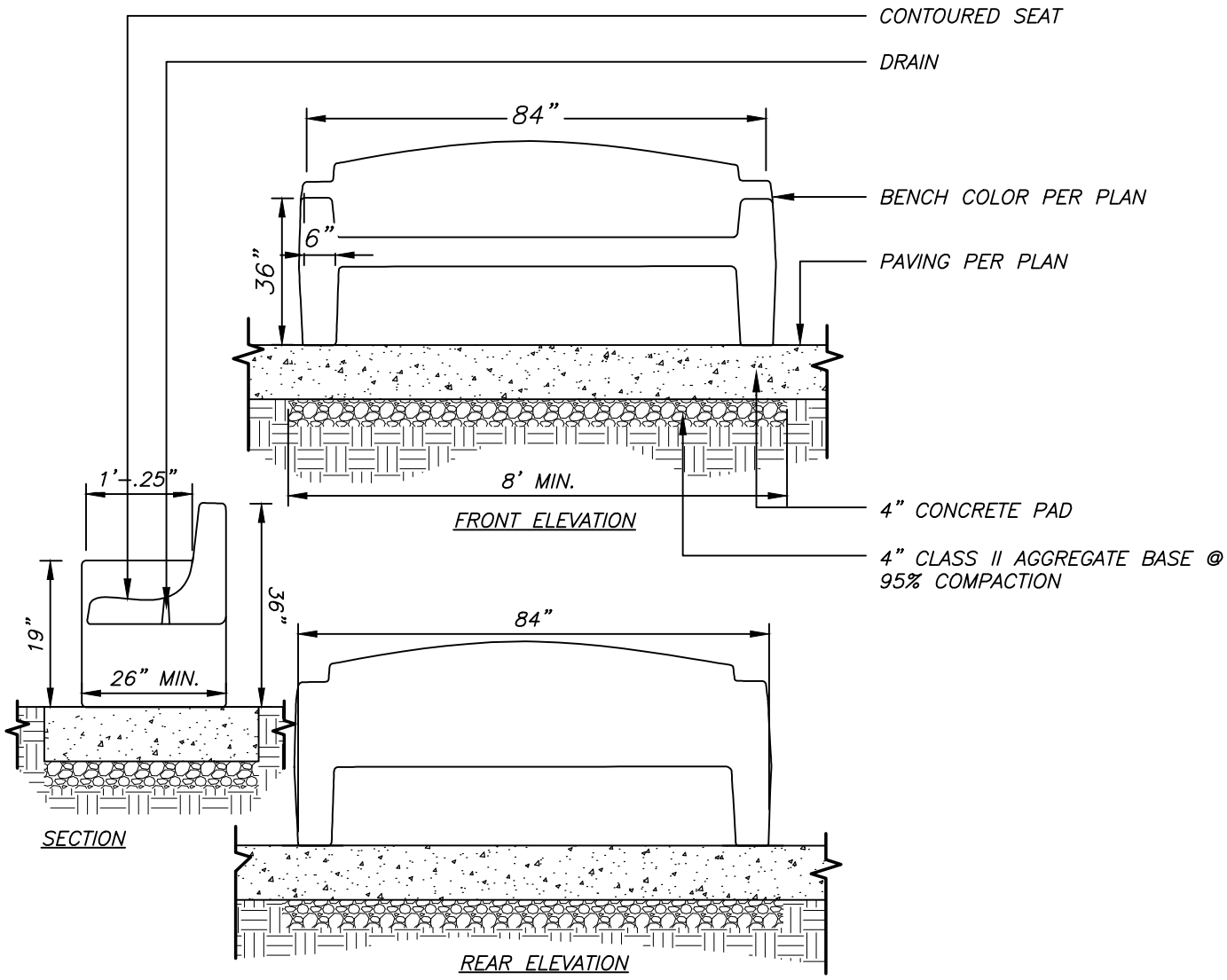

NOTES:

A. APPROVED MANUFACTURER; OUTDOOR CREATIONS, MODEL # 408, CONCRETE BENCH WITH BACK AND ARMRESTS
B. CONCRETE MIX DESIGN TO INCLUDE A MIXTURE OF PORTLAND CEMENT, WATER, COARSE AND FINE AGGREGATES, PURE MINERAL OXIDE COLORING AGENTS (WHEN APPLICABLE) TO YIELD A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
C. FINAL PRODUCT SHALL BE REINFORCED WITH #4 AND #5 REBAR GRID.
D. PRODUCT IS CAST IN 1-PIECE WITH NO ASSEMBLY REQUIRED.
E. HAIRLINE CRACKS MAY DEVELOP OVER TIME. THESE ARE NOT STRUCTURAL FAILURES, BUT INHERENT CHARACTERISTICS OF THE MATERIAL ITSELF.
F. AIR POCKETS ARE A COMMON OCCURRENCE IN PRECAST PRODUCTS, THE FREQUENCY AND SIZE OF AIR POCKETS ARE VARIABLE AND TO BE EXPECTED, ESPECIALLY ON VERTICAL SURFACES.
G. CONCRETE CORNERS AND EDGES WILL CHIP IF NOT HANDLED ACCORDING TO GUIDELINES. PATCH KITS ARE AVAILABLE BUT MAY OR MAY NOT BLEND AND CAN BE VARIABLE.
H. THERE IS A LEVEL OF CARE AND MAINTENANCE ASSOCIATED WITH YOUR PRODUCT AND IS THE RESPONSIBILITY OF THE END USER. CHOOSING THE RIGHT SEALER CAN HELP MINIMIZE THOSE COSTS.

INSTALLATION RECOMMENDATIONS:

A. BENCH REQUIRES EPOXY APPLIED TO COVER BOTTOM OF ENTIRE LEG.
B. EPOXY ADHESIVE SHOULD BE CHECKED PERIODICALLY TO ENSURE CONTINUED ADHESION.
C. BENCH MAY ALSO BE MECHANICALLY ATTACHED.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

CONCRETE BENCH

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

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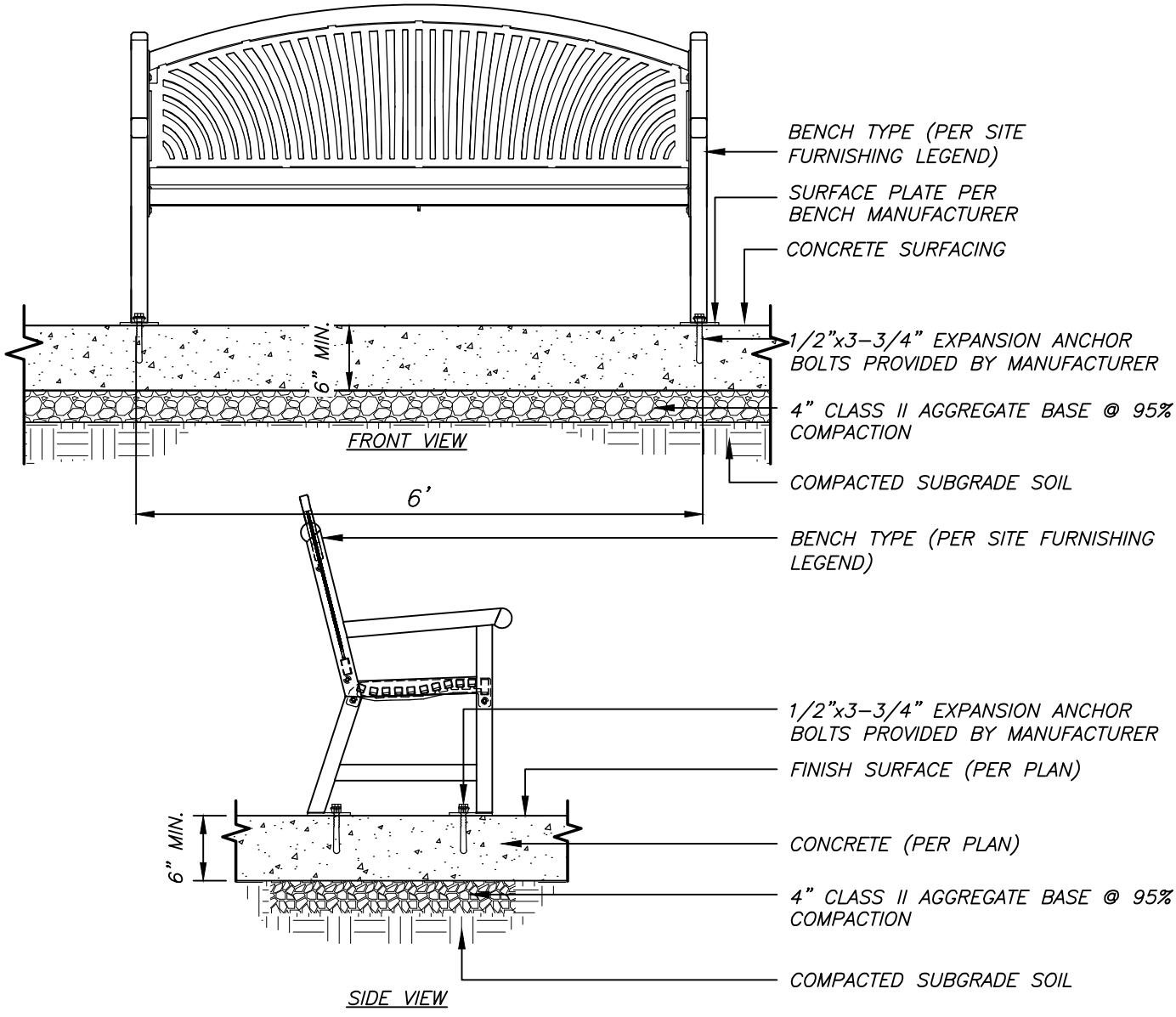

NOTE:
A. APPROVED MANUFACTURER; DUMOR MODEL #69-803-6, S-2 SURFACE MOUNT, COLOR BLACK

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METAL BENCH

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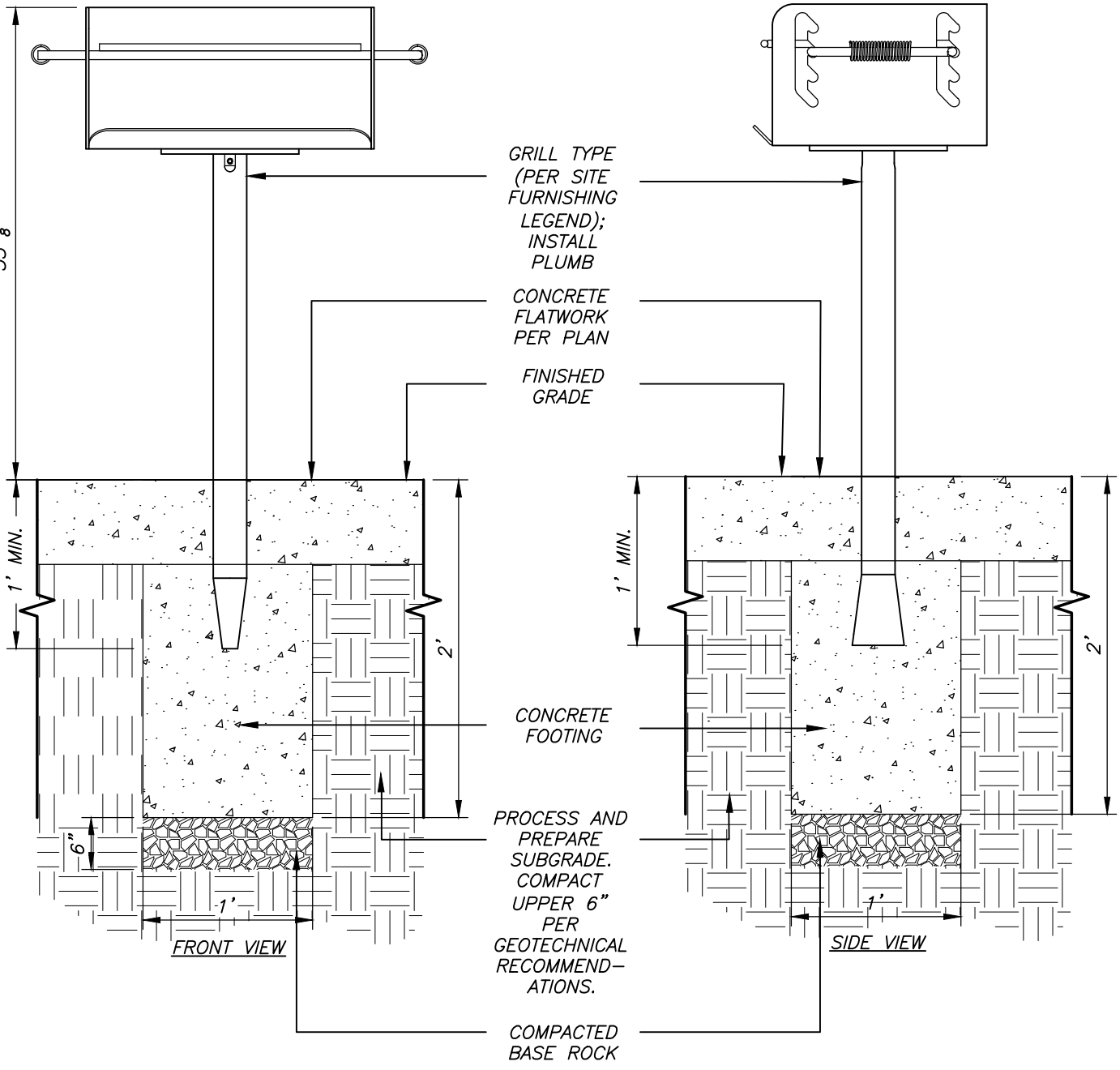

NOTES:

A. ACCEPTABLE MANUFACTURER: DUMOR MODEL 21-00, COLOR BLACK
B. MANUFACTURER RECOMMENDED HEIGHT ABOVE FINISH GRADE:

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

DUMOR BBQ GRILL

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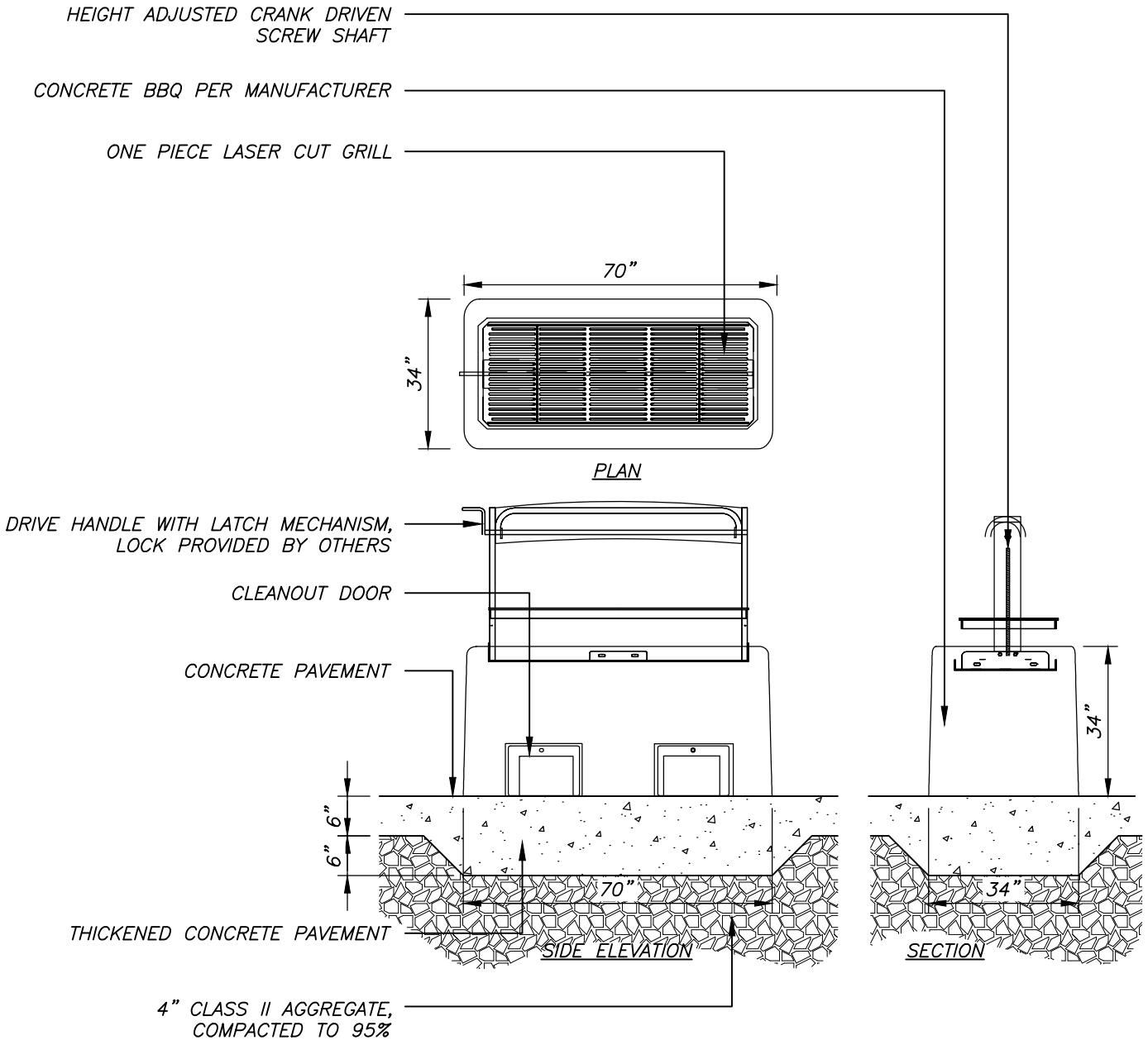

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02/03/16
DATE

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GROUP BBQ

DRAWING NO. M-8

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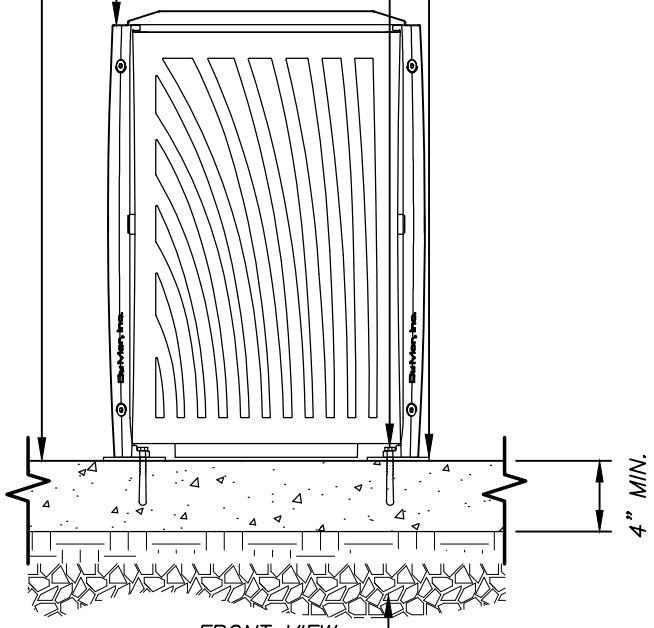
PLAN VIEW

VINYL LETTERING. (ONLY ON RECYCLED TRASH RECEPTACLES)



FRONT VIEW

CONCRETE FLATWORK (PER PLAN)

TRASH OR RECYCLE RECEPTACLE

USE 1/2"x3-3/4" EXPANSION ANCHOR BOLTS PROVIDED BY MANUFACTURER

S-2 SURFACE PLATE PER TRASH RECEPTACLE MANUFACTURER

4" CLASS II AGGREGATE, COMPACTED TO 95%

NOTES:

A. APPROVED MANUFACTURER; DUMOR MODEL # 196-32 COLOR BLACK AND/OR 196-32-RC-0202

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METAL TRASH RECEPTACLE

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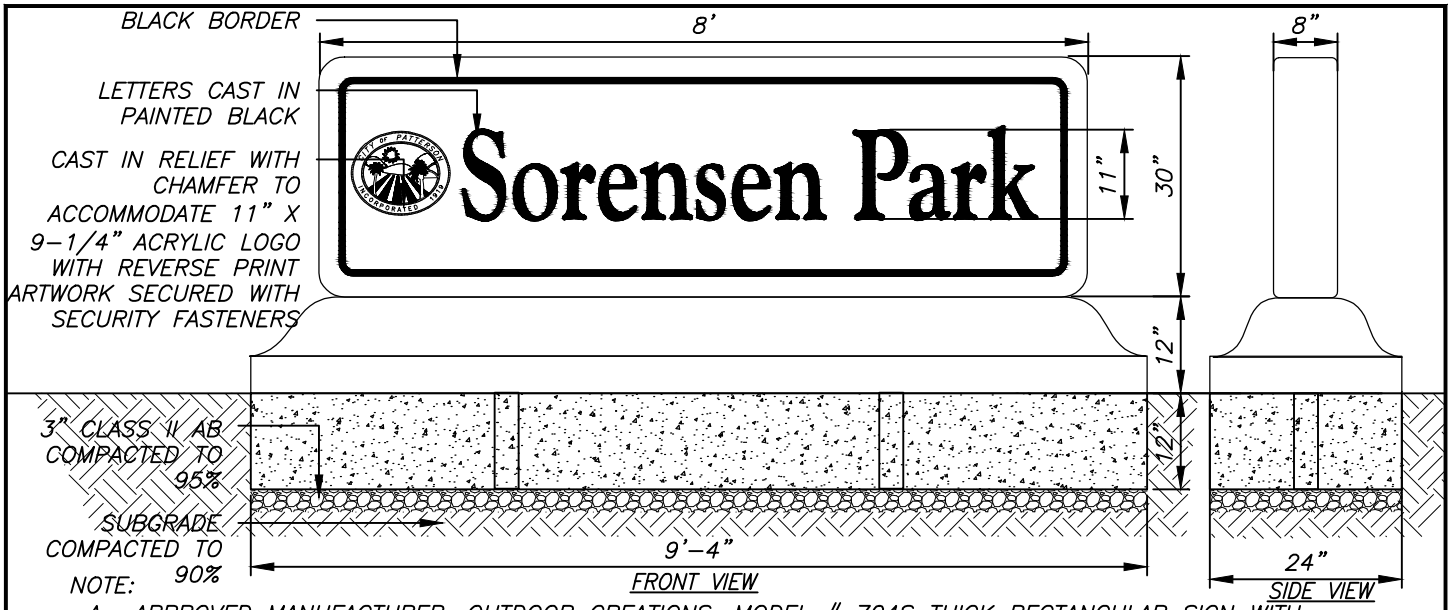

NOTE:

A. APPROVED MANUFACTURER; OUTDOOR CREATIONS, MODEL # 704S THICK RECTANGULAR SIGN WITH REVEAL AND #703C BASE, SMOOTH TEXTURE, ODC TAN COLOR, STANDARD ACRYLIC SEALER
B. CONCRETE MIX DESIGN TO INCLUDE A MIXTURE OF PORTLAND CEMENT, WATER, COARSE AND FINE AGGREGATES, PURE MINERAL OXIDE COLORING AGENTS (WHEN APPLICABLE) TO YIELD A MINIMUM COMPRESSIVE STRENGTH OF 5000 PSI.
C. FINAL PRODUCT SHALL BE REINFORCED WITH #4 AND #5 REBAR GRID.
D. PRODUCT IS CAST IN 1-PIECE WITH NO ASSEMBLY REQUIRED.
E. HAIRLINE CRACKS MAY DEVELOP OVER TIME. THESE ARE NOT STRUCTURAL FAILURES, BUT INHERENT CHARACTERISTICS OF THE MATERIAL ITSELF.
F. AIR POCKETS ARE A COMMON OCCURRENCE IN PRECAST PRODUCTS, THE FREQUENCY AND SIZE OF AIR POCKETS ARE VARIABLE AND TO BE EXPECTED, ESPECIALLY ON VERTICAL SURFACES.
G. CONCRETE CORNERS AND EDGES WILL CHIP IF NOT HANDLED ACCORDING TO GUIDELINES. PATCH KITS ARE AVAILABLE BUT MAY OR MAY NOT BLEND AND CAN BE VARIABLE.
H. THERE IS A LEVEL OF CARE AND MAINTENANCE ASSOCIATED WITH YOUR PRODUCT AND IS THE RESPONSIBILITY OF THE END USER. CHOOSING THE RIGHT SEALER CAN HELP MINIMIZE THOSE COSTS.
I. CONTRACTOR TO VERIFY PROJECT NAME WITH CITY PRIOR TO ORDERING SIGN.

INSTALLATION RECOMMENDATIONS:

A. CAST (2) MOUNTING THRU HOLES (GROUT POCKETS) MINIMUM DIAMETER 3", IN FOOTING AS SHOWN.
B. INSERT PIPE (SUPPLIED WITH SIGN) INTO HOLES IN BOTTOM OF SIGN.
C. FILL GROUT POCKETS WITH LIQUID GROUT CEMENT AND LOWER SIGN ONTO FOOTING, USING EPOXY BETWEEN SIGN AND FOOTING FOR FINAL ANCHORING.
D. FOOTING SIZE IS THE MINIMUM BELOW GRADE REQUIREMENT. FINAL SIGN HEIGHT AND WEIGHT MAY REQUIRE ADDITIONAL FOOTING DEPTH AS DETERMINED BY OUTDOOR CREATIONS AND STRUCTURAL ENGINEER. FOOTING CONCRETE SPECIFICATIONS PER STRUCTURAL ENGINEER.

INSTALLATION FOR SIGNS WITH BASE (PIPE MOUNT)

A. POUR A CONCRETE FOOTING PER DETAIL. (SEE PAGE 2) MAKE SURE IT IS FLAT AND LEVEL.
B. SET PIPES (SHIPPED WITH SIGN), INTO FOOTING GROUT POCKETS. DO NOT USE MORTAR YET AS A "DRY RUN" INSTALLATION RECOMMENDED.
C. SET BASE, IF SUPPLIED WITH SIGN, OVER PIPES AND SQUARE UP TO FOOTING.
D. PLACE SIGN ON PIPES. DO NOT EPOXY YET AS A "DRY RUN" TO CHECK FOR PROPER FIT IS RECOMMENDED.
E. IF SIGN AND BASE INSTALL PROPERLY THEN YOU CAN PROCEED TO PERMANENT INSTALLATION THAT INCLUDES APPLICATION OF MORTAR/EPOXY (NOT SUPPLIED BY ODC).
F. REMOVE SIGN AND BASE (IF SUPPLIED) AND PIPES. MIX MORTAR AND FILL GROUT POCKETS ¾ FULL WITH MORTAR.
G. APPLY CONSTRUCTION EPOXY BETWEEN FOOTING AND BASE.
H. REINSTALL PIPES AND SET BASE OVER PIPES AND SQUARE UP TO FOOTING.
I. PLACE SIGN ON PIPES AND PRIOR TO CONTACT WITH BASE APPLY A THICK BEAD OF CONSTRUCTION EPOXY
J. THAT RUNS IN THE CENTER OF THE BASE (USE PIPES AS GUIDELINE) THE LENGTH OF THE SIGN ITSELF.
K. MAKE ANY FINE TUNING ADJUSTMENTS TO THE SIGN AS NEEDED BY USE OF SHIMS WHILE EPOXY/MORTAR IS SETTING.
L. USE RAGS/TOWELS TO CLEAN UP ANY EPOXY THAT MAY SQUEEZE OUT FROM UNDER THE SIGN AS SIGN SETTLES ON BASE.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

PARK ENTRY SIGN

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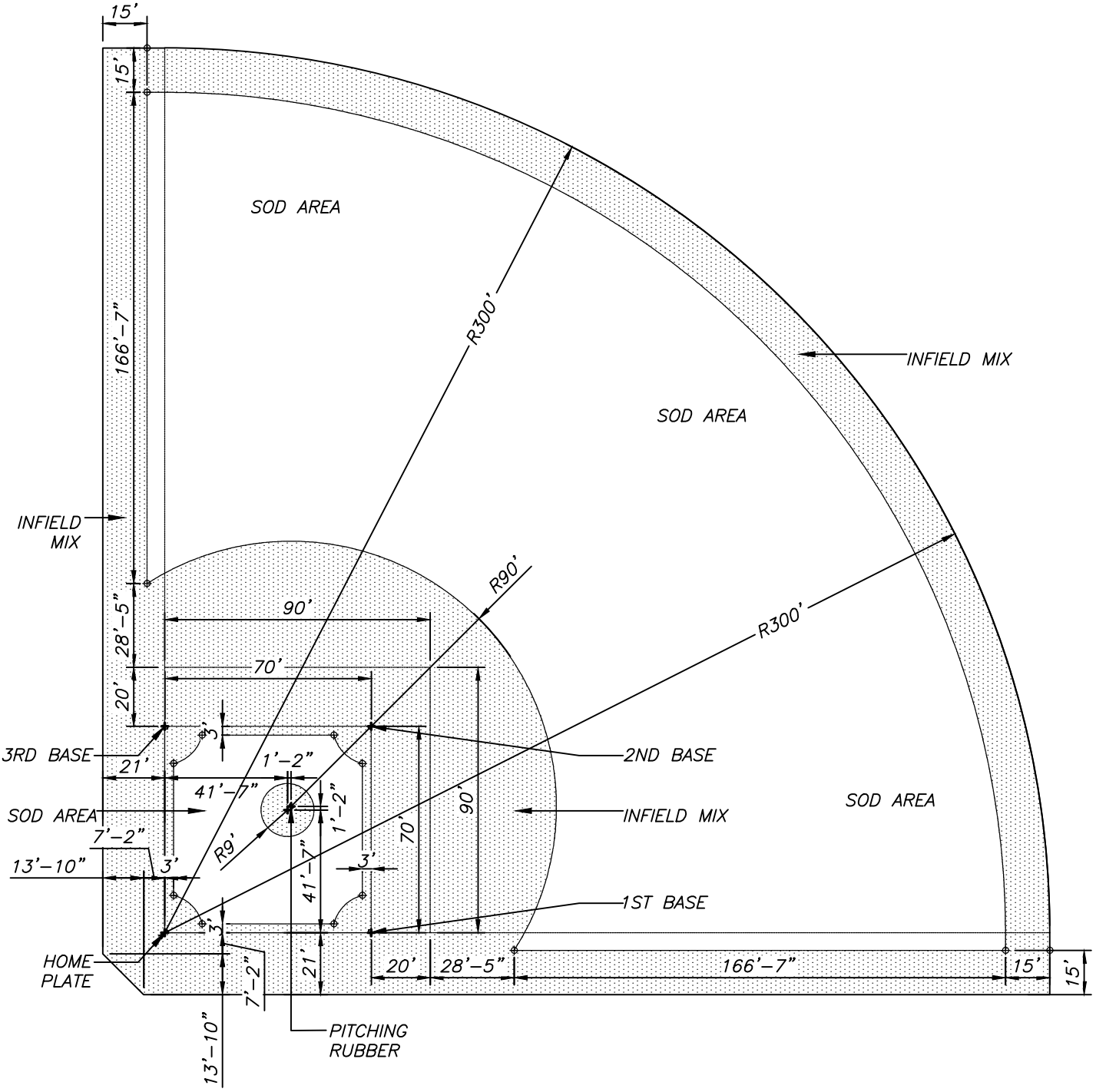

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

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MULTI-USE FIELD LAYOUT PLAN

FERNANDO ULLOA, CITY ENGR.

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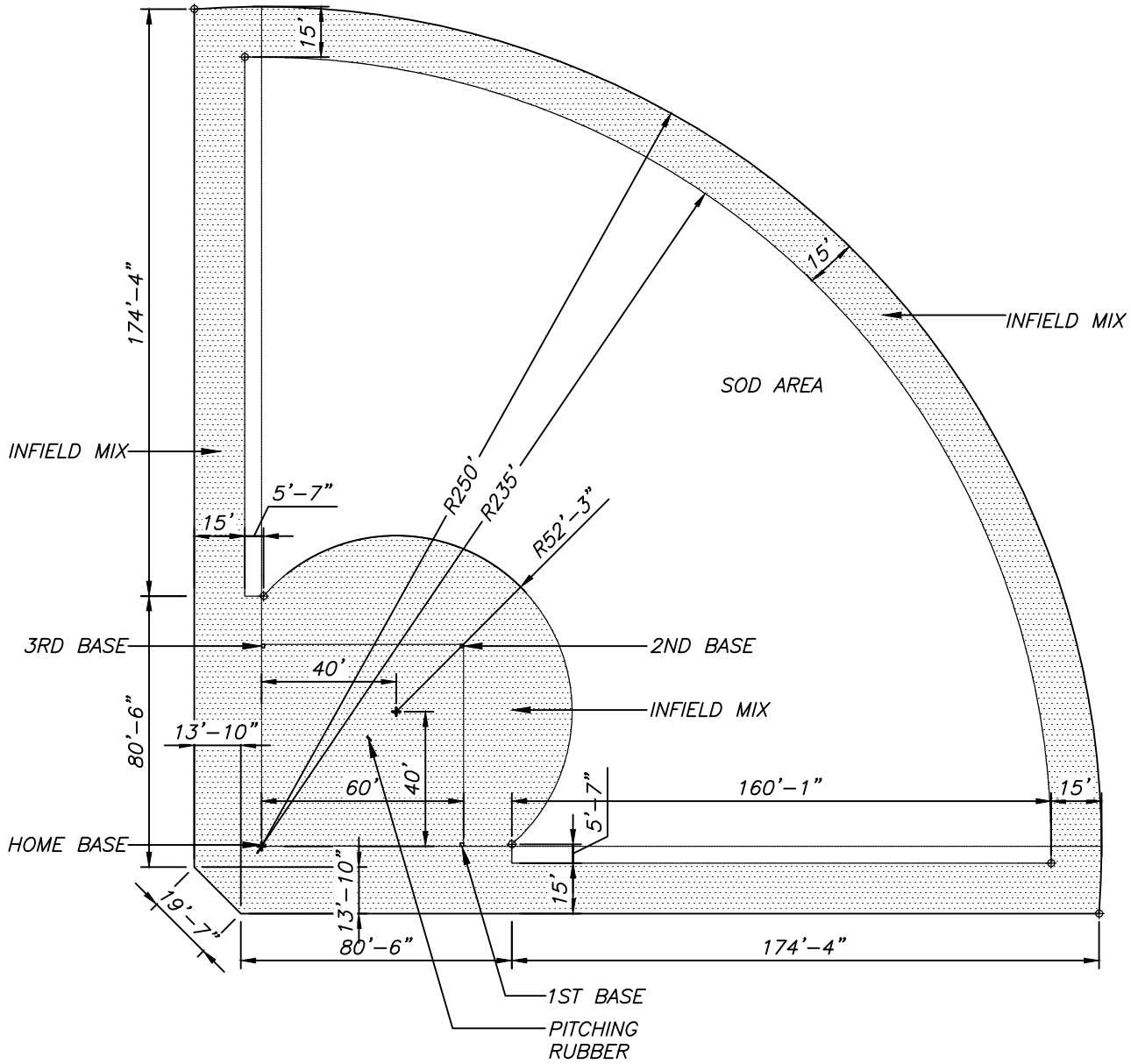

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SOFTBALL FIELD LAYOUT PLAN

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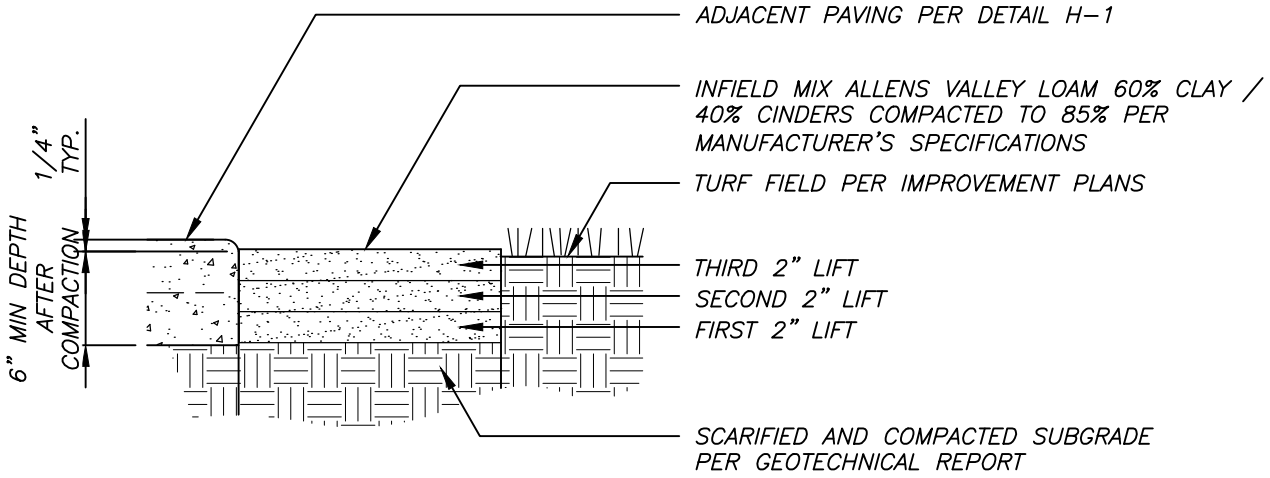

NOTES:

1. INFIELD MIX SHALL PASS PHYSICAL PROPERTIES BELOW:

SIEVE SIZE	% PASSING
5MM	100
2MM	95-100
1MM	70-95
.5MM	60-80
.05MM	20-30
<.05MM	20-30%

2. ENTIRE INFIELD SKINNED SURFACE SHALL BE FREE OF ROCK, DEBRIS, VEGETATION, AND FOREIGN MATERIAL, PER SPECIFICATIONS.
3. STERILIZE SUBGRADE TO ELIMINATE POSSIBLE VEGETATION GROWTHPER MANUFACTURER SPECIFICATIONS/RECOMMENDATIONS.
4. SPREAD INFIELD MIX IN 2" THICK LIFTS. WATER LIGHTLY AND COMPACT WITH ROLLER AFTER EACH LIFT, PER MANUFACTURER'S RECOMMENDATIONS.
5. INCORPORATE INFIELD CONDITIONER "PROS CHOICE SELECT RED" AT A RATE OF 1 TON/1000 SQ. FT. UNIFORMLY INTO THE TOP 3'' OF THE SURFACE AFTER APPROXIMATE GRADE IS ESTABLISHED, PER MANUFACTURER SPECIFICATIONS. DISTRIBUTED BY ALLENS VALLEY LOAM.
6. RECOMPACT TO 85% MIN. UNTIL FINAL GRADE ELEVATION IS ACHIEVED, PER IMPROVEMENT PLANS.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

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INFIELD SURFACING

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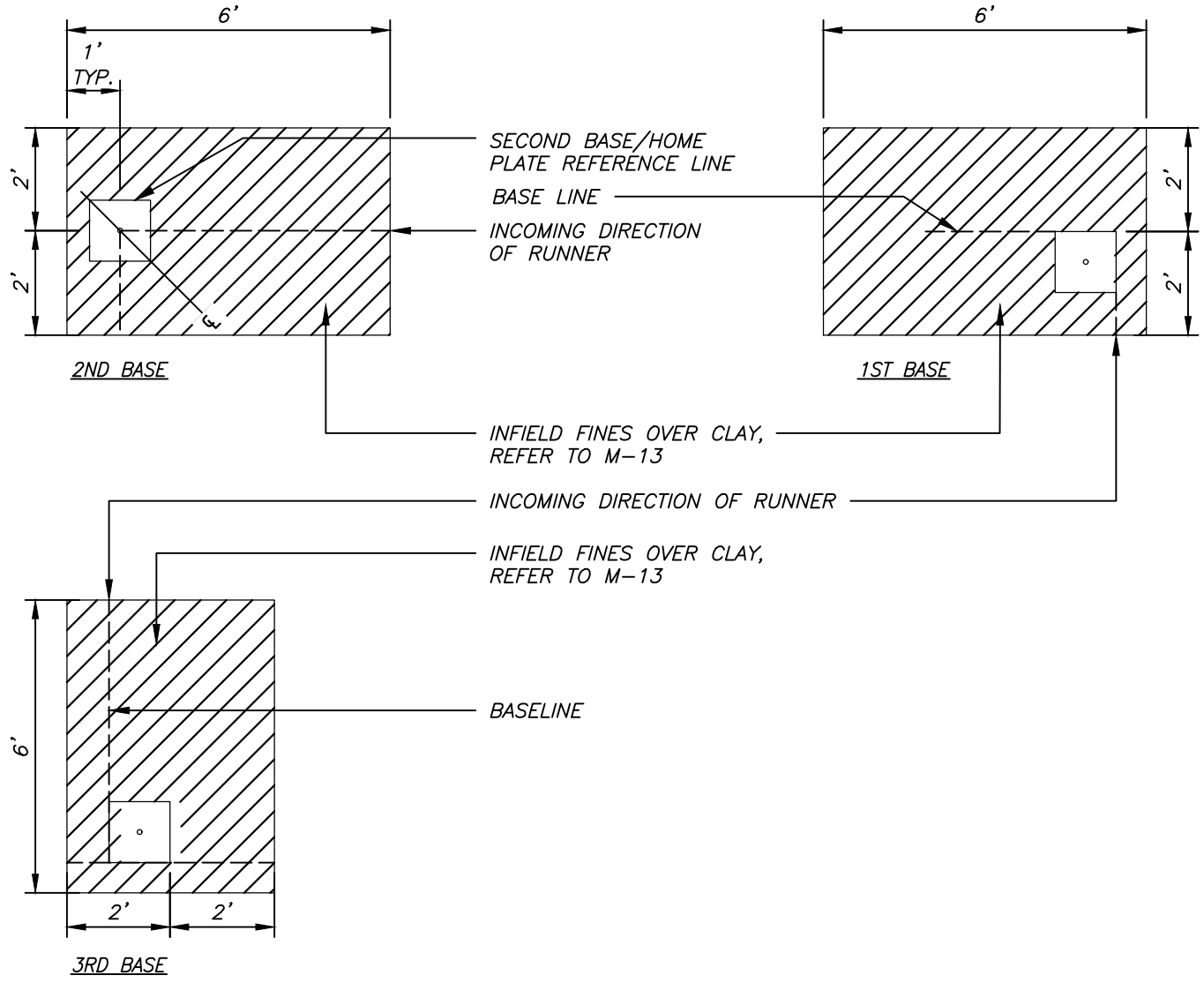

NOTES:

A. PEGS LOCATED CENTERED ON BASE, 6" FROM INTERSECTION OF BASE LINE FOR 1ST AND 3RD BASES; INSTALL PER MANUFACTURER RECOMMENDATIONS.
B. PEGS LOCATED ON INTERSECTION OF BASE LINE FOR 2ND BASE.
C. DETAIL INFORMATION PROVIDED FOR GENERAL LOCATION ONLY; SEE IMPROVEMENT PLAN FOR LAYOUT.

CITY OF PATTERSON IMPROVEMENT STANDARDS

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CHECKED BY: M. WILLETT
APPROVED BY:

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BASES LAYOUT

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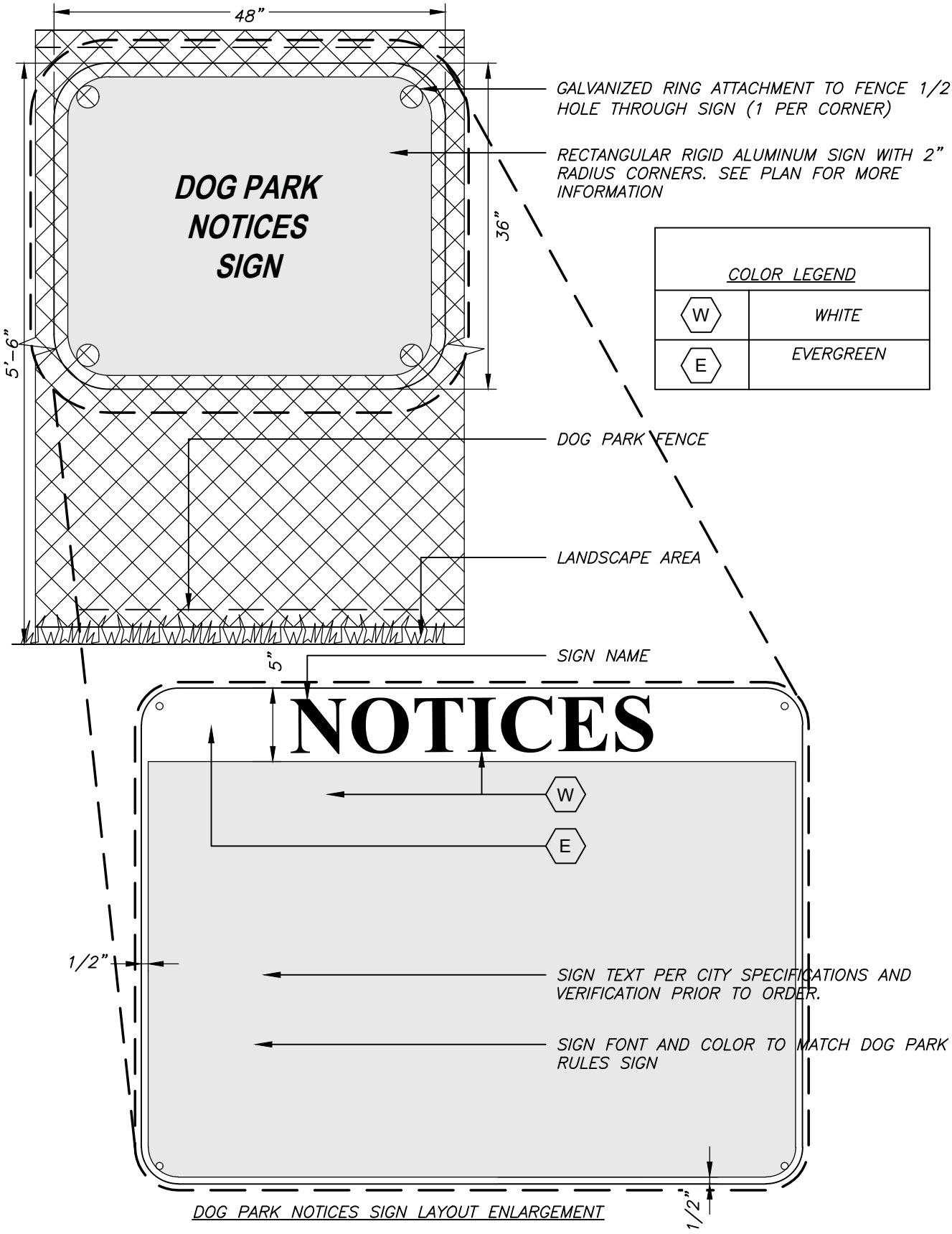

DOG PARK NOTICES SIGN LAYOUT ENLARGEMENT

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

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DOG PARK NOTICES SIGN

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May 28, 2020 - 3:32pm
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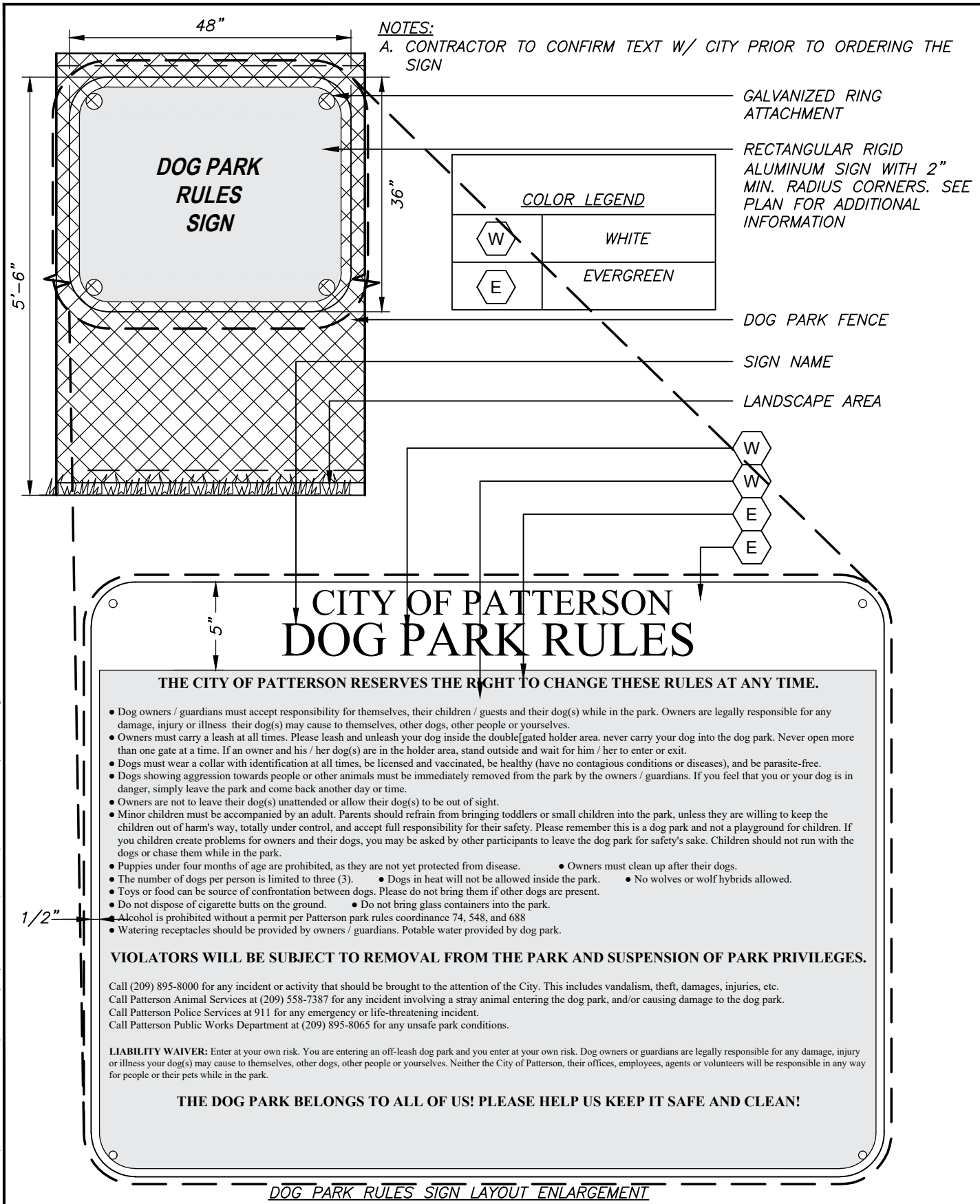

DOG PARK RULES SIGN LAYOUT ENLARGEMENT

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

DOG PARK RULES SIGN

DRAWING NO. M-16

NTS

May 28, 2020 - 3:32pm
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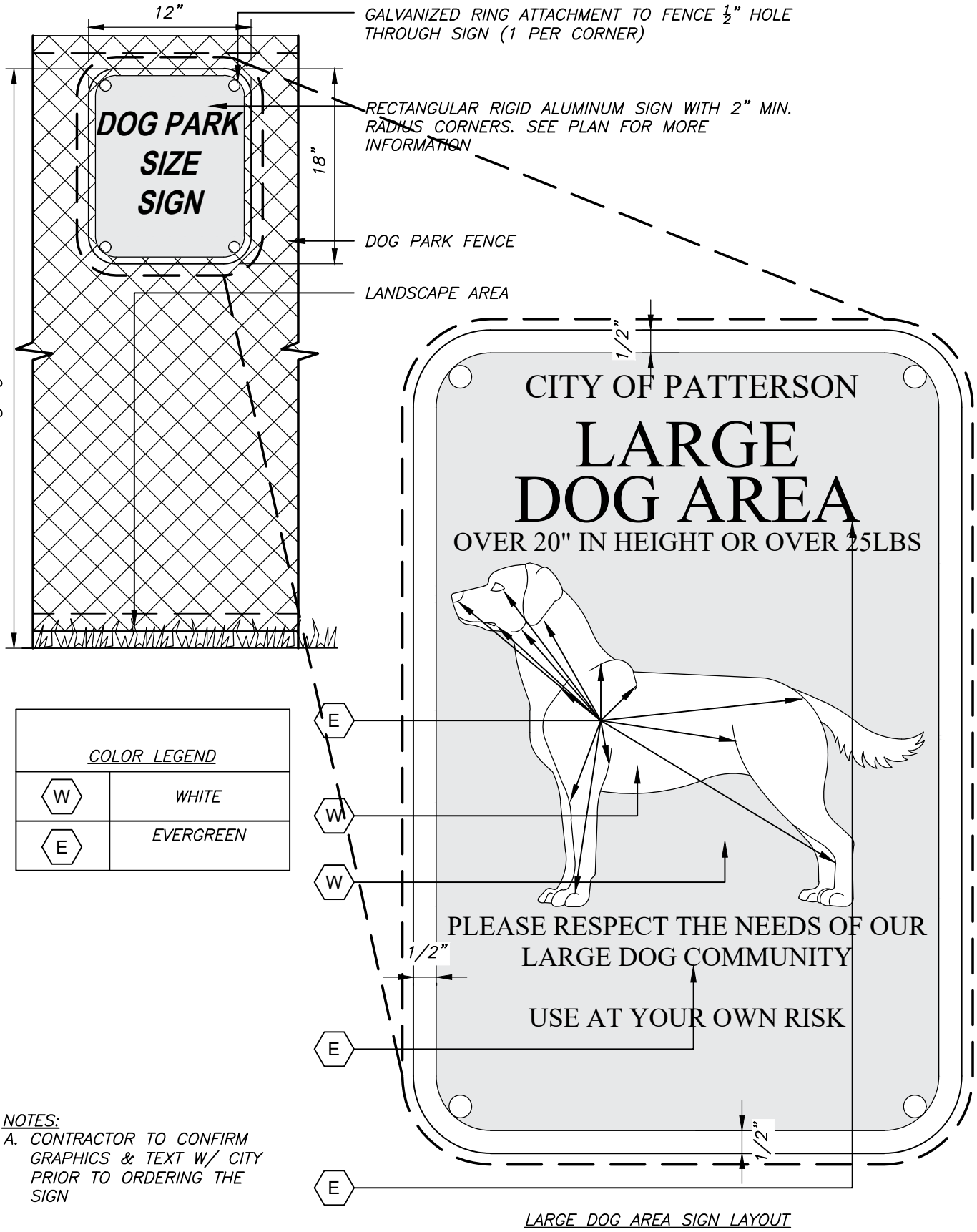

NOTES:
A. CONTRACTOR TO CONFIRM GRAPHICS & TEXT W/ CITY PRIOR TO ORDERING THE SIGN

LARGE DOG AREA SIGN LAYOUT

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

LARGE DOG AREA SIGN

DRAWING NO. M-17
NTS

May 28, 2020 - 3:32pm
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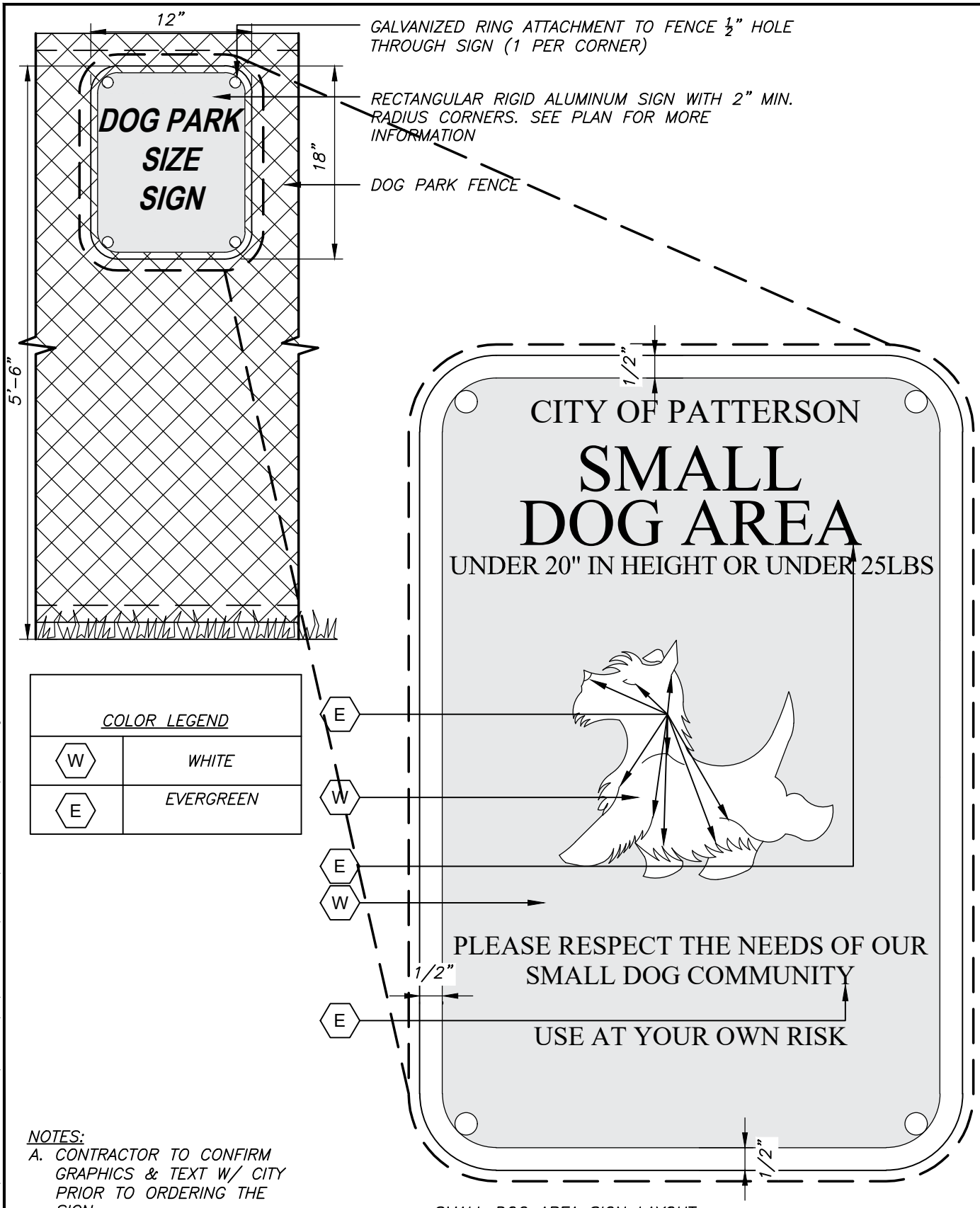

COLOR LEGEND	
W	WHITE
E	EVERGREEN

NOTES:
A. CONTRACTOR TO CONFIRM GRAPHICS & TEXT W/ CITY PRIOR TO ORDERING THE SIGN

SMALL DOG AREA SIGN LAYOUT

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

SMALL DOG AREA SIGN

DRAWING NO. M-18
NTS

May 28, 2020 - 3:32pm
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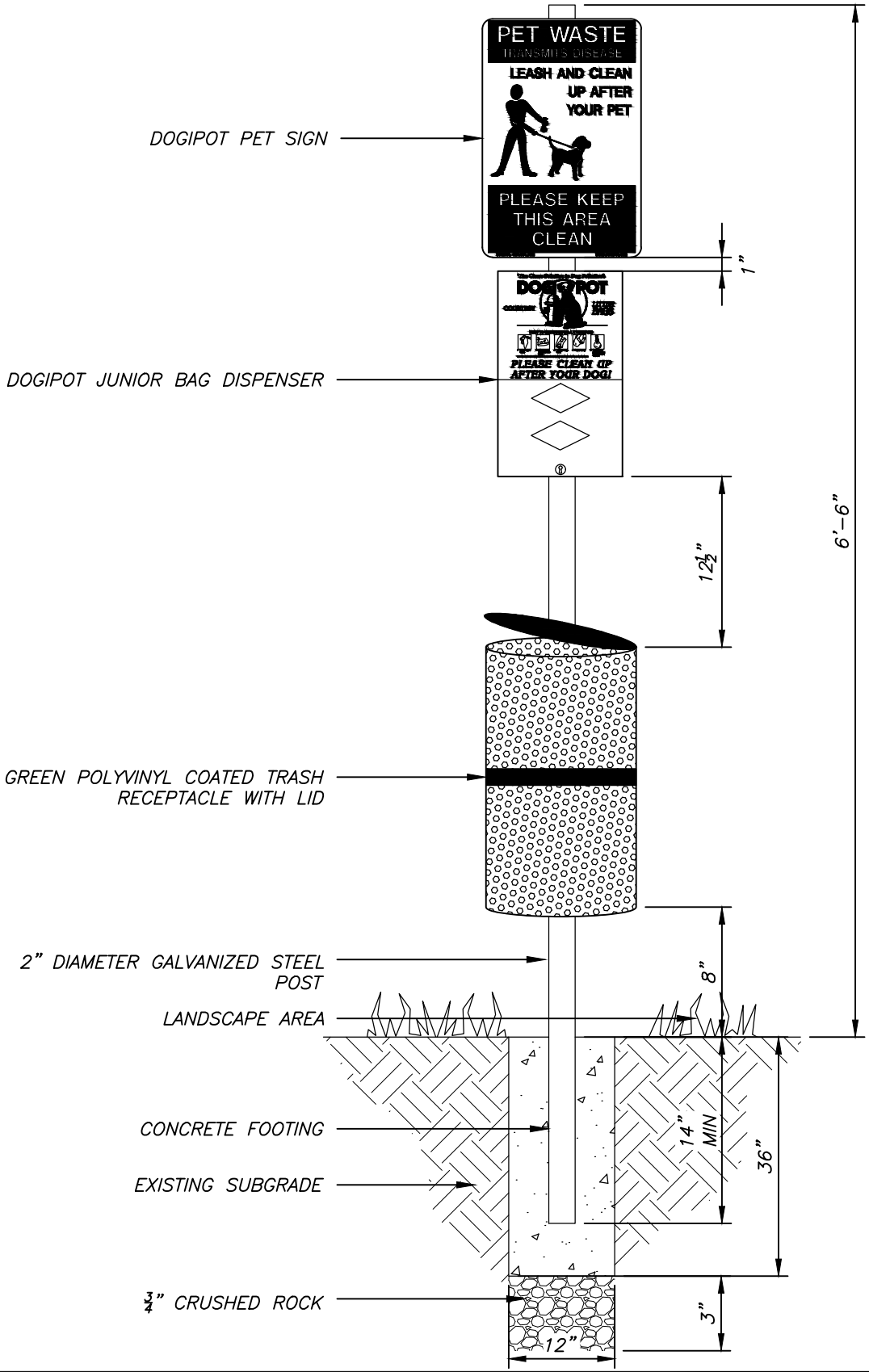

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

DOG WASTE STATION

DRAWING NO. M-19

NTS

May 28, 2020 - 3:32pm
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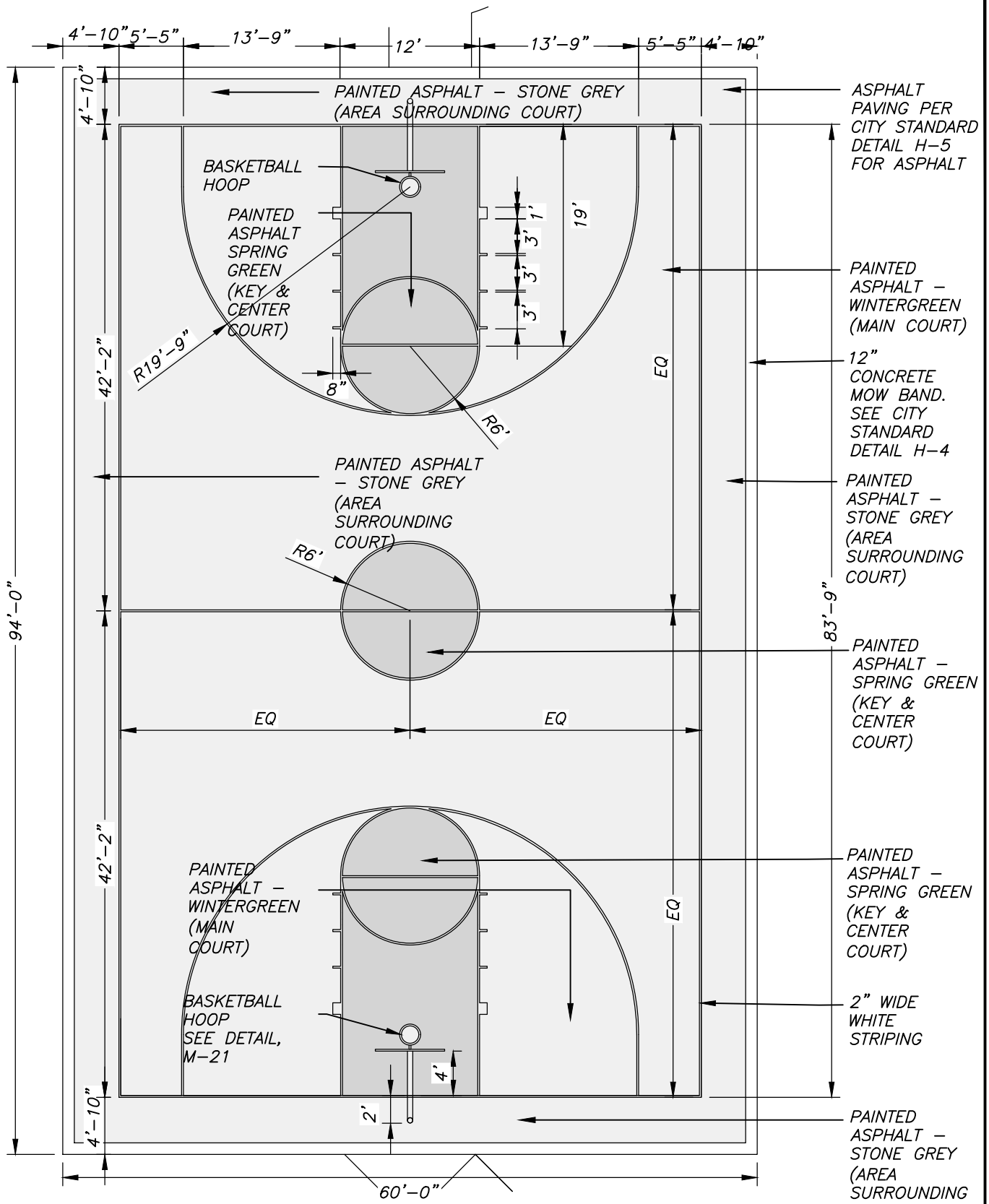

NOTE:
A. ACCEPTABLE SURFACING OPTION: CALIFORNIA SPORTS SURFACES
B. COLORS MAY BE CHANGED WITH CITY APPROVAL

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

BASKETBALL SPORT COURT LAYOUT PLAN

DRAWING NO. M-20
NTS

May 28, 2020 – 3:32pm
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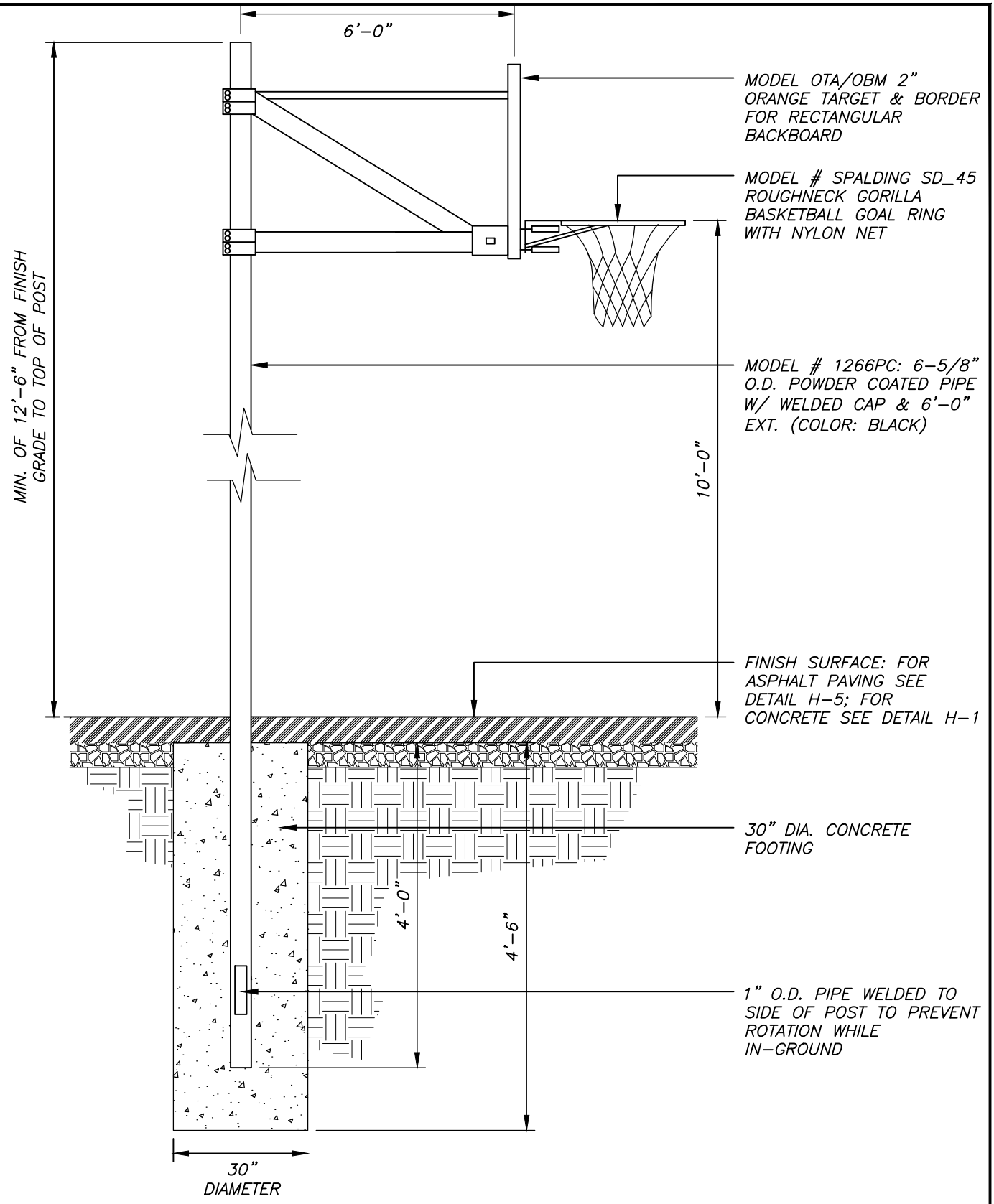

NOTES:

A. ACCEPTABLE MANUFACTURER LA STEELCRAFT

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

BASKETBALL HOOP

DRAWING NO. M-21

NTS

May 28, 2020 - 3:32pm
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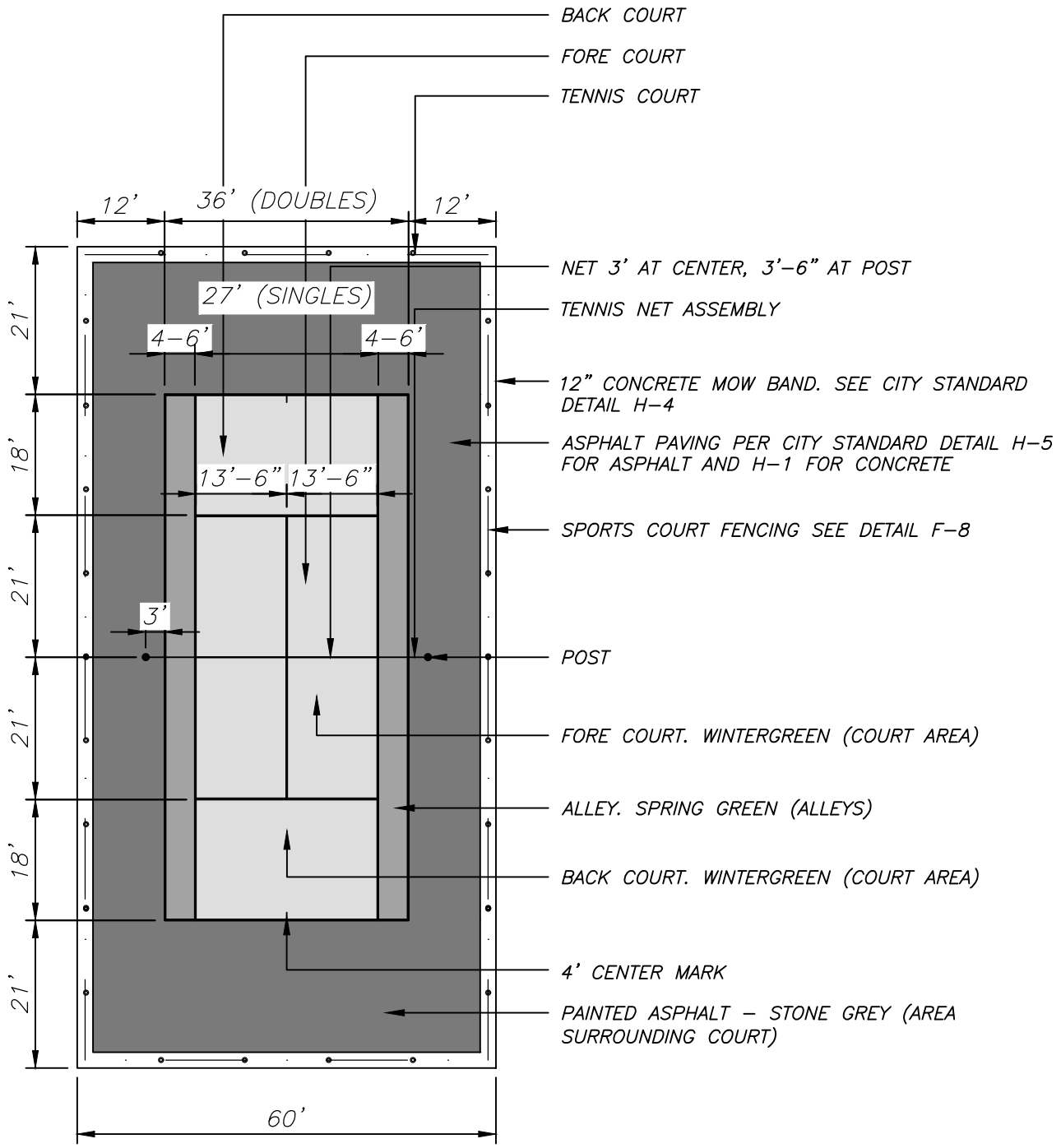

NOTES:

A. SEE DETAIL H-5 FOR COURT SURFACING
B. VERIFY LAYOUT WITH CURRENT NCAA STANDARDS
C. ORIENT IN A NORTH SOUTH DIRECTION; UNLESS OTHERWISE NOTED ON PLANS
D. DIMENSIONS GIVEN TO OUTSIDE OF LINES EXCEPT CENTER LINE. LINES 2" WIDE EXCEPT BASE LINE TO BE 4" WIDE

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

02/03/16
DATE

62736
R.C.E. NO.

TENNIS COURT LAYOUT PLAN

DRAWING NO. M-22
NTS

May 28, 2020 - 3:32pm
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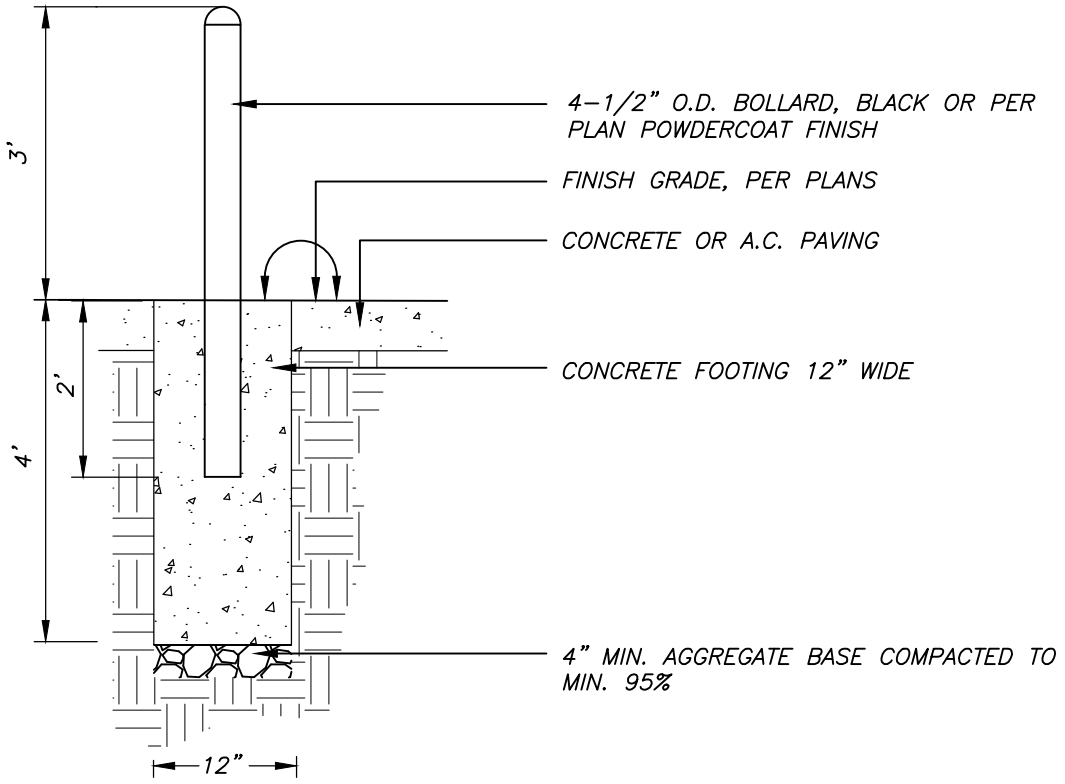

NOTE:
A. APPROVED MANUFACTURER; TOURNESOL, MODEL# B2 4" EMBED MOUNT BOLLARD.

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL
CHECKED BY: M. WILLETT
APPROVED BY:

PERMANENT BOLLARD

FERNANDO ULLOA, CITY ENGR. | 02/03/16 DATE | 62736 R.C.E. NO.

DRAWING NO. M-23
NTS

May 28, 2020 - 3:32pm
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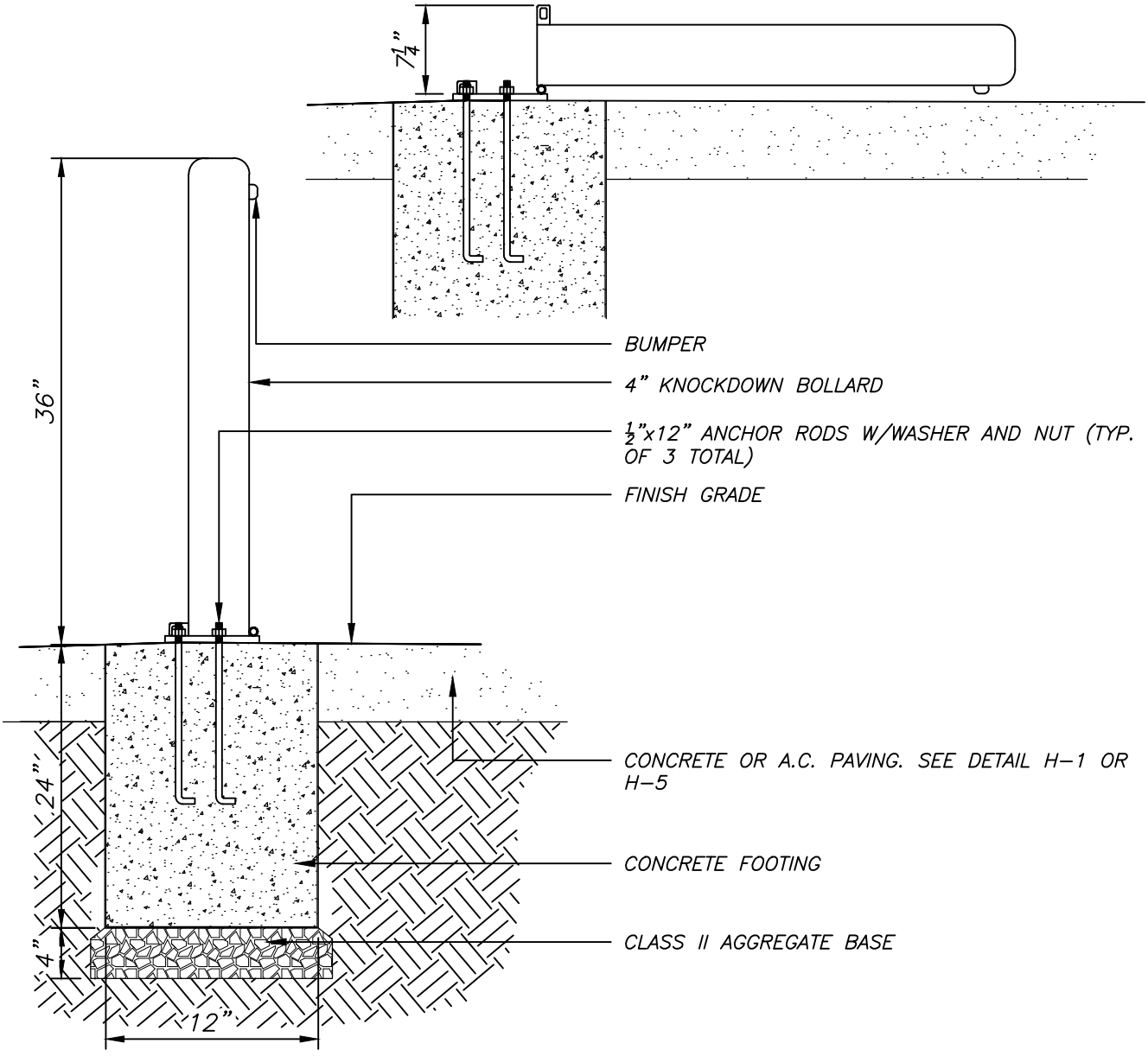

NOTES:

A. BOLLARD BY TOURNESOL MODEL #B–0200–40–3604

CITY OF PATTERSON IMPROVEMENT STANDARDS

DRAWN BY: O'DELL

CHECKED BY: M. WILLETT

APPROVED BY:

FERNANDO ULLOA, CITY ENGR.

METAL KNOCKDOWN BOLLARD

02/03/16
DATE

62736
R.C.E. NO.

DRAWING NO. M-24

NTS

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