



DEPARTMENT OF PUBLIC WORKS STANISLAUS COUNTY

STANDARDS & SPECIFICATIONS 2007 EDITION

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CHAPTER 1: GENERAL PROVISIONS

- 1.1 GENERAL:** The purpose of these improvement standards is to establish minimum design standards for the construction of improvements in the public rights-of-way, residential subdivisions, commercial development, industrial development, and other types of development projects that are subject to the approval of the Department of Public Works or are to be dedicated to the County for maintenance and/or operations. The County recognizes, however, that it has a responsibility to assure that certain other owned improvements (private streets, private utilities, etc) also meet minimum standards. County Standards may be applied to privately owned and maintained improvements which affect public health and safety.

These Standards include the specifications and plates as contained herein. All work done in the unincorporated area of Stanislaus County (public or private) that are subject to the approval of the Department of Public Works or are to be dedicated to the County for maintenance, shall conform to these Standards and the Stanislaus County Code. Any variances and exceptions to these standards shall be reviewed and approved by the Engineer.

It is recognized that it is not possible to anticipate all situations that may arise and to prescribe criteria and guidelines applicable to every situation. It is anticipated that the design policies in this manual will be applicable to the majority of cases, but are not inflexible rules without exceptions. In addition to these standards, the licensed Civil Engineer preparing the improvement plans is encouraged to use generally accepted engineering practices.

The Engineer shall be the final authority on all questions which may arise as to the interpretation of these Standards. The Engineer's decision shall be final and he/she shall have authority to enforce and make effective such decisions.

Copies of these Standards may be purchased at the Stanislaus County Department of Public Works. The purchase price includes a subscription for future changes. The purchase price and subscription term shall be established by the Department of Public Works.

These standards can also be viewed and downloaded from the County's web site located at <http://www.stanco-pworks.org>. The site can also be accessed by visiting <http://www.co.stanislaus.ca.us>, Click on "Agencies & Departments" and then click on "Public Works"

Developers are advised to have their representatives contact the Department of Public Works during design to insure conformance with these Standards.

You may contact Public Works by phone, fax, or visiting our office at the following location:

Mailing Address: Stanislaus County Department of Public Works
1010 10th Street, Suite 3500
Modesto CA, 95354

Phone: 209-525-6550
Fax: 209-525-7759

Visit us online at: www.stanco-pworks.org

Office Hours: Monday - Friday, 7:30 am - 5:00 p.m. (excluding legal holidays)

Work requiring plans prepared by a registered engineer such as public improvements for subdivisions, parcel maps, planned developments, building permits, etc. shall conform to these Standards, even though reference to these Standards may not be made on such plans.

Work not requiring plans prepared by a registered engineer shall conform to these Standards, and it shall be the responsibility of the Developer to determine the requirements.

Where subdivision improvements are required, the improvements shall be completed according to these Standards or shall be bonded pursuant to the requirements of the Stanislaus County Code prior to the recording of the map.

When improvements are to be done that will be privately owned and maintained, the County will require assurance that the improvements have been constructed in accordance with good practices to protect the general public. To achieve this protection, all privately owned and maintained improvements shall meet the minimum standards as outlined in this manual.

1.2 DEFINITIONS: The following definitions shall apply to these Standards:

- a. Acceptance of Improvements: The Board of Supervisors' formal approval and acceptance of the Improvements or adoption of a resolution reflecting that the Improvements are complete and meet the requirements of the Conditions and Specifications.
- b. Air Quality Planning: Stanislaus County falls within the jurisdiction of the San Joaquin Valley Air Pollution Control District (SJVAPCD). The federal Clean Air Act and federal transportation conformity rule require each transportation improvement program to demonstrate conformance with the federal air quality attainment plans.

- c. Approved Plans: Improvement plans that have been reviewed & approved by the County and signed by the Design Engineer.
- d. Conditions and Specifications: Includes the Improvement Plans, the latest version of County of Stanislaus Department of Public Works Improvement Standards, the Stanislaus County Code, all applicable laws, rules, regulations, ordinances, policies, resolutions, mitigation measures, development standards, zoning restrictions, and conditions of approval.
- e. County: The County of Stanislaus.
- f. Department: Stanislaus County Department of Public Works.
- g. Design Engineer: A person, firm, or corporation legally registered to perform civil engineering in the State of California.
- h. Developer: Subdivider, Developer, property owner, Utility, Registered Engineer or Contractor proposing to design work or do work in the County public rights-of-way.
- i. Engineer: Director of Public Works and/or authorized representative.
- j. Engineer's Estimate: The list of estimated quantities of work items for the project and the estimated cost to perform the work. It shall be dated, signed and stamped by the Design Engineer.
- k. Fire Chief: Chief of Stanislaus Consolidated Fire Protection District.
- l. Fire Inspector: The authorized representative of the Fire Chief assigned to inspect on-going construction projects in conformance to Federal, State, and Local fire codes.
- m. HDM: Highway Design Manual as published by Caltrans with CA amendments.
- n. Health Department: Stanislaus County Department of Environmental Resources.
- o. Inspector: Any person employed by the County under the authority of the Engineer to inspect on-going construction projects.
- p. Laboratory: Any testing agency or testing firm which is acceptable to the Department of Public Works.
- q. Maintenance Period: The one year period in which the developer shall maintain all improvements commencing on the date of the acceptance of improvements for subdivisions and parcel maps or

the sign off date of the encroachment permit by the Engineer for street frontage improvements, whichever applies.

- r. Parks Department: Stanislaus County Department of Parks and Recreation.
- s. Plans: Improvement Plans prepared by the Developer for a specific project.
- t. Record Drawings: An original set of plans showing the actual work as completed in the field, also known as "as-built" drawings.
- u. Special Provisions: Specific clauses setting forth conditions or requirements particular to the work and supplementary to the Standards as a part of the contract documents.
- v. Specifications: Directions, provisions, and requirements contained in this manual. The specifications pertain to the method and manner of performing the work and the quality and quantity of materials involved.
- w. Standards: These Improvement Standards of the County of Stanislaus including the text and drawings contained in this manual.
- x. State Standards: The current edition of the State of California Standard Specifications, the Standard Plans, the Highway Design Manual, the Manual of Uniform Traffic Control Devices, and the Manual of Uniform Traffic Control Devices with CA amendments.
- y. Subdivision Improvement Agreement: One or more agreements which are entered into by the County to secure the construction of such public or private improvements as are required by an adopted Resolution by the Board of Supervisors or agreements between the subdivider and the County.
- z. Surveyor: A person, firm, corporation, partnership or agent thereof, legally licensed to perform land surveys in the State of California.
- aa. Utility: Public sewer, public storm drain, public water, irrigation districts, gas companies, power companies, water companies, telephone companies, television cable companies, community services districts, railroads and any company holding a franchise to occupy road right-of-way within Stanislaus County.

- 1.3 PLANS:** Improvement Plans shall be prepared by the Developer and shall be submitted to the Engineer. Plans shall be approved by the Engineer prior to commencement of any work. The Plans shall be on a translucent (i.e. vellum, plastic film, etc) medium 24 inches by 36 inches with a minimum 1 inch border on the left side with ½ inch border on all other sides.
- a. Datum: All Plans shall be based on the National Geodetic Survey Vertical (elevation) datum. When available, 1988 datum shall be used. Only benchmarks on file with the Department shall be used.
 - b. Scale: The Plans shall be scaled to sufficiently show the necessary details when reproduced on blue-line and to construct the project. Generally, use a scale of 1"=10' or 1"=20' on highly detailed plan drawings and on larger projects, a scale of 1"=40' or 1"=50'. On profiles sheets, use a vertical scale of 1"=2' for mild slopes and 1"=4' for steeper slopes and a horizontal scale of 1"=10'. On typical street cross sections, use a vertical scale of 1"=2' for mild slopes and 1"=4' for steeper slopes and a horizontal scale of 1"=10'. The scale shall be indicated on all sheets. Letters and numbers shall be minimum 0.10 inch in size.
 - c. Title Block: Each sheet of the Plans shall have a title block showing the project name; sheet title; date of the drawing and revisions; scale of drawings; page number; the Design Engineer's name, address and telephone number; registration stamp showing the engineer's name, number, and expiration date; and the Design Engineer's signature.
 - d. Orientation and Stationing: If practical, arrange the design and drawings so that the north direction points to the top or left edge of the sheet. Stationing should be positive in the north and east directions. If practical, the stationing on the plan and profile sheet shall read from left to right or from bottom to top. A north arrow shall be placed on all appropriate sheets. Negative stationing shall be avoided.
 - e. Format: Plans should consist of the following: Title sheet, topographical sheet (unless exempted by the Engineer), grading and drainage sheet, utility sheet, plan and profile sheet, detail sheet, and traffic signing, storm water pollution prevention plan, and striping plan. Plans shall also show sufficient data to enable the design to be reviewed for conformance to County Standards and for the project to be constructed.

- f. Title Sheet: The first sheet or title sheet may contain, but not be limited to:
1. The layout of the entire project drawn to an appropriate scale including road names and lot numbers, centerline monuments and bearings and distances. The bearing, distance and the basis of bearing from an established monument of record to a proposed project monument in the subdivision.
 2. A vicinity map and north arrow.
 3. An index of sheets (if more than one sheet).
 4. A legend of symbols.
 5. The location, description, elevation, and datum of the reference benchmark.
 6. The location of the project by township, range, section, and Assessor's Parcel Number. Also include reference to any permits that regulate the project.
 7. A signature block for all approving agencies required on the title sheet. Individual sheets may also require signature blocks for Stanislaus County Department of Environmental Resources, Stanislaus County Department of Fire Safety, Department of Planning & Community Development, other County Departments, or Utility.
- g. Topographical Sheet: A topographical survey (when not exempted by the Engineer) sheet may be required showing, but not limited to:
1. Spot elevations at appropriate intervals, drainage systems details, fences, structures, pipelines, ditches, utility poles, driveways, roads, pavement, right-of-way (both sides of the road), signs and pavement markings, trees, easements and any other feature which may affect the project.
 2. The topographical survey extending a minimum of 300 feet past the limits of the project or such distance as may be appropriate to show specific impacts to the project design. The survey must show the full right-of-way for that length.

- h. Grading and Drainage Sheet: The Plans shall include an overall grading and drainage sheet showing, but not limited to:
1. A typical lot grading detail. Typical lot grading detail may be placed on detail sheet.
 2. The proposed lot corner elevations as well as any elevation differential between the project boundaries and the adjoining properties and finished elevation or building pad elevation for each lot.
 3. Gutter or ditch flow arrows and slopes, drainage courses (existing and proposed), drains, grade breaks, storm drainage pipe sizes and slopes, manholes, valley gutters, catch basins and grate elevations, sufficient top of curb elevations to show drainage patterns, retention basin location and a separate sheet for details, location of lift stations, location of any retaining walls, location and size of easements and any other items affecting grading and drainage.
 4. Where soil borings are performed for drainage purposes, the location of the soil borings and the soil boring results shall be shown on the plans.
- i. Utility Sheet: The Plans shall include utility sheet(s) showing, but not limited to:
1. Streets lights, conduit runs and power source for each street light circuit, fire hydrants, water lines, valves, blow-offs, sanitary sewer lines and manholes, leach fields and waste system appurtenances, clean outs, sewer and water service locations, water wells, power lines, gas lines, television cable lines, utility boxes, telephone lines, driveways if locations are known, utility easements and any other utility items at or near the project location.
 2. All sheets shall contain a note about contacting USA prior to excavation.
 3. A signature block for any agency or Utility whose facilities shall be installed, made part of, or connected to, as part of the improvements.
- j. Plan and Profile Sheet: The Plans shall include a plan and profile sheet(s) showing the existing and proposed profiles of all roadways. They shall include, but not be limited to:
1. All elevations necessary to accurately describe the work.
 2. A cross section of the roadway along with the traffic index

and soil R-value used in design including the design speed for each road.

3. Grade breaks, centerline, vertical curves, percent slope, road stationing and survey data, original ground at centerline and right-of-way, top of curb profile, storm drainage lines, water lines, sewer lines, the station of the nearest cross street for mid-block improvements, any areas of possible conflict between underground utilities, indicate length and type of pipe between manholes and catch basins, elevations of pipe inverts, grate elevations of catch basins, drain inlets, manholes and all other pertinent data. Pipelines and underground utility lines shall be shown on both the plan and profile portion of the sheet.
 4. All sheets shall contain a notation about contacting USA prior to excavation.
- k. Detail Sheet: A complete detail sheet(s) showing a typical detail for each construction item applicable to the project shall be clearly shown on the plans and not referenced only by a plate number.

On the detail sheet(s), reproduce the Standards in this manual that apply to the project and identify by Plate Number. Clearly reference any Standard, either as-is or modified, utilized from this manual.

The required sheets may be combined into a single sheet as long as the work to be performed is clearly defined.

- l. Traffic Signing and Striping Plan: The traffic signing and striping plan shall contain, but not be limited to:
1. An overall plan of the project showing the new roadways and the surrounding existing roadways. The plan shall show both sides of the road, all traffic lanes, edges of pavement and handicap ramps.
 2. Existing traffic signs, pavement markings and striping.
 3. Proposed traffic signs, pavement markings and striping.
 4. Traffic signs shall be identified by type and size either by verbal explanation or Caltrans designation.
 5. Traffic striping and pavement markings shall be identified by either verbal description or by "detail" designation as used in the State Standards, i.e., double yellow centerline stripe with two-way yellow reflective pavement markers or simply Detail 22.

Detail style designations are encouraged.

6. Sufficient data shall be shown on the Plans to identify the placement of signs, striping and pavement markings.

On uncomplicated street improvement plans the striping and signing details may be incorporated into another sheet.

m. Supplemental Information:

1. When the Plans mention products like pumps, motors, street lights, etc., the Design Engineer shall provide the manufacturers' specifications.
2. Design calculations for storm drainage systems including watershed area calculations, hydraulic pipeline flow calculations, required storage volume calculations, percolation calculations, pumping plants, structures, etc. shall be shown on the improvement plans. All design calculations shall be stamped and signed by the Design Engineer. The calculations shall clearly reveal, using figures and diagrams, how the result was obtained. If the result is computer generated, the Design Engineer shall provide the means to verify the result to the Department.
3. Quantities and the Design Engineer's Estimate shall show a detailed itemized estimate of cost, including contingencies. The estimate shall be signed and stamped by the Design Engineer.
4. A geotechnical soil's report (prepared by a person, firm, or corporation licensed to prepare such report) shall be submitted with Plans. The soils report shall include, but not be limited to: "R" value tests of sub-grade soil, structural section design based on County approved Traffic Index, percolation rates taken at appropriate elevations, water table elevations, and logs of the soil profiles.
5. All landscaping and irrigation plans, when required, shall be designed and constructed in accordance with the requirements of Department of Planning & Community Development, the Department of Parks & Recreation, and the Caltrans Highway Design Manual (for sight visibility and clearance requirements).
6. Where the improvement plans are for a portion of a larger development, a tentative map or master plan, including all infrastructure for the ultimate development, shall be submitted along with the plans.

7. Plan check fees shall be paid prior to receiving signed and approved plans or recording a final map or parcel map.
 8. Copies of utility and will-serve letters shall be provided as required by the Engineer.
 9. Where existing pavement is being joined and widened, the plan submittal shall include cross sections of the existing pavement from crown line to ten (10) feet outside the right of way at 50' maximum intervals, and showing the proposed widening. Design elevations of proposed edge of pavement or lip of gutter and/or top of curb shall be shown along with existing elevations. The cross slope of the existing pavement to remain and proposed new pavement shall be calculated and shown for each section.
 10. A set of design calculations with supporting information for the proposed project shall be submitted at the time of plan submittal.
- n. Departmental Review: The Design Engineer shall present two blueline sets of plans to the Development Services Division for the initial plan review.

Plans being resubmitted shall consist of two sets of revised plans. On one set of the revised plans, the Design Engineer shall highlight all changes. The original plan set previously marked for correction must also be submitted. If the previously marked plan set is not submitted with the re-submittal check set, the plan review time may be extended.

A revised engineer's estimate, revised design calculations, and any other submittal or supporting information required by the Engineer shall accompany all plan re-submittals.

The Engineer may require additional sets of improvement plans, as deemed necessary, to complete the review and inspection.

The Department may be the last agency to sign the Plans for final approval. The Design Engineer shall present the final Plans with all required agency signatures. If there are required changes during construction after the Plans have been signed by the Engineer, the changes shall be properly documented on the record drawing. Said changes shall be in accordance with Engineer's written approval.

Signed Plans shall be reproduced on 3-mil mylar at Developers expense and provided to the Department. The mylar drawings shall become the property of the County and retained in the Department of Public Works.

In addition to a set of mylars, four (4) copies of the final approved and signed improvement plans shall be submitted prior to applying for a permit (grading, encroachment, building, etc) or prior to starting any construction work.

Plans will not be considered approved nor construction authorized until the Engineer has signed the original drawings. Grading, encroachment, and building permits may not be issued without approved improvement plans. These permits should be accompanied with a plan showing the extent of the proposed improvement and/or grading.

Courtesy-grading permits requested by the Applicant, Contractor, or Design Engineer may not be issued by the County without approved improvement plans. Any grading activity performed without obtaining the necessary grading permits shall be done at the sole risk of the Applicant and his/her Contractor. Where County developments drain into a storm drain system located within a City Sphere of Influence, the developments shall comply with the requirements of that particular agency.

The plan approval is valid for twelve months after the date of approval. Should construction not begin within the twelve month period, the approval shall expire and the plans and engineer's estimate shall be resubmitted for review and re-approval. A request for an extension may be filed prior to expiration, and approved on a case by case basis. An additional plan check fee may be incurred for re-approval of plans.

o. Plan Revisions During Construction:

Should changes become necessary during construction, the Design Engineer shall first obtain the approval of the County Inspector for any plan revisions.

Changes that become necessary during construction may also need to be reviewed and approved by the Planning and Community Development Department. Any changes that have the potential to affect conditions of approval or development standards for the project, such as landscaping or parking, shall first be reviewed and approved by the Planning and Community Development Department for zoning compliance.

Revisions to the plans shall be made in the following manner:

1. The Design Engineer shall indicate the revisions on a blue line print and submit it for review by the County Inspector. Upon agreement of the revisions, the County Inspector will release the necessary original mylar drawings to the Design Engineer for revision.

2. The original design shall not be deleted in the plans but shall be lined out.
3. In the event that eradicating the original design is necessary to maintain clarity of the plans, approval must first be obtained from the County Inspector.
4. 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 County Inspector shall both initial the revision block to confirm responsibility and approval.
5. The changes shall be identified by the revision number in a triangle delineated on the plans adjacent to the change and on the revision signature block.
6. Minor field changes which do not affect safety, drainage or the basic design may be made upon the authorization of the County Inspector. Said authorized changes must be shown on "Record Drawings" before the work will be accepted as complete.
7. The Engineer may order changes in the plans in order to complete the necessary facilities. Changes in the plans ordered by the Engineer shall conform to all of the above.

p. Record Drawings:

1. The Design Engineer shall keep an accurate record of all approved deviations from the plans and shall provide a copy of these records to the Engineer upon completion of the work. "As-built", "as-constructed" or "record" plans, known as "Record Drawings", shall be provided to the Department prior to acceptance of the improvements.
2. Record drawings shall be on 3-mil mylar or polyester and stamped "Record Drawings" with the Design Engineer's registration stamp and signature on each sheet. Approved deviations shall be recorded on the original approved plans, not reproducible copies. The original plans shall not be removed from the Department of Public Works for preparation of "Record Drawings" without approval of the Engineer. A work area will be available for making additions or corrections.
3. Portions of the Plans replaced by changes during construction shall not be erased but simply crossed off or lined out.

4. All utilities not shown on the construction Plans shall be drawn on the record drawings.
5. Street light conduit runs, power source and pull boxes shall be shown on the record drawings.
6. All lettering must be clear and legible.
7. Extensive unclear changes must be shown clearly on a supplemental sheet.
8. Record drawings shall become the property of the Department.
9. Electronic files of the As-Built (in standard PDF format at 300 dpi resolution settings) shall be provided in addition to the original As-Built mylars.
10. Prior to accepting the As-Built, the Inspector shall review the Record Drawings to confirm that they reflect what has actually been constructed. After this review, the Inspector shall sign the Record Drawings and clearly label them as being the official As-Built for the Improvement project.

1.4 PRIORITY OF WORK: All underground utilities shall be constructed and accepted prior to surfacing of roads or rights-of-way. The Developer shall be responsible for making arrangements, as necessary, with utility companies to insure that the necessary underground utilities are constructed.

1.5 STAKING: The Developer is responsible for providing all required construction staking.

1.6 INSPECTION: The Inspector shall perform inspection of all work and materials furnished to assure conformance with these Standards on the approved plans. The cost of all inspections shall be paid by the Developer.

The Developer shall request inspections a minimum of 48 hours in advance to permit scheduling of inspection by the Inspector.

All work not accepted by the Inspector shall be remedied, removed or replaced by the Developer. Any work done beyond that shown on the Plans approved by the Engineer may be ordered removed, by the Engineer or Inspector, at the Developer's expense.

Materials proposed for use and not specified herein shall be submitted for approval by the Engineer prior to ordering such material.

Underground work shall not be backfilled or covered until an inspection by the Inspector has been made and the work accepted. Any work that is backfilled or covered without inspection shall be uncovered, at Developer's expense, upon the request of the Inspector.

Inspector shall have access to the work at all times and shall be furnished every reasonable facility for ascertaining that the work done, materials used and workmanship performed are in accordance with the requirements and intentions of these Standards and the approved Plans and Specifications. Failure of the Inspector to note faulty material or workmanship during construction or on material submittals shall not relieve the Developer of the responsibility for correcting such deficiencies at Developer's expense. The inspection of the work or materials shall not relieve the Developer of any obligations to fulfill the contract. Work or materials not meeting these Standards or approved Plans may be rejected.

Improvements that are to be relinquished to the County will be accepted for maintenance only after the Engineer receives written notice from all agencies (such as the sanitary sewer district, water district, fire district, irrigation district, environmental resources, planning, parks & recreations, and any other governmental agencies as may be required) stating that all pertinent work has been completed to their satisfaction and has been accepted for maintenance.

1.7 CONCRETE: Portland cement concrete, unless otherwise approved by the Engineer, shall be as defined in the State Standards. The concrete shall consist of a 6 sack mix minimum (3,500 pounds per square inch minimum compressive strength rating) with aggregates graded pursuant to State Standards with a maximum size gradation of 3/4 inch. All mix design shall be approved by the Engineer prior to use.

1.8 DUST CONTROL: Dust control shall be the responsibility of the Developer and shall be implemented in accordance with applicable federal, state, and local guidelines.

1.9 SURFACE RESTORATION: Work in easement areas must be confined to the easement and the surface of the work area shall be restored to its original condition.

Written agreements must be made between the Developer and the property owners if work or equipment is outside the easement. The surface of the area outside the easement must be restored to the satisfaction of the property owner. Said agreements are the responsibility of the Developer.

In the case of paved areas, excavations, or trenches that leave less than six feet of existing surfacing, the remaining surface shall be removed, and

the full section replaced in accordance with the design drawings and/or Standards.

Excavations in the shoulder area located within three (3) feet of the edge of pavement shall be restored with a minimum of eight (8) inches of aggregate base material.

Prior to paving, all uneven or loose edges shall be saw cut in true and even lines parallel with the centerline of the work. See Section 3 for paving details.

- 1.10 CLEAN UP:** Developer shall clean up the dirt and debris caused by the construction, including adjacent roads effected by his work. All sidewalks, curbs, approaches, crosswalks, existing and new drain inlets, lawns, etc., shall be kept free of excess dirt and rubbish and kept in a clean and neat condition. Public roads shall be cleaned daily, as needed.

Before a final inspection of a project is requested, the following shall be completed:

- a. All of the right-of-way, adjacent property, adjacent roads and alleys and all areas used by the Developer in connection with the project shall be cleared of all debris and excess material and left in a neat and presentable condition.
- b. All paved areas shall be free of dirt and dust.
- c. All concrete surfaces shall be left free of excess concrete, paving materials, dirt and dust. All expansion joints shall be trimmed flush with concrete.
- d. All old and new storm drain inlet bottoms and outlet pipes shall be left free of all dirt and debris. Care shall be taken to keep sand and silt out of storm drains, catch basins, manholes or horizontal drains. Any storm drains, catch basins, manholes or horizontal drains affected by the work shall be cleaned by the Developer.
- e. All manhole bottoms shall be cleaned of all foreign matter and covers shall be raised to grade and have all excess asphalt removed.

The Developer shall not remove temporary warning, regulatory and guide signs prior to formal acceptance by the County. Such signs shall be removed when directed by the Engineer.

- 1.11 DESIGN EXCEPTIONS:** These Standards are intended to be minimum standards which apply to all new construction. Any design exceptions from these Standards are to be specifically approved in writing by the Engineer.

For in-fill construction projects, the Engineer may approve design exceptions, variations, and modifications from these Standards as necessary, due to conditions of, and the compatibility with, existing improvements adjacent to the construction.

1.12 GUARANTEE: The Developer or Utility shall inspect and repair all defects on his constructed improvements in the public right-of-way for a period of one year from the date the work is initially accepted as complete by the County.

1.13 MONUMENTS: All existing road survey monuments within the area of construction shall be placed in monument wells and raised to grade. Monuments shall be 3/4 inch inside diameter x 24 inch long galvanized iron pipe or approved equal. The monument shall be tagged as required by the State of California Land Surveyors' Act. The top of all boundary and lot corner monuments shall be at least 1 foot below the ground surface, unless otherwise approved.

Final maps and recorded maps shall show by appropriate statement when monuments will be set and provide a description of monuments installed. Monuments shall be set at least 1 foot below the finished grade in unpaved areas.

Final maps or recorded maps shall show the position of all monuments to be set per the requirements of the Land Surveyors and Subdivision Map Act.

a. Road Monuments: Road survey monuments and monument wells shall be installed in conformance with the Road Monument Plate contained in these Standards on the centerline of each road at the following locations:

1. Intersection of the road centerline;
2. Beginning and end of curves;
3. Any change of direction; and,
4. Any other points deemed necessary by the Engineer.

Road monuments shall be 3/4 inch inside diameter x 24 inch long galvanized iron pipe or approved equal. The monument shall be tagged as required by the State of California Land Surveyors' Act.

b. Boundary Monuments: Boundary monuments, if not existing, shall be placed on the exterior boundary of the subdivision at the following locations:

1. Any changes of direction;
2. Beginning and end of curves;
3. Block corners and alley corners; and,
4. Any other points required by the Subdivision Map Act or Land Surveyors Act.

Boundary monuments shall be 3/4 inch inside diameter x 24 inch long galvanized iron pipe or approved equal. The monument shall be tagged as required by the State of California Land Surveyors' Act. The top shall be set at least 1 foot below the ground surface.

- c. Lot Corner Monuments: Lot corner monuments shall be placed in the subdivision at the following locations:

1. At each corner except as otherwise provided by this section;
2. Any other lot corners deemed necessary by the Subdivision Map Act. Monuments shall not be located under footings or structures.

Lot corner monuments shall be 3/4 inch inside diameter x 24 inches long galvanized iron pipe. The monument shall be tagged as required by the State of California Land Surveyors' Act. The top shall be at least 1 foot below the ground surface.

On standard R-1 lots, the monuments may be 1/2 inch inside diameter x 24 inch long galvanized iron pipe or approved equal.

- 1.14 BENCHMARK:** A minimum of one benchmark shall be established (on a brass cap) within each subdivision. The location and elevation shall be shown on the record drawings. If possible, the benchmark shall be set at the base of a street light standard. National Geodetic Survey vertical (elevation) datum shall be used. When available, 1988 data or most recent datum shall be used.

When developing within the City of Modesto Sphere of Influence, the development shall tie the proposed property into the City of Modesto High Precision GPS Record of Survey 22-S-51 per City standards.

A benchmark card shall be filed with the Engineer for each established subdivision benchmark.

1.15 ENGINEERING AND CONSTRUCTION COMPLIANCE REQUIREMENTS:

The County requires strict compliance with the Professional Engineers Act of the California Business and Professions Code. All plans, specifications, reports, and documents required by the County shall be signed and stamped with the seal of a Registered Civil Engineer, currently licensed and able to practice in the State of California.

All work performed to meet these standards shall be constructed by Contractors holding a current valid license issued by the Contractors State License Board, Department of Professional and Vocational Standards, State of California. The Contractor must be licensed appropriately for the type of work to be performed.

1.16 FAITHFUL PERFORMANCE SECURITY: The County may require security for performance on projects without a Subdivision Improvement Agreement as follows:

Faithful Performance Security: Applicants shall provide the County with an acceptable irrevocable letter of credit, or other suitable financial guarantee acceptable to the County from a financial institution authorized to do business in the State of California, and such authorization shall be valid to one full year after the project is accepted by the County. The security shall be in the amount of 100% of the County approved engineer's estimate.

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

- a. Failure by the Contractor to complete the installation.
- b. Necessary repairs caused by poor installation techniques.
- c. Necessary repairs caused by the installation of defective material.
- d. Failure by the Contractor to perform in accordance with the approved plans and specifications.
- e. Material liens against the County.

1.17 GUARANTEE OF WORKMANSHIP, MATERIALS AND EQUIPMENT

The Applicant and/or Developer shall guarantee that the project installed by the Contractor be free from any and all defects in materials and workmanship for a period of one year after final acceptance by the County. This guarantee shall be based on the Design Engineer's approved construction cost estimate, or other amount determined by the County. The County may make any necessary repairs and charge the security in the event the developer or Contractor fail to correct the defects.

Contractors performing work for the applicant shall be competent with adequate manpower and equipment to accomplish the work in accordance with the approved plans and specifications and licensed in the State of

California. A representative of the Applicant and the Contractor shall be present at the job site whenever work is being conducted by subcontractors.

1.18 DEVELOPMENT WITHIN A CITY'S SPHERE OF INFLUENCE

Within the Spheres of Influence of any city, roadway improvements, dedications, building setbacks, and road reservations shall meet the development standards of the city consistent with the Spheres of Influence Policy in the Land Use Element of the General Plan, except in those areas subject to an individual city/county agreement. These requirements may change from time-to-time through the adoption or revision of local land use plans or standards. To ensure consistency with a city's development standards, additional right-of-way may be required for each of the roadway classifications described above. Where design and access requirements of a city differ from those established by the County, development shall be required to meet the standards of the city. The Design Engineer and/or Developer shall consult with the city prior to the construction of improvements within its sphere of influence to ensure consistency with the standards of that city.

1.19 ENCROACHMENT PERMITS: Before the Department of Public Works will issue an encroachment permit for any construction within the County's public right-of-way, the following must be submitted.

- a. A set of improvement plans signed and approved by the Design Engineer for the construction of street improvements or pipelines running longitudinally within the right-of-way must be submitted showing the location and type of encroachment. If a trench is to be dug, a cross-section must be shown labeling depth, width, pipe diameter, and backfill specification.
- b. A Certificate of Insurance showing proof of General Liability in the amount of \$100,000 (minimum) for the person signing the encroachment permit. The owner can not sign for a contractor or vice-versa.
- c. Appropriate fees shall be paid and an encroachment permit obtained prior to performing any construction activities.
- d. Call the Inspector 48 hours before starting work and for final inspection @ 525-4102.
- e. Perform work according to County Standards & Specifications.
- f. Call USA at 800-642-2444 for utility locations at least 48 hours before digging. Other utility companies may need to be contacted:(including, but not limited to PG&E, SBC, MID, TID, Comcast, Charter, etc). Provide a copy of these permit conditions to all Contractors doing work covered under the encroachment permit.
- g. Construct subdivision improvements in accordance with approved plan set and conditions of approval and/or development standards.
- h. Prior to receiving any water taps or sewer connections, the

Developer shall pay the water service connection charges to the appropriate water or sewer agency.

- i. Prior to issuance of the permit for a project over one (1) acre, the Contractor or Developer shall provide the Developer/Contractor Information and a copy of the Notice of Intent (NOI) filed with the Water Resources Board. In compliance with the Water Resources Board, the Storm Water Pollution Prevention Plan is required to be on-site. A copy of the NOI shall be attached to the encroachment permit.
- j. Off-site inlets adjacent to the proposed project shall have filter screens placed in the grates to prevent silt contamination. These shall be maintained during the entire duration of the project.
- k. No landscaping work is permitted unless plans are approved by the Department of Parks & Recreation and/or the Department of Planning & Community Development.
- l. Open all traffic lanes during peak hours: Mon-Fri: 7:30 – 8:30 AM; 4:30 – 5:30 P.M.
- m. Full street closures will require a separate permit. Street closure permits will be conditioned to post all streets that are affected with the closure. The traffic plan shall be approved a minimum of two (2) weeks prior to pending closure. The traffic plan will address the detour of traffic. The permit will minimize the amount of time the closure is in effect.
- n. Partial street closures may be coordinated with the inspector. Partial street closures may be limited in time to 8:30 am to 4:30 p.m. All construction traffic control shall follow the Caltrans manual.

COUNTY SURVEYOR'S STATEMENT

This is to certify that the accompanying map has been examined, that it substantially conforms to the tentative map, and any approved alternations thereof. That all provisions of the State Subdivision Map Act, Chapter 2, and Title 20, Stanislaus County Subdivision code has been complied with, and the map is technically correct.

- * I hereby accept, on behalf of the public for public use, the offer(s) of dedication of the (size) and/or (description) road right of way, and/or the (size) and/or (description) public utility easement, along (road name).

*Dated this _____ day of _____ 20_____
Stanislaus County Surveyor*

*BY: _____
Deputy Director, Public Works*

NOTES:

- * This part used only when offers of dedication are made for public utility easements or widening of existing public road rights of way, or irrevocable offers of dedication for potential future roads, extension or widening of existing public right of way.

The County Surveyor or his Deputy may also accept subject to improvement, or reject any offer of dedication in lieu of acceptance.

	No.	Revised	By	COUNTY SURVEYOR'S STATEMENT	Approved by 
					Director of Public Works
	Updated by	P. Saini		COUNTY OF STANISLAUS	Date
Checked by	S. Erickson		DEPARTMENT OF PUBLIC WORKS	PLATE NO:	1-A



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TYPICAL PARCEL MAP
SHEET 1 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-B1

OWNER'S STATEMENT

WE, THE UNDERSIGNED, HEREBY STATE THAT WE ARE THE OWNERS OF THE LAND SHOWN ON THIS MAP, AND WE HAVE NO OTHER INTEREST IN THE LAND SHOWN ON THIS MAP, AND WE CONSENT TO THE MAKING AND FILING OF THIS MAP IN THE OFFICE OF THE COUNTY RECORDER OF STANISLAUS COUNTY, CALIFORNIA, FOR THE PURPOSE OF RECORDING ALONG THE FRONTAGE OF PARCEL, USE THE ROAD, AND WITHIN THE EXTERIOR BOUNDARY OF THE LAND BEING SUBDIVIDED.

OWNERS: _____

AUTHORIZED OFFICER

VENUEE: _____ AND _____

COUNTY RECORDER'S STATEMENT

FILED THIS _____ DAY OF _____, 19____, AT _____ O'CLOCK
COUNTY RECORDS, AT THE REQUEST OF _____, STANISLAUS
INSTRUMENT NO. _____, FEE _____ PAID.

COUNTY RECORDER

BY _____
DEPUTY

ALL-PURPOSE ACKNOWLEDGMENT

STATE OF _____ }
COUNTY OF _____ }

ON _____ BEFORE ME, _____ (NAME, TITLE OF OFFICER),
PERSONALLY APPEARED _____ PERSONALLY KNOWN TO
ME, _____ (NAME, TITLE OF OFFICER),
BE THE PERSON(S) WHOSE NAME(S) IS/ARE SUBSCRIBED TO THE WITHIN
INSTRUMENT AND ACKNOWLEDGED TO ME THAT HE/SHE/HE/IT EXECUTED
THE SAME IN HIS/HER/HER AUTHORIZED CAPACITY(IES), AND THAT BY
HIS/HER/HER SIGNATURE(S) ON THE INSTRUMENT THE PERSON(S), OR
THE ENTITY UPON BEHALF OF WHICH THE PERSON(S) ACTED, EXECUTED
THE INSTRUMENT.

WITNESS MY HAND AND OFFICIAL SEAL.

SIGNATURE

Expiration Date

CLERK OF THE BOARD OF SUPERVISOR'S CERTIFICATE

THIS IS TO CERTIFY THAT THE OWNERS OF THE PROPERTY SHOWN ON THE ACCOMPANYING MAP HAVE FILED WITH THE BOARD OF SUPERVISORS:

CHECK ONE

☐ A. A BOND OR DEPOSIT APPROVED BY SAID BOARD TO SECURE THE PAYMENT OF TAXES AND SPECIAL ASSESSMENTS DUE OR TO BE DUE ON THE TIME OF FILING OF THIS MAP, A LIEB AGAINST SAID PROPERTY OR ANY PART THEREOF.

☐ B. RECEIPTED TAX BILL OR BILLS OR SUCH OTHER EVIDENCE AS MAY BE REQUIRED BY SAID BOARD SHOWING FULL PAYMENT OF ALL APPLICABLE TAXES.

DATED THE _____ DAY OF _____, 20____

CLERK OF THE
BOARD OF SUPERVISORS STANISLAUS COUNTY, CALIFORNIA

BY: _____

TAX COLLECTOR'S CERTIFICATE

THIS TO CERTIFY THAT THERE ARE NO LIENS FOR ANY UNPAID STATE, COUNTY, SCHOOLS, MUNICIPAL OR IRRIGATION TAXES, OR SPECIAL ASSESSMENTS, EXCEPT SPECIAL ASSESSMENTS OR TAXES NOT YET PAYABLE AGAINST THE LAND SHOWN ON THIS MAP.

AS TO STATE, COUNTY, SCHOOL, OR MUNICIPAL TAXES:

DATED THIS _____ DAY OF _____, 20____

_____, COUNTY TAX COLLECTOR

BY _____
DEPUTY

AGRICULTURAL STATEMENT

MAY PROCEEDS NORMAL AND NECESSARY TO THE OPERATION OF AGRICULTURE, SUCH AS FUEL, FERTILIZER, INSECTICIDES, PESTICIDES, DUST, SPRAYING, IRRIGATION, AND OTHER POTENTIALLY DETRIMENTAL EFFECTS TO RESIDENTIAL USE OF ADJACENT PROPERTIES. ALL PERSONS EMPLOYED IN THE OPERATION OF THE AGRICULTURE SHOULD INVESTIGATE THE LIKELIHOOD OF SUCH CONFLICTS.

SURVEYOR'S STATEMENT

THIS IS TO STATE THAT THE ACCOMPANYING MAP HAS BEEN EXAMINED, THAT IS SUBSTANTIALLY CONFORMS TO THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF, THAT ALL PROVISIONS OF THE STATE SUBDIVISION MAP ACT AND TITLE 20, STANISLAUS COUNTY SUBDIVISION CODE HAVE BEEN COMPLIED WITH, AND IT IS TECHNICALLY CORRECT.

DATED THIS _____ DAY OF _____, 20____.

STANISLAUS COUNTY SURVEYOR

BY: _____
DEPUTY DIRECTOR



COUNTY SURVEYOR'S STATEMENT

THIS IS TO CERTIFY THAT THE ACCOMPANYING MAP HAS BEEN EXAMINED, THAT IS SUBSTANTIALLY CONFORMS TO THE TENTATIVE MAP AND ANY APPROVED ALTERATIONS THEREOF, THAT ALL PROVISIONS OF THE STATE SUBDIVISION MAP ACT, CHAPTER 2, AND TITLE 20, STANISLAUS COUNTY SUBDIVISION CODE HAVE BEEN COMPLIED WITH, AND THE MAP IS TECHNICALLY CORRECT.

DATED THE _____ DAY OF _____, 20____

BY _____
COUNTY SURVEYOR



(Name & Address of the
Engineer and/or Surveyor)

PARCEL MAP

A PORTION OF SECTION _____, T. _____ S.,
R. _____ E., M.D.M., STANISLAUS
COUNTY, CALIFORNIA

SCALE: 1"= _____' (MONTH), 20____

COUNTY FILE NO. _____

SHEET 1 OF 2

The wording of the statements may change.
All signatures must have the printed
name by the signature

STANDARD SIZE FOR ALL MAPS SHALL BE
18"x 26" WITH A 1" BLANK MARGIN.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TYPICAL PARCEL MAP
SHEET 2 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-B2

LEGEND

- MONUMENT FOUND AS NOTED
- MONUMENT SET. A 3/4" Ø IRON PIPE TAGGED
- (A) VOLUME ___ OF SURVEYS, PAGE ___
- (B) VOLUME ___ OF OFFICIAL RECORDS, PAGE ___

GENERAL NOTES

1. ALL BEARINGS AND DISTANCES SHOWN ARE MEASURED UNLESS OTHERWISE NOTED.
2. ALL DISTANCES AND DIMENSIONS SHOWN ARE IN FEET AND DECIMALS THEREOF.
3. ALL RECORD INFORMATION IS FROM STANISLAUS COUNTY RECORDS UNLESS OTHERWISE NOTED.

BASIS OF BEARINGS

THE BEARING OF _____ FOR THE _____ LINE OF SECTION _____, T. _____ S. _____, R. _____ E., M.D.M., AS SHOWN IN VOLUME _____ OF SURVEYS AT PAGE _____, STANISLAUS COUNTY RECORDS.

RECORDERS STATEMENT

FILED THIS _____ DAY OF _____, 20____
AT _____ O'CLOCK _____M IN BOOK _____ OF
PARCEL MAPS AT PAGE _____, STANISLAUS
COUNTY RECORDS, AT THE REQUEST OF

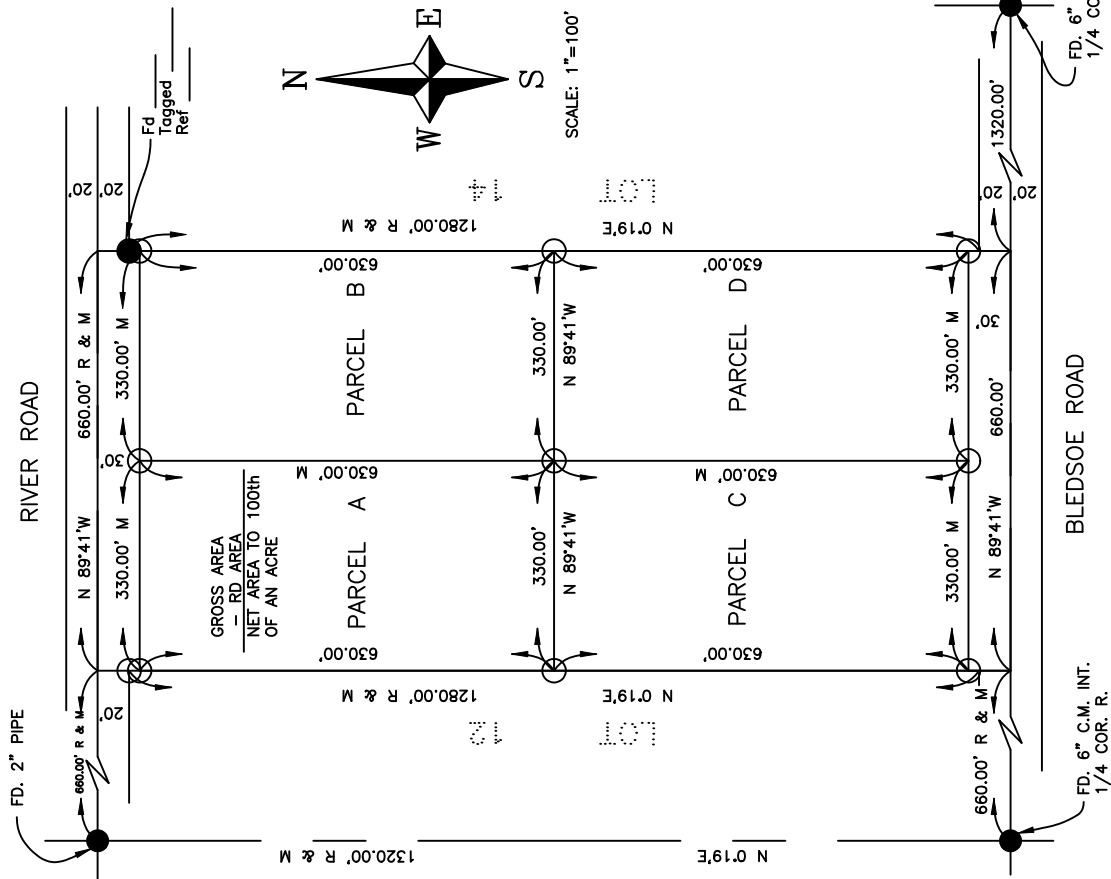
FEE _____ PAID _____
BY _____

PARCEL MAP

A PORTION OF SECTION _____, T. _____ S. _____
R. _____ E., M.D.M., STANISLAUS
COUNTY, CALIFORNIA.

SCALE: 1"=____'
COUNTY FILE NO. _____ (MONTH), 20____

SHEET 2 OF 2



See Subdivision Map Act & Land Surveyors Act for map requirements

STANDARD SIZE FOR ALL MAPS SHALL BE
18" x 26" WITH A 1" BLANK MARGIN.

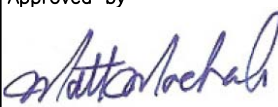
The wording of the statements may change.

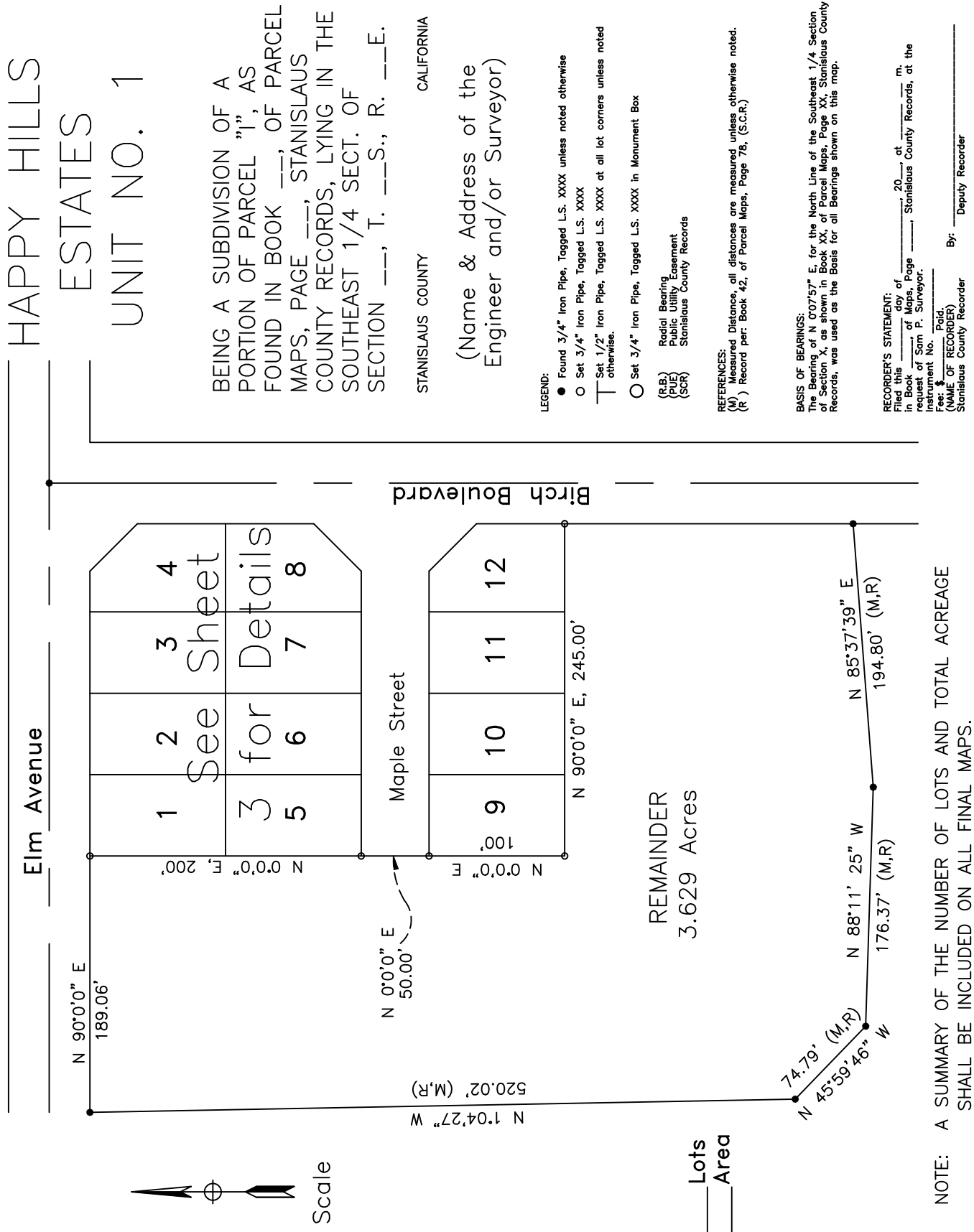
Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-C1



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

TYPICAL FINAL MAP SHEET 2 OF 3	
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	

Approved by 	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-C2



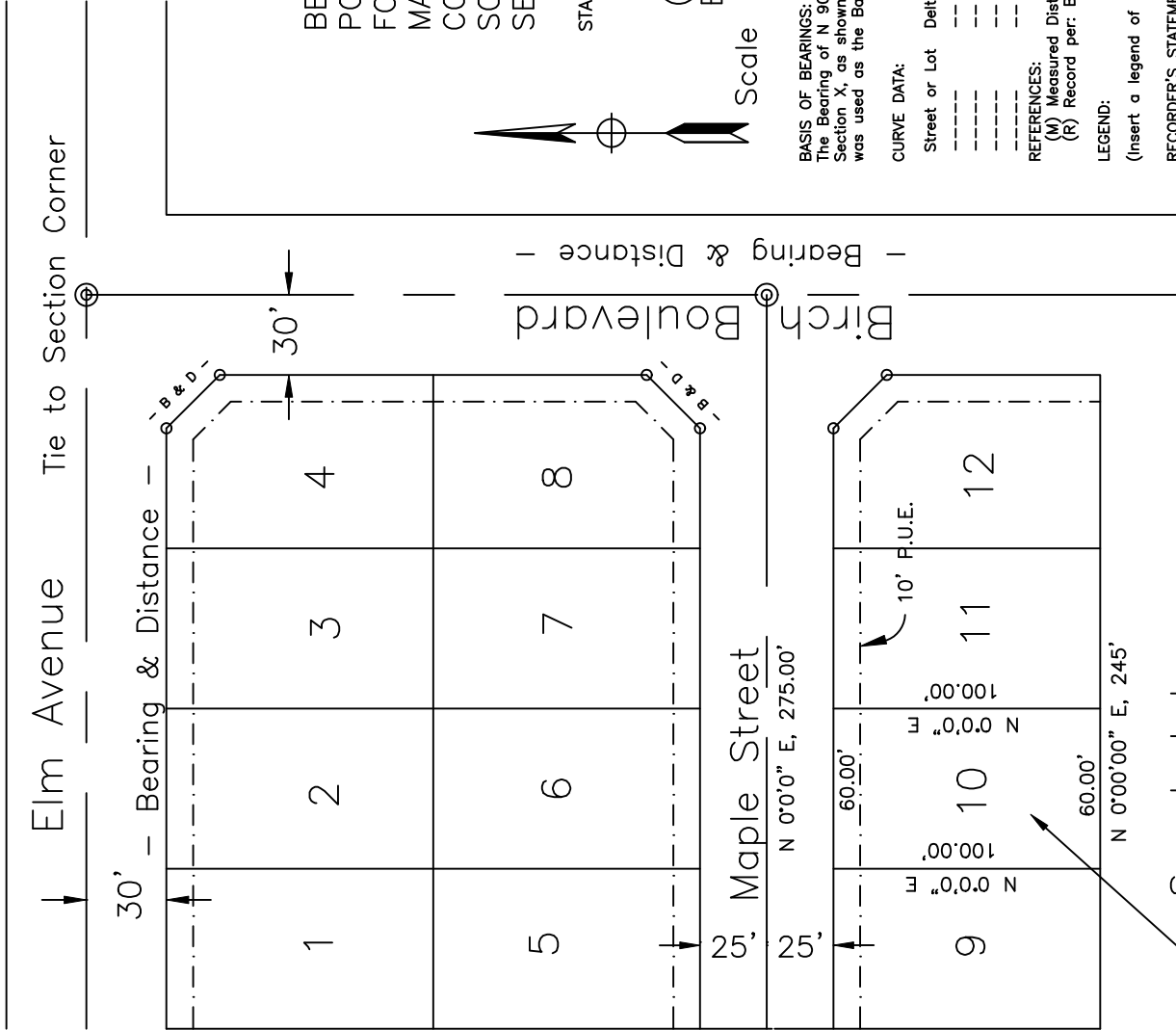


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TYPICAL FINAL MAP
SHEET 3 OF 3

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-C3



NOTE:
Place dimensions on the Block

HAPPY HILLS ESTATES UNIT NO. 1

BEING A SUBDIVISION OF A
PORTION OF PARCEL "1", AS
FOUND IN BOOK ---, OF PARCEL
MAPS, PAGE ---, STANISLAUS
COUNTY RECORDS, LYING IN THE
SOUTHEAST 1/4 SECT. OF
SECTION ---, T ---S., R. ---E.

STANISLAUS COUNTY CALIFORNIA

(Name & Address of the
Engineer and/or Surveyor)

Scale



BASIS OF BEARINGS:

The Bearing of N 90°07'57" E, for the North Line of the Southeast 1/4 Section of Section X, as shown in Book XX of Parcel Maps, Page XX, Stanislaus County Records, was used as the Basis for all Bearings shown on this Map.

CURVE DATA:

Street or Lot	Delta	Radius	Length	Tangent	Chord	Chord Bearing
---	---	---	---	---	---	---
---	---	---	---	---	---	---
---	---	---	---	---	---	---
---	---	---	---	---	---	---

REFERENCES:

(M) Measured Distance
(R) Record per: Book XX, of Parcel Maps, Page XX (SCR)

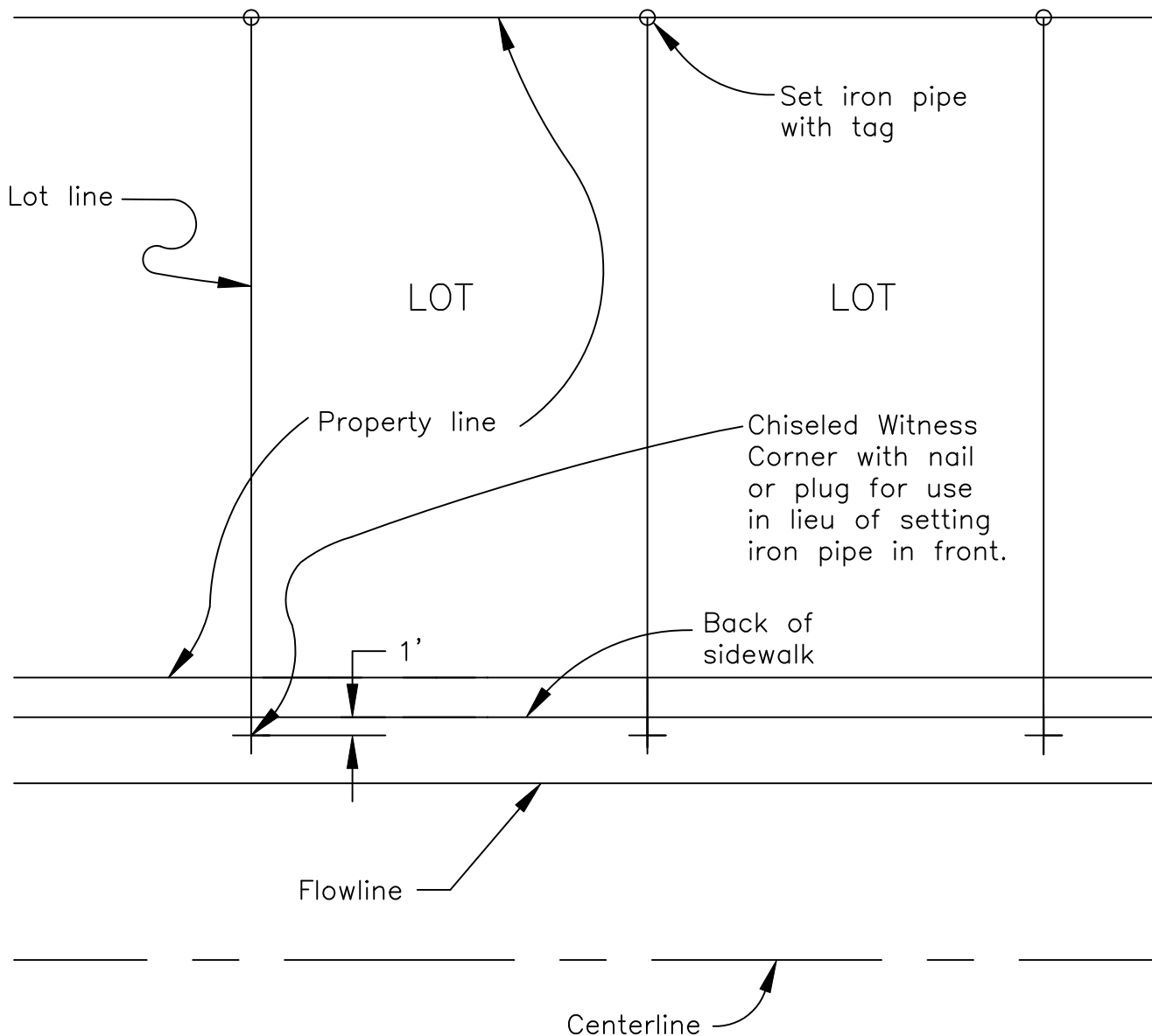
LEGEND:

(Insert a legend of symbols here)

RECORDER'S STATEMENT:

Filed this ___ day of _____, 20___, at ___ M., in Book ___ of Maps,
Page ___, Stanislaus County Records, at the request of ___ (Surveyor).
Instrument No. ___
Fee \$ ___ Paid.

By: ___ Assistant Recorder
Stanislaus County Recorder



Note: The top of witness corners shall be set at least 1 foot below the ground surface elevation.

If no sidewalk is constructed, place chiseled witness corner on top of curb.

TYPICAL CHISELED WITNESS CORNER IN NEW SUBDIVISIONS FOR 90° LOT LINES



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

WITNESS CORNERS FOR
90 DEGREE LOT LINES

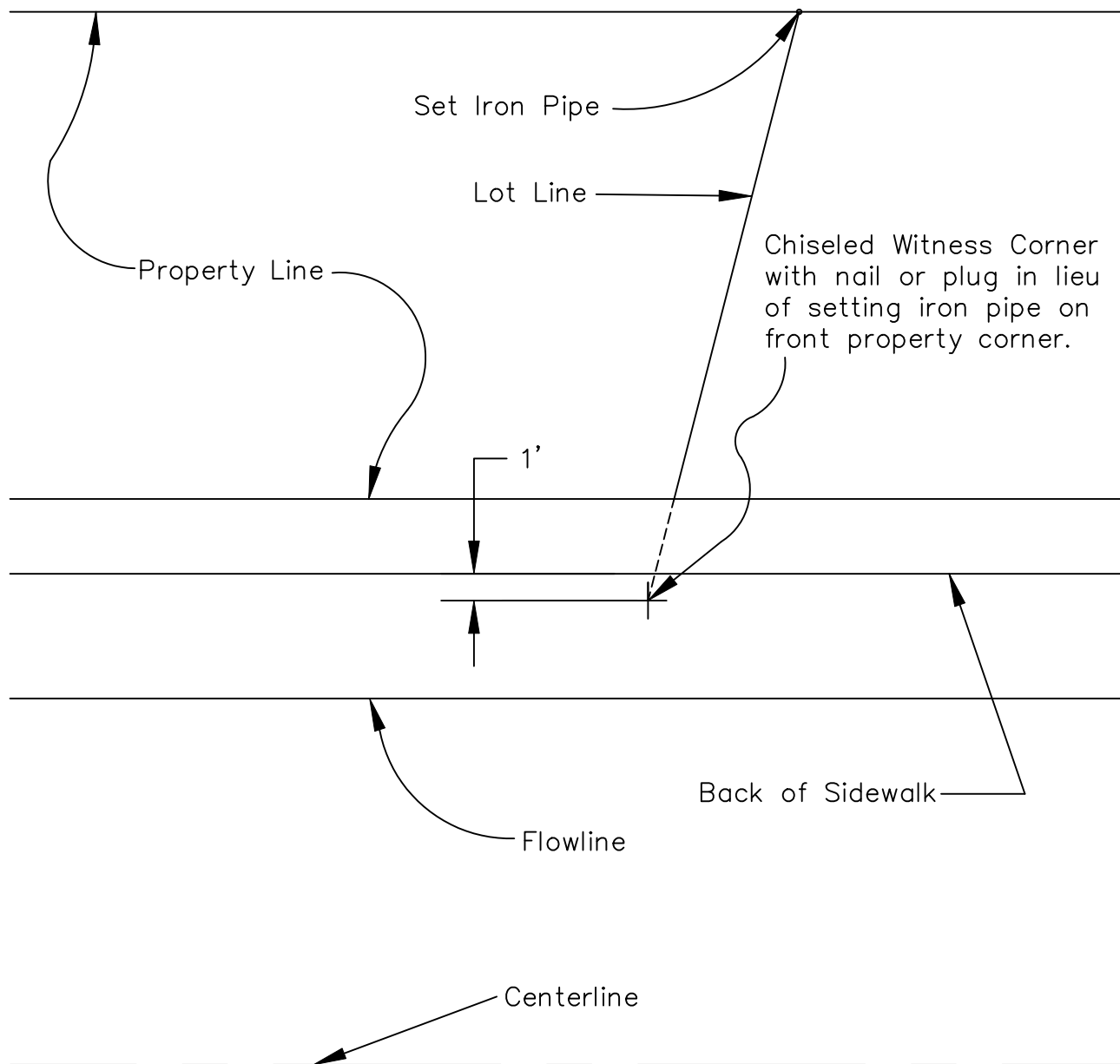
COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

Director of Public Works

Date 01/02/2007

PLATE NO: 1-D1



Note: The top of witness corners shall be set at least 1 foot below the ground surface elevation.

If no sidewalk is constructed, place chiseled witness corner on top of curb.

TYPICAL CHISELED WITNESS CORNER FOR NEW SUBDIVISIONS FOR OTHER THAN 90° LOT LINES



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

WITNESS CORNERS FOR
OTHER THAN 90 DEGREE
LOT LINES

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

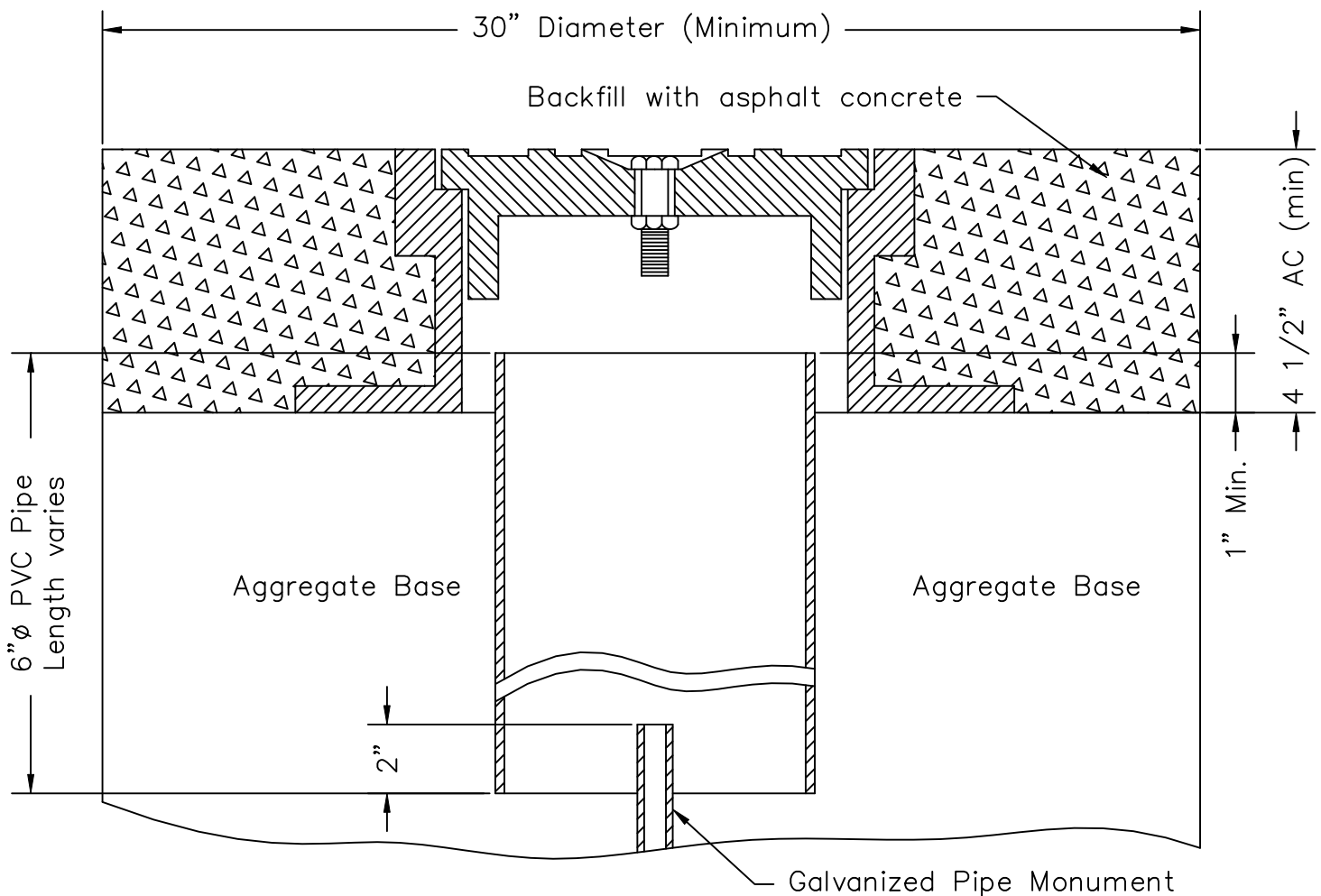
Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 1-D2



NOTES:

1. Monument box shall resemble cast iron cover in detail 1-E2 or approved equal.
2. Monument cover shall be marked "MONUMENT".
3. The monument shall be a new 3/4 inch X 24 inch long galvanized iron pipe.
4. The monument shall be tagged as required by the State of California Land Surveyor's Act.
5. The monument shall be capped with a survey marker identifying the monument.
6. All government corners shall be 2 inch X 24 inch galvanized iron pipe with identification cap. The County will provide pipe and cap upon request.
7. Monuments shall be set at least 1 foot below the finished grade in unpaved areas.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

ROAD MONUMENT SHEET 1 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-E1

SUGGESTED DRAFTING STANDARDS

DESCRIPTION	TO BE CONSTRUCTED	EXISTING
SANITARY SEWER		
STORM SEWER		
GAS LINE		
WATER LINE		
TELEPHONE		
CABLE TELEVISION		
GAS VALVE		
WATER VALVE		
ELECTRICAL CONDUIT		
MATCH LINE		
MANHOLE		
CATCHBASIN		
GAS METER		
WATER METER		
CURB AND GUTTER		
SIDEWALK		
DRIVEWAY		
CONFORM PAVEMENT		
FIRE HYDRANT		
SIGN		



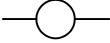
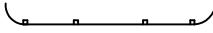
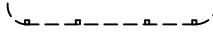
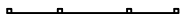
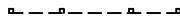
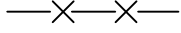
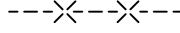
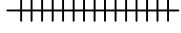
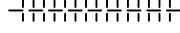
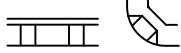
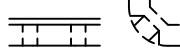
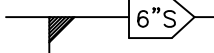
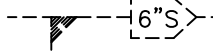
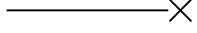
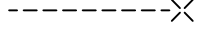
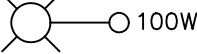
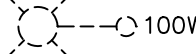
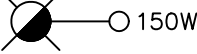
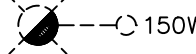
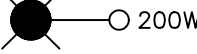
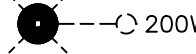
No.	Revised	By
Updated by	P. Saini	
Checked by	G. Halliday	

DRAFTING STANDARDS SHEET 1 OF 3

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-F1

SUGGESTED DRAFTING STANDARDS

<u>DESCRIPTION</u>	<u>TO BE CONSTRUCTED</u>	<u>EXISTING</u>
SANITARY SEWER CLEANOUT		
UTILITY POLE		
GUARD RAIL		
BARRICADE		
FENCE		
RAILROAD		
WHEELCHAIR RAMP		
SANITARY SEWER SERVICE		
LAMPHOLE		
STREET LIGHT TYPE A		
STREET LIGHT TYPE B		
STREET LIGHT TYPE C		
POWER SOURCE FOR STREET LIGHT CIRCUIT		
PULL BOX WITH FUSE		



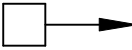
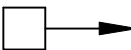
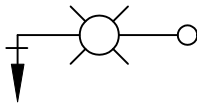
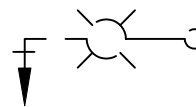
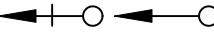
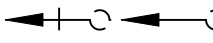
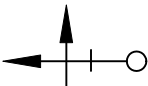
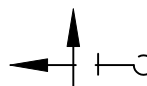
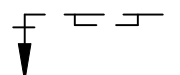
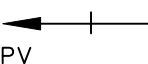
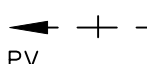
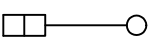
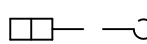
No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

DRAFTING STANDARDS SHEET 2 OF 3

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-F2

SUGGESTED DRAFTING STANDARDS

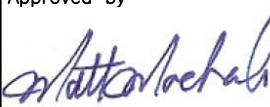
DESCRIPTION	TO BE CONSTRUCTED	EXISTING
ELECTRICAL CONDUIT	— E — E —	— E — E —
PULL BOX		
PULL BOX WITH DETECTOR STUB IN CONDUIT		
COMBINATION TRAFFIC SIGNAL WITH BACKPLATE & LUMINAIRE		
VEHICLE SIGNAL WITH AND WITHOUT BACKPLATE		
COMBINATION TRAFFIC SIGNAL, GREEN ARROW AND BACKPLATE		
MASTARM SIGNAL WITH STREET NAME SIGN		
PROGRAMMED VISIBILITY HEAD WITH BACKPLATE	 PV	 PV
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		



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

DRAFTING STANDARDS SHEET 3 OF 3

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-F3

AAN American Association of Nurserymen

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

ACPA American Concrete Pipe Association

ADA American with Disability Act

AISC American Institute of Steel Construction

AISI American Iron and Steel Institute

ANSI American National Standards Institute

AREA American Railway Engineering Association

ASA American Standards Association

ASCE American Society of Civil Engineers

ASME American Society of Mechanical Engineers

ASTM American Society of Testing and Materials

AWG American Wire Gage

AWS American Welding Society

AWWA American Water Works Association

CAC California Administrative Code

CALTRANS California Department of Transportation

CSAS California State Accessibility Standards

EIA Electronic Industrial Association

IEEE Institute of Electrical and Electronics Engineers

OSHA Occupational Safety & Health Administration

UBC Uniform Building Code

UPC Uniform Plumbing Code

UL Underwriters' Laboratories, Inc.

USA Underground Service Alert

	No.	Revised	By	STANDARD ABBREVIATIONS	Approved by
					
	Updated by P. Saini				
Checked by S. Erickson			Date 01/02/2007		
					PLATE NO: 1-G

**STANISLAUS COUNTY
CONSTRUCTION NOTES**

The following notes shall be placed on all improvement plans.

1. Prior to starting any work, the contractor shall obtain a encroachment permit from the Stanislaus County Department of Public Works. 48 hour advanced notice shall be provided to encroachment inspector prior to starting any work.
2. All material and work shall conform to Stanislaus County specifications and improvement standards. All improvements are subject to the inspection and approval of the Public Works Department.
3. The contractor shall take precautionary measures to protect all utilities. The contractor shall do no excavation until all utility agencies and the Stanislaus County Department of Public Works have been notified and have been given the opportunity to mark their facilities in the field. The contractor shall call U.S.A. at least forty-eight (48) hours prior to doing any excavating.
4. These plans have been checked by the Stanislaus County Department of Public Works and/ or authorized representative, but such checking and/or approval does not relieve the developer or contractor from his/her responsibility to correct errors, omissions or make changes required by conditions discovered in the field during course of construction.
5. The Contractor shall control dust at all times. Dust control shall be the responsibility of the Developer/Contractor and shall be implemented in accordance with applicable federal, state, and local guidelines (including, but not limited to the San Joaquin Valley Air Pollution Control District).
6. Construction staking for curb, gutter, and sidewalk, sanitary sewers, storm drains, water lines, fire hydrants, electroliers, etc. shall be done under the direction of a registered civil engineer or licensed land surveyor.
7. Unless othewise approved, house services, fire hydrant laterals, gas and telephone lines, and all other underground utilities shall be installed prior to curb, gutter, and sidewalk construction and street paving.
8. All lines abandoned during construction shall be removed.
9. All independent laboratory inspection requested by the County Engineer shall be paid for by the developer or contractor.
10. Street striping shall include stop bars, centerline striping , and lane line markers, crosswalks and all other markings required by the Engineer. Striping shall be done with thermoplastic and reflective markers.
11. All trenches shall be back filled in accordance with Stanislaus County Specifications and Improvements Standards.
12. When widening the pavement on an existing road, the existing pavement shall be cut (saw) to a neat line and removed back to an existing adequate structural section, or to the original road section. An exploratory trench, or pot-holing, may be required to determine the limits of pavement removal.

	No.	Revised	By	CONSTRUCTION NOTES SHEET 1 OF 2	Approved by 
					Director of Public Works
Updated by	P. Saini			COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	Date 01/02/2007
Checked by	S. Erickson				PLATE NO: 1-H1

13. Existing curb and sidewalk within the project limits that are damaged or displaced, even though they were not to be removed, shall be repaired or replaced per Stanislaus County Standards even if damage or displacement occurred prior to any work performed by the contractor.
14. Asbestos Cement Pipe (ACP) or fittings shall not be used.
15. Prior to trenching for storm drain pipe, the contractor shall verify, in the field, the size and location of existing pipe at the point of connection. Any deviation from the plans shall be resolved by the design engineer and approved by the County prior to trenching.
16. Manholes, valves, clean outs, etc. shall be brought to finish grade by the Contractor after the final paving course is placed.
17. Storm drain pipe sizes shall not be changed without the approval of Stanislaus County.
18. All construction site activities shall conform to the State Water Resources Control Board, National Pollution Discharge Elimination System (NPDES), Waste Discharge Requirements for Discharges of Storm Water Runoff Associated with Construction Activity.
19. An approved SWPPP shall be submitted to the County and must be on-site during all construction activities.
20. All construction site activities shall comply with all conditions of approval, development standards, and/or mitigation measures adopted by the Planning Commission and/or Board of Supervisors for the specific project.
21. Prior to initiating any construction, the contractor/developer shall verify that all necessary federal, state, and local permits and/or authorizations have been obtained.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

CONSTRUCTION NOTES SHEET 2 OF 2	
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	1-H2

CHAPTER 2: TRAFFIC CONTROL AND SAFETY

- 2.1 GENERAL:** This Traffic Control & Safety Section is intended to establish general principles of safety and traffic control while in the performance of any work covered by these Standards.

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

The requirements of the current edition of the State of California Department of Transportation, "Manual of Traffic Controls for Construction and Maintenance Work Zones", herein referred to as the Manual of Traffic Controls, shall take precedence over the requirements of this Safety Section.

- 2.2 TRAFFIC CONTROL:** The safe movement of traffic through construction areas depends upon communicating concise and proper information to the public by signs, channelizing devices, barricades, markings, lighting devices and control of traffic through work zones. All such devices necessary during construction shall be furnished by the Developer. The size, shape and color of such devices shall be as required by the Manual of Traffic Controls. No traffic control devices shall be altered or removed from the construction site without prior approval of the Engineer.

- 2.3 CONSTRUCTION SIGNS:** All signs shall conform to Section 5-02 of the Manual of Traffic Controls.

Signs used for night-time 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.

- 2.4 CHANNELIZING DEVICES:** The functions of channelizing devices are to warn and alert drivers of hazards created by construction or maintenance activities in or near the traveled way and to guide and direct drivers safely past the hazards. Channelizing devices shall conform to Section 5-03 of the Manual of Traffic Controls.

Channelization devices should be uniformly positioned laterally and longitudinally relative to the line of traffic and they must be maintained in an erect position. Consideration must also be given to the necessity for stability against knock-down from wind or from the wash of passing traffic.

Channelization devices for night-time use shall be reflectorized to be visible from 500 feet under normal atmospheric conditions.

- 2.5 BARRICADES AND PORTABLE BARRIERS:** The function of barricades is to separate motorists from objects or unusual situations created by construction or maintenance activities in or near the traveled way. All barricades shall conform to Section 5-04 of the Manual of Traffic Controls.

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., can be hazardous and their use is prohibited.

- 2.6 MARKINGS:** Pavement markings in conformance with Section 5-05 of the Manual of Traffic Controls shall be required if field conditions warrant their use. Additional markings may be required at the discretion of the Inspector.

- 2.7 LIGHTING DEVICES:** Construction and maintenance activities create conditions on or near the traveled way that are potentially hazardous, particularly at night when the ability of drivers to see is sharply reduced from daytime conditions. It may be necessary to supplement the reflectorized signs, barriers and channelizing devices with lighting devices. All lighting devices shall conform to Section 5-06 of the Manual of Traffic Controls.

- 2.8 CONTROL OF TRAFFIC THROUGH WORK ZONES:** The primary function of traffic control procedures is to move traffic safely and expeditiously through or around work zones. All hand signal devices, flaggers, flagging procedures, flagger stations, one-way traffic control, flagger control, flag-carrying or official car, pilot car and traffic control signals shall conform to Section 5-07 of the Manual of Traffic Controls.

Flaggers shall be required, as necessary, for safe conduct of the traffic through the construction zone or as directed by the Engineer. Flaggers shall not be used as a substitute for other warning signs and devices.

- 2.9 PRINCIPLES OF WORK ZONE TRAFFIC CONTROL:** In work zones, the work and traffic controls must be coordinated to provide safe and expeditious movement of traffic and pedestrians, while allowing the work to progress as rapidly, safely and efficiently as possible. Placement of all work zone traffic control signs and devices shall conform to Section 5-08 of the Manual of Traffic Controls.

- 2.10 ROAD CLOSURES:** A minimum of 7 working days prior to any temporary road closure a traffic control plan (detour plan) prepared by the Developer

shall be submitted to the Engineer for review and approval. After Engineer's approval of the traffic control plan, the Developer shall obtain an encroachment permit pursuant to Section 1460 et. seq. of the California Streets and Highway Code. The permit shall be obtained a minimum of 2 working days prior to the actual road closure. The encroachment permit may require a cash guarantee at the time of issuance to ensure that all requirements of the road closure are met. The Inspector must be notified by the Developer 48 hours prior to the road closure and must be kept informed of closure status. The California Highway Patrol, Stanislaus County Sheriff's Department, Stanislaus County Department of Fire Safety, Stanislaus County all Emergency Dispatch, and the local school districts shall be notified by the Developer of the road closure a minimum of 24 hours prior to the closure.

A copy of the encroachment permit and approved traffic control plan shall be provided to the Inspector. All barricades, warning lights, traffic signs and any other safety devices required by the traffic control plan shall be provided and maintained by the Developer. At the discretion of the Inspector, and based on field conditions, additional safety devices may be required. Protective barricades shall be provided on each side of, and parallel to, an open trench crossing a road when the trench will remain uncovered overnight and/or when work on the trench ceases.

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. However, roads less than 20' in width shall be used for detouring only one direction of traffic unless the Engineer's approval for use has been previously obtained. 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. When detouring a 4-lane road onto a detour route of less than four lanes in width, parking may be prohibited on the detour route at the Engineer's discretion.

Where the trench line crosses an entrance to private property, until the trench is backfilled, access to the property shall be maintained at all times. Such bridges shall be properly guarded and illuminated at night.

Where any crosswalk is cut by the trench, and said trench is left open, suitable bridging shall be constructed. Such bridging shall be at least 4 feet in width, shall have suitable hand-railing, shall be properly guarded and shall be illuminated at night.

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

Specifically, the Developer 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 expense.

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

- 2.12 UNDERGROUND SERVICE ALERT (USA):** USA is a "One-call Notification Center" used for identifying underground facilities prior to digging. The Developer shall call USA at least 48 hours prior to the start of any excavation.

Request for field meetings shall be included in the initial call to USA.

All excavations shall be in compliance with Section 1540-a(1) of the Construction Safety Orders, (Title 8, California Administrative Code), which states:

"Prior to opening an excavation, effort shall be made to determine whether underground installations; i.e., sewer, water, fuel, electrical 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 shall be responsible for the preservation of, and any damage to, both private and public property in conformance with Section 7-1.11 of the State Standards.

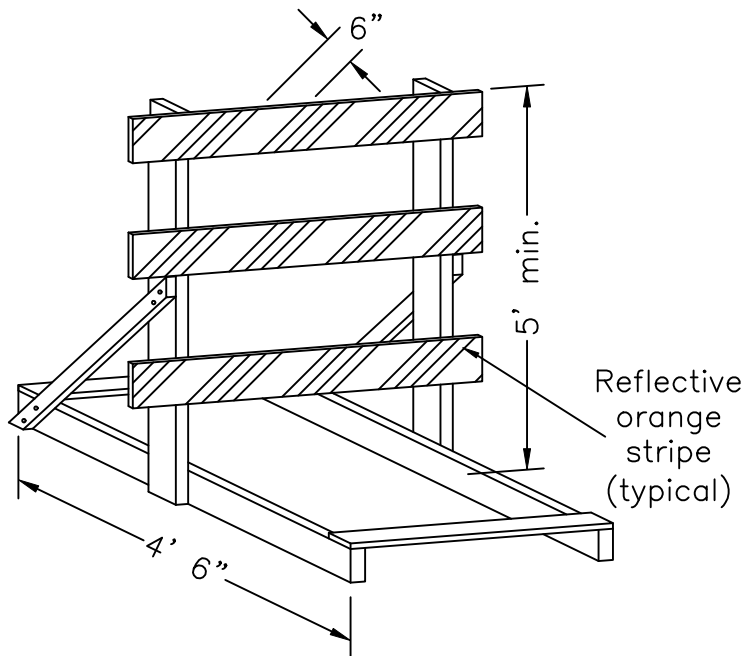
2.13 MAINTAINING VERTICAL AND HORIZONTAL CLEARANCES:

The Design Engineer shall ensure that their design complies with all vertical and horizontal clearance standards and are in conformance with the Highway Design Manual (HDM). Special attention shall be given to the vertical clearance remaining following any street overlays. Efforts should be made to avoid decreasing the existing vertical clearance whenever possible, and consideration should be given to the feasibility of increasing the vertical clearance even where it currently exceeds minimum standards. The engineering design analysis should also include consideration of other vertical clearances (existing and future) along the route, and available routing around any such reduced clearance structure. All projects, including new construction, shall meet the appropriate minimum clearance design standard for the type of facility, as shown in Index 309.2 of the HDM.

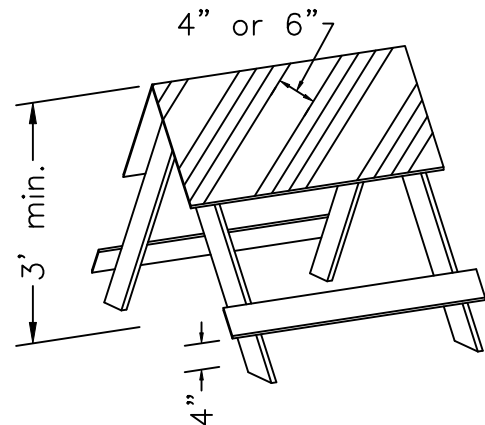
BARRICADE CHARACTERISTICS

TYPE *	I	II	III
Width of Rail *	8" min. – 12" max.	8" min. – 12" max.	8" min. – 12" max.
Length of Rail	2' min.	2' min.	4' min.
Width of Stripes**	6"	6"	6"
Height	3' min.	3' min.	5' min.
Number of Reflectorized Rail Faces	2 (one each direction)	4 (two each direction)	3 – if facing traffic in one direction. 6 – if facing traffic in two directions.

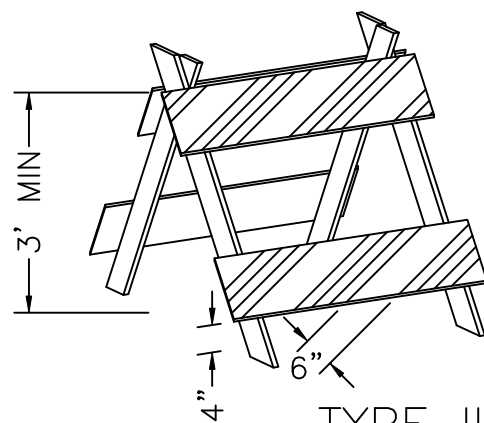
(*) For wooden barricades nominal lumber dimensions will be satisfactory.
 (**) For rails less than 3 feet long, 4 inch wide stripes shall be used.



TYPE III



TYPE I



TYPE II

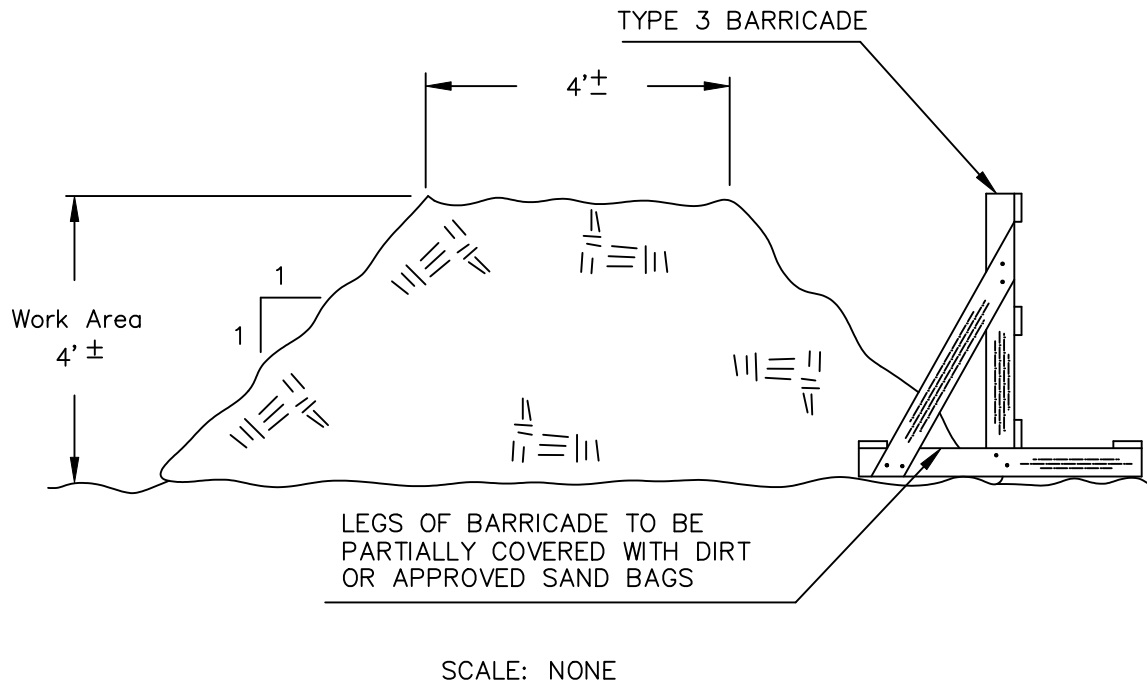


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

PROTECTIVE BARRICADE
SHEET 1 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	2-A1



NOTES:

1. The developer shall construct and maintain protective barricades at the locations shown on the detour plan approved by the County.
2. At a minimum, each closure shall consist of three Type 3 barricades, an "N-3", two C2 signs (black on white, 48 inch X 30 inch, 8 inch series "D" letters), and fill material.
3. The developer shall submit to the Engineer plans for the protective barricade. Placement of the fill material and Type 3 barricades shall not begin until the developer receives an encroachment permit from the County.

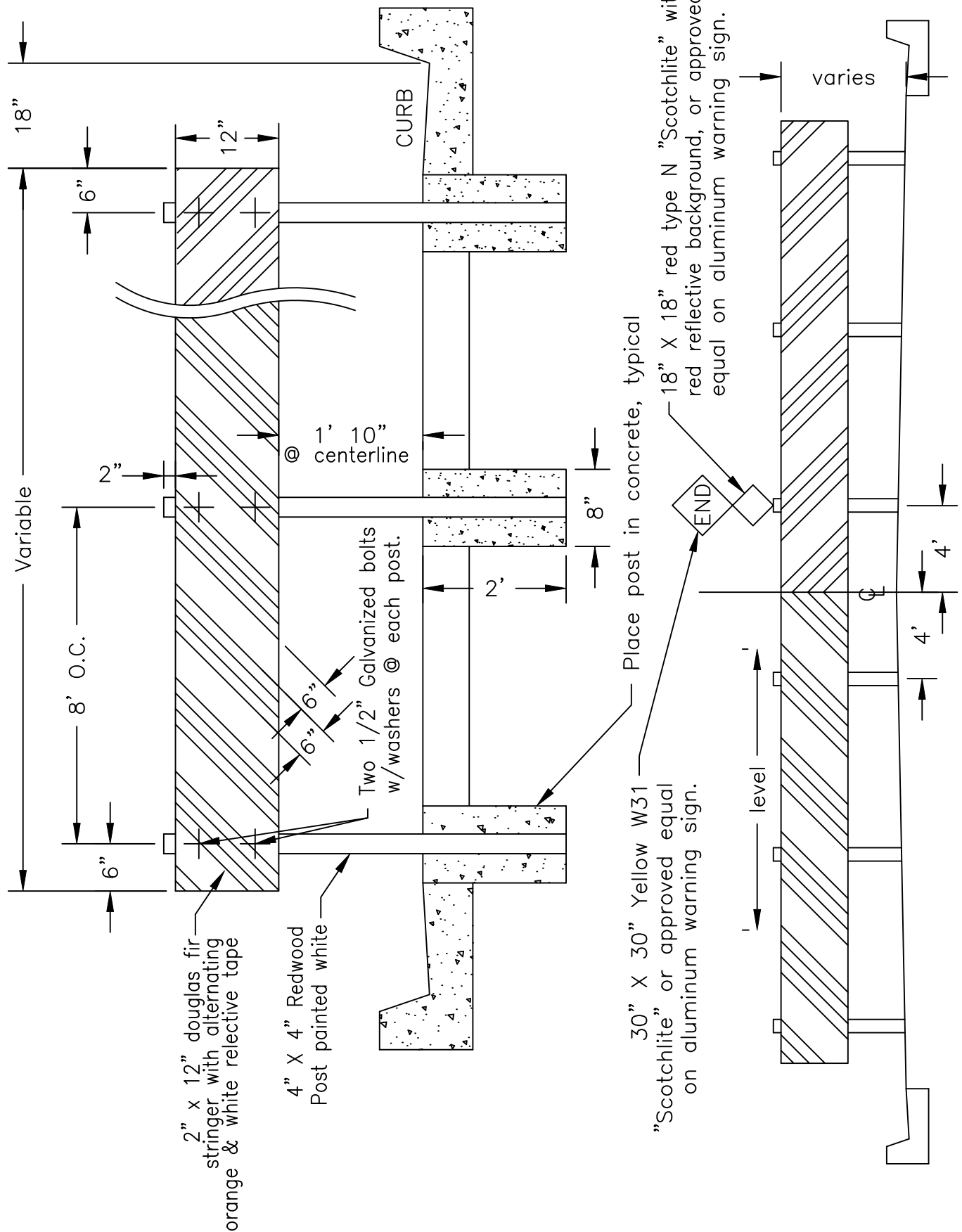


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

PROTECTIVE BARRICADE SHEET 2 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	2-A2

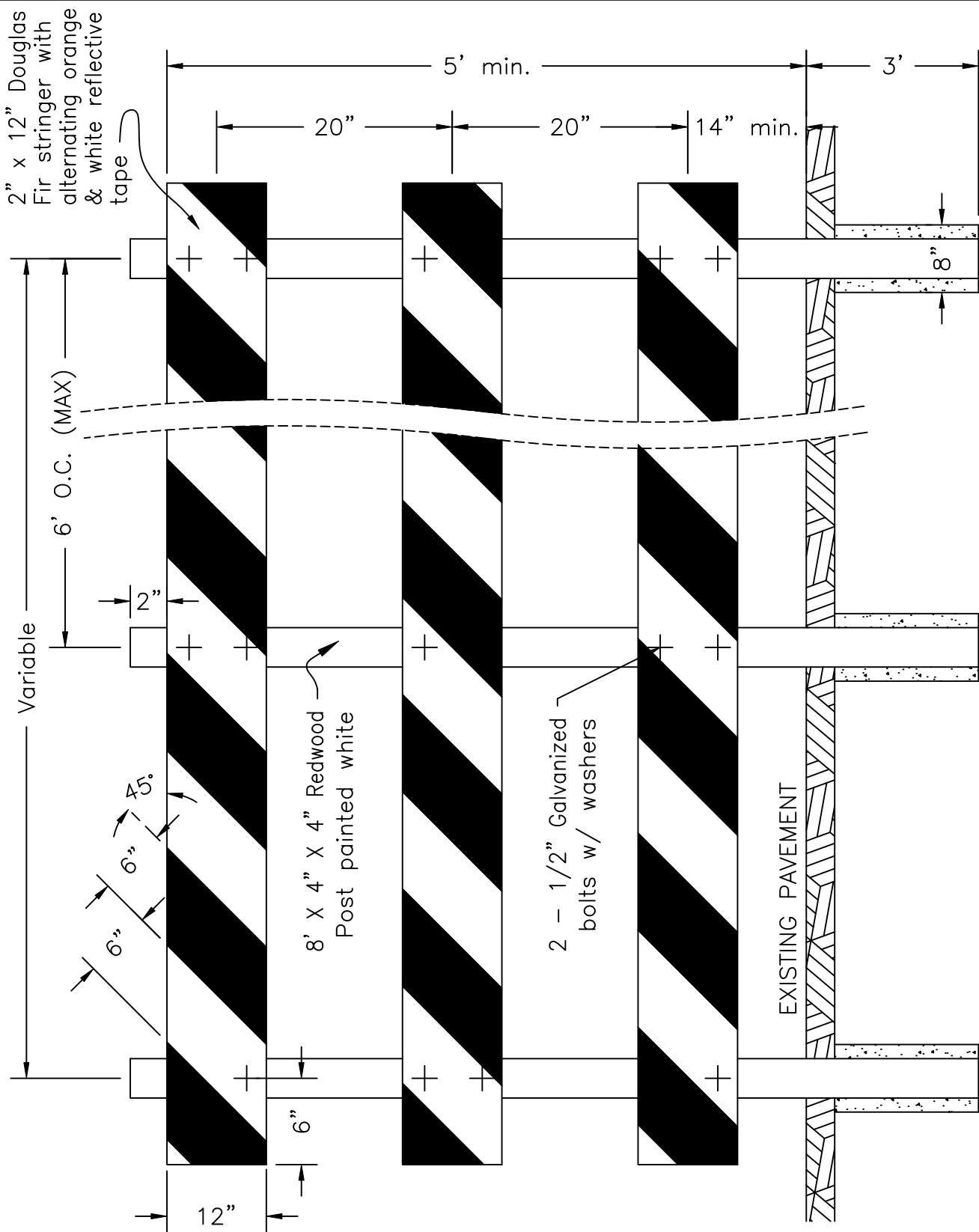


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

BARRICADE DEAD END ROAD
SHEET 1 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	<i>Matt Wachob</i>
Director of Public Works	
Date	01/02/2007
PLATE NO:	2-A3



NOTE:
Use single board
barricade unless
directed otherwise

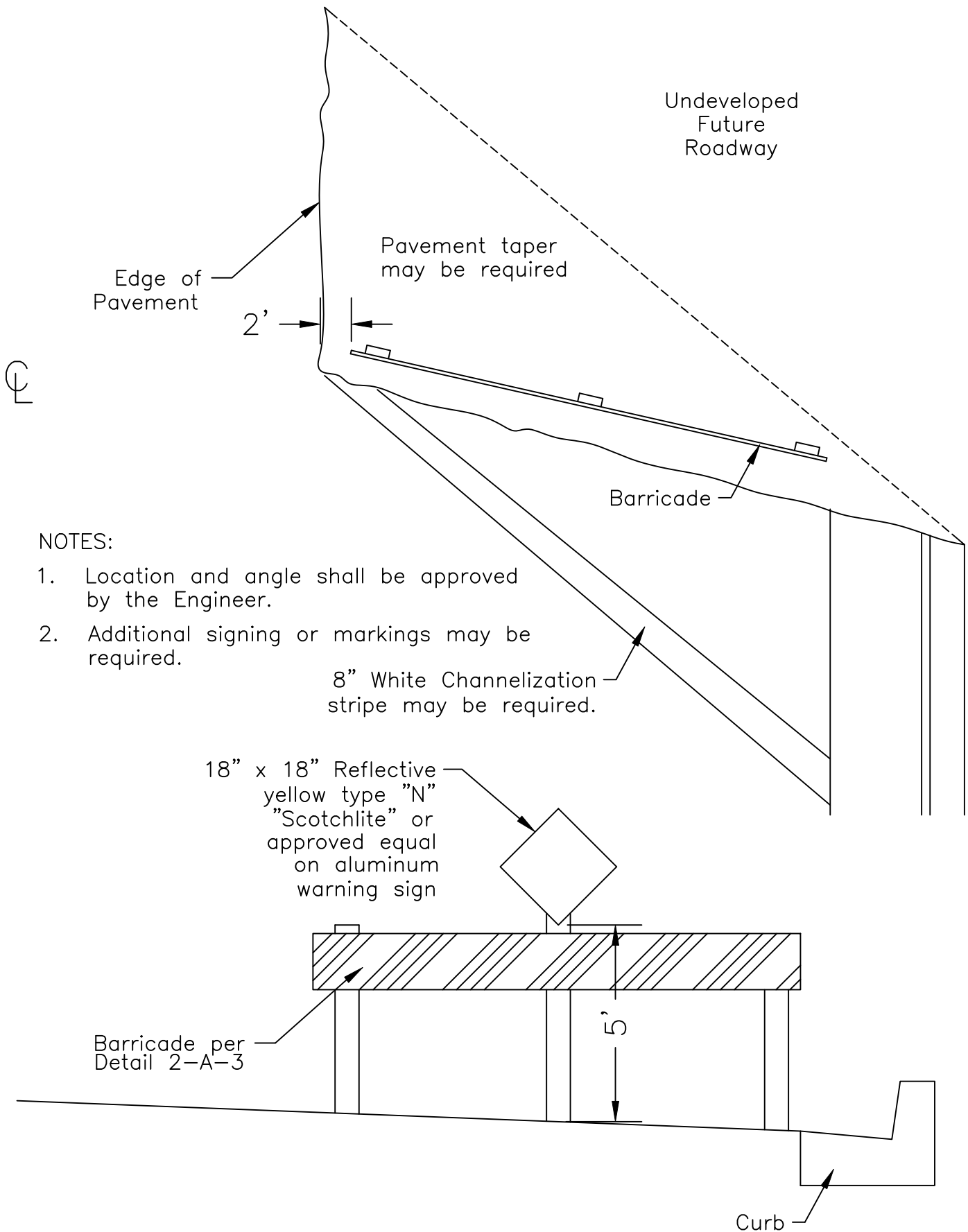


No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

BARRICADE DEAD END ROAD SHEET 2 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	2-A4



NOTES:

1. Location and angle shall be approved by the Engineer.
2. Additional signing or markings may be required.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

BARRICADE ROAD
WIDTH TRANSITION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

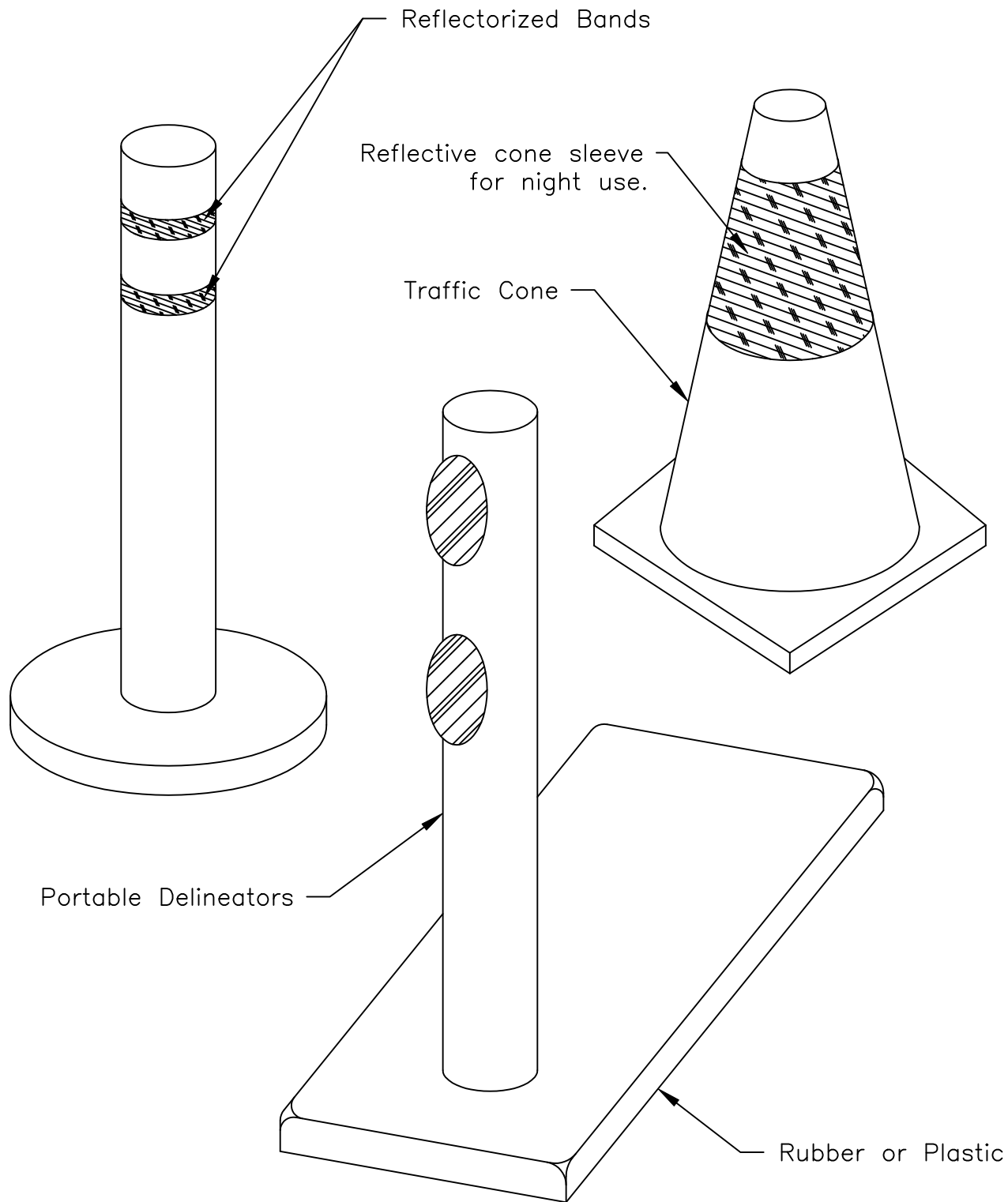
Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 2-A5



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

DELINEATORS	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	2-B

CHAPTER 3: ROADS

- 3.1 GENERAL:** Road improvements in the public right-of-way shall be constructed by the Developer to conform to these Standards and to the “General Plan Amendment #2004-03 Stanislaus County Focused General Plan Update of the Circulation Element & Other Related Elements” adopted by the Stanislaus County Board of Supervisors on April 18, 2006

Only a Developer with an appropriate license and required insurance may perform the work described herein. Any road improvement damaged by the Developer shall be repaired by the Developer as required by the Engineer.

3.2 ROAD CLASSIFICATION:

A hierarchy of adequately sized roads will be required to provide access to facilitate the movement of people and goods throughout the County, provide access to future development within the unincorporated area and between cities, and maintain acceptable levels of service. The General Plan Circulation Diagram depicted in Figure 3.1 identifies the functional classification of key routes and distinguishes between existing and proposed future roads. The classifications as well as their required design and access standards are defined in the following index of road classifications:

- a. **Freeway:** The function of a Freeway is to provide for the safe and efficient movement of large volumes of interregional, inter-city, and urban traffic at high-speeds. Freeways have no direct land service function. Access is restricted to roads via interchanges, and typically to Expressways and Majors. Parking is not permitted on freeways. Freeways in Stanislaus County are typically planned, constructed, and operated by Caltrans.
- b. **Expressway:** The function of an Expressway is to move high volumes of people and goods between urban areas within the county at higher speeds depending upon the level of access control. Direct access to abutting property is specified within the standard for each expressway class. Expressways serve a similar function to that of Freeways - the fast and safe movement of people and goods within the county - and provide access to the interregional freeway system. On-street parking is not permitted on Expressways except under very special and rare circumstances where the Engineer has determined that traffic flow and safety conditions allow on-street parking. The design features of Expressways are determined by the level of access control and the number of lanes designated for each expressway route segment. The General Plan Circulation Diagram as shown in Figure 3-2 identifies Expressway Access Classifications.

1. **“Class A” Expressway:** is a fully access-controlled road with grade separated interchanges at intervals of approximately one mile at other Expressway, Major, or Local roads. The typical right-of-way is 110 or 135 feet (4 or 6 lanes, respectively).
2. **“Class B” Expressway:** is a partially access-controlled road with traffic-controlled intersections at Major roads and other Expressways. Collectors and Locals are permitted right-in, right-out access only at 1/4- to 1/2-mile intervals. The typical right-of-way is 110 or 135 feet (4 or 6 lanes, respectively). On limited rights-of-way, Class B Expressways may be 100 feet for four lanes and 124 for six lanes.
3. **“Class C” Expressway:** is a limited access-controlled road with traffic-controlled intersections at Majors and other Expressways. Intersections at Collectors and Locals may or may not be controlled by a traffic signal. The typical right-of-way is 110 or 135 feet (4 or 6 lanes, respectively). On limited rights-of-way, Class C Expressways may be 100 feet for four lanes and 124 for six lanes.

- c. **Major:** The function of a Major road is to carry moderate- to high-volume traffic to and from collectors to other Majors, Expressways, and Freeways with a secondary function of land access.

Majors located within areas zoned for heavy or light industrial or that are expected to carry large or heavy trucks shall be constructed to Industrial Major standards. Limited direct access is provided to abutting property. On-street parking will be permitted only where the Engineer has determined that traffic flow and safety conditions allow on-street parking. The typical right-of-way is 110 feet (up to 6 lanes, ultimately). On limited rights-of-way, Majors may be 100 feet.

- d. **Collector:** Collectors serve a dual function by providing both access to abutting property and movement of moderate volumes of people and goods for medium length trips. Collectors serve as transition facilities, carrying traffic from lower to higher level roads. Most Collectors are two-lane roads with a typical right-of-way of 60 feet. On-street parking will be permitted only where the Engineer has determined that traffic flow and safety conditions allow on-street parking. In urban residential subdivisions, roads not shown on the General Plan Circulation Diagram or as an Official Plan Line that will serve more than 50 dwelling units, when the maximum density and full extent of the development is considered, shall be deemed Collectors. In some instances, the Engineer may determine that project design features dictate that a road serving as few as 20 urban dwelling units be deemed a Collector. Under certain circumstances, 80 feet of right-of-way may be required to provide

additional capacity to provide two additional through lanes to accommodate projected traffic demand, to facilitate the movement of large trucks, or to improve safety due to limited visibility or other safety hazards. Table 3-1 lists the 80-foot Collectors.

- e. **Local:** Local roads serve as land access facilities in the agricultural areas of the County by providing both direct access to abutting property and movement of small volumes of people and goods for medium length trips. Locals are two-lane roads with a typical right-of-way of 60 feet to safely accommodate drainage, utilities, and other physical improvements that may be located within the public right-of-way. In agricultural areas of the county, roads not shown on the General Plan Circulation Diagram or as an Official Plan Line shall be considered Locals. This classification also includes cul-de-sac and dead-end roads in agricultural areas of the county.

Unless a Subdivision Ordinance exception is granted, no existing or proposed local street shall be designed or altered in such a way that would create a dead-end street longer than 500 feet.

- f. **Minor:** Minor roads serve as land access facilities in the urban and industrial areas of the County by providing both access to abutting property and movement of small volumes of people and goods for short trips. In urban subdivisions, roads not shown on the General Plan Circulation Diagram or as an Official Plan Line, which will serve no more than 50 dwelling units, when the neighborhood is fully developed, shall be deemed Minors unless otherwise designated by the Department of Public Works. Minor roads are two-lane roads with a typical right-of-way of 50 feet.

Minors located within areas zoned for heavy or light industrial or which are expected to carry large or heavy trucks shall be constructed to Industrial Minor standards with a typical right-of-way of 70 feet. This classification also includes cul-de-sac and dead-end roads in urban and industrial areas of the County.

Unless a Subdivision Ordinance exception is granted, no existing or proposed minor street shall be designed or altered in such a way that would create a dead-end street longer than 500 feet.

- g. **Private:** Private roads serve as land access facilities and are not maintained by the County. Two types of Private roads are permitted in the County. These roads are generally not shown on the General Plan Circulation Diagram.

Agricultural access easements, providing access to parcels 20 acres or more, are included primarily to conform to state-mandated standards for private access roads in the State Responsibility Area as designated by the California Department of Forestry and Fire Protection. New roads under this category shall not exceed a 10%

slope nor be less than 32 feet in width. Due to conditions, design constraints or environmental issues, the Engineer may approve an increase in the maximum allowed grade from 10% to 12%.

Private roads may also be approved by the Planning Commission or Board of Supervisors as an exception to the Subdivision Ordinance to provide access to parcels in an urban or planned development when it is determined that such a request serves a public purpose and that future divisions of land requiring road access to or through the development would not occur due to topographic features, physical barriers, existing development, and other physical constraints of the development and the adjacent lands. If approved, these roads shall be constructed to the same standards as County-maintained roads or other standard approved by the Department of Public Works.

The formation of a Community Service Agency (CSA). or Home Owners Association (HOA) may be required as determined by the Engineer.

3.3 GEOMETRIC DESIGN: Road right of way widths shall conform with the street classification and the corresponding construction plate details as shown in Table 3.1, "Street Classification and Plate No."

The gutter slope shall not be less than 0.20%.

The maximum vertical grade for all public roadways in Stanislaus County shall be 10%. However, due to conditions, design constraints or environmental issues, the Engineer may approve an increase in the maximum allowed grade from 10% to 12%.

When required by the Engineer, a truck auxiliary lane shall be installed.

The cross slope of County roadways shall be 2.0% for new construction. When matching existing pavement and/or other restrictions, the cross slope may vary between 1.0% and 4.0% upon prior approval from the Engineer.

Vertical and horizontal alignment shall be designed in accordance with the State Standards.

Table 3.2 lists the minimum design speed and radii for various types of roadway (see Table 3.2).

3.4 INTERSECTIONS: Road intersections shall be as close as possible to right angles. Where required by topographic conditions, the angle of intersection of two local roads may be less than perpendicular but must always be 70° or greater.

Opposing roads entering upon any given road shall have their center lines directly opposite each other. If center lines are not opposite each other, then opposing roads intersecting minor, local, or collector roads shall be separated by at least 250 feet. Opposing roads intersecting major and expressway roads (unless restricted by a raised concrete median) shall be separated by at least a quarter-mile (1,320 feet).

Roadway and "T" intersections with curb and gutter shall have a curb ramp constructed on all curb returns.

Access roads (non-maintained County roads) or driveways that intersect a roadway which has a structure, shall have its centerline (of the access road) no less than 85 feet from the closest end of the structure. Driveways along major and expressways may be restricted as deemed by the Engineer.

Only collector or major roads may intersect a major road or expressway. Major and collector roads may only intersect an expressway road as provided in the access management provisions for the expressway class.

Additional right-of-way shall be acquired to accommodate right-turn lanes and left turn pockets in accordance with Table 3-1. Plates 3A1 to 3-A7 illustrate the geometric design for each intersection type.

When a 60-foot right-of-way collector road intersects a major road, the right-of-way shall be widened to 70 feet to provide for a left turn lane. The configuration of the bay taper for the left-turn lane shall be per the State Standards and County Standard Plate 3-K.

Geometric design of intersections shall accommodate traffic for the 20-year design life. The 20-year period shall be measured from the date the improvements are accepted by the County for maintenance.

Additional right-of-way on collector roads shall be provided to accommodate a right turn lane and a left turn pocket as may be required by the Engineer.

3.5 EXISTING ROADWAYS: The following will be required whenever pavement widening is to be done on an existing roadway unless special conditions require otherwise as determined by the Engineer.

- a. The existing edge of pavement shall be saw cut at a uniform distance parallel with the centerline prior to placement of the paveout.
- b. Structural section thickness shall be per Section 3.7, "Structural Design", of this chapter.

- c. When the Engineer determines a paveout will be temporary, a thinner structural section may be considered for approval by the Engineer.

3.6 PART WIDTH ROADS: A part width road shall be defined, for the purpose of these Standards, as a new or existing road on the edge of a subdivision, development or improvement not contained entirely within the parcel boundaries of the subdivision or development. The part width road shall be fully developed on the side adjacent to the development plus 12 feet or more of pavement on the opposite side of centerline and shall be marked as “No Parking” until such time as it is fully developed. Part width roads shall be constructed to comply with fire access road standards.

Part width roads shall be constructed:

- a. On new or existing roads bordering new subdivisions or developments.
- b. If the pavement width on the opposite side of the road adjacent to the improvement or subdivision is inadequate for the safe flow of traffic.
- c. When grade differences or existing profiles create an uneven crown or cross slope.

Any above-ground utilities along the part width road on the side opposite the improvements shall be relocated to the side of the improvements when inadequate right-of-way exists on the opposite side of the part width road as determined by the Engineer.

3.7 STRUCTURAL DESIGN: The R-value design method contained in the State Standards shall be used as the basis to determine the structural section of the roads.

The traffic index (T.I.) is based on a 20-year design life. The minimum T.I. used to determine the structural section for various roadbeds and intersections shall be based on Table 3-2, “Minimum TI-Values for Streets & Intersections.”

The limits of an intersection T.I. shall be 50 feet beyond the projection of the flow lines.

These values may be adjusted for those roads designated as bus routes or with significant truck traffic, as determined by the Engineer. The Engineer may approve a specific T.I., other than the minimum, based on an engineering study including a site specific 24-hour vehicle classification count to verify the T.I.

The Developer shall be responsible for obtaining soil R-value tests, specifically supervised by a registered engineer, in sufficient quantity to

establish the quality of the soil and to provide a basis for the design of the structural section. R-value tests shall be taken at Developer's expense. In order to establish the design, R-value tests will be required at the road subgrade elevation. On roads where the frontage is less than 500 feet, two R-value tests shall be made. On roads where the frontage exceeds 500 feet, a minimum of one R-value test shall be taken at each 500-foot interval. Exact locations and number of the R-value tests shall be as approved by the Engineer. The Developer shall stake the field test locations and shall provide an existing ground and finish grade elevation for each test location. The Developer shall provide the results of the R-value tests to the Engineer. The test results shall include a verification signed by a registered engineer that the R-value tests were taken at the depth and locations(s) as shown on the approved plan.

The minimum allowable structural pavement section for County's street classification shall be as shown in Table 3-3, "Minimum Structural Pavement Section."

3.8 CLEARING AND GRUBBING: All work shall be done in accordance with Section 16 "Clearing and Grubbing" of the State Standards.

3.9 EARTHWORK: Earthwork shall be performed as set forth in Section 19 "Earthwork" of the State Standards.

Relative compaction shall be determined by California Test 231 utilizing the nuclear gauge. California Test 231 shall be modified to use 30-second counts or one-minute counts at the option of the Engineer. Five 30-second warmup counts shall be used instead of ten one-minute counts for testing with 30 second counts.

Section "B" of California Test 231 shall be amended as follows:

"At the discretion of the Engineer, a guide plate measuring approximately 9-3/4 inches x 14 inches x 3/16 inch may be substituted for standard plate. Additionally, a sliding sleeve impact hammer which incorporates a 13/16-inch diameter pin, and is manufactured specifically for use with a nuclear gauge and guide plate, may be used in lieu of standard driving pin."

The Developer shall obtain a disposal site for all of the roadway excavation not used on the job-site. The Developer shall obtain and file with the County a letter showing permission and conditions for use of the disposal site. The Developer shall control dust at the disposal site and keep any roads used free of excess material.

3.10 AGGREGATE BASE: The aggregate base material shall conform to the requirements of Section 26 "Aggregate Bases" of the State Standards for Class 2, 3/4 inch maximum combined grading.

3.11 PRIME COAT: An asphaltic emulsion shall be used as a prime coat and applied in conformance with Section 39 "Asphalt Concrete" of the State Standards. A prime coat shall be applied only to those areas designated by the Engineer. The prime coat grade shall be approved by the Engineer.

When directed by the Engineer, a sand cover shall be spread over the prime coat at approaches and side roads in order to maintain use. Before through traffic is permitted on the prime coat, all wet spots shall be covered with sand. All loose sand shall be completely removed from the treated areas before the placing of any surfacing material.

3.12 ASPHALT CONCRETE: The asphalt concrete shall conform to the requirements of Section 39 "Asphalt Concrete" of the State Standards. Asphalt concrete shall be Type A. Aggregate used in all but the final course shall be 3/4 inch maximum medium grading. Aggregate used in the final course shall be 1/2 inch maximum, medium grading.

The asphalt grade shall be constructed in conformance to Section 92 of the State Standards, unless otherwise approved by the Engineer.

- a. The final surface course shall be paved in the number of passes approved by the Engineer starting from the curb and paving toward the centerline.
- b. Rolling equipment shall conform to the requirements of Section 39 "Asphalt Concrete" of the State Standards. Vibratory rollers may be used as approved by the Engineer.
- c. The surface course shall be laid with a self propelled paving machine except when permitted otherwise by the Engineer.
- d. Left turn pockets, tapers, and returns shall be paved independently from the main line paving. Main line paving shall take precedence over any other portion of the roadway paving.

- 3.13 ASPHALT PAINT BINDER:** An asphalt paint binder shall be applied in conformance with Section 39 "Asphalt Concrete" of the State Standards to all existing vertical surfaces and construction joints prior to placing asphalt concrete.
- 3.14 SEAL COAT:** A seal coat complying with the requirements of Section 37 "Bituminous Seals" of the State Standards shall be applied to the finished surface of the asphalt concrete.
- 3.15 HEADER BOARDS:** Header boards shall be installed to protect the edges of the asphalt concrete where roads are partially completed in conformance with the plates contained in these Standards.

The boards shall be Douglas Fir with an American Wood Preservers Bureau stamp indicating its use for ground contact and an application of an approved preservative or redwood.

The boards shall be nominal 2 inches x 4 inches, dimensioned of appropriate material.

- 3.16 CONCRETE CURBS AND SIDEWALKS:** Concrete curb and sidewalks shall be constructed and repaired in conformance with the Plates contained in these Standards. Construction shall conform to Section 73 "Concrete Curb and Gutter" of the State Standards. However, where concrete is to be placed on basement material, all soft or spongy material shall also be removed to a depth of not less than 0.5 feet below subgrade elevation for sidewalk and curb ramps.

All concrete surfaces shall have a broom finish.

All earthwork shall conform to Section 19 "Earthwork" of the State Standards.

Weakened plane joints shall have a maximum interval of 10 feet and shall be constructed in conformance with the plates contained in these Standards. Weakened plane joint intervals for curbs shall match adjacent sidewalk. Depth of weakened plane joint shall be a minimum of 1 inch. Concrete shall be scored at equal intervals between weakened plane joints to approximate squares.

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

All sidewalks shall be placed adjacent to curb unless otherwise approved by the Engineer.

All sidewalks placed adjacent to drive over curb shall be 5-1/2 inches thick.

Sidewalk subgrade shall be compacted to not less than 95% relative compaction for a minimum depth of 12 inches.

When removing curb, the asphalt shall be cut a minimum of 12 inches from the lip of curb, unless otherwise directed by the Engineer.

Sidewalks shall have a cross slope toward the curb face of 1/8 inch per foot minimum to 1/4 inch per foot maximum, unless otherwise approved by Engineer.

When matching 6-inch vertical curb sections, the curb return shall also be 6-inch vertical curb.

Unless poured monolithic, all curbs shall be doweled to adjacent sidewalk with No. 4 rebar at intervals not exceeding 5 feet. The rebar shall extend 6 inches into the sidewalk and 3 inches into the curb.

Transitions between different types of curb and different widths of sidewalk shall be constructed as shown on plates contained in these Standards. All curb transitions shall occur outside curb returns.

Traffic, parking and road name signs on County roads which require relocation because of the work will be relocated by the Developer at locations approved by the County. 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 property line shall be placed 1 inch from the property line to provide space for lot corner monuments.

- 3.17 APPROACHES:** Approaches shall be constructed and repaired in conformance with the plates contained in these Standards. The construction shall conform to Sections 73 "Concrete Curb and Gutter" and Section 19 "Earthwork" of the State Standards. The Engineer may require additional requirements where these Standards cannot be met.

All concrete surfaces shall have a broom finish.

Weakened plane joints shall be constructed at a maximum interval of 10 feet and in conformance with the plates contained in these Standards. Depth of weakened plane joint shall be a minimum of 1-inch deep.

The width of approaches serving a parcel of land shall conform to the following:

- a. Unless otherwise directed by the Engineer, the width of residential and commercial drive approaches shall conform to the Plates contained in these Standards.
- b. The total maximum width of approaches shall be the greater of 50% of the road frontage of the property or a single approach with a width conforming to the Plates contained in these Standards. In the case of corner lots, the limitation shall apply to each road frontage.

The minimum distance between approaches serving the same parcel of land shall be 30 feet. The distance between approaches on adjacent parcels may be less than 30 feet.

On-site improvements shall not restrict access to the approach.

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 Engineer and the necessary adjustments to the improvements are accomplished without cost to the County.

The number of commercial approaches on a parcel shall be kept to a minimum by making the approach available for multiple uses.

Based on conditions, drop curb approaches may be required for neighborhood shopping centers or other comparable commercial, industrial or multiple-family uses with equal or greater than expected traffic. There shall be only one drop-curb approach for each frontage. In no case shall the approach be closer than 200 feet from the end of an intersection return.

Commercial approaches on major roads shall conform to the following:

- a. Approach shall be located a minimum of 350 feet from the intersection as measured from intersection centerline to approach centerline.
- b. When the above Condition No. a cannot be met due to lack of property width, the approach shall be placed at or near the farthest property line from the intersection and a curbed, full-width median extending 100 feet past approach return shall be installed by Developer at Developer's expense.

Commercial approaches on collector roads shall conform to the following:

- a. Approach shall be located a minimum of 150 feet from the intersection as measured from intersection centerline to approach centerline.
- b. When the above Condition No. a cannot be met due to lack of

property width, the approach shall be placed at or near the farthest property line from the intersection, or a shared driveway may be required.

The approach elevation at the ultimate right-of-way line shall be within 1 foot, either above or below the existing roadway centerline.

The approach shall have its centerlines as perpendicular as possible to the roadway centerline.

- 3.18 ALLEYS:** Commercial and residential alleys shall be constructed in conformance with the Plates contained in these Standards.

Residential R-1 Zone alleys shall be constructed, at a minimum, with a 2-inch crown and surfaced with 2 inches of asphalt over compacted native material.

Alleys used as access to new development shall be improved to a minimum width of 20 feet, unless otherwise approved by the Engineer.

- 3.19 VALLEY GUTTERS:** Valley gutters designed to permit drainage across a road shall be constructed in conformance with the Plates contained in these Standards.

- 3.20 DISABLED ACCESS CURB RAMPS:** Disabled access curb ramps shall be constructed at all intersections in conformance with the requirements of the Federal Americans With Disabilities Act, California Title 24, and the "Plates" contained in these standards.

All new curb ramps installed in the County shall be constructed with 2"x4" truncated domes tiles. Truncated domes may be omitted when ramp slope exceeds 6.67%. Truncated dome tiles shall be furnished and installed as detectable warnings on the curb ramps, as shown on Detail 3-D4a and 3-D4b. The tiles shall be either the 'Vitrified Polymer Composite (VPC) Cast-In-Place Tiles' manufactured by Armor-Tile Tactile Systems (1-800-682-2525), 'E-Z Set Ceramic Composite Detectable Warning Panels' manufactured by Detectable Warning Systems (1-866-999-7452), or approved equal. The tiles used must be uniform for all of the new curb ramps.

Prior to actual construction, the Contractor shall construct on the project site, a test detectable warning surface using the selected truncated dome tile for the project and shall be of a size not less than 24" x 48". The test surface shall be constructed to the satisfaction of the Engineer, before the selected tile and installation procedure will be accepted for the project.

The truncated dome tiles shall comply with the following specifications:

- a. Dome Alignment - Square grid pattern in the predominant direction of travel.
- b. Dome Size - Base diameter of 0.9" minimum to 1.4" maximum, a top diameter of 50% of the base diameter minimum to 65% of the base diameter maximum, and a height of 0.2".
- c. Dome Spacing - Center-to-center spacing of 1.6" minimum and 2.4" maximum, and a base-to-base spacing of 0.65" minimum, measured between the most adjacent domes on square grid.
- d. Color - The tiles shall be provided in manufacturer specified brick red color. The tiles shall be uniform in color for the entirety of the project.
- e. Tile Size and Location - The truncated dome tiles shall extend 24" in the direction of travel and the full width of the curb ramp as shown on the plans. The Contractor may choose 24" x 24" or 24" x 48" tiles. The edge of the detectable warning surface nearest the back of curb line shall be 6" minimum and 8" maximum from the back of curb line.
- f. Installation - The truncated dome tiles shall be installed per the manufacturer's written recommendations. The tiles shall be flush with the surrounding surface of the curb ramp. The tiles shall be installed with precision, such that along with maintaining the slope of the curb ramp, the concrete surface surrounding the detectable warning area shall have the exact surface finish as if the truncated dome tiles were not installed. The ramp surface shall not have any concrete bulges or deposits associated with the installation of the tiles.
- g. Submittal - The Contractor shall submit a certificate of compliance for the truncated dome tiles, conforming to ADA requirements, strength requirements and warranty. The Contractor shall submit a certification from the tile manufacturer, certifying that the Contractor or the Contractor's subcontractor that will install the tile is qualified for installation, and who has successfully completed tile installations similar in material, design, and extent to that indicated for the project.
- h. Testing - The finished concrete shall be in conformance with the tolerances as stated in Section 40-1.135 of the State Standard Specifications and attain a minimum 28-day compressive strength of 3000 psi. Core testing of substandard concrete will not be permitted.

3.21 FINAL ADJUSTMENT TO UTILITY COVERS: The covers for all manholes, lampholes, water valves and survey monuments existing at the time paving takes place shall be adjusted to final grade by the Developer within 10 working days after the pavement has been placed.

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 material 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 in conformance with the plates contained in these Standards.

3.22 TESTING: Material testing required by the Engineer for work done under the provisions of this section shall be provided by the Developer and submitted to the Engineer for approval. Where approved by the Engineer, materials certificates of compliance may be submitted in lieu of actual tests.

3.23 INSPECTION: The Developer shall notify the County Inspector of any work performed in the County right-of-way. The Developer shall request inspections as follows:

- a. Completion of subgrade preparation;
- b. Completion of forms installation;
- c. During placement of concrete;
- d. During placement of aggregate base;
- e. Completion of aggregate base grade;
- f. During placement of asphalt concrete;
- g. During drainage facility construction;
- h. During location of pavement markers, pavement markings and signage;
- i. Completion of final clean up;
- j. Trench requirements for all underground utilities and road crossings;
- k. Other inspections to cover special items shall be as determined by the Engineer as needed.

All underground utilities shall be inspected and approved by the governing utility prior to paving. The developer shall provide the Inspector with a letter from all applicable utility companies, approving their respective underground utilities prior to the contractor doing any paving.

3.24 ACCESS CONTROL WALL: A 6-foot access control wall shall be constructed between irrigation district laterals and adjacent subdivision lots. A 7-foot access control wall shall be constructed when the subdivision lots back up to freeways, major roads and expressways. Access control walls for commercial and industrial developments, if required, shall be constructed as directed by the Engineer. Walls shall be as specified when required by a noise study. The wall height shall be measured from the

highest adjacent finished grade.

The wall shall be shown on the Plans and, if the wall exceeds 6 feet in height, a building permit shall be obtained by the Developer from the County Building & Development Services Division prior to commencement of work on the wall.

For additional information regarding specific construction requirements for access control walls and fences, contact the County Building & Development Services Division.

CMU masonry retaining walls, when required, shall be designed in accordance to UBC/ICC standards. Construction of CMU masonry walls that are six feet in height or more shall be designed and checked for minimum wind and seismic lateral load resistance.

- 3.25 CURBED MEDIANS:** On existing roads of 70 feet from curb to curb or wider, a 6-inch high curbed median shall be installed at the intersection of a major road, at Developer's expense, in conformance with the plates contained in these Standards or as directed by the 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 landscaping. Landscaping shall be designed in accordance with the requirements of the Parks & Recreation Department and shall not interfere with pedestrian or vehicle safety.

On new major and expressway 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 and shall conform to one of the following:

- a. A 4-foot wide curbed median without landscaping, surfaced with concrete, "Bomanite" or approved equal.
- b. A curbed median ranging in width from 8 feet to 16.5 feet with landscaping. A water barrier shall be installed 6 inches beneath the road structural section.

Breaks in curbed medians shall be at all major and collector roads with a minimum of 600 feet between breaks. Additional breaks shall be as approved by the Engineer.

Traffic lanes adjacent to curbed medians shall be 12.5 feet in width. Specific design of medians and traffic lanes shall be as directed by the Engineer.

- 3.26 BUS TURNOUT:** Bus turnouts may be required on major, collector, and expressway roads where there is a curbside travel lane or the probability of replacing curbside parking with travel lanes. Bus turnouts, if required, shall be placed approximately 1/4 mile (1,320 feet) apart, or as directed by the Engineer. Turnouts may be required at all 4 corners at major/major and major/collector road intersections where there is no parking lane or where the parking lane will be eliminated, as directed by the Engineer.

Bus turnouts may be placed on the far side of the intersection in the travel direction. Other locations shall be as determined by the Engineer. Location of mid-block turnouts shall be as approved by the Engineer and shall only be approved if there is no intersection available to accommodate a turn-out within 1000 feet.

Bus turnouts shall be constructed in conformance with the plates contained in these Standards. The slope of the bus turn-out parallel with the roadway shall match the slope of the roadway, unless otherwise approved by the Engineer.

A maximum cross slope of 2% is allowed perpendicular to the roadway in the passenger loading area.

- 3.27 BRIDGE AND CULVERT DESIGN:** All bridge and culvert designs shall be in accordance with the California Department of Transportation's Bridge Design Specifications.

The minimum clear width of bridges and box culverts shall be the traveled way width plus the width of the graded shoulders of the existing or proposed road, whichever is greater, except an additional 3 feet of shoulder per side will be required where the bridge length exceeds 100 linear feet. In urban areas, the minimum width of bridges shall be sufficient to accommodate full curb-to-curb width plus standard sidewalks and railings on each side.

For pipe culverts, all headwalls or other appurtenant structures shall be located adjacent to the right-of-way. The maximum fill slope over culverts shall be 4 to 1 or flatter.

All fill below 2 feet above the 100-year flood (Q_{100}) elevation shall be protected from erosion by slope protection as approved by the Engineer.

- 3.28 IRRIGATION FACILITIES:** All existing irrigation lines within an area to be subdivided shall be removed or relocated outside of existing or proposed County right-of-ways into easements along lot lines. The irrigation lines shall be reinforced at road crossings and driveways. All irrigation lines or structures which are to be abandoned shall be removed. All work shall be done in accordance with the requirements of the Department of Public Works and the particular irrigation district.

3.29 BORING: Private and public facilities that go under a County road shall be bored if one or more of the following conditions exist:

- a. The road pavement is in average or better condition based on Department records and/or field inspection.
- b. The road has been overlaid within the last 10 years or chip-sealed within the last 5 years.
- c. The road is designated as a "Major" or "Expressway" on the County General Plan.
- d. The road carries daily traffic exceeding 2,000 vehicles per day.
- e. Utility service lines and/or connections for placement under the roadway are 10 inches in diameter or less.
- f. The surface area of bore pit(s) excavated in the roadway does not exceed the surface area of a trench needed to perform the same task.

Any request for an exception to the boring requirement shall be in writing stating the reasons why a bore cannot be performed. Exceptions must be approved by the Engineer.

3.30 TRENCHING AND BACKFILL: Where trenching is allowed pursuant to the preceding Section 3.28, the following shall apply:

a. Trenching

Trenching across existing County roadways requires prior approval from the Department. All requests for this approval shall be in writing.

All trenching shall conform to the Occupational Safety & Health Administration (OSHA) safety requirements and in accordance with the Trench Construction Safety Orders issued by the Division of Industrial Safety of the Department of Industrial Relations of the State of California.

When groundwater or unstable soil conditions are encountered in excavations, trenches shall be excavated below the subgrade. Aggregate base or other suitable materials shall be placed to provide a firm and stable base for the proposed pipe installation.

All trenching operations shall have adequate provision for the protection of the traveling public on all roads affected by the work.

Excess native excavated material and broken pavement shall

become the property of the Contractor and shall be disposed of outside of the County right of way. The exact location will be determined by the Contractor and will be approved by the Inspector.

Where a trench crosses a roadway, the excavation and backfilling shall be completed prior to the end of the working day. In the event an excavation cannot be backfilled prior to the end of the working day, suitable bridging shall be provided to safely carry vehicular traffic over the excavation.

All work of excavating and backfilling in a public street shall be performed as quickly as possible. Not more than 600 linear feet of trench shall be opened ahead of any pipeline or conduit installation taking place in a street or alley except upon written permission of the Inspector. However trenches may be open for a distance of not more than 1,200 linear feet in areas where public traffic not affected by the trenches. Excavations or trenches for cast-in-place concrete pipe may remain for a period not to exceed seven days providing said excavations or trenches are adequately barricaded and access is provided for abutting property owners and at all street intersections.

At the end of each working day, if a vertical difference of 0.15 foot or more exists between the elevation of the existing pavement and the elevation of any excavation within 5.0 feet of the traveled way, then suitable engineer material as approved by the Engineer shall be placed and compacted against the vertical cuts adjacent to the traveled way.

The patch surface shall not deviate from the finished grade by more than 0.02 foot in elevation. The edges of the patch shall be straight.

If a longitudinal trench excavation damages or destroys more than 50% of the traffic lane width at any point in either lane, that entire lane, together with any part of the trench lying outside the lane, shall receive a 0.1 foot thick minimum finished course asphalt concrete overlay for at least the entire length of the trench, in addition to the full structural section otherwise required. The length of the overlaid areas as required shall be determined by the Engineer. If a longitudinal trench within a traffic lane has an edge 3 feet or less from the edge of that lane, then replace the structural section to the original edge of the lane.

The Contractor shall perform all excavations necessary or required to construct all manholes and all pipelines as specified by the Engineer and as approved on the plans. Excavation shall include the removal of all materials whatever nature encountered. Excavation shall be by open trench unless otherwise specified, following neat, parallel lines equi-distance from the centerline. The maximum width of the trench at the level of the spring line of the pipe to be laid

therein shall not exceed the width of the outside diameter of the barrel of the pipe plus a minimum of 10 inches as shown in Standard Plates 3-H1 and 3-H2. Such width shall be kept as small as practical while providing sufficient working space for joining the pipe and placing the backfill material. Any damage occurring to the saw cut after the cut has taken place will be corrected to the satisfaction of the Inspector at the Contractor's expense.

b. Backfill

Where trenching is allowed pursuant to Section 3.28, the following shall apply: After the pipe has been properly laid and inspected, backfill material shall be placed around the pipe at a minimum depth of 12 inches above the top of the pipe and shall be thoroughly compacted to final density of at least 95 percent maximum density as shown in Standard Plates 3-H1 and 3-H2. This shall be done in such a manner as to not injure or disturb the pipe. All excavation within the existing street roadbed shall be backfilled and compacted until the relative compaction is not less 95 percent. Backfill material shall be placed in layers not to exceed 8 inches in depth and moistened as necessary before compaction. Each layer shall be thoroughly tamped, rolled or otherwise compacted and brought to grade. Backfill in trenches between the back of the curb and property lines shall be thoroughly consolidated to a final density of at least 90 percent of maximum density. Compaction of backfill material by ponding, jetting, or flooding will not be permitted without the prior approval of the Engineer or County Inspector. Field density may be determined by California Test 231 method.

3.31 UTILITY PLOWING: Plowing is only permitted in dirt shoulder areas and not within three (3) feet of the edge of pavement.

No equipment shall be permitted to pull a plow from the paved portion of the roadway.

No track laying equipment without pads is permitted on the road pavement.

All areas disturbed by plowing shall be compacted to 95% relative compaction.

No plowing is permitted during rainy weather or when the inspector has determined the conditions to be unsuitable.

3.32 UTILITIES: The location of all new utilities/facilities and the relocation of existing utilities/facilities are subject to the approval of the Department and shall meet the following minimum design standards:

a. All at ground or above ground permitted utilities/facilities shall be

placed in Public Utilities Easement (PUE). If no PUE exists, then place the above ground permitted utilities/facilities so that its roadside edge is within 2 feet of the right-of-way line. Place the at ground level utility/facility so that its roadside edge is within 3 feet of the right-of-way line. Refer to Plate 3-L for recommended utility locations.

- b. No underground pipelines, conduits, cables, etc., except for sewer, storm drain, and water lines shall be placed under a paved portion of the roadway.
- c. The minimum cover for all underground utilities and/or facilities outside the pavement area shall be the lower of:
 - 1. 2.5 feet or more below the surface at the point of installation.
 - 2. 2.5 feet or more below the edge of pavement of the corresponding station.
- d. All utility backfills within 5 feet of the edge of pavement shall be backfilled with a material having a sand equivalent value of not less than 20 and shall be compacted to a relative compaction of not less than 95%. Other locations can use native material and shall be compacted to a relative compaction of not less than 90%. Compaction tests shall be taken at the rate of not less than 1 for each 250 feet of trench in a paved area and 1 for each 500 feet of trench in an unpaved area. The test results shall be filed with the Engineer.
- e. All above ground facilities (poles, pedestals, etc.) should be a minimum of 70 feet from any intersection centerline.
- f. All at-grade facilities (manholes, grates, etc.) in unpaved areas shall have an asphalt pad around them in conformance with the Plate contained in these Standards.
- g. The use of utility poles shall be avoided whenever possible. If above ground poles must be used, use poles already in existence where possible. Two sets of utility poles in the same location or along the same road shall be discouraged.
- h. Route alignment of new or relocated pole lines shall be reviewed and approved by the County prior to construction.
- i. Whenever an underground pipeline facility including, but not limited to water, sewer irrigation, drainage, gas and petroleum products is being relocated or abandoned, the facility no longer being used shall be removed from the right-of-way, unless otherwise approved by the Engineer.

3.33 SAW CUTTING EXISTING PAVED STREETS: When placing asphalt concrete adjacent to existing paved streets, the pavement at the edge of the existing structural section shall be vertically cut in a neat straight line by sawing. This shall be done to the limits shown on the plans and as directed by the Engineer.

Sawing shall be done with an approved saw capable of cutting a minimum of 1-1/2 inches in depth. It is the Contractor's responsibility to provide a clean, smooth, vertical surface for the depth of the proposed structural section. The sawing shall be done to the exact lines snapped with a chalk line.

Any damage occurring to the saw cut after the cut has taken place will be corrected to the satisfaction of the Engineer at the Contractor's expense.

A seal coat of asphaltic emulsion shall be applied in accordance with the requirements of Section 37 of the Caltrans Specifications along all saw cut edges.

3.34 TURNING RADIUS

The criteria for truck turning shall be designed in accordance to the latest edition of the Highway Design Manual (HDM), Topic 404 and follow these general guidelines:

- a. Intersections should be evaluated to accommodate design vehicles. See HDM Topic 404.1 and HDM Index 405.8.
- b. The Design Engineer should inspect the ground adjacent to intersection curb returns for physical evidence of vehicle off-tracking and evaluate required upgrades as may be needed. Intersections shall be designed so that design vehicles begin and end their turn wholly within their lane.
- c. It may be impractical to provide for truck turning on local streets due to the infrequency of truck use at these locations. Where truck volumes are very low, bus turning may be a more appropriate application, especially if it is a school bus or transit route. Design exceptions may be granted where truck volume and bus volume are very low.
- d. At intersections, the California Design Vehicle template shall be used to evaluate the corner radius. Where STAA (Surface Transportation Assistance Act of 1982) is anticipated, the STAA Design Vehicle template shall be used (refer to Figure 404.2 in the HDM).

3.35 RECOMMENDED APPROACH LANES

Additional lanes may be necessary at intersections to accommodate traffic making left-and right-turns. The recommended approach lane design at each intersection along these roadways is represented in Table 3-6. The Design Engineer shall review the precise intersection geometrics with Stanislaus County Traffic Department . These geometrics will be used when establishing building setbacks and dedication requirements for development projects located in and around intersections, and may be modified in specific cases where the traffic impact analysis shows that additional approach lanes are needed to accommodate projected traffic.

3.36 OFFICIAL PLAN LINES

Official Plan Lines have been prepared for a number of roads in the County and adopted by the Board of Supervisors (see Table 3-7). Adoption of Official Plan Lines shows the intent of the County to widen these streets to a specified width along a specified alignment or build a new road at some future time. Official Plan Lines are often used when it is undesirable or impractical to widen a road by requiring legal dedication on both sides of the existing center line. Official Plan Lines are established to prevent any unnecessary removal of buildings or important natural features when the County is ready to build the road. Once adopted, building activity is prohibited inside the established setback lines although existing buildings may remain.

The process of adopting an Official Plan Line entails extensive technical studies and public outreach including a traffic analysis, environmental analysis, and detailed engineering studies to determine potential alignments and work with the affected property owners and the public to determine an appropriate alignment for each roadway. The Official Plan Lines adopted by the Board of Supervisors are listed in the Table 3-7. Some portions of these roads have been annexed into the spheres of influence or jurisdictional boundaries of the cities; therefore, city standards now apply to in those areas. This element includes proposed streets and roads that are necessary to support development planned within the cities' general plans. Generally, these streets and roads will be planned, developed and constructed upon annexation to the city.

Some of the plan lines may be outdated or may not be consistent with the new Circulation Element adopted by the County Board of Supervisors. Therefore, the Engineer shall make the final determination on which plan lines are applicable and apply to new planned developments.

3.37 CUL-DE-SAC AND DEAD END ROADS

Cul-de-sacs and dead-end roads shall not be longer than 500 feet.

3.38 BICYCLE LANES

The Developer shall provide adequate striping and paving in accordance with Caltrans and AASHTO standards to safely accommodate bicycle travel whenever a roadway is constructed, widened, and, where adequate right-of-way exists, whenever a roadway is resurfaced, restored, or rehabilitated on all routes except Minor roads.

Marked and/or signed bicycle lanes and paths shall be provided in accordance with the Regional Bicycle Action Plan adopted by StanCOG, the adopted Community Plans for the urban areas of the County, and the General Plans of the cities within the spheres of influence. The striping plans for the proposed bicycle lanes shall be reviewed and approved by the County Traffic Department prior to construction.

TABLE 3-1**STREET CLASSIFICATION AND PLATE NO.**

ROW & Street Classification	Plate No.	Pavement Width (ft)	Sidewalk Width (ft)
50 FT MINOR	3-A1	36	5
60 FT LOCAL	3-A1	40	5
60 FT COLLECTOR	3-A2	40	5
80 FT COLLECTOR	3-A2	68	6
100 FT MAJOR	3-A3	86	7
110 FT MAJOR	3-A3	90	10
70 FT MINOR INDUSTRIAL	3-A4-A	50	5
110' MAJOR INDUSTRIAL	3-A4-A	94	8
4-LANE EXPRESSWAY WITH LIMITED 100' ROW	3-A4-B	86	8
4-LANE EXPRESSWAY WITH 110' ROW	3-A4-B	90	8
6-LANE EXPRESSWAY WITH LIMITED 124' ROW	3-A5	104	10
6-LANE EXPRESSWAY WITH 135' ROW	3-A5	104	10
2-LANE RURAL COLLECTOR WITH 60' ROW	3-A6	32	See Notes
2-LANE RURAL COLLECTOR WITH 80' ROW	3-A6	36	See Notes
2-LANE RURAL MAJOR WITH 100' ROW	3-A6	56	See Notes
4-LANE RURAL MAJOR WITH 110' ROW	3-A7	78	See Notes
6-LANE RURAL EXPRESSWAY WITH 135' ROW	3-A7	104	See Notes

NOTES:

1. All items shown in the Street Classification Index table are minimum values only. Actual configuration may vary and/or be determined by the Engineer.
2. "Rural Areas" in this table refers to "Agricultural Areas" as identified in the Stanislaus County General Plan.
3. Pavement area width shown is measured from flow line to flow line or from edge of pavement to edge of pavement.
4. Sidewalk width shown is measured from back of walk to flowline of gutter.

TABLE 3-2

**MINIMUM TI-VALUES FOR STREETS
AND INTERSECTIONS**

ROW & Street Classification	Traffic Index (Streets)	Traffic Index (Intersections)
50 FT MINOR	5	6
60 FT LOCAL	6	7
60 FT COLLECTOR	8	9
80 FT COLLECTOR	8	9
100 FT MAJOR	10	11
110 FT MAJOR	10	11
70 FT MINOR INDUSTRIAL	9	10
110' MAJOR INDUSTRIAL	9	10
4-LANE EXPRESSWAY WITH LIMITED 100' ROW	11	12
4-LANE EXPRESSWAY WITH 110' ROW	11	12
6-LANE EXPRESSWAY WITH LIMITED 124' ROW	11	12
6-LANE EXPRESSWAY WITH 135' ROW	11	12
2-LANE RURAL COLLECTOR WITH 60' ROW	8	9
2-LANE RURAL COLLECTOR WITH 80' ROW	8	9
2-LANE RURAL MAJOR WITH 100' ROW	10	11
4-LANE RURAL MAJOR WITH 110' ROW	10	11
6-LANE RURAL EXPRESSWAY WITH 135' ROW	11	12

NOTES:

1. All items shown in the Street Classification Index table are minimum values only. Actual configuration may vary and/or be determined by the Engineer.
2. TI values and other minimum values shown in the Table may be increased at the discretion of the Engineer if traffic warrants a higher value.
3. "Rural Areas" in this table refers to "Agricultural Areas" as identified in the Stanislaus County General Plan.

TABLE 3-3**MINIMUM STRUCTURAL PAVEMENT SECTION**

ROW & Street Classification	Minimum Asphalt Concrete (ft)	Minimum Aggregate Base (ft)
50 FT MINOR	0.25	0.50
60 FT LOCAL	0.35	0.50
60 FT COLLECTOR	0.40	0.50
80 FT COLLECTOR	0.40	0.50
100 FT MAJOR	0.50	0.50
110 FT MAJOR	0.50	0.50
70 FT MINOR INDUSTRIAL	0.45	0.50
110' MAJOR INDUSTRIAL	0.45	0.50
4-LANE EXPRESSWAY WITH LIMITED 100' ROW	0.50	0.50
4-LANE EXPRESSWAY WITH 110' ROW	0.50	0.50
6-LANE EXPRESSWAY WITH LIMITED 124' ROW	0.60	0.50
6-LANE EXPRESSWAY WITH 135' ROW	0.60	0.50
2-LANE RURAL COLLECTOR WITH 60' ROW	0.40	0.50
2-LANE RURAL COLLECTOR WITH 80' ROW	0.40	0.50
2-LANE RURAL MAJOR WITH 100' ROW	0.50	0.50
4-LANE RURAL MAJOR WITH 110' ROW	0.50	0.50
6-LANE RURAL EXPRESSWAY WITH 135' ROW	0.60	0.50

NOTES:

1. All items shown in the Street Classification Index table are minimum values only. Actual configuration may vary and/or be determined by the Engineer.
2. If there is insufficient soils data to determine the structural thickness of the pavement asphalt and aggregate base, specifically R-values, then streets shall be designed using an assumed R-value of 5.
3. "Rural Areas" in this table refers to "Agricultural Areas" as identified in the Stanislaus County General Plan.

**TABLE 3.4
MINIMUM CENTERLINE RADIUS
BASED ON HORIZONTAL DESIGN SPEED
AND ROADWAY TYPE**

ROW & Street Classification	Design Speed (mph)	Horizontal Centerline Radius (ft)
50 FT MINOR	30	500
60 FT LOCAL	30	500
60 FT COLLECTOR	35	600
80 FT COLLECTOR	35	600
100 FT MAJOR	50	1500
110 FT MAJOR	50	1500
70 FT MINOR INDUSTRIAL	35	600
110' MAJOR INDUSTRIAL	35	600
4-LANE EXPRESSWAY WITH LIMITED 100' ROW	45	1200
4-LANE EXPRESSWAY WITH 110' ROW	45	1200
6-LANE EXPRESSWAY WITH LIMITED 124' ROW	55	1800
6-LANE EXPRESSWAY WITH 135' ROW	55	1800
2-LANE RURAL COLLECTOR WITH 60' ROW	55	1800
2-LANE RURAL COLLECTOR WITH 80' ROW	55	1800
2-LANE RURAL MAJOR WITH 100' ROW	55	1800
4-LANE RURAL MAJOR WITH 110' ROW	60	2200
6-LANE RURAL EXPRESSWAY WITH 135' ROW	70	3000

NOTES:

1. All items shown in the Street Classification Index table are minimum values only. Actual configuration may vary and/or be determined by the Engineer.
2. "Rural Areas" in this table refers to "Agricultural Areas" as identified in the Stanislaus County General Plan.
3. Design Speed for Vertical Alignment shall be 5.0 miles per hour higher than the minimum values shown.

TABLE 3.5

COLLECTOR ROUTES REQUIRING AT LEAST 80' OF RIGHT-OF-WAY*

The following designated collector routes require at least 80' of right-of-way either because of hilly terrains or greater than average anticipated traffic flows:

Claribel Road: Oakdale-Waterford Highway to Tim Bell Road
Cooperstown Road: Warnerville Road to La Grange Road
Crabtree Road: Highway 132 to Warnerville Road
Del Puerto Canyon Road: Interstate 5 to Santa Clara County
Dunton Road: Milton Road to Highway 4
Eastman Road: 26 Mile Road to 28 Mile Road
Emery Road: Warnerville Road to Fogarty Road
Fogarty Road: Wamble Road to Emery Road
Frankenheimer Road: 28 Mile Road to Sonora Road
Hawkins Road: Lake Road to Keyes Road
Hazeldean Road: Highway 132 to Tim Bell Road
Hickman Road: East Avenue to Whitmore Avenue
Kennedy Road: Highway 108/120 to Sonora Road
Keyes Road: Santa Fe Avenue to Merced County Line
Lake Road: Hickman Road to Highway 132
Lancaster Road: Orange Blossom Road to Highway 108/120
Milnes Road: Claus to Oakdale-Waterford Highway
Milton Road: Highway 4 to Calaveras County Line
Orange Blossom Road: Highway 108/120 to Sonora Road
River Road: San Joaquin County Line to Highway 120
Rock River Road: Willms Road to Tuolumne County Line
Rodden Road: Highway 120 to Orange Blossom Road
Sisk Road: Kiernan Avenue north to end
Sonora Road: Milton Road to Highway 108/120
Tim Bell Road: Lone Oak Road to Warnerville Road
Twenty Eight Mile Road: Rodden Road to Sonora Road
Wamble Road: Fogarty Road to Orange Blossom Road
Warnerville Road: Albers Road to Cooperstown Road
Willms Road: Cooperstown Road to Highway 108/120

* This list only contains those Collector roads that require 80 feet of right-of-way. All other Collector routes are depicted in the Circulation Diagram depicted in Figure 3-2

TABLE 3-6

RECOMMENDED APPROACH LANES

Facility Type	Intersecting Road	Left	Through	Right
Expressway	Expressway	2	2 or 3	1
	Major*	2	2 or 3	1
	Collector*	1	2 or 3	1
	Local*	1	2 or 3	1
	Minor/Private			
Major	Expressway*	2	2 or 3	1
	Major	2	2 or 3	1
	Collector	1	2 or 3	1
	Local	1	2 or 3	1
	Minor/Private			
Collector	Expressway*	1	1 or 2	1
	Major	1	1 or 2	1
	Collector	1	1 or 2	1
	Local	1	1 or 2	1
	Minor/Private	0	1 or 2	0
Local	Expressway*	1	1 or 2	1
	Major	1	1 or 2	1
	Collector	1	1 or 2	1
	Local	1	1 or 2	1
	Minor/Private	1	1 or 2	1
Minor/Private	Expressway			
	Major			
	Collector	0	1	0
	Local	0	1	0
	Minor/Private	0	1	0

* When permitted, based on access policy for Expressway Class.

TABLE 3-7
ADOPTED PLAN LINES

NAME	FROM	TO
26 Mile Road	Dodds Road	Sonora Road
Blue Gum Avenue	Morse Road	North Ninth Street
Briggsmore Avenue	State Route 99	Claus Road
Carpenter Road	Crows Landing Road	Whitmore Avenue
Claus Road	State Route 132	State Route 108
Coffee Road	Orangeburg Avenue	Sylvan Road
Coffee Road	Sylvan Road	Patterson Road
Crane Road	Patterson Road	West F Street
Crows Landing	State Route 99	Whitmore Avenue
Crows Landing	Whitmore Avenue	West Main Street
Fink Road	Interstate 5	State Route 33
Fulkerth Avenue	State Route 99	Golden State Boulevard
Hatch Road	Carpenter Road	Crows Landing Road
Hatch Road	State Route 99	Mitchell Road
Hawkeye Road	State Route 99	Berkeley Avenue
Howard Road	Interstate 5	State Route 33
McHenry-Ladd-Patterson Intersection		
Mc Henry Avenue	Briggsmore Avenue	Stanislaus River
Monte Vista Avenue	State Route 99	Berkeley Avenue
Monte Vista Avenue	State Route 99	Golden State Boulevard
North Olive Avenue	Canal Drive	Monte Vista Avenue
Oakdale Road	Scenic Drive	Patterson Road
Orange Blossom Road	Rodden Road	Knights Ferry
Paradise Road	Sutter Avenue	Dunning Lane
Pelandale-Claratina	Dale Road	Claus Road
Roselle Avenue	Briggsmore Avenue	Floyd Avenue
Scenic Drive	Modesto City Limit	Claus Road
Sperry Road	Interstate 5	State Route 33
Standiford-Sylvan	State Route 99	Claus Road
Stearns Road	State Route 108	Oakhurst Drive
Stuhr Road	Interstate 5	State Route 33
Sylvan-Standiford Avenue	State Route 99	Claus Road
Yosemite Boulevard	Modesto City Limit	Waterford City Limit
Zeering Road	State Route 99	Hawthorne Street

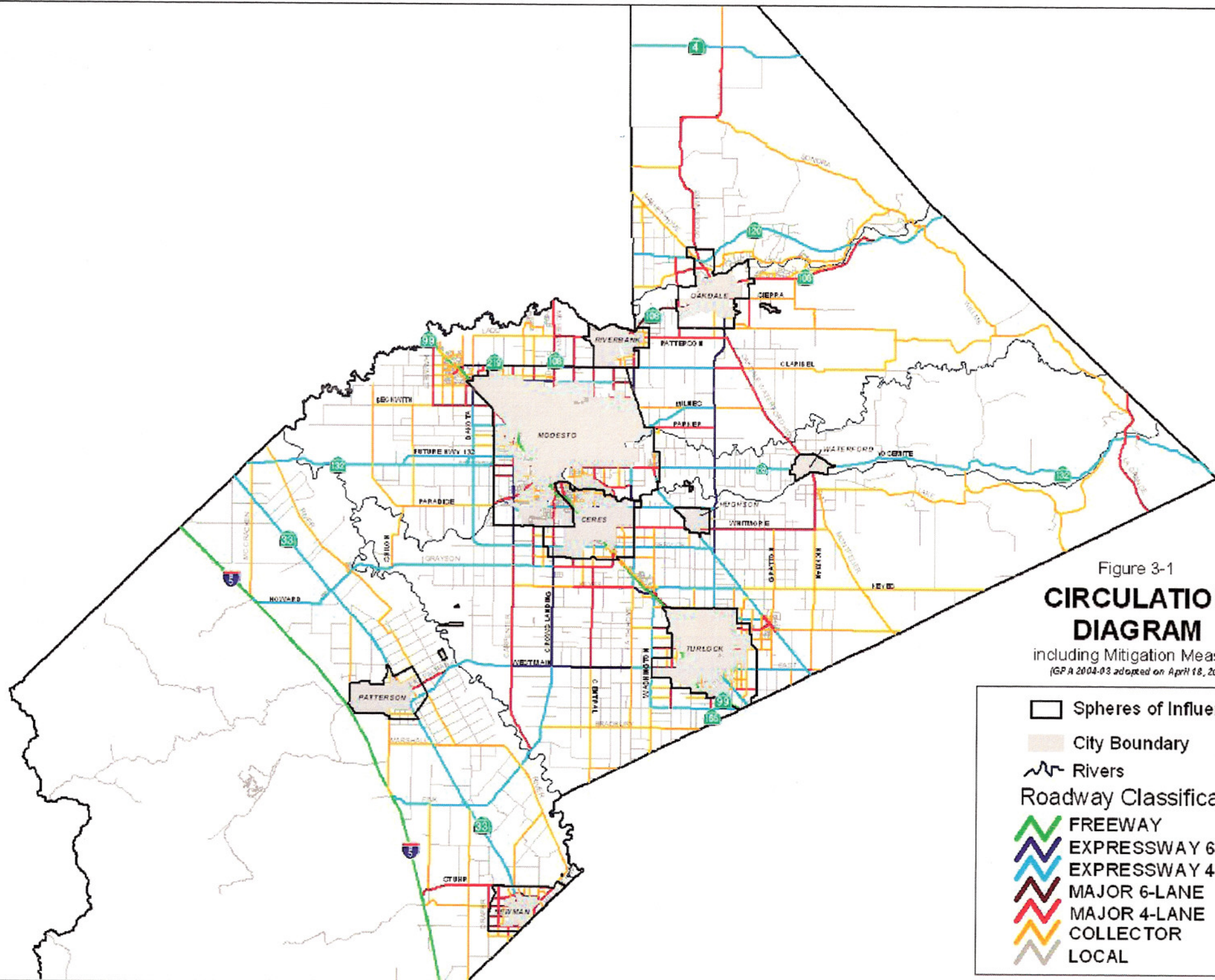


Figure 3-1
**CIRCULATION
 DIAGRAM**
 including Mitigation Measures
(GPA 2004-03 adopted on April 18, 2006)

-  Spheres of Influence
-  City Boundary
-  Rivers
- Roadway Classification**
 -  FREEWAY
 -  EXPRESSWAY 6-LANE
 -  EXPRESSWAY 4-LANE
 -  MAJOR 6-LANE
 -  MAJOR 4-LANE
 -  COLLECTOR
 -  LOCAL

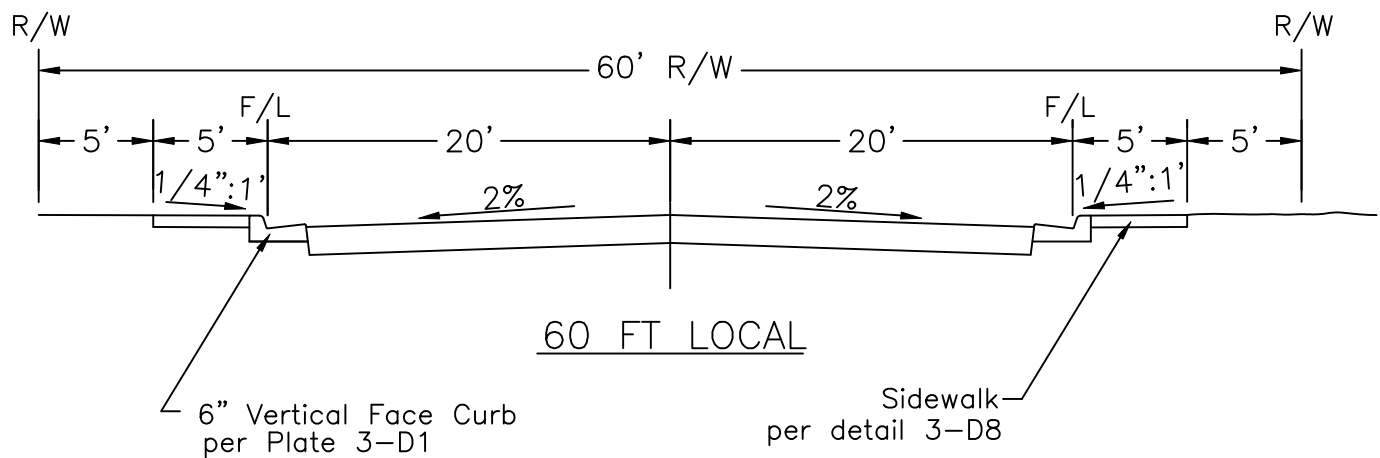
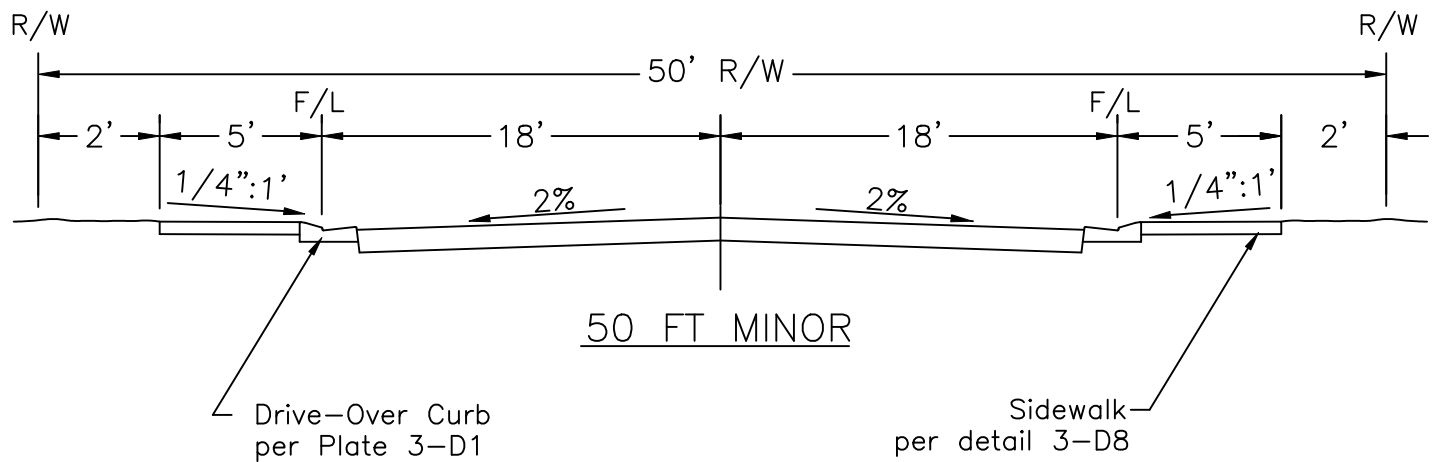
STREET CLASSIFICATION INDEX TABLE

ROW & Street Classification	Plate No.	Flow Line to Flow Line Width (ft)	Sidewalk Width (ft)	Traffic Index	Design Speed (mph)	Horizontal Centerline Radius (ft)	Minimum AC (ft)	Minimum AB (ft)
50 FT MINOR	3-A1	36	5	5	30	500	0.25	0.50
60 FT LOCAL	3-A1	40	5	6	30	500	0.35	0.50
60 FT COLLECTOR	3-A2	40	5	8	35	600	0.40	0.50
80 FT COLLECTOR	3-A2	68	6	8	35	600	0.40	0.50
100 FT MAJOR	3-A3	86	7	10	50	1500	0.50	0.50
110 FT MAJOR	3-A3	90	10	10	50	1500	0.50	0.50
70 FT MINOR INDUSTRIAL	3-A4-A	50	5	9	35	600	0.45	0.50
110 FT MAJOR INDUSTRIAL	3-A4-A	94	8	9	35	600	0.45	0.50
4-LANE EXPRESSWAY WITH LIMITED 100' ROW	3-A4-B	86	8	11	45	1200	0.50	0.50
4-LANE EXPRESSWAY WITH 110' ROW	3-A4-B	90	8	11	45	1200	0.50	0.50
6-LANE EXPRESSWAY WITH LIMITED 124' ROW	3-A5	104	10	11	55	1800	0.60	0.50
6-LANE EXPRESS WAY WITH 135' ROW	3-A5	104	10	11	55	1800	0.60	0.50
2-LANE RURAL COLLECTOR WITH 60' ROW	3-A6	32	See Notes	8	55	1800	0.40	0.50
2-LANE RURAL COLLECTOR WITH 80' ROW	3-A6	36	See Notes	8	55	1800	0.40	0.50
2-LANE RURAL MAJOR WITH 110' ROW	3-A6	56	See Notes	10	55	1800	0.50	0.50
4-LANE RURAL MAJOR WITH 110' ROW	3-A7	78	See Notes	10	60	2200	0.50	0.50
6-LANE RURAL EXPRESSWAY WITH 135' ROW	3-A7	104	See Notes	11	70	3000	0.60	0.50

NOTES:

1. All items shown in the Street Classification Index table are minimum values only. Actual configuration may vary and/or be determined by the Engineer.
2. TI values and other minimum values shown in the Table may be increased at the discretion of the Engineer if traffic warrants a higher value.
3. If there is insufficient soils data to determine the structural thickness of the pavement asphalt and aggregate base, specifically R-values, then streets shall be designed using an assumed R-value of 5.
4. "Rural Areas" in this table refers to "Agricultural Areas" as identified in the Stanislaus County General Plan.
5. Pavement area width shown is measured from flow line to flow line or from edge of pavement to edge of pavement.
6. Sidewalk width shown is measured from back of walk to flowline of gutter.

	No.	Revised	By	STREET CLASSIFICATION INDEX TABLE	Approved by
					
	Updated by P. Saini				
Checked by S. Erickson			DEPARTMENT OF PUBLIC WORKS	PLATE NO: 3-A0	



NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

ROAD SECTION
50 FT MINOR
60 FT LOCAL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

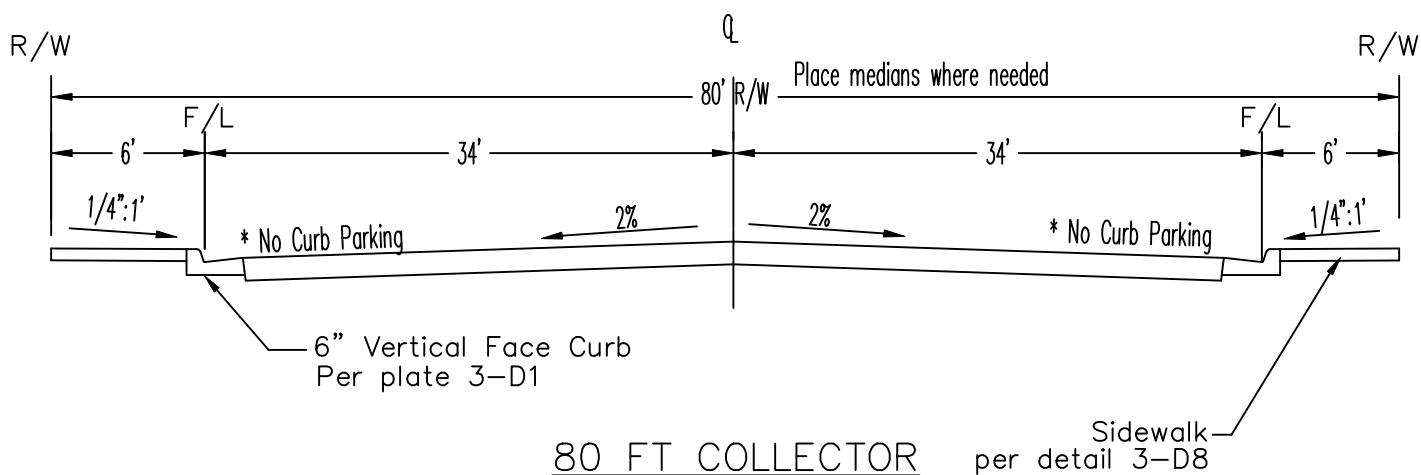
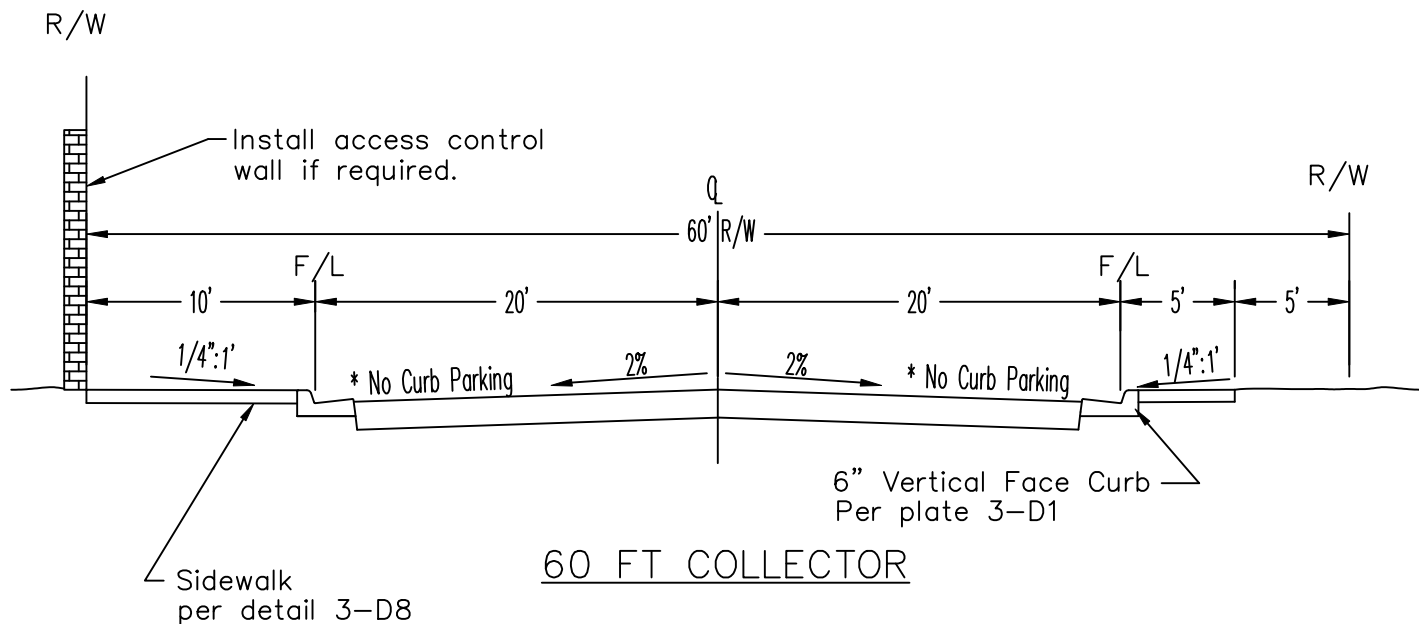
Approved by

Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 3-A1



- * Install "No Stopping Any Time" signs two feet from flowline. Space signs at 300 ft apart for projects in rural areas that are over 1,300 ft in length. In urban areas, space the signs 100 ft apart.

NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.

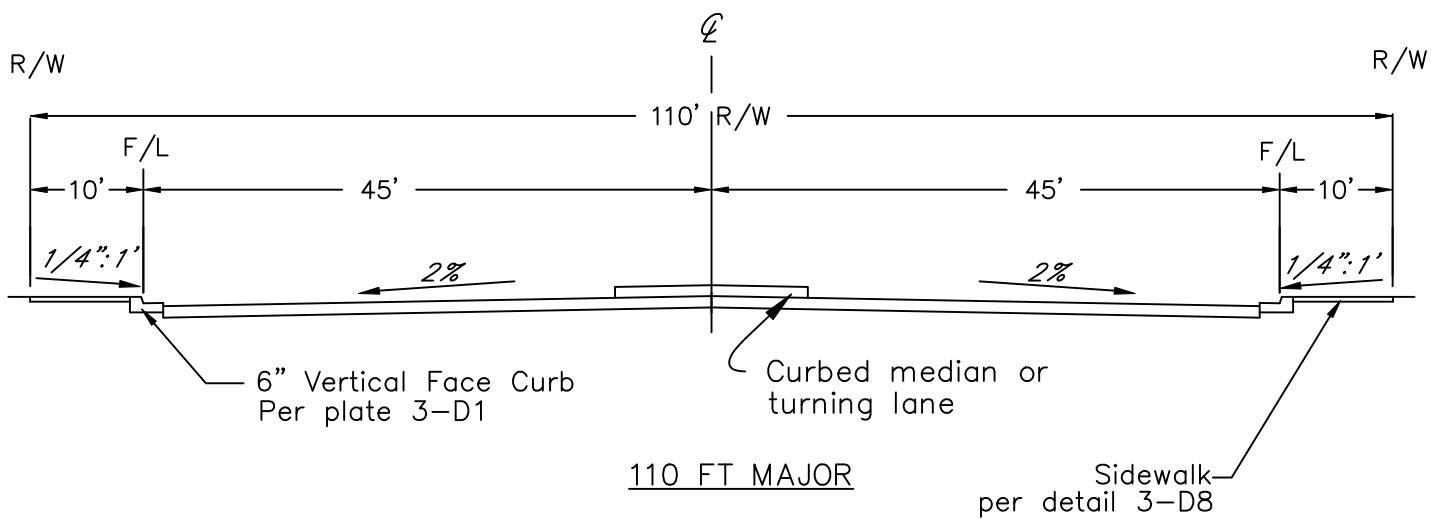
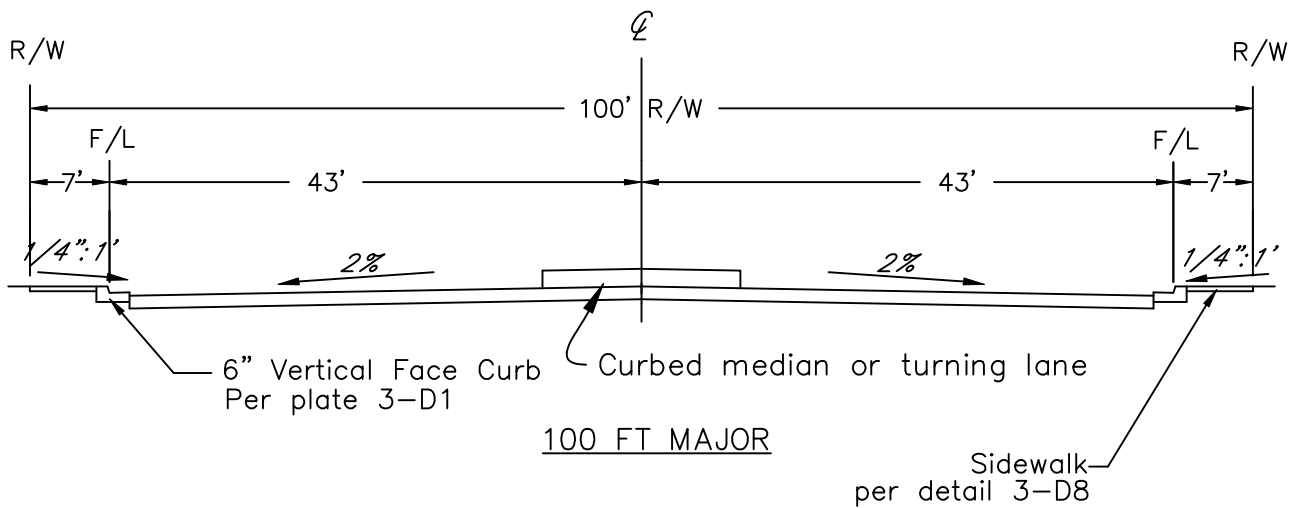


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

ROAD SECTION
60 FT COLLECTOR
80 FT COLLECTOR

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-A2



NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

ROAD SECTION
100 FT MAJOR
110 FT MAJOR

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

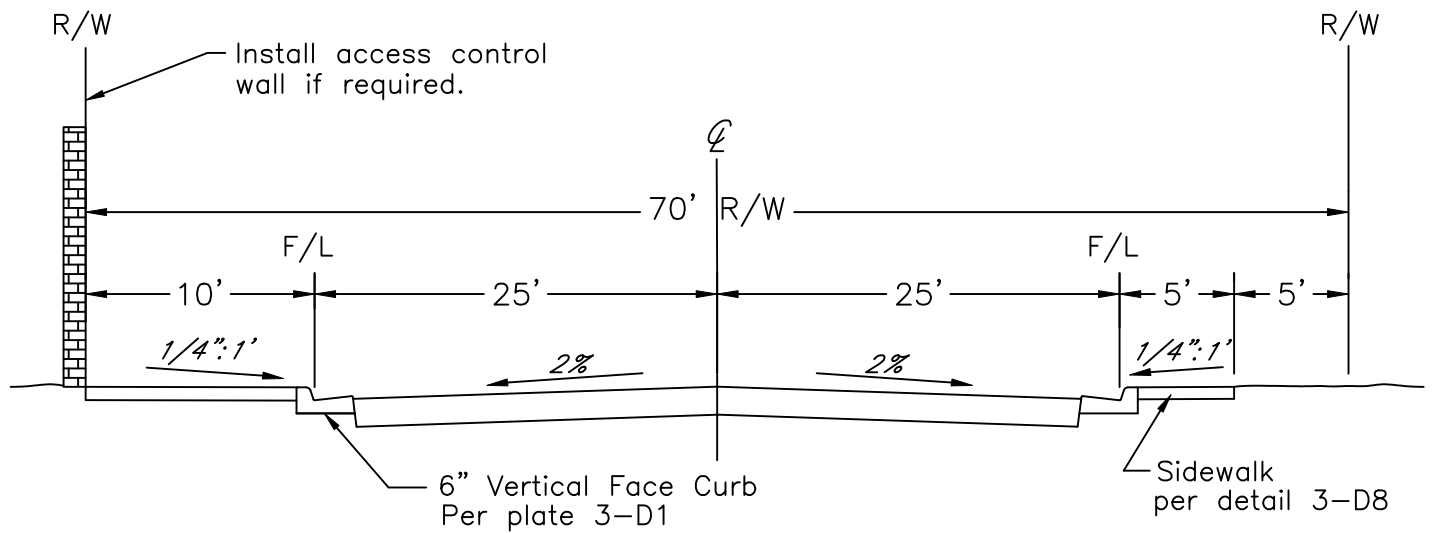
Approved by

Matt McCall

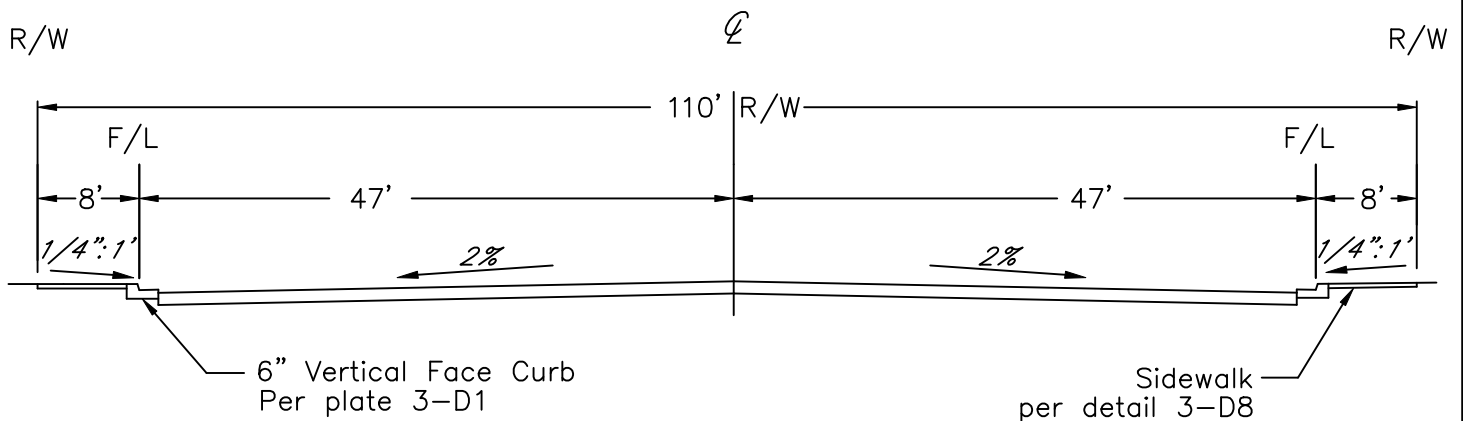
Director of Public Works

Date 01/02/2007

PLATE NO: 3-A3



70 FT MINOR INDUSTRIAL



110 FT MAJOR INDUSTRIAL

NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.

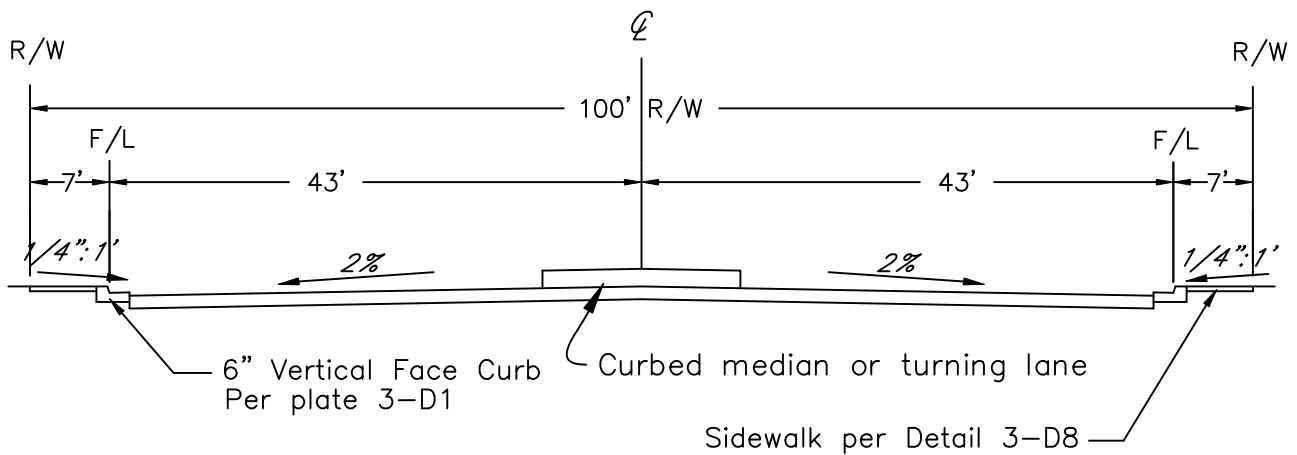


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

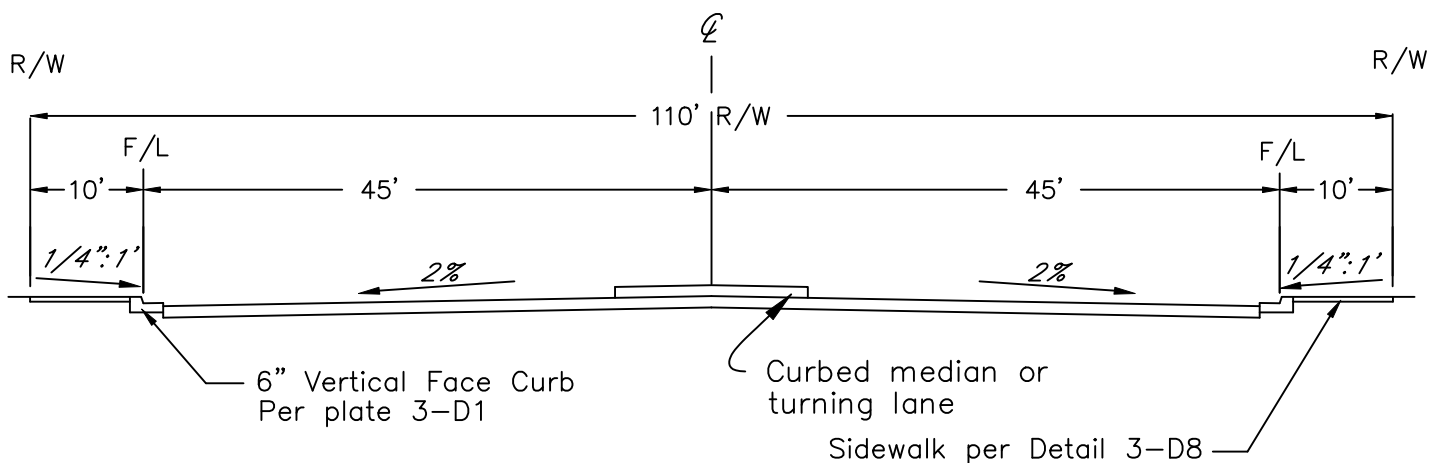
ROAD SECTION
70 FT MINOR INDUSTRIAL
110 FT MAJOR INDUSTRIAL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-A4-A



4-LANE EXPRESSWAY WITH LIMITED 100 FT ROW



4-LANE EXPRESSWAY WITH 110 FT ROW

NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

4-LANE EXPRESSWAY
WITH 100 FT ROW
WITH 110 FT ROW

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

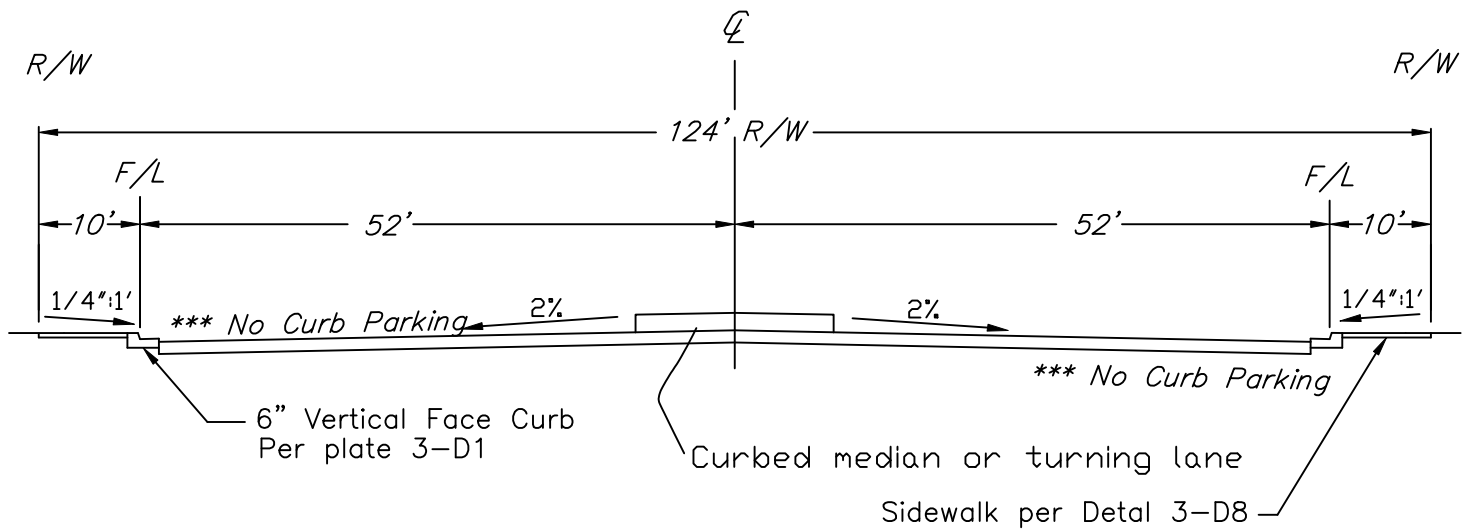
Approved by

Matt Cochran

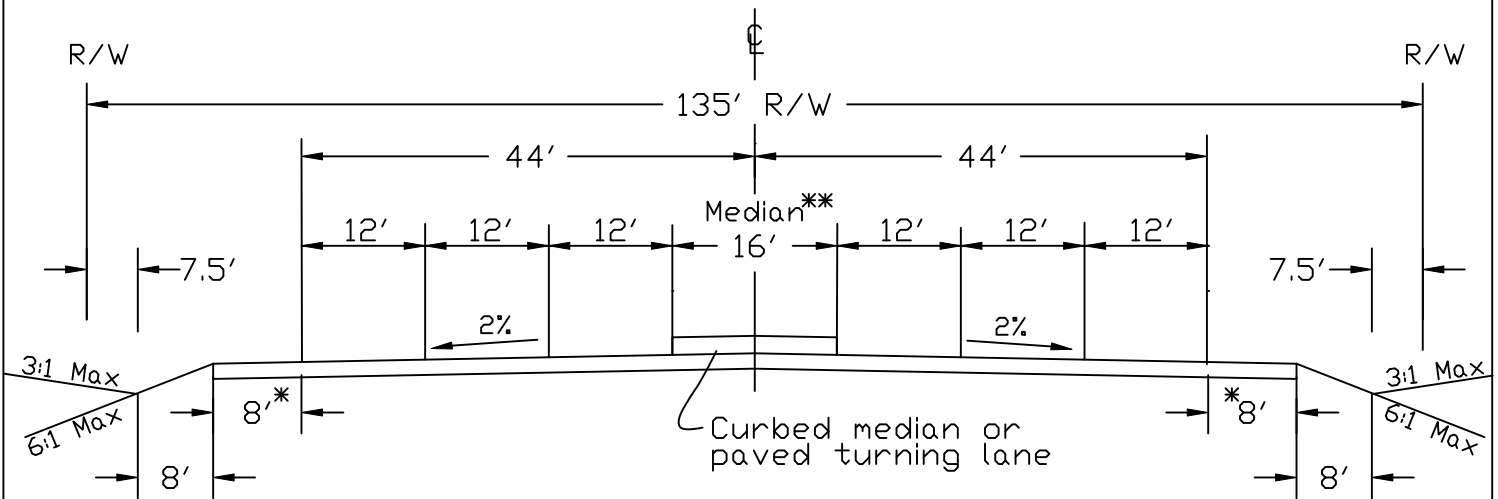
Director of Public Works

Date 01/02/2007

PLATE NO: 3-A4-B



6-LANE EXPRESSWAY WITH LIMITED 124 FT ROW



6-LANE EXPRESSWAY WITH 135 FT ROW

NOTE:

1. Sidewalk Slope = 1/4" per foot between back of curb and right-of-way.
2. Pavement cross slope shall be 2.0% on new road construction.
3. Install concrete curb per detail 3-D1.
4. Install concrete sidewalk per detail 3-D8.

* Provide minimum 8' paved shoulder with 2% minimum cross slope.

** Median to be raised concrete or striped as determined by County Engineer.

*** Install "No Stopping Any Time" signs two feet from flowline. Space signs at 300 ft apart for projects in rural areas that are over 1,300 ft in length. In urban areas, space the signs 100 ft apart.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

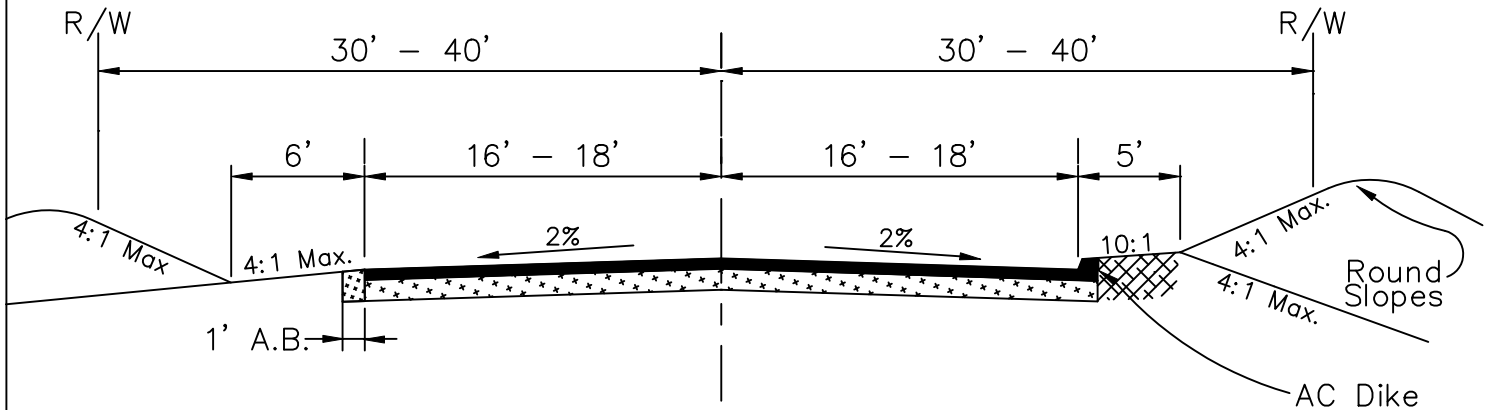
ROAD SECTION
6-LANE EXPRESSWAY 124 FT
6-LANE EXPRESSWAY 135 FT

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-A5

Typical Section
Without AC Dike

Typical Section
Where AC Dike
is Required to
Control Drainage



2-LANE RURAL COLLECTOR WITH 60 FT OR 80 FT ROW

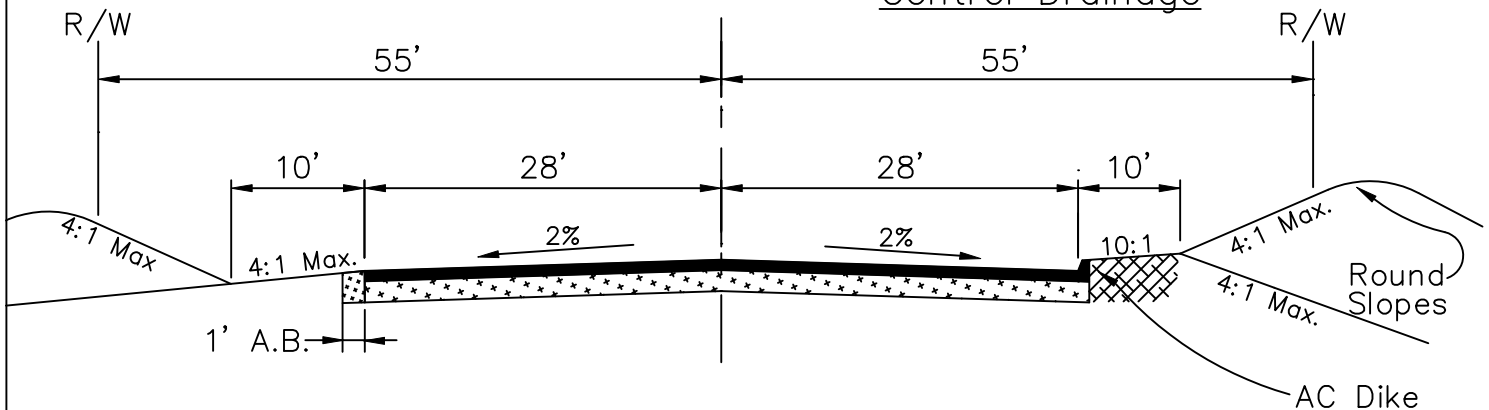
Note: Pavement width less than 18' may require posting of "NO PARKING" signs as directed by County Engineer.

Additional slope easements may be required.

Underground french drain maybe be required in the swale area to help control drainage and enhance safety.

Typical Section
Without AC Dike

Typical Section
Where AC Dike
is Required to
Control Drainage



2-LANE RURAL MAJOR WITH 110 FT ROW

Note: Additional slope easements and/or french drains may be required.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

RURAL ROAD SECTION
2-LANE RURAL COLLECTOR
2-LANE RURAL MAJOR

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

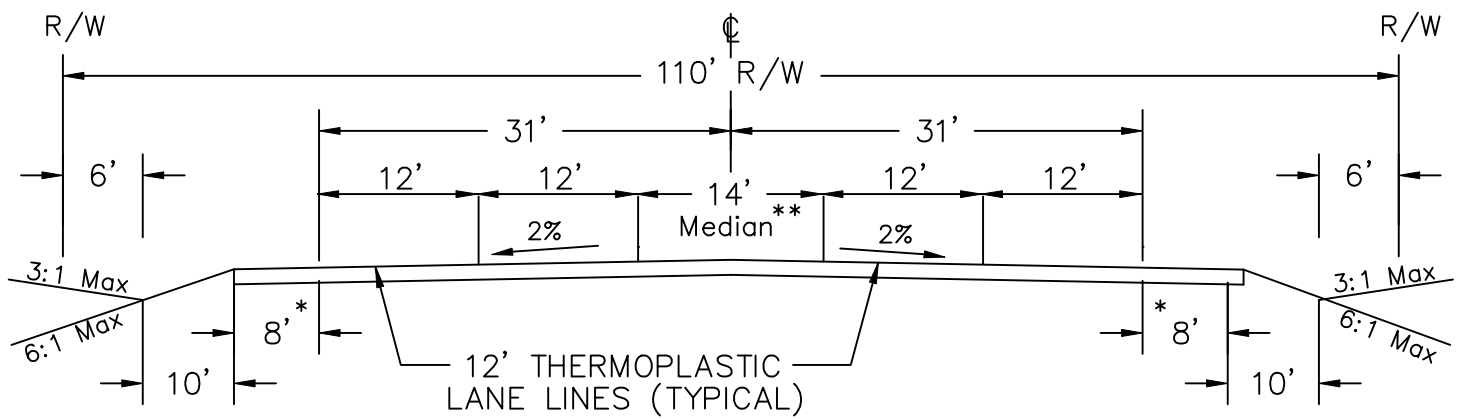
Approved by

Matt McCall

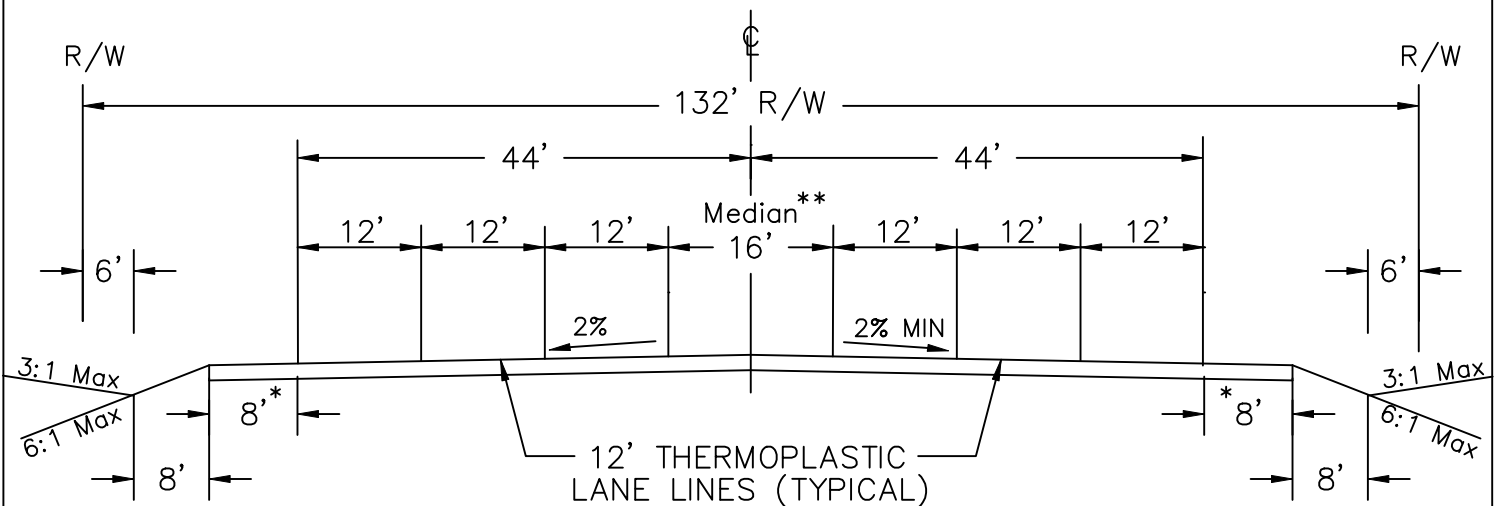
Director of Public Works

Date 01/02/2007

PLATE NO: 3-A6



4-LANE RURAL MAJOR WITH 110 FT ROW



6-LANE RURAL EXPRESSWAY WITH 132 FT ROW

* Provide minimum 8' paved shoulder with 2% cross slope. Underground french drain maybe be required in the swale area to help control drainage and enhance safety.

** Median to be raised concrete or striped as determined by County Engineer

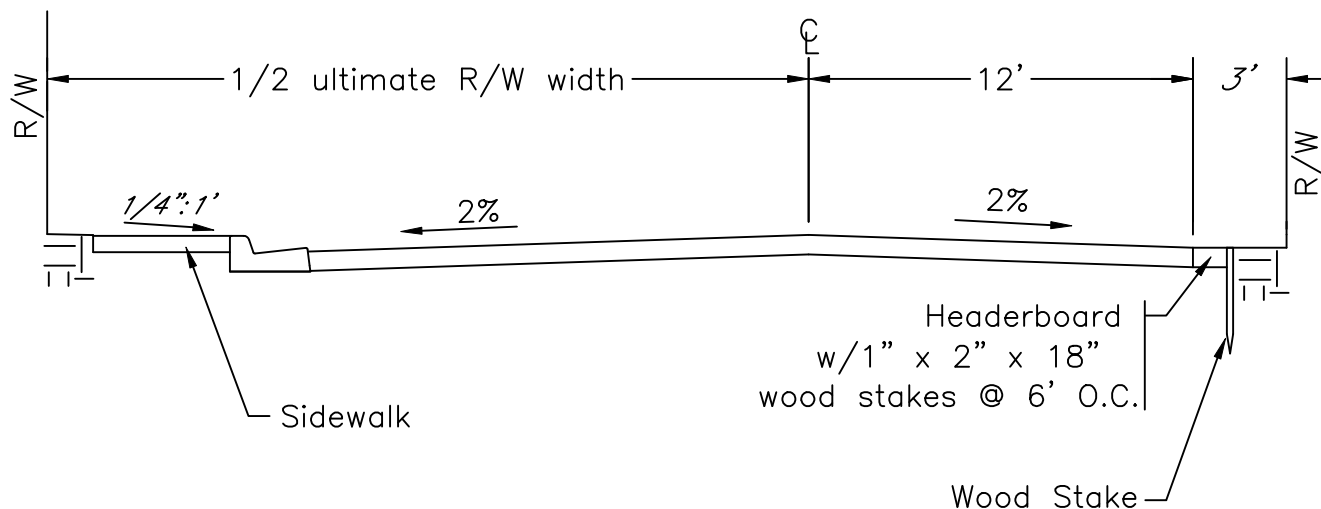


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

RURAL ROAD SECTION
4-LANE RURAL MAJOR
6-LANE RURAL EXPRESSWAY

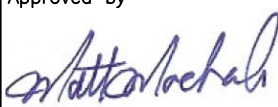
COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

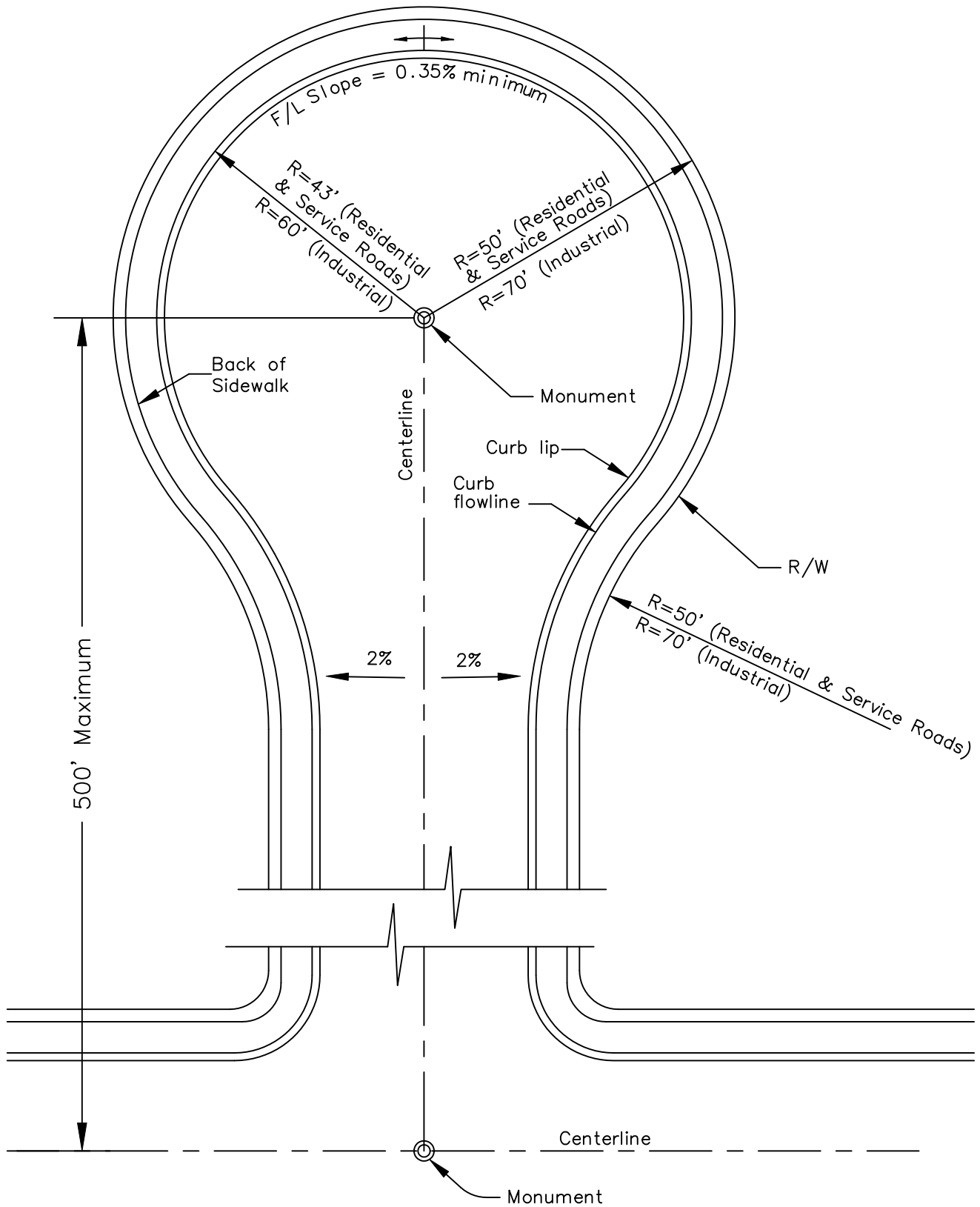
Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-A7



NOTES:

1. The part-width road is only permitted on a frontage where the developer does not have ownership or control of the right-of-way for full width road improvements.
2. Developer will be required to provide drainage facilities for the entire road section. A 6 inch asphalt dike may be required adjacent to the 12 foot lane.
3. Headerboard to be redwood or pressure treated douglas fir.

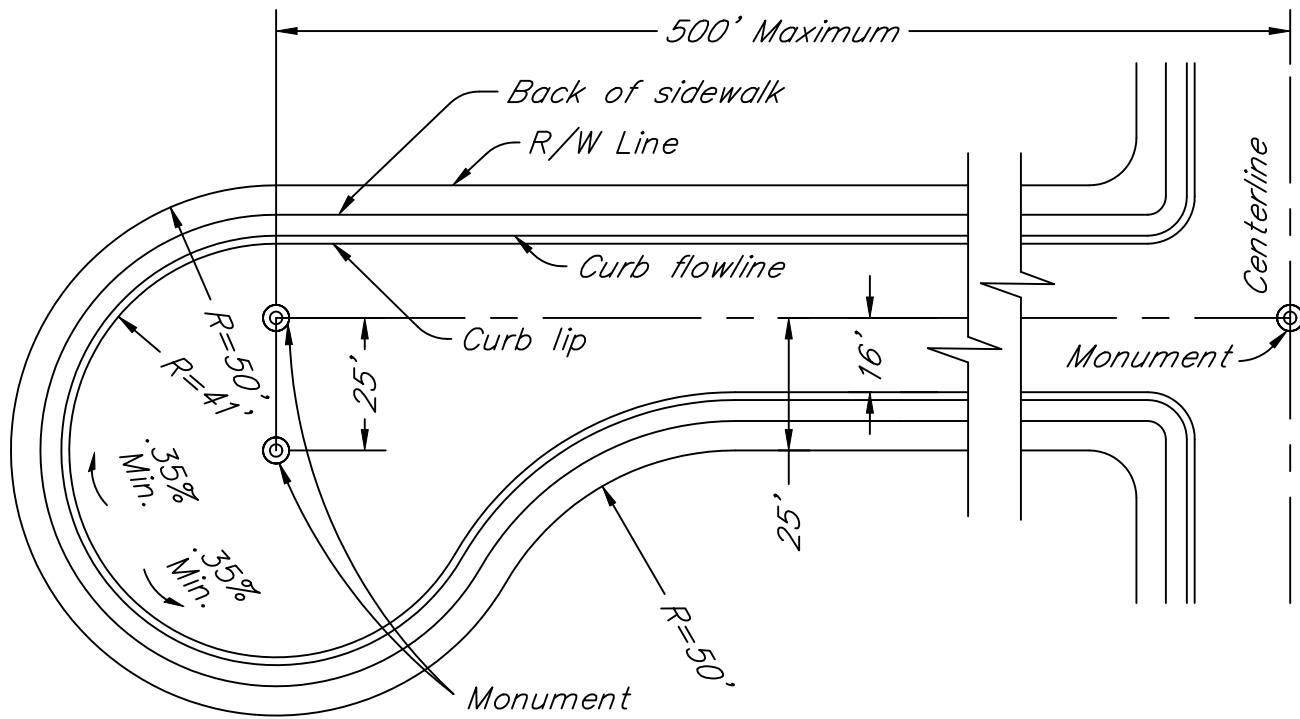
	No.	Revised	By	PART WIDTH ROAD SECTION	Approved by
					
	Updated by P. Saini				
Checked by S. Erickson			PLATE NO: 3-A8		



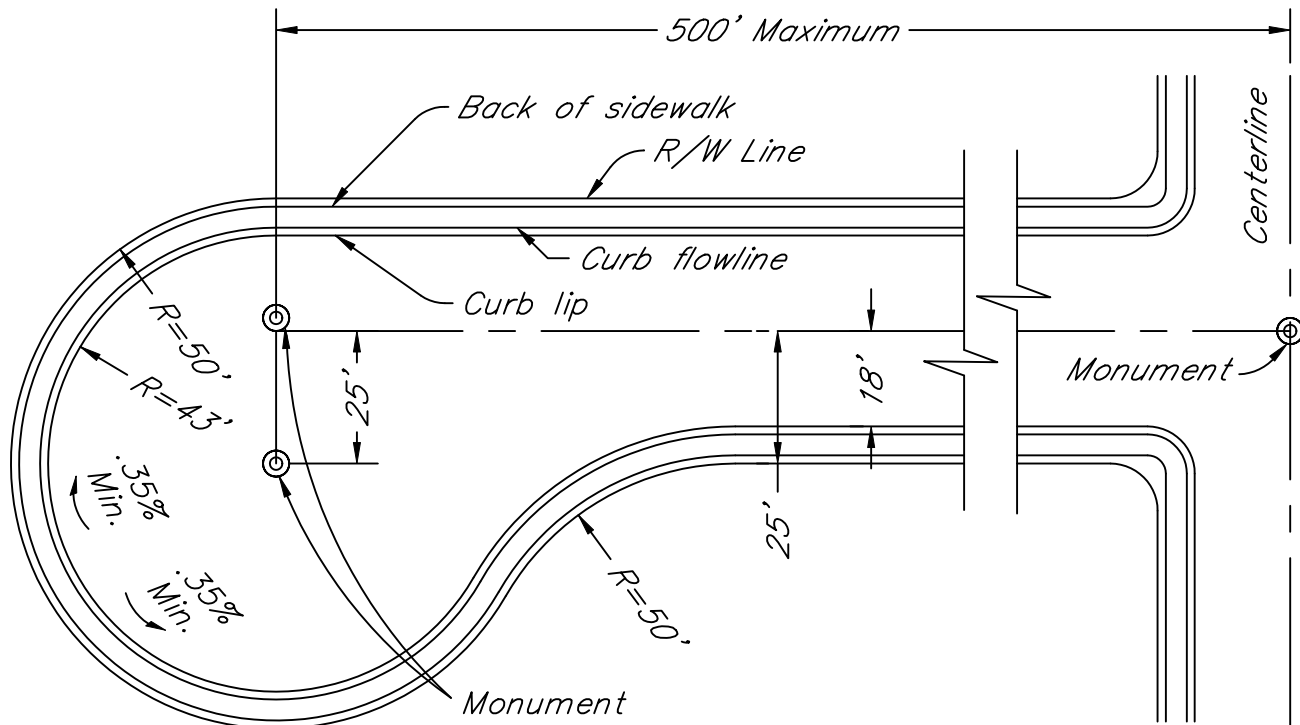
No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

CUL-DE-SAC	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-B1



RURAL RESIDENTIAL STREET



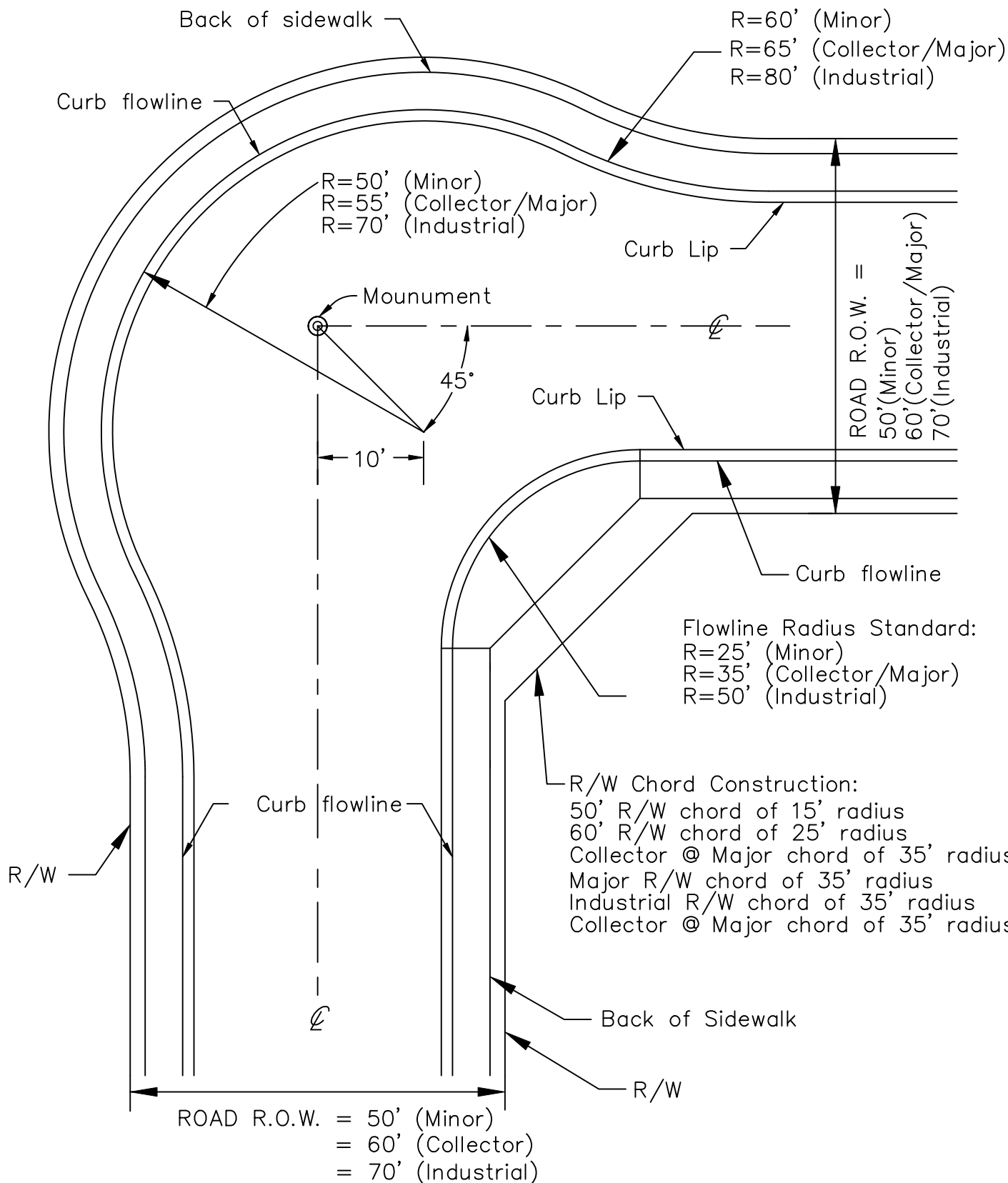
RESIDENTIAL STREET



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

OFFSET CUL-DE-SAC	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-B2



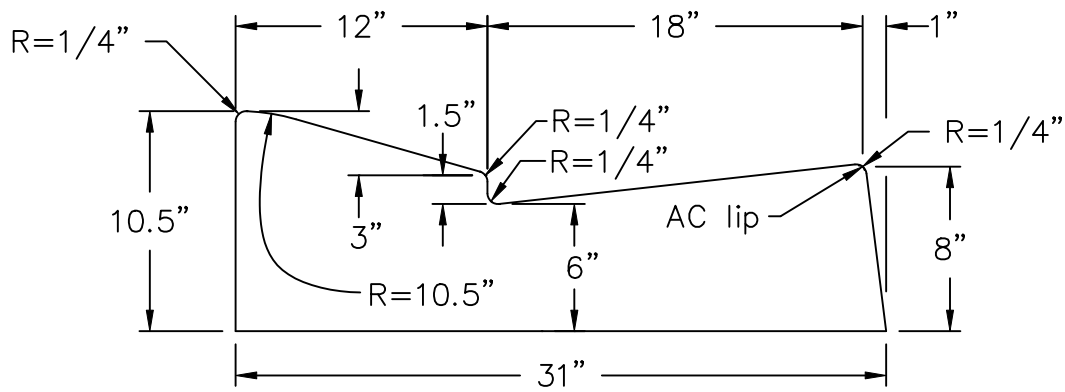
No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

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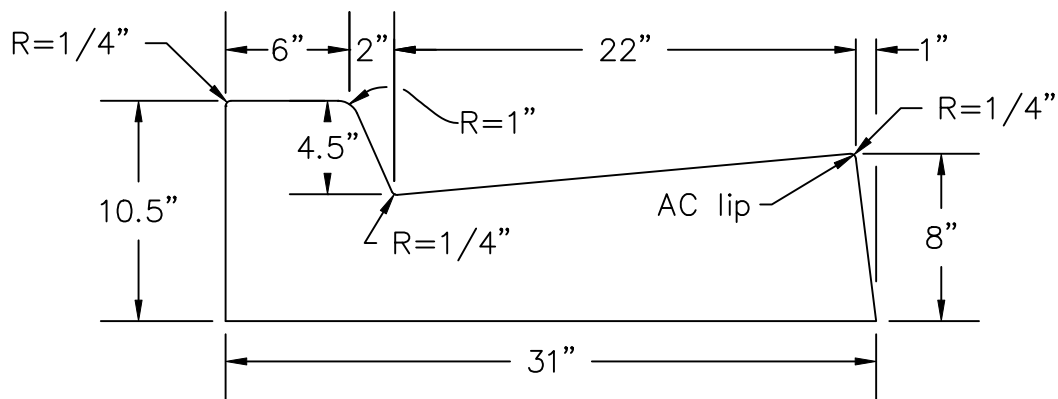
COUNTY OF STANISLAUS

DEPARTMENT OF PUBLIC WORKS

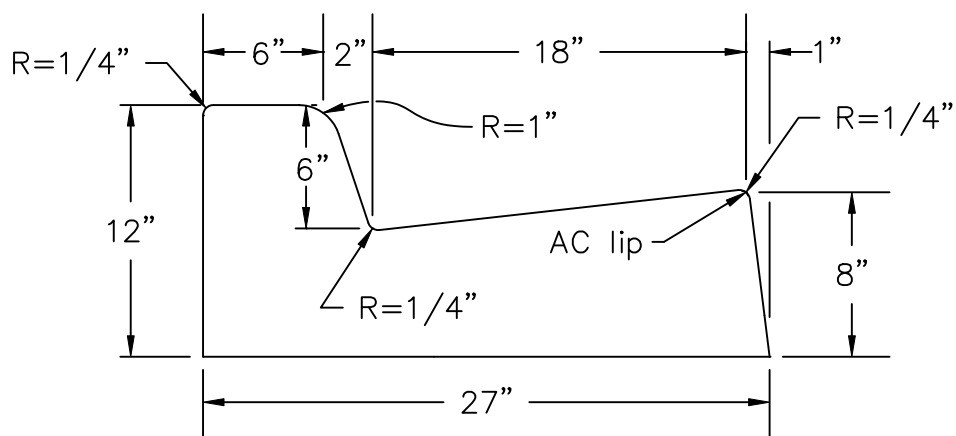
Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-C



DRIVE-OVER



4-1/2" VERTICAL FACE
ADJACENT TO MID-BLOCK CURB INLETS



6" VERTICAL FACE



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

CURB & GUTTER STANDARDS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

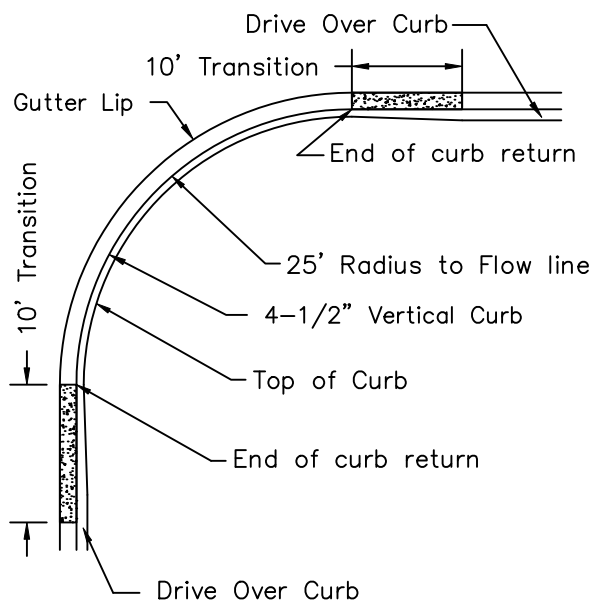
Approved by

Matt Cochran

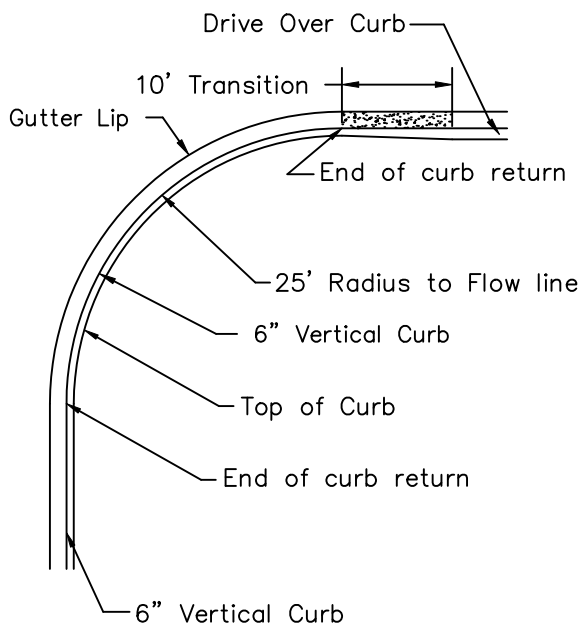
Director of Public Works

Date 01/02/2007

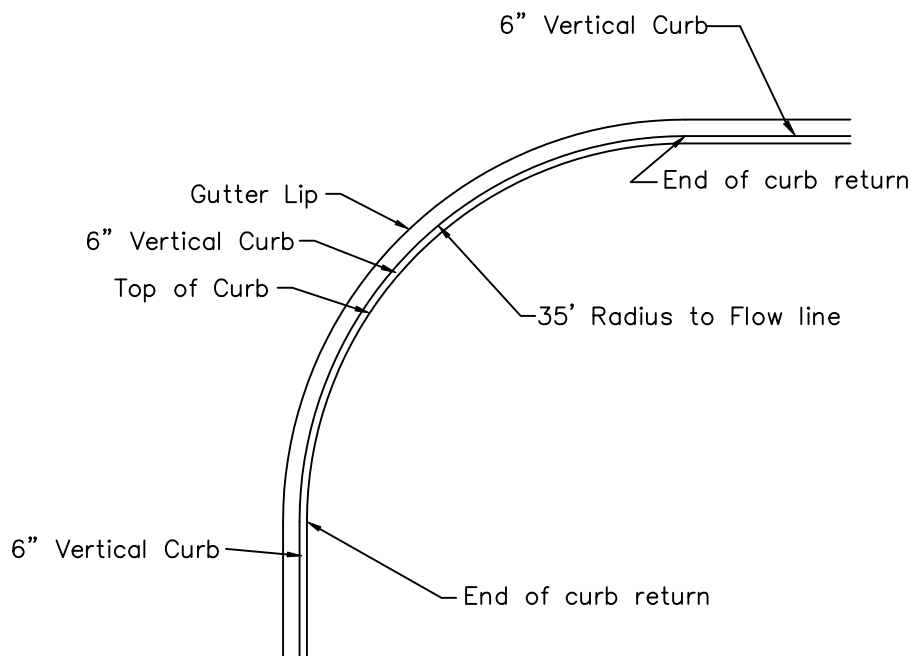
PLATE NO: 3-D1



Drive Over to Drive Over Curb



Vertical to Drive Over Curb



Vertical to Vertical Curb



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

CURB RETURN DETAILS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

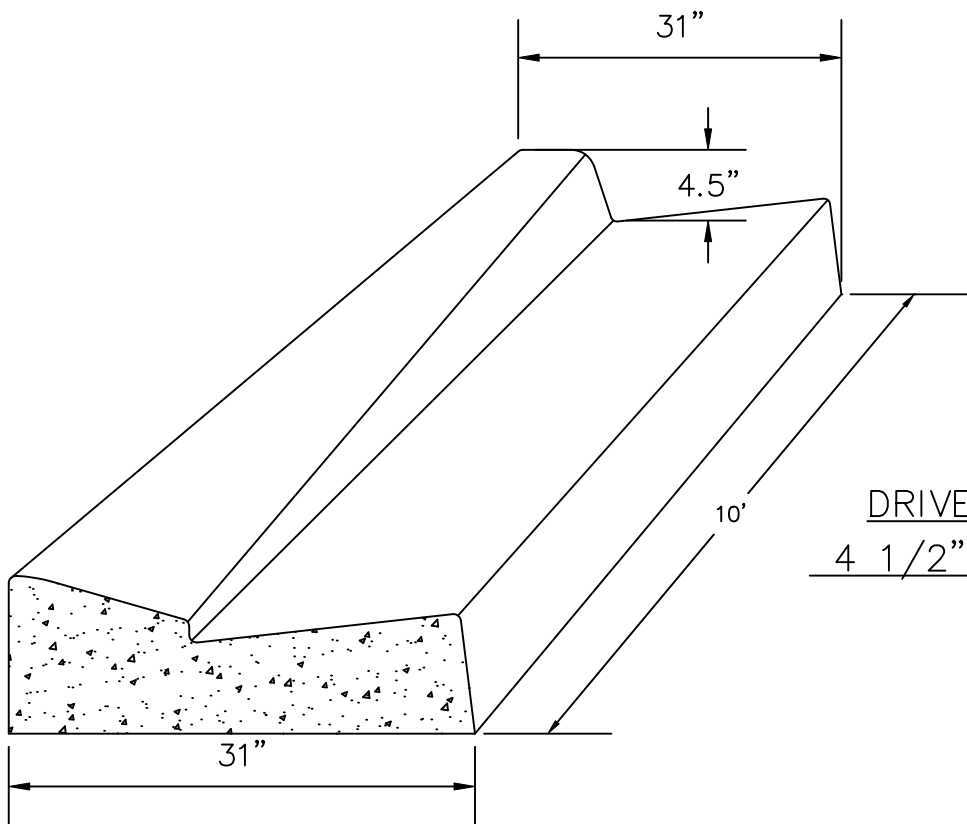
Approved by

Matt Cochran

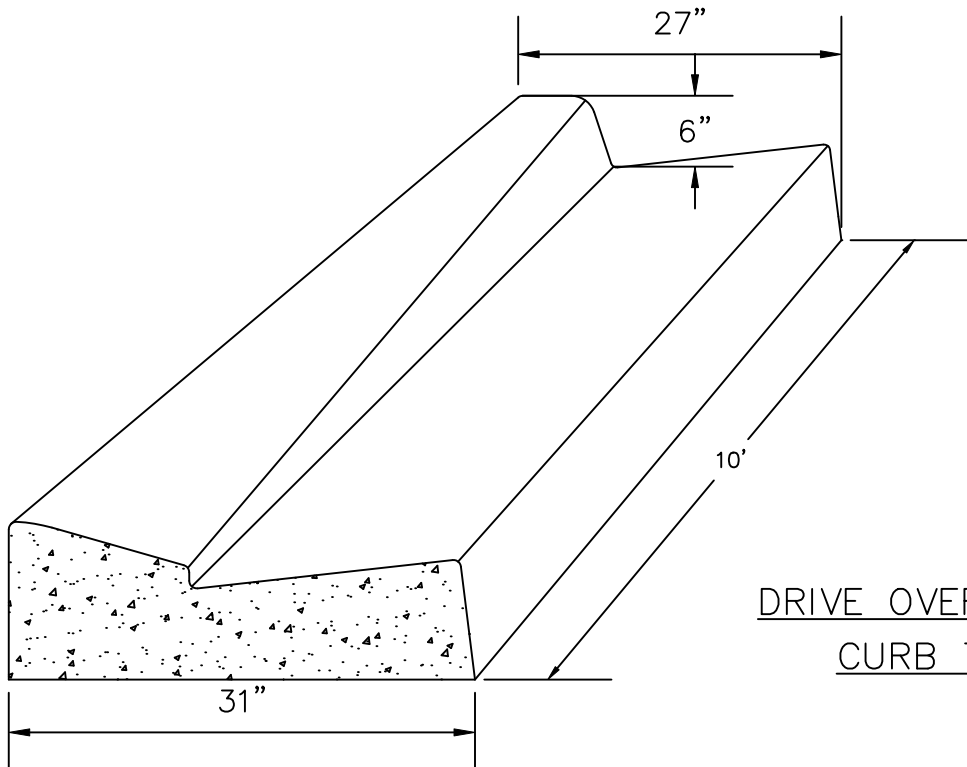
Director of Public Works

Date 01/02/2007

PLATE NO: 3-D2



DRIVE OVER CURB TO
4 1/2" CURB TRANSITION



DRIVE OVER COVER TO 6"
CURB TRANSITION



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

CURB & GUTTER
TRANSITION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

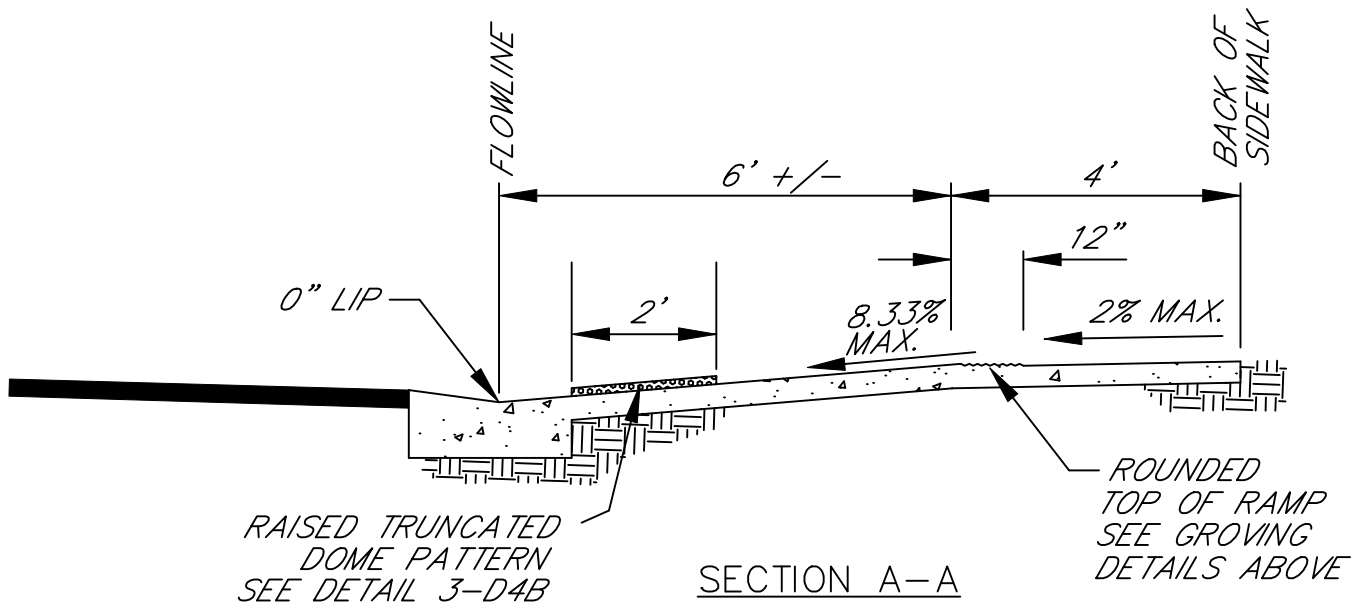
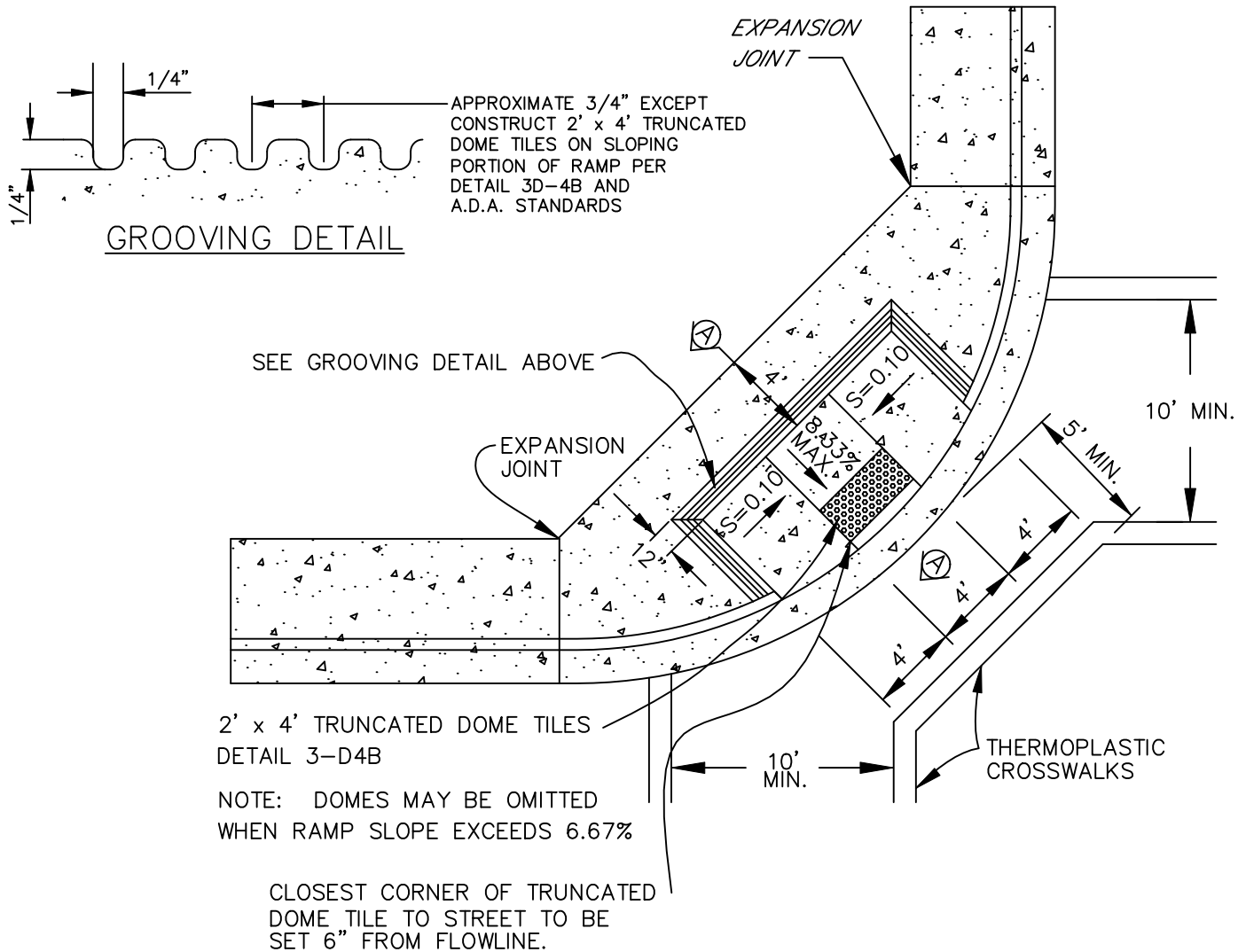
Approved by

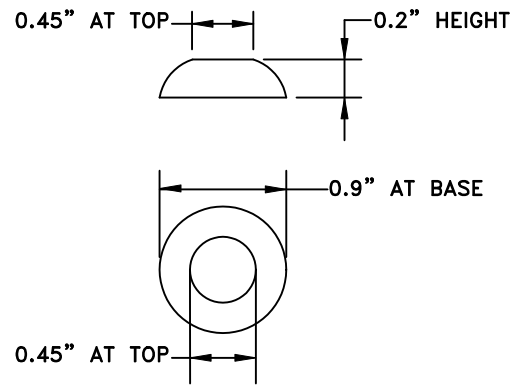
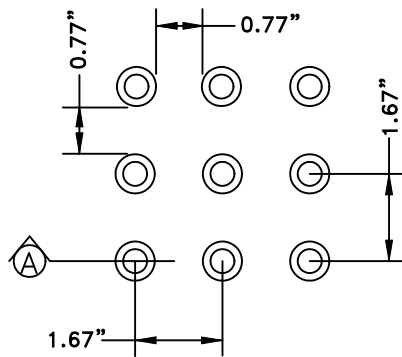
Matt McNeal

Director of Public Works

Date 01/02/2007

PLATE NO: 3-D3





SECTION A-A

RAISED TRUNCATED DOME PATTERN DETECTABLE WARNING SURFACE

NOTES:

1. DOMES MAY BE OMITTED WHEN RAMP SLOPES EXCEEDS 6.67%
2. THE LOWER END OF EACH RAMP SHALL BE FLUSH WITH GUTTER.
3. WHEN THE RAMP IS LOCATED IN THE CENTER OF THE CURB RETURN, CROSS WALK CONFIGURATION MUST BE SIMILAR TO THAT SHOWN ON THE PLAN TO ACCOMMODATE WHEELCHAIRS.
4. THE RAMP SHALL HAVE A 12" WIDE BORDER WITH 1/4" GROOVES APPROXIMATELY 3/4" O.C. (SEE GROOVING DETAIL) AT LOCATIONS INDICATED ON THE PLANS. THE SURFACE OF THE RAMP SHALL HAVE A TRANSVERSE BROOMED SURFACE TEXTURE ROUGHER THAN THE SURROUNDING SIDEWALK EXCEPT WHEN LOCATED IN THE CENTER OF CURB RETURN.
5. THE RAMPS SHALL HAVE TRUNCATED DOME TILES AS DETECTABLE WARNINGS AT THE END OF THE RUNNING SLOPE OF THE RAMP, AS INDICATED IN THE PLANS AND SPECIFICATIONS.
6. COLOR SPECIFICATIONS: AT LEAST 70% VISUAL CONTRAST OF LIGHT-ON-DARK OR DARK-ON-LIGHT WITH ADJACENT WALKING SURFACES SHALL BE PROVIDED USING THE FOLLOWING FORMULA:

$$\text{CONTRAST} = [(B1 - B2) / B1] \times 100$$

WHERE: B1 = LIGHT REFLECTANCE VALUE OF LIGHTER AREA (LRV)
B2 = LIGHT REFLECTANCE VALUE OF DARKER AREA (LRV)

(SEE ADAAG APPENDIX, SECTION A, 29.2 FOR MORE INFORMATION).

(ADAAG = ADA Accessibility Guidelines)



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

RAISED TRUNCATED DOME
DETAIL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

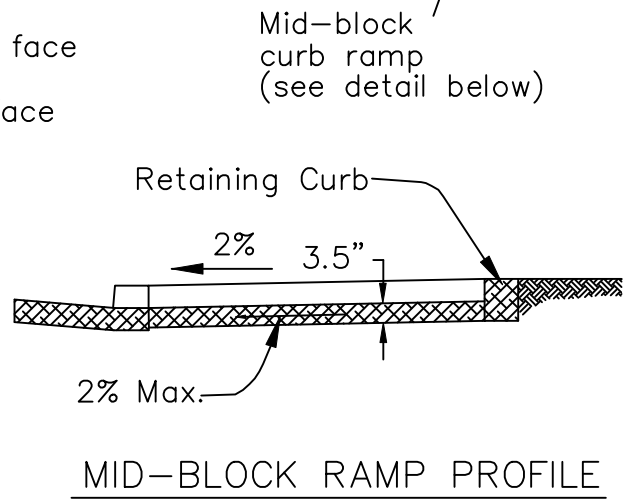
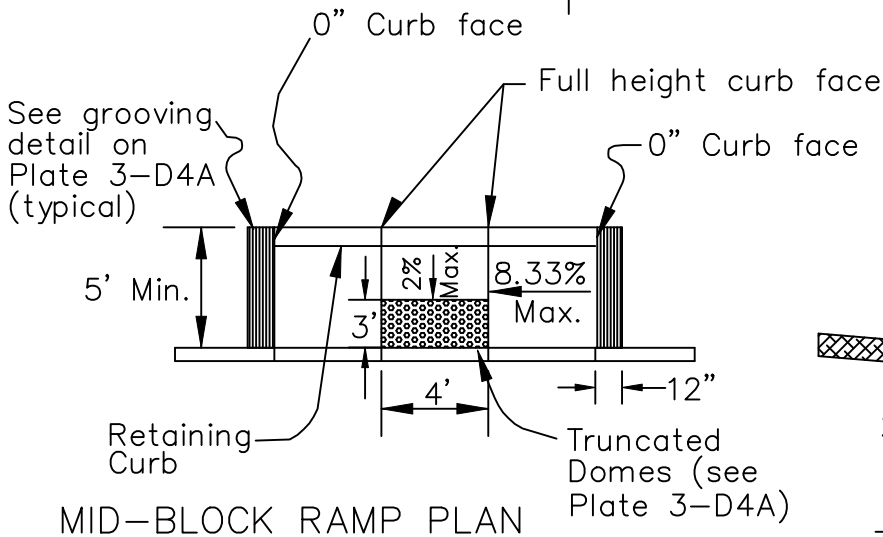
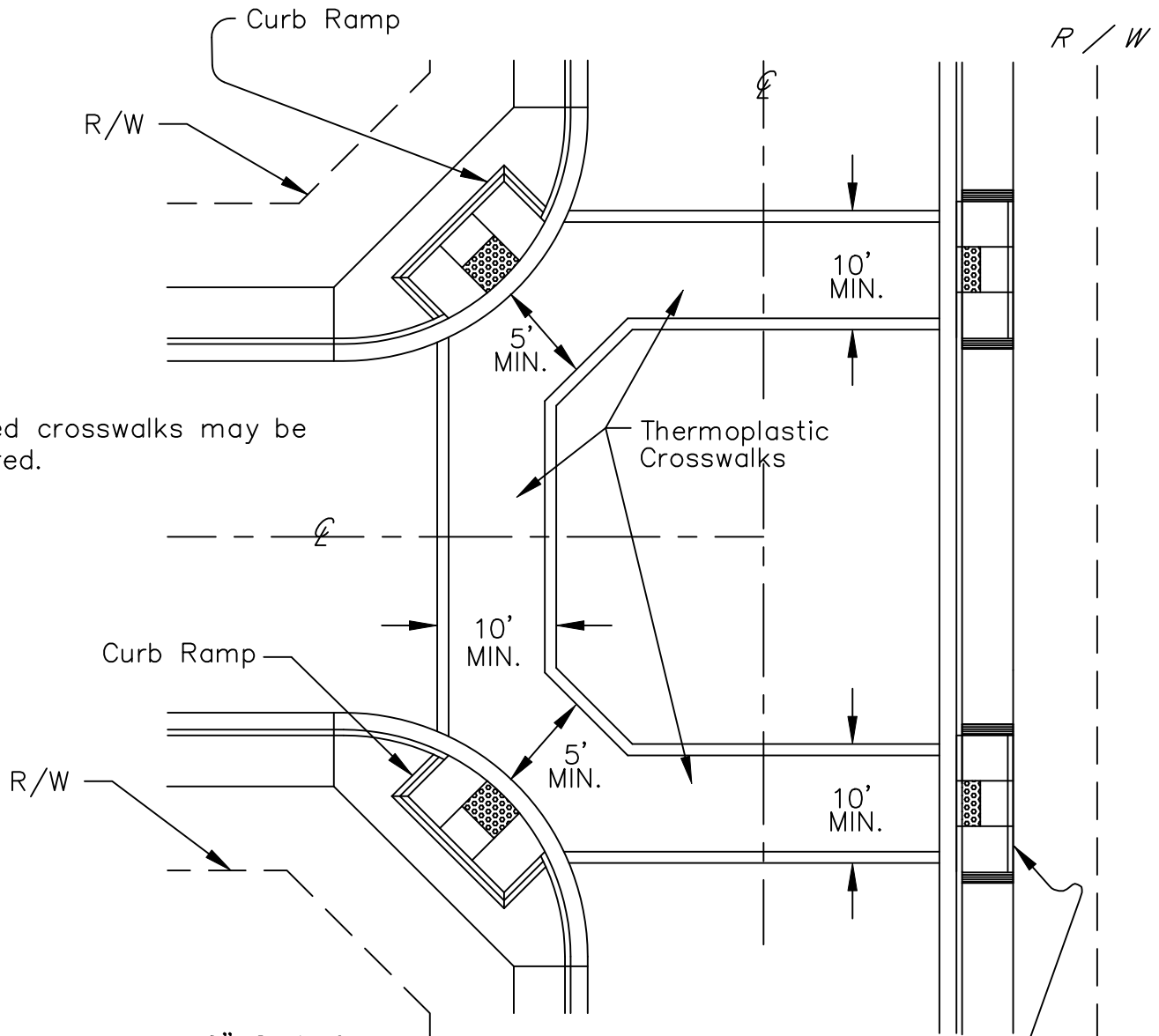
Matt McNeal

Director of Public Works

Date 01/02/2007

PLATE NO: 3-D4-B

NOTE:
Marked crosswalks may be required.

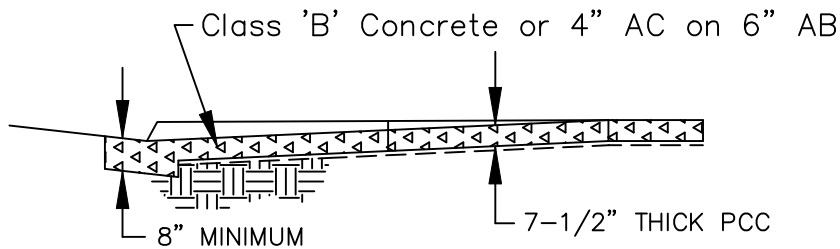


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

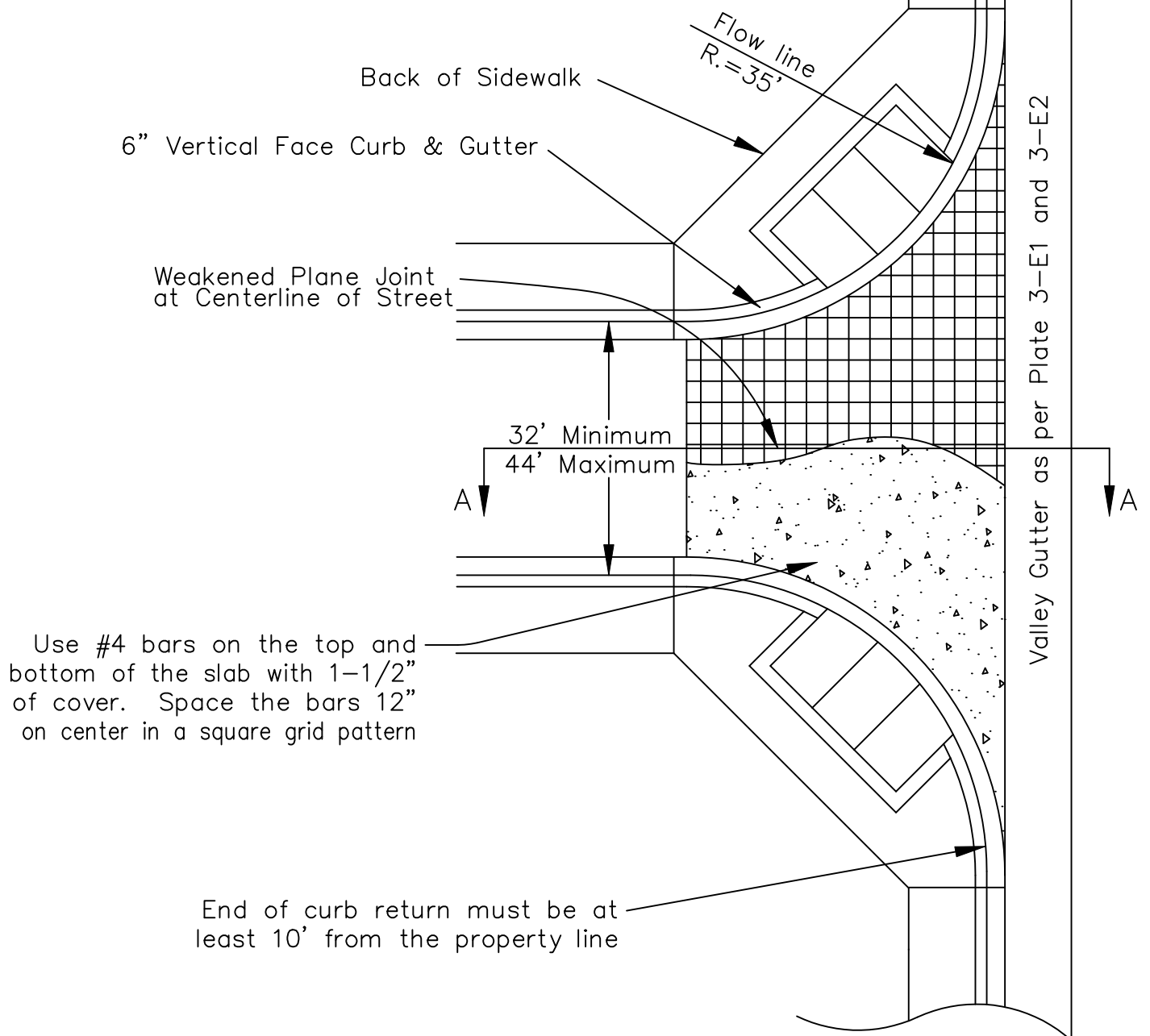
CURB RAMPS AT 3-WAY INTERSECTIONS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	<i>Mattorbech</i>
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-D5



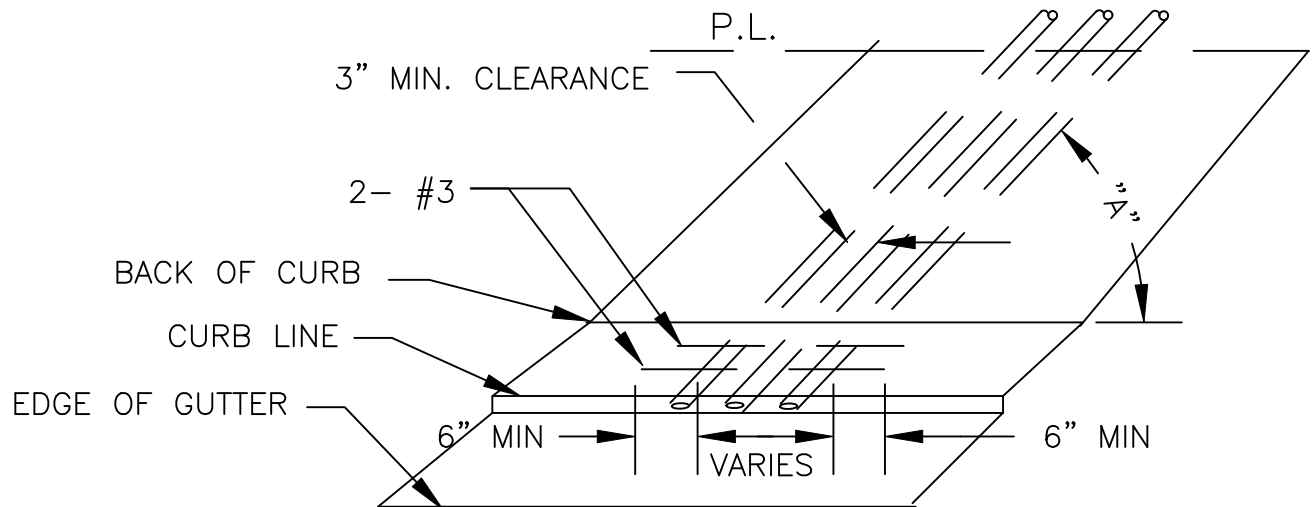
SECTION A-A



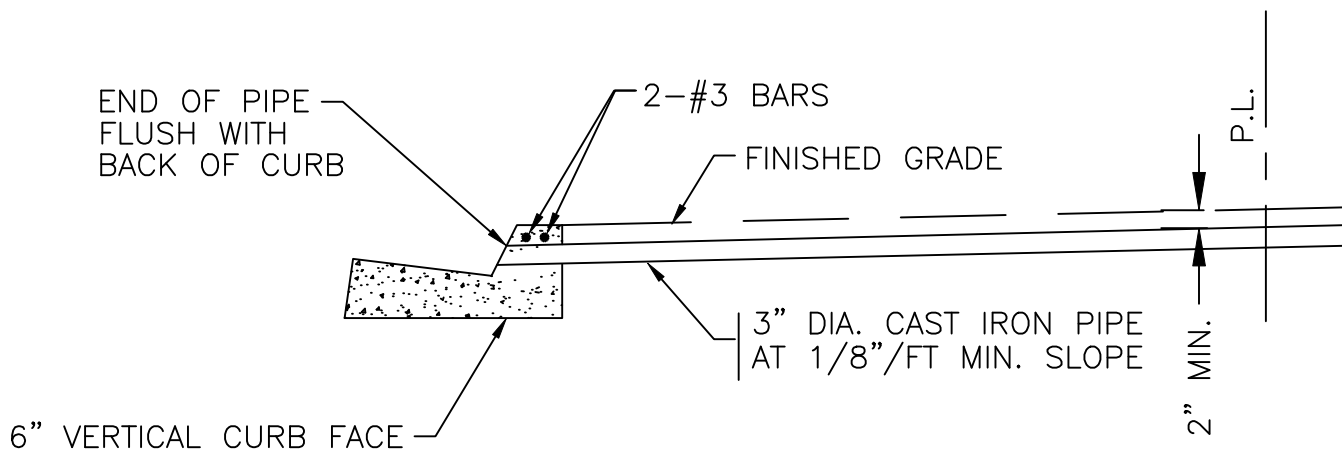
No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

DROP CURB APPROACH	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	<i>Matt Wachala</i>
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-D6



PLAN



SECTION

NOTES:

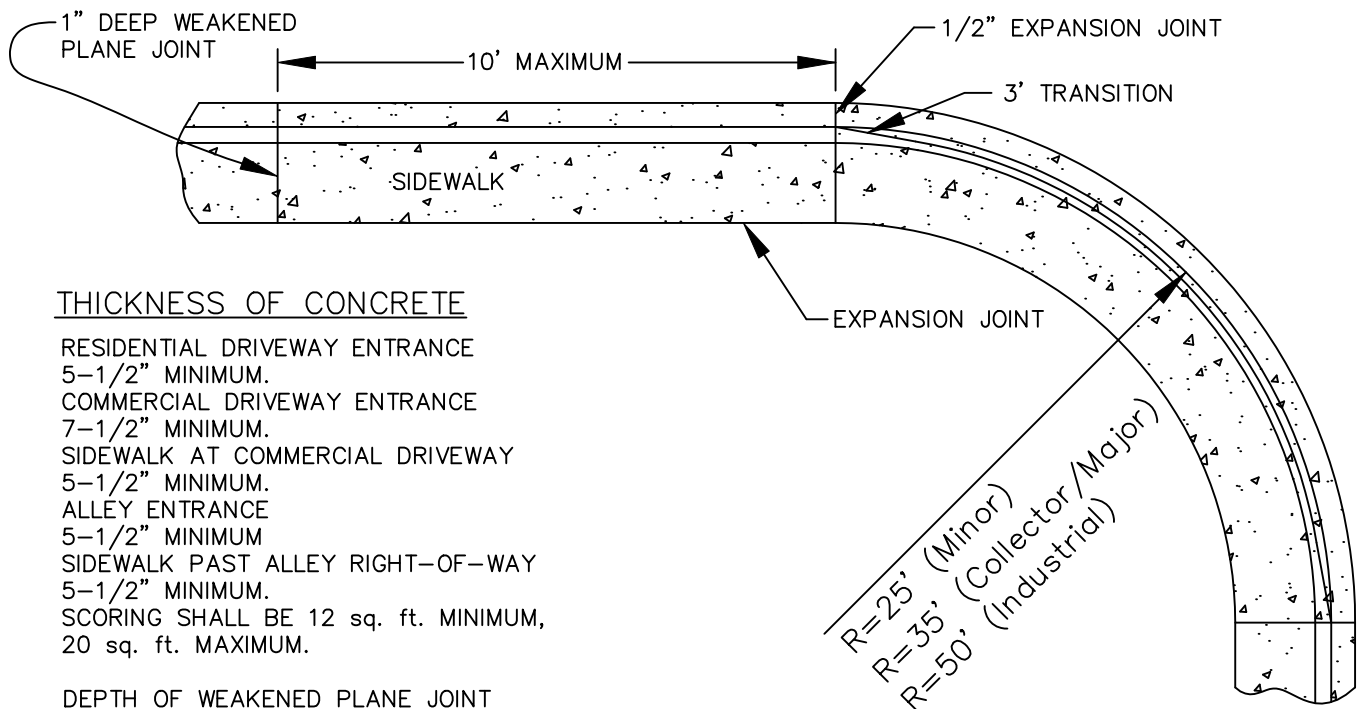
1. PIPES WILL NOT BE MAINTAINED BY THE COUNTY.
2. ANGLE "A" = 90 DEGREES WITH CURB, UNLESS OTHERWISE SPECIFIED.
3. THE NUMBER OF PIPES AT ANY LOCATION SHALL NOT EXCEED 4.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

CURB DRAIN	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-D7



THICKNESS OF CONCRETE

RESIDENTIAL DRIVEWAY ENTRANCE

5-1/2" MINIMUM.

COMMERCIAL DRIVEWAY ENTRANCE

7-1/2" MINIMUM.

SIDEWALK AT COMMERCIAL DRIVEWAY

5-1/2" MINIMUM.

ALLEY ENTRANCE

5-1/2" MINIMUM

SIDEWALK PAST ALLEY RIGHT-OF-WAY

5-1/2" MINIMUM.

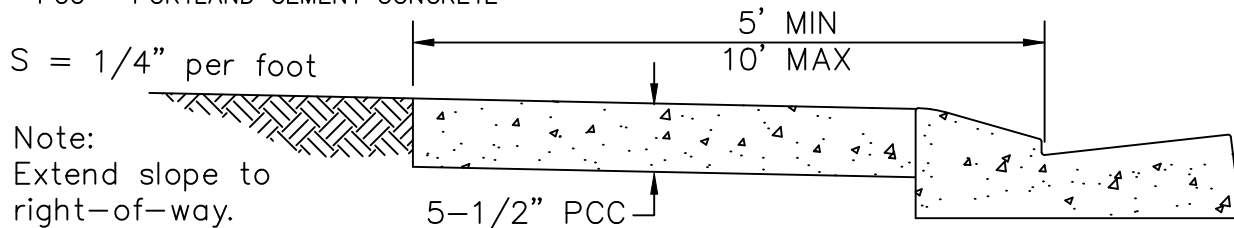
SCORING SHALL BE 12 sq. ft. MINIMUM,

20 sq. ft. MAXIMUM.

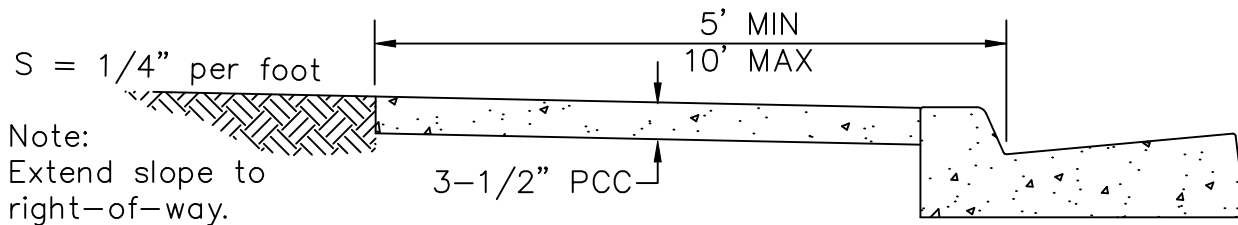
DEPTH OF WEAKENED PLANE JOINT

SHALL BE THE THICKNESS OF CONCRETE SECTION.

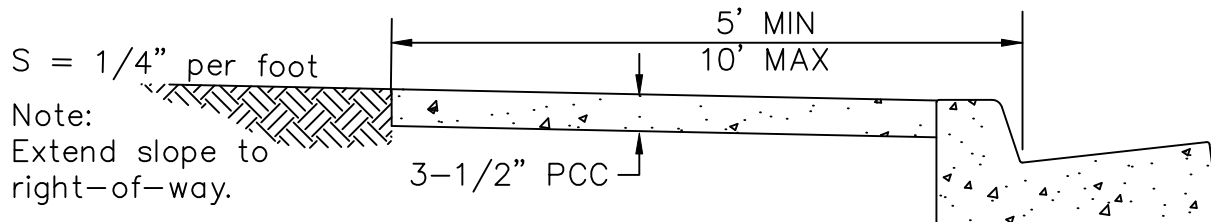
PCC = PORTLAND CEMENT CONCRETE



Drive-Over Profile



4-1/2" Vertical Face Adjacent to Mid-block Curb Inlets



6" Vertical Face Profile



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

SIDEWALK STANDARDS

COUNTY OF STANISLAUS

DEPARTMENT OF PUBLIC WORKS

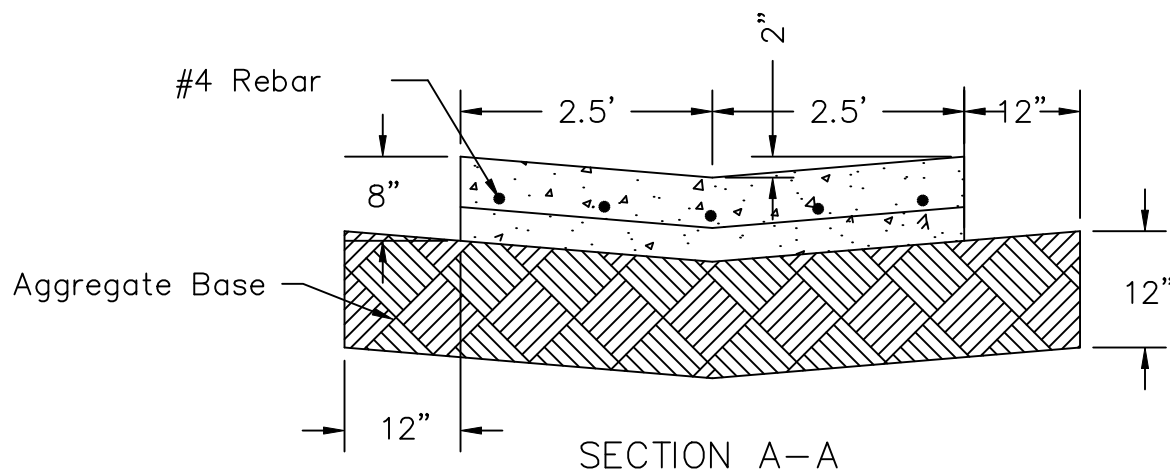
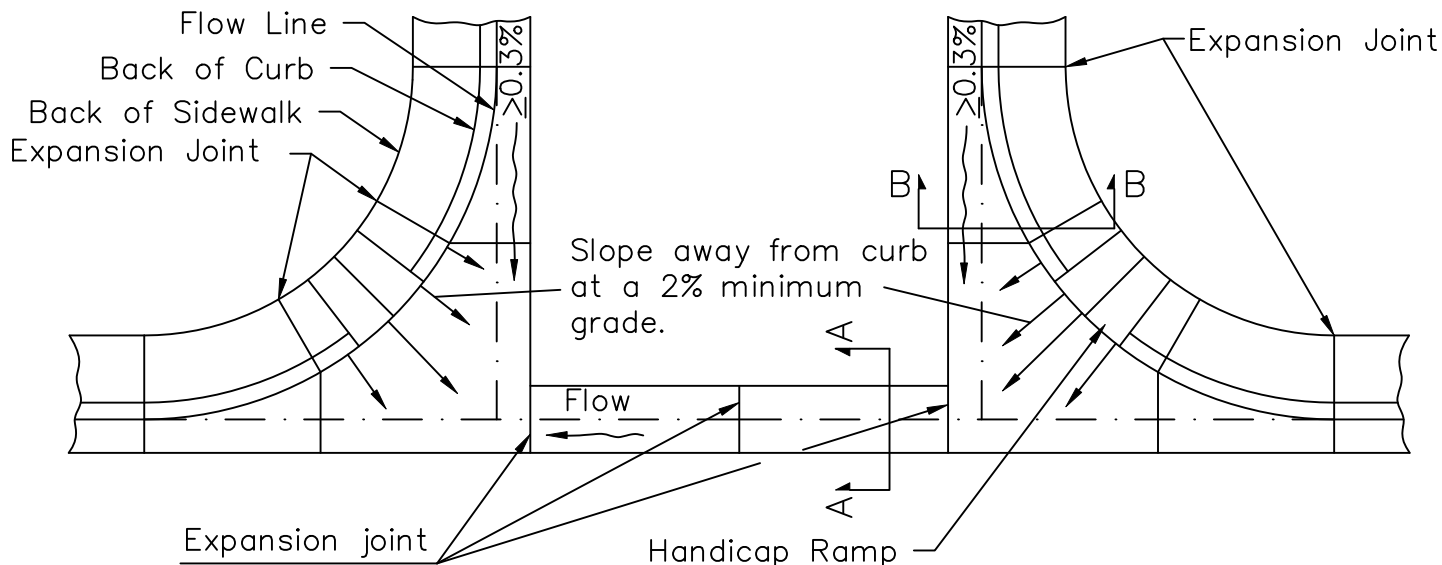
Approved by

Matt McCall

Director of Public Works

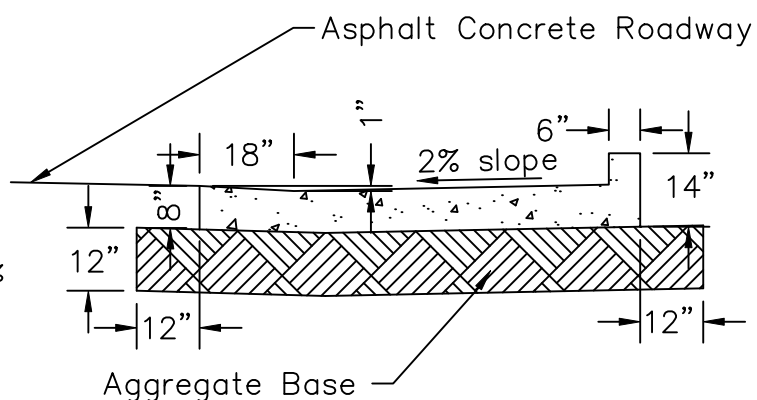
Date 01/02/2007

PLATE NO: 3-D8



NOTES:

1. ALL CONCRETE TO BE CLASS "A" UNLESS OTHERWISE APPROVED.
2. REFER TO PLATE 3-E2 FOR SPECIFICATIONS ON REINFORCEMENT.
3. THIS CONSTRUCTION PERMITTED ONLY WITH CROSS SLOPE OF INTERSECTION MORE THAN 0.3% AND ONLY WITH APPROVAL OF THE ENGINEER.
4. A EXPANSION JOINT IS REQUIRED AT THE CENTERLINE OF THE STREET.
5. A SEPARATE CONCRETE PAD IS REQUIRED WHEN VALLEY GUTTER IS POURED HALF AT A TIME.



SECTION B-B



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

VALLEY GUTTER STANDARD

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

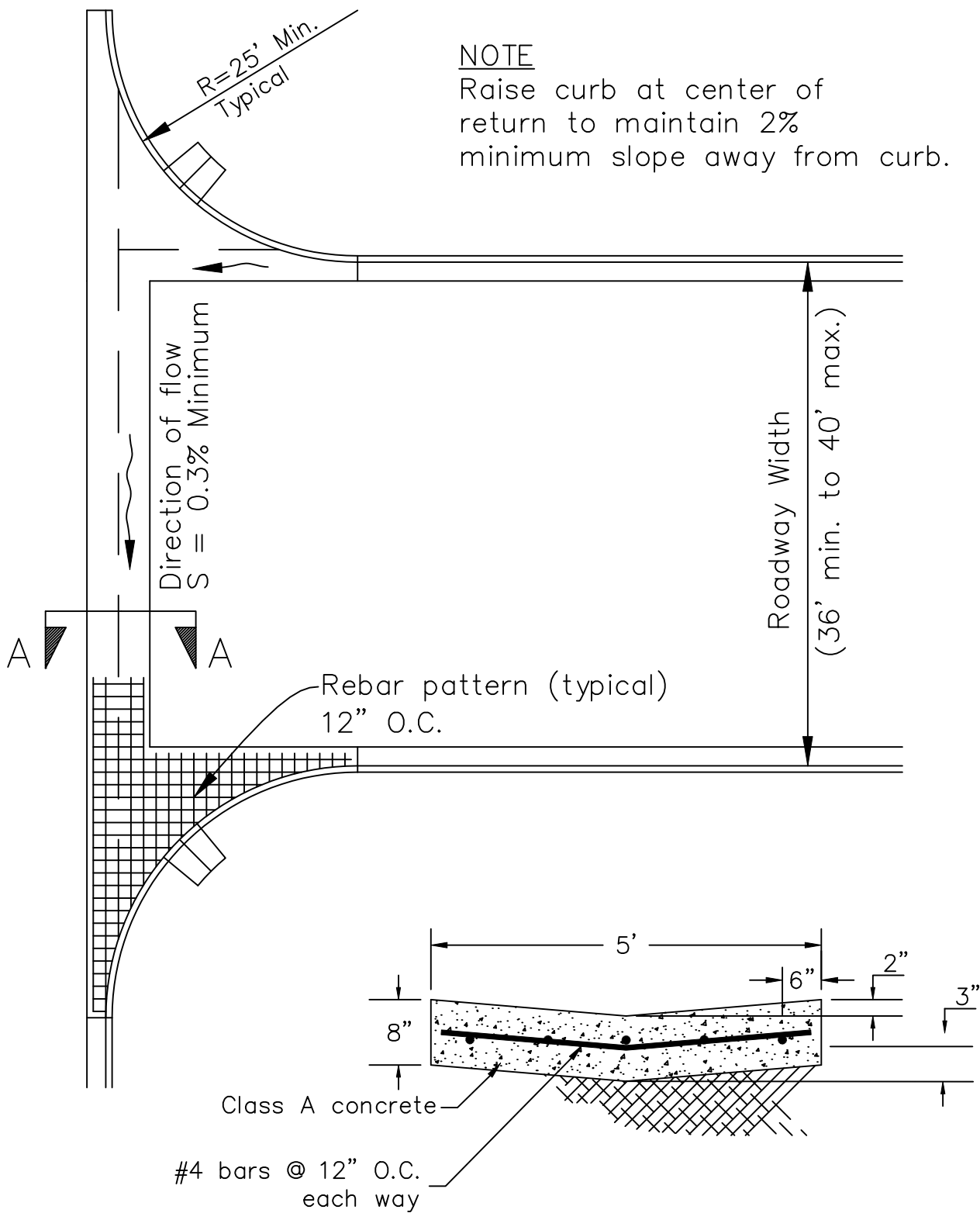
Approved by

Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 3-E1

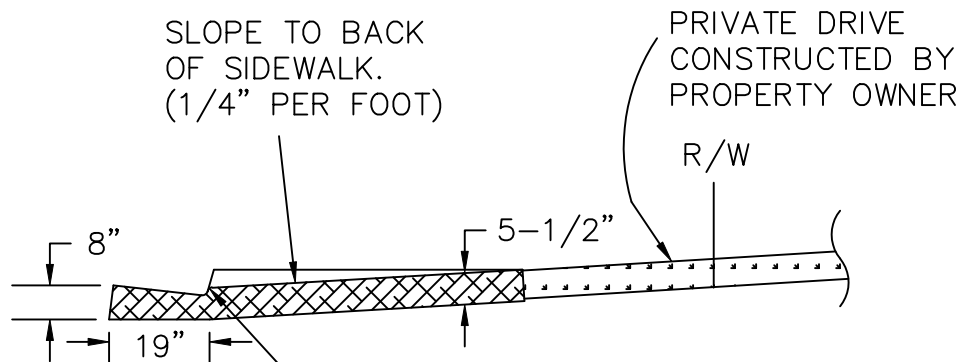


No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

REINFORCEMENT FOR VALLEY GUTTER

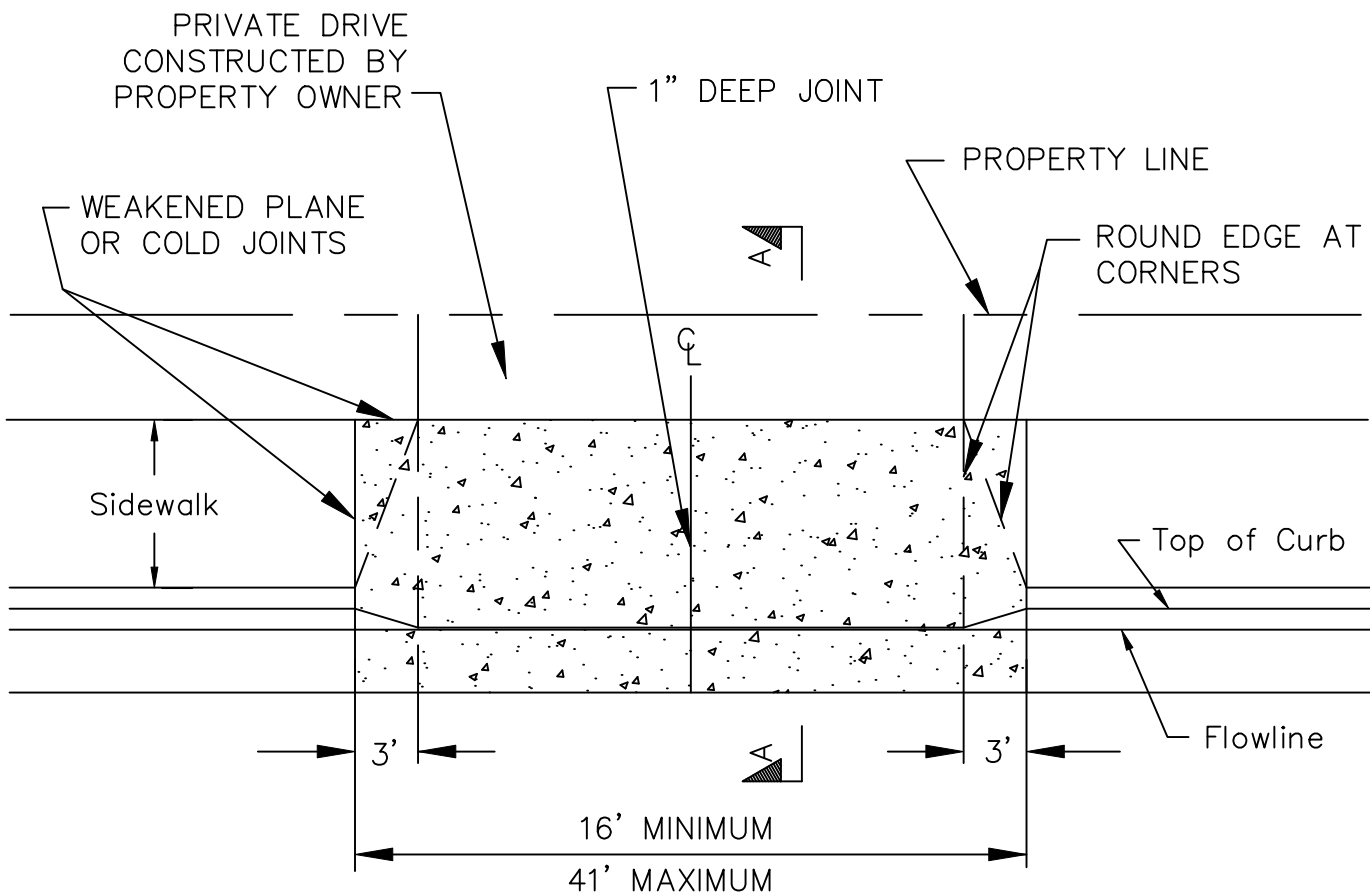
COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by		
Director of Public Works		
Date	01/02/2007	
PLATE NO:	3-E2	



1 1/2" RISE (for DRIVE OVER CURB)
1/4" RISE (for 4" AND 6" CURB)

SECTION A-A



NOTES:

1. UNSUITABLE SOIL SHALL BE REMOVED AND REPLACED WITH SAND.
2. NON-MONOLITHIC DRIVE APPROACHES MAY BE CONSTRUCTED WHERE DEPRESSED CURB EXISTS OR WHERE CURB IS PLACED WITH A SLIP FORM MACHINE. DOWELS OR KEY SHALL BE USED IF NON-MONOLITHIC.
3. RESIDENTIAL DRIVEWAYS SHALL BE PLACED A MINIMUM OF 10 FEET FROM CURB RETURNS.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

RESIDENTIAL DRIVE APPROACH

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

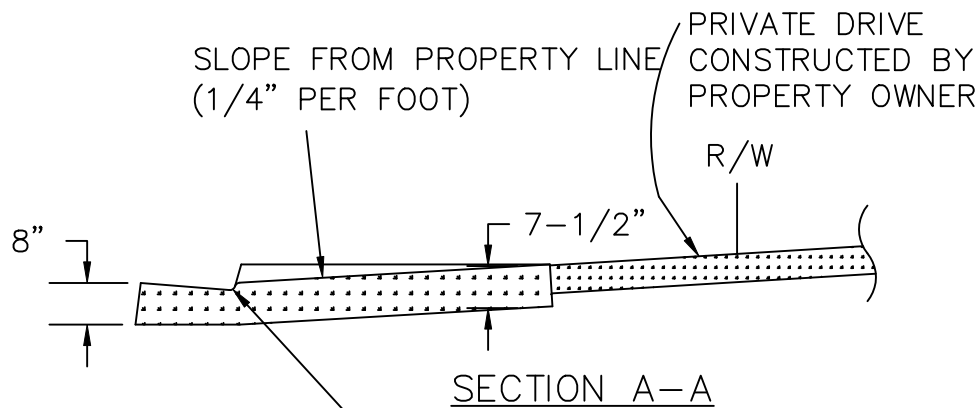
Approved by

Matt McCall

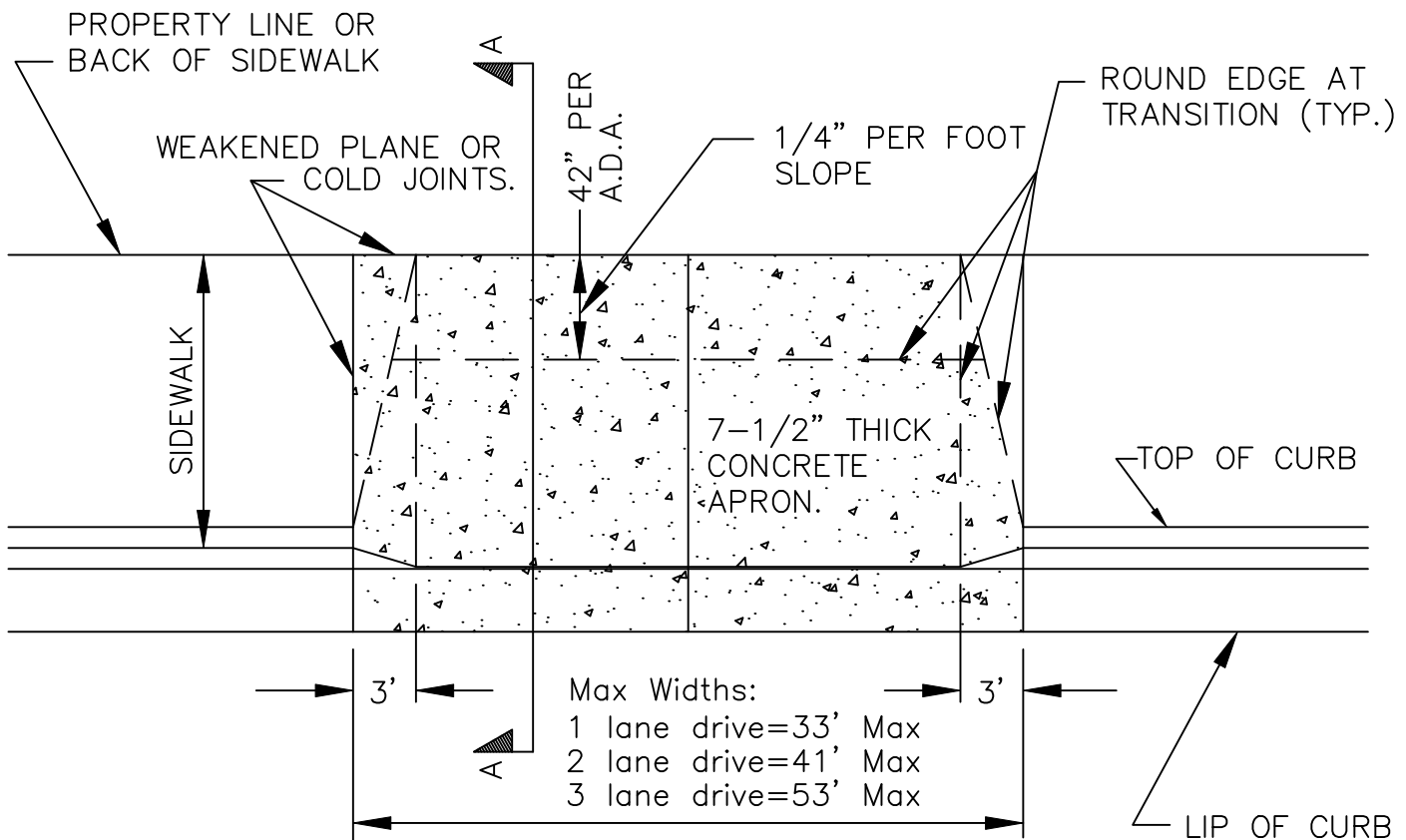
Director of Public Works

Date 01/02/2007

PLATE NO: 3-F1



1 1/2" RISE (for DRIVE OVER CURB)
1/4" RISE (for 4" AND 6" CURB)



NOTES:

1. 6X6X10 wire mesh required.
2. Unsuitable soil shall be removed and replaced with sand.
3. Non-monolithic drive approaches may be constructed where depressed curb exists or where curb is placed with a slip form machine. Dowels or keys shall be used where non-monolithic.
4. Commercial driveways that accommodate truck traffic or buildings with roll up doors shall have #4 rebar installed 12" O.C. in both directions.
4. Commercial driveways on major or collector roads shall be constructed in accordance to Plate 3-F3.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

COMMERCIAL DRIVEWAY APPROACH

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

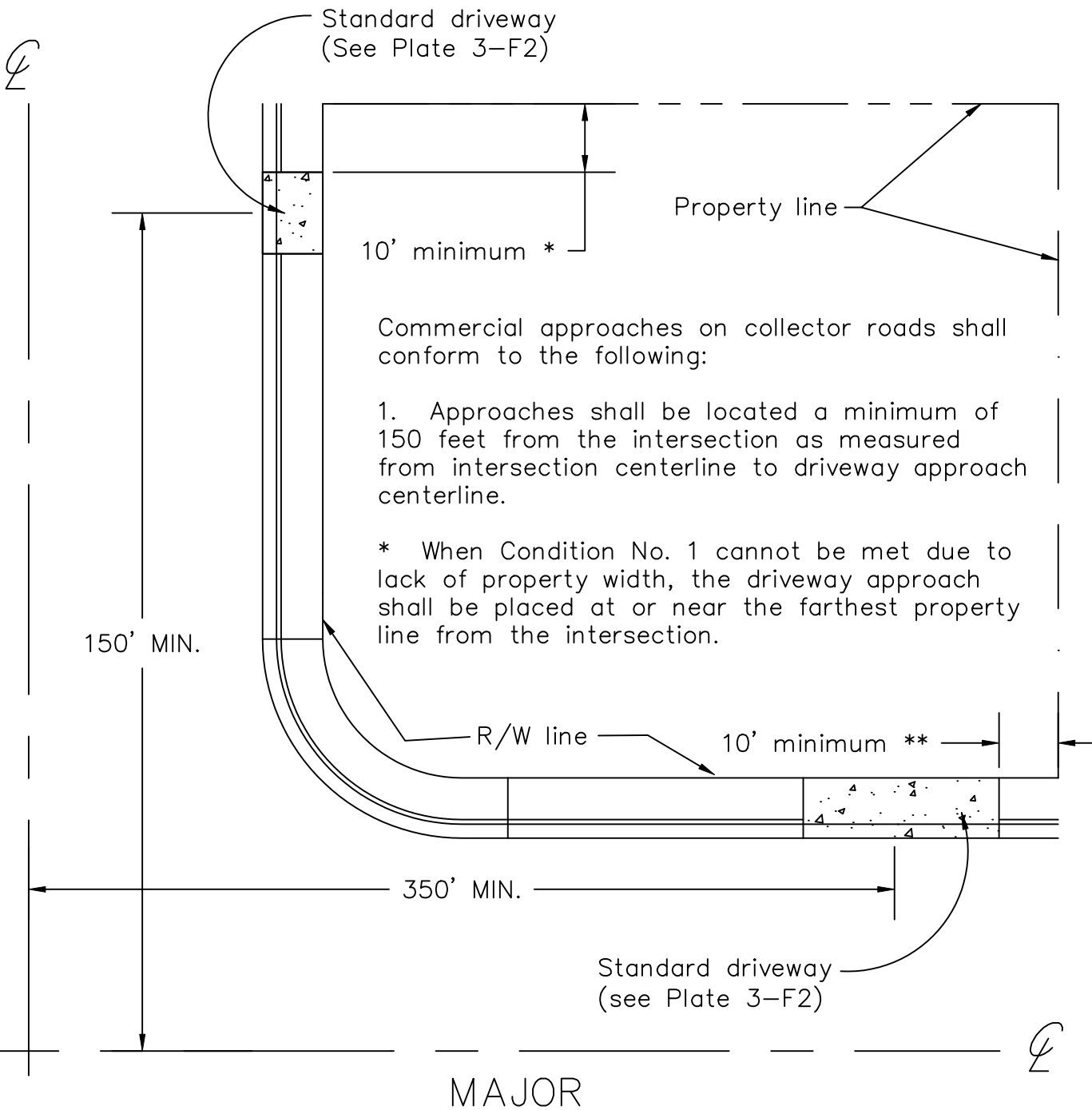
Matt Wachal

Director of Public Works

Date 01/02/2007

PLATE NO: 3-F2

COLLECTOR



Commercial driveway approaches on major roads shall conform to Section 3.17 and to the following minimum requirements:

- Approach shall be located a minimum of 350 feet from the intersection as measured from intersection centerline to approach centerline.
- ** When condition No. 1 cannot be met due to lack of property width, the approach shall be placed at or near the farthest property line from the intersection and a curbed, full median extending 100 feet past the approach shall be installed by the Developer at the Developers' expense.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

COMMERCIAL DRIVEWAY REGULATIONS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

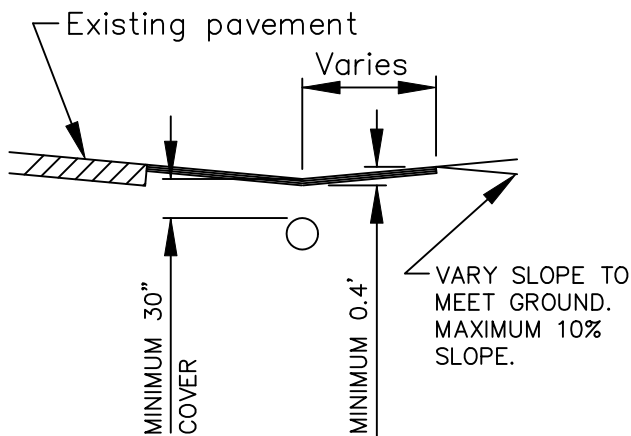
Approved by

Matt Cochran

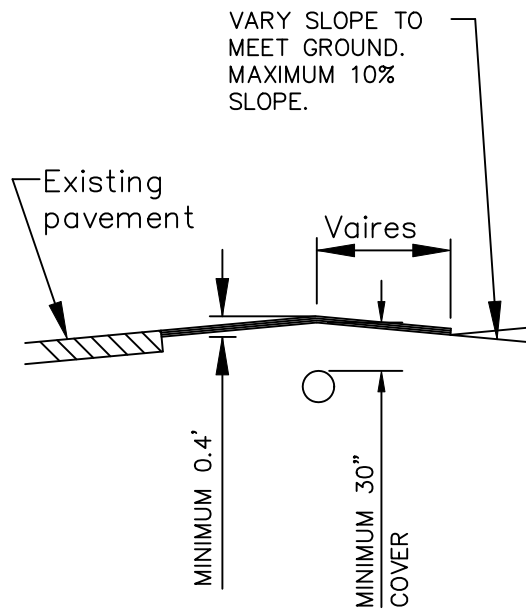
Director of Public Works

Date 01/02/2007

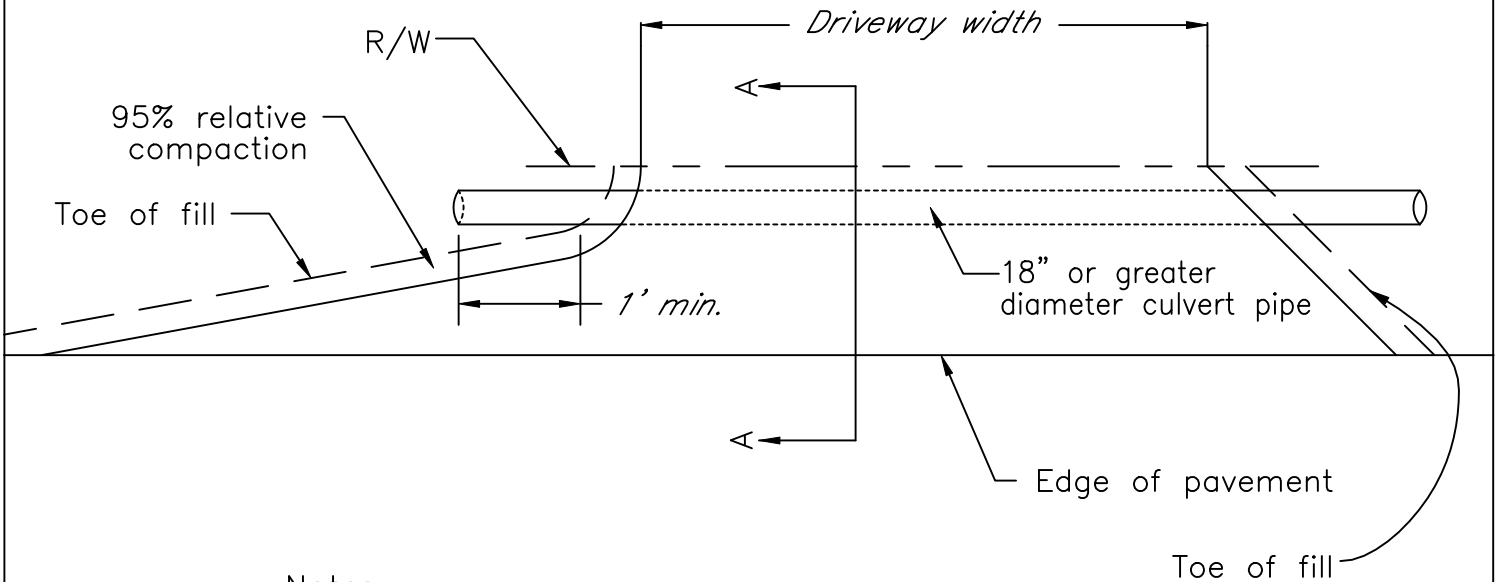
PLATE NO: 3-F3



SECTION A-A



SECTION A-A



Notes:

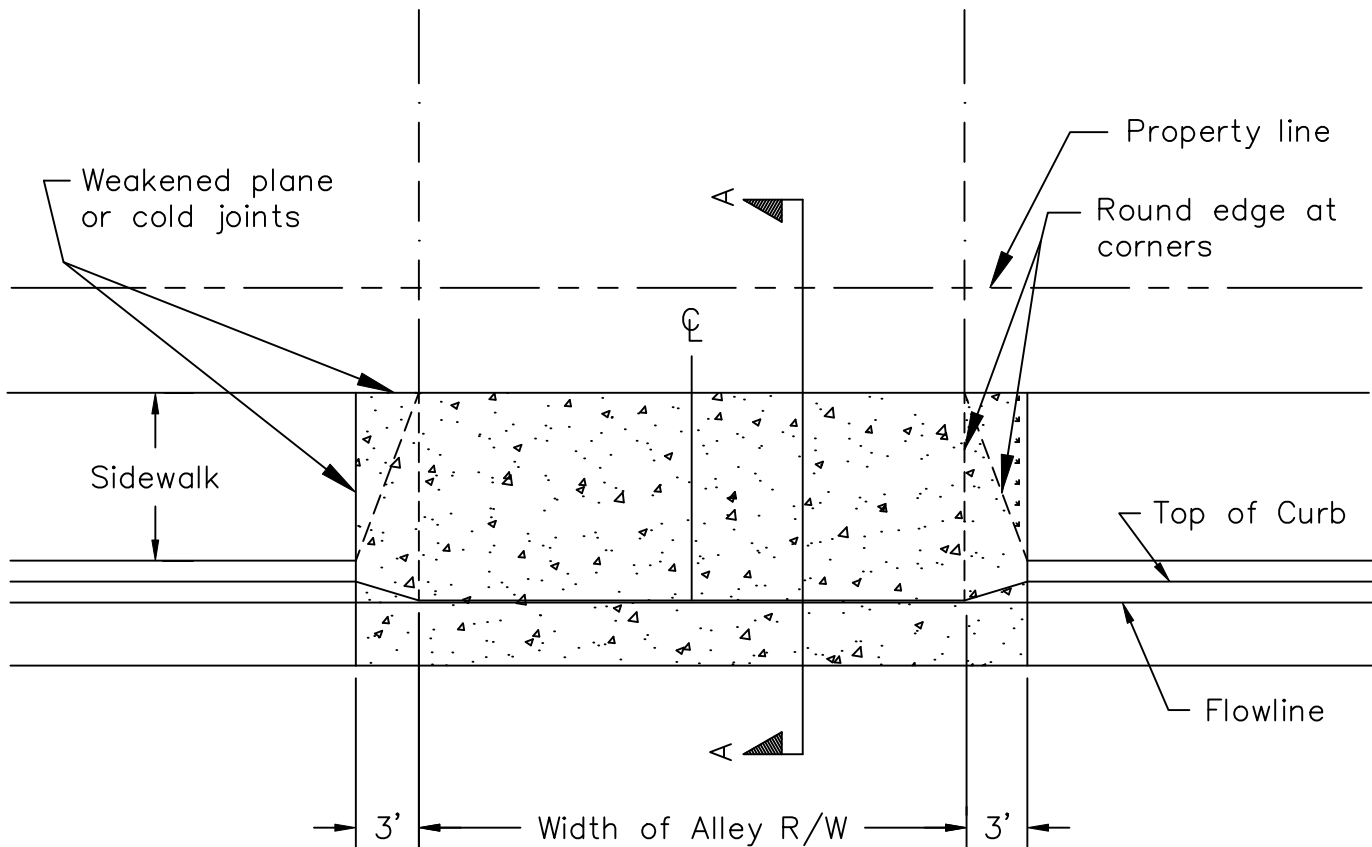
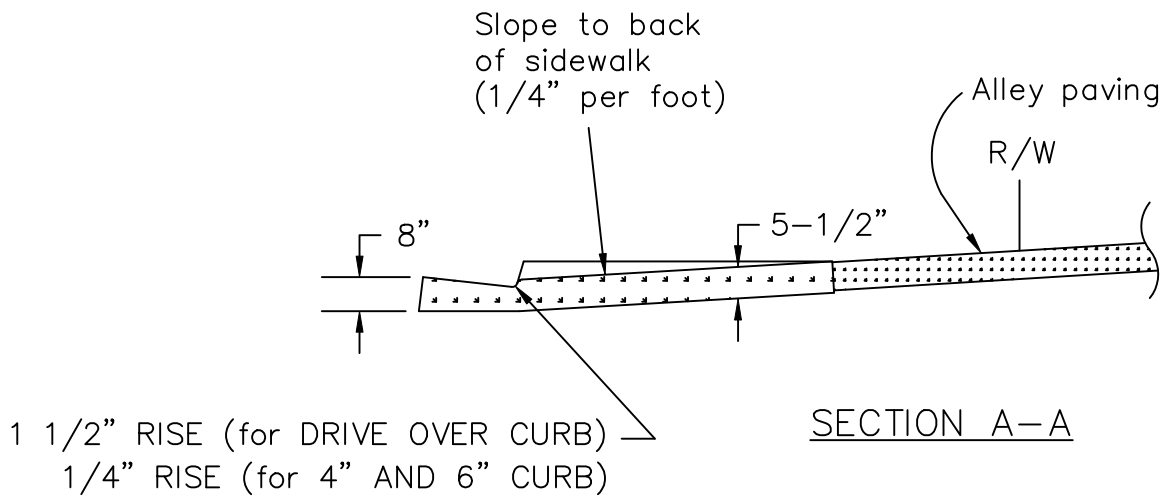
1. Culverts shall be placed to maintain flow.
2. Set pipe in line with existing ditch at elevation that it will not disrupt natural drainage.
3. Use 12 gauge minimum for all metal pipe or HDP plastic pipe.
4. For RCP 24" or smaller, use a minimum Class 3 RCP.
5. For pipe diameter greater than 24" use Class 4 or better.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

CULVERT PLACEMENT UNDER RURAL DRIVE APPROACH	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-F5



NOTES:

1. Unsuitable soil shall be removed and replaced with sand.
2. 6X6X10 wire mesh required throughout approach.
3. One-inch deep weakened plan shall be installed at centerline of approach.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

RESIDENTIAL ALLEY APPROACH

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

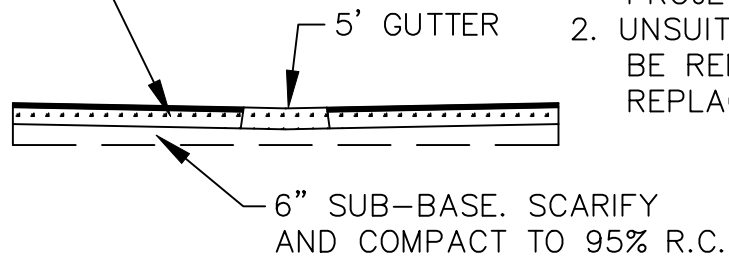
PLATE NO: 3-G1

2" AC OVER 6" AB OR
5 1/2" CONCRETE WITH
6X6X10 WIRE MESH

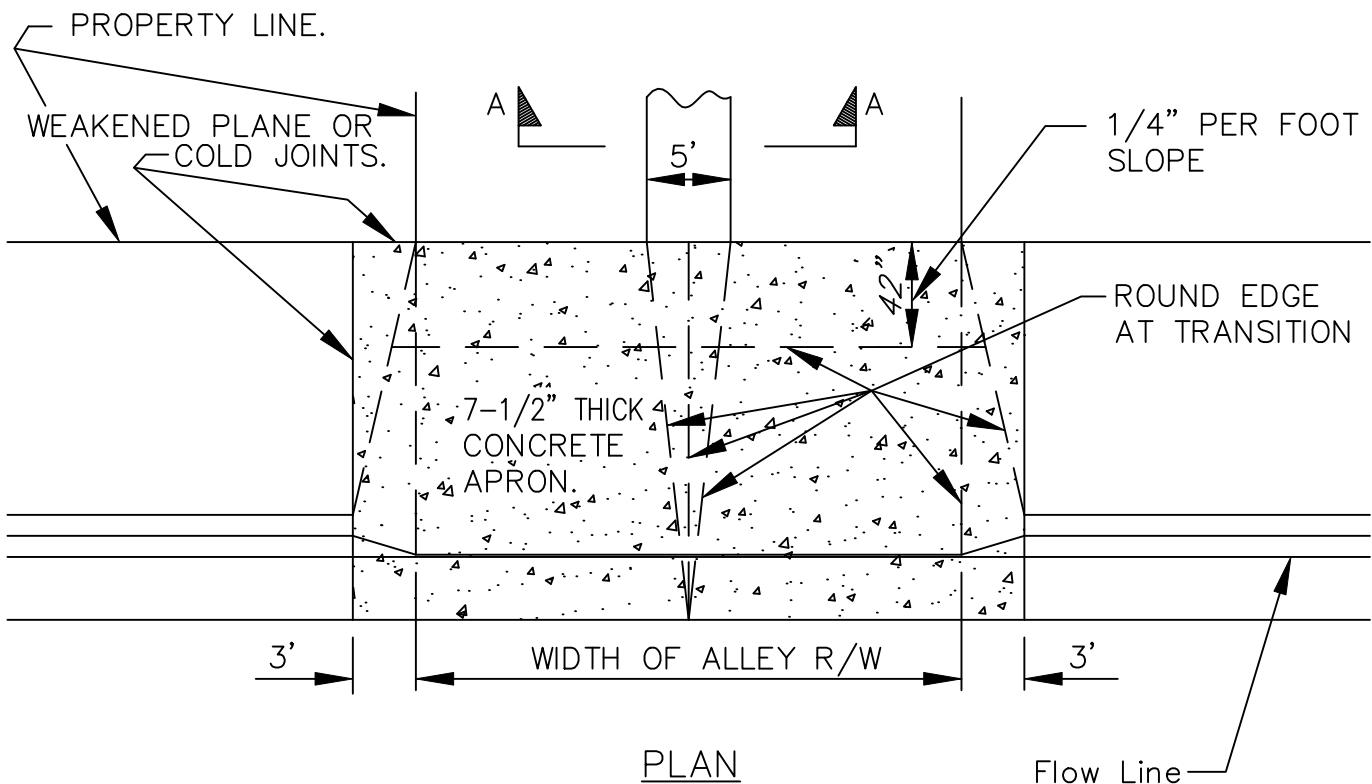
SECTION A-A

NOTES:

1. 6X6X10 WIRE MESH
REQUIRED THROUGHOUT
PROJECT.
2. UNSUITABLE SOIL SHALL
BE REMOVED AND
REPLACED WITH SAND.



ALLEY SECTION



PLAN



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

COMMERCIAL ALLEY APPROACH

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

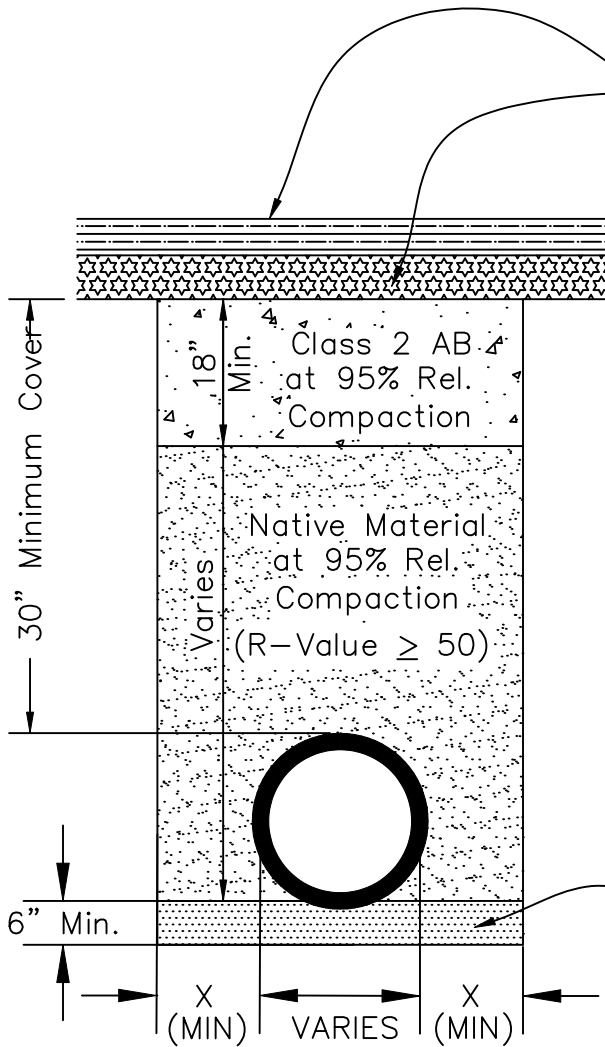
Matt Wachal

Director of Public Works

Date 01/02/2007

PLATE NO: 3-G2

Replace Asphalt & Aggregate Base with existing street structural section.



All pipes, including, but not limited to storm, water, gas, sewer, culverts, and laterals shall be a minimum of 30" below sub grade at edge of pavement.

Trenches 5 ft or more in depth must be shored per or protected in accordance with Cal Osha and other State and Federal safety codes, regulations, and ordinances.

Use a sand bedding depth of at least 6" for stable soil foundations, 12" above rock foundations, and 18" or more above unstable foundations.

Pipe Size	$\leq 33"$	36"–54"	60"–72"
Minimum X	10"	12"	18"

NOTES

- Provide 95% Compaction in 8" layers for the entire depth of trench.
- Ponding or jetting will not be allowed.
- Compaction tests shall be performed by Contractor and be submitted to (and approved) by County inspector prior to paving, using Caltrans Test Method No. 216 and No. 231.
- If soil R-value is less than 50, use Class 2 AB versus native material.
- R-value test reports must be provided at trench locations.

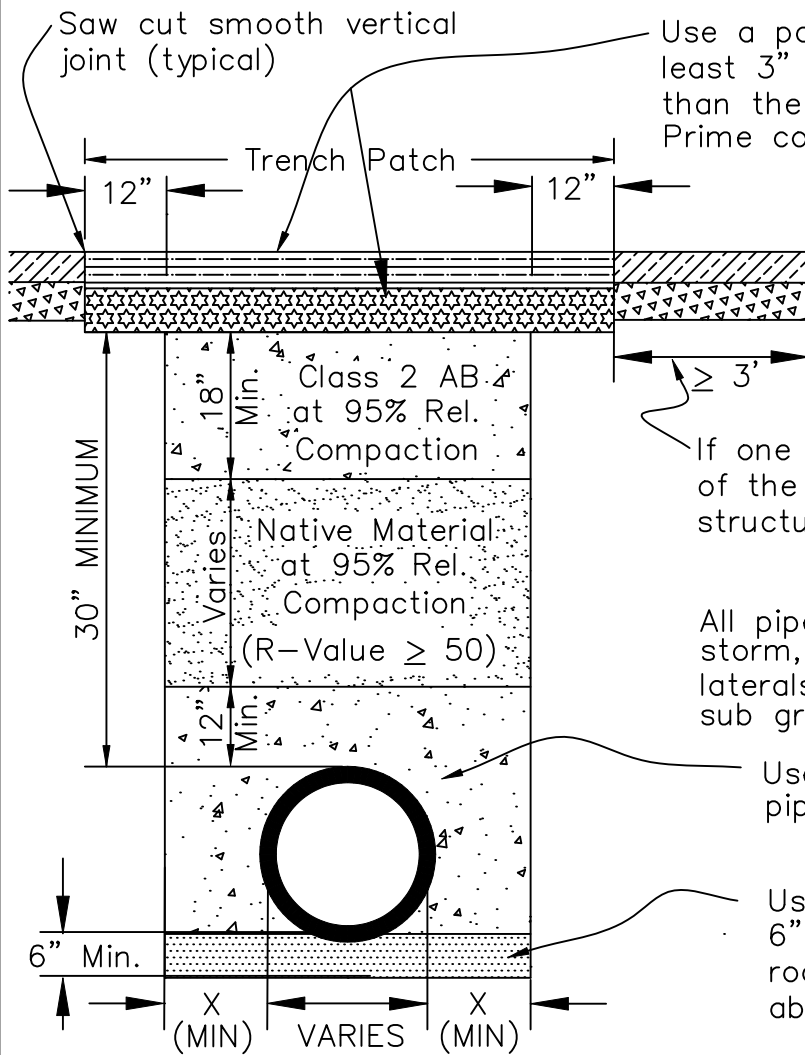


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TRENCHING REQUIREMENTS IN NEW STREETS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-H1



Trenches 5 ft or more in depth must be shored per or protected in accordance with Cal Osha and other State and Federal safety codes, regulations, and ordinances.

If one edge of the trench is within 3' of the edge of pavement, replace the structural section to the edge of pavement.

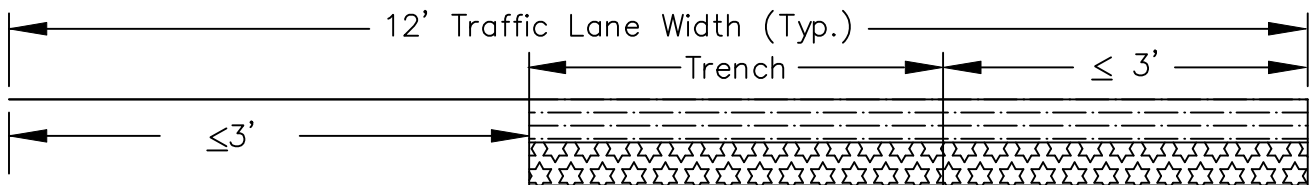
All pipes, including, but not limited to storm, water, gas, sewer, culverts, and laterals shall be a minimum of 30" below sub grade at edge of pavement.

Use crushed 3/4" rock for rigid pipe and sand for flexible pipe.

Use a sand bedding depth of at least 6" for stable soil foundations, 12" above rock foundations, and 18" or more above unstable foundations.

Pipe Size	≤ 33"	36"–54"	60"–72"
Minimum X	10"	12"	18"

Longitudinal Trenches:



NOTES:

- Provide 95% Compacting in 8" layers for the entire depth of trench.
- Ponding or jetting will not be allowed.
- If soil R-value is less than 50, use Class 2 AB versus native material.
- Compaction tests shall be performed by Contractor and be submitted to (and approved) by County inspector prior to paving, using Caltrans Test Method No. 216 and No. 231.

If the edge of the trench is ≤ 3' from the edge of the lane, then overlay the lane with 1" of AC.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TRENCHING REQUIREMENTS IN EXISTING STREETS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

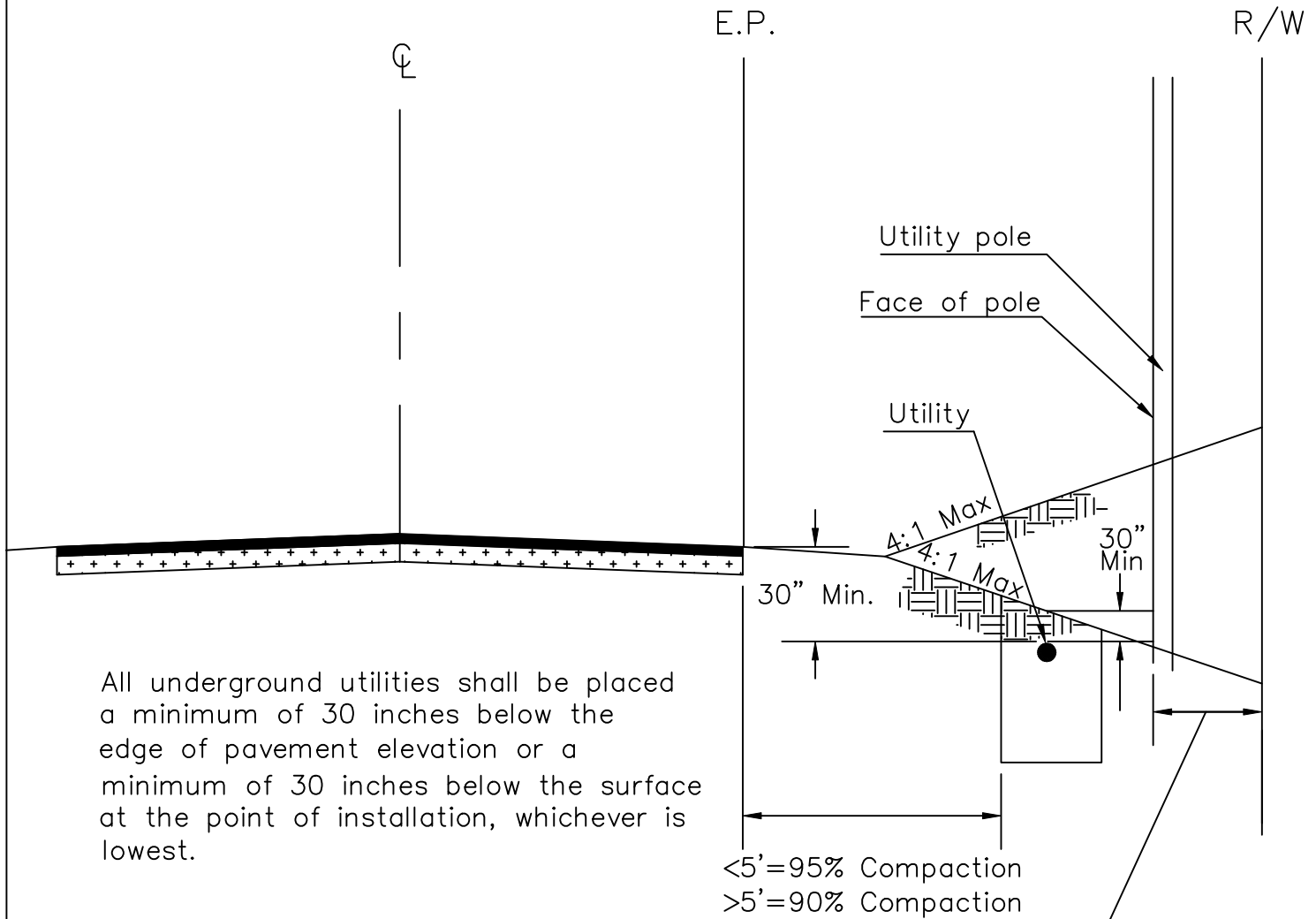
Approved by

Matthew Beckah

Director of Public Works

Date 01/02/2007

PLATE NO: 3-H2



All underground utilities shall be placed a minimum of 30 inches below the edge of pavement elevation or a minimum of 30 inches below the surface at the point of installation, whichever is lowest.

Place all above ground utilities/facilities in a public utility easement, otherwise the road side edge of the utility/facility shall be within 24" of the right-of-way.

Place all below or at grade utilities/facilities in a public utility easement, otherwise the road side edge of the utility/facility shall be within 36" of the right-of-way.

NOTE:

Where applicable, all private irrigation facilities shall be placed in the P.U.E. area or outside the R/W.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

TRENCH & POLE UTILITY
LOCATION OUTSIDE OF
PAVED ROADWAY

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

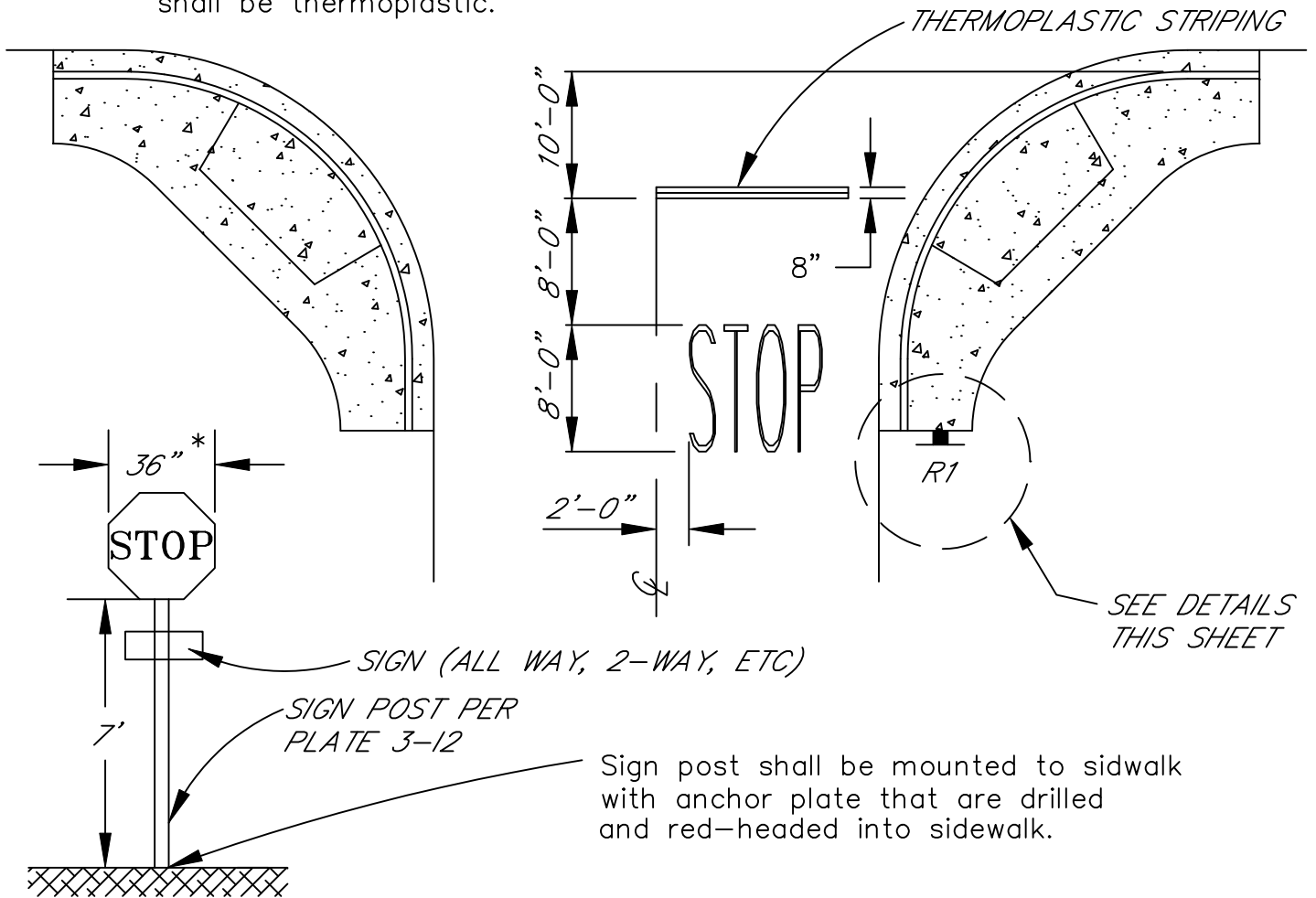
Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 3-H3

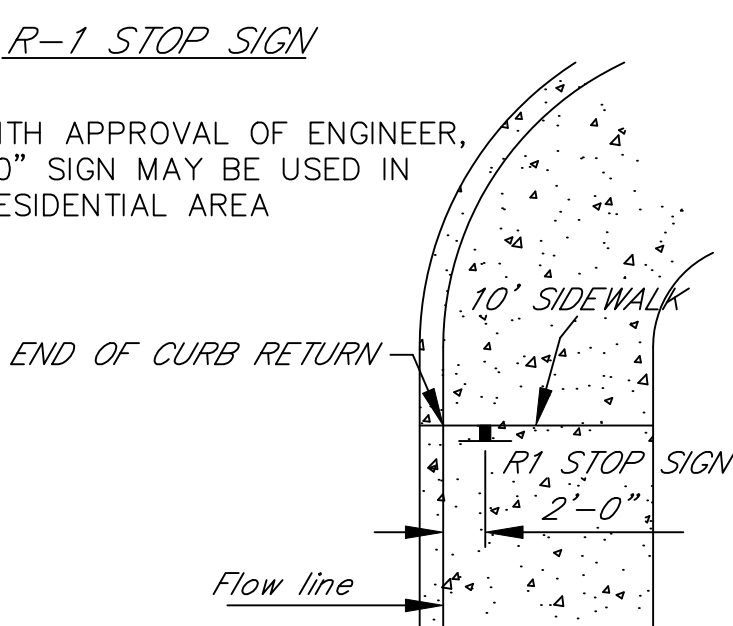
Note: All striping for centerline, edgeline, stop bar, and other pavement markings shall be thermoplastic.



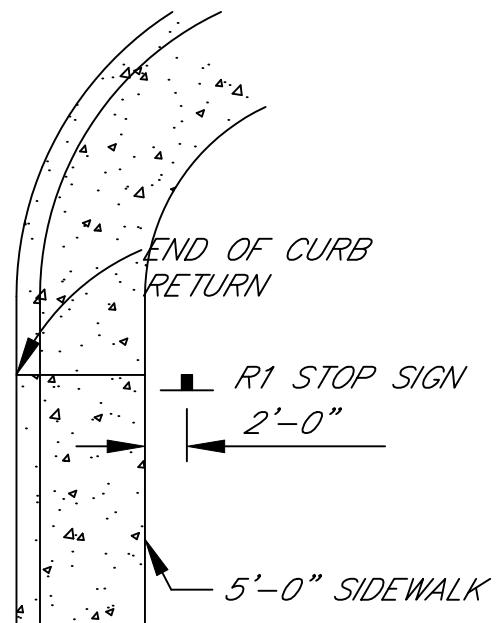
R-1 STOP SIGN

*

WITH APPROVAL OF ENGINEER, 30" SIGN MAY BE USED IN RESIDENTIAL AREA



DETAIL "A"



DETAIL "B"



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

STOP SIGN INSTALLATION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

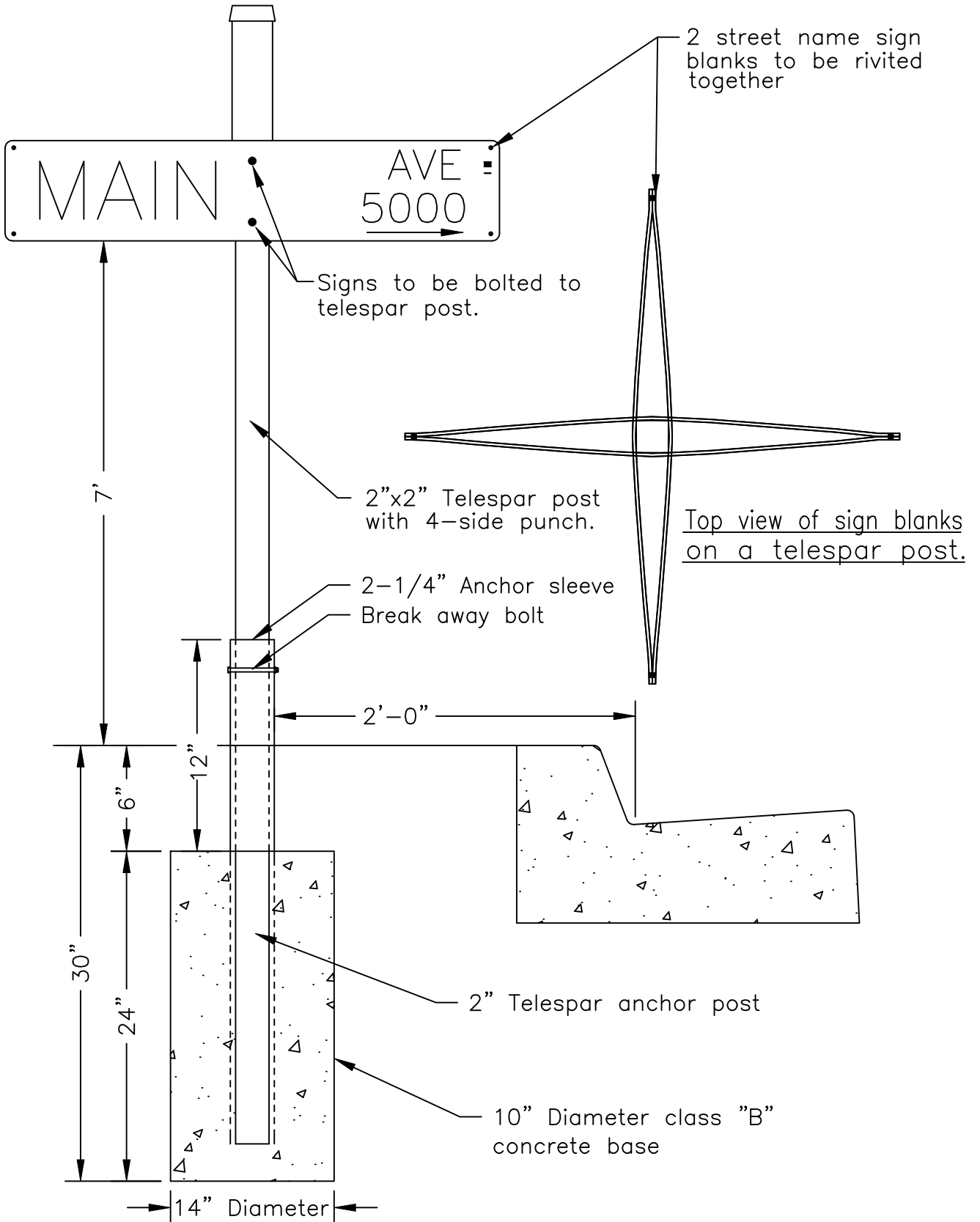
Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 3-11

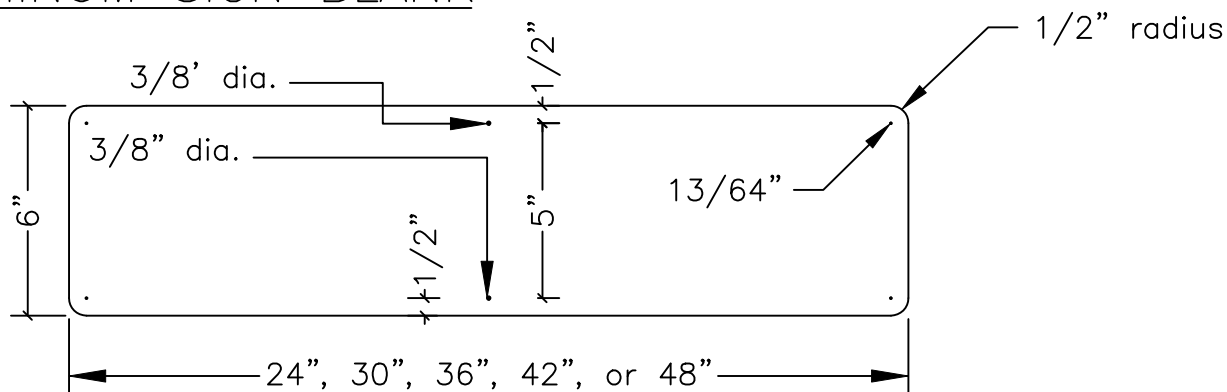


No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

SIGN POST	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	<i>Matthew Gehlbach</i>
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-12

ALUMINUM SIGN BLANK



1. All blanks to be 0.063 gauge aluminum alloy (6061-TB or 5155-H3B), degreased and treated with Aladdin 1200.
2. The sign blanks shall conform to the standard B.P.R. shapes and corner radii, except that hole punching, or drilling, shall conform to the hole sizes and locations shown hereon. Each corner shall have a 13/64" diameter hole.
3. All blanks shall be 6" high by 24", 30", 36", 42", or 48" wide. The 3/8" holes shall be centered on the vertical centerline of each blank.

NAME FACE



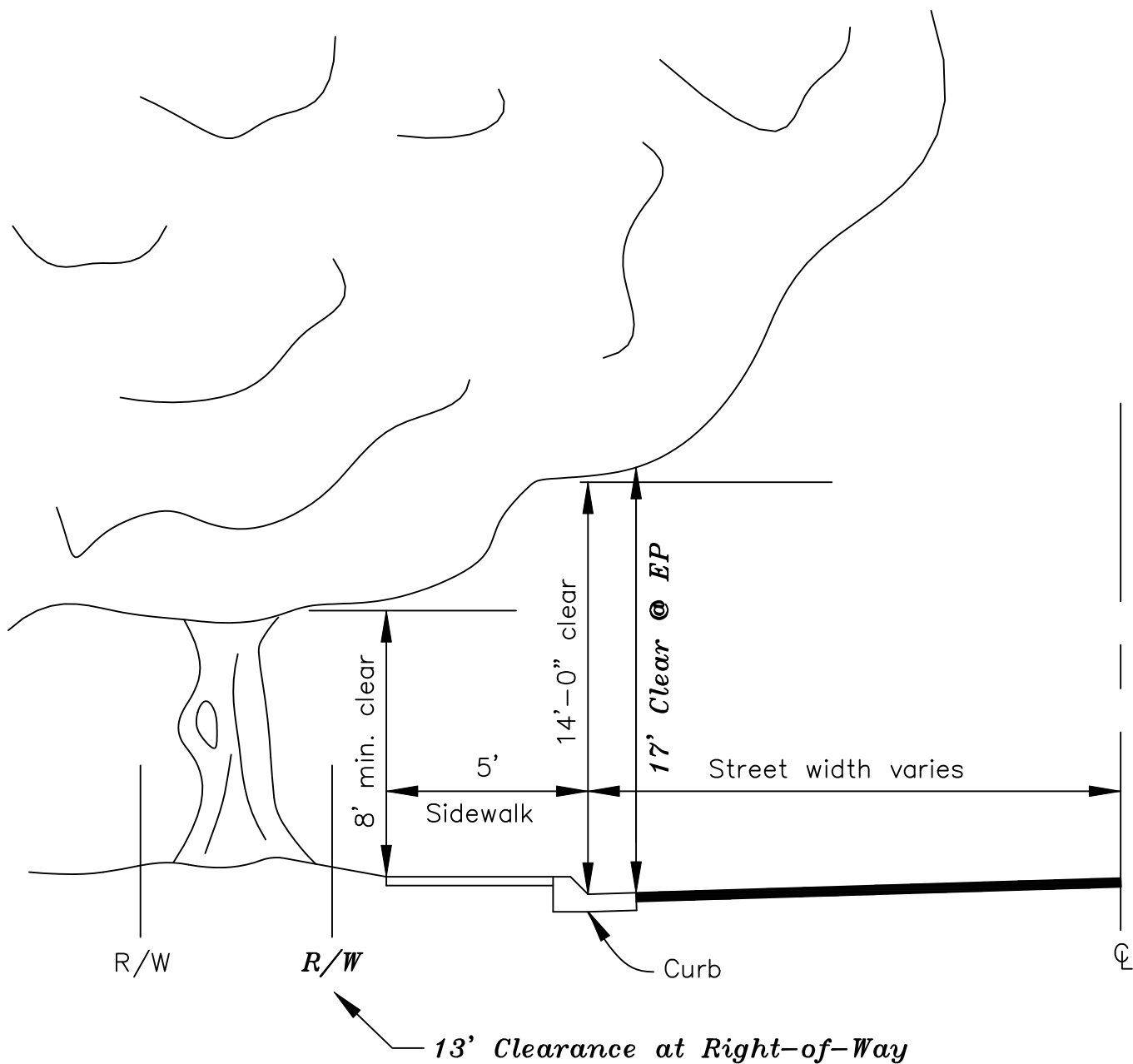
1. All faces shall be "Engineer Grade" reflective sheeting with reflective silver copy on reflective green background.
2. Each sign face shall have sufficient spacing provided to permit application of a 5-digit number.
3. Numerical street names shall be spelled out instead of using the numeral letter type abbreviated legends.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

STREET NAME SIGN	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-13



Note:

Rural Criteria are in italics.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TREE TRIMMING STANDARDS	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-J



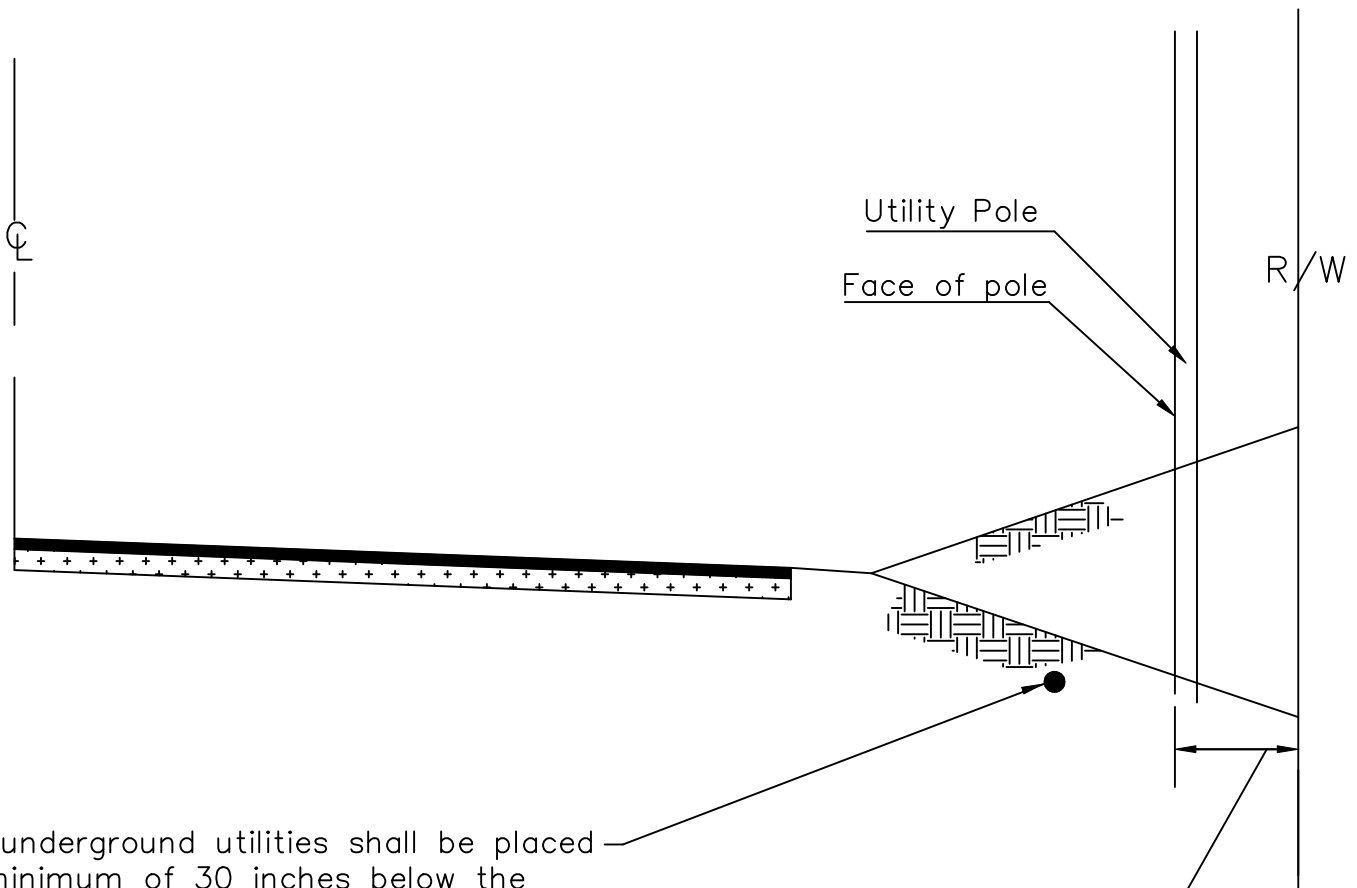
COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Atto Moehali

Director of Public Works

Date	01/02/2007
------	------------

PLATE NO: 3-K



All underground utilities shall be placed a minimum of 30 inches below the edge of pavement elevation or a minimum of 30 inches below the surface at the point of installation, whichever is lowest.

Place all above ground utilities/facilities in a P.U.E., otherwise the road-side edge of the utility/facility shall be within 24" of the R/W.

Place all below or at grade utilities/facilities in a P.U.E., otherwise the road-side edge of the utility/facility shall be within 36" of the R/W.

NOTE:

Where applicable, all irrigation facilities shall be placed in the P.U.E. area or outside the R/W.

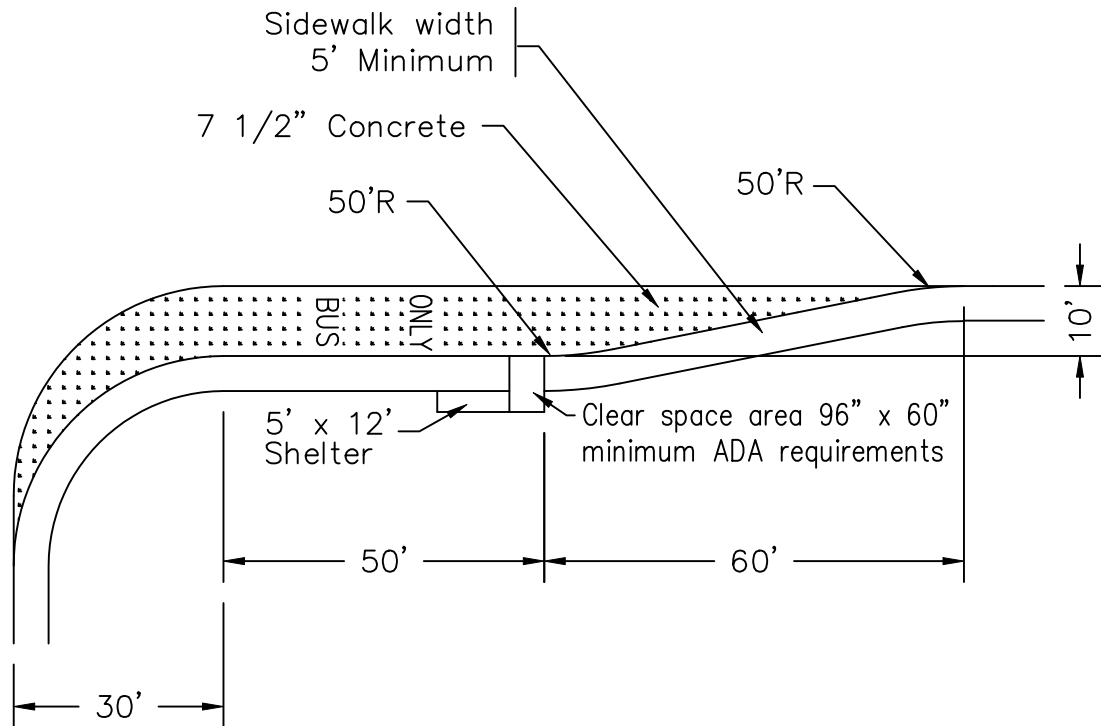


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

UTILITY LOCATION DETAIL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	<i>Matt McCall</i>
Director of Public Works	
Date	1/2/2007
PLATE NO:	3-L



NOTES:

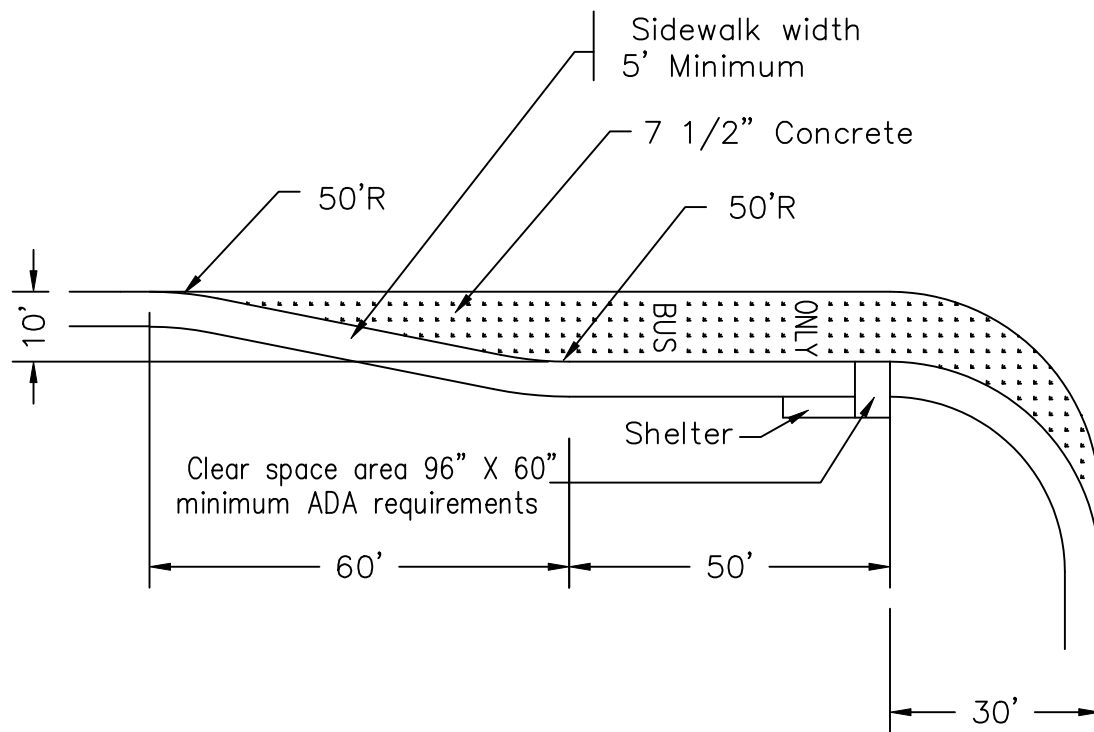
1. No extra shelter pad needed for sidewalks wider than 10 feet.
2. Shelter pad and shelters must be wide enough to meet ADA requirements 4.0' x 3.0' clear floor area within shelter perimeter.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

FAR SIDE BUS TURNOUT	
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-M1



NOTES:

1. No extra shelter pad needed for sidewalks wider than 10 feet.
2. Shelter pad and shelters must be wide enough to meet ADA requirements 4.0' x 3.0' clear floor area within shelter perimeter.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

NEAR SIDE
BUS TURNOUT

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

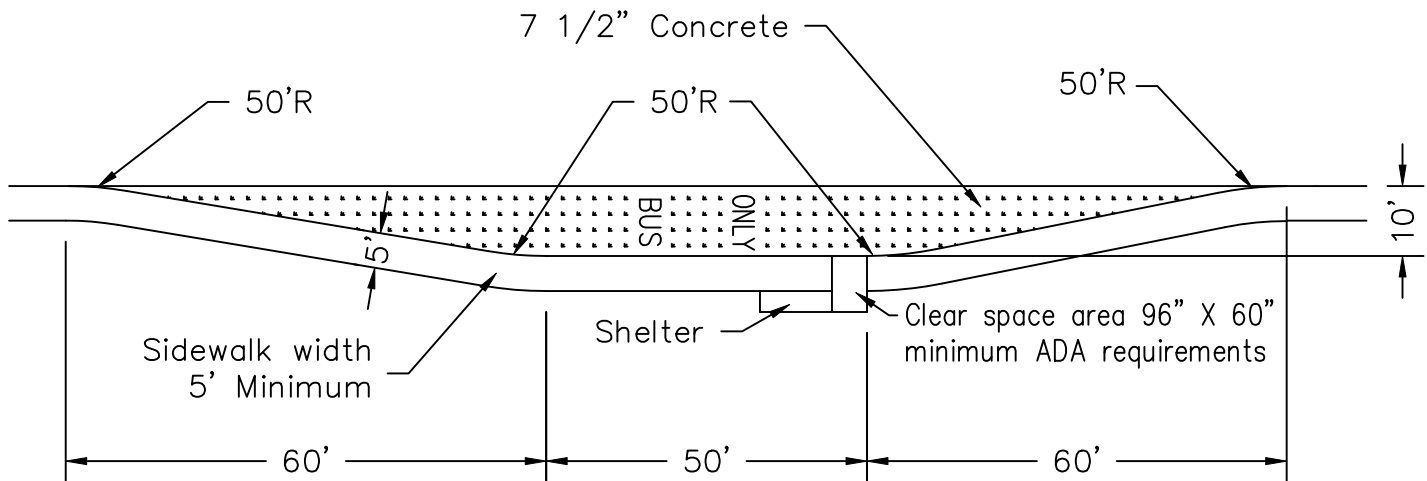
Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 3-M2



NOTES:

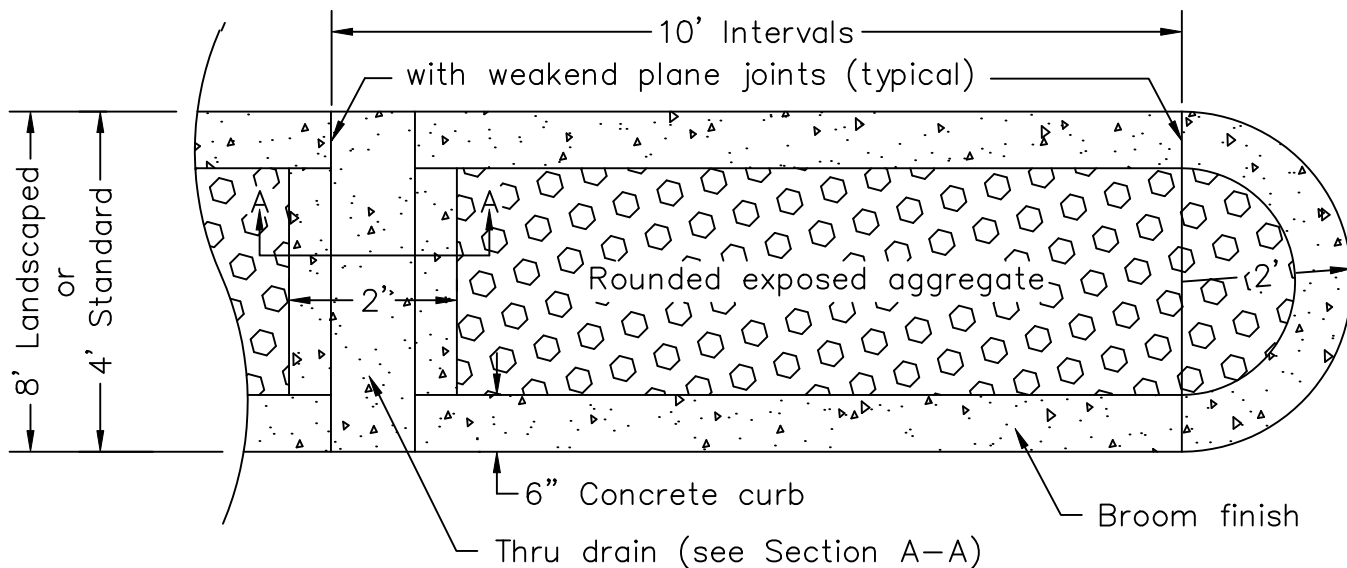
1. No extra shelter pad needed for sidewalks wider than 10 feet.
2. Shelter pad and shelters must be wide enough to meet ADA requirements 4.0' x 3.0' clear floor area within shelter perimeter.



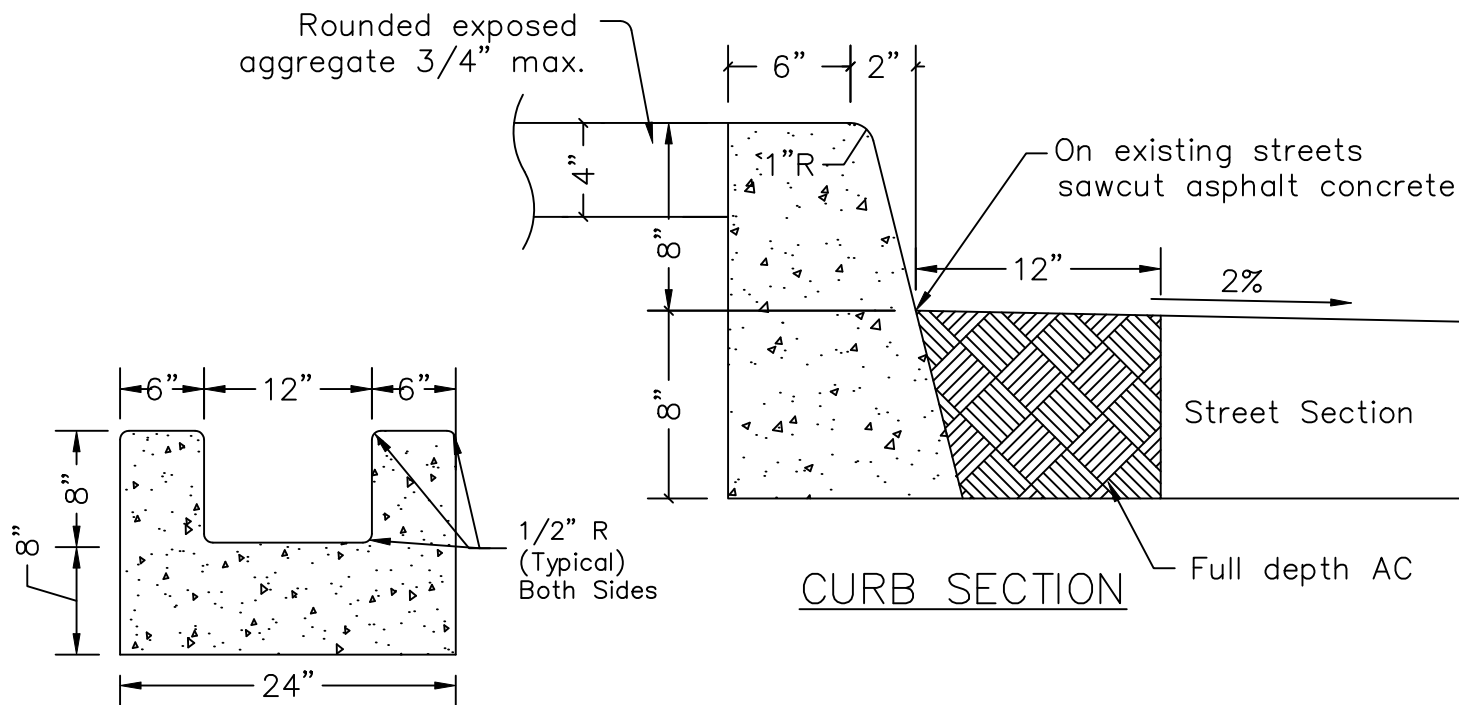
No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

MID-BLOCK BUS TURNOUT	
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-M3



PLAN



SECTION A-A

CURB SECTION

NOTES:

1. On landscaped medians, the curb shall extend to the bottom of the aggregate base.
2. Provide weakened plane joints every 10 feet and at end of returns.
3. Landscaped medians shall be a minimum of 8 feet wide.

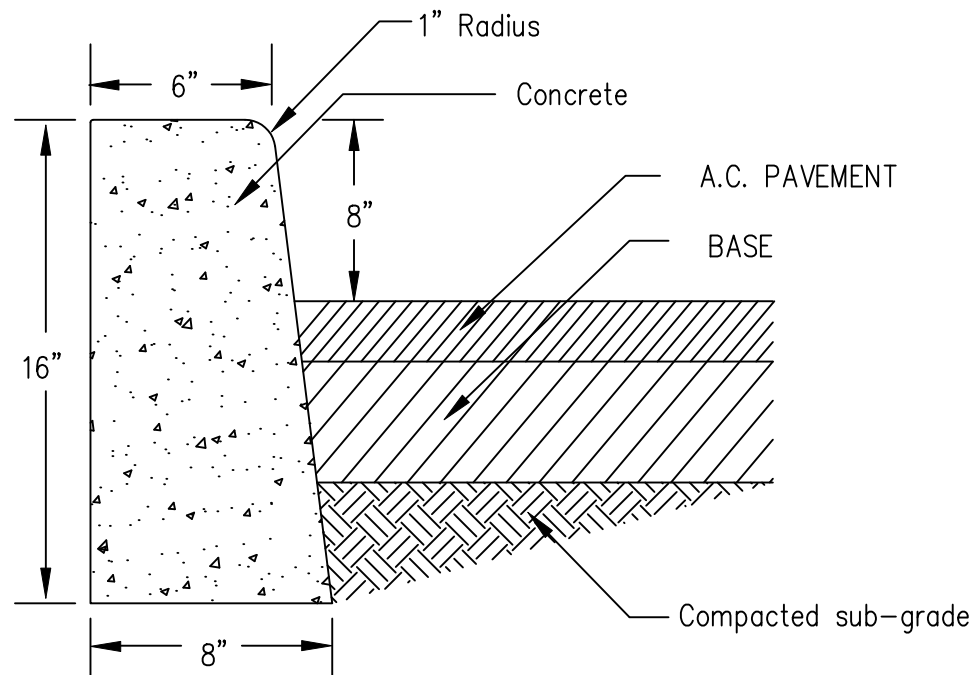
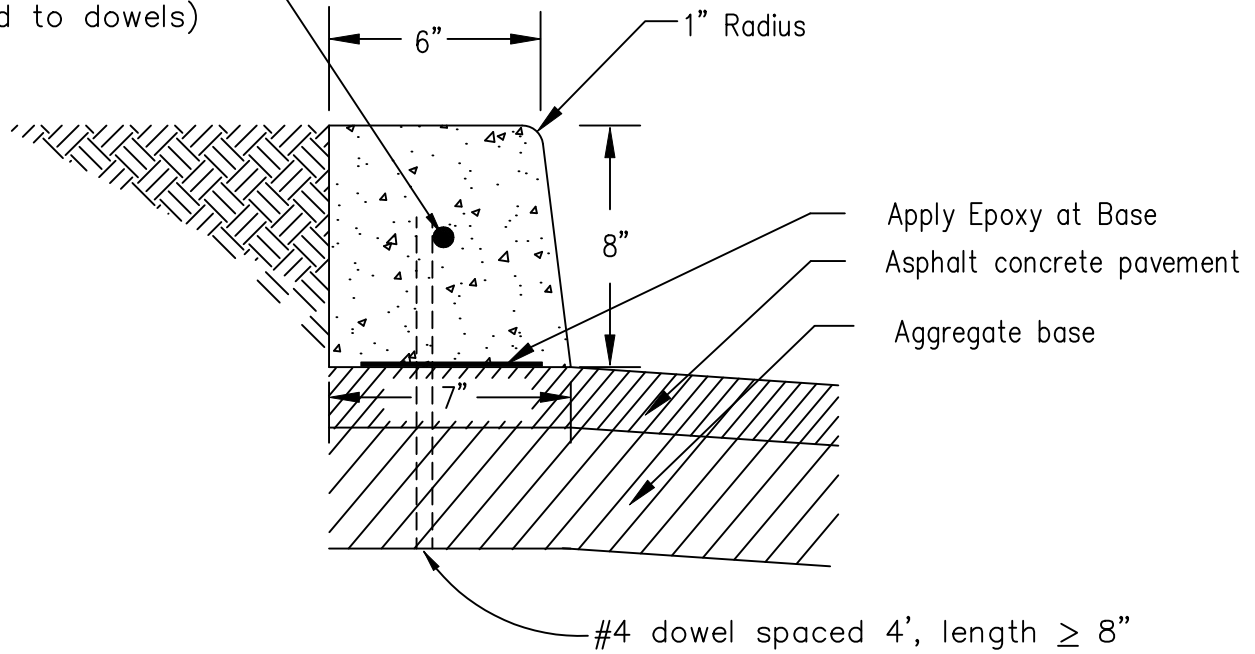


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

MEDIAN DETAIL	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-N1

#4 Longitudinal bar
(tied to dowels)



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

MEDIAN CONCRETE VERTICAL CURBS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

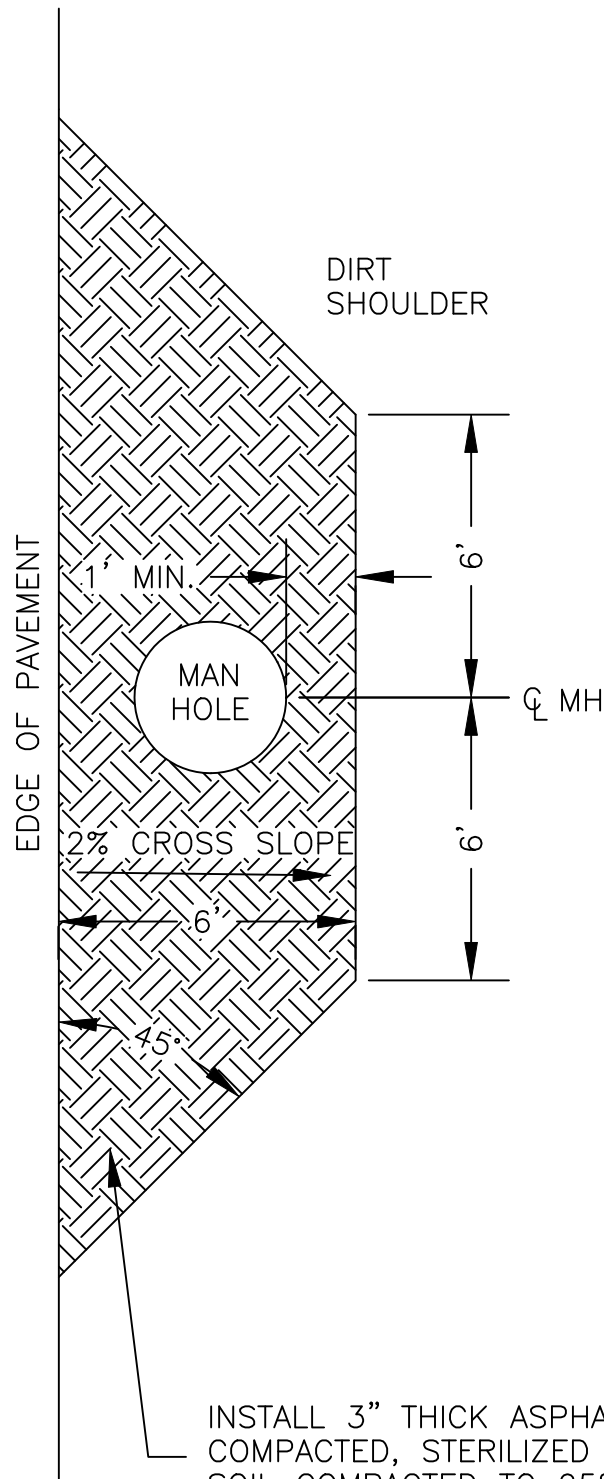
Matthew Behar

Director of Public Works

Date 01/02/2007

PLATE NO: 3-N2

CENTERLINE OF ROAD

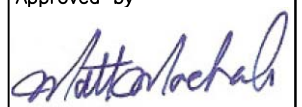


INSTALL 3" THICK ASPHALT CONCRETE OVER COMPACTED, STERILIZED NATIVE SOIL COMPACTED TO 95% OR 2" ASPHALT CONCRETE OVER 4" AGGREGATE BASE. COMPACTED TO 95%.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

PAVING REQUIREMENT FOR MANHOLE LESS THAN 6FT FROM EDGE OF PAVEMENT
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS

Approved by 
Director of Public Works
Date 01/02/2007
PLATE NO: 3-01

CENTER LINE OF ROAD

EDGE OF PAVEMENT

2% CROSS SLOPE

IF 6' OR
LESS, PAVE
TO EDGE OF PAVEMENT
AS PER 3-01

DIRT SHOULDER

INSTALL 2" THICK ASPHALT CONCRETE OVER
COMPACTED, STERILIZED NATIVE SOIL OR 3 1/2"
THICK CONCRETE.

1' MIN

1' MIN

6'

6'

6'

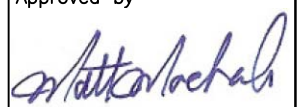
MAN
HOLE

CL MH



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

PAVING REQUIREMENTS FOR MANHOLE MORE THAN 6FT FROM EDGE OF PAVEMENT	
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	

Approved by 	
Director of Public Works	
Date	01/02/2007
PLATE NO:	3-02

CHAPTER 4: STORM DRAINAGE

- 4.1 GENERAL:** These Standards have been prepared for use in the design of storm water facilities within the unincorporated areas of Stanislaus County. The criteria and guidelines set forth herein shall be followed in instances where the facilities are subject to review by the Department.

Where County developments drain into a storm drain system located within a City Sphere of Influence, the developments shall comply with the requirements of that particular agency. However, all drainage facilities constructed in and maintained by Stanislaus County shall be designed in accordance with accepted engineering principles, and shall conform to these minimum design standards:

Residential, commercial and industrial developments shall have surface drainage disposal accommodated in one or more of the following prioritized ways:

- a. Positive Drainage: Positive drainage is a gravity flow storm drainage collection and discharge system into a river, stream, creek, irrigation facility, or other water way.
- b. Drainage Retention Facility: Drainage retention facilities may be used when positive drainage is not available.
- c. Rock Well: A rock well (vertical or horizontal) may be used only when above methods 4.1a or 4.1b are not feasible. Rock wells are typically not a standard design option. Department approval of the use of a rock well shall be obtained prior to submittal of the drainage plan.
- d. On-Site Drainage: Commercial and Industrial properties shall contain all storm drainage on-site unless above methods are available and approved for use by the Department prior to submittal of the drainage plan.

- 4.2 STANDARD OF DESIGN:** All storm drainage storage facilities within Stanislaus County shall be designed using a 50 year storm or greater. All conveyance drainage facilities shall be designed for a 10 year storm or greater. All drainage facilities shall be designed to provide for public safety and there shall be no increased inundation of any building or roadway surface.

Proposed storm drainage facilities may require provisions for future upstream development. If required, calculations for storm drainage design within a development, as well as calculations for runoff generated by upstream areas within the contributing watershed, shall be submitted to the Engineer for approval.

The diversion of natural drainage will be allowed only within the limits of

proposed improvement. All natural drainage must leave the improved area in the same state and condition as it was prior to relocating unless a special agreement, approved by the Engineer, has been executed with adjoining property owners.

Design storm methods shall be according to the Rational Method for design areas less than or equal to 400 acres. Storm runoff calculations for areas larger than 400 acres shall be computed using more advanced storm drain design methods (i.e. Unit Hydrograph Method as defined by the United States Army Corps of Engineers, Technical Release 55 (TR-55), etc).

The Manning equation shall be used to determine the capacity and friction losses of open channels and enclosed gravity conduits:

$$Q = VA = 1.486 (R^{2/3}) (S^{1/2}) A / n$$

Where: Q = flow rate measured in cubic feet per second (cfs);
A = cross sectional area of the flow in square feet (sf);
V = flow velocity in feet per second (fps);
R = hydraulic radius in feet (ft);
S = slope of the hydraulic gradient in feet per foot (ft/ft);
n = Manning coefficient.

Values of the Manning coefficient for various pipes and open channels are given in the Table 4.1 (see Table 4.1).

4.3 PEAK FLOW RATE: The peak flow rate shall be used to size pipes and culverts and shall be determined using the following rational formula:

$$Q = CIA$$

- a. Peak Flow Rate (Q): Peak rate of flow in cubic feet per second.
- b. Coefficient of Runoff (C): Values between 0.0 and 1.0 which are to be extrapolated from Table 4.2 (see Table 4.2).
- c. Intensity (I): The average intensity of rainfall in inches per hour for a duration equal to the time of concentration (Tc) and is determined using the following formula:

$$I = I_m \times \frac{M.A.P.}{10.9}$$

Where:

Im: Average intensity of rainfall in inches per hour for the Modesto rainfall gauging station. Coefficient is extrapolated from Plate 4-A using the calculated time of concentration (T_c).

T_c : The time of concentration or the sum of the overland flow and conduit flow times. The following table shows minimum travel times to be used when the calculated T_c is less than the minimum shown.

<u>Land Use</u>	<u>Minimum Travel Time</u>
Single family (0.5 to 1.0 acre)	30 min.
Single family (less than 0.5 acre)	20 min
Multi-family	20 min
Commercial & Industrial	10 min
Gutters	1 ft. / Sec

M.A.P.: The mean annual precipitation for the design area in question. Coefficient is extrapolated from Plate 4-B.

- d. Area (A): The total tributary area, expressed in acres, that will contribute runoff to the drainage system, regardless of the limits of the development under construction.

4.4 DRAINAGE RETENTION: Drainage retention facilities shall be designed in conformance with the guidelines contained in these Standards and as a minimum shall comply with the criteria shown below:

Compliance with these standards does not relieve the designer, owner or developer of the responsibility to apply sound professional judgment to protect the health, safety and welfare of the general public. Special site conditions and environmental constraints and considerations may require a greater level of protection than otherwise required under these standards.

A minimum separation of five (5) feet measured from the bottom of the drainage retention facility, rock well, or on-site drainage facility to the water table surface elevation shall be provided. If design restrictions do not provide a 5 foot minimum separation from the basin bottom to the water table elevation, the Developer shall obtain prior written approval and authorization from Stanislaus County Department of Environmental Resources prior to construction.

All drainage retention facilities (i.e. basins/ponds) shall have a measuring device (tad-a-tail) to indicate water level as measured from the bottom of the basin.

The required storage volume needed for the design storm shall be determined as follows:

- a. Volume (V): Drainage facilities shall have the capacity to hold the total runoff from a 50 year frequency, 24 hour storm. The volume shall be determined with no allowance for percolation or outlet facilities using the following basic formula:

$$V = \frac{CAR}{12}$$

V: Volume in acre-feet

C: Coefficient of Runoff (see section 4.3 part b)

A: Area in acres (see section 4.3 part d)

R₍₅₀₎: 2.33 times M.A.P. divided by 10.9 (for M.A.P. see Plate 4-B)

Where:

$$R_{(50)} = \frac{2.33 \times \text{M.A.P.}}{10.9}$$

- b. Elevation: Drainage retention facilities shall be designed so that a hydraulic grade line (HGL) extended from the drainage retention facility's highest water surface elevation (Z) shall be at least 6 inches below all tributary drainage inlets at their respective locations. The HGL at a given point shall be calculated using the following formula:

$$\text{HGL} = Z + H_f$$

HGL: Hydraulic grade line elevation in feet at a particular point.

Z: The top of pipe elevation at the point of discharge or the high water surface elevation of a drainage basin measured in feet.

H_f: Head loss in feet due to friction loss from a pipe. The friction loss shall be calculated using the following formula:

$$H_f = \frac{(3.022)(v)^{1.85}(L)}{(C)^{1.85}(D)^{1.165}}$$

v: Velocity of water in pipe in feet per second
(assume pipe flowing full)

L: length of pipe in feet

D: Inside diameter of pipe in feet

C: Design coefficient based on pipe material.

Coefficient to be extrapolated from Table 4.3

- c. Dewatering: A drainage facility must be emptied of a 10 year event storm within 48 hours by outlet facilities providing positive drainage or

through percolation. If percolation is used, the percolation rate shall not be assumed. The percolation rate shall be based on the results of a soil's report investigation performed by a licensed geotechnical engineer.

The volume for the 10-year frequency, 24 hour storm shall be determined using the following formula:

$$V = \frac{CAR}{12}$$

V: Volume in acre-feet

C: Coefficient of Runoff (see section 4.3 part b)

A: Area in acres (see section 4.3 part d)

R₍₁₀₎: 1.88 times M.A.P. divided by 10.9 (for M.A.P. see Plate 4-B)

Where:

$$R_{(10)} = 1.88 \times \frac{M.A.P.}{10.9}$$

- 4.5 DISCHARGE APPROVAL AND PERMITS:** It shall be the responsibility of the Developer to obtain written approval and encroachment permits from all agencies controlling the discharge of drainage into the receiving waterways.

These agencies shall include, but not be limited to the following:

- a. Army Corps of Engineers
- b. US Coast Guard
- c. California Regional Water Quality Control Board
- d. Department of Fish and Game
- e. California State Lands Commission
- f. California Department of Water Resources
- g. Local regulatory irrigation districts

- 4.6 ROCK WELLS:** Rock wells (vertical and horizontal), when approved by the Engineer, shall be constructed as shown on the plates contained in these Standards (Plate 4-D2). The rock wells shall be located at least 150 feet from domestic water wells. Individual rock wells shall have a 20 foot minimum horizontal separation from all other vertical rock wells. Rock wells shall store the volume from a 50 year frequency storm and be designed in the following manner:

- a. Find Percolation Rate (PR): For design purposes this value shall not be assumed but must be determined by the design engineer by

means of adequate percolation tests performed by a qualified testing firm. The test shall be taken at the intended location, both horizontal and vertical of said drainage unit. The percolation rate shall be expressed in cubic feet per minute. The percolation rate shall be sufficient to completely percolate a 10 year storm's volume within 48 hours

- b. Determine the Volume of Storm Water (V): See methodology in item 4.4.a. The volume shall be determined with no allowance for percolation or outlet facilities.
- c. Determine the Storage Volume (SV): Storage may be a combination of surface, subsurface or aggregate voids. No portion of the paved roadway shall be used for storage.
- d. Dewatering: A rock well must be emptied of a 10 year event storm within 48 hours through percolation.
- e. Testing: Rock wells shall be tested for adequacy after their completion. Testing shall consist of flooding the rock well at a rate equal to its design percolation for a duration equal to the Peak Flow Time. If a static head is obtained then the rock well shall be allowed to drain for 1 hour, then refilled and its percolation rate then calculated.

The measured percolation rate of the drainage unit shall be compared to the design percolation rate. If the measured rate is less than the design, additional percolation area will be required.

- f. Permits: The Developer shall contact the Stanislaus County Department of Environmental Resources and obtain the necessary rockwell permits.

4.7 PIPE: The 10 year storm used to design the conveyance drainage facilities shall not surcharge any conduit unless written approval is granted by the Engineer. Storm drain pipe shall be as shown on the plates contained in these Standards, and conform to the following minimum requirements:

- a. Material: The type of pipe used and it's intended use must conform to accepted engineering practice and must be approved by the Engineer.

The class of pipe to be used shall be clearly shown on the improvement plans and specified in the special provisions, if any. All pipes constructed in roadways must be traffic rated. All pipe material shall conform to the following minimum standards outlined below:

1. Reinforced Concrete Pipe (RCP):
Reinforced concrete pipe shall conform to the requirements as outlined in Section 65 of the Caltrans Specifications. The use of rubber gasket joints will be required unless specified otherwise by the Engineer.
 2. High Density Polyethylene Ribbed Pipe (HDPE):
High Density Polyethylene Ribbed Pipe shall conform to the requirements of Section 64 of the Caltrans Specifications. HDPE pipe shall be bell and spigot only with polyisoprene rubber gasket meeting or exceeding ASTM F-477 requirements. HDPE pipe shall have a smooth interior wall.
 3. Concrete Cast-In-Place Pipe (CCIP):
Concrete cast-in-place pipe shall conform to the requirements as outlined in Section 63 of the Caltrans Specifications.
 4. Galvanized Steel / Welded Steel Pipe (pump station force mains):
Galvanized steel pipe shall conform to ASTM Designation A53. All nominal pipe size designations shall be standard weight. Threaded fittings shall be galvanized malleable iron or steel. Welded steel pipe shall conform to the requirements in Section 7001.02B of the Caltrans Specifications, "Welded Steel Pipe".
- b. Size: All storm drain mains, trunk lines, cross culverts, catch basin laterals, or any other type of gravity flow storm drainage pipe shall be no less than eighteen inches (18") in diameter.
1. Pipe curvature between man holes shall not exceed manufactures recommendations.
 2. Pipe sizes shall not decrease going down stream.
 3. Match pipe crowns when pipe sizes change (unless otherwise approved by the Engineer).
 4. At intersection of pipes, the downstream pipe shall have a crown elevation which is less than or equal to the crowns of all upstream connecting pipes.
 5. All pipes shall be smooth walled.
- c. Minimum Cover: Pipe alignment shall be designed to allow for a minimum cover of 30 inches as measured from the natural ground or bottom portion of the structural pavement section to the outside top of pipe. If the minimum cover cannot be obtained due to design constraints, the pipe shall either be encased in concrete or provided with a concrete cover as approved by the Engineer.
- d. Velocity: Pipes (for calculation purposes) shall be considered to be

flowing full. Minimum velocity shall be a velocity sufficient to maintain a clean pipe generally not less than 2 feet per second. For pump discharge lines, the velocity shall not exceed the manufacturer's design specifications. Velocities in unlined open channels shall not exceed those values shown in Table 4.4 or the soils engineer's recommendation.

- e. Installation: The pipe shall be laid in conformity with the prescribed lines and grades.

The design engineer shall field verify the depth and alignment of existing storm drain lines prior to construction. If the existing storm drain line depth, alignment and size is not as shown on the improvement plans, the design engineer shall notify the Engineer and make appropriate corrections before proceeding.

All adjustment of pipe to line grade shall be made by scraping away or filling in and tamping under the body of the pipe and not by blocking or wedging. All pipe sections shall be laid with bell end upstream and shall be laid upstream (from the lowest point to the highest point) and from structure to structure. Grade stakes shall be provided at 50 foot minimum intervals. When directed by the Engineer or establishing grade stakes along small radius curves, stakes shall be provided at 25 foot minimum intervals. Each stake shall be used in establishing the grade for the pipe.

Every precaution shall be taken to protect the pipe against the entrance of foreign material before the pipe is placed in the trench. At the close of the day's operations, the last section of pipe shall be plugged, capped or otherwise tightly closed to prevent entry of any foreign matter.

- f. Alignment: Storm drainage pipe shall be parallel with the centerline of the street whenever possible. Pipe curvature shall not exceed manufacturer's recommendation. When appropriate, pipe shall be deflected before each curb inlet such that it enters in the center of the inlet.
- g. Backwater: All outlets shall take into account any backwater condition in the receiving channel.

4.8 MANHOLES: Storm drain manholes shall be constructed as shown on the plates contained in these Standards.

- a. Manholes shall not be constructed within a gutter.
- b. Manholes shall be placed at junction points, changes in gradient, and changes in pipe size. On curved pipes with radii of 200 feet to 400 feet, manholes shall be placed at the beginning of the curve (BC) and at the ending of the curve (EC) and on 300 foot maximum intervals along the curve. On curves with a radii exceeding 400 feet, manholes shall be placed at the BC and EC of the curve and on 400 foot maximum intervals along the curve for pipes 24 inches and less in diameter and 500 foot intervals along the curve for pipes greater than 24 inches in diameter. Manhole locations on curves with radii less than 200 feet will be specified on an individual basis.
- c. Spacing of manholes shall not exceed 500 feet unless approved by the Engineer. Whenever possible spacing of manholes shall be equal.
- d. Manhole covers shall be constructed as shown in the plates of these Standards.

4.9 CATCH BASIN: Catch basins shall be as shown in the plates of these Standards. Catch basins shall not be allowed to drain into or through other catch basins without the approval of the Engineer.

- a. The maximum total lineal feet of road right-of-way that may discharge into a catch basin is 500 feet. However, in no case shall the width of water flowing in the gutter from a 50-year storm event be allowed to encroach into the traveled way of the nearest traffic lane.
- b. Metal parts of all catch basin grates and frames shall be hot dipped galvanized.
- c. Catch basins shall be designed and spaced such that they intercept and fully contain the 10-year storm.
- d. A drain inlet must be placed at all gutter sag points. Inlets shall not be allowed within street crosswalks, handicap ramps, or driveways.
- e. The length of catch basin grates shall be doubled and possibly tripled for roads with a grade of 6% or more.

4.10 DRAINAGE PUMPS: Drainage pumps shall only be used for emptying drainage retention facilities. Inflow pumps shall not be allowed. If pumps are used to empty a drainage facility, the following criteria shall be incorporated into the design of the pump station:

- a. Pump station shall be designed with a securable facility.
- b. Drainage pumps shall be duplex, submersible, and be of the non-clog type capable of passing at least 3 inch spheres. Each installation shall have at a minimum two pumps that automatically operate on an alternating basis with all pumps operating together during times of heavy flow. The design pumping head shall be based on the maximum flood water elevation in the receiving facility. Pumps shall be rail mounted with auto disconnect.

Capacity shall be provided for the design storm with the largest pump out of service. Staged installation of pumps is allowed, providing space is provided for future installations. Where slide mount submersible pumps are used, a duplex installation of 100% design capacity may be used if a spare pump assembly is supplied to the County complete. Where design flows exceed 1.0 cfs, a low flow pump shall be provided in addition to the design rated pumps. The low flow pump shall have a capacity of 5% - 10% of the design flow and shall operate as the lead pump. Pumps shall be designed for a minimum of 10 minutes cycling time.

- c. Performance curves shall be submitted for the pumps showing the diameter of the runner to be used, the pump capacity, total dynamic head, kilowatts, horse power, and efficiency of pump throughout the working range of the pumps.
- d. The pump station and wet well shall be lighted. Lights shall be switchable and shall be designed & constructed to operate with County generators during power failures and other emergency events.
- e. The wet well rim and electrical panel shall be a minimum of three (3) feet above the 100-year flood elevation.
- f. A securable NEMA weatherproof enclosure shall be provided for all outdoor controls, including lighting. Electric service shall be provided by underground conduit to the utility service pedestal.
- g. Controls shall be a solid state programmable controller with LED digital readout with purge and clean capacities and automatic pump alternating. Switches for manual operation of each pump shall be included.

- h. An on-site alarm with an automatic telephone dialer with message capability and exterior lights shall be installed. The alarm shall have a battery back-up and sensors that will respond to power failure, pump failure and high water levels. A telephone line connecting the automatic dialer shall be provided.
- i. A paved access driveway and paved work area for the pump station shall be provided. The access and work area shall be paved with a minimum of 2 inches of AC over 4 inches of AB or 5.5 inches of concrete as shown on the plans approved by the Engineer.

A paved access driveway to the open-space/detention basin bottom shall be provided to allow maintenance vehicles safe access to the inlet/outlet structures. The paved access driveway shall be reviewed and approved by Department of Parks and Recreation and the Engineer prior to construction. The maximum driveway slope shall be 10% unless otherwise approved by the Engineer.
- j. Trash racks shall be provided upstream from the pumps. The trash rack shall be designed to be easily cleaned.
- k. Emergency operation during power outages shall be provided by a connection for a County owned portable generator.
- l. All electrical installations shall comply with the National Electric Code, NEMA, Division of Industrial Safety, and County of Stanislaus Electrical Code. All local utility requirements shall be met. A building permit for the electrical service will be required from the County.
- m. The County shall be provided with 3 complete sets of manufacturer's brochures, technical data, operation and maintenance manuals, schematics, wiring diagrams, warranties, etc. for all equipment and controls. Said data shall be provided to the Engineer organized with each set in its own three ring binder. The Developer shall provide on-site training for County maintenance personnel.
- n. Locks, keyed to the County master system, shall be provided at the access to the pump station and to the wet well. All pumps shall be equipped with locks and cam lock system for the suction and discharge lines.
- o. Submersible pumps shall be capable of running in air without damage. Moisture sensing circuit breakers in terminal changer shall be incorporated into submersible pumps.
- p. The pump station shall not be in County road right-of-way except with permission from the Director.

- q. Force mains shall be designed in accordance with good engineering practice. Maximum velocity shall not exceed the manufacturer's design specifications. Minimum velocity shall be 2 ft/sec. Provide suitable outfall structure and erosion protection.
- r. Above ground screening, fencing, and/or landscaping shall be provided for all above ground lift stations. Screening and landscaping standards shall meet the minimum requirements from the Planning Department and/or Parks and Recreation Department.
- s. The following items are required in the pump station plan submittal package. Each item must be included or the submitted package will be rejected and returned to the consultant without review or comment.
 - 1. Four sets of pump station plans which includes a site plan.
 - 2. Plan review fee.
 - 3. Service area map.
 - 4. Design flow (Q) calculations.
 - 5. Wet well sizing calculations.
 - 6. Cycle time calculations.
 - 7. Force main sizing calculations.
 - 8. System head calculations.
 - 9. Structural calculations.
 - 10. Buoyancy calculations.
 - 11. Emergency power narrative.
 - 12. Schematic showing system of force mains and pump stations from proposed pump station to electrical panel connections.
 - 13. Soil boring and geotechnical report.
 - 14. Pump selection catalog cut.
 - 15. Pump curve with system curves.
 - 16. Verification letter from electrical utility company for adequate electrical service to be provided.

4.11 EXCAVATION AND BACKFILL: Excavation and backfill shall be as per the plates in these Standards. If a situation arises that is not covered, then the excavation and backfill shall be per State Standards.

4.12 TESTING: Testing for proper compaction and for control of the concrete shall be as directed and observed by the Engineer. Testing shall be performed by the Developer unless otherwise directed by the Engineer. Certificates of Compliance, weigh master tags or other standard design data may be required by the Engineer in lieu of testing for proper concrete design. The cost of all testing shall be at the Developer or Contractor's expense.

- 4.13 INSPECTION:** All work shall be inspected by the Engineer prior to backfilling. After compaction has been completed all new lines shall be inspected with closed circuit television or by visual inspection. The method of inspection will be at the discretion of the Engineer.

If closed circuit television is used, the Developer shall give the Engineer at least 2 working days notice prior to televising the work. All dirt and other debris shall be cleaned from the pipeline and manholes, trenches shall be compacted and manhole rims raised to grade. Infiltration, leaks and deficiencies shall be corrected prior to inspection. The suitability of the system for televising shall be at the discretion of the Engineer. The Engineer shall be present during the televising of the work.

The tape (in VHS or DVD format) and tape logs shall be provided to the Engineer after the system has been televised.

The Developer shall repair all substandard work to the Engineer's satisfaction.

- 4.14 STORM DRAIN EASEMENTS:** Publicly owned drainage conduits and channels will not be allowed on private property unless they lie within a dedicated public easement. Where minor improvement of a drainage channel falls on adjacent property, such as day-lighting a ditch profile, written permission from the adjacent property owner(s) for such construction shall be required. A copy of the document which grants said approval shall be submitted to the Engineer prior to the approval of the improvement plans.

Easements for closed conduits shall meet both of the following width criteria:

- a. Minimum width of any easement for a closed conduit shall be 16 feet.
- b. All easements for closed conduits shall have a minimum width in feet equal to the required trench width according to the standard detail for trench backfill plus 2 additional feet of width for every foot of depth of the pipe as measured from the bottom of the pipe to finished grade. All conduits shall be centered within their easements.

Drainage easements for open channels shall have sufficient width to contain the open channel and a 12-foot wide service road. The toe of a bank shall not be within 5 feet 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.

4.15 OPEN SPACE/ DETENTION BASINS: The dual-use open space/detention basin concept is proposed as a means to improve the aesthetic appearance of storm drain basins.

Appropriate design guidelines and criteria pertinent to the development of dual-use open space/storm drain detention basin facilities shall be incorporated into all dual-use open space/detention basins facilities constructed in the County. The City of Modesto's Design Standards for Dual Use Flood Control/Recreation Facilities, adopted on December 12, 2000 - Resolution No. 2000-632 shall be used to design dual use open space/storm drain detention basin facilities in the County areas.

Water quality storage elements, flood control storage elements, and recreation elements shall be employed in the design of dual-use detention facilities, whenever possible. The following minimum design criteria shall be followed:

- a. All outlet designs shall incorporate preventative measures for trash accumulation and erosion at the outfall structure.
- b. A gravity outflow structure shall be used if feasible based on downstream drainage system grades. When downstream grades preclude the use of a gravity outflow structure, a pump station shall be constructed to drain the basin.
- c. The maximum side slopes for a basin area shall be 4:1 or flatter to facilitate ease of mowing and maintenance. Side slopes of basins adjacent to public streets may require 6:1 or flatter slopes to facilitate improved security visibility by law enforcement, fire, and emergency personnel.
- d. The minimum vertical separation between the bottom elevation of the basin and the local water table shall be five (5) feet.
- e. In general, fencing will be avoided in open-space detention basin facilities. Limited fencing may be considered on a site-specific basis in order to restrict public interaction with potentially hazardous situations such as frequently inundated areas.
- f. The Engineer may require fencing around pump stations, pump inlets, pump outlets, basin inlets, basin outlets, and other structures in order to provide security, protection against vandalism, and to enhance public safety.
- g. Inflow and outflow structures to open-space detention basins shall include appropriate provisions to prevent access by small children and prevent clogging of structures. This may include the installation of trash racks or rebar mesh grill across the open areas of said structures.
- h. A maintenance access roadway shall be provided from the top of the detention facility to the lowest lying portion of the basin to allow access for maintenance vehicles and facilitate periodic removal of sediments and other maintenance functions. Limited maintenance access roadway maybe considered on a site specific basis.

Requirements for maintenance access may include, but not limited to the following:

1. A minimum access roadway width of 16 feet.
2. A maximum access roadway grade of 10%.
3. An turning radii of 45' for maintenance vehicles.
4. A turn around for maintenance vehicles.
5. Access roads shall be constructed with 5 ½" thick concrete.

Certain conditions for approval for Dual Use Open Space/Detention may apply to the project as determined by Planning & Community Development and Parks & Recreation. These may include, but not limited to the following:

- i. Prior to the final map being recorded and improvements accepted, a County Service Area (CSA) may be formed to provide funds for personnel and equipment to maintain the park and/or the storm drain system and the landscaping areas. The developer shall provide all necessary documents and pay all fees associated with the formation of the CSA. The formation process may take between 90 and 120 days.
- j. Prior to the final map being recorded and improvements being approved, landscape design and amenities for parks shall be reviewed and signed off by the Parks Department. Landscape Architects should contact the Parks Department for inputs and standard brand name amenities.
- k. Prior to the final map being recorded and improvements being approved, all drawings and specifications for landscape improvements to storm drain basins shall be reviewed and signed off by the Parks Department.
- l. Prior to issuance of any building permits for dwelling, the owner/developer shall pay a per dwelling fee (see Park land Dedication/In-Lieu-Of Fees Policy) to the County Department of Parks & Recreation, 3800 Cornucopia Way, Suite C, Modesto, CA 95358, to address the additional Parks & Recreation impact and responsibilities.
- m. Dual-use retention basin credits as per the City of Modesto formula, adopted December 12, 2000 resolution No. 2000-632 may be allowed as determined by the Department of Parks & Recreation.
- n. Project must conform to the General Plan requirements of providing three acres of park land per 1,000 residents or pay in-lieu of fees (see Park land Dedication/In-Lieu-Of fees Policy, General Plan Amendment No. 2003-02).

4.16 DESIGN CALCULATIONS & DOCUMENTATION: Design calculations shall be presented at the time plans for storm drainage facilities are submitted for approval. Drainage calculations shall be done on standard form Figure 4.J, or a spreadsheet reproducing this information.

Submittal of drainage calculations shall include the following minimum items:

- a. Storm Calculation Sheet The standard design form as shown in Figure 4.J shall be used and shall show the following information:
 1. Dainage area (in acres)
 2. Time of concentration (in minutes)
 3. Runoff coefficient for each area
 4. Flow rate to each structure (in cubic feet per second)
 5. Flow rate and velocity in each pipe (in cubic feet per second)
 6. Pipe diameter, length, and slope (measured in ft; ft; ft/ft, respectively)
 7. Invert elevation of each pipe at structure (in feet)
 8. Rim elevation of each storm drain manhole
 9. Hydraulic and energy grade line elevation (HGL & EGL) in feet.
 10. Depth and width of flow in gutters (in feet)
 11. Depth of flow in open channels (in feet)
 12. List of any assumptions, charts, tables, references, and list of method used.
- b. Drainage Map: A drainage map shall be provided that shows all lines and inlet points; drainage areas contributing to each inlet point; designations for the above items listed in Section 4.16.a. A plan, preferably at 1" = 100' scale, showing proposed street system, existing and proposed drainage system, tributary sub-areas (including offsite drainage), the magnitude and direction (indicated by arrows) of flow in each pipe and flow to each structure contributed by its tributary area. All flow rates shall be in cubic feet per second (cfs).
- c. Topographic Map: showing the relationship between the proposed development and the remainder of the watershed, including acreage of all sub-areas.

4.17 **MISCELLANEOUS ITEMS**

- a. Service Roads: A paved service road shall be provided within the boundary of all open channels and to detention/retention and dual use basins. The service road shall be a minimum of sixteen (16) feet wide, graded for maintenance vehicular traffic. The service road shall be free of all obstructions for its full width. Twelve (12) feet of the road's width shall be paved surface type and structural section with a minimum unpaved shoulder width of two (2) foot on each side of the roadway.

Service roads shall be constructed with a minimum of 0.25 feet AC over 0.35 feet AB or per soil report's recommendation, which ever is greater. Service road grade shall not exceed 6.0% with 4:1 shoulder side slopes without prior approval of the Engineer.

Service roads may be required on both sides of the channel as determined by the Engineer.

- b. Soils Report: A comprehensive soils report shall be prepared for the proposed project. A licensed geotechnical engineer experienced in soil work shall prepare, stamp, and sign the report. It shall include R-values taken at the site with a map showing the locations and depths of the test samples. Additionally, it shall include percolation testing results, high ground water elevations, stripping and grading recommendations, determination if expansive soil is present, and structural pavement sections based on various traffic index (T.I.) values.
- c. Culvert Design: Cross culvert conduits and box structures shall be designed to pass the peak flow from the 10-year, 24-hour design storm without damage to the roadway in accordance with normally accepted engineering practice based on good judgement and experience in design, construction, and maintenance. Culvert capacity may be determined on the basis of inlet and outlet control in accordance with generally accepted engineering practice.
- d. Siphons: are generally not acceptable but may be allowed at the discretion of the Engineer.
- e. Inlets: shall be sized to handle the peak design flow and in accordance with the manufacturer's recommendation. Inlets shall be spaced such that gutter flow does not spill over the curb or have a width that encroaches into the nearest traveled way. Inlets shall not connect to other inlets.

4.18 EROSION, SEDIMENT, AND WATER POLLUTION CONTROL

- a. General: Currently, NPDES permits are required for all construction projects involving the grading, filling, excavating, storage, or disposal of three hundred fifty (350) cubic yards or more of soil, or the clearing or grubbing of one (1) acre or more must have an Erosion and Sediment Control Plan (ESCP) and a Storm Water Pollution Prevention Plan SWPPP. In addition, construction projects, which are a part of a larger common plan, but are less than one acre, would also require a permit. The permit must be obtained prior to obtaining the necessary grading permits or starting any construction activities in Stanislaus County.

To be covered by the NPDES permit, the Developer must submit a Notice of Intent (NOI), a SWPPP, and the appropriate fee(s) to the State Water Resources Control Board.

Stanislaus County's MS-4 document titled, "Storm Water Management Program for Stanislaus County" was adopted on April 30, 2003 pursuant to NPDES General Permit No. CAS000004 and NPDES General Permit No. CAS000002.

- b. Regulations, Ordinances, Permits, and Specifications: The Developer is responsible for compliance with all Federal, State, and local permits, rules, regulations, ordinances, statutes, and directions that apply to erosion, sediment, and water pollution control. Failure to obtain the required permit coverage or to comply with the requirements of the required permits could result in significant daily fines or penalties imposed by the State.
- c. Storm Water Pollution Prevention Plan: The SWPPP shall be prepared in accordance with the General Permit or other permit specified by SWRCB. The SWPPP shall be prepared by an individual knowledgeable about storm water pollution prevention methods and requirements, and shall be signed by the preparer of the SWPPP. The Developer shall implement the SWPPP before work commences. The Developer may not be allowed to mobilize until the plan is accepted. The SWPPP shall be kept onsite at all times, updated for the various phases of the project, and made immediately available for SWRCB and Regional Board Inspectors upon request. Updates shall be submitted to the SWRCB immediately for review.
- d. Best Management Practices: A SWPPP plan that incorporates storm water drainage "Best Management Practices" into the construction activities shall be submitted to the Engineer for review. Best Management Practices shall be used to control erosion, and reduce the quantity of sediments that discharges into water bodies during

storm events. Implementation of the SWPPP will be the responsibility of the Developer to help ensure that the major waterways, wetlands, and rivers in Stanislaus County will not be negatively impacted from construction activities.

The minimum standards provided here do not relieve the Developer from liability of utilizing best management practices to eliminate pollution discharge caused by construction activities. The Developer shall implement best management practices regardless of project size in accordance to all relevant rules, regulations, guidelines, and procedures by the appropriate governing agencies.

- e. Inspection and Compliance: The Developer shall perform routine inspection and maintenance of BMP's. Inspections shall be done prior to, during, and after each rain event. The Developer is solely responsible for preparing and maintaining inspection and monitoring records.

The Developer shall immediately correct or replace any ineffective BMP. If the measures taken by the Developer are inadequate to effectively control water pollution, the Developer may need to revise the operations and water pollution control program according to the requirements of the SWRCB. Ineffective BMP may restrict the construction work from being performed until the water pollution control measures are made adequate. Continued noncompliance may result in suspending the work indefinitely. The Engineer reserves the right to take corrective action as needed to correct any noncompliance issues at the Developer's expense.

Any fines, including third-party claims, levied against the Developer as a result of Developer's non-compliance to any State, Federal, or Local requirements are at the Developer's sole responsibility.

TABLE 4.1
MANNING COEFFICIENT

<u>Conduit Material</u>	<u>Manning Coefficient</u>
--------------------------------	-----------------------------------

Closed Conduit *

Reinforced Concrete Pipe (RCP)	.013
Cast Iron Pipe (CIP)	.013
Ploy Vinyl Chloride Pipe (PVC)	.011
Steel Welded and Seamless	.020
Cast Iron Pipe (CIP) - Coated	.013
Cast Iron Pipe (CIP) - Uncoated	.014
Cast Iron Pipe (CIP) - Galvanized	.015

Note: Use of any other pipe material not shown above must be approved by the Engineer.

Open Channels

Lined Channels	
Asphalt	.015
Concrete	.015
Rubble or Rip Rap	.030
Vegetal	.040
Excavated or Dredged	
Earth, Straight & Uniform	.030
Earth, Winding, Fairly Uniform	.040
Un-maintained	.100

Natural Channels (minor streams)

Fairly Regular Section	.050
Irregular Section with Pools	.100

(Adapted and modified from Table XIV, ASCE Manual No. 37, 1970)

* Manufactures information may be used in lieu of these values.

TABLE 4.2
COEFFICIENT OF RUNOFF

<u>Land Use Description</u>	<u>C</u>
Pavement & Roofs	0.95
Compacted earth without pavement	0.80
Lawns, pasture and farmland	0.30
Single family residence:	
Over 1.5 acres	0.35
0.5 to 1.5 acres	0.45
6000 sf. to 0.5 acres	0.50
Less than 6000 sf.	0.55
Multi-family residence:	
Apts., condos, duplexes, & town homes	0.70
Commercial and industrial	0.90

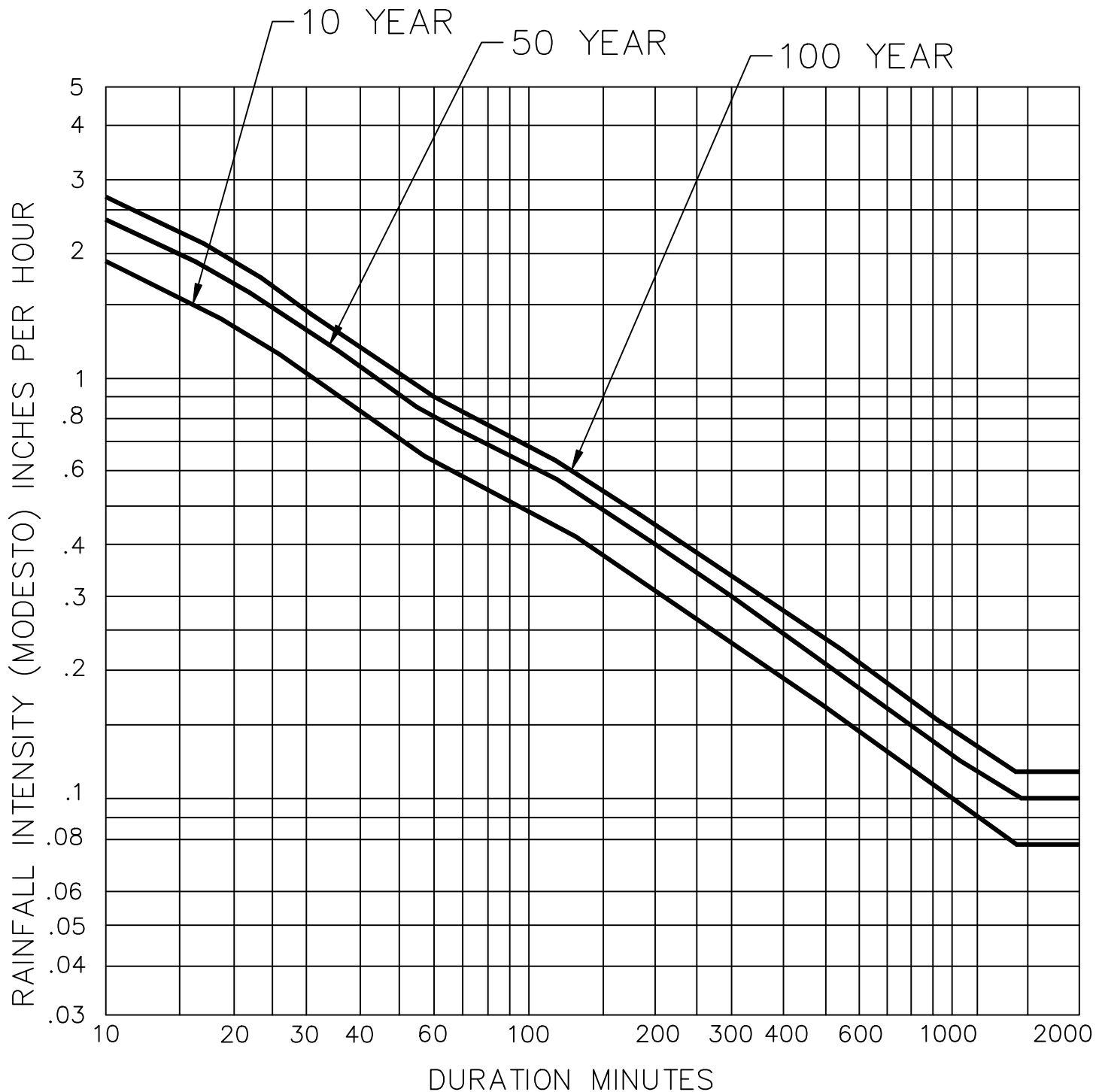
TABLE 4.3
HAZEN-WILLIAMS ROUGHNESS COEFFICIENTS

<u>Pipe Material</u>	<u>C</u>
Reinforced Concrete Pipe (RCP)	100
Cast in Place Concrete Pipe (CIP)	100
Poly Vinyl Chloride Pipe (PVC)/Plastic	130
High Density Poly Ethylene Ribbed (HDPE)	130
Steel Welded and Seamless	100
Cast Iron Pipe (CIP) - Coated	100
Cast Iron Pipe (CIP) - Uncoated	130
Cast Iron Pipe (CIP) - Galvanized	100

Note: Use of any other pipe material roughness coefficient not shown above must be in conformance with pipe manufacturer's recommendation and approved by the Engineer.

TABLE 4.4
ALLOWABLE VELOCITIES
FOR UNLINED OPEN CHANNELS

<u>Channel Material</u>	<u>Maximum Allowable Velocity (fps)</u>
Fine Sand	2.0
Sandy Loam	2.5
Alluvial Silt	3.0
Firm Loam	3.5
Fine Gravel	4.0
Stiff Clay	4.5
Coarse Gravel	5.0



THESE CURVES ARE BASED ON CALIFORNIA DEPARTMENT OF WATER RESOURCES DATA FROM THE MODESTO RAINFALL GAGING STATION. (MEAN ANNUAL PRECIPITATION = 10.9 INCHES).

TO OBTAIN INTENSITIES FOR LOCATIONS OTHER THAN MODESTO, MULTIPLY INTENSITY ON THIS CHART BY MEAN ANNUAL PRECIPITATION AT THE POINT IN QUESTION DIVIDED BY 10.90.



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

RAINFALL INTENSITY CURVES

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

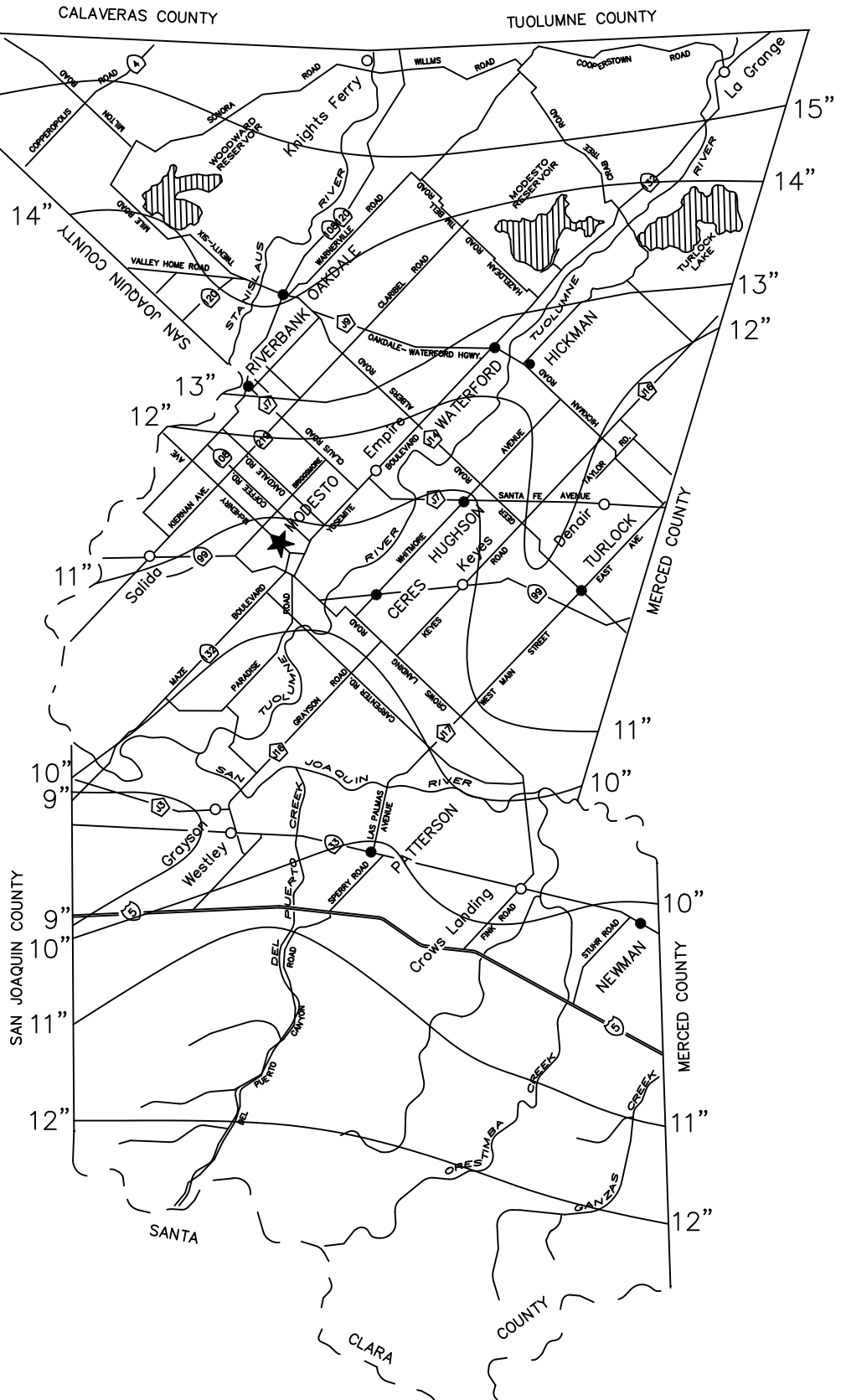
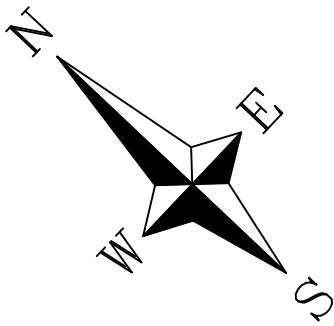
Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 4-A

STANISLAUS COUNTY



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Updated by	P. Saini	
Checked by	S. Erickson	

MEAN ANNUAL
PRECIPITATION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-B

PLATE 4-C1 REMOVED

PLATE 4-C2 REMOVED

PLATE 4-C3 REMOVED

PLATE 4-C4 REMOVED

PLATE 4-C5 REMOVED

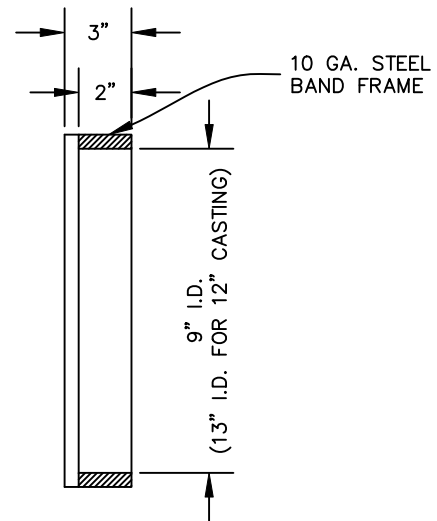
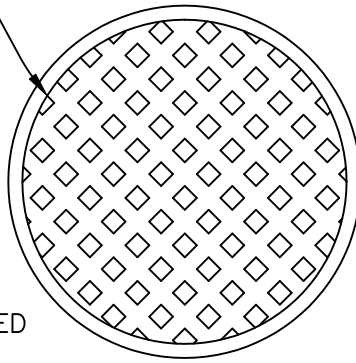
	No.	Revised	By	REMOVED PLATE C1 – C5	Approved by
					
	Updated by P. Saini				
Checked by S. Erickson			Date 01/02/2007 PLATE NO: 4C1		

Approved by

Director of Public Works
Date 01/02/2007
PLATE NO: 4-D1

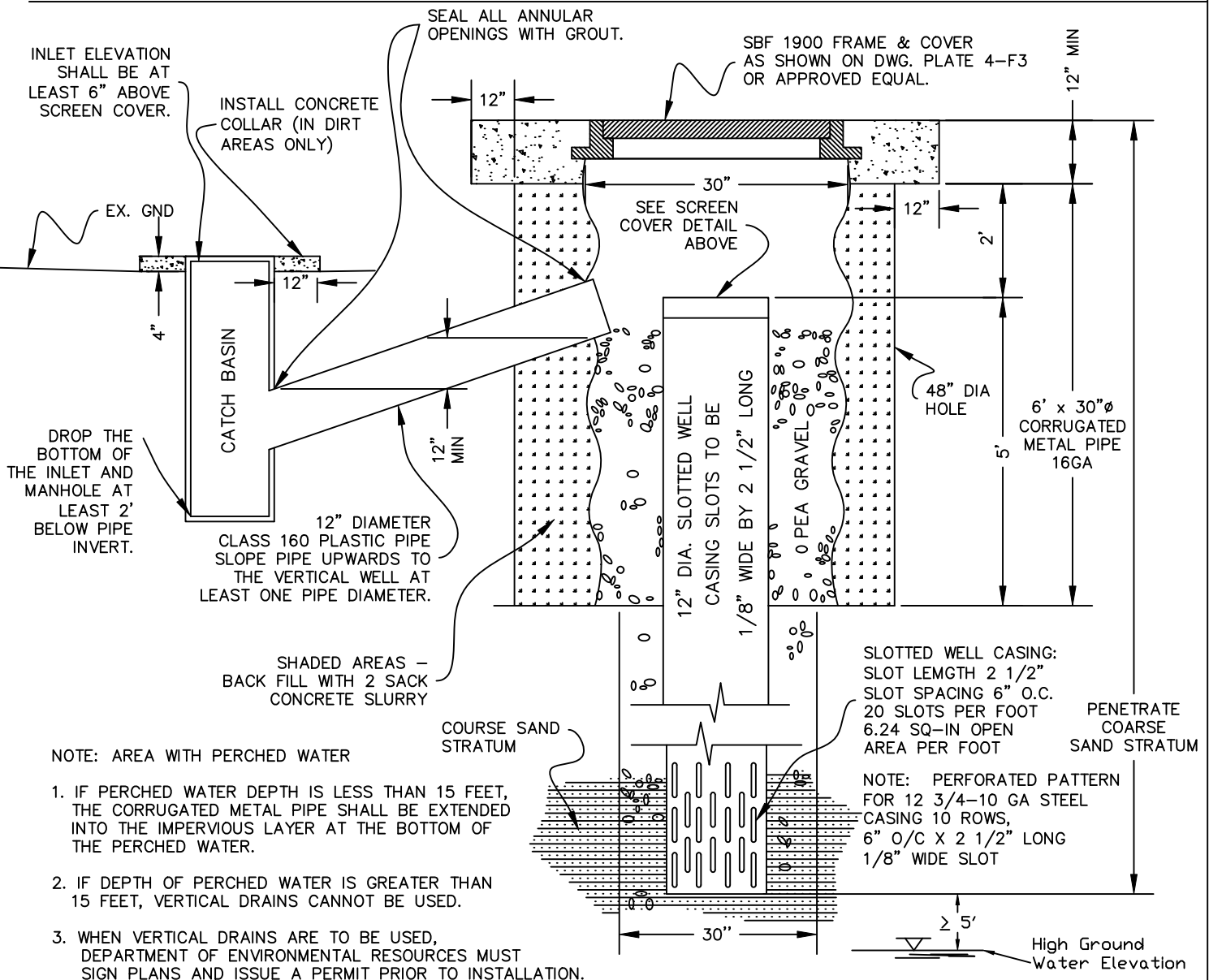
SCREEN COVER

SCREEN COVER
3" - 0-11
FLATTENED
EXPANDED METAL
WELDED TO FRAME



NOTE

1. UNIT TO BE HOT-DIPPED GALVANIZED AFTER MANUFACTURING.



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VERTICAL DRAIN

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

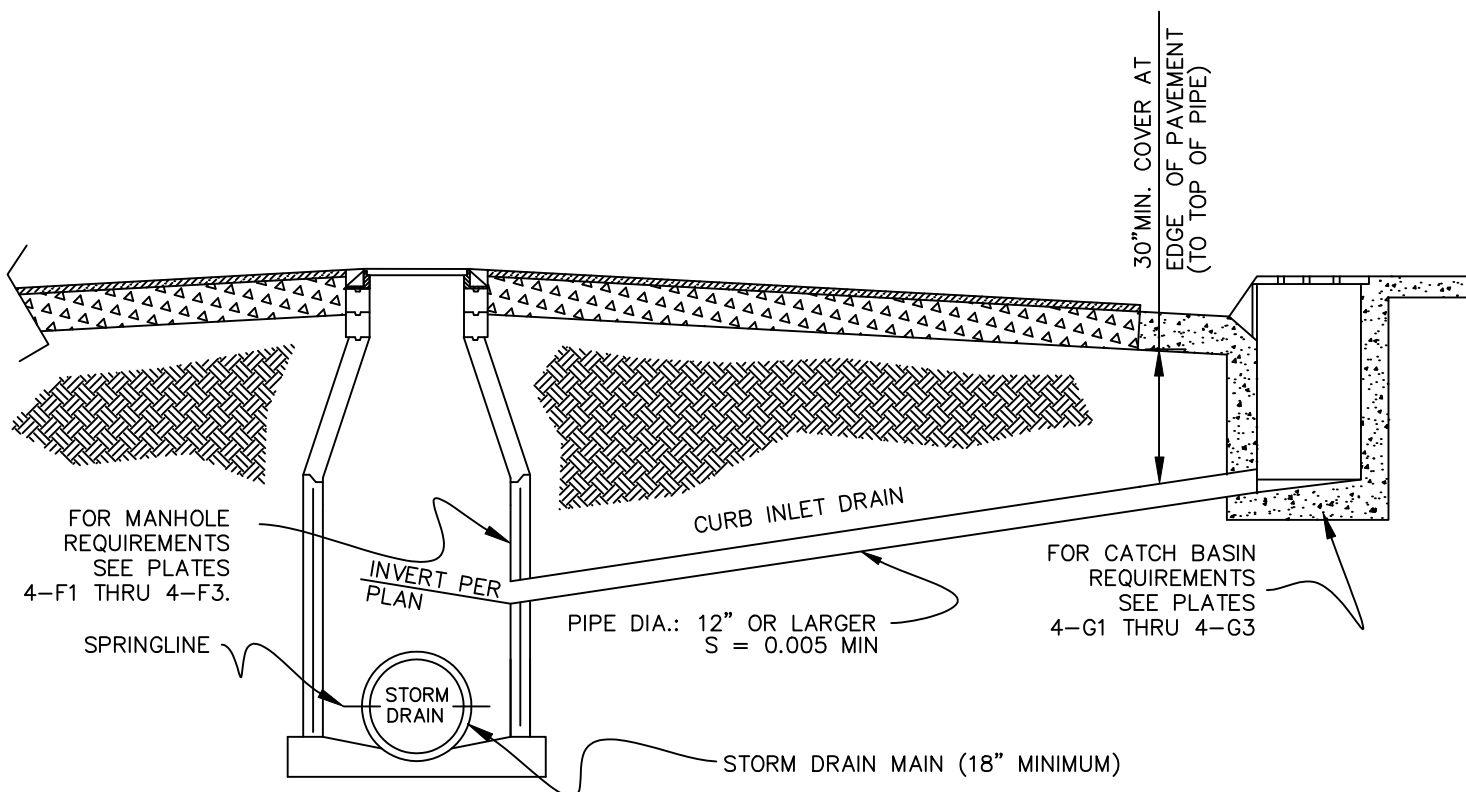
Approved by

Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 4-D2



NOTE:

FOR TRENCHING AND PIPE INSTALLATION
SEE PLATES 3-H1 AND 3-H2.



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CATCH BASIN TO MANHOLE CONNECTION

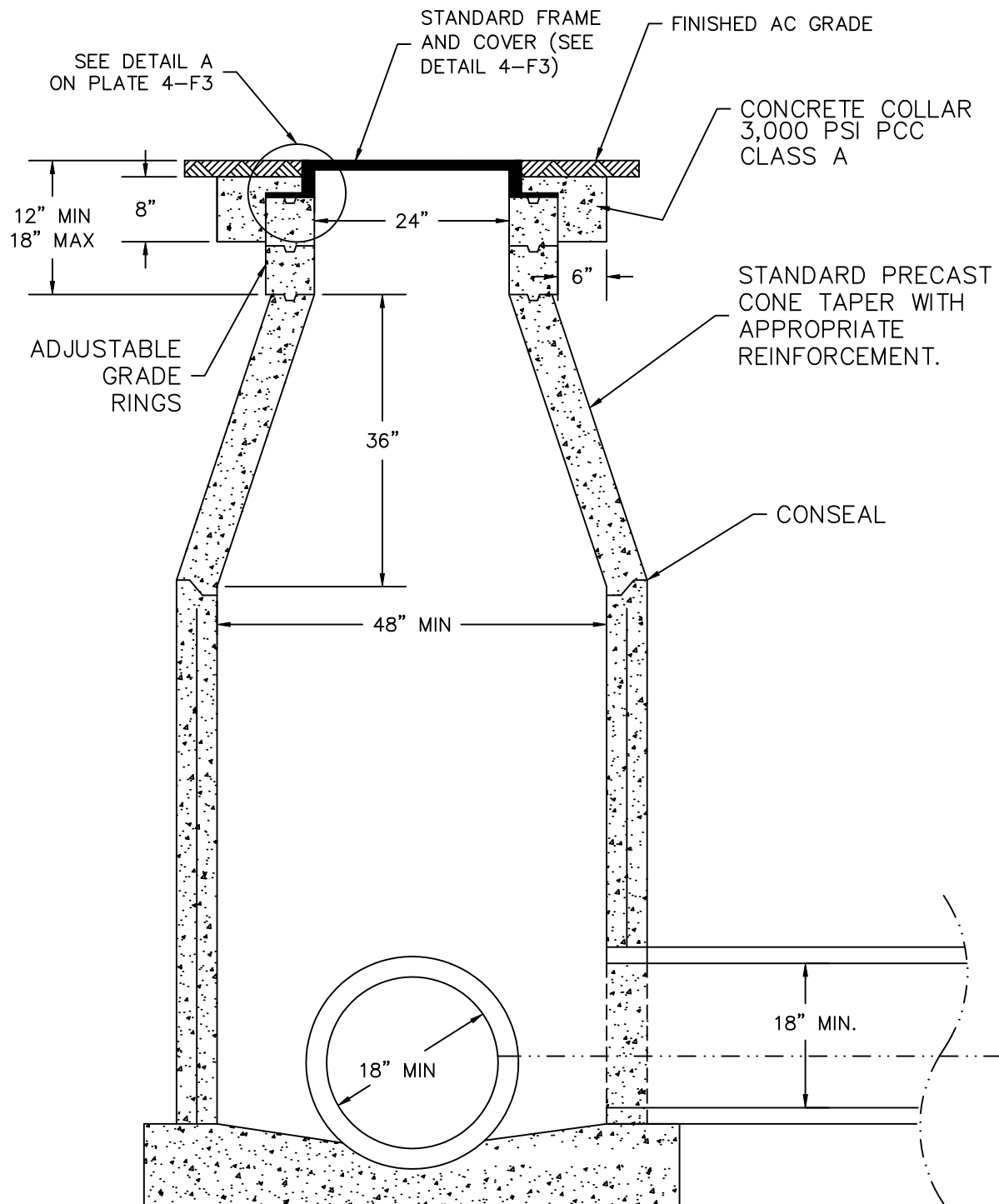
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DEPARTMENT OF PUBLIC WORKS

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Director of Public Works

Date 01/02/2007

PLATE NO: 4-E



NOTES:

1. FOR MANHOLE BASE SEE PLATE 4-F2
2. FOR MANHOLE FRAME AND COVER SEE PLATE 4-F3
3. MINIMUM D = 18" PIPE DIAMETER FOR STORM DRAIN MAINS & LATERALS



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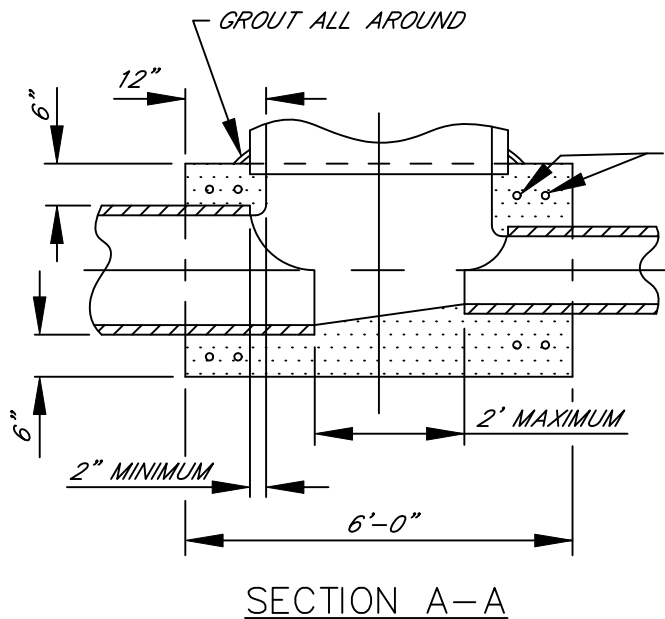
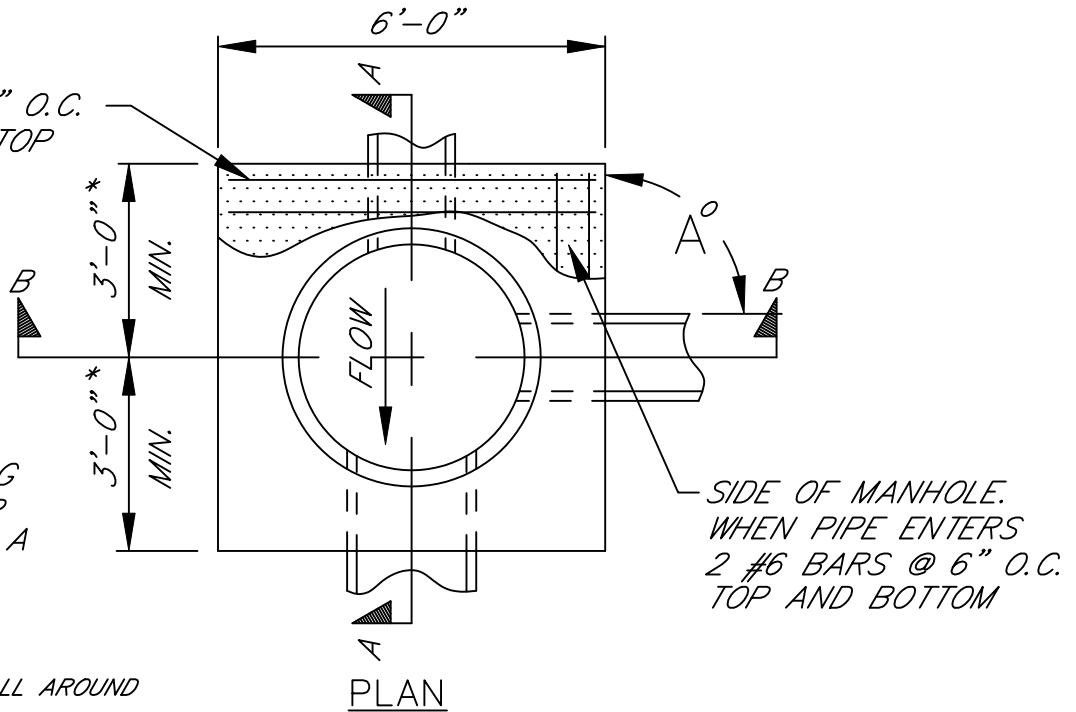
TYPICAL STORM DRAIN
MANHOLE

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	<i>Matt McCall</i>
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-F1

#6 BARS @ 6" O.C.
TOTAL OF 2. TOP
AND BOTTOM.

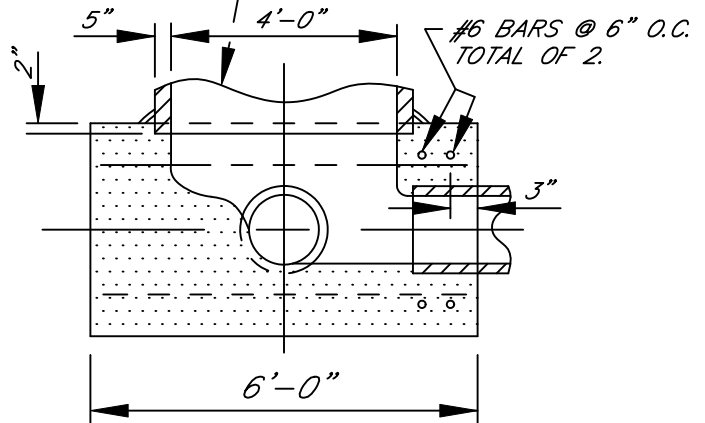
* MAY NEED TO BE
LONGER DEPENDING
ON PIPE DIAMETER
AND SKEW ANGLE A



TOTAL OF 2.

#6 BARS @ 6" O.C.

MANHOLE SHAFT



NOTES

1. ALL CONCRETE TO BE CLASS "A".
2. MATCH SPRING LINES OF PIPES ENTERING M.H. UNLESS OTHERWISE NOTED.
3. CUT PIPES TO ALLOW SETTING OF 4' DIAMETER CYLINDRICAL FORM FROM 6" ABOVE MAIN LINE PIPE TO SPRING LINE. CUT PIPE 2" LARGER THAN FORM TO ALLOW 2" CONCRETE OVER ENDS OF ALL CUT PIPE.
4. INVERT AND BASE OF M.H. TO BE POURED AND INVERT TO BE SHAPED BY HAND TO MAKE SMOOTH TRANSITION. FINISH WITH RUBBER FLOAT.
5. CENTER M.H. ON PIPE JOINT WHERE PIPE CHANGES SIZES, LEAVING A GAP OF 12" MINIMUM, 24" MAXIMUM.



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STORM DRAIN MANHOLE
BASE - 48"

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

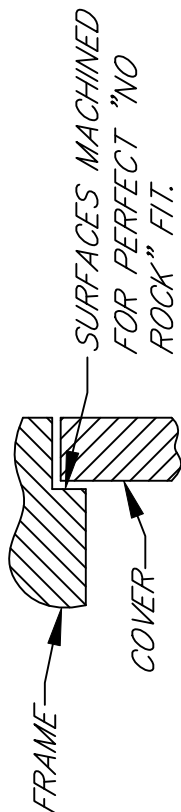
Approved by

Matthew Beckah

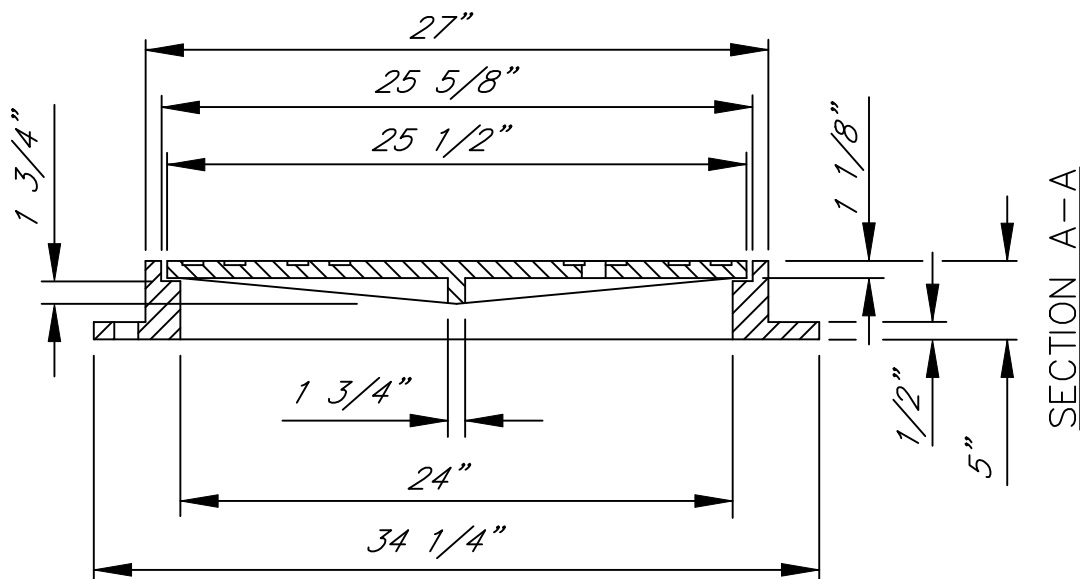
Director of Public Works

Date 01/02/2007

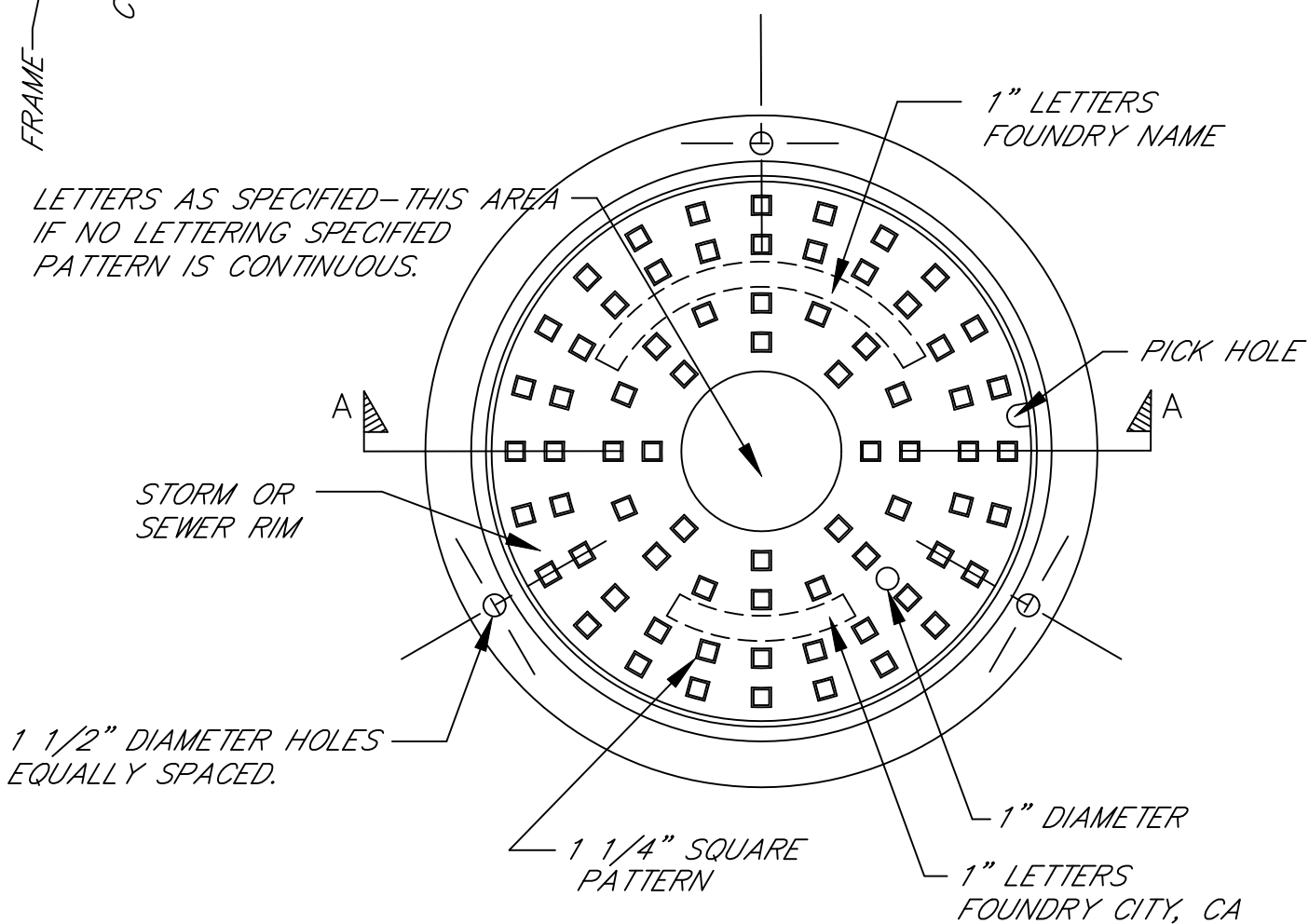
PLATE NO: 4-F2



DETAIL



LETTERS AS SPECIFIED—THIS AREA IF NO LETTERING SPECIFIED PATTERN IS CONTINUOUS.



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MANHOLE FRAME
AND COVER

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

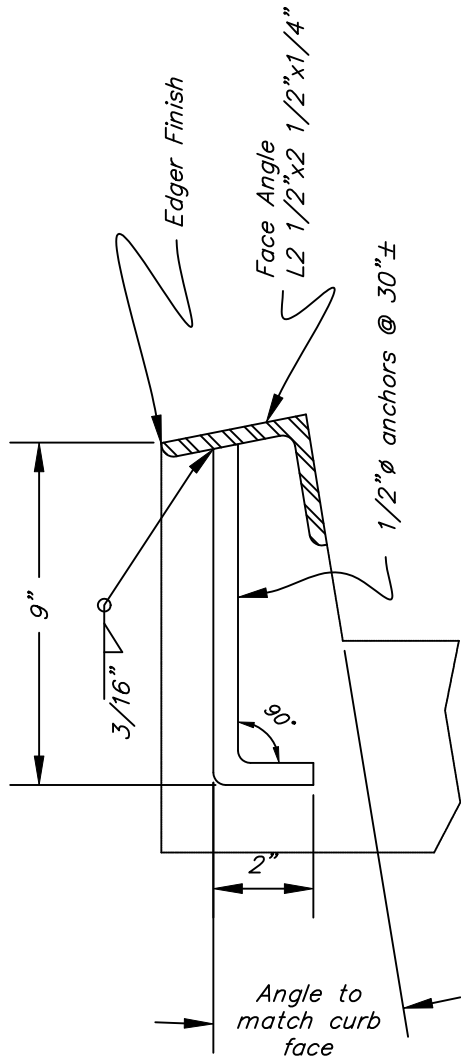
Approved by

Matt McCall

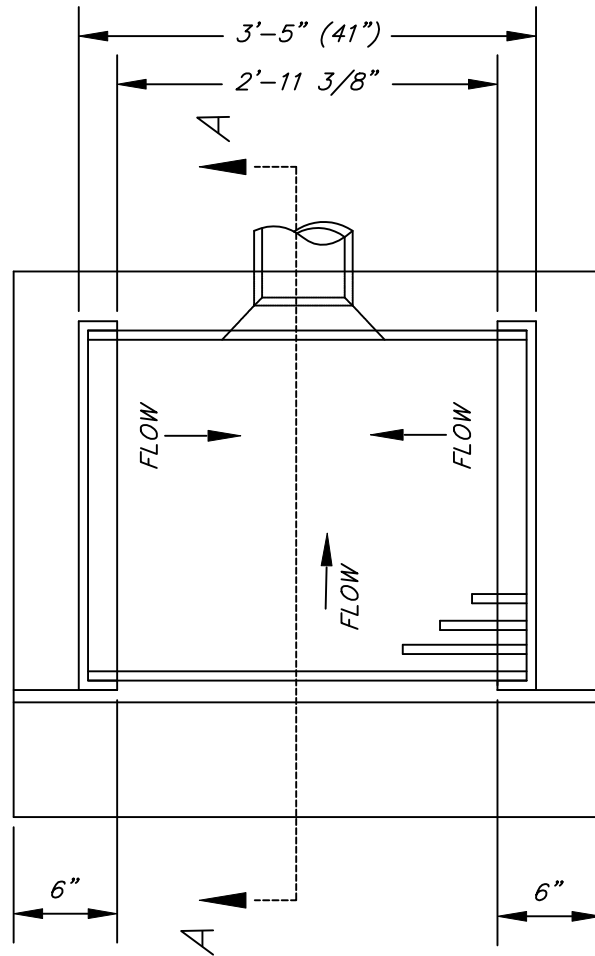
Director of Public Works

Date 01/02/2007

PLATE NO: 4-F3



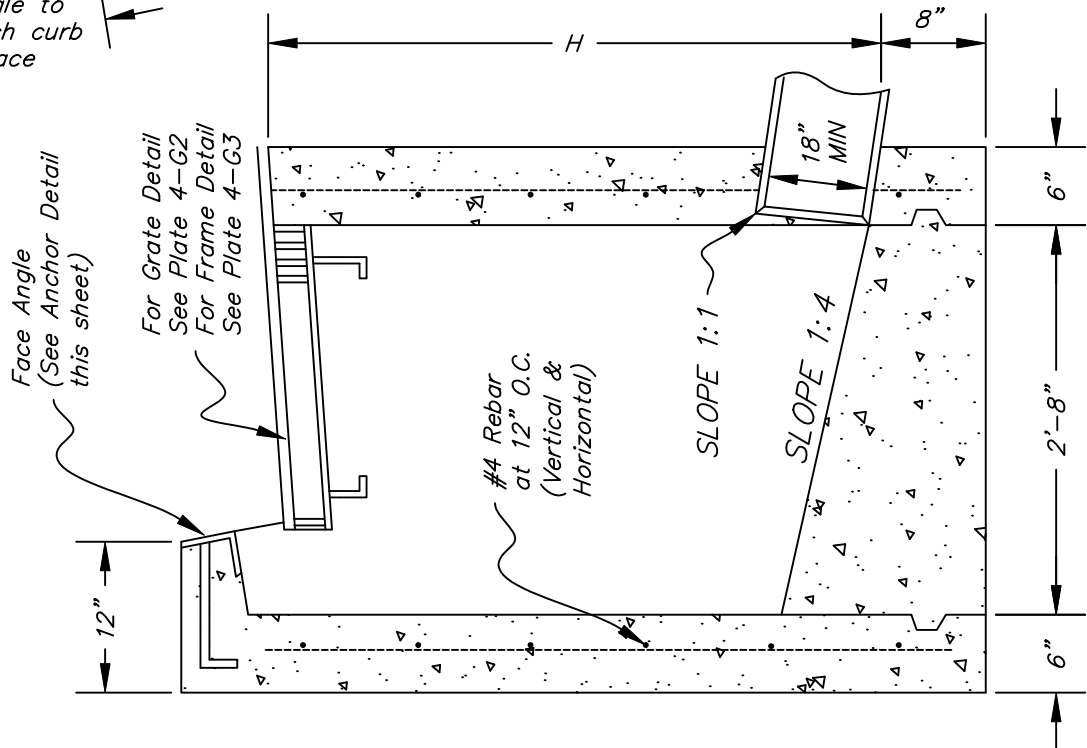
FACE ANGLE ANCHOR DETAIL



PLAN

Note:
All frame and grates shall be hot-dipped galvanized.

Basin frame and grate shall conform to Caltrans Standard Plate D74B, Type G.O.



SECTION A-A

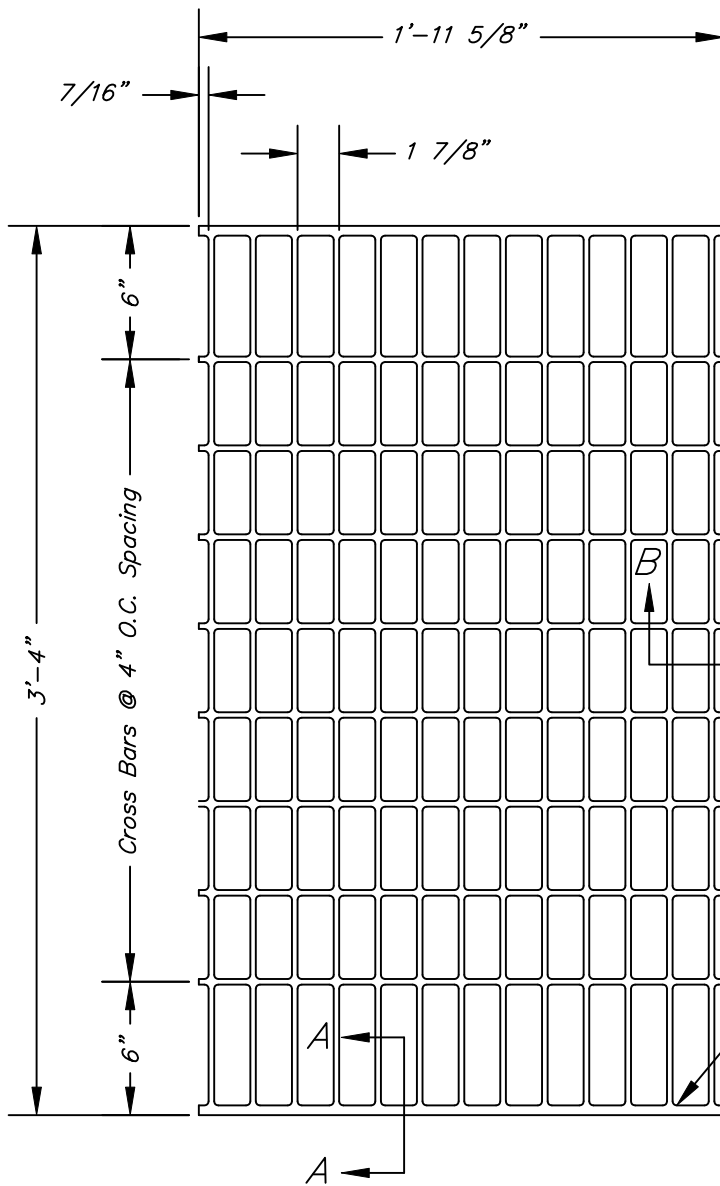


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GRATE WITH CURB OPENING
(G.O.) CATCH BASIN

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

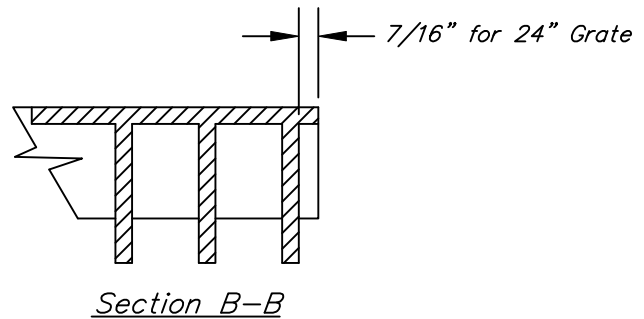
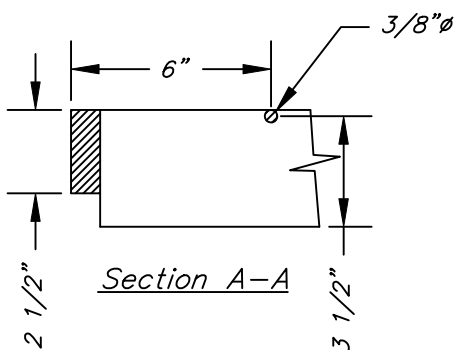
Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-G1



Notes:

1. Bearing bars to be 3 1/2" x 1/4" bars on 1 7/8" Centers.
2. 3/8" ϕ cross bars may be fillet welded, resistance welded or electroforged to Bearing Bars.
3. Weight of 24" grate = 141lbs.
4. Grate shall be chained to catch basin.
5. All frames and grates shall be hot-dipped galvanized.
6. Grate shall conform to Caltrans Standard Plan D77B, Type 600-13 Grate.

3/16 Fillet Weld full depth each side on outside bearing bars and on every third internal bearing bar.

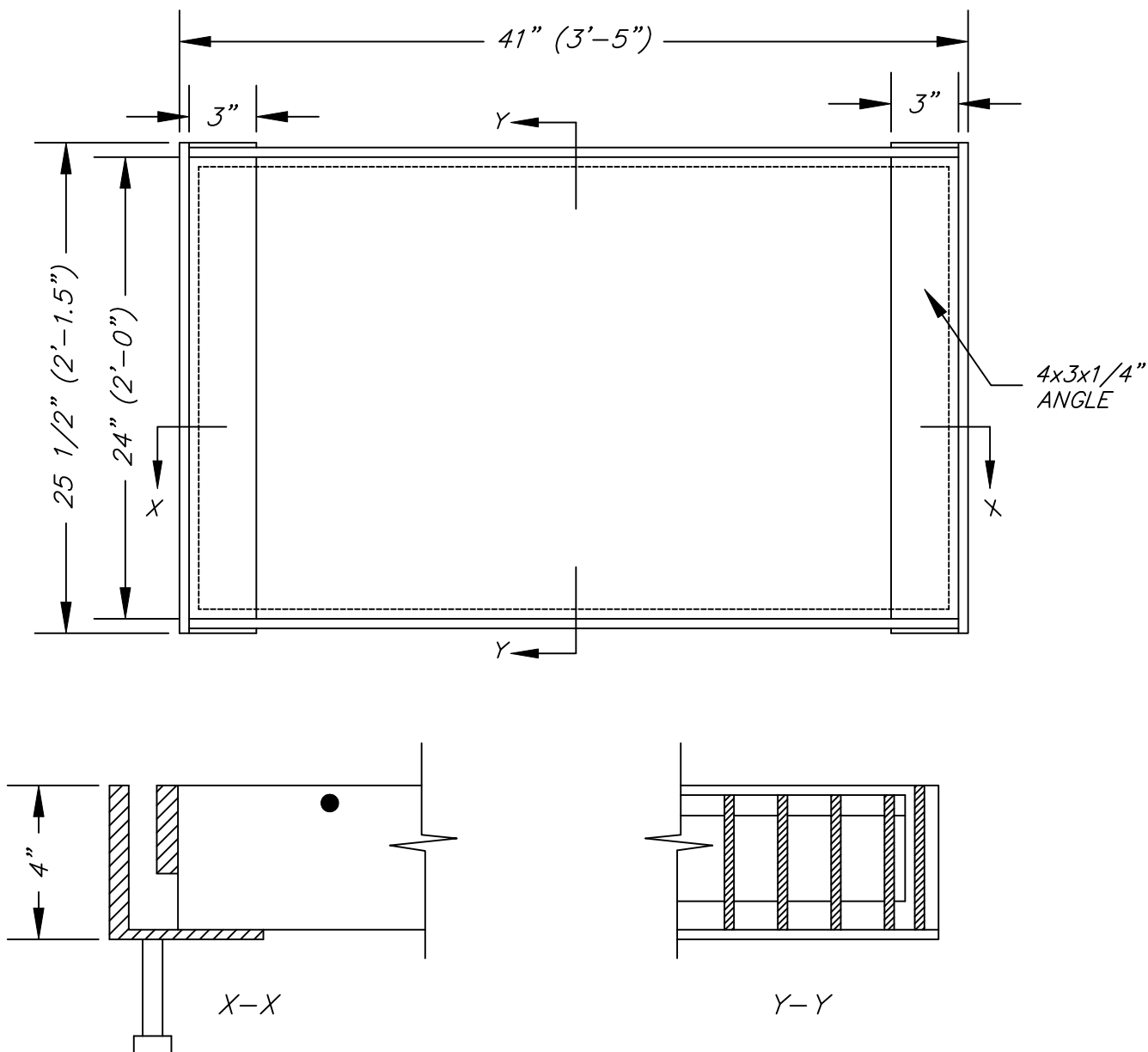


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

GRATE WITH CURB OPENING (G.O.) CATCH BASIN GRATE

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-G2



NOTE:

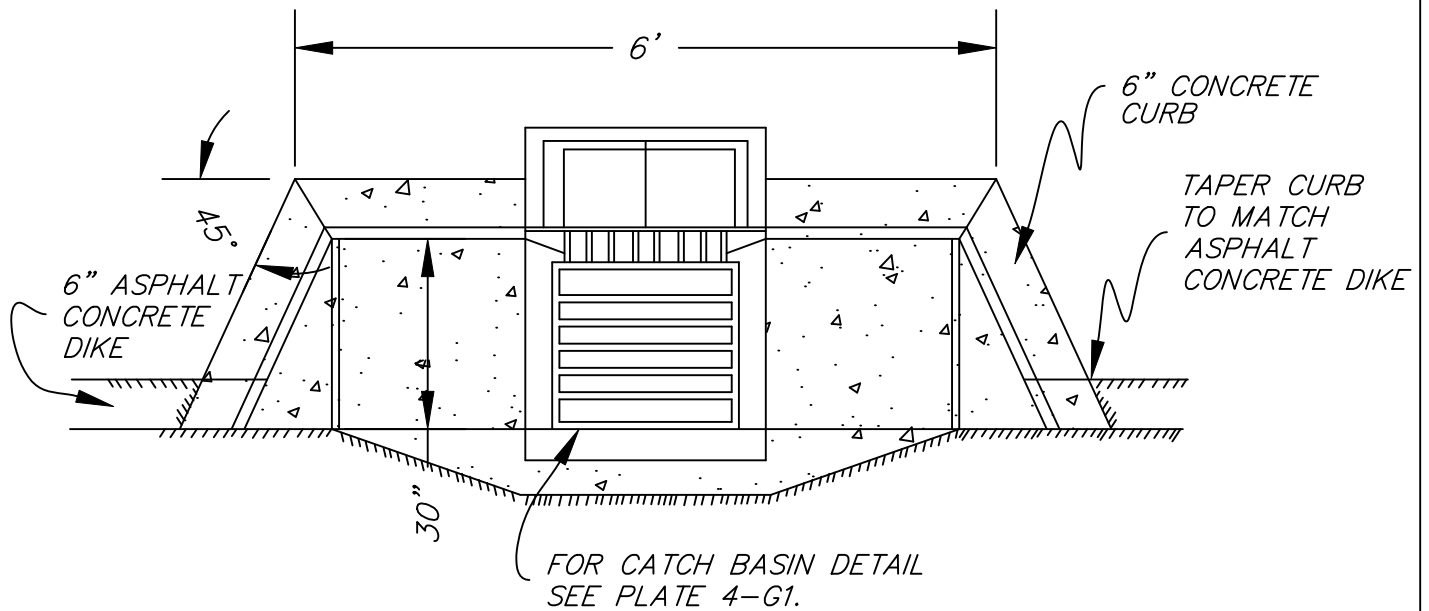
1. ALL FRAMES AND GRATES SHALL BE HOT-DIPPED GALVANIZED.
2. FRAME SHALL CONFORM TO CALTRANS STANDARD PLAN D77A, FOR TYPE 600 GRATE.



No.	Revised	By
Updated by	P. Saini	
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GRATE WITH CURB OPENING (G.O.) CATCH BASIN FRAME	
COUNTY OF STANISLAUS	
DEPARTMENT OF PUBLIC WORKS	

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-G3



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

G.O. CATCH BASIN
IN A.C. DIKE

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

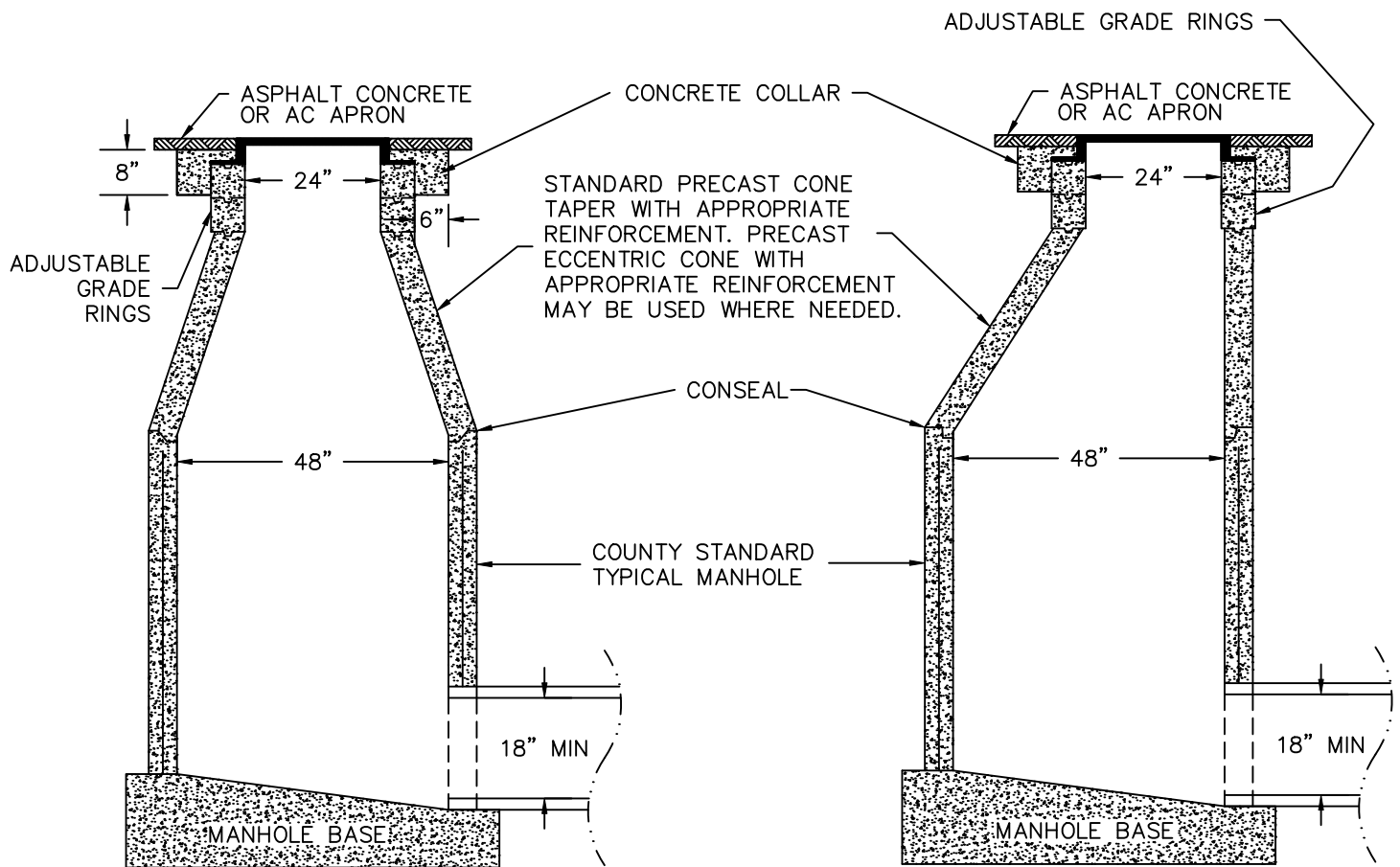
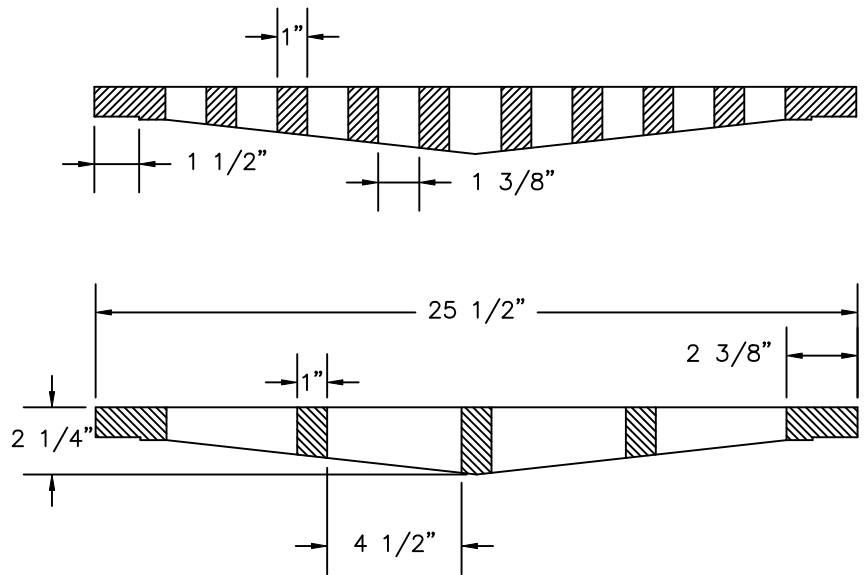
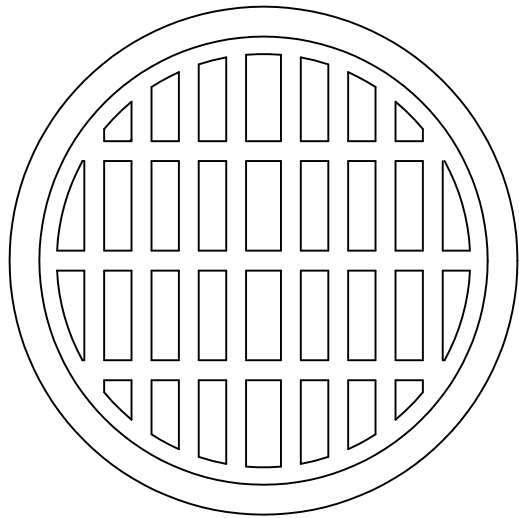
Approved by

Matthew Beckah

Director of Public Works

Date 01/02/2007

PLATE NO: 4-G4



NOTE: THIS CATCH BASIN IS TO BE USED IN AREAS WITHOUT CURBING OR ASPHALT CONCRETE. DIKE.

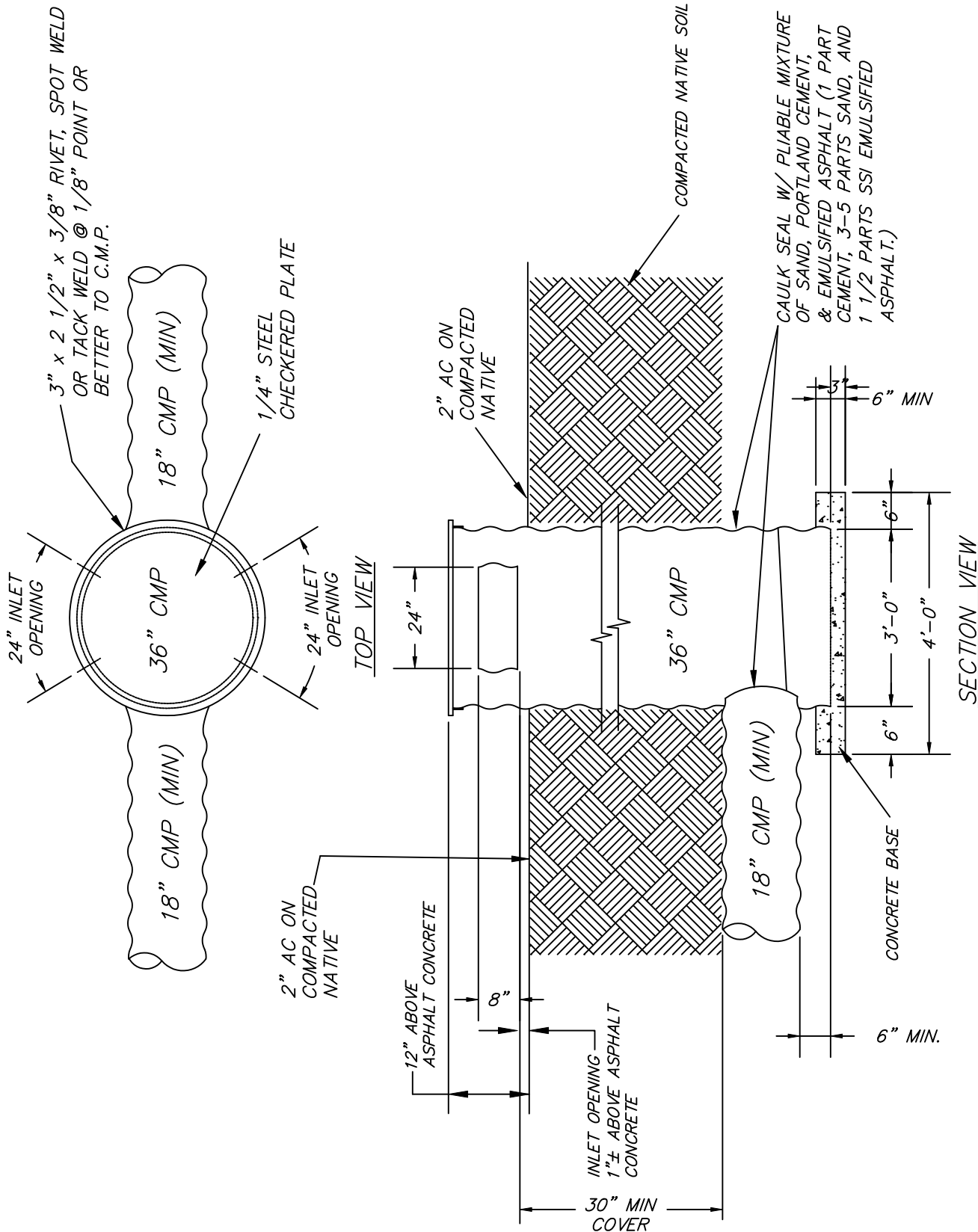
MINIMUM D = 18" PIPE DIAMETER FOR STORM DRAIN MAINS & LATERALS



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Checked by	S. Erickson	

CATCH BASIN ALTERNATIVE
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS

Approved by
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Date 01/02/2007
PLATE NO: 4-G5

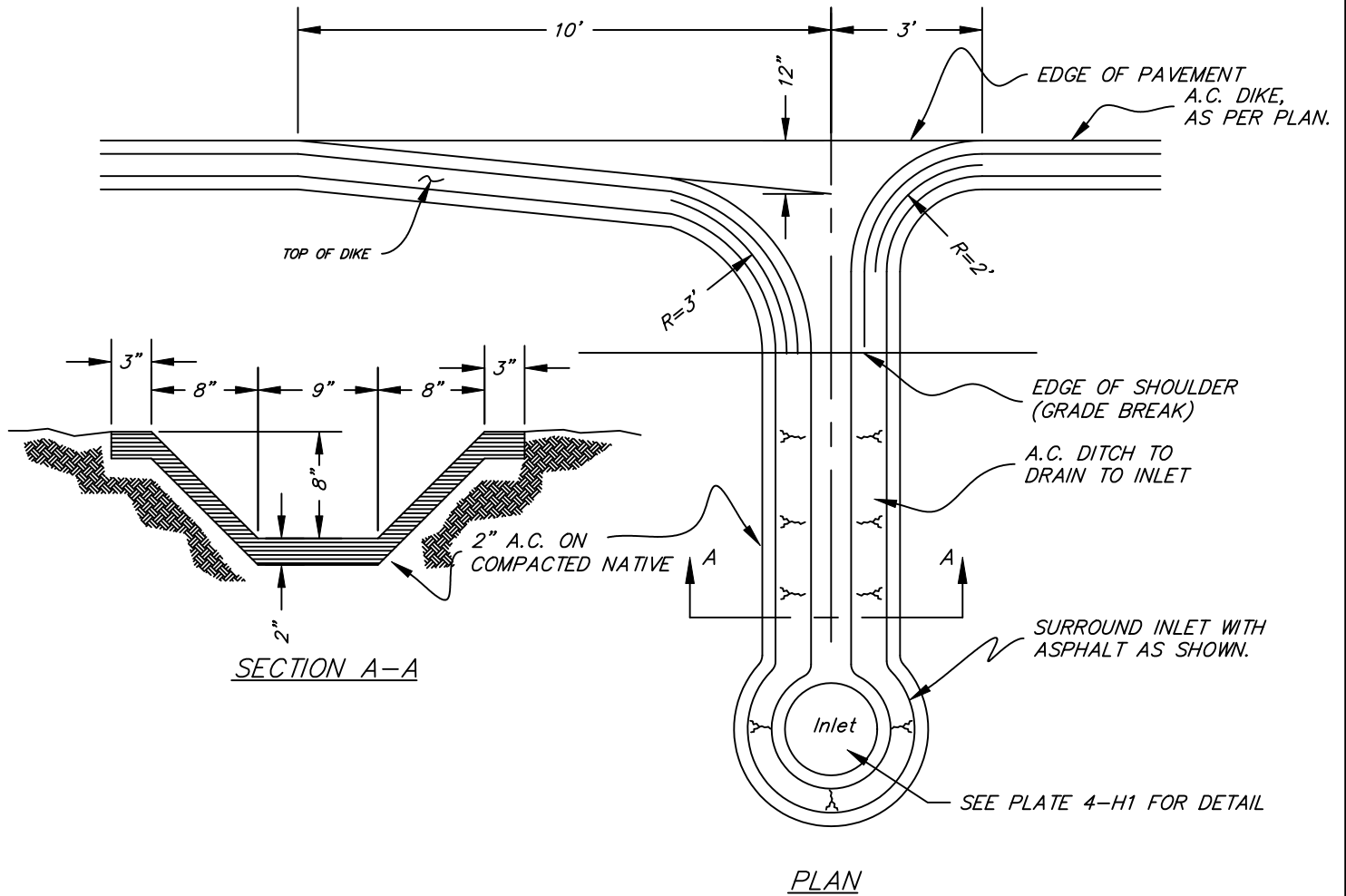


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Checked by		S. Erickson

OVERSIDE DRAIN
SHEET 1 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-H1

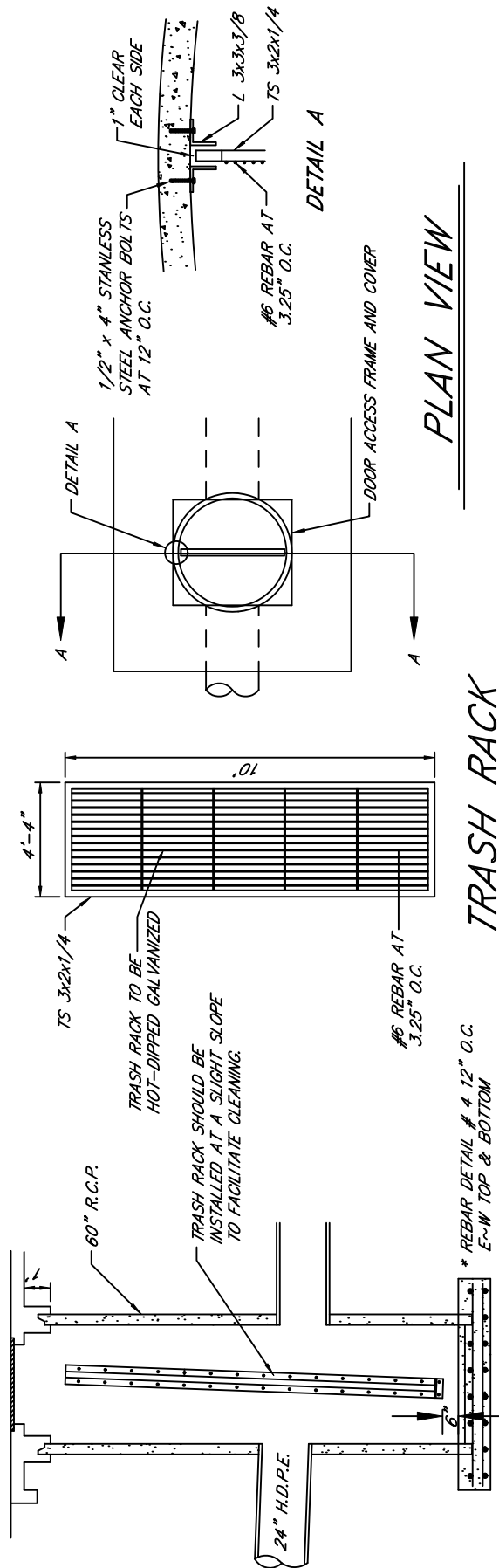


No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

OVERSIDE DRAIN
SHEET 2 OF 2

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

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Director of Public Works	
Date	01/02/2007
PLATE NO:	4-H2



PLAN VIEW

TRASH RACK

SECTION A-A

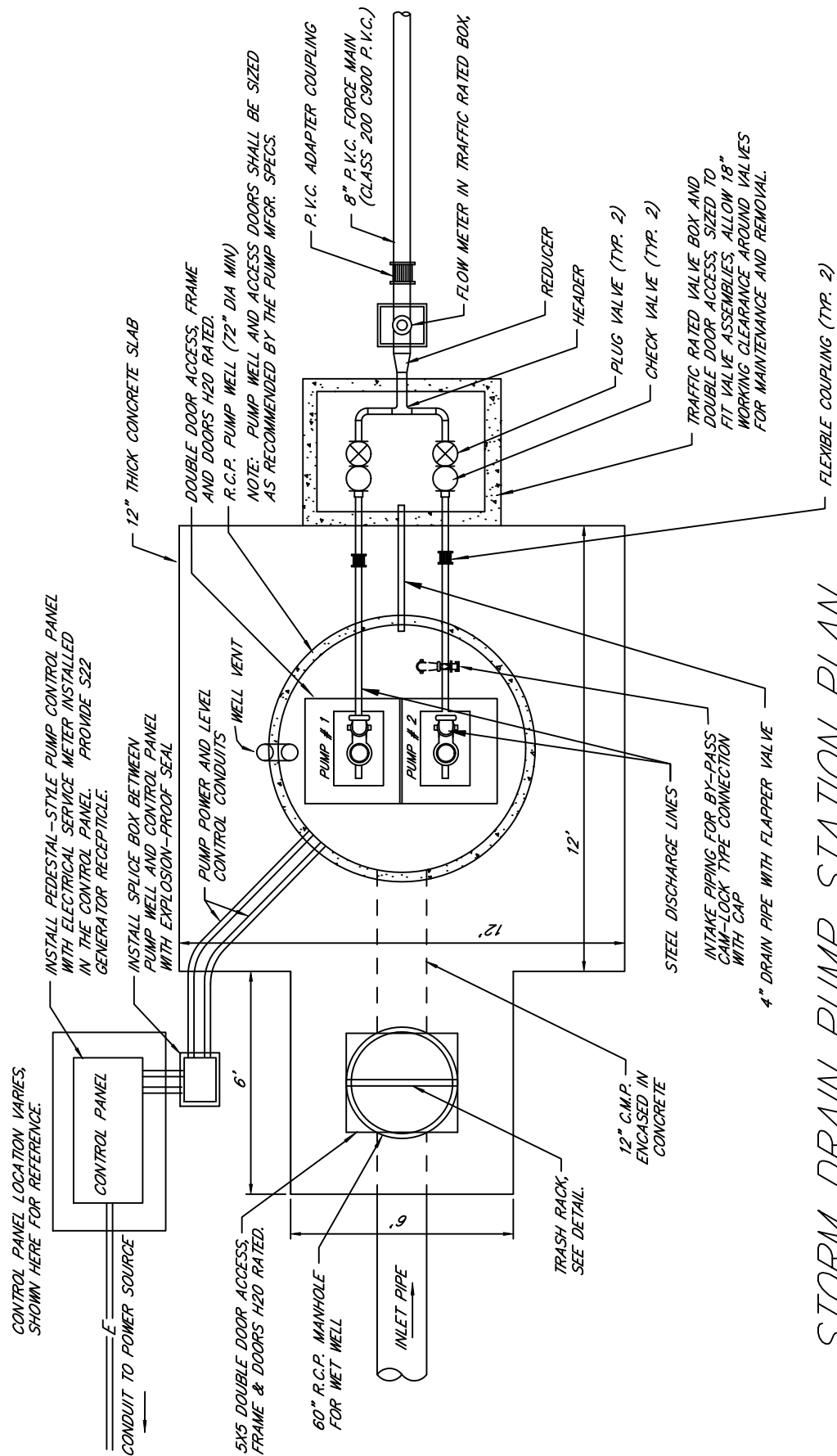


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Updated by	P. Saini	
Checked by	S. Erickson	

STORM DRAIN PUMP
STATION X-SECTIONS

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-12



STORM DRAIN PUMP STATION PLAN

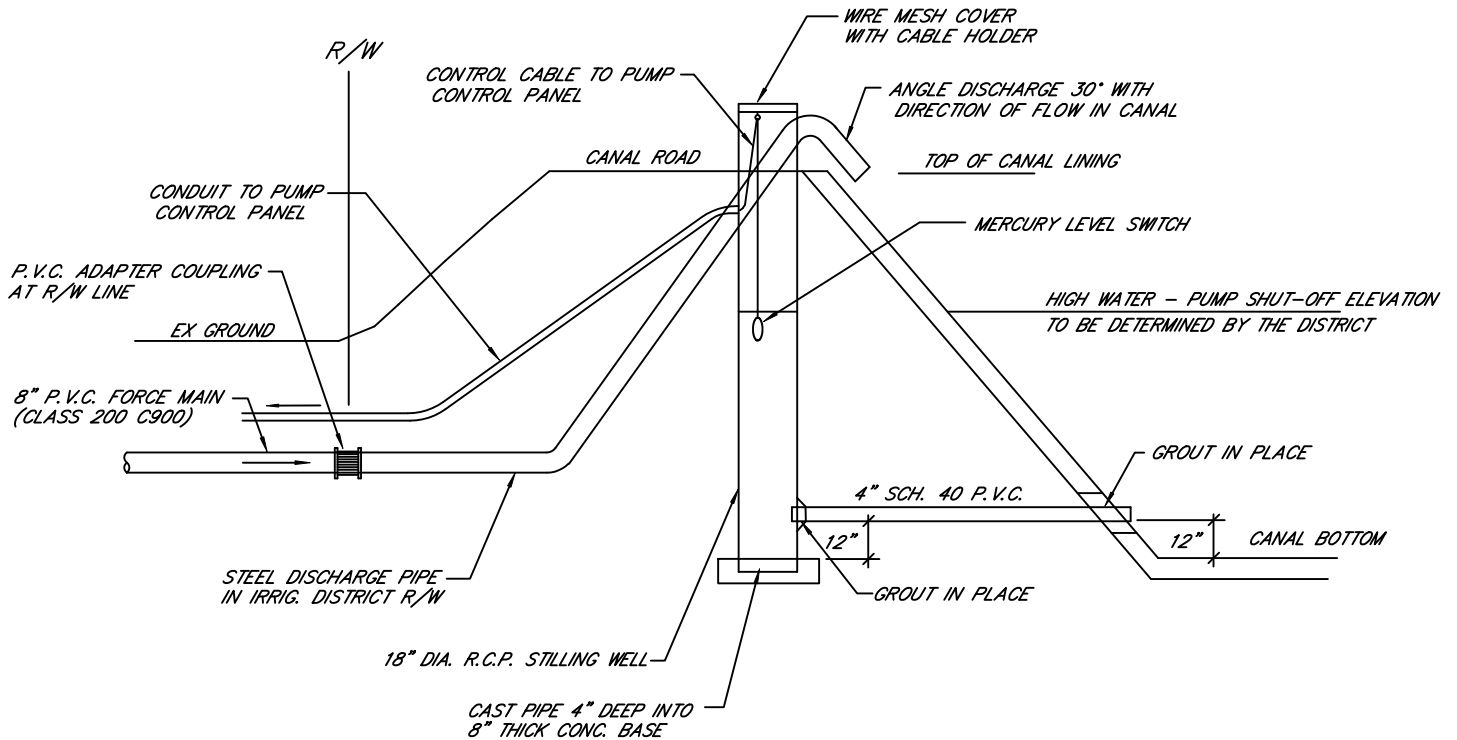


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Updated by	P. Saini	
Checked by	S. Erickson	

STORM DRAIN PUMP STATION PLAN VIEW

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	4-13



DISCHARGE DETAIL AT CANAL



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

TYPICAL FORCE MAIN DISCHARGE DETAIL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

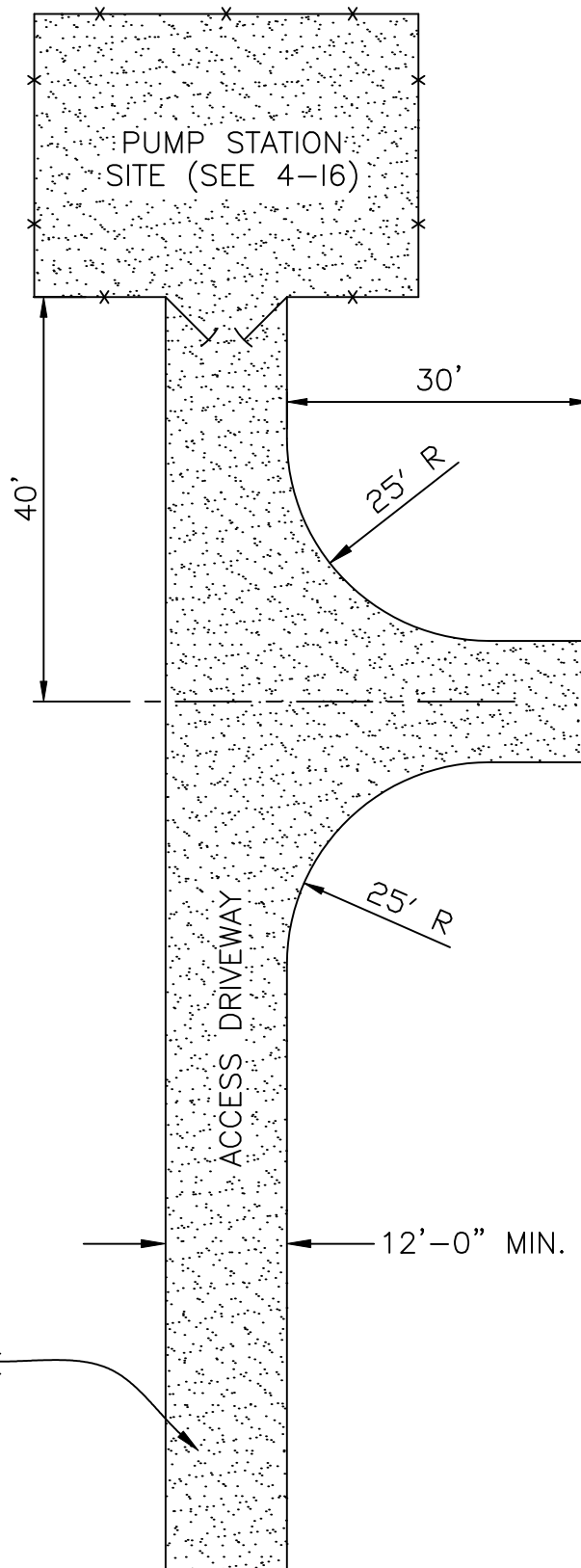
Approved by

Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 4-14



2" AC OVER 4" AB
OR 5 1/2" CONCRETE

PUBLIC STREET



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Updated by	P. Saini	
Checked by	S. Erickson	

ACCESS DRIVEWAY &
TURN AROUND AREA

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

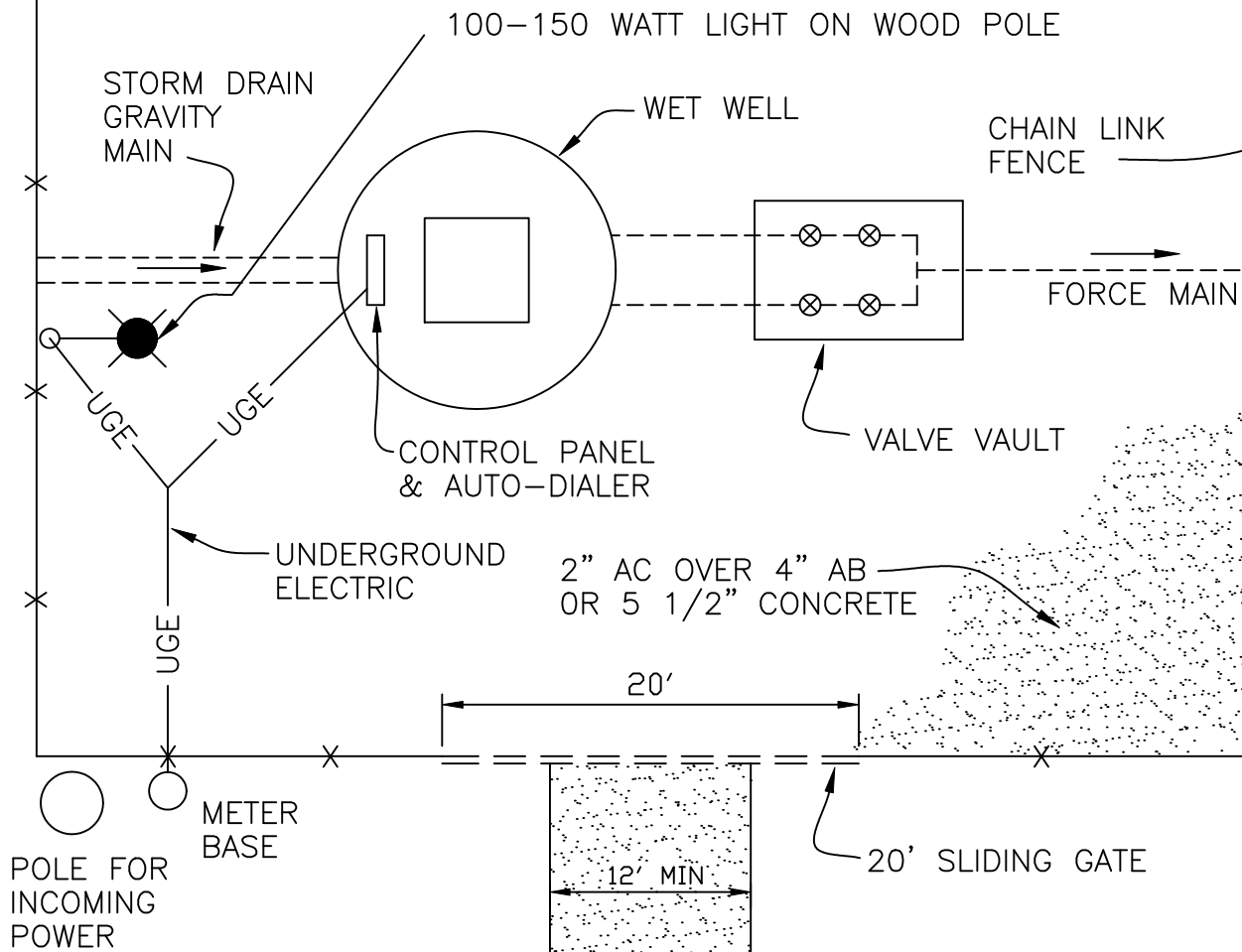
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Matt McCall

Director of Public Works

Date 01/02/2007

PLATE NO: 4-15



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TYPICAL PUMP STATION SITE PLAN

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

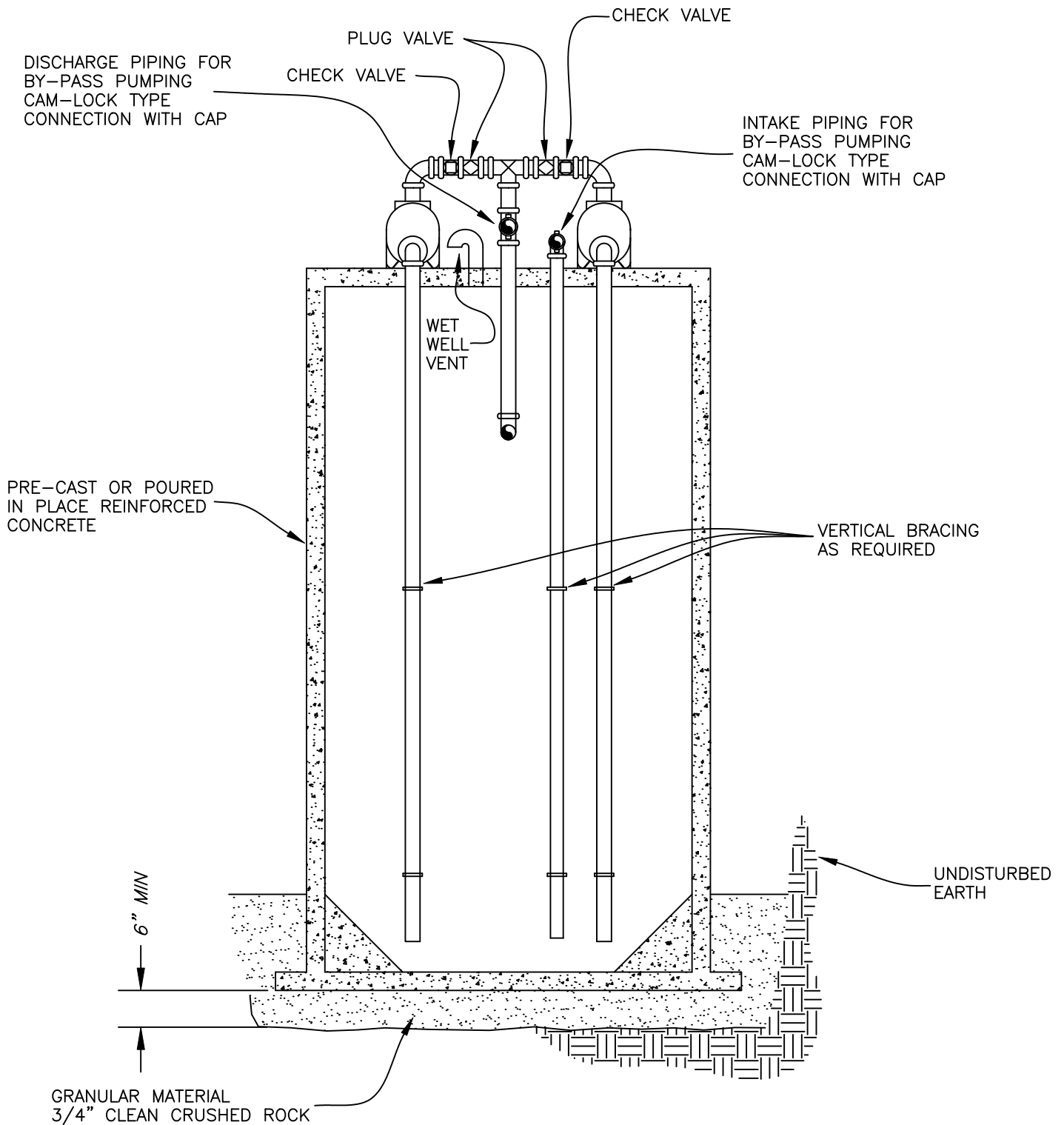
Approved by

Matthew Beckah

Director of Public Works

Date 01/02/2007

PLATE NO: 4-16



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

TYPICAL LIFT STATION CROSS SECTION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

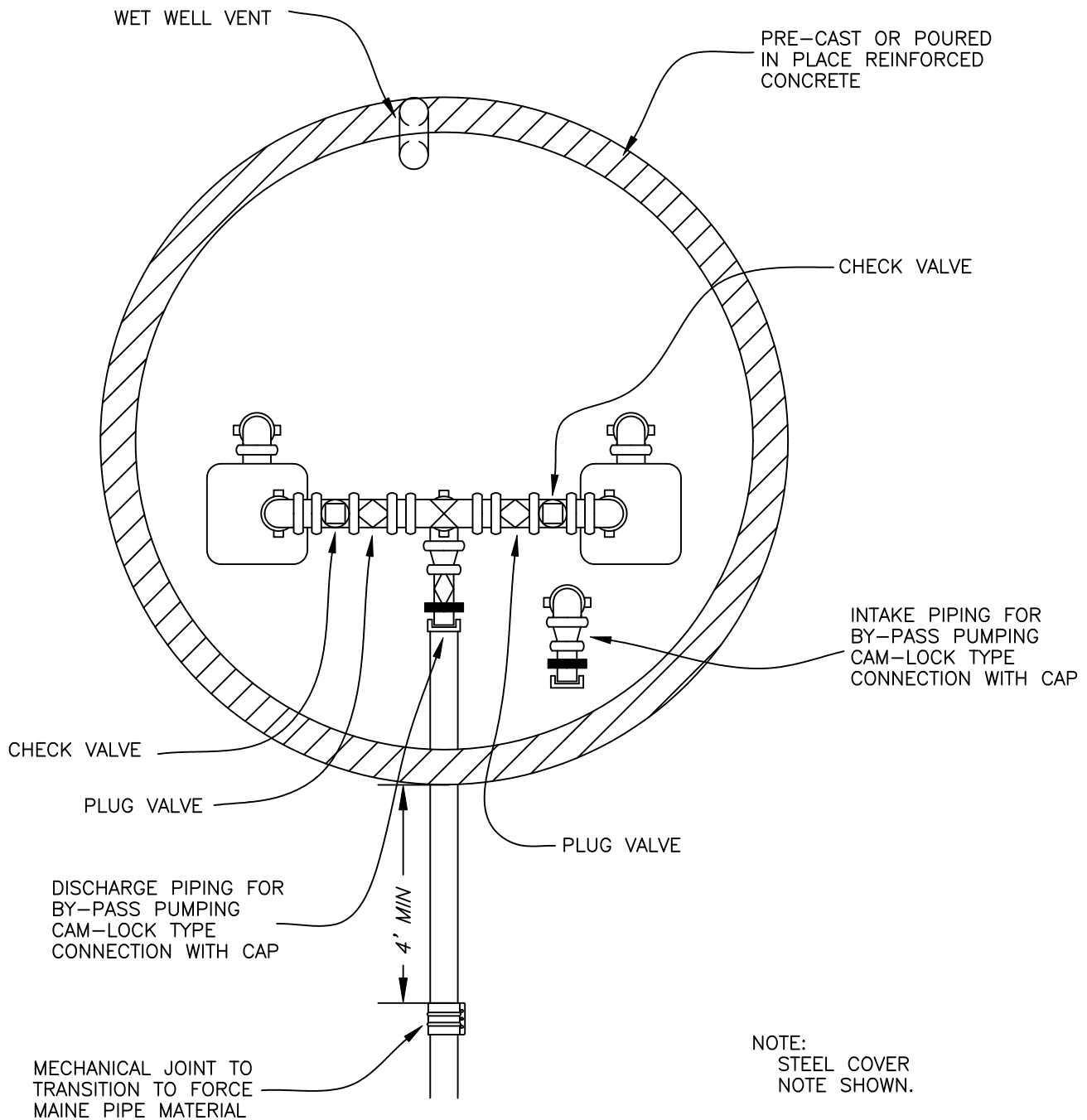
Approved by

Matt K. Behal

Director of Public Works

Date 01/02/2007

PLATE NO: 4-17



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STORM DRAINAGE DESIGN SPREADSHEET

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STORM DRAINAGE DESIGN SPREADSHEET
(CONTINUED)



No.	Revised	By	STORM DRAINAGE DESIGN SPREADSHEET	Approved by
				
				Director of Public Works
Updated by P. Saini			COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	Date 01/02/2007
Checked by S. Erickson				PLATE NO: 4-J

CHAPTER 5: LIGHTING

- 5.1 GENERAL:** Street lighting shall be installed to conform to these minimum Standards by a Contractor holding an appropriate license for such work under the provisions of the State of California Business and Professions Code. Alternative higher standards that may be adopted by the Planning Commission or Board of Supervisors shall be applied, as appropriate. In the development of the plans, the Engineer shall be consulted to insure coordination with the electrical distribution systems as proposed by the Utility.

Electrical equipment shall conform to the requirements of the National Electrical Manufacturers' Association and material and work shall conform to the requirements of the National Electrical Code, the Electrical Safety Orders of the Division of Industrial Safety, Department of Industrial Relations of the State of California, Public Utilities Commission, the Standards of the American Society for Testing Materials and the American Standards Association.

- 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.

All street lights to be installed shall be shown on the Plans. The location of the power source(s), the location of pull box(es) containing circuit fuse and of all conduit runs shall be shown on the Plans or on the final as-builts. The plans shall also include these following items:

- a. Location of electroliers in accordance to County Standard Plates.
- b. Intensity of luminaries (i.e. wattage).
- c. 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 Design engineer shall provide the final as-builts prior to final acceptance of the construction improvements and prior to having the street lights energized.

The circuit lengths and conductors shall be sized such that the maximum voltage drop between the source and any street light does not exceed 5 percent of the nominal circuit voltage.

The spacing and location for 25-foot poles and 28-foot poles shall be as shown on the Plates contained in these Standards.

- 5.3 CONDUIT:** Conductors shall be run in metal conduit except when run inside poles. Conduit and fittings shall be rigid metal or intermediate metal in locations where approved by the National Electric Code. Conduit shall be 1-inch minimum in diameter. All fittings installed in concrete shall be of the concrete tight type.

Conduit shall be zinc-coated by the sherardizing, hot-dip or electroplating process. Each length shall bear the label of the Underwriters Laboratory, Inc.

Conduits shall be bonded together in pull boxes and pole bases with not less than No. 8 AWG copper wire.

Where factory bends are not used, conduit shall be bent without crimping or flattening using the longest radius practicable. In no case shall the bend radius be less than six times the inside diameter of the conduit.

Conduits crossing an existing paved right-of-way shall be installed by the jacking or boring method and shall be installed 30 inches below flow line grade.

- 5.4 CONDUCTORS:** Conductors shall be No. 10 copper or larger, THW single conductor and Underwriters Laboratory approved.

No conductors shall be drawn into the conduit until the conduit run is complete and the conduit is free of debris. If the conduit is installed in a pole foundation, the conductors shall not be drawn into the conduit for at least 3 days after placement of the foundation concrete.

Conductors shall not be spliced except in pole bases (or in pull boxes when approved by the 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. Where specifically approved by the Engineer, splices in pull boxes shall be made using Ilson IK8 10 STP-8 STP split bolt or approved equal to connect wire ends. Split bolt shall be wrapped first with 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.

Each light shall be individually fused (in accordance with Section 5.13) in the pull box at the base of the street light standard.

5.5 PULL BOXES: Pull boxes shall be concrete and conform to Caltrans No. 3-1/2 pull box specifications. The pull box installation shall conform with the Plates contained in these Standards and meet the following minimum requirements:

- a. A pull box shall be installed at the base of each street light standard.
- b. Where a utility company transformer is designated as the service point, a pull box shall be installed adjacent to the transformer with a fuse holder and fuse installed in this pull box.
- c. Additional pull boxes shall be installed in conduit runs as necessary so that no conduit run shall exceed 200 feet between pull boxes.
- d. Traffic pull boxes conforming to Caltrans specifications shall be used in areas subject to vehicular traffic.
- e. All pull box lids shall be marked "Street Lighting."
- f. One pull box shall be located at each side of all street crossings, at or near the curb return.
- g. Pull boxes shall be placed immediately behind the sidewalk in sidewalk areas or 4 feet behind the back of the curb in non-sidewalk areas.
- h. Where a utility company transformer is designated as the service point, a pull box shall be installed adjacent to the transformer.

5.6 FOUNDATIONS: Foundations for poles shall be constructed of concrete and shall be located in conformance with the Plates contained in these Standards.

Foundations shall be placed monolithically to within 4 inches of sidewalk grade. After pole is installed, a 36-inch square cap shall be placed to bring the foundation to sidewalk grade.

All work on foundations must conform to Section 15-2 "Miscellaneous Highway Facilities" and Section 86-2 "Materials and Installation" of the State Standards. Sidewalk grade shall conform to these Standards.

In no case shall the base of the standard be permitted to be more than 2 inches above grade. Where the new grade will be higher than the original established grade, the standards may be raised as permitted by unused threads on the anchor bolts. In all cases, a full nut of threads must be maintained. Welding of anchor bolts is not allowed. Base of standards may never be left below grade. Where these standards cannot be met, a new pole foundation must be installed.

Where steel poles are to be served by an overhead service, acceptable landing gear shall be provided and the foundations shall include a concrete-encased grounding electrode complying with Article 250-81(c) of the National Electrical Code.

5.7 ANCHOR BOLTS: Anchor bolts shall be 1 inch in diameter, 36 inches long with a 4 inch "L" bend at the bottom end and a minimum of 6-inches of threading at the top end. Anchor bolts shall conform to ASTM Designation A-307, at a minimum.

5.8 POLES: Poles shall be hot-dip galvanized steel. The 28-foot poles with 15-foot arms shall be Ameron Catalog No. N-2815-2 or an approved equal. The 25-foot poles with 15-foot arms shall be Ameron Catalog No. N-2515-2 or an approved equal. Pole tops and base covers shall be furnished and installed with each pole. Poles shall meet the following minimum standards:

Poles shall not be installed until the foundation has set at least 5 days. Poles shall be plumbed by adjusting the leveling nuts; leveling shims shall not be used. The poles shall be grounded to conform to the provisions of the National Electrical Code.

Poles shall have hand-holes near their bases. The hand covers shall have theft-proof bolts.

When the pole is not located at the back of the sidewalk, the length of the luminaire arm shall be as directed by the Engineer.

All poles shall have a single arm.

Pole height and arm length shall be as shown in the Standard Plates.

- 5.9 ELECTROLIERS:** The electroliers shall be located according to size as shown on the Plates contained in these Standards. Streetlights shall be placed at street intersections and curves whenever possible. Additional lights may be added as required.

The luminaires shall be as follows, or an approved equal:

- a. 200 Watt I.E.S. Type III I.T.T. 113-62J3
G.E. M2RR20S1A2GMS2
Hubbell RM GT 20 S31 071 0 3 4 0
- b. 150 Watt I.E.S. Type II I.T.T. 113-56262
or Type III G.E. M2RR15S1M2GMS2
Hubbell RM GT 15 S31 061 0 3 4 0
- c. 100 Watt I.E.S. Type II I.T.T. 113-56262
or Type III G.E. M2RR10S1M2GMS2
Hubbell RM GT 10 S31 061 0 3 4 0

Luminaires shall have high-pressure sodium vapor lamps, glass refractors, built-in receptacles for photoelectric cells and regulator or auto-regulator type ballasts with a power factor of not less than 92%.

- 5.10 PHOTOELECTRIC CELLS:** Photoelectric cells shall be adjustable, compatible with related equipment and adequate for the load. They shall be General Electric No. C402G660, Fisher Pierce No. 6690B or an approved equal.

- 5.11 INSTALLATION:** The trench excavation shall be made by the Developer as shown on the Plates contained in these Standards. Trenches shall be straight and of even depth. Special locations or depths must be approved by the Engineer prior to excavation.

The conduit shall be laid in the trench as shown on the Plates contained in these Standards. Wherever possible, the conduit shall be placed adjacent to the sidewalk for protection from future excavation. Conduit shall be jacked or bored at existing street crossings.

- 5.12 BACKFILL:** The backfill shall be compacted as shown on the Plates contained in these Standards.

- 5.13 CONNECTION TO ELECTRICAL DISTRIBUTION SYSTEMS :** Where lighting circuit and energy sources meet, the circuit shall terminate in the Utility service or pull box (see 5.5, "Pull Boxes"), as shown on the Plates contained in these Standards. The circuit shall terminate with a Bussman TRON fuse-holder, with a 30-amp cartridge fuse, type HEB-AB or an approved equal. The fuse shall be taped to the cable and there shall be 4 feet of slack conductor coiled in the service box.

The Utility shall make service connections for light standards in the pull box. Where service is from a Utility transformer, and no service or pull box exists, the Developer shall furnish and install a pull box at the transformer location, as shown on the Plates contained in these Standards. The Developer shall furnish and install conduit and conductors from the pull box into the Utility transformer. Entrance in the Utility transformer shall be coordinated with, and supervised by, the Utility.

The connection to either an overhead or underground energy source will be made by the Utility, upon receipt of request for service by the County. All necessary wiring, conduit or the like to an existing and available power source shall be installed prior to acceptance by the County.

All utility identification numbers shall be installed in accordance with the Utility's Standards before the lights will be energized.

- 5.14 TESTING:** The street lights shall be tested in normal service for a minimum of 4 nights before acceptance by the County.

- 5.15 CONFLICT WITH UTILITIES:** Developer shall be responsible for contacting other utilities to determine that locations for foundations and conduit runs are clear. Where conflicts exist, the locations may be altered with the approval of the Engineer.

5.16 LOCATION OF STREETLIGHTS

- a. If possible, streetlights shall be located within 3' of a property line.
- b. On streets with separated sidewalks, streetlights shall be located at the front of sidewalk. The edge of the pole foundation shall meet the front of sidewalk.
- c. On streets with monolithic curb, gutter, and standard five (5) foot sidewalk, streetlights shall be located at the back of sidewalk. The edge of the pole foundation shall meet the back of sidewalk. On streets with ten (10) foot or larger sidewalks, streetlights shall be located directly behind curb.

- d. Where there is only curb and gutter, the center of the streetlight foundation shall be located 6.5 feet from the back of curb.
- e. T intersections - A streetlight shall be located on the through street at within 12.5' of the projected centerline of the intersecting street (either direction).
- f. Cul-de-sac - Street lights shall be spaced at 330 feet maximum intervals. A street light shall be located at the end of the cul-de-sac.
- g. Four way intersection/major streets - Streetlights shall be located at each corner of the intersection.
- h. Four way intersection/major and minor street - Streetlights shall be located at each corner of the intersection.
- i. Four way intersection/minor streets - A streetlight shall be located at one of the intersection corner.
- j. Electroliers will normally be staggered on opposite sides of the street. In residential areas, electroliers shall be placed on the outer edge of curves. The placement of electroliers will be as determined by the Engineer in non-residential areas.
- k. Electroliers are required at each knuckle. The electroliers shall be located on the outside of the knuckle.
- l. Electroliers shall be installed on breakaway bases on all roads except those classified as local or minor.

5.17 ENERGIZING STREET LIGHTS AND LIGHTING DISTRICT ANNEXATION

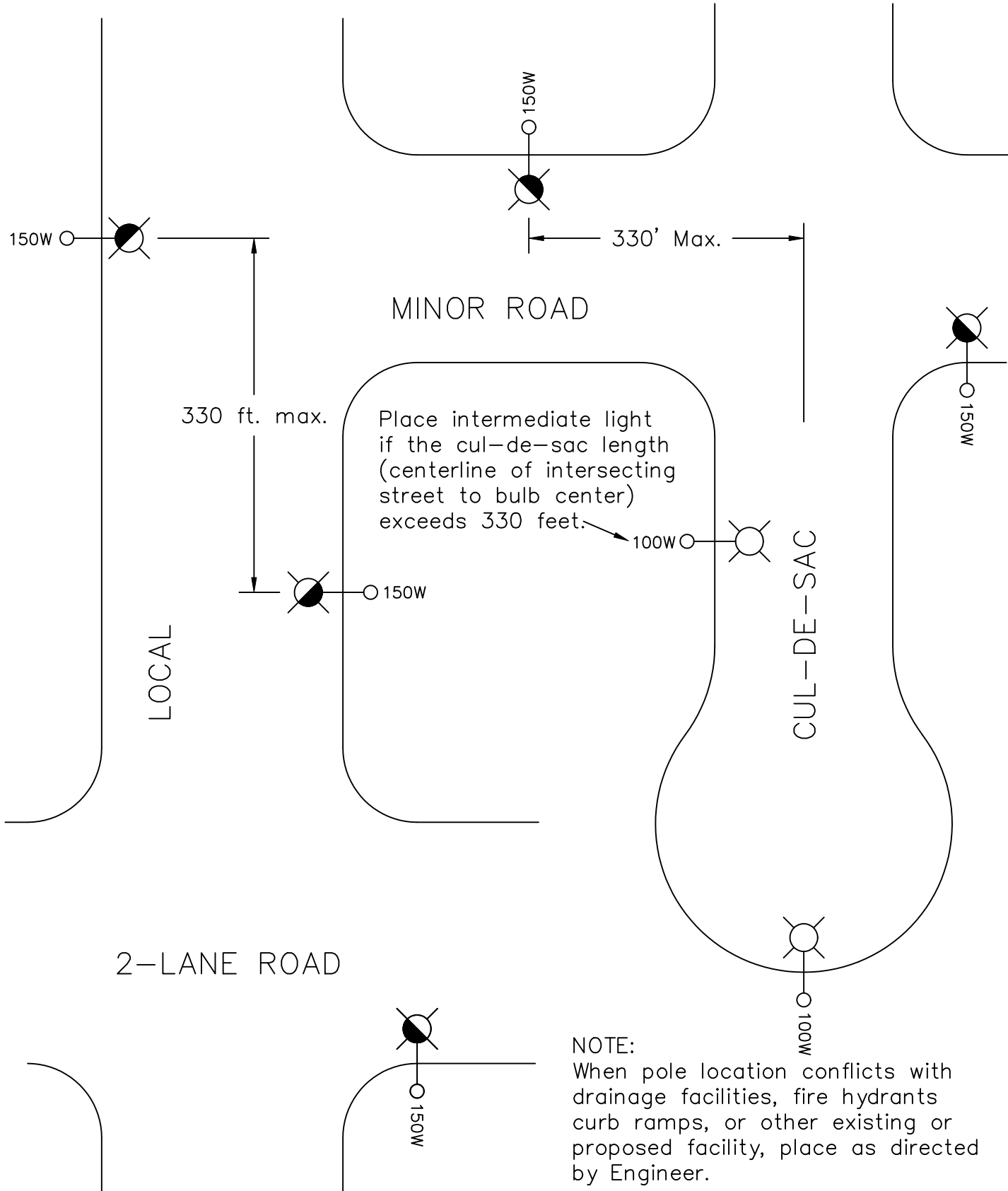
Prior to acceptance of the improvements and/or recording of a final subdivision or parcel map, the Developer shall deposit the first year's operating and maintenance cost of the streetlights with the Department of Public Works. In order for the lights to be energized, the area being developed shall be annexed to a lighting district or a new lighting district shall be formed.

The Developer shall provide all necessary documents and pay all costs associated with the formation of a new lighting district or annexation district. The fees are calculated by the Development Services division of the Department of Public Works. The following documents will be required to form a new or annex into an existing district:

- a. A legal description of the project boundaries including total acreage.
- b. A map of the project boundaries that show all the street lighting with the appropriate spacing, wattage, height, and pole type clearly indicated.

- c. A petition or agreement form signed by all the current owners of the project property requesting either the formation or annexation of the lighting maintenance district of benefit. The wording and format of the petition shall be as shown in the attached Exhibit:

The County will not submit a request to have the streetlights energized until the street lights have been approved by the County. The Developer shall pay all costs associated with having the streetlights energized.

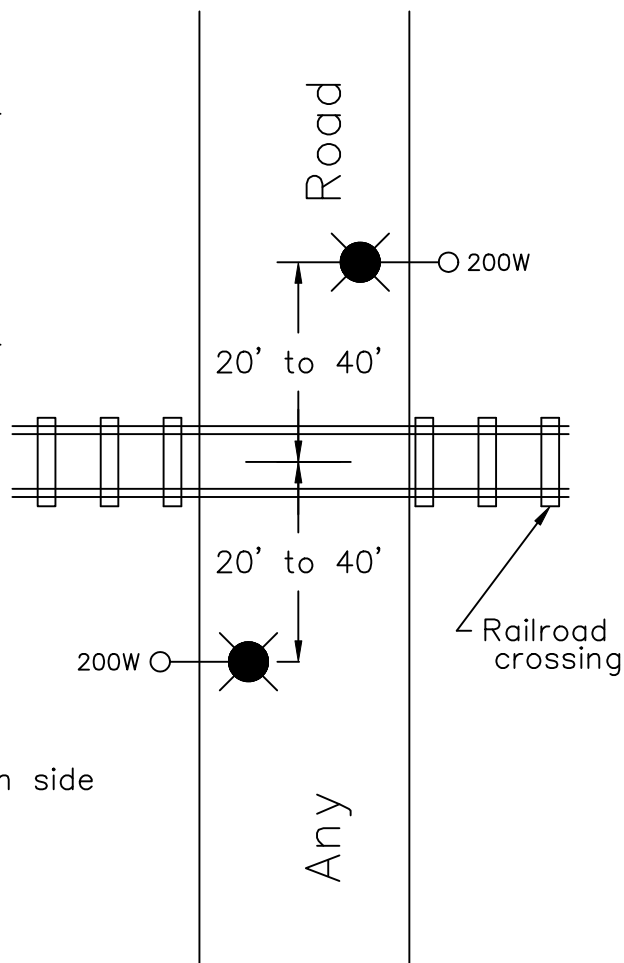
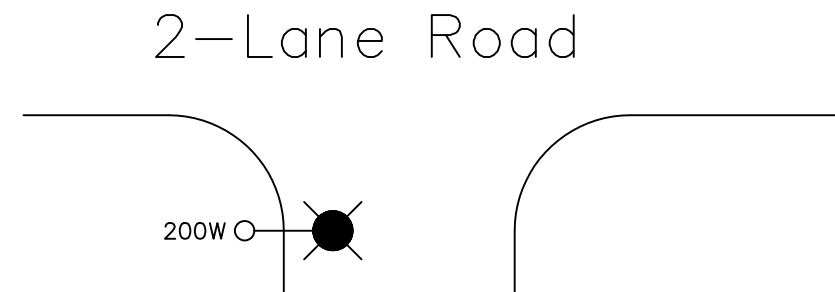
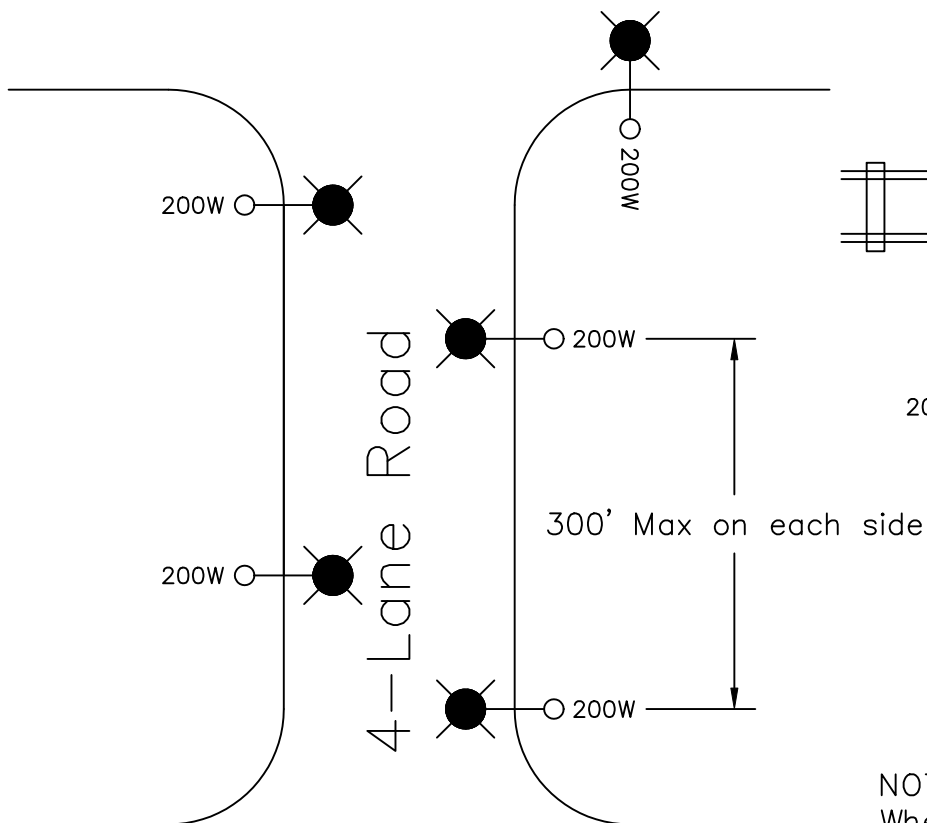
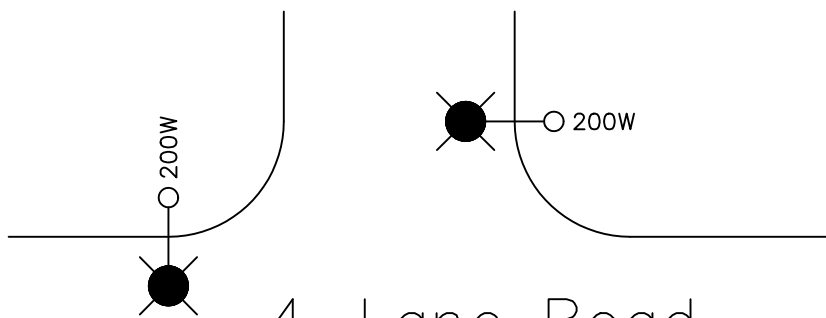


No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

LOCATION OF 25 FT STREET LIGHT POLES

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	5-A1



NOTE:
When pole location conflicts with drainage facilities, fire hydrants, curb ramps or other existing or proposed facilities, place as directed by the Engineer.



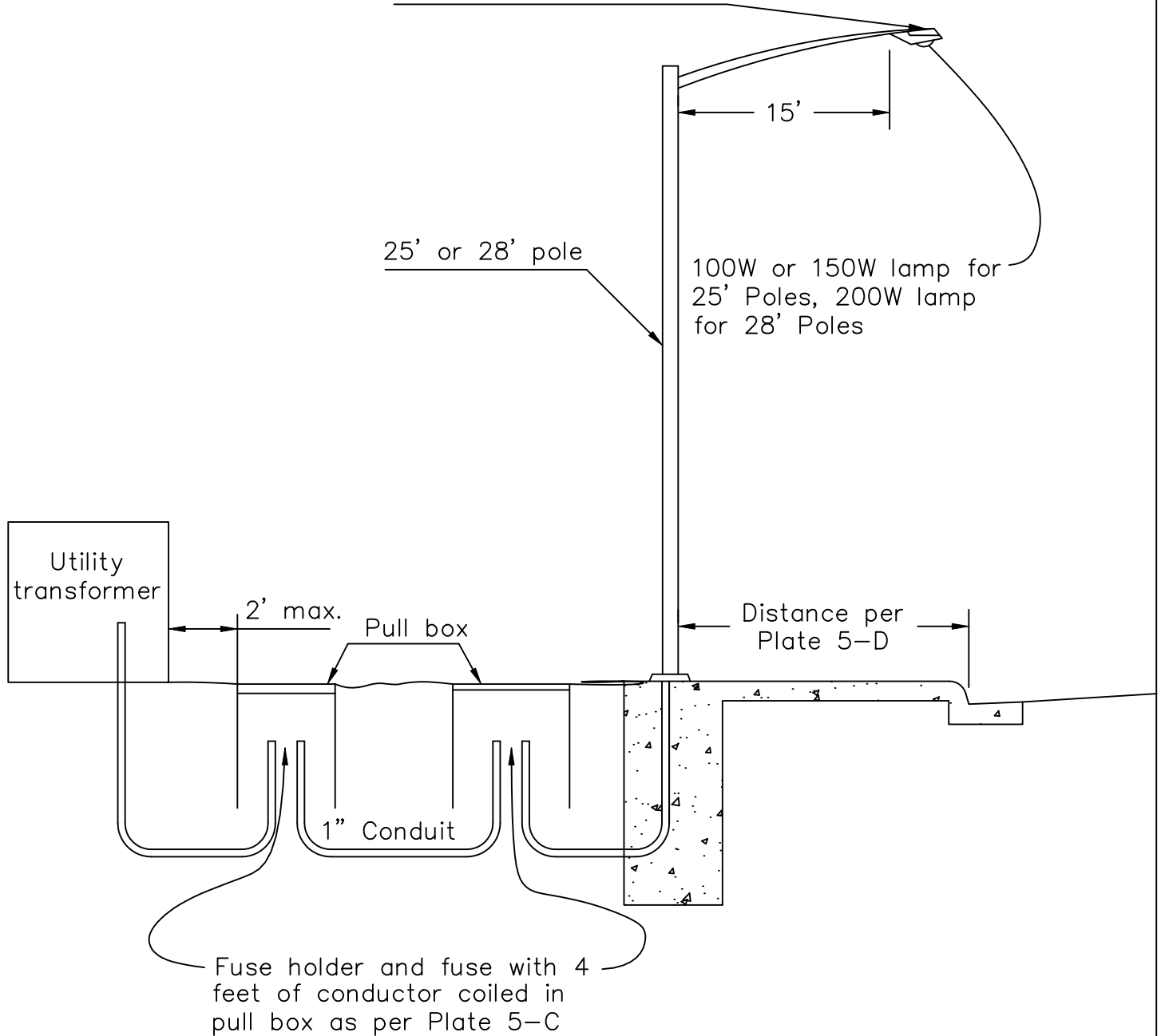
No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

LOCATION OF 28 FT
STREET LIGHT POLES

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	5-A2

Luminaires shall be 120V with built-in photoelectric cell



NOTES:

1. Minimum conduit cover is 30"
2. Contact Utility to coordinate work in and around their transformer.
3. Utility will complete connection of 120V circuit upon receipt of signed application of service from Stanislaus County.



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

LIGHT POLE
INSTALLATION LAYOUT

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

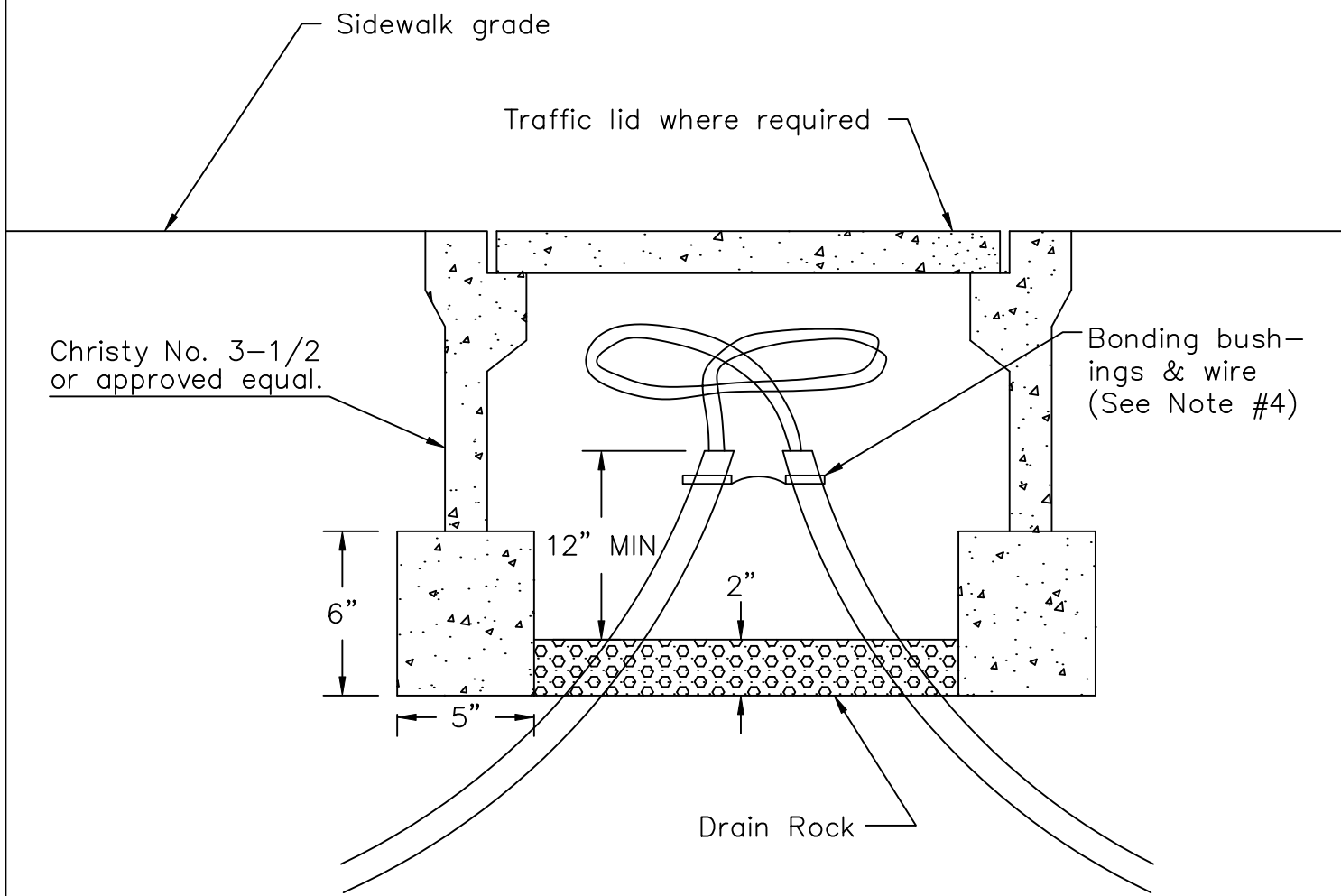
Approved by

Matt Wachal

Director of Public Works

Date 01/02/2007

PLATE NO: 5-B

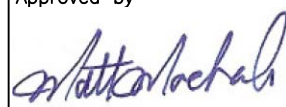


NOTES:

1. If box is mid-circuit, leave 4 ft. of slack conductor in box.
2. If box is a circuit terminus at power source or adjacent, install fuse holder with 4 ft of slack conductor. Tape fuse to conductor in box.
3. Conduit entering a utility service box shall conform to utility specifications.
4. The bonding wire shall be at least the same gauge as the largest circuit conductor. (min. no. 8 AWG copper wire)
5. Lid shall be stamped street lights.

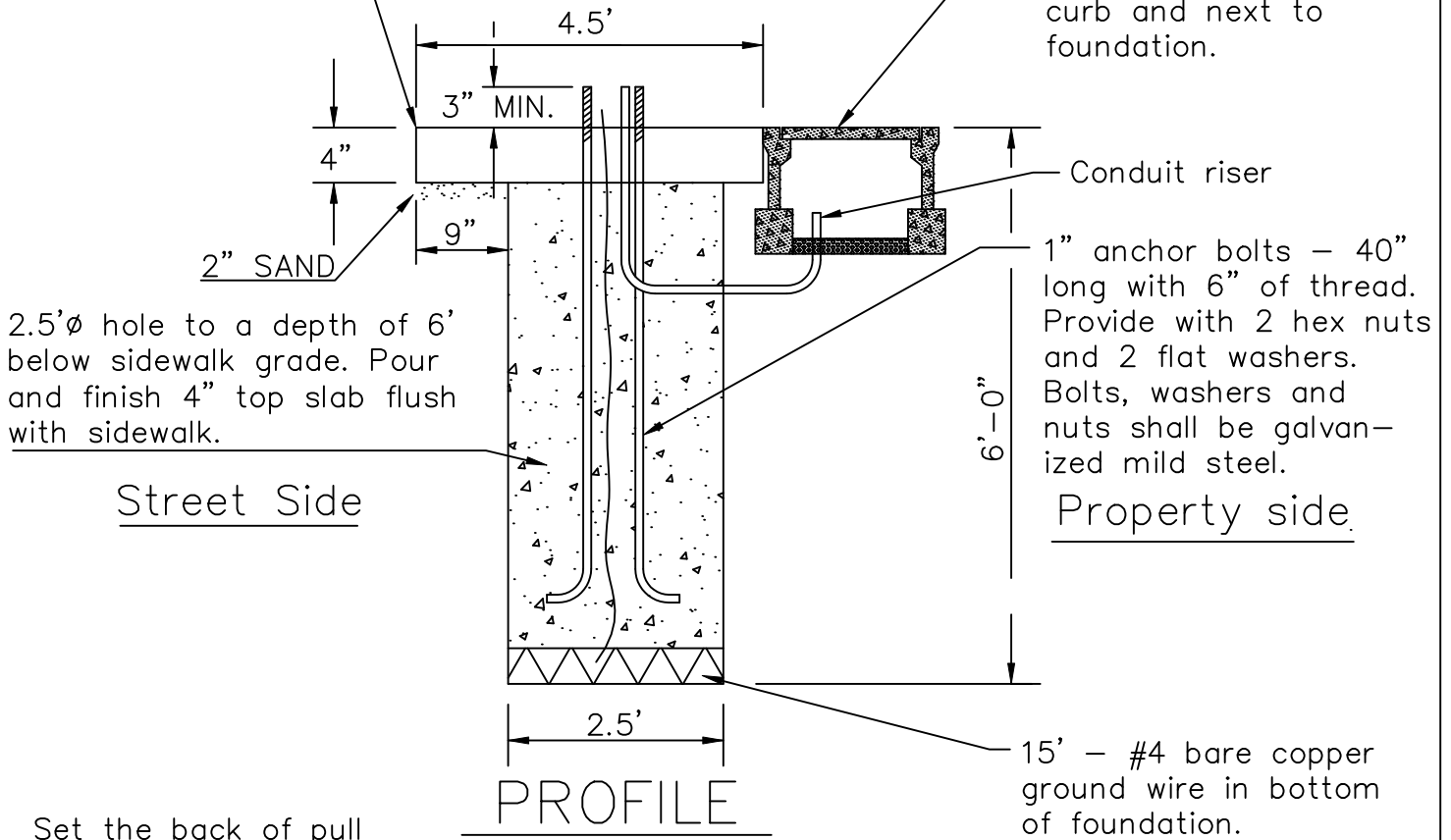


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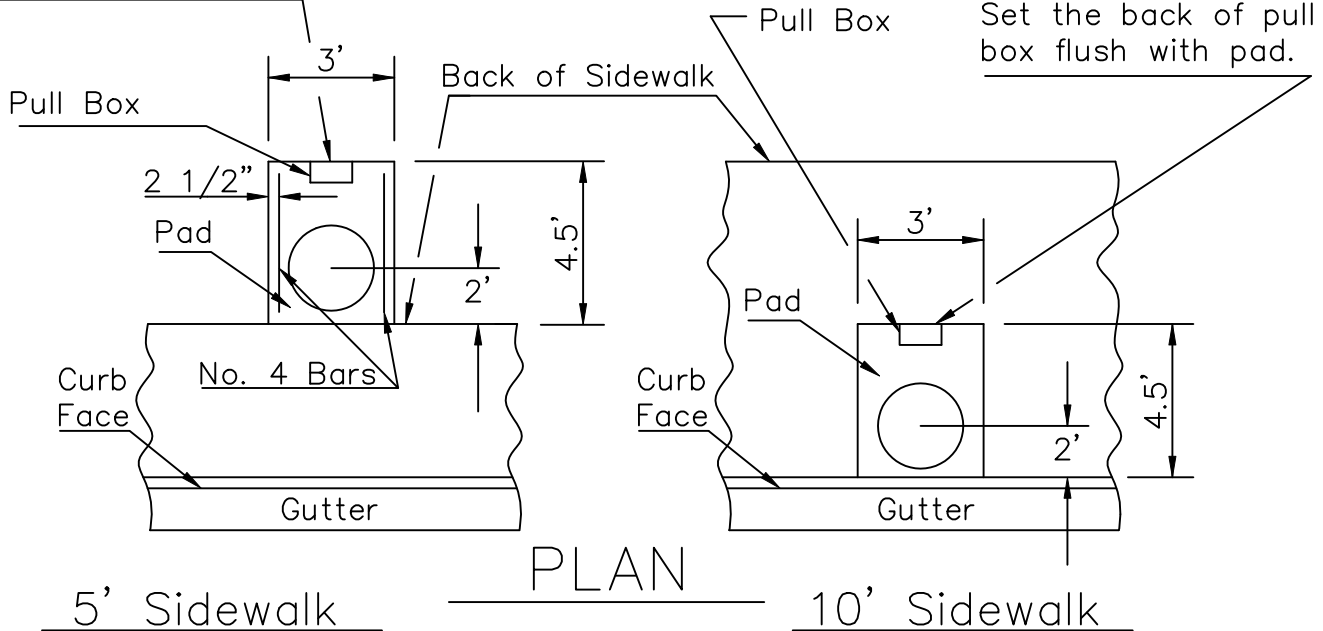
PULL BOX STATEMENT		Approved by
		
COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS		Director of Public Works
		Date 01/02/2007
		PLATE NO: 5-C

3' X 4.5' CONCRETE PAD.

Pull box
Locate box away from curb and next to foundation.



Set the back of pull box flush with pad.

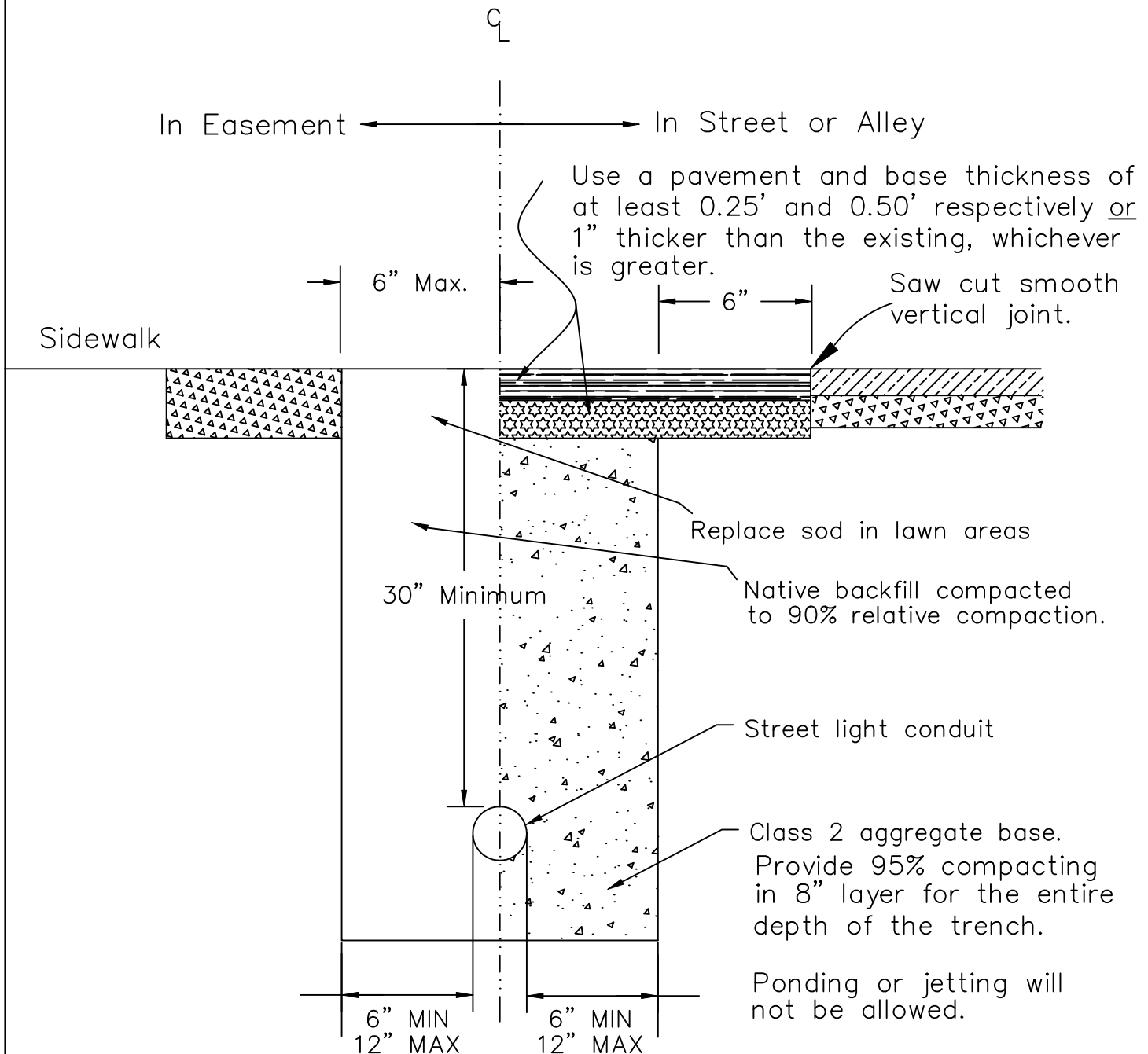


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Updated by	P. Saini	
Checked by	S. Erickson	

LIGHT POLE FOUNDATION

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by	
Director of Public Works	
Date	01/02/2007
PLATE NO:	5-D



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

STREET LIGHT CONDUIT DETAIL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

Matt Wachal

Director of Public Works

Date 01/02/2007

PLATE NO: 5-E

CHAPTER 6: MISCELLANEOUS

6.1 OFF-STREET PARKING

- a. General: Each off-street parking space shall contain at least a rectangular area of a minimum width of (9) feet and a minimum length of eighteen (18) feet. A parallel parking space shall be a minimum width of nine (9) feet and a minimum length of 22 feet. If desired, 30% required parking stalls may be so sized and posted to be used for parking small cars. Small car stalls shall contain a rectangular area a minimum of 7.5 feet in width and a minimum of fifteen (15) feet in length. Small car spaces shall be identified by the words "small car" or "compact" marked on the pavement.

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 (20) 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 ten (10) feet in width. All driveways connecting public rights-of-way to off-street parking lots shall comply with the regulations regarding driveways contained in these Standards.

All parking areas shall have internal circulation in which no backing movement, except that required to leave a parking space, is required. It shall also be possible to maneuver within a parking area without the use of street right-of-way. No parking area design shall require an exiting vehicle to back onto a street, except for parking serving single-family houses, duplexes, or triplexes.

Parking areas, including driveways to and from parking areas, shall be paved with a minimum of two inches of asphalt concrete surfacing or a minimum of 3½ inches of concrete, and be graded and designed as to dispose of all surface water in accordance with these Standards.

All parking areas shall be marked by either striping or buttons to delineate spaces. The spaces shall be double-striped with a painted line width of four inches. If buttons are used they shall be 3.5" to 4" in diameter, spaced no more than 3 feet on center. The lines shall be laid parallel to and one foot within each stall, eighteen feet in length for a full-sized space and fifteen feet in length for a small car space, not including the semicircular cap.

The number of parking spaces required shall be determined by the Planning and Community Development Department. Any changes made after the issuance of the building permit to the parking layout, curbing, or striping plan that may change the number or configuration of parking, or the location, size, or dimensions of tree wells or landscaped area(s) shall

require the re-submittal of revised plans for review and approval by the Planning and Community Development Department prior to construction.

- b. Handicapped Parking: Parking area for nonresidential uses shall include spaces designed for use by the physically handicapped which shall be as close to the primary building entrance(s) as practical. These spaces shall be located so the handicapped person is not required to wheel or walk behind a parked car other than their own. Pedestrian ways accessible to the handicapped shall be provided from each space to the use served.

If one space is provided, it shall be seventeen feet wide and lined to provide a 9 foot wide space and 8 foot wide loading and unloading area on the passenger side of the vehicle. Two spaces can share the loading/unloading area. If a walkway is used as a wheelstop (maximum 2.5 foot vehicle overhang permitted), the walkway must still have a net clear width of four feet.

All handicapped parking shall comply with the California State Accessibility Standards, Title 24 of the California Administrative Code.

A raised sidewalk serving as a wheelstop may be less than six inches high if necessary to accommodate a handicapped ramp.

Markings and signs shall be as required by state law, including signs at parking lot entrances regarding towing of cars for unauthorized parking in a space for the handicapped, signs at the spaces restricting use to handicapped persons, and pavement markings displaying the handicapped symbol. The minimum number of handicapped spaces that are required shall be based on Table 6-1.

In lots with less than five spaces, one space seventeen feet wide must be provided. This space shall be striped to provide a 9 ft. wide vehicle area and a 8 ft. ramp area. However, this space need not be signed for or limited to exclusive use by the handicapped.

Surface slopes of parking spaces for the physically handicapped shall be the minimum possible and shall not exceed ¼-inch per foot (2.083% gradient) in any direction.

- c. Wheelstops: Every parking space that is not separated by a fence, wall or landscaped area from any alley property line upon which it abuts, shall be provided with a suitable concrete curb or timber barrier not less than six inches in height. The curb or barrier shall be located not less than 2.5 feet from the alley property line, and be securely installed and maintained.

Every parking space that abuts a fence, wall, or landscaped area shall be separated from them by a suitable wheelstop consisting of a concrete curb or timber barrier not less than six inches in height. The curb or

barrier shall be located not less than 2.5 foot from the fence, wall, or landscaped area; and be securely installed and maintained. If low-lying plant materials that will permit a 2.5 foot vehicular overhang are specified in an approved landscaping plan, a six-inch concrete curb can be utilized for a planter border as well as a wheelstop.

Every parking area with an aisle that abuts a fence, wall, or landscaped area shall have the aisle separated from them by a suitable wheelstop consisting of a concrete curb or timber barrier not less than six inches in height and not less than 4.5 feet from the fence, wall, or landscaped area. The curb or barrier shall be securely installed and maintained. If low-lying plant materials that will permit a 2.5 foot vehicular overhang are specified in an approved landscaping plan, a six inch concrete curb can be utilized for planter border as well as a wheelstop.

6.2 EMERGENCY ACCESS:

- a. General: Road and street networks, whether public or private, shall provide for safe access for emergency fire apparatus and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during an emergency. No parking, stopping, or standing of vehicles is allowed in emergency access lanes.

All roads shall be constructed to provide two-way traffic flow using a minimum of two 10 foot traffic lanes.

Access roads shall provide unobstructed access to fire apparatus. The surface must also be capable of supporting a 60,000 pound load. The grade for all roads, streets, private lanes, and driveways shall not exceed 10 percent.

All roadways shall have a horizontal radius of curvature along the inside edge of pavement of no less than 50 feet. An additional roadway width of 4 feet shall be added to curves of 50-100 feet radius and 2 feet to those from 100-200 feet.

The length of vertical curves in roadways, exclusive of gutters, ditches, and drainage structures designed to hold or divert water, shall be not less than 100 feet.

Turnarounds are required on driveways and dead-end roads as specified in this article. The minimum turning radius for a turnaround shall be 50 feet from the centerline of the road.

Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper on each end.

All driveway, road, street, and private lane roadway structures shall be constructed to carry at least the maximum load and provide a minimum vertical clearance of 16.5 feet.

Appropriate signing, including but not limited to weight or vertical clearance limitations, one-way road or single lane conditions, shall reflect the capability of each bridge.

All one-way roads shall be constructed to provide a minimum of one 10 foot traffic lane. All one-way roads shall connect to a two lane roadway at both ends, and shall provide access to an area currently zoned for no more than 10 dwelling units. In no case shall it exceed 2,640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each one-way road.

- b. Dead-end Roads: Cul-de-sac and dead-end roads can only be greater than 500 feet if a subdivision exception is approved by the Planning Commission or Board of Supervisors. Only agricultural parcels are allowed access easements up to one mile in length. The maximum length of a dead-end road, including all dead-end roads accessed from that dead-end road, shall also meet the requirements of the Stanislaus Consolidated Fire Protection District.
- c. Driveways: All driveways shall provide a minimum 10 foot traffic lane and unobstructed vertical clearance of 16.5 feet along its entire length.

Driveways exceeding 150 feet in length, but less than 800 feet in length, shall provide a turnout near the midpoint of the driveway. Where the driveway exceeds 800 feet, turnouts shall be provided no more than 400 feet apart.

A turnaround shall be provided at all building sites on driveways over 150 feet in length. All portions of the building shall be located within 150 feet of a fire access road as measured by an approved route around the exterior of the building.

6.3 FIRE SAFETY: The fire system shall conform to the requirements of the fire district in which the development is located. The governing fire district and/or Stanislaus Consolidated Fire Protection District shall sign the improvement plans prior to the plans being approved by the County.

6.4 WATER: The water system shall conform to the requirements of the water district in which the development is located. The governing water district shall sign the improvement plans prior to the plans being approved by the County. If the development is located outside of a water district, then the water system shall be designed and constructed in conformance with the City of Modesto

water standards. Compliance with the applicable water standards shall be certified by the design engineer.

At a minimum, the water system shall meet these design requirements:

- a. General: All improvements, including extensions, replacements and repairs of water facilities, shall conform to the requirements of the National Board of Fire Underwriters, American Water Works Association Standards, the Stanislaus Consolidated Fire Protection District, National Fire Protection Association and these Standard Specifications.

All installations shall conform to regulations prescribed by the California State Department of Public Health and the Stanislaus County Department of Environmental Resources.

In all cases, water mains shall be of sufficient size to meet fire-flow requirements as set forth by the Stanislaus Consolidated Fire Protection District.

- b. Layout Of Mains: The distribution system, whenever possible, shall employ the "Grid System" of water circulation so as to allow pressure equalization. All water pipelines designed for the transmission or distribution of domestic water supply shall be constructed and installed within the right-of-way of public streets or roads, unless such construction or installation is determined to be impractical by the Engineer.
- c. Vertical Alignment: Water mains and services shall be installed at a depth which will provide a minimum of 30 inches from the top of the pipe to finished grade. Where a water line crosses a sewer line, the appropriate line(s) shall be designed according to "Criteria for the Separation of Water Mains and Sanitary Sewers", Department of Health Services, State of California.

When crossing a sewer, storm, or irrigation line, it is desirable that the water main be installed above the storm, irrigation, or sewer line with a clearance of 12 inches. The Design engineer shall detail all crossings with a clearance less than 15".

- d. Horizontal Alignment: Alignment shall be parallel with the street centerline wherever possible. A horizontal clearance of 10 feet to a sanitary sewer or a storm drain line shall be provided. Curved water mains are allowed in curved streets when curvature does not exceed 80% of the manufacturer's recommendations.
- e. Pipe Size And Material: The minimum size pipe used for water mains shall have a nominal diameter of 8 inches. Water mains serving a cul-de-sac beyond a fire hydrant may use a 6-inch diameter line. Larger sizes may be required as designated by a water master plan for future

continuation or as directed by the Stanislaus Consolidated Fire Protection District. Industrial and commercial areas may require installation of 12-inch mains.

For single-family residential areas, all water mains shall be sized to provide 1000 gallons per minute fire flow from each of 2 adjacent fire hydrants flowing simultaneously with 20 pounds per square inch residual pressure.

For multi-family, commercial, and industrial areas, all water mains shall be sized to provide fire flow as required by the Stanislaus Consolidated Fire Protection District but shall provide not less than 1500 gallons per minute from each of 2 adjacent fire hydrants flowing simultaneously with 20 pounds per square inch residual pressure.

The fire flow can generally be obtained using the following design standards:

½ mile looped grid – 12-inch mains or larger
1/4 mile looped grid - 8-inch mains
Distribution system, looped - 8 inch mains

Pipe materials may be ductile iron pipe (D.I.P.) or polyvinyl chloride pipe (P.V.C.).

- f. Water Service: The minimum size service is 1 inch. For properties other than single family residential, and for non-typical single family residential, the design engineer shall determine the water service size.

All water services shall be metered, except dedicated fire services. Each individual property shall have a separate water service complete from the water main to the property. Water services are not permitted in easements without prior approval of the County Engineer. Water services are not permitted to connect to a transmission main (14" or larger).

All meter boxes shall be located in the public right-of-way. Meter boxes shall not be located in vehicular traffic areas.

For commercial properties, individual services for irrigation, domestic, and fire water shall be installed from the main. The water division will not manifold the water services at property line from a fire service.

A double check assembly will be required on all Class 1 & 2 fire systems. Double checks must be above ground and within view for the Fire Chief's inspection. At a minimum, an above ground single check is required within view (usually 30' of property line) on any private fire system, including a single fire hydrant.

- g. Fire Hydrants: Fire hydrants shall be supplied from the largest available main except transmission mains.

Fire hydrants shall be fed from two directions unless specifically approved by the County Engineer and Fire Chief or unless located in a cul-de-sac.

Fire hydrant shall be installed in conformance with the governing water district's standard construction details.

Fire hydrants shall be located at ends of curb returns or at lot lines whenever possible. The preferred fire hydrant location is at curb returns.

Fire hydrant spacing and distribution shall be determined as follows:

1. R-1 & R-2 Residential Zones - 500 feet.
2. All other zones - 300 feet
3. In addition, hydrants shall be placed on both sides of a major street and shall be spaced on each side according to the maximum distance allowed. On major streets where buildings and streets are separated by a 6 foot restrictive wall, hydrants shall be placed at all street intersections with a maximum distance of 1000 feet between hydrants. If the distance exceeds 1000 feet, intermediate hydrants shall be placed at even intervals between intersections.
4. On divided streets, planned divided streets or state highways, the above spacing shall apply to both sides of the street.
5. A fire hydrant shall be located at the end of all cul-de-sacs in lieu of a blow-off.

- h. Valves: The distribution system shall be equipped with a sufficient number of valves so that no single shutdown will result in shutting down a main, or necessitate the removal from service a length of pipe greater than 550 feet. Transmission mains greater than 12" in diameter shall have valves at 1000 feet on center.

Additionally, in no case shall more than two fire hydrants be removed from service. The valves should be so located that any section of main can be shut down without going to more than three valves. One of the valves for a tee or cross at a cul-de-sac must be in the direction of the cul-de-sac. Valves, incorporating a blow off device, shall be installed at the boundary of development. A valve shall be installed on each side of services to all hospitals, schools and major industrial sites as directed by the Fire Chief.

Valves installed on all ten inch (10") and smaller lines shall be gate valves. Mains twelve inches (12") and larger shall utilize butterfly valves. When butterfly valves are used, butterfly operator shall be toward nearest property lines.

- i. Blow-Offs: Blow-offs shall be constructed at the end of all temporary DEAD END runs. Blow-offs for future extensions shall be installed at mains to be extended at a later date.

Permanent dead ends must have a fire hydrant installed at the end of the line in lieu of a blow-off.

- j. Thrust Blocks: Thrust blocks shall be designed and installed in conformance with City of Modesto Standard Detail #609.
- k. Water Line Easement: Dedicated water mains outside the public right-of-way are discouraged. The design engineer should strive for a design to put them within the public right-of-way.
- l. Water Supply General Requirements: The following standards shall apply for all water systems to residential, commercial, mobile home parks, and industrial subdivisions developed under these specifications.

When connection to a public water system is declared as not feasible by the Planning Commission, and all lots exceed 20,000 square feet in area, and adequate proof is furnished to show that an adequate and potable water supply is available for all lots, the Stanislaus County Department of Environmental Resources (DER) may authorize the use of individual wells.

These standards are supplemental to California Water Works Standards (CWWS) contained in Title 22, Chapter 16, California Code of Regulations, Section 64555 et. seq.

Plans, specifications, technical report (prepared, stamped, and signed by a qualified professional engineer), and a permit application must be submitted to and approved by the following agency, before construction of any water distribution or supply facilities:

1. California Department of Health Services for water systems greater than or equal to 200 service connections.
2. Stanislaus County Department of Environmental Resources for water systems less than 200 service connections.

A qualified professional engineer should typically possess at least three (3) years experience in public water system design.

- m. Water Supply Design Standards: In the case of a subdivision with all lots exceeding 20,000 square feet or more in area, the water supply may be from individual wells provided the approval of the supply is first obtained from the County DER.

The following standards shall apply for water systems in subdivisions where lot size is less than 20,000 square feet whether the subdivision is for residential, commercial, mobile home parks, or industrial use:

1. $P = N \times c \times f + F$ = formula for peak flow rate
2. $R = 60 \times D \times P$ = required minimum supply

where:

C = Flow constant in gallons per minute per service.

D = Required minimum duration of peak flow (in hours).

f = Diversity factor (number of units).

F = Total fire flow rate in gallons per minute.

N = Number of services.

P = Peak demand rate (including fire and domestic) in gallons per day.

R = Required minimum supply (also see C.W.W.S)

Wells and firm surface stream diversions, with documented water rights are the only sources of water supply to be considered in this section. Storage tanks and reservoir are not to be construed as a source of supply. Where industries using large quantities of water are included in the service area, their requirements must be considered separately and added to the requirements computed by the formula, $R = 60 \times D \times P$.

In no case shall "R" be less than 2,000 gallons per day per acres served by the system.

The distribution system must be capable of delivering at the peak demand rate. Minimum sizes for individually piped lines will be computed for the flow given by the formula for peak demand rate by using the portion of the system served by the pipeline whose size is to be determined. Use procedure in Plumbing Code for sizing lines for trailer parks.

In determining peak flow required by system ($P = N \times c \times f + F$), use highest value of "F" required by system. In determining pipe size, try the fire flow "F" from each hydrant (or group of hydrants) in the system, one at a time, together with peak domestic flow. Use value of "F" for type of district in which each hydrant is located.

- n. Water Pressure: A minimum of 20 pounds per square inch residual pressure shall be maintained in the mains at all locations in the distribution system during required periods of flow at peak demand rates.

- o. Water Storage: Storage units include potable water reservoirs and tanks and elevated tanks. Storage in pipelines will not be taken into consideration in meeting minimum storage requirements.

Size of storage units will be computed from the lowest normal operating level to the highest normal operating level.

See CWWWS, Section 64564 - Procedures for determining needed source capacity and needed storage volume.

- p. Water Well Lot Sizes: A minimum water well lot size of 100 foot by 100 foot shall be provided for all public water supply wells.
- q. Backflow Prevention Devices: Approved backflow prevention devices, where required on individual service connections, shall be installed and tested by an approved tester prior to acceptance of the water system improvements.
- r. Auxiliary Power Sources: Approved auxiliary power sources shall be installed onsite to adequately operate pumping facilities in the event of a power outage by the local power supplier.

- 6.5 **SANITARY SEWER:** The sewer system shall conform to the requirements of the sewer district in which the development is located. The governing sewer district shall sign the improvement plans prior to the plans being approved by the County. If the development is located outside of a sewer district, then the sewer system shall be designed and constructed in conformance with the City of Modesto sanitary sewer standards.

All calculations to verify the design of any portion of the sanitary sewerage system shall be submitted to the Department of Environmental Resources or the governing sewer district for review and approval. The calculations shall be based on rational methods generally accepted by the engineering profession and shall be neatly and legibly done in such form as to enable them to be readily checked. Literature and technical data concerning any of the materials and equipment proposed to be used may be required by the Director of Environmental Resources or the governing sewer district.

When the sewerage collection system is to become a part of an existing sanitation system, it shall meet the design requirements of the administrative agency controlling the system.

TABLE 6-1**MINIMUM NUMBER OF HANDICAP SPACES
BASED ON TOTAL PARKING SPACES AVAILABLE**

Total Spaces in Lot	Number of Spaces
1-25	1
26-50	2
51-75	3
76-100	4
101-150	5
151-200	6
201-300	7
301-400	8
401-500	9
501-1,000	2% of total spaces
Over 1,000	20 spaces plus 1 space for every 100 spaces, or a fraction thereof, over 1,000

TABLE 6.2
NUMERICAL VALUE OF WATER SUPPLY SYMBOLS

C = Flow Constant	Five gallons per minute when services are individually metered. Nine gallons per minute when services are not individually metered.
D = Diversity Factor	Two hours when N is less than 100. Three hours when N is from 100 to 250. Four hours when N is greater than 250. Four hours for commercial or industrial area.
f = Diversity Factor	2.00 for systems with five services or less 1.33 for systems with 24 services. 1.00 for systems with 40 services. 0.75 for systems with 80 services. 0.50 for systems with 200 services. 0.33 for systems with 500 services or more. A straight-line interpolation shall be used for all intermediate values.
F = Fire Flow	To be determined by Stanislaus County Consolidated Fire Department or other regulatory fire agency.
N = # of Service Connections	Residential: Each single family home or lot shall be counted as one service. Each unit of an apartment, duplex or triplex building shall be counted as one service connection. Each acre of commercial or industrial district (including storage and parking areas) shall be counted as a minimum of five services. Agricultural land shall be counted as two services for each acre. Each trailer or mobile home space in a trailer park shall be counted as one-third service connection.

The diagram illustrates a typical rectangular area, likely a parking lot or a similar facility, with the following dimensions and features:

- Dimensions:**
 - A:** Stall width.
 - B:** Stall depth.
 - C:** Stall length.
 - D:** Aisle width.
 - E:** Total width of the rectangular area.
 - F:** Total length of the rectangular area.
 - G:** Total width of the rectangular area, including the aisle.
- Stall Angle:** The typical stall angle is 60° .
- Flow Direction:** The flow direction is indicated by arrows pointing towards the stalls.
- Typical 9'x18' Rectangular Area:** This area is shown with a typical stall angle of 60° .
- Typical Stall Angle of 60° :** This angle is shown for the typical stall.
- Typical 9'x18' Rectangular Area:** This area is shown with a typical stall angle of 60° .

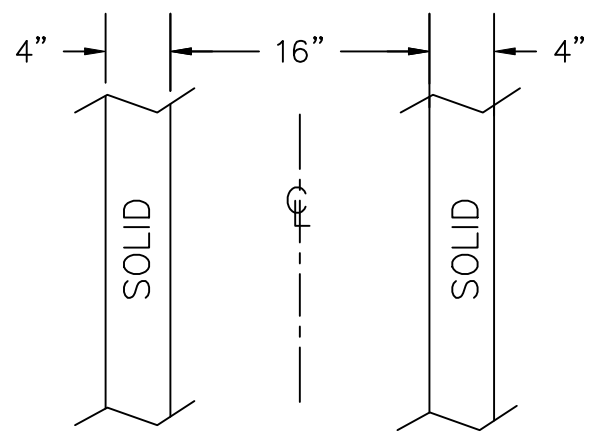
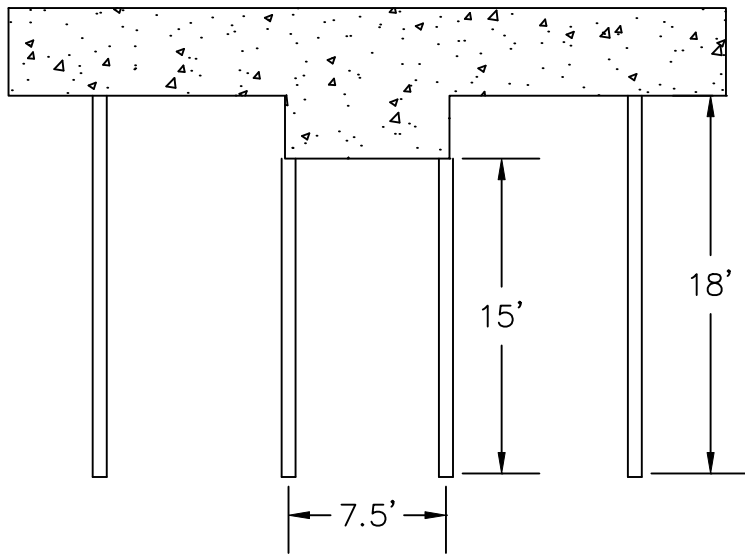
PARKING SPACE AND AISLE DIMENSION TABLE

		PARKING ANGLE TO DRIVEWAY						
		45°	50°	55°	60°	70°	80°	90°
SPACE WIDTH	A	12.7'	11.7'	11.0'	10.4'	9.6'	9.1'	9.0'
SPACE DEPTH	B	19.1'	19.6'	19.9'	20.1'	20.0'	19.3'	18.0'
DOUBLE SPACE DEPTH	C	31.8'	33.4'	34.7'	35.7'	36.9'	37.0'	36.0'
AIisle WIDTH	D	8.8'	9.8'	12.2'	15.8'	19.0'	21.7'	24.0'

THE MINIMUM DRIVEWAY WIDTH (G) FOR ONE-WAY TRAFFIC IS 10 FEET AND FOR TWO-WAY TRAFFIC IS 20 FEET.

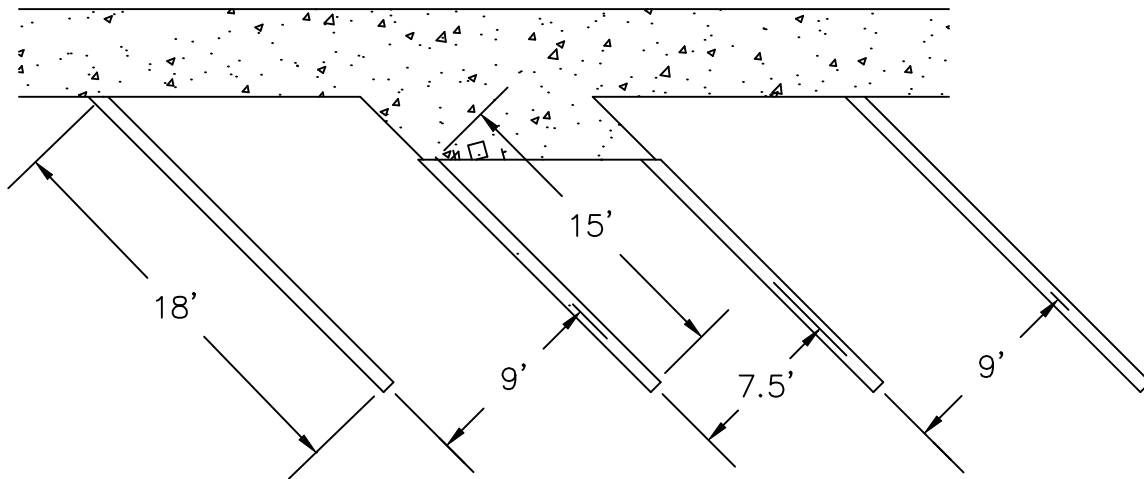
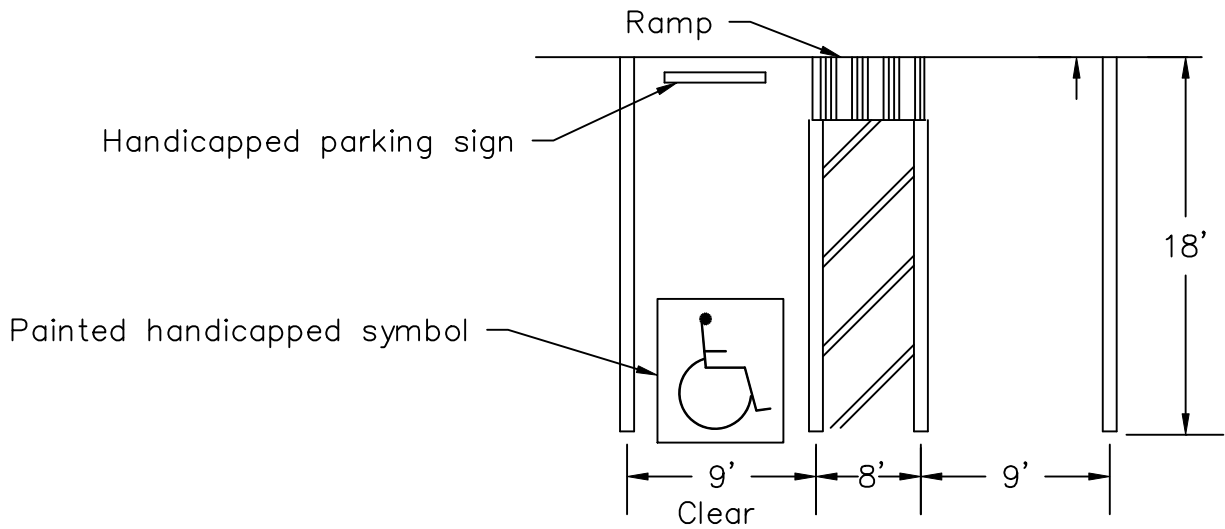


No.	Revised	By	TYPICAL PARKING LOT DESIGN	Approved by
				
				Director of Public Works
Updated by P. Saini			COUNTY OF STANISLAUS DEPARTMENT OF PUBLIC WORKS	Date 01/02/2007
Checked by S. Erickson				PLATE NO: 6-A1



Double Stripe Detail

4' Clear



No.	Revised	By
Updated by	P. Saini	
Checked by	S. Erickson	

TYPICAL PARKING STALL DETAIL

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

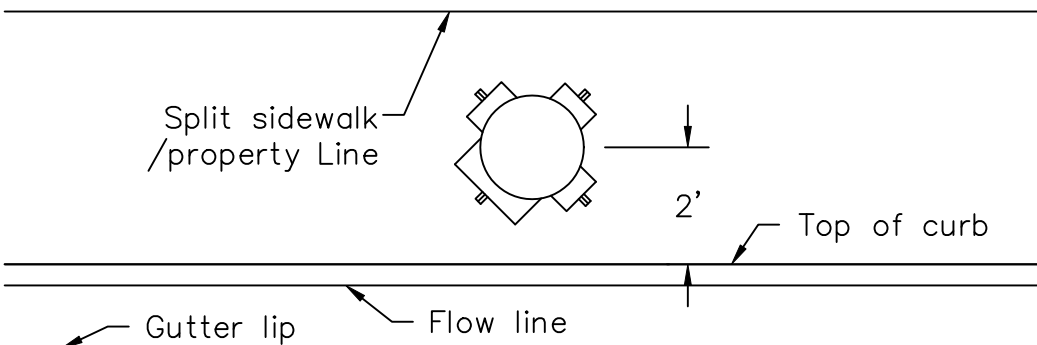
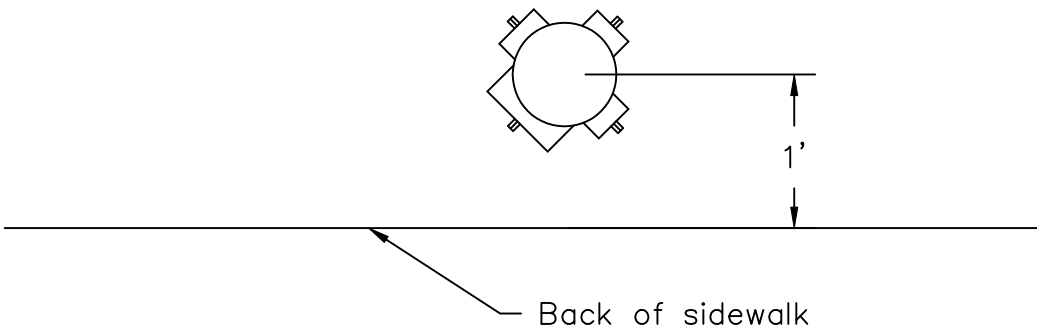
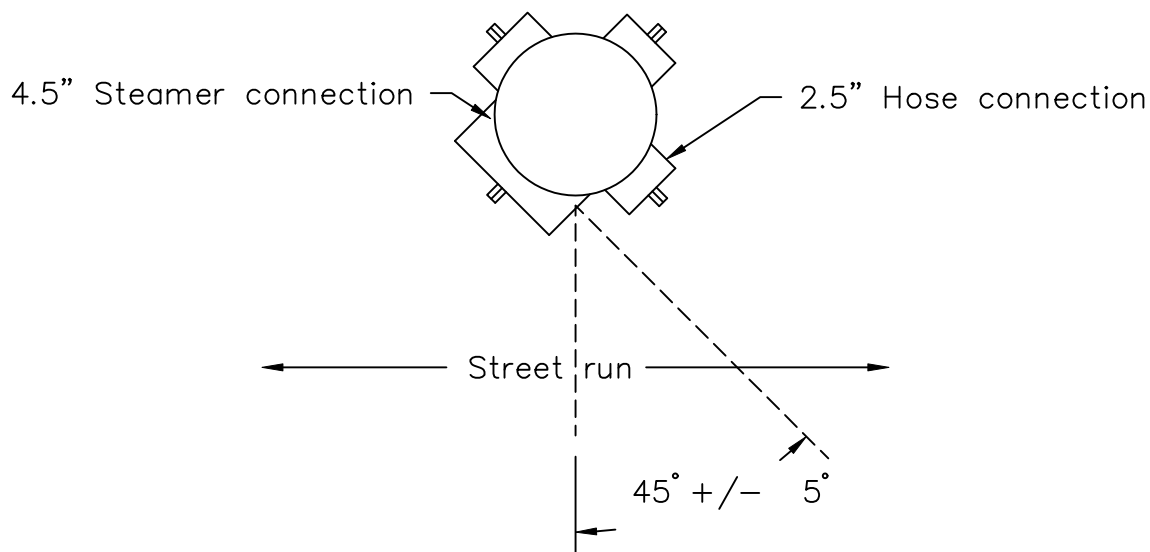
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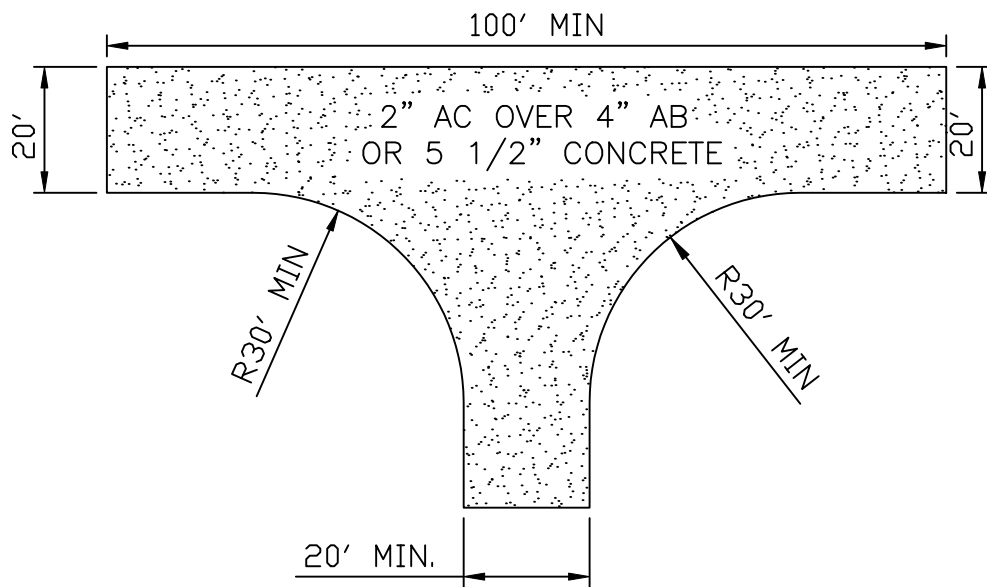
Matt McCall

Director of Public Works

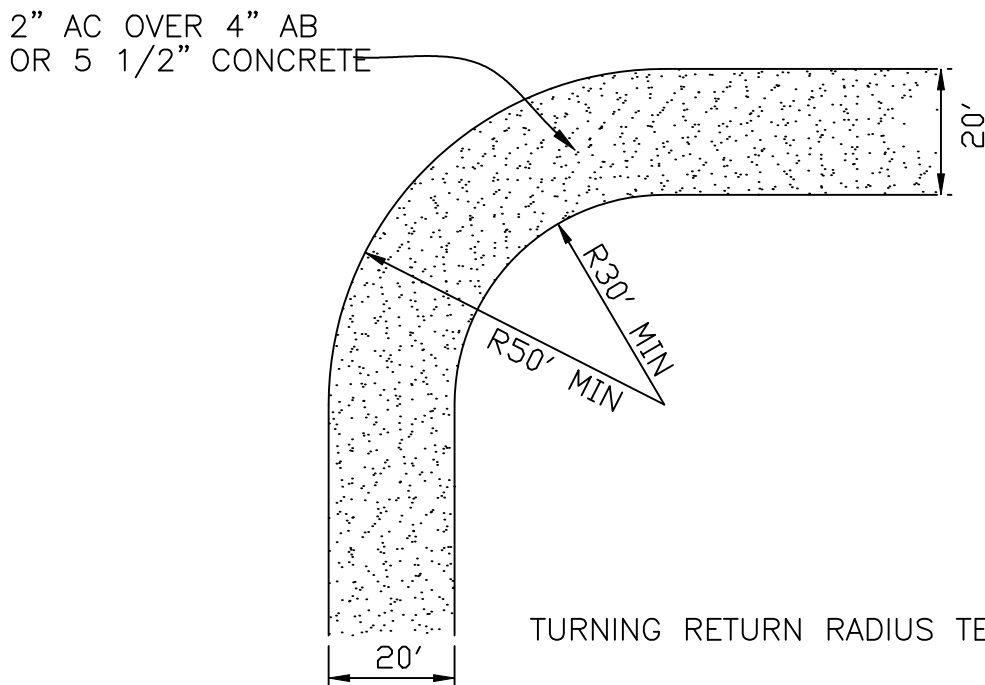
Date 01/02/2007

PLATE NO: 6-A2





HAMMER HEAD TURN AROUND TEMPLATE



TURNING RETURN RADIUS TEMPLATE



No.	Revised	By
Updated by		P. Saini
Checked by		S. Erickson

FIRE APPARATUS DESIGN TEMPLATES

COUNTY OF STANISLAUS
DEPARTMENT OF PUBLIC WORKS

Approved by

Matt Cochran

Director of Public Works

Date 01/02/2007

PLATE NO: 6-C

CHAPTER 7: GRADING PERMITS

- 7.1 PURPOSE:** This section has been provided to help reduce both erosion and sediment problems resulting from the development process and the increase of urban runoff from developed land within the County jurisdiction. This section has been compiled to assist you in processing grading and excavation permits through the Stanislaus County Department of Public Works.

The purpose of developing this permit process is to safeguard life, limb, property, and the public welfare in Stanislaus County by regulating grading & excavation on private property.

An application for a Grading Permit shall be submitted to the Development Services Division prior to the beginning of any grading, clearing, excavating, filling or other disturbance of natural terrain. The Development Services Division currently issues two types of grading permits: rough grading and final grading. The permit application and supplementary information requirements for the rough and final grading are similar and each permit application shall be submitted to Stanislaus County Department of Public Works located at 1010 10th Street, Suite 3500, Modesto, CA 95354.

- 7.2 GENERAL GUIDELINES:** All grading activities in Stanislaus County must follow these basic guidelines:

- a. Practice erosion control best management practices as outlined in this section and/or directed by Stanislaus County. The Stanislaus County Standards & Specifications and the Uniform Building Code are good guides to proper implementation of these techniques.
- b. Drainage ways shall not be altered or obstructed in such a way as to create flooding or sediment problems outside the project area.
- c. Fill material must be at least 90% soil. No demolition material, household waste or other degradable material may be used. Yard waste may not be transported from another site. No on-site yard waste (brush, tree stumps, etc.) shall be used as fill material.
- d. All import fill soils should be nearly free of organic or other deleterious debris, essentially non-plastic, and less than 3-inches in maximum dimension.
- e. All plans and permits required by Stanislaus County and other agencies must be in place.

Please note that approved grading & drainage permit does not imply compliance with any other building regulations.

- 7.3. GENERAL ZONING:** The zoning conformance approval must precede grading permit submittal. Once the tentative map for a parcel or tract is approved and zoning cleared, a grading plan can then be submitted. The first plan check may require 5-10 working days, and 2-5 working days for any subsequent check of preliminary and precise grading plans. Inspection fees (and in some cases, a bond) will be required prior to issuance of the final grading permit.

The Public Works staff will review and approve the submittal for conformance against the requirements listed in this checklist. Should any questions arise regarding the application process, the applicant is encouraged to contact the Land Development Division at Stanislaus County Department of Public Works.

Inspection fees (and a bond, if required) must be paid prior to issuance of the grading permit. Inspection fees are calculated based on the total acreage of the project site, and a set unit cost per square foot of hard scape. A bond is calculated based on the amount of cut or fill (whichever is the largest) and 100% of the cost of the total drainage improvements (including any pavement).

- 7.4 DESIGN STANDARDS:** All grading and improvement projects, whether public or private, shall be designed in accordance with the latest edition of the Stanislaus County Standards & Specifications, the County Grading Ordinance, the Zoning Ordinance, and Appendix Chapter 33 of the Uniform Building Code. All grading work requires erosion control. The erosion control plan is to be submitted as part of the grading plan.

Grading in excess of 5,000 cubic yards shall be performed in accordance with the approved grading plan prepared by a civil engineer, and shall be designated as "engineered grading." Grading involving less than 5,000 cubic yards shall be designated "regular grading" unless the permittee chooses to have the grading performed as engineered grading. If the building official determines that special conditions or unusual hazards exist, the grading shall conform to the requirements for engineered grading.

All applications for a grading permit shall be accompanied by two sets of plans and specifications, and supporting data consisting of a soils report and engineering geology report per Section 3309.4 of the Uniform Building Code titled, "Engineered Grading Requirements."

A comprehensive soils report shall be prepared for each project in the County. A licensed Geotechnical experienced in soil work or Geotechnical Engineer must prepare the report. It shall include R-values (if greater than 5) taken at the site with a map showing the locations and

depths of the test samples. Additionally, it shall include ground water elevations, stripping and grading recommendations, determination if expansive soil is present, etc. The subdivision improvement plans shall provide a chart of the pavement sections. The chart shall contain the R-value and the design traffic index (TI).

7.5 PERMIT APPLICATION CHECK LIST - INITIAL SUBMITTAL

REQUIREMENTS: After receiving a complete grading plan application, the County will issue a Plan Checking Number for your project. Allow up to two weeks for plan checking (first submittal or re-submittal) then the County will contact the applicant for plan correction or plan approval and permit issuance. A complete plan check review will not be performed over the counter.

A NPDES permit may be required for all construction projects involving the grading, filling, excavating, storage, or disposal of three hundred fifty (350) cubic yards or more of soil, or the clearing or grubbing of one (1) acre or more. If a NPDES permit is required, an Erosion and Sediment Control Plan (ESCP) and a Storm Water Pollution Prevention Plan SWPPP must also be provided as part of the initial plan review submittal requirements.

No final plans, calculations, or reports will be accepted unless they are signed & stamped by Registered Civil Engineer.

The following items are required at the time of the initial grading & drainage permit application submittal to the County:

- a. Completed Excavation and Grading Permit Application (signed by applicant).
- b. Two (2) blue line prints of grading plans prepared in accordance with Stanislaus County Standards & Specifications and signed by a Civil Engineer registered in the State of California. Minimum acceptable plan size is 8 ½"x 11". Maximum acceptable plan size 24"x 36".
- c. Release from planning for submittal to engineering.
- d. Plan check deposit (Cash or check). A permit application fee (non-refundable). Complete fee will be determined during permit processing.
- e. Two (2) copies of the preliminary soils report prepared by an approved soils engineering firm, signed by a Geo-technical Engineer registered in the State of California (per Section 3309.5 of the Uniform Building Code titled, "Soils Engineering Report"
- f. One (1) copy of a current preliminary Title Report.
- g. Two (2) copies of hydrology and hydraulic calculations, if applicable, to be submitted to Public Works Engineering Department.

- h. Two (2) copies of site grading plans. Grading site plan shall include, as a minimum, the following items:
 - 1. Property lines and bearings, existing and proposed topographic elevation contour lines of the parcel and the surroundings
 - 2. Vicinity map, north arrow, scales used, County general grading notes, plan, wet stamp and signature by a Registered Civil Engineer.
 - 3. Location and dimensions of any easements if they exist.
 - 4. Utility Plan - Must show proposed onsite utility lines, e.g., sewer, water, gas and electricity.
 - 5. Location and dimensions of existing overhead and underground improvements on site and surroundings including: buildings, structures, utilities, slabs, berms, free standing or retaining walls, fences, landscaping, curb, gutter, sidewalk, poles, trees, bushes, etc.
 - 6. Location and dimensions of proposed improvements including: building-structure footprint, any other improvements, dimensions & elevations on parcel and on public right of way.
 - 7. Addresses, assessors parcel numbers, and legal description must be included on plans.
 - 8. Street right of way, centerline, basis of bearings, dimensions, cross intersection distances, roadway, street improvements, street name(s), etc.
 - 9. Include any other information as required or applicable to the project.
- i. Two (2) copies of cost estimate and quantities for all work to be completed as part of the grading plan, including:
 - 1. Grading (cut and fill).
 - 2. Private Improvements (Paving, drainage, etc).
 - 3. Public Street and Drainage Improvements.
 - 4. Erosion Control Improvements.

- j. In addition to the items listed in Section 4 above, the following items may also be required to complete your application. You will be notified if they are needed after a pre-inspection of the site. Each item (if required) shall be stamped and signed by the appropriate design engineer licensed in the State of California.
1. Two (2) copies of Erosion Control Plan attached to each copy of the grading plan.
 2. Two (2) copies of structural calculations for retaining wall.
 3. Two (2) copies of Soils report(s) addressing retaining wall design parameters.
 4. Two (2) copies of Landscape and Irrigation Plans.
 5. Two (2) copies of Approved EIR or Negative Declaration.
 6. Two (2) copies of Precise Grading Plan.
 7. Two (2) copies of Approved Tentative Map.
 8. Two (2) copies of Final Map.
 9. Two (2) copies of Street Improvement Plans.
 10. Two (2) copies of N.P.D.E.S. application letter of receipt from Water Quality Control Board (if applicable).
 11. Two (2) copies of Water Quality Management plan (if applicable).

7.6 GRADING PLAN CHECK CORRECTION AND RE-SUBMITTAL CHECKLIST: If a plan correction is required, the applicant shall re-submit and pay any additional plan review fees (Cash or check) to cover plan checking expenses. The following items may be required for subsequent submittals

- a. Submit previous check prints at time of re-submittal, if applicable.
- b. Submit previous hydrology and hydraulic comments, if applicable.
- c. Submit previous quantity calculations, if applicable.
- d. Submit previous cost estimates, if applicable.
- e. Two (2) sets of revised Grading Plans prepared by a Civil Engineer, if applicable.
- f. Two (2) copies of revised preliminary Soils Report, if applicable.
- g. Two (2) copies of revised hydrology and hydraulics calculations, if applicable.
- h. Two (2) copies of revised quantity calculations, if applicable.
- i. Two (2) copies of revised cost estimate, if applicable.

7.7 UNFORESEEN AND ENVIRONMENTALLY SENSITIVE ISSUES: The following additional items may be required prior to issuance of a final grading permit. Although the list appears to be comprehensive, most items may not be necessary except when developing projects within conflicting land use designations or environmentally sensitive areas (i.e. near rivers, wetlands, vernal pools, areas with endangered species or plants, etc.):

- a. Submit one (1) set of plans to Planning to complete an initial study and obtain clearance (including retaining walls > 6 feet high).
- b. Planning sign off approving consistency of site plan with proposed plans.
- c. Comply with all project conditions of approval related to grading.
- d. The project conforms to the approved Tentative Map (if applicable).
- e. Fire department approval.
- f. Submit plan and questionnaire to California Department of Fish and Game, to obtain permit. (If applicable, review the site, EIR, and/or Negative Declaration).
- g. Submit plan to the Division of Dam Safety and obtain permit (if applicable).
- h. Submit plan to Army Corps. Of Engineers and obtain permit (if applicable).
- i. Submit a notarized letter of consent for grading on adjacent property. (Provide easement if applicable).
- j. Submit a record consent for drainage onto adjacent property (if applicable).
- k. Other Agency approvals (if applicable):
- l. Other requirements as indicated by the County Officials.
- m. Plan check items complete (hydrology, hydraulics, structural, grading & drainage, etc.) and approved by County plan checker.
- n. Approval of Engineer's cost estimate and Grading Plan.
- o. Provide to the County with a copy of certificate of insurance (general liability for \$1,000,000 and workmen's compensation) naming County of Stanislaus as additional insured and certificate holder, this must be submitted prior to issuance of permit

7.8 ENFORCEMENT: Per section 3306.1 of the Uniform Building Code, no person shall do any grading or excavating without first having obtained a grading permit from the Stanislaus County building official. A separate permit shall be obtained for each site, and may cover both excavation and fills.

Any person, firm, association, or corporation who violates, disobeys, omits, neglects, or refuses to comply with or resists the enforcement of any of the provisions of Stanislaus County zoning ordinances may be cited. Stanislaus County Public Works as well as Codes Administration personnel may issue citations for erosion and sediment control violations.

A violation of the ordinance may be punished by assessment of a civil penalty (amount to be determined by regulatory agency for each violation).

7-9 PLAN REVIEW AND GRADING PERMIT FEES: Fees shall be assessed in accordance with the provisions set fourth in the fee schedule adopted by the Stanislaus County Department of Public Works. The fee schedule is shown in Table 7.1.

- a. Plan Review Fees: When a plan or other data are required to be submitted, a plan review fee shall be paid at the time of submitting plans and specifications for review. Separate plan review fees shall apply to retaining walls or major drainage structures. For excavation and fill on the same site, the fee shall be based on the volume of excavation or fill, whichever is greater.
- b. Grading Permit Fees: A fee for each grading permit shall be paid to the building official. Separate permits and fees shall apply to retaining walls or major drainage structures as required.

TABLE 7.1
PLAN REVIEW & GRADING PERMIT FEE SCHEDULE

CUBIC YARDS OF CUT OR FILL	ESTIMATED FEE
50 cy or less	\$0.00
51 cy - 100 cy	\$23.50
101 cy - 1,000 cy	\$37.00
1,001 cy - 10,000 cy	\$49.25
10,001 cy - 100,000 cy	\$49.25 for first 10K cy plus \$13.25 per additional 10K cy or fraction thereof
100,001 cy - 200,000 cy	\$269.75 for first 100K cy plus \$13.25 for each additional 10K cy or fraction thereof
200,001 cy or more	\$402.25 for first 200K cy plus \$7.25 for each additional 10K cy or fraction thereof.
Other Fees: Additional plan review required by changes, additions, or revisions to approved plans	\$80.00 per hour (minimum charge is one half hour).

Grading Permit Fees

CUBIC YARDS OF CUT OR FILL	ESTIMATE FEE
50 cy or less	\$23.50
51 cy - 100 cy	\$37.00
101 cy - 1,000 cy	\$37.00 for first 100 cy plus \$17.50 per additional 100 cy or fraction thereof
1,001 cy - 10,000 cy	\$194.50 for first 1,000 cy plus \$14.50 per additional 1,000 cy or fraction thereof
10,001 cy - 100,000 cy	\$325.00 for first 10,000 cy plus \$66.00 per additional 10,000 cy or fraction thereof
100,001 cy or more	\$919.00 for first 100,000 cy plus \$36.50 for each additional 10,000 cy or fraction thereof
	\$402.25 for first 200K cy plus \$7.25 for each additional 10K cy or fraction thereof.
Other Fees: Additional plan review required by changes, additions, or revisions to approved plans	\$80.00 per hour (minimum charge is one half hour).

**2007 STANISLAUS COUNTY STANDARDS & SPECIFICATION
MANUAL ORDER FORM**

Counter Sale

Mailed

COST OF MANUAL:

\$32.21

\$30.00 + 2.21 Sales Tax

\$37.21

\$30.00 + 2.21 Sales Tax
+ 5.00 Shipping/Handling

COST OF CD:

\$32.21

\$30.00 + 2.21 Sales Tax

\$37.21

\$30.00 + 2.21 Sales Tax
+ 5.00 Shipping/Handling

**COST OF COMPLETE SET
(1 Manual - 1 CD)**

\$53.69

\$50.00 + 3.69 Sales Tax

\$58.69

\$50.00 + 3.69 Sales Tax
+ 5.00 Shipping/Handling

PLEASE COMPLETE THE FOLLOWING:

ITEM DESCRIPTION	QUANTITY	COST
Printed Manual		
CD (PDF file format)		
Complete Set (Manual + CD)		

Total Cost:

PLEASE PROVIDE SHIPPING ADDRESS:

NAME OF COMPANY	
MAILING ADDRESS	
CITY, STATE, ZIP	
CONTACT PERSON	
TELEPHONE NUMBER	
COMPANY E-MAIL	

PLEASE RETURN THIS COMPLETED FORM TO:

Stanislaus County Public Works • 1716 Morgan Road • Modesto, CA 95358
Phone: (209) 525-4130 • Fax: (209) 525-4183