AGENDA

Three Rivers Community Plan Update
Community Meeting
Monday February 8, 2016 6:00 P.M.
Three Rivers Veterans Memorial Building
43490 Sierra Drive
Three Rivers, CA

... *service with pride.*

Resource Management Agency

1. Welcome and Introduction.

2. Project Status, Information and Discussion of Special Topics Review Schedule.

   (a) Special Topics Review Schedule 2015-16.

   (b) January 11, 2016 Summary Meeting Notes.

   (c) Agenda Information.

3. Discussion of Special Topics.

   (a) M375A Mineral King Bridge Project.

   (b) Development on Slopes.

   (c) Development Standards.

4. Other Topics as Related.

5. Topics for the Next Meeting.

   (a) Water Quality and Quantity.

   (b) Noise.

6. Next Steps.

7. Adjournment: Next Meeting March 14, 2016 at 6:00 P.M.

Three Rivers Community Plan Website address:
http://www.tularecounty.ca.gov/rma/index.cfm/planning/three-rivers-community-plan-update/

2. Project Status, Information and Discussion of Special Topics Review Schedule.

(a) Special Topics Review Schedule 2015-16.

Three Rivers Community Plan Update
Special Topics Review Schedule
Three Rivers Veterans Memorial Building
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December 2015- April 2016 (Meetings 6:00 P.M. to 8:00 P.M.)

In order to address key special review topics, we have set a strict schedule to review the following topics to facilitate the preparation of the Draft Three Rivers Community Plan Update. Discussion materials associated with each special review topic will be posted in advance of each meeting. As with all of our community plans, public input is of paramount importance. Comments received from the community will be considered while developing local planning policies for the Three Rivers Community Plan Update.

December 14, 2015
Land Use Plan Update
Transportation and Circulation Plan Update

January 11, 2016
Flooding (FEMA/Zoning)
Emergency Preparedness and Access

February 8, 2016
Development on Slopes
Development Standards

March 14, 2016
Water Quality and Quantity
Noise

April 11, 2016
CEQA Appendix G Considerations

Three Rivers Community Plan Website address:
http://www.tularecounty.ca.gov/rma/index.cfm/planning/three-rivers-community-plan-update/

(b) January 11, 2016 Summary Meeting Notes.

Three Rivers Community Plan Update Meeting Notes-January 11, 2016

Staff appreciated the excellent feedback that we got from the community members who attended the meeting. The following is a summary of some of the major points that were discussed and information that was communicated to staff during the meeting:

M375A Mineral King Bridge Project

Tulare County, in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing bridge to enhance public safety, improve the sufficiency rating, and remove the structurally deficient flag. Tulare County staff will provide a brief presentation during the Community Plan meeting on February 8, 2016 regarding this project.

Flooding and Flood Control

- An overview of flooding and flood control was presented.
- The county has control within 200 feet of all bridges and within an approximate 20 foot right of way on either side of the roadway pavement.
- The California Department of Fish and Wildlife (CDFW), has jurisdiction to the top of the bank within the river channel areas.
- Removal of any debris within the river channel would only occur if there was a health or safety concern within the river channel as determined/authorized by CDFW.
- Flooding concerns for the trailer park on North Fork drive were identified.
- 80 year flood concerns were expressed that may impact the Three Rivers Community in addition to the 100 year flood zones that are currently identified. Parcels that may be impacted in the 80 year flood areas should be identified on a map in the Community Plan. Additional information may be available in the Army Corp of Engineers records of the 1955 or 1966 floods.
- Flood control improvements should be considered along South Fork Drive.
- Monitoring programs and existing maintenance of roads and bridges should be identified, especially for the North Fork and South Fork bridges. A maintenance and capital improvement program should be identified.
- Bridges in the Cherokee Oaks area should be evaluated.
- Any areas where slumping is present and locations where culvert ditch maintenance has been identified should be evaluated.
- Riparian protection and habitat concerns should be considered in light of the potential clearance of river channel areas for flood control purposes. These considerations should be evaluated to determine future priorities for improvements.
- Flood Control Agency Regulations should be identified in the Community Plan.

Emergency Preparedness

- Office of Emergency Services overview was presented.

- The Tulare County Multi-Hazard Mitigation Plan will be updated this summer. The update will include identifying hazards, risks, identification of mitigation projects and priorities for funding.
- The Alert TC program has been established. It includes a phone alert system that is primarily programmed from the white pages for land line phones and pagers for notifications regarding emergencies in the County.
- There was interest expressed in regards to communications planning and what happens if the communication system breaks down. Information regarding ham radios and hand crank radios was discussed as providing options to traditional communication equipment. A communication plan was suggested.
- Concerns were raised by the community in regards to emergency access including ingress and egress to and from the community.
- A recommendation to prepare an inventory of bridges and determine what procedures would need to be in place if any bridges are not serviceable in the event of an emergency was also suggested.
- There was an interest expressed in locating designated emergency meeting areas, assembly areas and any backup plans to determine other appropriate locations.
- Areas that are serviced by low flow bridges were identified as areas of concern.
- Wildfire emergencies and wildfire evacuation procedures were mentioned as areas of concern. Additional concerns included providing for mass evacuation planning, and the interface with Sheriff, Fire, and Emergency Services. There was a reference made to the Camp Nelson and Ponderosa Fire Safe Plans regarding this topic.
- The identification of safety routes, assembly areas, helicopter landing areas, utilizing air cargo support, ambulance service, street signage, community addressing programs, and the ability to address the emergency evacuation needs of the North and South Fork areas in addition to the highway 198 corridor were mentioned as important safety topics.
- Additional comments we received about, first aid, food and water safety, shelter in place, and mass evacuation procedures.
- Staff indicated that funding programs from the state are available to local agencies including the county, for capital improvements, including roads, bridges, and fire breaks.
- The American Red Cross provides information and assistance regarding public education, disaster preparedness, household preparedness, community volunteer programs, home and wildfire preparation, food and water safety, and first aid training.

(c) Agenda Information.

AGENDA INFORMATION

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Monday February 8, 2016 6:00 P.M.
Three Rivers Veterans Memorial Building
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Three Rivers, CA

3. Discussion of Special Topics.

(a) M375A Mineral King Bridge Project.

Tulare County, in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing bridge to enhance public safety, improve the sufficiency rating, and remove the structurally deficient flag. Tulare County staff will provide a brief presentation during the Community Plan meeting on February 8, 2016 regarding this project.

(b) Development on Slopes.

1. General Plan Policies Regarding Development on Slopes and Visual Resources.
2. Draft Three Rivers Community Update Visual Character and Development on Slopes Policies.

Background/Overview:
The Tulare County General Plan and Draft Three Rivers Community Plan Update contain numerous policies addressing development on slopes and the importance of maintaining the visual character, community character, and scenic qualities that are present in the County. As indicated in the General Plan, "The scenic landscapes in Tulare County will continue to be one of its most visible assets. The Tulare County General Plan emphasizes the enhancement and preservation of these resources as critical to the future of the County. The County will continue to assess the recreational, tourism, quality of life, and economic benefits that scenic landscapes provide and implement programs that preserve and use this resource to the fullest extent."

Considerations: What questions are there regarding the existing policies and regulations and how they are applied? Are there other considerations in addition to these policies that need to be evaluated? Are there other policy considerations in addition to the General Plan Policies or draft Three Rivers Community Plan Update policies that that need to be evaluated?

3. Discussion of Special Topics.

(c) Development Standards.

1. Foothill Growth Management Plan Development Standards
2. General Plan Policies: Development Standards
3. Tulare County Improvement Standards
4. SRA Fire Safe Standards
5. Bear/Animal Resistant Containers

Background/Overview:
A comprehensive General Plan provides a jurisdiction (a City or County) with a consistent framework for land use decision-making. The General Plan has been called the "constitution" for land use development to emphasize its importance to land use decisions. A General Plan is called upon to address a range of diverse, sometimes divergent, public interests. A County utilizes broad discretion to weigh and balance competing interests in formulating general-plan policies. The General Plan and its policies, maps, and diagrams form the basis for the County's zoning, subdivision, and public works actions. Under California law, no specific plan, zoning, subdivision map, or public works project may be approved unless the County finds that it is consistent with the adopted General Plan as per Government Code §§ 65359, 65401, 65454, 65860, and 66473.5.

The purpose of development standards is to implement the General Plan and to guide and manage the future growth of the county in compliance with the General Plan. Development standards regulate the design of building sites, buildings, land uses, parking areas, or other forms of land development by providing appropriate standards for development. Some examples of development standards relevant to development and foothill development include the following which are included in your agenda packet:

1. Foothill Growth Management Plan Development Standards
2. General Plan Policies: Development Standards
3. Tulare County Improvement Standards
4. SRA Fire Safe Standards

General Plan Policies set out the direction against which consistency findings will be made. General Plan 2030 Update policies fall into four categories depending on the purpose they serve and how they are implemented.

***Framing Policies**. These are general policy statements that set out broad direction, much like a goal. These typically do not require a follow-up Implementation Measure.*

***Consistency Standard Policies**. These are policies that, taken together, establish a basis for consistency findings in individual project reviews. They set a standard for approval or denial of a project or provide the basis for imposing conditions on the project that would*

allow for the project's approval. These policies are "self implementing" in that they do not require a follow up Implementation Measure.

***County Directory Policies**. These are policies that generally commit the County to undertaking a particular action. Typically, these require a specific Implementation Measure, which will be incorporated into the Work Plan.*

***Environmental Mitigation Policies**. These are policies that serve to minimize or eliminate potentially significant environmental impacts. Often these are identified through the environmental review process and cited specifically in environmental findings made under the California Environmental Quality Act in approving the General Plan and certifying the EIR.*

All general plans must address a range of diverse, sometimes divergent, public interests. They must do so within a consistent, well-integrated policy framework. A county utilizes broad discretion to weigh and balance competing interests in formulating general plan policies. In implementing those policies, it is the task of the Board of Supervisors, or its delegates, to make determinations in a manner that promotes the objectives and policies of all aspects of the General Plan, and does not obstruct their attainment. Policy implementation may require reasonable and thoughtful consideration of a number of General Plan policies. Such implementation decisions will be made on a case-by-case basis as the Board of Supervisors, Planning Commission, County staff, and others work to implement the entire General Plan. When implementing the General Plan or reviewing projects or approvals for consistency with the General Plan, the County will need to balance numerous planning, environmental and policy considerations.

Another overall principle to guide the reading and interpreting of the General Plan and its policies is that none of its provisions will be interpreted by the County in a manner that violates State or Federal law. For example, PFS-1.3: Impact Mitigation, requires new development to pay for its proportionate share of the costs of infrastructure required to serve the project. This policy will be implemented subject to applicable legal standards, including but not limited to the U.S. Constitution's "Takings" clause. In reading every provision of the General Plan, one should infer that it is limited by the principle: "to the extent legally permitted".

Policies throughout the General Plan use the terminology "shall" and "should." For the purposes of interpreting the policies in this General Plan, the term "shall" indicates a mandatory or required action or a duty to undertake an action unless the context indicates otherwise, in which case the term is synonymous with "should." The term "should" indicates a directive subject to discretion and requires at least review or consideration and, in that context, substantial compliance with the spirit or purpose of these General Plan policies. The term "may" indicates at the sole discretion of the County.

The Tulare County Improvement Standards specify that required improvements "shall be done in accordance with the applicable sections of these improvement standards including the California Standard Specifications, (hereinafter called the "Standards Specifications"); Section 7000 – 7126 of the Tulare County Ordinance Code; and such other special provisions prepared by the developer's engineer and approved by the County Public Works Director that are necessary for the successful completion of the required work." The improvement standards apply to improvements in subdivisions, road rights of way and at other locations specified by ordinance.

<u>Considerations:</u> What questions are there regarding the existing policies and regulations and how they are applied? Are there other considerations in addition to these policies that need to be evaluated? Are there other policy considerations in addition to the General Plan Policies or draft Three Rivers Community Plan Update policies that that need to be evaluated? The following topic was discussed at previous community plan update meetings. Is there an interest in a policy, ordinance, or equivalent mechanism for establishing requirements for Bear/Animal Resistant Containers?

3. Discussion of Special Topics.

(a) M375A Mineral King Bridge Project.

3. Discussion of Special Topics.

(b) Development on Slopes.

1. General Plan Policies Regarding Development on Slopes and Visual Resources.
2. Draft Three Rivers Community Update Visual Character and Development on Slopes Policies.

3. Discussion of Special Topics.

(c) Development Standards.

1. Foothill Growth Management Plan Development Standards
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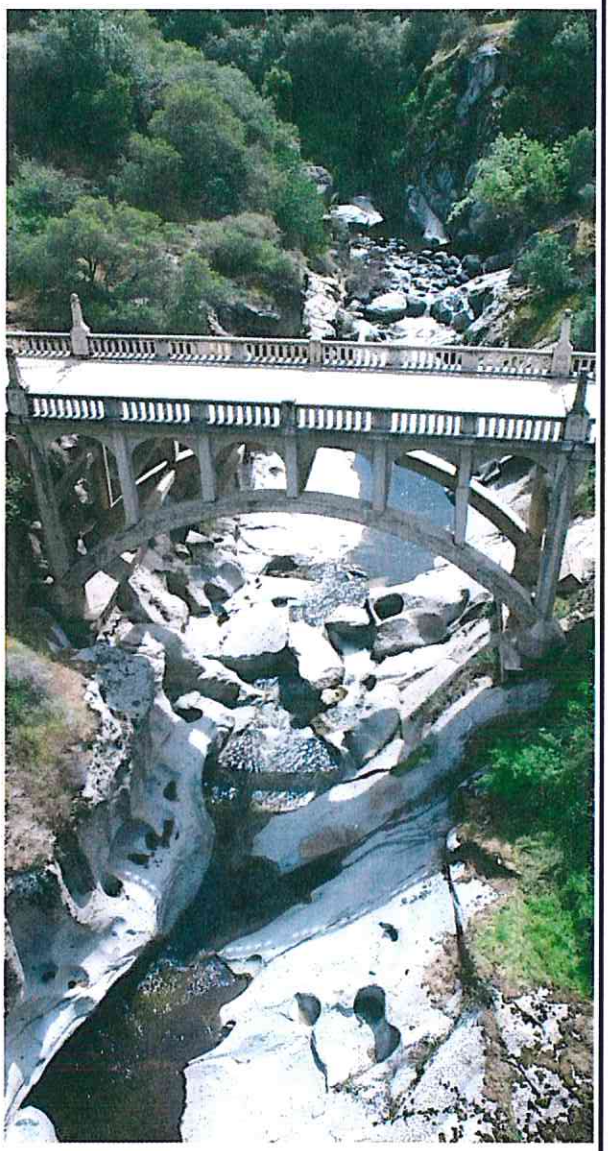
4. SRA Fire Safe Standards
5. Bear/Animal Resistant Containers

3. Discussion of Special Topics.

(a) M375A Mineral King Bridge Project.

M375A MINERAL KING BRIDGE PROJECT



Project Description: The Mineral King Bridge is an approximately 108-foot-long structure providing access across the East Fork of the Kaweah River. The existing bridge, constructed in 1923, is considered a historic resource. The bridge received a low sufficiency rating and was flagged as structurally deficient due to deterioration of the bridge over time. The purpose of the project is to enhance public safety, improve the sufficiency rating, and remove the structurally deficient flag. In order to meet the purpose of the project, Tulare County, in cooperation with the California Department of Transportation (Caltrans), proposes to replace and/or rehabilitate the existing bridge.

Public Involvement: In an effort to engage the public early in the design process, Tulare County will provide a brief presentation during the Community Plan meeting on February 8, 2016 at approximately 6:00 p.m. The meeting will be held at the Three Rivers Veterans Memorial Building, 43490 Sierra Drive in Three Rivers, California. The presentation will include information regarding the project background, proposed alternatives, project schedule, and future community meetings.

For further information or questions regarding this project please contact Jason Vivian by phone, 559-624-7135 or e-mail jvivian@co.tulare.ca.us

Project Design Team

Tulare County Project Manager: Jason Vivian, Tulare County

Project Manager: Todd Goolkasian, Cornerstone

Project Engineer: Shawn Cullers, Cornerstone

Hydraulics Engineer: Cathy Avila, Avila and Associates

Geotechnical Engineer: David Pearson, Kleinfelder

Environmental Consultant: GPA Consulting

Regulatory Agency Permitting: Aaron Bock, Tulare County

Right-of-Way: Heather Franklin, Tulare County

3. Discussion of Special Topics.

(b) Development on Slopes.

1. General Plan Policies Regarding Development on Slopes and Visual Resources.

2. Draft Three Rivers Community Update Visual Character and Development on Slopes Policies.

1. General Plan Policies Regarding Development on Slopes and Visual Resources.

General Plan Geology/Slope, Goals, Policies and Implementation Measures

GOALS:

FGMP Goal 1
To maintain the natural beauty of the foothills while allowing focused growth in identified growth areas.

FGMP Goal 3
To ensure that new development be designed in a manner which minimizes impact to foothill areas including grading, vegetation disturbance, and intrusion onto natural watercourses, canyons, and prominent landmarks, or rare and endangered species sites.

FGMP Goal 6
To provide local protection of scenic highways and routes within the foothills.

FGMP Goal 8
To protect the natural features of the foothills by directing development to selected areas.

POLICIES:

LU 1.7 Development on Slopes
The County shall require a preliminary soils report for development projects in areas with shallow or unstable soils or slopes in excess of 15 percent. If the preliminary soil report indicates soil conditions could be unstable, a detailed geologic/hydrologic report by a registered geologist, civil engineer, or engineering geologist shall be required demonstrating the suitability of any proposed or additional development.

L.U. 2.3 Open Space Character
The County shall require that all new development requiring a County discretionary approval, including parcel and subdivision maps, be planned and designed to maintain the scenic open space character of open space resources including, but not limited to, agricultural areas, rangeland, riparian areas, etc., within the view corridors of highways. New development shall utilize natural landforms and vegetation in the least visually disruptive way possible and use design, construction and maintenance techniques that minimize the visibility of structures on hilltops, hillsides, ridgelines, steep slopes, and canyons.

ERM 7.3 Protection of Soils on Slopes
Unless otherwise provided for in this General Plan, building and road construction on slopes of more than 30 percent shall be prohibited, and development proposals on slopes of 15percent or more shall be accompanied by plans for control or prevention of erosion, alteration of surface water runoff, soil slippage, and wildfire occurrence.

FGMP 1.2 Grading
The County shall ensure that new development is designed in a manner that minimizes grading, vegetation disturbance, and intrusion onto natural watercourses, canyons and prominent landmarks, or rare and endangered species sites.

FGMP 1.5 Preserving Visual Resources
The County shall encourage new development be designed in a manner that preserves the visual quality of the foothill setting by encouraging the use of curvilinear streets, vegetation reestablishment on cuts and fills, cluster development, and housing site locations that blend into the landscape rather than becoming a focal point.

FGMP 1.11 Hillside Development
The County shall require that hillside development be designed so as to preserve the skyline and maintain an unobstructed scenic panorama of the foothills.

FGMP 1.13 Land Use and Zoning
Planned development within the foothills may be located within development corridors on lands designated Foothill Mixed Use (FMU) and zoned Planned Development-Foothill Combining-Special Mobile Home Zone (PD-F-M), or within development corridors delineated on a Master Development Plan, established in compliance with the FGMP first and second level planning criteria, where an area has been designated as a Planned Community Area (PCA) in the FGMP and zoned Planned Community (PC) pursuant to requirements of the Tulare County Planned Community (PC) Zoning Ordinance. PCA land uses shall included equivalent General Plan land use designation allowed within UDBs.

FGMP 1.14 PCA's
For Planned Community Areas within the foothills, the Planned Community (PC) Zone shall be used. Development corridors shall be delineated through the Master Development Plan (MDP) process. The MDP shall clearly demonstrate how "First and Second Level" FGMP planning criteria are or can be met. Lands that fail to meet these criteria for development will be protected for open space uses.

FGMP 1.16 Applicable Development Standards
Unless it can be demonstrated that an alterative standard will result in attainment of a superior environment, when preparing Specific Plans, Master Development Plans, or Area Development Plans and standards therein for areas within the foothills, at a minimum, the development standards within the FGMP Section 3.12 shall apply.

FGMP 3.3 Development Compliance
The County shall ensure that development proposals conform to all standards related to the Foothill Mix Use designation and the FGMP Development Standards.

FGMP 4.1 Identification of Environmental Standards
The County shall identify and protect those environmentally sensitive areas in the foothill

development corridors which should be maintained as open space, such as areas characterized by floodplains, steep slopes (30 percent or greater), unstable geology, unique archaeological/historical sites, habitat of special status species, and scenic vistas.

FGMP 6.4 Development within a Scenic Corridor
The County shall require that projects located within a scenic corridor be designed in a manner, which does not detract from the visual amenities of that thoroughfare. The County shall support through the use if its authority and police powers, the design of infrastructure that minimizes visual impacts to surrounding areas by locating roadways in areas that minimize the visual impact on rural and natural places whenever feasible.

FGMP 8.7 Minimize Soil Disturbance
The County shall encourage cluster-type development, narrower road widths, and minimized cut and fill projects to minimize soil disturbances. New roads in the foothills should, whenever possible, conform to the natural contours of the existing foothill landscape.

FGMP 8.11 Development on Slopes
The County shall not allow development on slopes 30 percent or greater, unless the applicant can sufficiently mitigate the inherent problems associated with developing on steep slopes.

IMPLEMENTATION #'S:

FGMP 3,4,13

3. The County shall require a grading and slope stabilization plan for that portion of the development exceeding slopes of greater than 15 percent.

4. The County shall require information in the preliminary review process to delineate slopes 30 percent or greater on the development site. Review of the proposal by the Committee (PRC) will prescribe a project design that will maintain 30 percent slopes generally free of improvements, unless the problems associated with steep slopes are sufficiently mitigated.

13. The County shall ensure that the design of subdivisions is reviewed by the PRC to assure the visual impact to the foothills is minimal.

2. Draft Three Rivers Community Update Visual Character and Development on Slopes Policies.

2009 DRAFT
THREE RIVERS COMMUNITY PLAN UPDATE
VISUAL CHARACTER AND DEVELOPMENT ON SLOPES POLICIES
2014
4-13-15

1.1.1 Ensure that new residential development is compatible with the character of the community through the enforcement of rural standards and guidelines.

1.1.15 LU-7.14 Contextual and Compatible Design
The County shall ensure that new development respects Three Rivers' long heritage by requiring that development respond to its context, be compatible with the traditions and character of the community, and develop in an orderly fashion which is compatible with the scale of surrounding structures.

1.2.1 Ensure that the size, type, and scale of new development in Three Rivers is compatible with the rural character of the community.

1.2.5 LU-7.2 Integrate Natural Features
The County shall emphasize each community's natural features as the visual framework for new development and redevelopment.

1.2.6 LU-7.9 Visual Access
The County shall require new development to maintain visual access to views of hillsides, creeks, and other distinctive natural areas by regulating building orientation, height, and bulk.

1.2.9 LU-2.3 Open Space Character
The County shall require that all new development requiring a County discretionary approval, including parcel and subdivision maps, be planned and designed to maintain the scenic open space character of open space resources including, but not limited to, agricultural areas, rangeland, riparian areas, etc., within the view corridors of highways. New development shall utilize natural landforms and vegetation in the least visually disruptive way possible and use design, construction and maintenance techniques that minimize the visibility of structures on hilltops, hillsides, ridgelines, steep slopes, and canyons.

1.2.10 SL-1.1 Natural Landscapes
During review of discretionary approvals, including parcel and subdivision maps, the County shall as appropriate, require new development to not significantly impact or block views of Tulare County's natural landscapes. To this end, the County may require new development to:

a. Be sited to minimize obstruction of views from public lands and rights-of-ways,
b. Be designed to reduce visual prominence by keeping development below ridge lines, using regionally familiar architectural forms, materials, and colors that blend structures into the landscape,
c. Screen parking areas from view,
d. Include landscaping that screens the development,
e. Limit the impact of new roadways and grading on natural settings, and
f. Include signage that is compatible and in character with the location and building design.

1.2.11 SL-1.3 Watercourses
The County shall protect visual access to, and the character of, Tulare County's scenic rivers, lakes, and irrigation canals by:

a. Locating and designing new development to minimize visual impacts and obstruction of views of scenic watercourses from public lands and right-of-ways, and
b. Maintaining the rural and natural character of landscape viewed from trails and watercourses used for public recreation.

1.2.12 SL-3.2 Community Expansion–Edges
The County shall design and plan the edges and interface of communities with working and natural landscapes to protect their scenic qualities by:

a. Maintaining separators between cities and communities,
b. Encouraging cities to master plan mixed-density neighborhoods at their edges, locating compatible lower density uses adjacent to working and natural landscapes, and
c. Protecting important natural, cultural, and scenic resources located within areas that may be developed in the future.

1.2.17 FGMP-1.5 Preserving Visual Resources
The County shall encourage new development be designed in a manner that preserves the visual quality of the foothill setting by encouraging the use of

curvilinear streets, vegetation reestablishment on cuts and fills, cluster development, and housing site locations that to the extent feasible for new development that causes a significant impact to the skyline and scenic panorama to blend into the landscape rather than becoming a focal point given reasonably available and feasible mitigation measures

1.2.18 FGMP-6.1 Preservation of Scenic Highways
The County shall ensure that the visual qualities of State Highway198 and County scenic routes are maintained and protected against obtrusive development improvements.

1.2.19 FGMP-6.4 Development Within Scenic Corridors
The County shall require that projects located within a scenic corridor be designed in a manner, which does not detract from the visual amenities of that thoroughfare. The County shall support through the use of its authority and police powers, the design of infrastructure that minimizes visual impacts to surrounding areas by locating roadways in areas that minimize the visual impact on rural and natural places whenever feasible.

1.2.20 FGMP-6.5 Cluster Development
The County shall encourage projects proposed on lands within a scenic corridor with a non-agricultural or non-open space land use designation, to use a cluster development concept. Appropriate land uses for the open space areas shall include, but will not be limited to, public or private open space, wildlife habitat or agriculture.

1.3.1 Require the County Project Review Committee for all new development in Three Rivers.

a. Unless otherwise specified in this Community Plan, apply Foothill Growth Management Plan standards to the extent feasible as determined to be reasonable and appropriate by the affected decision makers.

1.3.2 Ensure that development proposals conform to all development standards and guidelines to the extent feasible as determined to be reasonable and appropriate by the affected decision makers.

1.3.10 Implement a residential development height standard of 35 feet, based on the existing policies of the FGMP.

1.3.12 FGMP-6.3 Development Along Scenic Highways
The County shall require that development along all scenic highways and routes meet the development standards of the FGMP.

1.3.16 LU-1.7 Development on Slopes
The County shall require a preliminary soils report for development projects in areas with shallow or unstable soils or slopes in excess of 15 percent. If the preliminary soil report indicates soil conditions could be unstable, a detailed geologic/hydrologic report by a registered geologist, civil engineer, or engineering geologist shall be required demonstrating the suitability of any proposed or additional development.

3.1.7 Prohibit high density residential developments in areas with sensitive environmental or visual resources and in areas lacking suitable infrastructure or emergency access facilities.

3.2.2 Require mobilehome parks and recreation vehicle parks adjacent to State Highway 198 to be screened from State Highway 198. Utilize such screening measures as masonry walls or other types of architectural fencing, earth berms, rock outcrops, and natural variation to topography. Require the use of natural vegetation where it exists supplemented by additional natural landscaping to soften the visible effect from the highway.

3.2.5 Ensure that mobilehome projects are located and designed in a manner that is compatible with existing development patterns and does not detract from the visual quality of the community.

4.5.1 Unless otherwise specified in this Community Plan, Implement the policies and standards of the Foothill Growth Management Plan regarding visual resources.

4.5.2 New development proposals may be subject to County Project Review Committee to ensure minimal impacts to visual resources including but not limited to significant native trees and oak woodlands, erosion, and night sky protection. Projects subject to Project Review Committee review requirements shall be determined by the project review checklist, (see appendix __.).

4.5.3 Ensure the quality of design of structures along Highway 198 to maintain the visual quality of the views from the Highway.

4.5.4 Design roadways to minimize viewshed alteration and impact.

4.5.5 Design hilltop development to preserve the skyline and maintain an unobstructed scenic panorama.

4.5.6 Prohibit development on ridgelines to the extent feasible for new development that causes a significant impact to the skyline and scenic panorama by requiring the development to blend into the landscape rather than becoming a focal point given reasonably available and feasible mitigation measures. The top of structures shall be designed to preserve the skyline and maintain an unobstructed scenic panorama. The maximum building height measured at foundation ground level shall be 35 feet.

4.5.7 Prohibit to the extent feasible and appropriate development on slopes 30% or greater, unless the inherent problems associated with developing on steep slopes can be mitigated without excessive grading given reasonably available and feasible mitigation measures.

4.5.8 Require a grading and slope stabilization plan for the portion of the development exceeding slopes of 15% or greater.

4.5.9 Prohibit alteration or cutting of existing slopes to the extent feasible and appropriate to decrease the gradient for the purpose of development, prior to the submittal of a development application.

3. Discussion of Special Topics.

(c) Development Standards.

1. Foothill Growth Management Plan Development Standards

2. General Plan Policies: Development Standards

3. Tulare County Improvement Standards

4. SRA Fire Safe Standards

5. Bear/Animal Resistant Containers

1. Foothill Growth Management Plan Development Standards

3.12 Development Standards

Unless it can be demonstrated that an alternative standard will result in attainment of a superior environment, when preparing Specific Plans, Master Development Plans, or Area Development Plans and standards therein for areas within the foothills, at a minimum, the development standards within the FGMP-Section 3.12 shall apply.

The following standards and conditions, as well as all applicable policies, standards, and conditions from the various agencies, shall be met by new development.

Residential Densities:

1. The residential density of a new development shall be initially limited by the amount of water available for domestic and fire fighting purposes based on water demand specifications provided by the Tulare County Health Department and the County Fire Department. A more specific residential density shall be determined in the site plan review process. The final allowable density shall correspond to how well the proposed project meets the goals and policies of the FGMP.
2. As a guideline, the maximum density for land with slopes between 15 percent and 29 percent shall be one (1) residential unit per two and one half (2 ½) acres unless it can be demonstrated that site-specific lot design and innovative waste water disposal can overcome the inherent problems of steep slopes and thin soils.
3. Development shall generally be precluded on slopes 30 percent or greater, unless the applicant can sufficiently mitigate the inherent problems associated with developing on steep slopes.
4. The residential density of any development within the Success Valley areas of the Tule River development corridor on the Land Use/Circulation Plan shall not exceed one (1) unit per five (5) acres.

Open Space Requirements:

5. Those portions of the site which are adjacent to a watercourse area, contain undeveloped slopes 30 percent or greater or encompass environmental, archaeological, or historically sensitive areas shall remain in common open space.

Land Alteration Grading:

6. All graded slopes are to be contoured and blended to harmonize with the natural slopes on and around the site.
7. The maximum steepness of exposed cuts and fills shall meet the standards established in the Improvement Standards of Tulare County.
8. Graded slopes consisting primarily of soil shall be planted with vegetation to stabilize slopes and prevent erosion. Native plant materials or similar climactically adapted vegetation shall be used wherever possible.
9. Slope stabilization and erosion prevention shall be completed before the winter months after grading has been completed.
10. Lots shall be designed to fit the natural landscape in a manner that does not require extensive grading.
11. Where two cut or fill slopes intersect, the intersection shall be horizontally rounded and blended. (This standard does not pertain to slopes composed of rock.)

12. Where a cut or fill slope intersects the natural grade, the intersection shall be horizontally rounded and blended. (This standard does not pertain to slopes composed of rock.)
13. Fills shall not encroach on natural watercourses or constructed channels. Excavated materials shall not be stored in watercourses.
14. Grading and excavation shall be phased with the development.

Erosion Control:

15. Sediment shall be retained on site by measures such as sediment basins and sediment traps as outlined in the Drainage Plan.
16. Temporary mulching, seeding, or other suitable stabilization measures shall be used to protect exposed critical areas after the completion of grading.
17. Exposed slopes shall be planted with native plant materials or similar climactically adapted vegetation that protects exposed slopes from erosion.

Drainage:

18. For projects located in areas containing steep slopes or tightly packed soils, the Drainage Plan shall be designed to detain as much water as possible on site to prevent potential sedimentation and flooding.
19. The drainage plan required for all projects within the Frazier Valley watershed area shall be designed to retain all storm water runoff caused by the development on the project site.

Vegetation Removal:

20. Removal or grading around native trees (with a trunk of 6" or larger in diameter or 3' above ground surface) which may disturb the root system shall not be allowed during the construction process unless the Project Review Committee deems it necessary because of road alignments or infrastructure improvements. Any trees to be removed shall be indicated on the submitted site plan.
21. Removal of native trees in areas restricted to open space shall not be allowed unless the health, safety or welfare of residents associated with the development is endangered. Any trees proposed for removal must be indicated on the submitted site plan with accompanying information stating why the tree must be removed.

Land Improvements: Building Standards

22. The maximum building height measured at foundation ground level shall be 35 feet.
23. Properties located along a scenic highway or road shall have a minimum property width of 150 feet with side yard setbacks of 10 percent of the width of the property.
24. In newly developing areas, those properties that are located along a scenic highway shall have a minimum front yard building setback of 100 feet from the right-of-way line while scenic roads shall have a setback of 100 feet from the centerline of the road.
25. The minimum lot width and front yard setback requirement for property along a scenic highway or road and inside the Springville Urban Development Boundary may be waived by the Project Review Committee if it is deemed inappropriate because of existing development patterns.
26. Building improvements (homes, fences, etc.) and septic tank/leach line systems or other activities associated with construction (grading) shall not be permitted within 50 feet of intermittent watercourses or 100 feet of perennial watercourses.

Land Improvements: Well Systems

27. Each residential or planned unit development in the development corridor shall join or form an association or community organization, private or mutual water company, or establish an equivalent financing/maintenance mechanism acceptable to the County for purpose of monitoring and maintaining the water system. This section shall not apply to newly created parcels that are 10 acres or larger. The Planning Commission shall have the discretion to recommend a waiver of a common water system based on circumstances such as size or number of lots, topography, existing water systems, or other overriding conditions.
28. Each well system shall meet the requirements of, and have a permit with, the Tulare County Health Department.

Land Improvements: Community Waste Water System

29. Each residential or planned unit development which uses a waste water disposal system other than an individual system shall join or form an association or community organization, or establish an equivalent financing/maintenance mechanism acceptable to the County for purposes of monitoring and servicing the waste water disposal system.
30. The waste water disposal system shall be designed to meet the requirements of the Tulare County Health Department and the Regional Water Quality Control Board.
31. Application for waste discharge shall be made with a permit received from the Water Quality Control Board.

Land Improvements: Streets

32. All streets, walkways, and bike path improvements shall conform to the Tulare County Improvement Standards document unless otherwise modified by the standards contained in this document. Each residential or planned unit development shall provide for a financing and maintenance mechanism acceptable to the County for street maintenance and replacement.
33. The following table will serve as a guide for minimum street standards for public streets permitted within a residential subdivision or planned unit development. Street widths or right-of-way standards are subject to modification during the site plan review process based on factors such as topography, soils, location of watercourses, or development density. One way streets shall be considered for private maintenance only.
34. Privately maintained streets may be developed to lesser street and right-of-way standards depending upon the location and type of development. In these cases, minimum standards will be determined by the Planning Commission.

			Unpaved Shoulder Width			Right-Of-Way Width
Type of Street	**Street Characteristics**	**Pavement Width***	**Flat Width (0-5% slopes)**	**Rolling (6-20%)**	**Mountainous (20% and above)**	**Desirable ** **
One Way Street	Projected Average Daily Traffic (ADT) not to exceed 400; on-street parking prohibited; guest parking required	16'	8'	3'	2.5'	50'
One Way Street	Projected ADT not to exceed 400; on-street parking prohibited.	26'	8'	3'	2.5'	60'
Two-Way Access Road (adjacent development prohibited)	Projected ADT not to exceed 400; on-street parking prohibited.	28'	8'	3'	2.5'	60'
	ADT greater than 400	28'	8'	3'	2.5'	
Two-Way Residential Street	Projected ADT 400 or less, on-street parking prohibited; guest parking required.	28'	8'	4'	3'	60'
Two-Way residential street and minor roads	Projected ADT not to exceed 1,000; on-street parking permitted.	32'	As required by RMA.			60'

*Pavement width may be increased by the Project Review Committee when on-site parking is likely to occur based upon the characteristics of the development (lot size or configuration, the existence of natural or man-made amenities adjacent to the roadway which would serve as an attractive force etc.). In addition, increased pavement width may be required when curb and gutter or asphalt concrete dikes are utilized.

**Reduced right-of-way widths may be considered acceptable by the Project Review Committee in cases where utilities are underground, when small cut and fill slopes are required, and other similar circumstances where the full right-of-way width is not deemed necessary.

Land Improvements: Parking

35. For residential uses located in areas where on-street parking is permitted, off-street parking shall be provided on the basis of two (2) spaces per dwelling unit.
36. For residential uses located in areas where on-street parking is prohibited, off-street guest parking shall be provided on the basis of one (1) space per dwelling unit (driveways not included), in addition to the two (2) spaces per dwelling unit.
37. Off-street parking and loading facilities for commercial, industrial and other types of uses shall be determined by the Planning Commission.

Scenic Highway Corridor

38. No new off-premises outdoor advertising signs shall be allowed in scenic corridors.
39. All new utility improvement shall be located underground if the property lies in a scenic corridor.
40. Grading and cut and fill operations shall be kept to a minimum in scenic corridors. All exposed slopes are to be planted with native materials.
41. Existing vegetation and unique land forms (rock outcrops, etc.) shall be retained and protected from any unnecessary grading or other development related activities.
42. Individual businesses in scenic corridors with on-site signs pertaining to the identification of the permitted use shall be flat to the primary building façade.
43. In scenic corridors, on premise, free-standing signs identifying the use of the property shall require discretionary approval by the Planning Commission based on design, setbacks, size, architectural compatibility, traffic safety, and visibility.

Fire Protection

44. Each new residential subdivision or planned unit development occurring in a development corridor shall be reviewed by the County Fire Warden or his/her agent to insure fire protection measures and standards set forth in the Tulare County Subdivision Ordinance are met.
45. New development within established development corridors shall be located within a 15-minute attack time of a County fire station. However, this standard shall not apply to the Badger Development Corridor, where attack times may exceed 15 minutes. This limited exception is justified based upon established residential density limitations and unique fire protection service facilities and capabilities existing in the Badger area. [General Plan Amendment (GPA) 83-03, 5/17/83].
46. Water for fire protection shall be available in sufficient quantity and pressure to serve the project in question.
47. Fire retardant roofing materials shall be used in new foothill developments.
48. Fire resistive construction elements shall be incorporated into stilt or cantilevered construction buildings.
49. Street house numbers shall be clearly visible from the main traveled roadway.
50. Sufficient clearance of flammable vegetation around buildings shall be maintained.
51. Fuel breaks and greenbelts shall be used to protect both developing areas and adjacent wildlands.
52. Where possible, take maximum advantage of planned or existing parks, golf courses, tennis courts, or other recreational areas to provide for a buffer zone between development and the wildland.

53. Road systems, either public or private, shall provide for a safe evacuation of residents and adequate access for fire and other emergency equipment.
54. Bridges shall have a minimum load limit of 40,000 lbs. (20 tons).
55. A fire protection plan shall be submitted on all new developments.

This space is intentionally left blank.

2. General Plan Policies: Development Standards

DEVELOPMENT STANDARDS

TULARE COUNTY GENERAL PLAN 2030 UPDATE POLICIES

LAND USE ELEMENT

LU-3.6 Project Design
The County shall require residential project design to consider natural features, noise exposure of residents, visibility of structures, circulation, access, and the relationship of the project to surrounding uses. Residential densities and lot patterns will be determined by these and other factors. As a result, the maximum density specified by General Plan designations or zoning for a given parcel of land may not be attained.

HEALTH AND SAFETY ELEMENT

HS-1.2 Development Constraints
The County shall permit development only in areas where the potential danger to the health and safety of people and property can be mitigated to an acceptable level.

HS-1.4 Building and Codes
Except as otherwise allowed by State law, the County shall ensure that all new buildings intended for human habitation are designed in compliance with the latest edition of the California Building Code, California Fire Code, and other adopted standards based on risk (e.g., seismic hazards, flooding), type of occupancy, and location (e.g., floodplain, fault).

HS-2.2 Landslide Areas
The County shall not allow development on existing unconsolidated landslide debris.

HS-2.3 Hillside Development
The County shall discourage construction and grading on slopes in excess of 30 percent.

HS-2.4 Structure Siting
The County shall permit development on soils sensitive to seismic activity permitted only after adequate site analysis, including appropriate siting, design of structure, and foundation integrity.

HS-2.7 Subsidence
The County shall confirm that development is not located in any known areas of active subsidence. If urban development may be located in such an area, a special safety study will be prepared and needed safety measures implemented. The County shall also request that developments provide evidence that its long-term use of ground water resources, where applicable, will not result in notable subsidence attributed to the new extraction of groundwater resources for use by the development.

HS-2.8 Alquist-Priolo Act Compliance
The County shall not permit any structure for human occupancy to be placed within designated Earthquake Fault Zones (pursuant to and as determined by the Alquist-Priolo

Earthquake Fault Zoning Act; Public Resource code, Chapter 7.5) unless the specific provision of the Act and Title 14 of the California Code of Regulations have been satisfied.

HS-5.1 Development Compliance with Federal, State, and Local Regulations
The County shall ensure that all development within the designated floodway or floodplain zones conforms with FEMA regulations and the Tulare County Flood Damage Prevention Ordinance.

New development and divisions of land, especially residential subdivisions, shall be developed to minimize flood risk to structures, infrastructure, and ensure safe access and evacuation during flood conditions.

HS-5.2 Development in Floodplain Zones
The County shall regulate development in the 100-year floodplain zones as designated on maps prepared by FEMA in accordance with the following:

1. Critical facilities (those facilities which should be open and accessible during emergencies) shall not be permitted.
2. Passive recreational activities (those requiring non-intensive development, such as hiking, horseback riding, picnicking) are permissible.
3. New development and divisions of land, especially residential subdivisions, shall be developed to minimize flood risk to structures, infrastructure, and ensure safe access and evacuation during flood conditions.

HS-6.1 New Building Fire Hazards
The County shall ensure that all building permits in urban areas, as well as areas with potential for wildland fires, are reviewed by the County Fire Chief.

HS-6.2 Development in Fire Hazard Zones
The County shall ensure that development in extreme or high fire hazard areas is designed and constructed in a manner that minimizes the risk from fire hazards and meets all applicable State and County fire standards. This shall include promoting the use of fire resistant materials designed to reduce fire vulnerability within high or extreme fire hazard areas through use of Article 86-A of the 2001 California Fire Code and other nationally recognized standards, as may be updated periodically. Special consideration shall be given to the use of fire-resistant-materials and fire-resistant-construction in the underside of eaves, balconies, unenclosed roofs and floors, and other similar horizontal surfaces in areas with steep slopes.

HS-6.4 Encourage Cluster Development
The County shall encourage cluster developments in areas identified as subject to high or extreme fire hazard, to provide for more localized and effective fire protection measures such as consolidations of fuel build-up abatement, firebreak maintenance, fire fighting equipment access, and water service provision.

HS-6.5 Fire Risk Recommendations
The County shall encourage the County Fire Chief to make recommendations to property owners regarding hazards associated with the use of materials, types of structures, location of structures and subdivisions, road widths, location of fire hydrants,

water supply, and other important considerations regarding fire hazard that may be technically feasible but not included in present ordinances or policies.

HS-6.6 Wildland Fire Management Plans
The County shall require the development of wildland fire management plans for projects adjoining significant areas of open space that may have high fuel loads.

HS-6.7 Water Supply System
The County shall require that water supply systems be adequate to serve the size and configuration of land developments, including satisfying fire flow requirements. Standards as set forth in the subdivision ordinance shall be maintained and improved as necessary.

HS-6.8 Private Water Supply
The County shall require separately developed dwellings with individual private water supply to provide an acceptable guaranteed minimum supply of water for fire safety, in addition to the amount required for domestic needs.

WATER RESOURCES ELEMENT

WR-2.1 Protect Water Quality
All major land use and development plans shall be evaluated as to their potential to create surface and groundwater contamination hazards from point and non-point sources. The County shall confer with other appropriate agencies, as necessary, to assure adequate water quality review to prevent soil erosion; direct discharge of potentially harmful substances; ground leaching from storage of raw materials, petroleum products, or wastes; floating debris; and runoff from the site.

WR-2.2 National Pollutant Discharge Elimination System (NPDES) Enforcement
The County shall continue to support the State in monitoring and enforcing provisions to control non-point source water pollution contained in the U.S. EPA NPDES program as implemented by the Water Quality Control Board.

WR-2.3 Best Management Practices (BMPs)
The County shall continue to require the use of feasible BMPs and other mitigation measures designed to protect surface water and groundwater from the adverse effects of construction activities, agricultural operations requiring a County Permit and urban runoff in coordination with the Water Quality Control Board.

WR-2.4 Construction Site Sediment Control
The County shall continue to enforce provisions to control erosion and sediment from construction sites.

WR-2.9 Private Wells
The County shall ensure that private wells are adequately constructed to provide protection from bacteriological and chemical contamination and do not provide a hazard as to contaminate the aquifer.

WR-3.3 Adequate Water Availability
The County shall review new development proposals to ensure the intensity and timing of growth will be consistent with the availability of adequate water supplies. Projects must submit a Will-Serve letter as part of the application process, and provide evidence of adequate and sustainable water availability prior to approval of the tentative map or other urban development entitlement.

TRANSPORTATION AND CIRCULATION ELEMENT

TC-1.13 Land Dedication for Roadways and Other Travel Modes
As required to meet the adopted County Improvement Standards, the County shall require, where warranted, an irrevocable offer of dedication to the right-of-way for roadways and other travel modes, as part of the development review process.

TC-1.14 Roadway Facilities
As part of the development review process, new development shall be conditioned to fund, through impact fees, tonnage fees, and/or other mechanism, the construction and maintenance of roadway facilities impacted by the project. As projects or locations warrant, construction or payment of pro-rata fees for planned road facilities may also be required as a condition of approval.

TC-1.15 Traffic Impact Study
The County shall require an analysis of traffic impacts for land development projects that may generate increased traffic on County roads. Typically, applicants of projects generating over 100 peak hour trips per day or where LOS "D" or worse occurs, will be required to prepare and submit this study. The traffic impact study will include impacts from all vehicles, including truck traffic.

PUBLIC FACILITIES AND SERVICES ELEMENT

PFS-1.3 Impact Mitigation
The County shall review development proposals for their impacts on infrastructure (for example, sewer, water, fire stations, libraries, streets, etc). New development shall be required to pay its proportionate share of the costs of infrastructure improvements required to serve the project to the extent permitted by State law. The lack of available public or private services or adequate infrastructure to serve a project, which cannot be satisfactorily mitigated by the project, may be grounds for denial of a project or cause for the modification of size, density, and/or intensity of the project.

PFS-1.4 Standards of Approval
The County should not approve any development unless the following conditions are met:
1. The applicant can demonstrate all necessary infrastructure will be installed and adequately financed,
2. Infrastructure improvements are consistent with adopted County infrastructure plans and standards, and
3. Funding mechanisms are provided to maintain, operate, and upgrade the facilities throughout the life of the project.

PFS-2.2 Adequate Systems
The County shall review new development proposals to ensure that the intensity and timing of growth will be consistent with the availability of adequate production and delivery systems. Projects must provide evidence of adequate system capacity prior to approval.

PFS-2.3 Well Testing
The County shall require new development that includes the use of water wells to be accompanied by evidence that the site can produce the required volume of water without impacting the ability of existing wells to meet their needs.

PFS-2.4 Water Connections
The County shall require all new development in UDBs, UABs, Community Plans, Hamlet Plans, Planned Communities, Corridor Areas, Area Plans, existing water district service areas, or zones of benefit, to connect to the community water system, where such system exists. The County may grant exceptions in extraordinary circumstances, but in these cases, the new development shall be required to connect to the water system when service becomes readily available.

PFS-2.5 New Systems or Individual Wells
Where connection to a community water system is not feasible per PFS-2.4: Water Connections, service by individual wells or new community systems may be allowed if the water source meets standards for quality and quantity.

PFS-3.1 Private Sewage Disposal Standards
The County shall maintain adequate standards for private sewage disposal systems (e.g., septic tanks) to protect water quality and public health.

PFS-3.2 Adequate Capacity
The County shall require development proposals to ensure the intensity and timing of growth is consistent with the availability of adequate wastewater treatment and disposal capacity.

PFS-3.3 New Development Requirements
The County shall require all new development, within UDBs, UABs, Community Plans, Hamlet Plans, Planned Communities, Corridor Areas, Area Plans, existing wastewater district service areas, or zones of benefit, to connect to the wastewater system, where such systems exist. The County may grant exceptions in extraordinary circumstances, but in these cases, the new development shall be required to connect to the wastewater system when service becomes readily available.

PFS-3.4 Alternative Rural Wastewater Systems
The County shall consider alternative rural wastewater systems for areas outside of community UDBs and HDBs that do not have current systems or system capacity. For individual users, such systems include elevated leach fields, sand filtration systems, evapotranspiration beds, osmosis units, and holding tanks. For larger generators or groups of users, alternative systems, including communal septic tank/leach field systems, package treatment plants, lagoon systems, and land treatment, can be considered.

PFS-3.5 Wastewater System Failures
The County shall require landowners to repair failing septic tanks, leach field, and package systems that constitute a threat to water quality and public health or connect to an existing community system through applicable County and/or Regional Water Quality Control Board standards and requirements.

PFS-4.2 Site Improvements
The County shall ensure that new development in UDBs, UABs, Community Plans, Hamlet Plans, Planned Communities, Corridor Areas, and Area Plans includes adequate stormwater drainage systems. This includes adequate capture, transport, and detention/retention of stormwater.

PFS-4.3 Development Requirements
The County shall encourage project designs that minimize drainage concentrations and impervious coverage, avoid floodplain areas, and where feasible, provide a natural watercourse appearance.

PFS-4.4 Stormwater Retention Facilities
The County shall require on-site detention/retention facilities and velocity reducers when necessary to maintain existing (pre-development) storm flows and velocities in natural drainage systems. The County shall encourage the multi-purpose design of these facilities to aid in active groundwater recharge.

PFS-7.2 Fire Protection Standards
The County shall require all new development to be adequately served by water supplies, storage, and conveyance facilities supplying adequate volume, pressure, and capacity for fire protection.

PFS-7.7 Cost Sharing
The County shall require new development to pay public facility fees associated with new sheriff/fire station facilities and equipment necessary to maintain the County's service standards in that area. New development may also be required to create or join a special assessment district, or other funding mechanism, to pay the costs associated with the operation of a sheriff/fire station.

PFS-7.12 Design Features for Crime Prevention and Reduction
The County shall promote the use of building and site design features as means for crime prevention and reduction.

FOOTHILL GROWTH MANAGEMENT PLAN

FGMP-1.2 Grading
The County shall ensure that new development is designed in a manner that minimizes grading, vegetation disturbance, and intrusion onto natural watercourses, canyons and prominent landmarks, or rare and endangered species sites.

FGMP-1.5 Preserving Visual Resources

The County shall encourage new development be designed in a manner that preserves the visual quality of the foothill setting by encouraging the use of curvilinear streets, vegetation reestablishment on cuts and fills, cluster development, and housing site locations that blend into the landscape rather than becoming a focal point.

FGMP-1.11 Hillside Development
The County shall require that hillside development be designed so as to preserve the skyline and maintain an unobstructed scenic panorama of the foothills.

FGMP-1.16 Applicable Development Standards
Unless it can be demonstrated that an alterative standard will result in attainment of a superior environment, when preparing Specific Plans, Master Development Plans, or Area Development Plans and standards therein for areas within the foothills, at a minimum, the development standards within the FGMP Section 3.12 shall apply.

FGMP-6.3 Development Along Scenic Highways
The County shall require that development along all scenic highways and routes meet the development standards of the FGMP.

FGMP-7.1 Information on Historical Sites
The County may require the developer to provide information at time of application submittal regarding any historical site and/or building that occupies the project area that is worthy of historical preservation.

FGMP-7.2 Information on Archaeological Sensitive Areas
The County may require the developer to provide information at time of application submittal regarding possible archeological sites if a project is located in proximity to archeological sensitive areas such as hilltops, buttes, watercourses, etc.

FGMP-8.3 Development in the Floodplain
The County shall prohibit development of residences or permanent structures within the 100-year floodway.

FGMP-8.4 Development of Wastewater Systems
The County shall ensure that new wastewater systems meet the standards of the Regional Water Quality Control Board and Tulare County Health & Human Services.

FGMP-8.10 Development in Hazard Areas
The County shall prohibit development in areas that are considered to be geologically hazardous (slides, earthquake faults, etc.).

FGMP-8.11 Development on Slopes
The County shall not allow development on slopes 30 percent or greater, unless the applicant can sufficiently mitigate the inherent problems associated with developing on steep slopes.

FGMP-8.12 Vegetation Removal
The County shall prohibit unnecessary removal of native trees on development sites prior to approval of development plans to control erosion, preserve wildlife habitat, and maintain the natural character of developing areas.

FGMP-8.15 Development in Chaparral
The County shall restrict development in chaparral since these areas present extreme wildland fire potential.

FGMP-8.18 Maintenance of Scenic Vistas
The County shall ensure that hilltop development is designed to preserve the skyline and maintain an unobstructed scenic panorama of the foothills for residents and visitors to enjoy.

FGMP-9.1 Infrastructure Capacity
In reference to water needs (domestic and fire fighting) and wastewater generation, the County shall not allow new development to exceed the maximum physical holding capacity (based on water availability and soils) of the parcel in question.

FGMP-9.2 Provision of Adequate Infrastructure
The County shall require evidence, prior to project approval, which (1) describes a safe and reliable method of wastewater treatment and disposal; and (2) substantiates an adequate water supply for domestic and fire protection purposes.

FGMP-9.3 Maintenance of Infrastructure
The County shall delegate the maintenance and operation of water and/or wastewater treatment facilities to a responsible entity, which shall be established prior to approval of the final subdivision map.

FGMP-9.4 Soil Conditions and Development Density
Based on existing soil conditions, types of land uses, effluent yield per land use, and the density of the proposed project, the County shall work with the Regional Water Quality Control Board and the Tulare County Health and Human Services Agency to review the adequacy of wastewater disposal areas.

FGMP-9.5 Alternate Sewage Disposal
The County may allow unconventional methods of disposing of sewage effluent, provided the system meets the performance standards of the Water Quality Control Board and the Tulare County Health and Human Services Agency. Such systems may include, but are not limited to common leach field, soil absorption mounds, aerobic septic tanks, or evapotranspiration systems.

FGMP-10.1 Compliance with Planning Policies
To provide for the integration of efficient road systems, existing community values, infrastructural improvements, and open space patterns, the County shall encourage development projects within a definable geographic area of a development corridor to comply with a common development or specific plan designed for that area.

FGMP-10.2 Provision of Safety Services
The County shall ensure that development is located in areas of the foothills that can be adequately served by existing Tulare County fire stations and the Sheriff's Department unless new facilities are proposed or required for the development.

FGMP-10.3 Fire and Crime Protection Plan
The County shall require that fire and crime protection plan considerations, including

financing, be incorporated into all proposed developments to ensure adequate emergency services are available and able to serve new development.

FGMP-10.4 Financing Plan
Where a specific plan is to be prepared for a sub-area of a development corridor, the County shall require a financing plan for the installation, operation, and ongoing maintenance of infrastructure resources to support growth in the specific plan area. The plan shall demonstrate no net cost to the County.

3. Tulare County Improvement Standards

IMPROVEMENT STANDARDS OF TULARE COUNTY

County Civic Center
Visalia, California

IMPROVEMENT

STANDARDS

OF

TULARE COUNTY

STANDARDS ADOPTED ON THE 16TH DAY OF JANUARY, 1973, BY THE TULARE COUNTY BOARD OF SUPERVISORS FOR CONSTRUCTION OF IMPROVEMENTS IN SUBDIVISIONS, ROAD RIGHTS-OF-WAY, AND AT OTHER LOCATIONS WHERE SPECIFIED BY ORDINANCE.

Revised: November 3, 1981/Res. 81-2221
(Fire Flow and Protection)

Revised: September 19, 1989/Res. 89-1236
(Concrete Curbs and Sidewalks)

Revised: December 10, 1991/Res. 91-1409
(SRA Fire Safe Regulations)

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SECTION I

GENERAL PROVISIONS

A. STANDARDS

Required improvement work shall be done in accordance with the applicable sections of these Improvement Standards including the California Standard Specifications, (hereinafter called the "Standard Specifications"); Sections 7000 - 7126 of the Tulare County Ordinance Code; and such other special provisions prepared by the developer's engineer and approved by the County Public Works Director that are necessary for the successful completion of the required work.

In case of conflict between the approved Special Provisions prepared by the design engineer and these Improvement Standards and/or the Standard Specifications, the approved Special Provisions shall take precedence over and be used in lieu of such conflicting portions of these Improvement Standards and/or the Standard Specifications. To supplement the above, the design engineer shall prepare necessary plans and profiles using accepted principles of civil engineering using, wherever applicable, the Standard Plates found in Section IV of these Improvement Standards.

B. DEFINITIONS

When used for the construction of any improvements required by these Improvement Standards, the definitions and terms listed in Section 1 of the Standard Specifications shall apply with the following exceptions:

<u>Contractor</u> - The person or persons, firm, partnership, corporation or combination thereof, private or municipal, or his or their legal representative, who have entered into an agreement with the County of Tulare for the construction of improvements in accordance with these Improvement Standards. Also a developer performing work under these Improvement Standards.

Department of Public Works - The Board of Supervisors of Tulare County.

Director of Public Works - Chairman of the Board of the Tulare County Board of Supervisors.

Department of Transportation - The Tulare County Public Works Department and/or Road Department.

Engineer - Tulare County Road Commissioner and County Public Works Director, acting either directly or through the properly authorized agents, such agents acting within the scope of the particular duties entrusted to them.

Laboratory - The laboratory of the Tulare County Road Department or any other laboratory approved by the Tulare County Road Department to test materials and work performed under these Improvement Standards.

Plans - The project plans and Standard Plates, profiles, typical cross sections, general cross sections, working drawings and supplemental drawings, or reproductions thereof, approved by the Engineer, which show the location, character, dimensions and details of the work to be performed. All such documents are to be considered as part of the plans whether or not reproduced in the special provisions.

In the above definitions, the following terms are defined as follows:

Standard Plates - The plates contained in Section IV of these Improvement Standards.

Project Plans - The project plans are specific details and dimensions peculiar to the work and are supplemented by the Standard Plates insofar as the same may apply.

Specifications - The directions, provisions and requirements contained herein as supplemented by the Standard Specifications and by such approved special provisions as may be necessary pertaining to the method and manner of performing the work or to the quantities

and qualities of the materials involved.

Special Provisions - The special provisions are specific clauses or instructions setting forth conditions or requirements peculiar to the project under consideration and covering work or materials not satisfactorily covered by these Improvement Standards and the Standard Specifications. Only those special provisions approved by the Engineer shall be applicable to the work.

State - The County of Tulare except where the word "State" refers to the laws of the State of California.

Work - All the work specified, indicated, shown or contemplated in the improvement, including all alterations, amendments or extensions thereto authorized by the Engineer.

In addition to the definitions and terms of Section I of the Standard Specifications, whenever in these improvement standards, the specifications or on the plans, the following terms are used or pronouns used in place of them, the intent and meaning shall be as follows:

Design Engineer - The Civil Engineer retained by a subdivider or other developer to prepare the plans and specifications and to provide general supervision of the construction of the required improvement work.

Developer - A subdivider or other party who undertakes work by agreement or permit governed by these Improvement Standards.

Improvement Plans - Plans prepared for the developer by his design engineer and approved by the County Public Works Director and Road Commissioner.

State Responsibility Area (SRA) - That area or those areas within the definition of a "State Responsibility Area" as set forth in the Zoning Ordinance of Tulare County, Tulare County Ordinance No. 352, as amended from time to time.

C. SUBDIVISION PLANS AND SPECIFICATIONS

All improvement plans, specifications, and special provi-

sions shall comply with the requirements of the approved or conditionally approved subdivision tentative map and these Improvement Standards. Prior to beginning any construction and at least 14 days prior to the date on which a developer desires the County Public Works Director to present his final

map of the development to the Board of Supervisors, his engineer shall present completed improvement plans and specifications along with any required special provisions, to the County Public Works Director for his approval.

Construction changes from the approved Improvement Plans shall be permitted only upon approval of the County Public Works Director. As built plans shall be furnished to the County Public Works Director upon completion of the work and shall be a prerequisite to acceptance of the work.

SECTION II

DESIGN

A. STREETS AND HIGHWAYS

1. Road Classification

a. Class 1 Roads - A cul-de-sac or minor residential street so designed that it cannot serve more than 50 lots, the primary function of which is to provide access to abutting property.

b. Class 2 Roads - A minor residential street so designed that it cannot serve more than 120 lots, the primary function of which is to provide access to abutting property.

c. Class 3 Roads - A minor residential collector street that has or is expected to have the dual purpose of providing access to abutting property and of carrying traffic from Class 1 and Class 2 Roads to roads in the County Select System.

d. Select System Roads - All State Highways, Federal Aid Secondary Routes, arterials and collector roads existing or unconstructed, that are designated for inclusion in the Select System by the Board of Supervisors with the approval of the State Department of Transportation.

2. Geometric Design

a. Road Widths - The road widths shall comply with the applicable geometric section shown on Plate No.s A-1, A-2,

A-3, A-1M, A-2M and A-3M of these Improvement Standards.

b. Design Speeds - The minimum design speed shall comply with the applicable design velocities shown on Plate No.s A-1, A-2, A-1M, A-2M and A-3M of these Improvement Standards.

c. Grades - Road grade shall not be less than 0.15%. Maximum allowable grades shall comply with the applicable grades shown on Plate No.s A-1, A-2, A-3, A-1M, A-2M and A-3M.

d. Superelevation - Superelevations shall comply with Plate No. A-5.

e. Sight Distance - Vertical curves shall be constructed to provide the following stopping sight distance or headlight sight distances.

Design Speed, MPH	Sight Distance - Feet
20	120
25	160
30	200
35	240
40	275
50	350
60	475

f. Horizontal Alignment - The curve radii, curve or arc length, and the minimum tangent length between superelevated curves shall be determined from Plate No. A-4.

g. Intersections - Street intersections shall be as near right angles as practical. In no case shall the angle of intersection be less than seventy degrees nor shall the tangent distance measured from the intersection be less than 35 feet. Streets located on opposite sides of an intersecting street shall have their centerlines directly opposite each other or their centerlines shall be separated by not less than 150 feet.

In mountainous areas where a minor residential street or cul-de-sac connects to a minor residential collector street and adequate signing for a full stop is provided, the radius of curvature and sight distance for the minor residential street may be reduced to 50 feet and 85 feet respectively within 150

feet of the intersection.

The centerline grades of intersecting streets shall not exceed 6 percent for a distance measured from the intersection of:

1. 50 feet on Class 1 and 2 roads (Minor Residential Street).
2. 70 feet on Class 3 (Minor Residential Collector Street).

h. Slopes and Clearing - The limits of clearing on all roads shall be not less than 2 feet outside excavation and embankment slopes and not less than 5 feet from the edge of pavement.

Embankment slopes shall be 1 1/2:1 or flatter. Excavation slopes shall not be steeper than 1:1 for cuts less than 15 feet high nor shall they be steeper than 1 1/2:1 for cuts greater than 15 feet high unless evidence satisfactory to the Road Department is submitted that indicates steeper slopes would be stable.

i. Industrial Streets - The geometric design of roads in industrial areas will be based upon the specific traffic requirements of the area served but shall have the following minimums:

Travel lane widths	12 feet
Parking lane widths	10 feet
Border widths(sidewalk areas)	8 feet

The design velocity, maximum grade, maximum superelevation and minimum right of way widths shall generally not be less than those specified for Select Roads as shown on Plates A-1, A-2 and A-3 of Section IV of the Improvement Standards.

3. Structural Design-Roads

The R-value design method used by the California State Department of Transportation shall be used to determine the thickness of the various structural elements of the roadway. A 10 year design life shall be used. The gravel equivalents and minimum thickness of the various structural layers shall be obtained from Plate A-9, Section IV of these

Improvement Standards.

The Traffic Index, T.I., shall be determined from Plate No. A-6 where traffic estimates can be made by conventional means. If traffic estimates cannot be made, the T.I. shall be determined from Plate No. A-7. Commercial and Industrial Streets and alleys shall use a minimum traffic index of 6.0.

The number of dwellings served by a road, including loop roads, shall be the number of dwellings fronting the entire road plus the number of dwellings fronting any other lesser street connected to it that would logically be served by the road under consideration.

4. Structure Design-Bridges

All bridges and culverts shall be designed for the following minimum design loads:

Road Class	AASHTO Design Load
1 & 2	H 15 - 44
3	HS 15 - 44
Select System Roads and All Roads in the SRA	HS 20 - 44

In mountainous areas the minimum clear width of bridges shall not be less than the paved width plus four feet on each side.

In valley areas the width of the bridge shall be sufficient for the full curb to curb width plus standard sidewalk areas and railings on each side of the bridge.

5. Curbs, Gutters and Sidewalks

In valley areas curbs and gutters shall be required on all lots within a subdivision if a majority of the lots contain less than 2.5 acres and/or have less than 200 feet average widths.

Sidewalks, where provided, shall have a minimum width of four (4) feet and shall be located adjacent to the curb unless approved by the Engineer.

6. Auxiliary Drainage Facilities

Culverts, ditches at the bottom of cut slopes, and other such drainage facilities shall be designed for a flood frequency of 10 years or more with inlet not submerged, and a

frequency of 50 years or more without overtopping the roadway fill.

Down flumes or other overside drains shall be spaced so as to drain no more than 300 feet of roadway.

Energy dissipators or other suitable forms of erosion protection shall be placed at culvert outlets where the Road Department determines such measures are needed for erosion control.

7. Cul-de-Sacs

Cul-de-sacs in valley areas shall not be more than six hundred and sixty (660) feet in length and shall terminate with a circular turnaround constructed as shown on Plate A-20 of Section IV.

The maximum length of cul-de-sacs in mountainous areas shall be 1,000 feet, except in the SRA where cul-de-sacs serving parcels zoned for less than one acre maximum length shall be 800 feet. The minimum radius of the cul-de-sacs right of way in mountainous areas shall be 45 feet and the minimum radius of the pavement edge shall be 37 feet, except in the SRA where the minimum radius of the cul-de-sacs right of way shall be 48 feet and the minimum radius of the pavement edge shall be 40 feet.

The minimum distance from the centerline of the road to the right of way in mountainous areas may be reduced 5 feet (Distance B, Plate No. A-1M and Plate No. A-2M.)

The maximum paved slope across the bulb of a cul-de-sac shall be 6 percent.

In mountainous areas the sight distance may be reduced to 85 feet within 150 feet of the center of the bulb.

8. Stub Roads

Stub roads shall be completely improved to the subdivision boundary and such boundaries shall not be distorted to specifically exclude the stub road.

Temporary turn-arounds on stub roads exceeding one lot in depth shall be constructed using a pavement radius of 30 feet.

9. Alleys in Valley Areas

If alleys are provided, they shall be a minimum of twenty (20) feet in width and shall be constructed as shown on Plate A-3, Section IV.

If two alleys intersect, the corners shall be cut either on a twenty (20) foot radius to which the lot boundaries are

tangent or on a straight line connecting points on both lot lines fifteen (15) feet from the corner of the lot at the intersection of the alleys.

Alleys thirty (30) feet or more in width may be required at the rear of lots in areas zoned for commercial and industrial use and in unzoned areas proposed for commercial and industrial use.

10. Private Drives in Mountainous Areas

Where reasonable access to abutting property cannot be provided within one lot, the driveway shall be constructed together with other subdivision improvements and the easements for such joint drives shall be shown on the improvement plans.

Joint driveways shall not serve more than 4 lots and shall be surfaced within the public road right of way and the entire driveway shall be constructed to prevent eroded material from being deposited on the public road.

11. Signs

At locations where steep cut or fill slopes prohibit parking off the pavement, "No Parking" signs shall be installed and charged to the developer. The subdivision plans shall clearly indicate such locations so that approval of no parking zones by the Board of Supervisors can be obtained.

12. Redwood Headers

2" X 6" redwood headers shall be installed to protect all edges of asphalt concrete where streets are partially completed prior to placing A.C. surfacing. Header shall be held in place with 2" X 3" stakes 18" long which shall be driven vertically and securely nailed to the headers. The backfill on the unimproved side of the headers shall be compacted to the density of the undisturbed earth.

B. DRAINAGE

1. General

All drainage design shall be done in accordance with the accepted principles of Civil Engineering and these Improvement Standards.

a. Closed Conduits - Waterways whose design dis-

charge may reasonably be conveyed in a 48-inch diameter or smaller concrete pipe shall be placed underground in a closed conduit, except for natural waterways.

2. Hydrologic Design

Hydrologic Design shall be based upon anticipated full development of the tributary watershed.

Average recurrence interval is defined as the average number of years, over a long period of time, in which a given rate of flow is equalled or exceeded in magnitude. Flood flows to be used for the design of waterways, channels and closed conduits shall have minimum average recurrence intervals as follows:

a. Major Waterways having a drainage area of over four square miles shall be designed for an average recurrence interval of 50 years or more.

b. Secondary Waterways having a drainage area of between one and four square miles, and drainage facilities for subdivisions, shall be designed for an average recurrence interval of 10 years or more.

c. Minor Waterways having a drainage area of less than one square mile shall be designed for an average recurrence interval of 5 years or more.

A given waterway, therefore, may be classed as minor in its upper reaches, then change to the secondary classification at a point where the drainage area exceeds one square mile and then change again to the major classification at a point where the drainage area exceeds four square miles.

In the absence of stream gages or other recorded information on major, secondary and minor waterways, the design discharge shall be determined by the use of the following modified rational formula:

$$Q = KCIA$$

in which:

Q = design discharge, cubic feet per second

C = runoff coefficient (from Plate No. B-1, based upon anticipated full development.)

I = intensity of rainfall, inches per hour (from Plate No. B-2.)

A = tributary watershed area, acres.

K = factor related to annual average rainfall from Plate No.s B-3 and B-4.

Time of concentration shall be based on an initial lot to street time of 10 minutes for lots smaller than 1/2 acre, and 15 minutes for lots of 1/2 acre and larger, plus water travel time.

Where the size of a watershed is too large for application of the rational method in one step, the waterway shall be subdivided into reaches of reasonable length and the rational formula applied to each, step-by-step, properly accumulating the parameters unless another accepted engineering procedure for determining the design discharge is approved by the Engineer.

3. Hydraulic Design

a. General - Minor waterways discharging into major or secondary waterways shall be designed to operate against a 5 year flow in the major or secondary waterways, provided that the ground elevation along the minor system shall be above the 50 year water surface elevation in the major or secondary waterway.

If a secondary or minor waterway is placed in a closed conduit, sufficient additional surface routes for flood flows shall be made available to carry the added flow increment up to the 50 year design discharge with no more than nuisance damage to improvements or projected improvements and with no inundation of present or future buildings. If such surface routes cannot be made available, the secondary or minor waterway shall be designed to carry the 50 year design discharge.

Design depth of flow in gutters shall not exceed 0.4 feet for the 5 year flow, provided the 10 year flow shall be contained within the right-of-way. Roadside ditches are allowed where lot frontage is greater than 200 feet, except that they shall not be used where the design flow is greater

than that which could be carried in a standard gutter flowing 0.4 feet deep on the same slope as the road profile slope. Where the discharge exceeds such gutter capacity, or the length of open flow exceeds 1,500 feet, a closed conduit system shall be provided. The minimum size of cross drains, storm sewer mains and laterals over twenty feet in length shall be 15 inches in diameter. The minimum size of any such line twenty feet or less in length shall be 12 inches in diameter.

Open channels shall be constructed to carry the design discharge with 1.5 feet of freeboard. Protective lining may be required when velocity of flow exceeds 3 feet per second and soil conditions would present erosion problems. Fencing of open channels may be required.

b. Manning's "n" values - Manning's "n" value for design shall be as follows:

1. Concrete Pipe 24" and greater	n = 0.012
Concrete Pipe less than 24"	n = 0.015
2. Concrete, wood float or broomed finish	n = 0.015
3. Asphaltic Concrete	n = 0.017
4. Corrugated Metal Pipe	n - 0.024

c. Conduit System - Major and secondary waterways placed within a closed conduit system shall have a minimum 1 foot clearance between the design water surface and the soffit of the conduit. The design depth in circular conduits shall not exceed 0.80 of the diameter of the conduit for major and secondary waterways. Minor waterways placed in closed conduit systems may be designed for full conduit capacity and pressure flow. At inlets and non-pressure type manholes within a closed conduit system, the hydraulic grade line shall be not less than 0.5 foot below the gutter or inlet surface elevation.

d. Alignment and Structures - The alignment of closed conduits shall be as nearly straight as practicable. Manholes shall be provided at all junctions, at all bends which are sharper than those formed by standard single bevel concrete pipe, at intervals not to exceed 500 feet along 21-inch and

smaller conduits, at intervals not to exceed 1000 feet along 24-inch and larger conduits, and at the junction of trunk lines with catch basin laterals where the length of the catch basin lateral is greater than 4-feet.

e. Ponding Lots - Ponding lots will be permissible if connection to an existing drainage system is not feasible. The location of a ponding lot shall be located adjacent to a logical storm drain route.

Ponding lot areas are to be established on the basis of one (1) lot for each twenty (20) for 1/2 acre lots and smaller and one (1) lot for each thirty (30) for lots larger than 1/2 acre. Where the ratio requires more than one-half of a lot, a full additional lot will be required. The minimum ponding lot area shall be one lot area (based on the average lot area).

Ponding lots shall have a 1.5 foot minimum freeboard, a 3.0 foot maximum water depth and a water surface elevation of 0.5 foot or more below the grate elevation of the lowest catch basin in the system. Ponding lot construction shall conform to the details shown on Plates B-5 and B-6 in Section IV.

f. Pumping Systems - Pumping systems shall be of sufficient capacity to discharge the peak design flow. Pumping systems on major and secondary systems shall consist of two pumps whose combined capacity equals the total expected peak design flow. The sump shall be designed to provide a minimum storage, in gallons, of one and one-half times the rated capacity of the pumping system in gallons per minute.

All switches and control mechanisms, except for reset switches, shall be enclosed or placed in lockable boxes or buildings so that operation by unauthorized personnel can be prevented. All pumping systems shall be enclosed with standard six foot chain link fence.

g. Irrigation Channels - When disposal of storm waters is proposed to be into an irrigation channel the developer shall first secure written consent of the owner or the operating authority to the discharge of storm waters into irrigation facilities, together with the right to assign such

privilege at no cost to the County. At the conclusion of the improvement work and prior to acceptance of the improvements, the developer shall assign the privilege to the County.

The design engineer representing the developer shall evaluate and certify as to the adequacy of the irrigation facility as a disposal system.

C. WATER SYSTEMS

1. Source of Water

When the source of water is other than an existing system approved by either the State Department of Health Services or the County Department of Health Services, construction of the source facilities shall comply with the requirements of Bulletin No. 74, Water Well Standards, State of California, Department of Water Resources.

2. Quantity of Water

The quantity of water delivered to the distribution system within a subdivision from all source and storage facilities for a period of two (2) hours shall be the maximum domestic demand plus a fire flow quantity of not less than 500 gpm for single family residential, 1500 gpm for multi-family residential-commercial-light manufacturing, and 2500 gpm for heavy manufacturing. For systems up to 625 customer units the domestic quantity shall not be less than $Q = 100$ plus $25\sqrt{N}$, and $Q = 100$ plus N for more than 625 customer units at sufficient pressure to provide a minimum pressure of 25 p.s.i.g. to each lot served; where Q equals the rate of flow in gallons per minute delivered from the combined source facilities to the distribution system, and N equals the total number of customer units where each customer unit is equivalent to one for a single family dwelling on a normal subdivision lot. Other types of development shall be assigned appropriate customer unit values by the Engineer as experience with the distribution system or locality indicates. The minimum source and domestic demand storage design requirements shall be in accordance with Plate No. WS-11 of Section IV.

3. Quality of Water

The quality of water supplied for human consumption shall conform to Sections 3, 4 and 5 of the latest United States Public Health Service Drinking Water Standards.

Samples will be taken and tests made by the County Department of Health Services for bacteriological determination of potability.

Chemical and physical tests for potability shall be performed by a commercial laboratory certified by the State Department of Health Services for performance of chemical and physical analysis, and the costs thereof shall be borne by the subdivider.

Construction plans shall show provision for adequately treating the water in order to meet water quality requirements of this section; or before the Engineer shall approve and sign the plans, the Tulare County Health Officer shall certify that the water supply meets the quality requirements of this section.

Installation of water treatment or water conditioning equipment will be accomplished by personnel properly licensed by the State of California.

4. Use of Water

Connection of house services to service laterals and subsequent use of water, either temporarily or permanently, shall not be allowed prior to approval of the distribution system by the County Health Officer and County Public Works Director.

5. Piping and Appurtenances

a. General - The design of water systems shall be based on good engineering practice and the requirements of these Standards, and shall be approved by the Engineer prior to any construction. If the design engineer of the water system can provide satisfactory information and calculations to substantiate that reduced sizes and substitute material will meet the quantity and quality requirements of these standards, the County Public Works Director may allow use of alternate methods

and materials. All distribution systems shall be designed to permit circulation of water flows throughout, except where impractical because of a cul-de-sac, or like conditions, or the incomplete development of a grid system. All dead end runs shall be provided with a means of flushing.

b. Water Main Size - The water mains shall be of adequate size and so designed in conjunction with related facilities to maintain a minimum operating pressure of 25 p.s.i.g. for each customer at the time of maximum domestic and fire flow demands in the system.

All water mains in valley subdivisions shall have a minimum nominal diameter of six (6) inches for single-family residential, ten (10) inches for multi-family - commercial - light manufacturing, and twelve (12) inches for heavy manufacturing except cul-de-sacs or other streets not required to have a fire hydrant, and serving six (6) lots or less, in which case a minimum size of four (4) inches nominal diameter shall be permitted. Water mains for mountainous areas shall have a minimum nominal diameter of four (4) inches and shall be designed to provide a loop system to maintain adequate pressure for fire protection. Any stub line over 660 feet in length or supporting more than one fire hydrant shall be 6 inches. A four (4) inch waterline from the street main shall be provided to the hydrant outlet.

c. Location - In general, when mains are to be placed in the traveled portion of streets, they shall be as parallel as possible to, and between four (4) and fourteen (14) feet from street centerline, but shall in no case be closer than three (3) feet from the lip of the gutter or edge of pavement.

Street mains shall be laid in the streets on which the property to be served fronts, and in subdivisions such mains shall be run to the limits of the subdivision on stub roads so that adjacent future development will not require excavation of the improved street within the subdivision.

The mains shall be kept a minimum of ten (10) feet from

the sewers.

d. Gate Valves - Gate valves shall be of the same size as the pipeline in which they are installed and a minimum of three valves shall be placed at a cross and two valves at a tee and shall be placed on the projection of the edge of pavement or lip of gutter. Valves on distribution systems shall be so located that any single break, accident, or repair will not necessitate shutting off from service a length of main greater than 800 feet for the valley and 1320 feet in the mountainous areas, except that in commercial or industrial areas, the Engineer may require a maximum length of 500 feet.

e. Air and Vacuum Valves - Air release and vacuum valves of adequate size shall be provided where necessary at all high points on mains. Suitable housing and protection for valves shall be provided and a shut off valve shall be provided in conjunction with each air release and vacuum valve to permit removal of valves for maintenance and servicing.

f. Flexible Couplings - Sufficient flexible couplings shall be provided in all piping adjacent to structures to permit differential settling of the foundations of piping and structures without damage to the piping.

g. Service Laterals - A service lateral shall be provided to each lot in the subdivision. Main water pressure, type of development and expected rate of water consumption shall determine the size of the service lateral, but in no case shall said lateral be smaller than a nominal diameter of 3/4-inch. Service laterals shall be placed perpendicular to the main and within the limits of the projection of the property lines of the property to be served. A "T" lateral may be allowed for two adjacent lots if the design engineer can provide calculations and information that the minimum pressure and volume can be maintained.

h. Fire Hydrants - Spacing of said hydrants shall be uniform throughout the subdivision with maximum spacing such that the maximum run of hose required between any hydrant and

the nearest available point on the extreme lot shall not exceed 330 feet for single family and 150 feet for other types of development.

In the SRA, fire hydrants serving any building shall be not less than 50 feet nor more than one-half mile by road from the building it is to serve and located at a turnout or turnaround along the driveway to that building or along the road that intersects with that driveway.

Fire hydrants in valley areas shall be placed with the centerline of the hydrant 18 inches behind the face of the curb. If sidewalk is to be constructed or if the subdivision is within an Urban Improvement Area, then hydrants shall be located at the back edge of the sidewalk. For mountainous areas, the hydrants shall be located between 2 and 5 feet beyond the edge of pavement. Hydrants shall be located at street intersections in conformance with Standard Drawings with additional hydrants located at sufficient intervals along the streets to comply with the spacing requirements of these Standards.

In the SRA, fire hydrants shall be 8 feet from flammable vegetation, between 4 and 5 feet beyond the edge of pavement, and in a location where fire apparatus using it will not block the roadway. Furthermore, within a SRA hydrants located along a road or private vehicular access shall be required to have a reflectorized blue marker, with a minimum dimension of 3 inches, mounted on a fire retardant post. Said post shall be within 3 feet of the hydrant with the marker no less than 5 feet above established grade in a position visible from the roadway.

i. Thrust Blocks - All tees, bends, plugs, fire hydrants and other sections of piping and appurtenances that might be capable of being displaced by the action of either working pressures or test pressures within the water system shall be anchored in place by the use of thrust blocks, thrust backing or harnesses as shown on the standard drawings. The bearing areas of thrust blocking on the supporting soil shall

not exceed that allowable for the soil involved. The pressure used to determine the required size of thrust blocks bearing area shall be no less than the test pressure required in Section III herein. Required thrust block bearing areas shall be in accordance with Plates WS-6 and WS-8 in Section IV.

SECTION III

CONSTRUCTION

A. CONTROL OF THE WORK

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

unsuitable work and materials shall be rejected.

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

The Engineer shall be notified at least twenty-four hours prior to beginning any of the following stages of work, shall be notified when each of the stages has been completed, and subsequent stages shall not be begun without approval of the Engineer. Should the developer fail to so notify the Engineer, the cost of all subsequent inspection and testing necessary to ascertain if the work has met all the specified requirements shall be borne by the developer or the work shall not be approved.

1. Roadway and ditch excavation, including the preparation of embankment areas and the placement of embankment material.
2. Structure Excavation.
3. Placing culvert pipes and storm drains.
4. Placing structure backfill material.
5. Construction of forms for all concrete work including concrete curbs.
6. Placing Concrete.
7. Placement of any layer of subbase, base or surfacing material including the preparation of the subgrade therefore.
8. Final Cleanup.

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

The source of materials used for work performed under

these Improvement Standards shall be approved by the Engineer before delivery is made. The developer shall give the Engineer sufficient notice of sources of material so that such tests and inspections as the Engineer deems necessary can be performed to determine that the materials comply to the specifications. If the source is not already approved the notice shall not be less than 10 working days prior to delivery of the material to the project. Only approved material shall be used in the work. If it is found that sources of supply which have previously been approved do not furnish a uniform product or if the product proves unacceptable at any time, the developer shall furnish acceptable material from another approved source. No material which after approval has in any way become unfit for use shall be used in the work.

All tests of materials and work to determine compliance with the approved specifications shall be in accordance with the methods and procedures in use by the Department of Transportation and defined in Section 6-3.01 of the Standard Specifications or as they may be amended in these Improvement Standards or by the Special Provisions. Should the work not be performed by contract, the test method shall be the test method in effect on the first day of the month preceeding the month in which work is first begun on the project. The developer shall furnish to the Engineer, without charge, samples of all materials to be used in the work. Samples of material from which tests are to be made shall be taken under the supervision of the Engineer, by a recognized laboratory or by the Design Engineer retained by the developer.

In lieu of prior sampling and testing of certain manufactured products such as reinforcing and structural steel, culvert pipe, paint, cement and asphalt products, the Engineer may permit or require certificates of compliance from the supplier of such products before such materials can be used in the work.

Preliminary sampling and testing of the improvement site or sources of materials that are to be made prior to construc-

tion may, at the option of the Engineer, be performed by the Laboratory of the Tulare County Road Department, by a recognized commercial laboratory or by the Design Engineer retained by the developer. Construction control testing of materials entering the work shall be performed by the Engineer or by a commercial laboratory retained by the County of Tulare. The cost of all preliminary testing not performed by the Laboratory of the Tulare County Road Department shall be paid by the developer. Costs of all preliminary testing performed by the County Laboratory under the direction of the Engineer and all construction control testing performed by the Engineer or laboratory retained by the County shall be paid by the County except as follows:

Whenever a specified percent relative compaction is required and the material or portion thereof so tested fails to meet or exceed the relative compaction specified, the first retest shall be performed at no expense to the contractor. Should the first retest also fail, a charge of $30.00 for each additional retest performed by the County shall be charged the developer. Failure of the developer to comply with the approved plans and specifications and the procedures specified herein shall be deemed sufficient cause for the rejection by the County of all or any portion of the work. The Engineer may cause rejected work to be remedied, removed or replaced all at the expense of the developer.

B. STREETS AND HIGHWAYS

1. General

The construction of all streets, highways, drainage structures, and their auxiliary facilities shall comply with the requirements of the following portions of the Standard Specifications, except as such portions shall be amended by these Improvement Standards and/or the special provisions, excluding therefrom all reference to measurement and payment. Measurement and payment for improvement work performed under Division Seven or Twelve of the Streets and Highways Code of

the State of California shall be as specified in the Special Provisions. Measurement and payment for other work performed under these improvement standards shall be the responsibility of the developer.

Applicable Sections:

1. Definition and Terms
5. Control of Work
6. Control of Materials
10. Dust Control
15. Existing Highway Facilities
16. Clearing and Grubbing
17. Watering
18. Dust Palliative
19. Earth Work
20. Erosion Control and Landscaping
22. Finishing Roadway
24. Lime Treatment
25. Aggregate Subbase
26. Aggregate Bases
27. Road Mixed Cement Treated Bases
36. Penetration Treatment
37. Bituminous Seals
38. Road Mix Asphalt Surfacing
39. Asphalt Concrete
51. Concrete Structures
52. Reinforcement
53. Air-blown Mortar
60. Rubble Masonry
64. Asbestos Cement Pipe
65. Reinforced Concrete Pipe
66. Corrugated Metal Pipe
67. Structural Plate Pipe, Arches, and Pipe Arches
68. Sub-surface Drains
69. Over-side Drains
70. Miscellaneous Facilities
72. Slope Protection

73. Concrete Curb and Sidewalks

80. Fences

83. Railings and Barriers

Applicable Sub-Sections:

4-1.01 Intent of Plans and Specifications

4-1.02 Final Cleanup

4-1.04 Detours

4-1.05 Use of Materials Found on the Work

7-1.01 Laws to be Observed, excepting sub-sections 7-1.01A through 7-1.01L; In lieu of these excepted sub-sections, the Developer shall comply with all applicable local, State and Federal laws, and shall hold the County of Tulare harmless from any breach of said laws.

7-1.02 Weight Limitations

7-1.04 Permits and Licenses

7-1.05 Patents

7-1.06 Safety Provisions

7-1.07 Sanitary Provisions

7-1.08 Public Convenience

7-1.09 Public Safety

7-1.10 Use of Explosives

7-1.11 Preservation of Property

7-1.12 Responsibility for Damage

7-1.13 Disposal of Material Outside the Highway Right of Way

7-1.14 Cooperation

7-1.16 Contractors Responsibility for the Work and Materials

8-1.10 Utility and Non Highway Facilities

2. <u>Earthwork</u>

The earthwork shall conform to the requirements of Section 19 of the Standard Specifications and the following provisions.

All unsuitable or surplus material excavated shall become the property of the Contractor and shall be disposed of in accordance with the provisions in Section 7-1.13 of the Standard Specifications. Such material encountered in subdivision improvements may be used to regrade lots within the sub-

division with the approval of the developer and the Engineer provided such regrading is done in a manner which will not prohibit the proper drainage of lots or property within or adjacent to the subdivision.

Selected material for use in subdivision improvements may be obtained from material excavated from a location outside the right of way but within the subdivision when specified in the special provisions, shown on the plans, or designated by the Engineer.

The trench for pipe culverts shall be excavated a minimum depth of 3 inches below the bells or couplings for the full length of the trench under ordinary circumstances and if solid rock or other unyielding material is encountered the material shall be removed to a depth of one-fourth the nominal diameter of the pipe below the couplings or bells but not less than 4 inches. If the foundation is soft, spongy, or unstable, the trench shall be excavated to a stable soil or 1 foot below the bells or couplings, whichever is the least, and the excavation backfilled with structure backfill material of a quality and gradation specified herein.

Below an elevation of 12-inches above the top of the pipe backfill material shall have a sand equivalent of 30 and shall meet the following gradation requirements.

Sieve Size	Percent Passing
3"	100
No. 4	35-100

Backfill around the pipe and to an elevation of 12 inches above the pipe shall be placed carefully to provide uniform support for the pipe and in such a manner as not to injure or disturb the pipe.

Backfill material above an elevation of 12 inches above the pipe may be material from excavation, free from stones or lumps exceeding 3 inches in greatest dimension, vegetable matter, or other unsatisfactory material and shall be compacted to a relative compaction of not less than 90 percent. Backfill material placed below the roadway surfacing or other paved area

shall be compacted to a relative compaction of 95 percent to a depth of 1.5 feet below finished grade or to a depth of 0.5 foot below the lowest layer of surfacing, base or subbase whichever is the greatest.

Surfacing, base or subbase removed during the trenching operations shall be replaced with material equal or better than the material so removed. However, the surfacing replaced shall have a minimum depth of not less than 3 inches.

Jetting may be permitted under favorable conditions with prior approval of the Engineer. Mechanically operated tamping machines employing the impact principal will not be permitted at locations where, in the opinion of the Engineer, their use could cause damage to the pipe being backfilled.

Excavation for compaction of original ground as provided in Section 19-5.02 of the Standard Specifications shall not be required, but this provision will not preclude the necessity of compacting subgrade. The subgrade shall be prepared and compacted as provided in Section 19-1.03 of the Standard Specifications.

The relative compaction of each layer of embankment beneath the surfacing to a depth of 1.5 feet from finished grade or to a depth of 0.5 foot below the lowest layer of pavement, base or subbase, whichever is the greatest, shall not be less than 95 percent. The relative compaction of all other embankment material shall be not less than 90 percent.

3. Aggregate Subbase

Aggregate subbase shall conform to the requirements of Section 25 of the Standard Specifications and the following provisions.

Aggregate Subbase shall be Class 4 and the percentage composition by weight shall conform to the following grading when determined by Test Method No. Calif. 202.

Sieve Sizes	Percentage Passing
2 1/2 inches	100
No. 4	50-100
No. 200	0-25

Class 4 aggregate subbase shall also conform to the following minimum quality requirements:

Tests	Test Method No.	Requirements
Sand Equivalent	217	20
Resistance (R-Value)	301	50

The R-Value requirement will be waived provided the aggregate subbase conforms to the specified grading and has a Sand Equivalent of 25 or more.

Where the required thickness is 0.67 foot or less, the aggregate subbase may be spread and compacted in one layer. Where the required thickness is more than 0.67 foot, the aggregate subbase shall be spread and compacted in 2 or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed 0.67 foot. Each layer shall be compacted in a similar manner.

4. Lime Treatment

Lime Treatment shall conform to the requirements in Section 24 of the Standard Specifications and these provisions.

Lime treated material may be used in place of aggregate subbase provided the minimum thickness of aggregate base and paving is provided.

Lime for use in lime treatment may be a granular quicklime which when sampled at the point of delivery shall conform to the following requirements.

1. Free lime, expressed as calcium hydroxide, $Ca(OH)_2$, shall not be less than 95 percent as determined by Test Method No. Calif. 414-A.
2. Granular Quicklime shall meet the following dry mechanical grading analysis.

Sieve Size	Percentage Passing
No. 4	100
No. 100	10 maximum

3. Lime reactivity shall be not less than 25° C. Lime reactivity shall be expressed as the slaking rate of quicklime after 30 seconds in accordance with ASTM designation C110.

5. Aggregate Base

Aggregate base shall conform with the requirements of Section 26 of the Standard Specifications and the following provisions.

Aggregate base shall be Class 2, 3/4 inch maximum in the valley areas.

Aggregate base may be either Class 2, 3/4 inch maximum or Class 3 aggregate base in the mountain areas.

Class 3 aggregate base shall be free from vegetable matter and other deleterious substances and shall be of such nature that it can be compacted readily under watering and rolling to form a firm, stable base.

Aggregate for Class 3 aggregate base shall consist of any one or a mixture of broken or crushed stone, crushed gravel, or natural materials that will meet the specified quality requirements when combined within the specified limits of grading.

The percentage composition by weight of Class 3 aggregate base shall conform to one of the following gradings when determined by Test Method No. Calif. 202.

	Percentage Passing		
Sieve Sizes	3/4" max.	1/2" max.	3/8" max.
1"	100	-	-
3/4"	85-100	100	-
1/2"	-	90-100	100
3/8"	-	-	95-100
No. 4	35-65	50-75	-
No. 8	-	35-60	60-85
No. 30	10-30	15-35	25-45
No. 200	2-10	4-12	6-15

Class 3 aggregate base shall also conform to the following quality requirements:

Tests	Test Method No. Calif.	Requirements
Resistance (R-Value)*	301	65 min.

Sand Equivalent	217	25 min.

* The R-Value requirement will be waived provided the aggregate base conforms to the specified grading and has a Sand Equivalent value of 35 or more.

In lieu of the requirements of Section 26-1.04B, aggregate base may be spread in accordance with the requirements of spreading aggregate subbase as specified in Section 25-1.04 of the Standard Specifications.

In mountain areas the finished aggregate base may vary up to 0.08 foot above or below the grade established by the Engineer.

6. Road-Mixed Asphalt Surfacing - Road-mixed asphalt surfacing shall conform with the following provisions.

Road-mixed asphalt surfacing shall only be used in mountain areas approved by the County Public Works Director.

The bituminous binder to be mixed with the aggregate shall be liquid asphalt conforming to the provisions in Section 93 of the Standard Specifications and shall be of a grade approved by the Engineer. The amount of liquid asphalt to be mixed with the aggregate shall be determined by the Engineer.

Aggregate may be imported material, selected material, local borrow material, or combination of such materials and shall consist of any one or a mixture of the following materials:

1. Broken or crushed stone, or crushed gravel.
2. Natural material having sufficient roughness to meet the specified stabilometer requirements when combined within the specified limits of grading.

The percentage composition by weight of the aggregate shall conform to one of the following gradings when determined by Test Method No. Calif. 202.

	Percentage Passing		
Sieve Sizes	3/4" max.	1/2" max.	3/8" max.
1"	100	-	-
3/4"	85-100	100	-

1/2"	-	90-100	100
3/8"	-	-	95-100
No. 4	35-65	50-75	-
No. 8	-	35-60	60-85
No. 30	10-30	15-35	25-45
No. 200	2-10	4-12	6-15

The combined aggregate shall also conform to the following quality requirements immediately prior to mixing with asphalt binder:

Tests	Test Method No. Calif.	Requirements
Both K_c and K_f - Factors (obtained from C.K.E. Test)	303	1.8 Max.
Sand Equivalent	217	35 Min.

The combined aggregate shall also conform to the following quality requirements when mixed with the amount of asphalt determined to be optimum by Test Method No. Calif. 304 which in no case shall be less than 3.8 percent by weight of the dry aggregates:

Tests	Test Method No. Calif.	Requirements
Stabilometer Value	304	30 Min.
Moisture Vapor Susceptibility (Stabilometer Value)	307	20 Min.
Swell	305	0.030 Max.

7. Asphalt Concrete

Asphalt Concrete shall comply with the requirements of Section 39 of the Standard Specifications and the following provisions.

In valley areas the asphalt binder to be mixed with the aggregate shall be a paving asphalt, the grade to be approved by the Engineer.

In mountain areas the asphalt binder to be mixed with the aggregate shall be a paving asphalt or a liquid asphalt of a grade approved by the Engineer.

Aggregate for asphalt concrete shall be Type B, the percentage composition by weight conforming to one of the

following gradings:

3/4" Maximum (Medium)

3/4" Maximum (Fine)

1/2" Maximum (Coarse)

A prime coat or paint binder meeting the requirements in Section 39-4.02 of the Standard Specifications shall be applied to all areas to be surfaced with asphalt concrete.

When specified by the Engineer, a Fog Seal complying with the requirements of Section 37 of the Standard Specifications shall be applied to the finished surface of the asphalt concrete. The combined mixture of asphaltic emulsion and water shall be applied at the rate of 0.10 gallon per square yard unless a lesser rate of application is required by the Engineer.

In lieu of the requirements in Sections 39-5.03A and 39-5.03B, the minimum rolling equipment specified may be reduced to one 2-axle tandem roller, weighing at least 8 tons, when asphalt concrete is placed at a rate of 100 tons, or less, per hour at any location provided it is demonstrated to the satisfaction of the Engineer that one roller can perform the work.

In mountainous areas, when approved by the Engineer, any course or layer of asphalt concrete may be spread with pneumatic tired motor graders meeting the requirements specified in Section 39-5.01 of the Standard Specifications provided segregation can be avoided and a uniform, smooth pavement obtained.

In mountainous areas the allowable surface tolerance may be increased to the maximum permissible for road-mixed asphalt surfacing as specified in Section 38-4.07 of the Standard Specifications.

8. Concrete Structures

Concrete structures shall be constructed in accordance with the requirements in Section 51 of the Standard Specifications and the following provisions.

When approved by the Engineer concrete may be designated

by 28 day comprehensive strength without reference to the class designation referred to in Section 90 of the Standard Specifications. If designated by compressive strength, the Contractor shall be responsible for furnishing concrete which contains not less than 5.5 sacks nor more than 8.5 sacks of cement per cubic yard of concrete which is workable, and which conforms to the strengths shown on the plans or specified by the Engineer. Unless approved by the Engineer the compressive strength specified shall be obtained without the use of admixtures. The weigh-batch proportions for concrete designated by compressive strength shall be determined by the Contractor.

Concrete may be mixed by hand where the batch size is less than 1/2 cubic yard and the concrete is mixed in accordance with the provisions in Section 90-6.05 of the Standard Specifications.

If approved by the Engineer in advance of mixing, where a truck mixer or agitator is used for transporting concrete, discharge of the concrete may be completed after more than 1½ hours or after 250 revolutions of the drum or blades following the introduction of the cement. The amount of additional time or number of revolutions permitted shall be determined by the Engineer.

The method used for curing concrete shall be determined by the Engineer and shall comply to the provisions in Section 90-7 of the Standard Specifications for the method selected.

A Class 1 surface finish may be waived for certain surfaces designated in Section 51-1.18B where shown on the plans or approved by the Engineer. However, an ordinary surface finish shall be required.

9. Reinforcement

Bar reinforcement, mesh reinforcement, and reinforcing wire shall conform to the requirements in Section 52 of the Standard Specifications and the following provisions.

Steel lists as specified in Section 52-1.03 shall not be required unless requested by the Engineer.

Samples of reinforcing steel to be used in the work may be

taken at the site of the work after delivery of the steel. The number and size of samples to be furnished the Engineer by the Contractor will be determined by the Engineer but shall not exceed two samples 2.5 feet in length from each size in each heat or melt.

10. Drainage and Irrigation Pipe

Pipe and pipe arch for use in drainage and irrigation facilities shall conform to the requirements in Sections 63, 64, 65, 66 and 67 of the Standard Specifications and the following provisions.

The type of pipe specified for work governed by these Improvement Standards may be selected by the developer or the design engineer provided the pipe is of sufficient strength to withstand the loading imposed, has a minimum service life of 50 years, and meets the quality requirements specified in the above named sections of the Standard Specifications. Soil tests may be required by the Engineer where the chemical composition of the soil may be detrimental to certain types of pipes proposed for use.

The strength of the pipe required within the road right of way shall be determined by the design procedure used by the State Department of Transportation.

Non-reinforced concrete pipe up to 18 inches in diameter and reinforced concrete pipe up to 24 inches in diameter that meet the D-load, minimum shell thickness, and minimum reinforcement shown in Plate A-24 of Section IV of these Improvement Standards may be used in lieu of pipe conforming to the quality requirements in said Section 65 provided the pipe can withstand the loading imposed.

Corrugated aluminum pipe and pipe arch shall conform to the provisions in Section 62-1.02C of the Standard Specifications.

Band couplers for corrugated pipe shall have the following minimum widths:

Nominal Pipe Diameter	Minimum Band Width
Under 15"	7"
15" thru 48"	12"
Over 48"	24"

Helically corrugated pipe shall be connected to annular corrugated pipe using a universal coupling band having a minimum width of 12 inches. The coupling of the two types of pipes at locations where a firm, positive connection is desired shall be avoided.

The hydrostatic test specified for siphon and pressure pipe in Sections 65-1.08 and 66-1.09D of the Standard Specifications may be waived by the Engineer under field conditions that he determines make the tests unnecessary or impractical to conduct.

11. Subsurface Drains

Subsurface drains shall conform to the requirements in Section 68 of the Standard Specifications and these provisions.

Permeable material may be either Class 1 or Class 2 material at the option of the Contractor unless otherwise specified on the plans or in the special provisions.

Trenches for underdrains shall be excavated to the width shown on the plans or directed by the Engineer. However, said width shall not be less than 2.0 feet. The trench shall also be excavated to a minimum depth of 6 inches below the grade established for the bottom of the drain line. The height to which the filter material is placed shall be as shown on the plans or as directed by the Engineer, which height shall generally be 6 inches below the natural ground outside the roadway or to the elevation of the grading plane within the roadway.

12. Overside Drains

Overside drains shall conform to the requirements in Section 69 of the Standard Specifications and these provisions.

Overside drains shall be limited to the tapered inlet and flume downdrain type of either ferrous metal or aluminum, except that asphalt concrete may be used where the slope is 4:1 or flatter and the length required is less than 10 feet.

Where soil conditions at the end of the downdrain are subject to erosion; rock, asphalt concrete or other material shall be placed to inhibit erosion.

When there is a question as to the ability of the downdrain to function properly, the Engineer may require water to be deposited on the finished roadway in such a manner that the operation of the downdrain may be tested. Inadequacies determined by such tests shall be corrected.

13. Miscellaneous Facilities

Miscellaneous facilities shall conform to the requirements in Section 70 of the Standard Specifications and these provisions.

The pressure tests specified in Sections 70-1.02B and 70-1.02K of the Standard Specifications may be waived by the Engineer under field conditions that he determines make the tests unnecessary or impractical to conduct.

Driveway culvert pipe placed within the right of way shall have a nominal diameter of not less than 12 inches.

14. Slope Protection

Slope protection shall conform to the requirements in Section 72 of the Standard Specifications and these provisions.

Unless shown on the plans or approved by the Engineer rock slope protection, grouted or ungrouted, shall be placed by Method A Placement. However, the local surface irregularities may vary up to two feet from the planned slope measured at right angles to the slope.

The slopes on which sacked concrete slope protection is to be placed may vary up to 0.5 foot of the planned slope measured at right angles to the slope.

15. Concrete Curbs and Sidewalks

Concrete curbs, sidewalks and gutter depressions shall conform to the requirements in Section 73 of the Standard

Specifications and the following provisions.

Either the 1" or 1 1/2" maximum aggregate grading specified in Section 90-3.04 of the Standard Specifications may be used.

16. Fences

Fences shall conform to the requirements in Section 80 of the Standard Specifications and these provisions.

Fences for ponding basins or lots shall be chain link fence, Type CL-6 constructed as shown on Plate No. B-6, Section IV of these Improvement Standards.

Fences adjacent to freeways or limited access expressways shall be of a type approved by the Engineer.

Property fences not adjacent to freeways or limited access expressways may be of any type and material selected by the developer that does not conflict with State and local ordinances or codes.

C. DRAINAGE

1. Pipelines

Pipe and pipe arch shall conform to item number 10 of Subsection B (Streets and Highways) of this section.

2. Earthwork

Trench compaction and backfill material shall conform to item number 2 of Subsection B (Streets and Highways) of this section.

3. Pumping Plant Equipment

a. General - The drainage pumping equipment and the pumping plant electrical equipment shall conform to the provisions in Section 74, "Pumping Plant Equipment", of the Standard Specifications and these special provisions.

The data required in Section 74-1.04, "Data to be Furnished", of the Standard Specifications shall be limited to 3 copies of the following material:

1. The name of manufacturer, catalog number, size, capacity and all pertinent power ratings of the pump.

2. Pump performance curves.

3. Assembly plans showing the pump, pipes and fittings and any bracing to be installed.

In addition to the above data any parts lists and service instructions packaged with or accompanying the drainage pumping equipment and pumping plant electrical equipment shall be delivered to the Engineer.

b. Drainage Pumping Equipment - The pumping unit shall be suitable for outdoor installation, consisting of a vertical-shaft, single propeller-type pump, direct connected to a vertical shaft induction motor. The unit shall be designed to operate safely in the reverse direction of rotation due to water returning through the pump. The weight of the revolving parts of the pump, including the unbalanced hydraulic thrust of the propeller, shall be carried by a thrust bearing in the motor. The pump shall be supported from a base plate and channels by means of a vertical column having a horizontal discharge located as specified.

The vertical pump supporting column and discharge elbow shall be made of welded plate steel with a minimum wall thickness of 10 gage from 8" through 14" columns and 1/4" for 16" columns and larger in lieu of the 3/8" minimum specified in Section 74-2.04 of the Standard Specifications. The discharge opening shall be plain end, fitted with a Dresser type coupling suitable for connection to the discharge pipe. The discharge elbow shall be as shown on the plans.

The suction bell and pump bowl shall be made of close-grained cast iron and shall be designed for easy removal of the propeller and bearings. The suction bell shall have a flared inlet designed to reduce entrance losses and a sufficient number of vanes to support the lower guide bearings as well as to sustain the weight of propeller and pump shaft when dismantling the pump.

The pump propellers shall be made of bronze or stainless steel and shall be fastened to the shaft in such a manner as to be removed readily. They shall be balanced statically and dynamically to reduce vibration and wear.

The shaft of the pumping unit shall be of ample size to operate without objectionable distortion or vibration at maximum speed in both the forward and reverse direction of rotation. The pump-bowl shaft shall be made of stainless steel and the line shaft shall be made of carbon or alloy steel. The shaft couplings shall be of the threaded type. Provision shall be made at the top of the motor shaft for adjusting the elevation of the propeller with reference to the bowls. If water lubricated lineshaft is supplied, it shall be furnished with a stainless steel shaft sleeve, mechanically replaceable in the field.

All oil-lubricated lineshaft bearings shall be protected from water and foreign matter by an enclosing tube. A shaft seal shall be provided immediately above the top propeller. By-pass ports to drain excess oil from the shaft enclosing tube shall be provided above the seal. All bearings shall be easily replaceable, and spaced not more than five feet apart. All water-lubricated lineshaft bearings shall be furnished of rubber, and installed in bearing retainers spaced at the minimum distance required by good practice in the field. All bearings shall be easily replaceable.

If oil-lubricated, the pump shall be equipped with a solenoid operated lubricating system which shall supply lubricant to each lineshaft bearing. The solenoid-operated oiler shall be designed for outdoor operation and shall have a lockable metal oil reservoir with a capacity of not less than one gallon. If water lubricated, the pump shall be furnished with a deep packing box designed to effectively reduce leakage. The packing box shall have not less than 6 packing rings and shall have a provision for grease lubrication of the packing.

The packing gland shall be of the split type.

The pump shall be controlled by a float type switch as shown on the plans.

The pump stand shall be constructed from information given on plans.

The motor shall be of the 3-phase, 60-cycle, drop-proof,

vertical, ball-bearing, squirrelcage, induction type for outdoor service. It shall be suitable for operation at (220) (440) (2300) volts, and shall be of the low starting current type suitable for across-the-line starting service. The thrust bearing shall be of proper design to carry the weight of the rotating parts of the pump, including the unbalanced thrust of the propeller. Motor conduit box shall be suitable for accommodating leads from solenoid-operated oiler. The unit shall meet applicable requirements of the latest National Electrical Manufacturer's Association standards. The horsepower rating shall be such that the motor will not be overloaded beyond the service factor under the maximum pumping load possible to develop under the range of pumping heads specified.

The maximum pumping capacity, total dynamic head and maximum relative speed shall be shown on the plans and be approved by the Engineer.

D. WATER SYSTEMS

1. Pipe and Fittings

a. Cast Iron - All cast iron pipe shall be cement lined and conform to A.W.W.A. Standard Specifications C 102, C 106 and C 108. Cement lining shall conform to A.W.W.A. Standard Specifications C 104.

The minimum pressure class allowable shall be Class 150. Where necessary, pipe of a higher pressure rating shall be used to give the proper factor of safety. Cast iron fittings shall be of the proper class for the intended use and in no case shall they be of a lower pressure rating than the pipe to which attached.

Cast iron pipe and fittings shall be joined by any of the methods generally accepted in water works practice, including bell and spigot joints, flagged joints, mechanical joints and sleeve type coupling joints. Any newly developed joints not generally accepted in the water works industry must have the approval of the Engineer prior to use.

Where caulked bell and spigot joints are used they shall be made up of the following materials:

(1) Caulking or packing material shall consist of (a) molded or tubular rubber rings, or (b) asbestos rope, or (c) treated paper rope.

(2) Lead shall be hot poured into the joint and shall contain not less than 99.73 percent pure lead. The producer's name or the mark of Lead Industries shall be clearly cast or stamped upon each piece of lead.

b. Asbestos-Cement - Asbestos-cement pipe shall conform to A.W.W.A. Standard Specifications C 400.

The minimum pressure class allowable shall be Class 150. Where necessary, pipe of a higher pressure rating shall be used to the proper factor of safety.

Fittings for asbestos-cement pipe shall be of cast iron and shall be of the proper pressure rating for the intended use and in no case shall they be of a lower pressure rating than the pipe to which attached.

Asbestos-cement pipe and cast iron fittings shall be joined by any of the methods generally accepted in water works practice, including continuous bell ring joints and lead caulking. Any newly developed joints not generally accepted in the water works industry must have the approval of the Engineer prior to use.

c. Copper Pipe - Copper pipe for service laterals shall conform to A.S.T.M. Designation B 88 for "Type K Copper Water Tube".

d. Other Types of Pipe and Fittings - Pipe and fittings of any material other than those herein set forth shall have the specific approval of the Engineer prior to their use.

e. Valves

(1) Gate Valves - All gate valves larger than four (4) inches shall conform to A.W.W.A. Standards C 500 when standard operating conditions are encountered. Where

other than Standard operating conditions are encountered, such as excessive waterhammer, operating in throttled position or under high operating pressure, gate valves of a design approved by the Engineer shall be used.

Gate valves four (4) inches and smaller shall be rated at 200 p.s.i. working pressure for non-shock, cold water service. all working parts of this class valve shall be bronze or bronze mounted and shall be standardized and interchangeable.

Gate valve ends shall be of any of the types commonly used in the water works industry, including screwed ends, hub ends, mechanical joint ends, flanged ends, spigot ends, universal ends and ends for direct connection to asbestos-cement pipe with rubber rings. Any ends other than those commonly used in the water works industry must have the approval of the Engineer prior to use.

(2) Plug Valves - The term "plug valve" shall, in these Standards, refer to regular duty plug valves, corporation stops and curb stops.

Regular Duty Plug Valves shall be designed for regular duty service and in sizes below twelve (12) inches, shall have a pressure rating not less than 175 p.s.i. water, oil or gas working pressure. Valves larger than 12 inches shall have a pressure rating approved by the Engineer.

Corporation stops shall have all bronze bodies, keys, stems, stem washers and stem nuts. Corporation stops shall have the proper type threads for the type of pipe or pipe clamp to which attached.

(3) Check Valves - Check valves for regular duty water works service shall employ non-corrosive materials in the construction of hinge pins, hinges, gate faces and seat faces.

Check valves up to twelve (12) inches in size for regular duty shall have a pressure rating of not less than 200 p.s.i. non-shock, cold water, oil or gas rating. Larger valves and valves for use in other than regular duty shall be of a pressure rating approved by the Engineer.

End connections on check valves may be any ends commonly used in water works practice, including hub ends, flange ends and universal ends. Types of ends other than those commonly used in the water works industry shall have the approval of the Engineer prior to use.

(4) Air and Vacuum Release Valves - Air and vacuum and air release valves shall have internal working parts made of corrosion resistant materials.

Air and vacuum and air release valves for regular service shall have a pressure rating of not less than 150 p.s.i., water, oil and gas, non-shock. Where other than regular service operation is required the valves shall have a pressure rating approved by the Engineer prior to their use.

(5) Miscellaneous Valves - Any type of valve not specifically covered in these specifications shall be considered in this category of "Miscellaneous Types of Valves".

Such valve types include: pressure relief valves, pressure regulating valves, altitude valves and globe valves, among other valve types.

Valves in this classification shall have the approval of the Engineer prior to use.

f. Fire Hydrants - When the required fire flow is 500 gpm, wet barrel or dry barrel fire hydrants may be installed. Wet barrel fire hydrants shall be installed when the required fire flow is 1500 gpm or greater.

Each fire hydrant shall have a minimum of one - $2\frac{1}{2}$" outlet and one - $4\frac{1}{2}$" outlet, except when the required fire flow in the system is 1500 gpm or greater then each hydrant shall have two - $2\frac{1}{2}$" outlets and one - $4\frac{1}{2}$" outlet. Outlets shall have National Standard Hose Threads.

Wet barrel fire hydrants shall meet the requirements of A.W.W.A. Standard C503. Dry barrel fire hydrants shall meet the requirements of A.W.W.A. Standard C502.

Each fire hydrant assembly shall be served with a minimum 6" diameter run of pipe, and shall be provided with a gate valve. Provisions shall be incorporated in the construction of

dry barrel hydrants to automatically shut off the flow of water in the event the hydrant is broken off.

Installation of fire hydrants shall be in accordance with Plate WS-9 in valley areas.

In mountainous areas only, the hydrant inlet may be reduced to 4 inches and installed in accordance with Plate WS-10.

g. Valve and Meter Boxes - Valve and meter boxes shall be constructed of materials capable of withstanding the loads imposed upon them.

Adequate access to all boxes shall be provided by means of readily removable covers.

Sizes of boxes shall be determined by sizes of valve or meter served.

Boxes shall be approved by the County Public Works Director prior to use.

2. Installation

a. General - All piping shall be supported and braced against movement as shown on the plans or as specified herein. When temporary supports are used they shall be sufficiently rigid to prevent any shifting or distortion of the pipe.

Where piping is installed on curves the maximum deflection of each joint shall be within the maximum deflection recommended by the pipe manufacturers.

Sufficient flexible couplings of Engineer approved design shall be provided in all piping adjacent to structures to permit differential settling of the foundation of said piping and structures without damage to the piping, or as may be required for ease of installation or removal of the pipe.

All dirt and scale shall be removed from the pipe prior to installing.

b. Earthwork - All trenching work shall conform to the requirements of the Item Number 2 of Subsection B (Streets and Highways) as found in these Standards.

c. Depth of Cover - Minimum cover from finished grade shall be as follows:

4" - 6" Pipe	- 36"	12" Pipe	- 48"
8" Pipe	- 36"	14" Pipe	- 48"
10" Pipe	- 36"	14"+Pipe as required by County Public Works	

d. Laying and Handling Pipe - Proper implements, tools and facilities satisfactory to the Engineer shall be provided and used by the Contractor for the safe, convenient, and workmanlike prosecution of the work.

All pipe, fittings and valves shall be carefully lowered into the trench in such a manner as to prevent damage to pipe or pipe coating. Under no circumstances shall pipe or accessories be dropped or dumped into the trench. Before lowering and while suspended, the pipe shall be inspected for defects and cast iron pipe shall be rung with a light hammer to detect cracks. Any defective, damaged or unsound pipe shall be rejected and sound material furnished. Cutting of pipe for inserting valves, fittings, or closure pieces shall be done in a neat and skillful manner without damage to the pipe.

All pipe shall be laid and maintained in the required alignment, with fittings and valves at the required locations and with joints centered and spigots home, and with all valve stems plumb. When the pipe is bedded in a trench it shall be brought into true alignment and shall be secured there with proper backfill material, carefully tamped under and on each side of it as specified herein. Care shall be taken to prevent dirt from entering the joint space.

Each length of pipe shall have a swab drawn through it and shall be freed of any visible evidence of contamination, dirt and foreign material before it is lowered into its position in the trench, and it shall be kept clean during and after laying. At times when pipe laying is not in progress, the open ends of any pipe which has been laid shall be plugged. Trench water shall not be permitted to enter the pipe.

All installation shall be in full conformance with the manufacturer's recommendation.

e. Service Laterals - Copper service laterals shall be installed in a trench of such depth and direction that the service pipe (tubing) will be at least 24" below finished street grade, shall be laid in a plane perpendicular to the longitudinal axis of the main, shall be as far away from sewer laterals as possible and shall not interfere with other utility installations.

The copper tubing shall be bent in such a manner as to prevent kinking of the tubing.

For 3/4" and 1" services, the corporation stops shall be tapped into that side of the main to which the service is to be installed at a point approximately 60 degrees down from the top of the main with the shut-off valve of the corporation stop facing up.

Service laterals may be attached to mains by the use of saddles where recommended by the pipe manufacturer and shall conform to the manufacturer's recommendations.

The house end of the service lateral shall terminate with a curb stop corresponding to the size of the service, with the outlet in a horizontal position facing the lot to be served. If meters are required, a concrete meter box of proper size shall be levelled and longitudinally centered over the end of the service. The meter box shall be set square with the curb or property line in solid ground, with the top of the box at the elevation of the top of the curb or adjacent ground.

f. Thrust Backing and Harness - All tees, bends, plugs, fire hydrants and appurtenances as may be specified on the plans, shall be provided with thrust backing and/or harness in accordance with Standard Drawings.

Thrust backing shall be of Class "B" concrete conforming with requirements of Section 90 of the Standard Specifications cast in place between solid ground and the fittings to be anchored. The backing shall be so placed that the pipe and fitting joint will be accessible for repair.

g. Valves - A valve box or masonry pit shall be provided for every valve.

A valve box shall be provided for every valve which has no gearing or operating mechanism or in which the gearing or operating mechanism is fully protected with a cast iron grease case. The valve box shall not transmit shock or stress to the valve and shall be centered and plumb over the wrench nut of the valve, with the box cover flush with the surface of the finished pavement or such other level as may be directed.

A masonry valve pit shall be provided for every valve which has exposed gearing or operating mechanisms. The valve nut shall be readily accessible for operation through the opening in the manhole, which shall be set flush with the surface of the finished pavement or such other level as may be specified. Pits shall be so constructed as to permit minor valve repairs and afford protection to the valves and pipe from impact where they pass through the pit walls.

h. Fire Hydrants - All fire hydrants shall stand plumb and shall have their outlets parallel with or at right angles to the curb or road centerline with the steamer outlet facing the curb or road centerline, except that hydrants having two hose outlets 90 degrees apart shall be set with each outlet facing the curb or road centerline at an angle of 45 degrees. Hydrants shall be set to the established grade, with outlets a minimum of 18 inches and a maximum of 30 inches above the ground or as otherwise shown on the plans. In the SRA, hydrants shall be set 18 inches above the established grade.

3. Water Storage

Storage facilities shall be provided where necessary to meet the demands of the water system.

Steel storage tanks shall conform to A.W.W.A. D 100 specifications and shall be painted in accordance with A.W.W.A. D 102 specifications.

Other tanks such as wood tanks, hydropneumatic tanks, reinforced concrete tanks and ground storage reservoirs may be acceptable, subject to the approval of the Engineer. Request for approval of any of these facilities shall be accompanied by

complete specifications and design calculations.

4. Pressure Testing

a. Hydrostatic Test - After the pipe has been laid and backfilled, said pipe shall be subjected to a hydrostatic pressure no less than the full rated (Maximum recommended) pressure class of the pipe plus an additional 50 p.s.i.

The duration of each test shall be 30 minutes unless otherwise directed by the Engineer.

Each section of pipeline shall be slowly filled with water, and the specified test pressure, measured at the point of lowest elevation, shall be applied by means of a pump connected to the pipe in a manner satisfactory to the Engineer. The pump, pipe connection, and all necessary apparatus, shall be furnished by the Contractor.

During the filling of the pipe and before applying the specified test pressure, all air shall be expelled from the pipeline. To accomplish this, taps shall be made, if necessary, at points of highest elevation, and after completion of the test the taps shall be tightly plugged unless otherwise specified.

During the test, all exposed pipes, fittings, valves, hydrants and joints shall be carefully examined. Any part found to be cracked or defective shall not be accepted and shall be removed and replaced by the Contractor with new, sound material. The test shall then be repeated until satisfactory to the Engineer.

b. Leakage Test - Leakage tests shall be conducted after completion of the hydrostatic test and shall be made at not less than the normal working pressure of the system as determined by the Engineer.

No pipe installation will be accepted until or unless the leakage for the section of line tested is less than the rate specified in the following table.

LEAKAGE ALLOWANCE

Gallons per 1300 feet per hour*

Pipe Diam. (inches)	Test Pressure (psi) 50	75	100	125	150	200	225
4	1.54	1.87	2.16	2.42	2.65	3.07	3.25
6	2.30	2.80	3.25	3.63	3.98	4.50	4.88
8	3.07	3.73	4.33	4.83	5.30	6.13	6.50
10	3.83	4.66	5.41	6.04	6.63	7.66	8.12
12	4.60	5.59	6.50	7.25	7.95	9.20	9.75
14	5.37	6.52	7.58	8.46	9.28	10.73	11.38
16	6.13	7.45	8.66	9.66	10.60	12.27	13.00

Measurement of allowable leakage need not be made until after the pipe has been filled with water for a period of 24 hours.

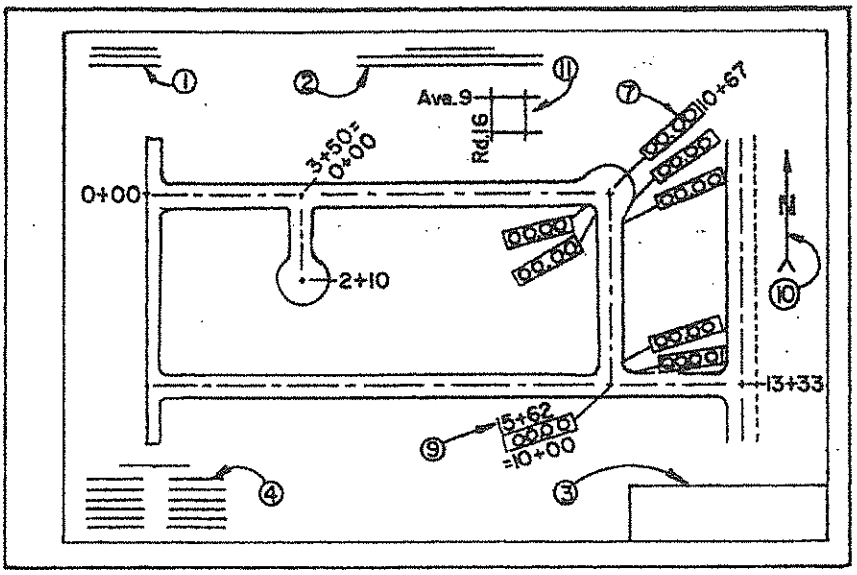
5. Disinfection

Disinfection of water mains shall be in accordance with A.W.W.A. Standard C 601. Special attention shall be given during pipe laying to keeping the pipe clean as outlined in Sections 1 through 4 of said standards.

Disinfection of storage tanks shall be in accordance with provisions of A.W.W.A. Standard D 102.

Following disinfection, samples will be taken and tests made by the Tulare County Department of Health Services for adequate disinfection. The Contractor shall request such tests and shall also provide the Engineer with evidence of Health Department acceptance.

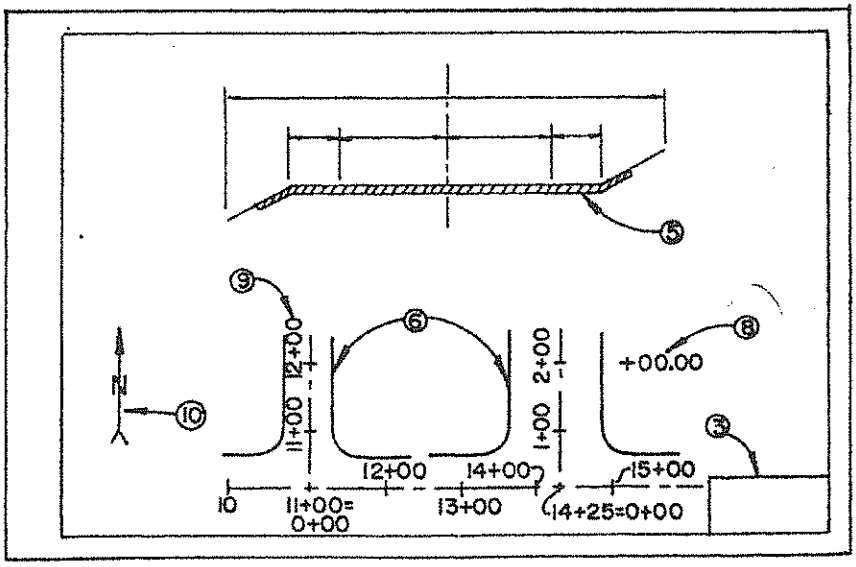
* A.C. pipe/13 ft. joints. Leakage allowances for water pipelines constructed with other materials shall be determined by the Engineer.



Sheet No.1 Drainage layout showing all grade breaks, curb grades, catch-basins, storm drains, drainage channels, natural drainageways and other drainage works in sufficient detail; and showing lot line and location of fire hydrants, both proposed and existing; showing key map to show the relationship of subdivision to surrounding streets (scale 1" = 1000')

Standard sheet size-24"x36"
or 22"x 35"

1. Index of sheets
2. Project title
3. Title Block
4. Conventional symbols or legend
5. Typical cross section
6. Road approaches
7. 00.00 Proposed elevation
8. 00.00 Existing Elevation
9. 0+00 Show Stationing
10. North Arrow
11. Key Map



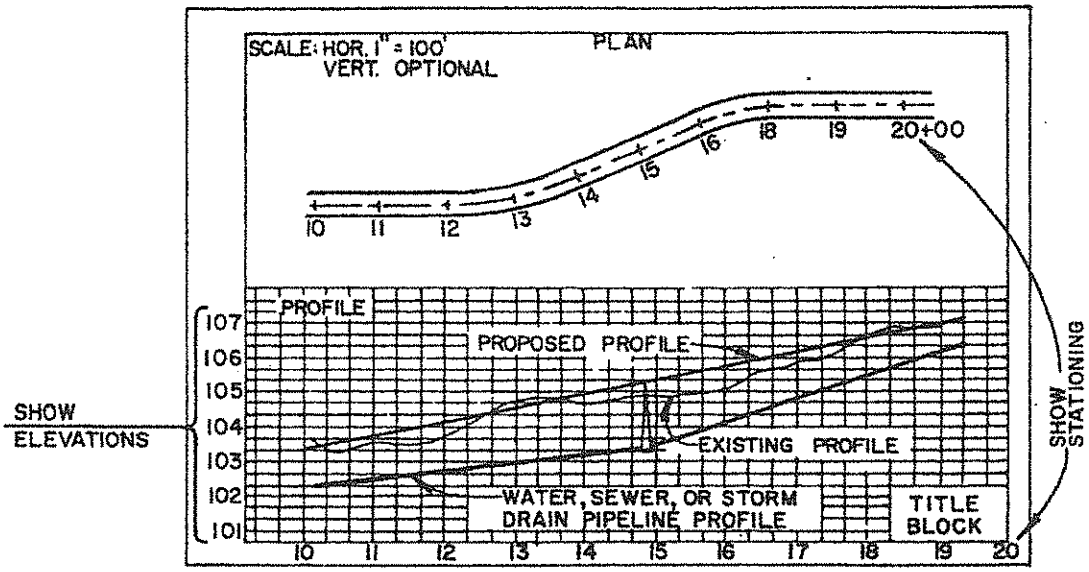
Sheet No. 2 Typical cross sections and road approaches

PUBLIC ROAD STANDARDS

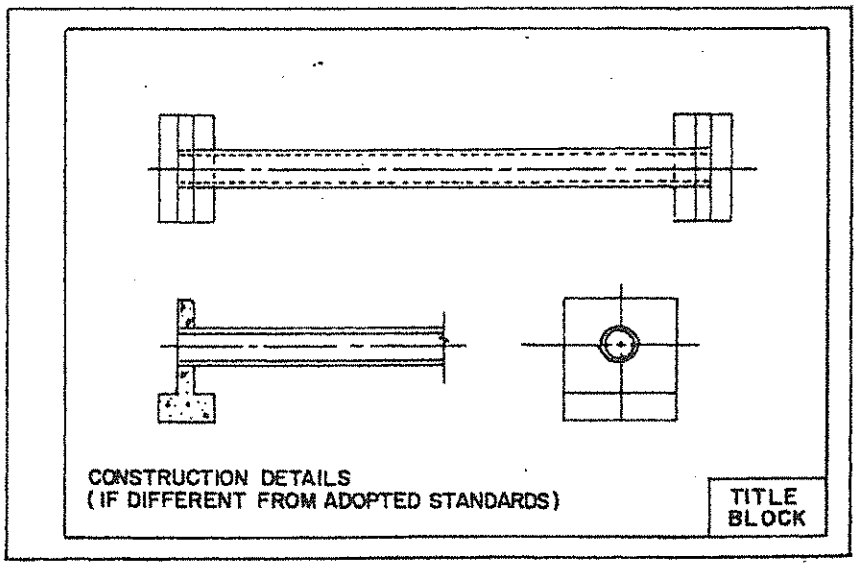
TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

TYPICAL IMPROVEMENT
PLAN LAYOUT

PLATE NO. 1



Sheet no. 3 to be used for utility plan and profiles, road grades with vertical curves and superelevation. Show elevations of all changes of grade in streets, pipelines, etc.



Remaining sheets following plan and profile to be used for construction details.

PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

TYPICAL IMPROVEMENT
PLAN LAYOUT

PLATE NO. 2

SUBDIVISION IMPROVEMENT PLANS COUNTY OF TULARE					SCALE
(NAME OF ENGINEERING FIRM)					DRAWN BY REVISED
(TRACT IDENTIFICATION)					
(TITLE OF SHEET)					
DESIGN ENGINEER _____ DATE _____ C.E. LICENSE NO. _____					SHEET
REVISED					_____OF
APPROVAL					_____SHEETS
APPROVED _____ C.E. LICENSE NO. _____ COUNTY OF TULARE DATE _____					
REVISED					
APPROVAL					

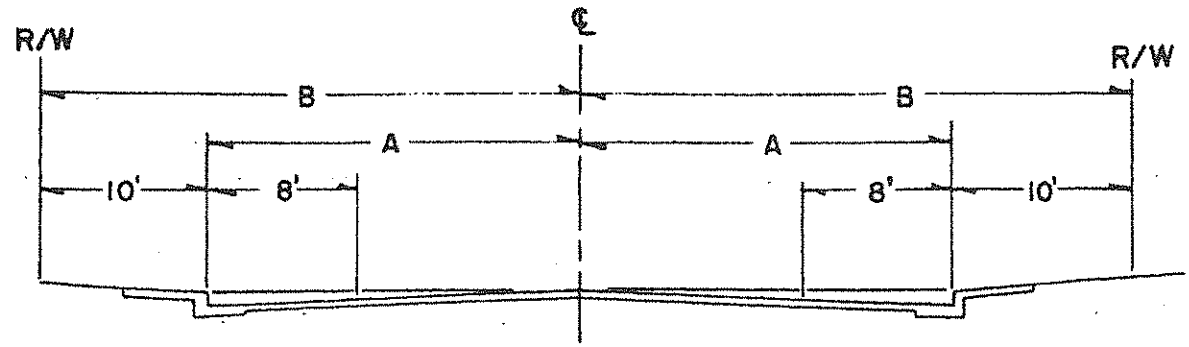
PUBLIC ROAD STANDARDS

105

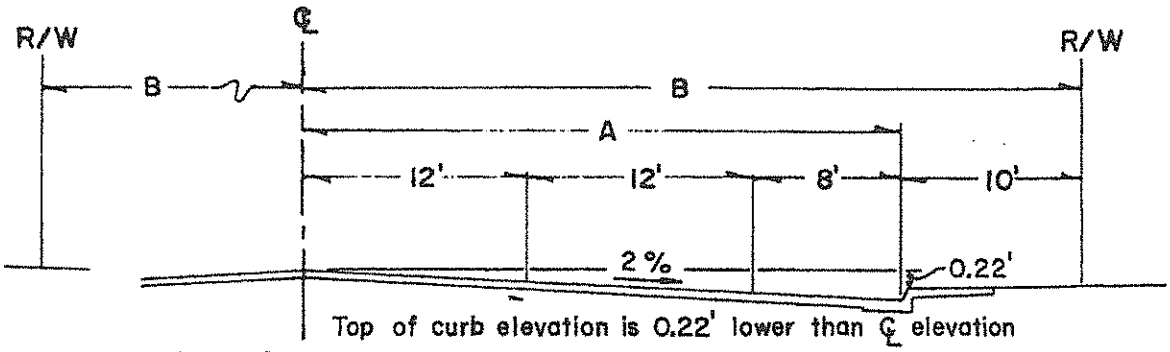
TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

APPROVAL AND
TITLE BLOCK

PLATE NO. 3



CLASS 1, 2, & 3 TWO LANE ROADS
Top of curb elevation = centerline elevation



Top of curb elevation is 0.22' lower than ℄ elevation

CLASS 3 & SELECT SYSTEM FOUR LANE UNDIVIDED ROADS

* Note: The distance between face of curb and right of way and distance B may be reduced to 8 feet and 40 feet respectively on existing 80 foot right of ways. The chart below applies to urban areas with speed control zones, and select system

ROAD CLASS	NO. OF LANES	DESIGN VELOCITY	A MIN.	B MIN.	MAX. GRADE	MAX. SUPER
1	2	25 MPH	18	28	10%	6%
2	2	30 MPH	20	30	10%	
3	2	35 MPH	20	30	10%	
3	4	40 MPH	32	42*	8%	
SELECT	2	40 MPH	20	30	8%	
SELECT	4	50 MPH	32	42*	8%	

roads outside such areas shall be designed to 60 m.p.h. minimum using a maximum super of 10%.

PUBLIC ROAD STANDARDS

VALLEY AREA

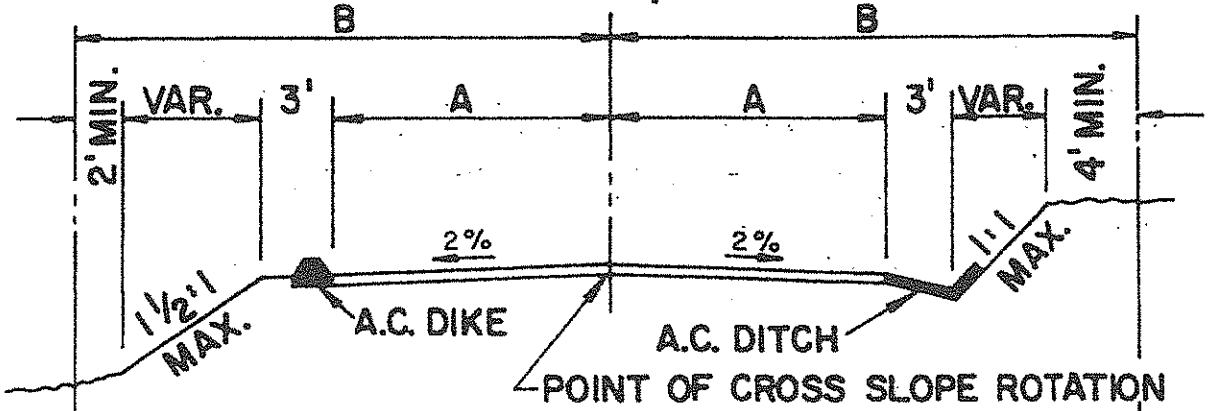
TULARE COUNTY ORDINANCE CODE SECTION No. 7080

GEOMETRIC SECTIONS

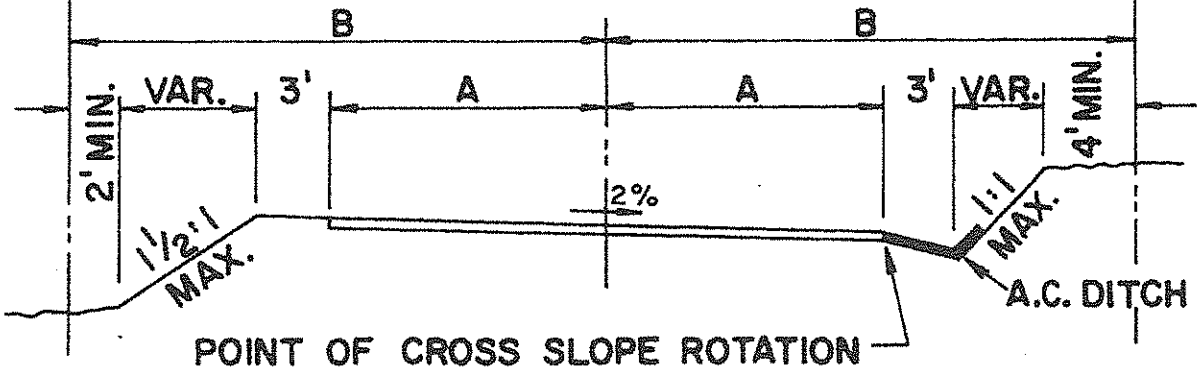
PLATE NO. A-1

FOR LOT AREAS 20,000 SQ. FT. OR MORE

CLASS 1,2 & 3



CLASS 1 & 2 ALTERNATE



ROAD CLASS	LOCATION	DESIGN VELOCITY	A MIN.	B MIN.	MAX. GRADE
1	WINTER TRAFFIC ABOVE ELEV. 3000'	20 MPH	12'	25'	10 %*
2		20 MPH	13'	25'	10 %
3		30 MPH	14'	30'	10 %
1	BELOW ELEV. 3000'	20 MPH	12'	25'	15 %
2		20 MPH	13'	25'	12 %
3		30 MPH	14'	30'	10 %

* In very difficult terrain, grade up to 12 % will be permitted for short distances at locations approved by the Road Department.

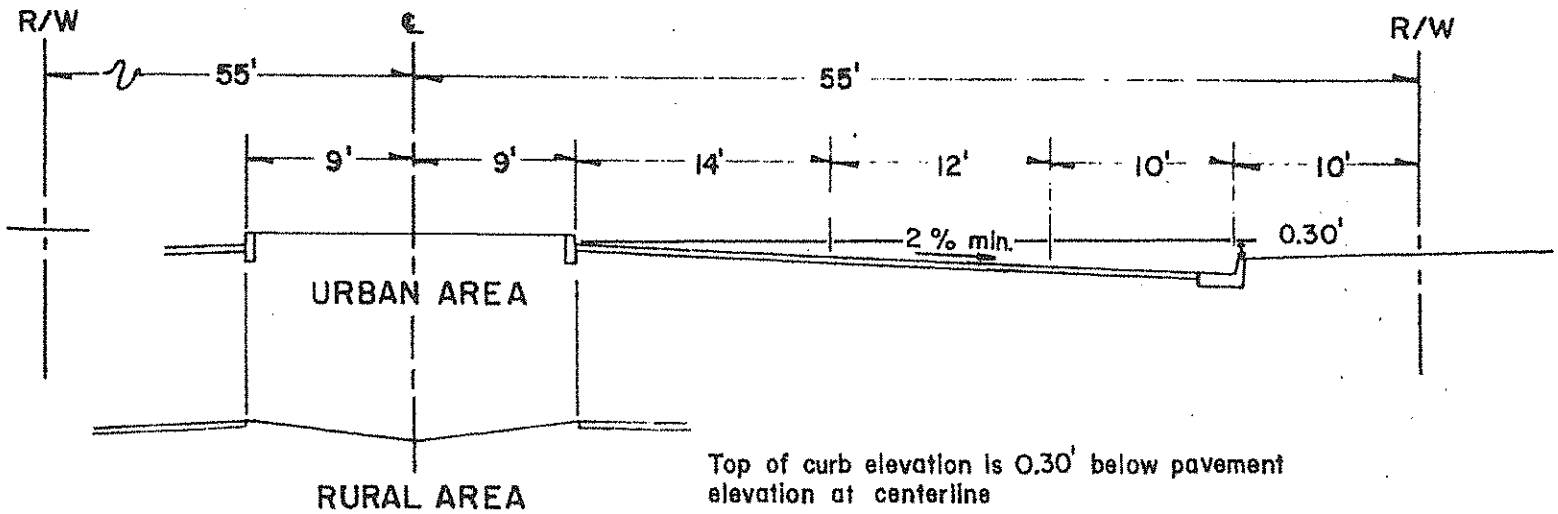
PUBLIC ROAD STANDARDS

MOUNTAINOUS AREA

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

GEOMETRIC SECTION FOR LOT AREAS 20,000 sq. ft. OR MORE

PLATE No. A-1M



Top of curb elevation is 0.30' below pavement elevation at centerline

SELECT SYSTEM FOUR LANE DIVIDED HIGHWAYS

ROAD LOCATION	MIN. DESIGN VELOCITY	MAX. GRADE	MAX. SUPER
Rural Areas	60 m.p.h.	6%	10%
Urban Areas	50 m.p.h.	6%	6%

PUBLIC ROAD STANDARDS

VALLEY AREA

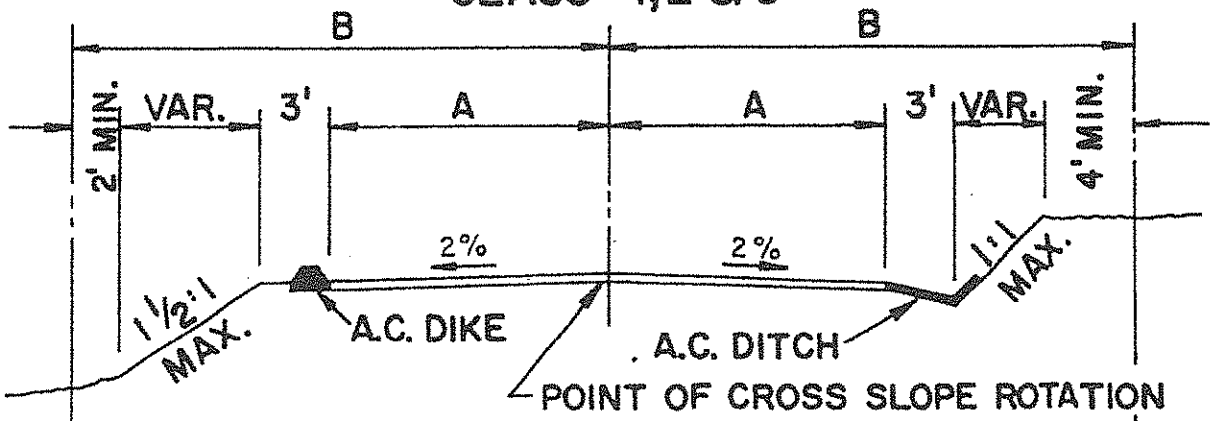
TULARE COUNTY
ORDINANCE CODE
SECTION No. 7080

SELECT SYSTEM
GEOMETRICS

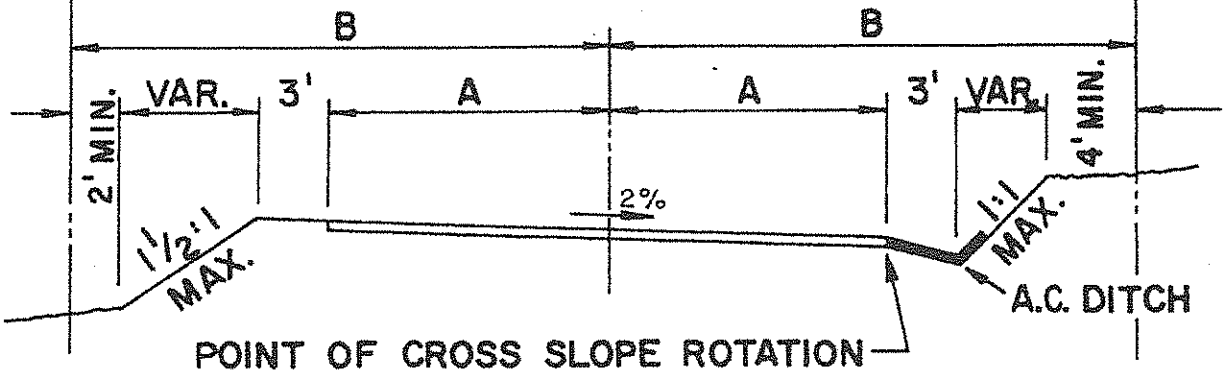
PLATE NO. A-2

FOR LOT AREAS LESS THAN 20,000 SQ. FT.

CLASS 1,2 & 3



CLASS 1 & 2 ALTERNATE



ROAD CLASS	LOCATION	DESIGN VELOCITY	A MIN.	B MIN.	MAX. GRADE
1	WINTER TRAFFIC ABOVE ELEV. 3000'	20 MPH	16'	30'	10 %*
2		20 MPH	17'	30'	10 %
3		30 MPH	18'	30'	10 %
1	BELOW ELEV. 3000'	20 MPH	16'	30'	15 %
2		20 MPH	17'	30'	12 %
3		30 MPH	18'	30'	10 %

* In very difficult terrain, grade up to 12% will be permitted for short distances at locations approved by the Road Department.

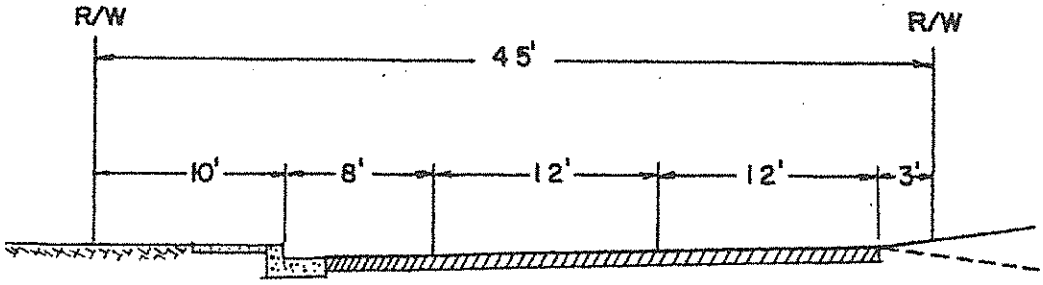
PUBLIC ROAD STANDARDS

MOUNTAINOUS AREA

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

GEOMETRIC SECTIONS FOR LOT AREAS LESS THAN 20,000 sq. ft.

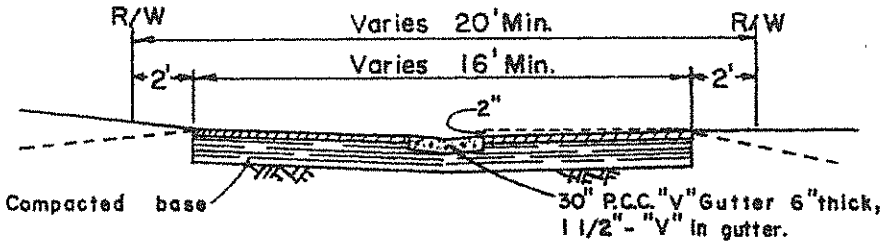
PLATE No. A-2M



Note: Grade and alignment shall be the same as the parallel contiguous highway.

Frontage roads shall enter four lane streets through Bulb Type intersections.

FRONTAGE ROAD SECTION



ALLEY SECTION

PUBLIC ROAD STANDARDS

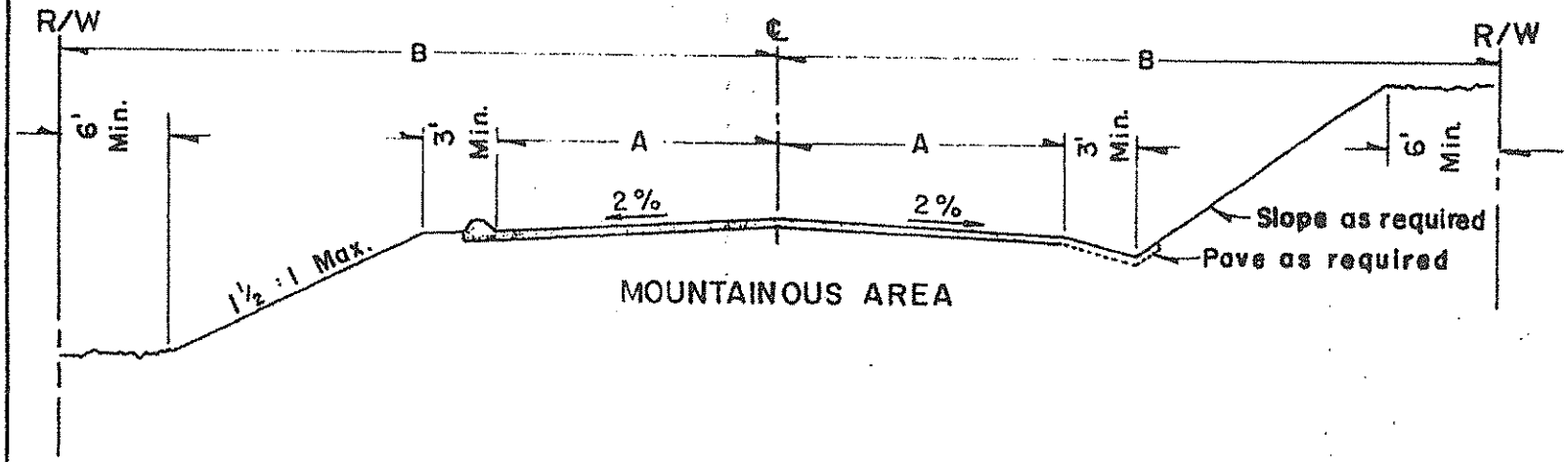
TULARE COUNTY ORDINANCE CODE SECTION No. 7080

FRONTAGE ROAD AND ALLEYS

PLATE No. A-3.

PUBLIC ROAD STANDARDS

MOUNTAINOUS AREAS



ROAD CLASS	LOT SIZE	DESIGN VELOCITY	A MIN *	B MIN	MAX. GRADE.
Collector	20,000 sq.ft.	35 m.p.h.	14' or 16'	30'	10%
Arterial	or more	40 m.p.h.	16'	40'	8%
Collector	Less than	35 m.p.h.	18' or 20'	30'	10%
Arterial	20,000 sq.ft.	40 m.p.h.	20'	40'	8%

*Paved width dependent upon traffic volume.

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

TWO-LANE SELECT SYSTEM ROAD

PLATE NO. A-3M

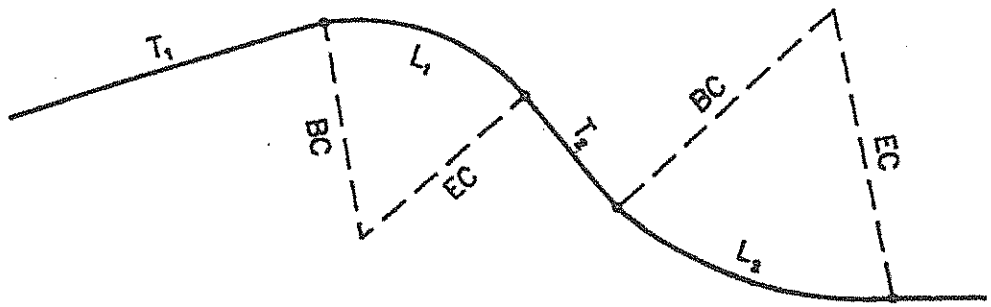


TABLE OF MINIMUM CURVE RADII (R)								
S \ V	20	25	30	35	40	50	60	70
NONE*	125	235	375	585	820	1385	2180	3270
.02	105	190	300	455	630	1040	1600	2330
.04	95	175	275	410	560	925	1410	2040
.06	90	160	250	375	510	835	1260	1815
.08						760	1140	1635
.10						695	1040	1485

* Design based on S = −0.02

V	F
20	.24
25	.20
30	.18
35	.16
40	.15
50	.14
60	.13
70	.12

TABLE OF MINIMUM TANGENT LENGTHS (T)								
S_1+S_2 \ V	20	25	30	35	40	50	60	70
.02	←		NONE		→	300	↑	↑
.04	←		NONE		→	325	375	
.06	20	25	30	35	40	350		425
.08	40	50	60	70	80	375	↓	
.10	60	75	90	105	120	400	400	
.12	80	100	120	140	160	425	425	↓
.14						450	450	450
.16						475	475	475
.18						500	500	500
.20						525	525	525

$$R = \frac{V^2}{15(F+S)}$$

WHERE
R = Radius in feet
V = Velocity in M.P.H.
S = Superelevation in ft./ft.
F = Friction factor

TABLE OF MINIMUM ARC LENGTHS (L) FOR VARIOUS DESIGN VELOCITIES								
V	20	25	30	35	40	50	60	70
L	80	100	120	140	160	300	360	420

NOTES:

1. See Plate A–5 for other applicable formuli
2. In the State Responsibility Area, add 4 feet additional surface width for R < 100 feet and 2 feet for 100 < R < 200 feet

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CURVE DESIGN RADII & TANGENTS

PLATE NO. A–4

L = 50VS

T min. = 50V(S_1 + S_2 - .04) = L_1 + L_2 - 2B

A min. = 4V

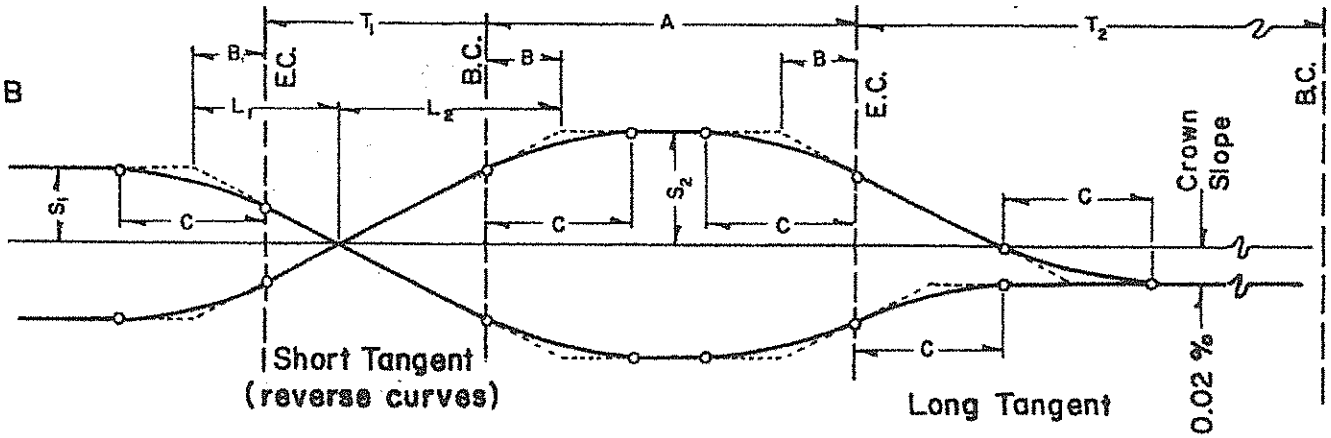
B = V

C = 2V

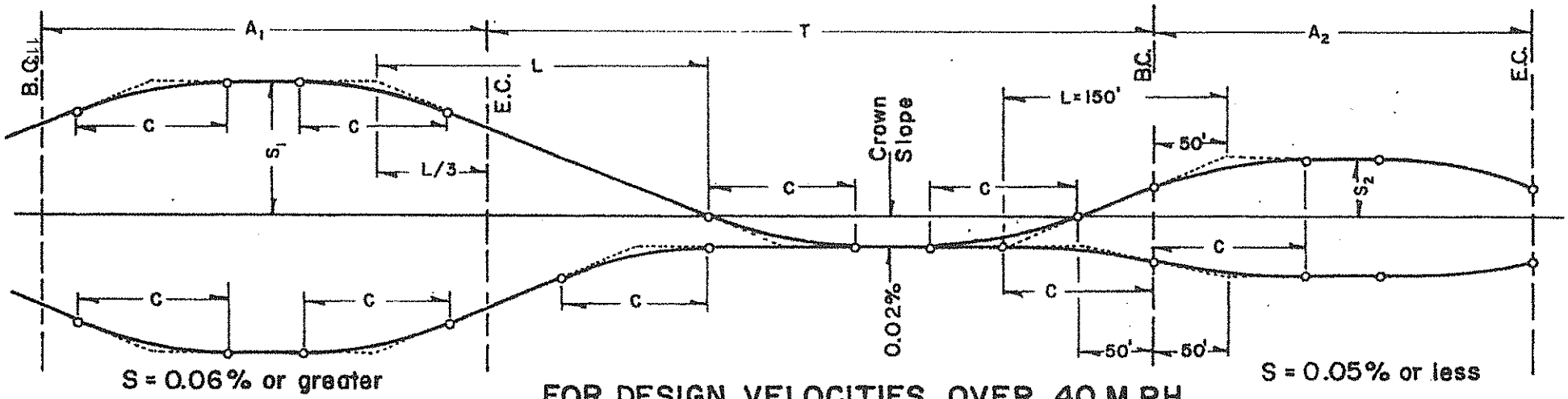
V = Design Velocity in M.P.H.

S = Superelevation, ft./ft.

(max. = 0.06 ft./ft.)



FOR DESIGN VELOCITIES 40 M.P.H. OR LESS



FOR DESIGN VELOCITIES OVER 40 M.P.H.

L = 2500 x S, 150' min.

T min., See Plate A-4

A min. = 6Y

C = 100'

V = Design Velocity in M.P.H.

S = Superelevation, ft./ft. (0.10 max.)

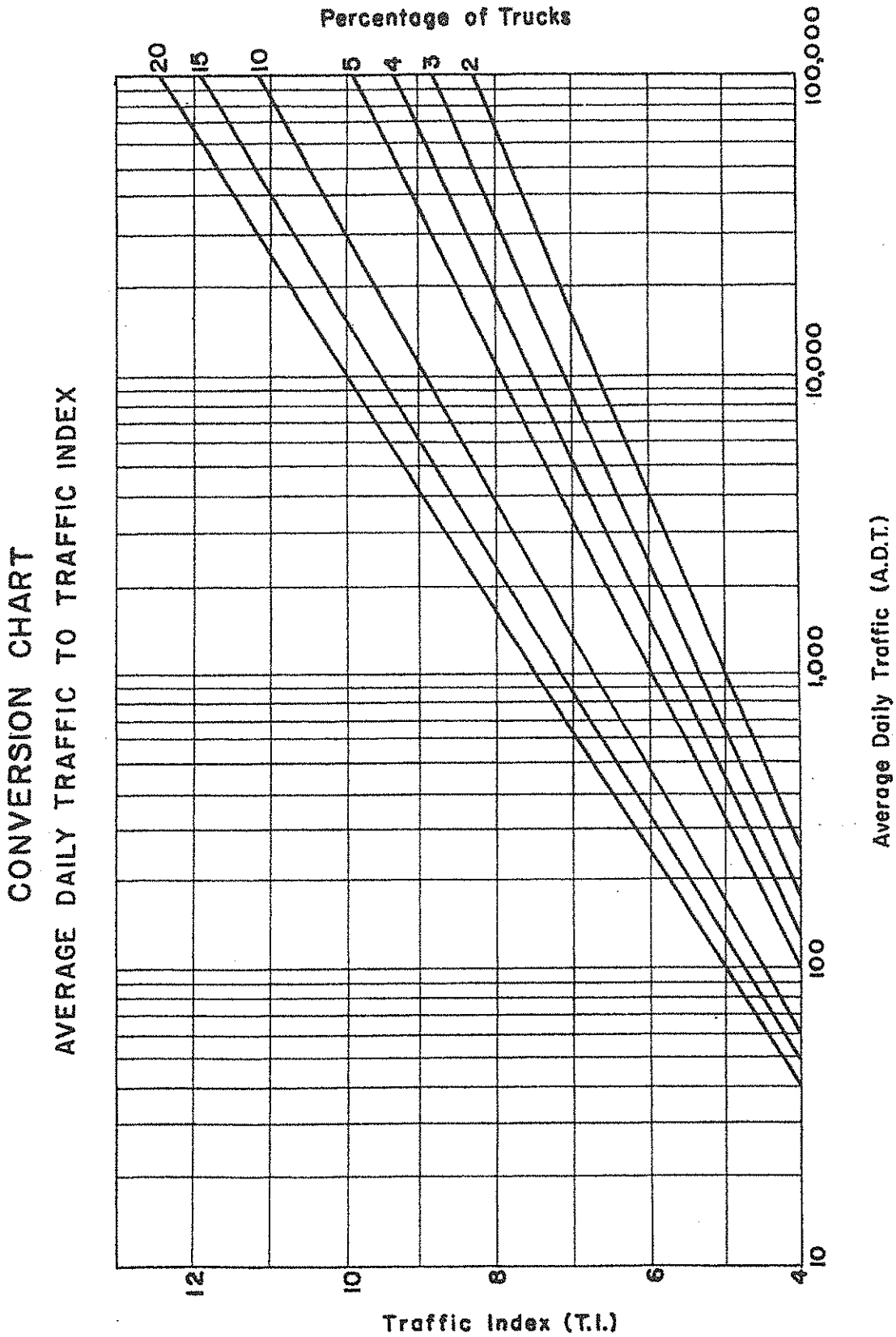
See Plate A-3 for table of min. values

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

CURVE DESIGN SUPERELEVATION

PLATE NO. A-5



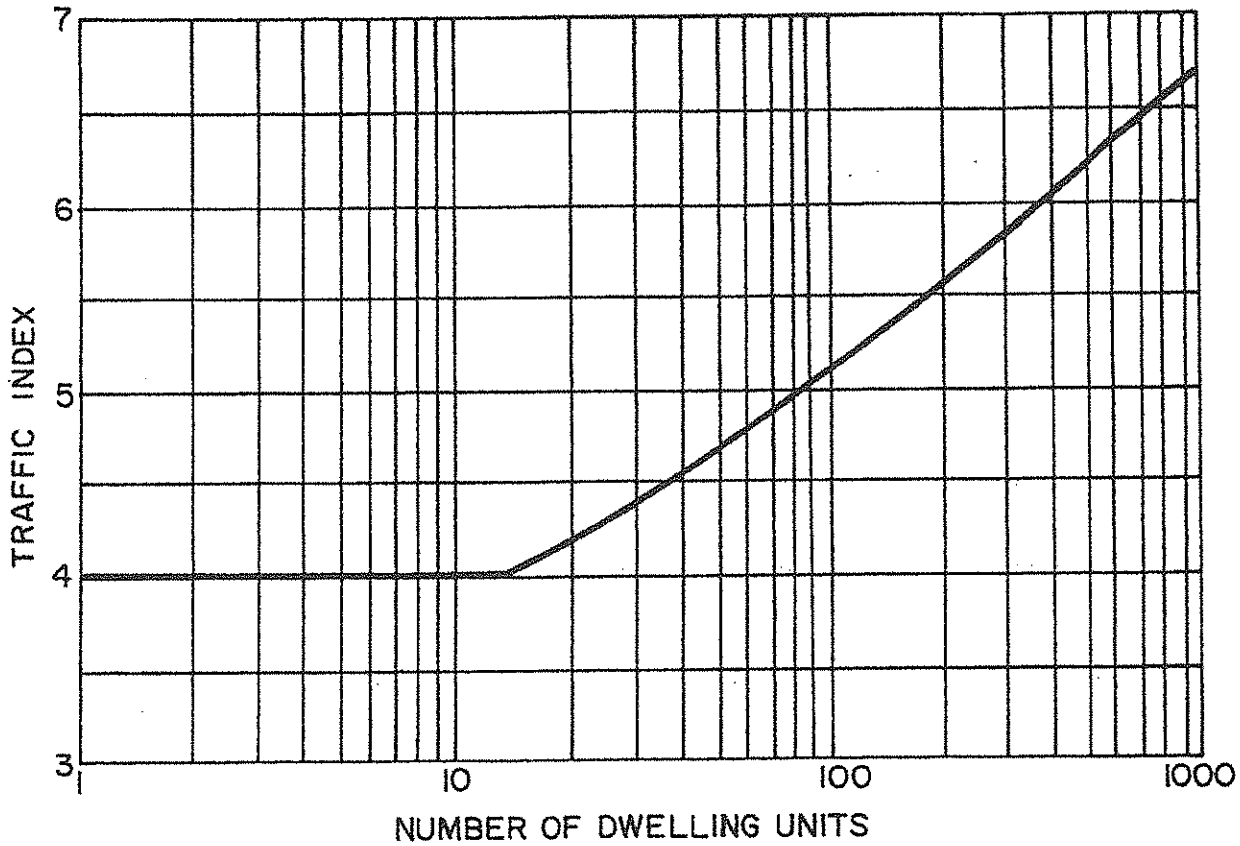
PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION No. 7080

TRAFFIC INDEX
TO A.D.T.

PLATE NO. A-6

CHART FOR ESTIMATION OF TRAFFIC INDEX FROM NUMBER OF DWELLING UNITS



Notes: For use only within subdivisions for residential and residential collector streets.

Chart is based on a 10 year design life.

Where the number of dwelling units cannot be accurately determined, the following traffic indexes shall be used:

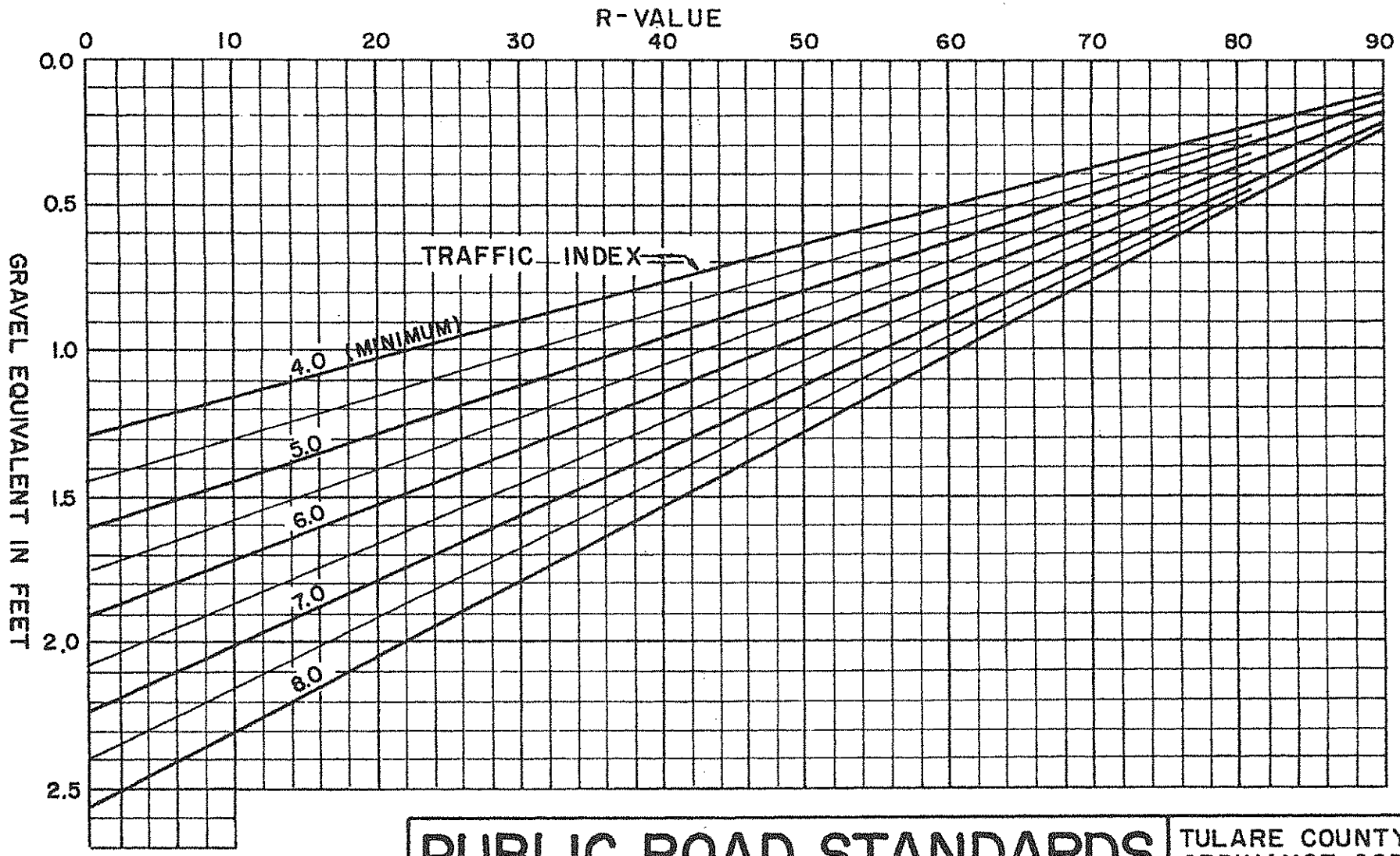
Class of road	T. I.
1	4.5
2	5.0
3	5.5

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

TRAFFIC INDEX-TO DWELLING UNITS

PLATE NO. A-7



$$GE = 0.0032(TI)(100-R)$$

PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION No. 7080

STRUCTURAL DESIGN
CHART FOR FLEXIBLE
PAVEMENT

PLATE NO. A-8

ACTUAL THICKNESS IN FEET	GRAVEL EQUIVALENT IN FEET												
	ASPHALT CONCRETE					ROAD-MIXED ASPH. SURFACING				AB	CL. "B" CTB,	CL. "C" CTB, BTB, LTB	CL. "D" CTB & ASB
	T. I.	5 & BELOW	5.5 6.0	6.5 7.0	7.5 8.0	5 & BELOW	5.5 6.0	6.5 7.0	7.5 8.0				
	FACTOR Gf	2.50	2.32	2.14	2.01	1.50	1.40	1.30	1.20	1.1	1.2	1.2	1.0
0.13 MIN.		0.32											
0.15		0.38	0.35										
0.20		0.50	0.46	0.43		0.30							
0.25		0.63	0.58	0.54	0.50	0.38	0.35						
0.30		0.75	0.70	0.64	0.60	0.45	0.42						
0.35		0.88	0.81	0.75	0.70	0.53	0.49	0.45		0.39			0.35
0.40		1.00	0.93	0.86	0.80	0.60	0.56	0.52	0.48	0.44			0.40
0.45			1.04	0.96	0.90	0.68	0.63	0.59	0.54	0.50	0.68	0.54	0.45
0.50			1.16	1.07	1.01	0.75	0.70	0.65	0.60	0.55	0.75	0.60	0.50
0.55				1.18	1.11		0.77	0.72	0.66	0.61	0.83	0.66	0.55
0.60					1.21			0.78	0.72	0.66	0.90	0.72	0.60
0.65					1.31				0.78	0.72	0.98	0.78	0.65
0.70										0.77	1.05	0.84	0.70
0.75											1.13	0.90	0.75
0.80											1.20	0.96	0.80

A. Solid line indicates minimum thickness allowed.

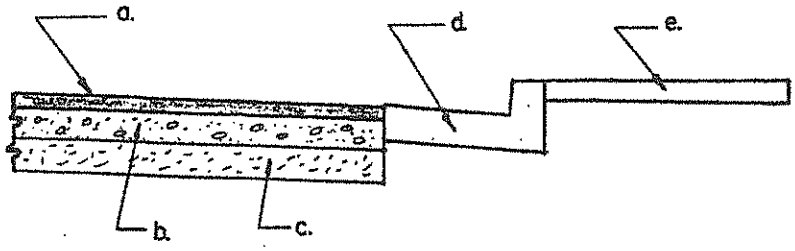
B. T. I. values shall be rounded to the nearest one half.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

GRAVEL EQUIVALENTS AND MIN. THICKNESS

PLATE NO. A-9



APPLICABLE TO VALLEY IMPROVEMENT STANDARDS

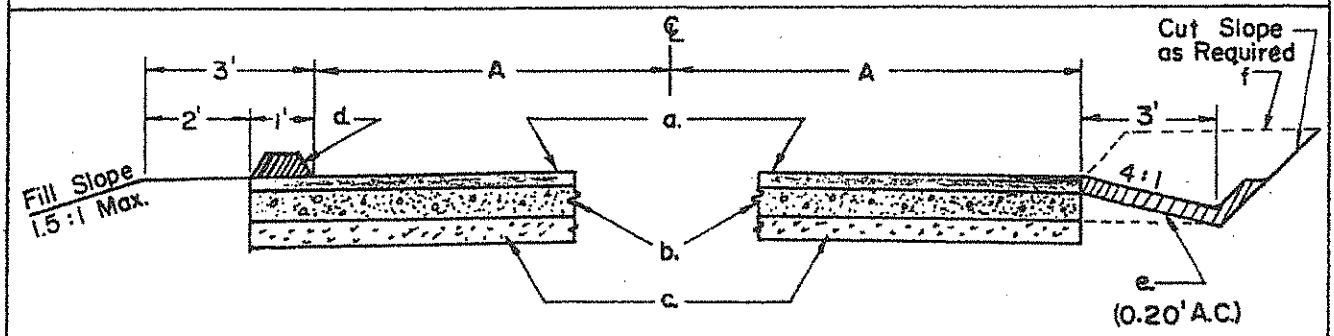
a. Type "B" Asphalt Concrete pavement.

b. Class "2" Aggregate Base.

c. Class "4" Aggregate Subbase if required by design.

d. Standard Type Curb.

e. Sidewalks where required.



APPLICABLE TO MOUNTAIN IMPROVEMENT STANDARDS

a. Type "B" Asphalt Concrete or Road Mixed Asphalt Surfacing.

b. Class "2" or Class "3" Aggregate Base.

c. Class "4" Aggregate Subbase if required by design.

d. Standard Asphalt Concrete Dike. May be eliminated where fill slope are flatter than 6:1 and erosion is not anticipated.

e. Paved Roadside Ditch. Pavement may be eliminated on grades flatter than 4% if erosion is not probable.

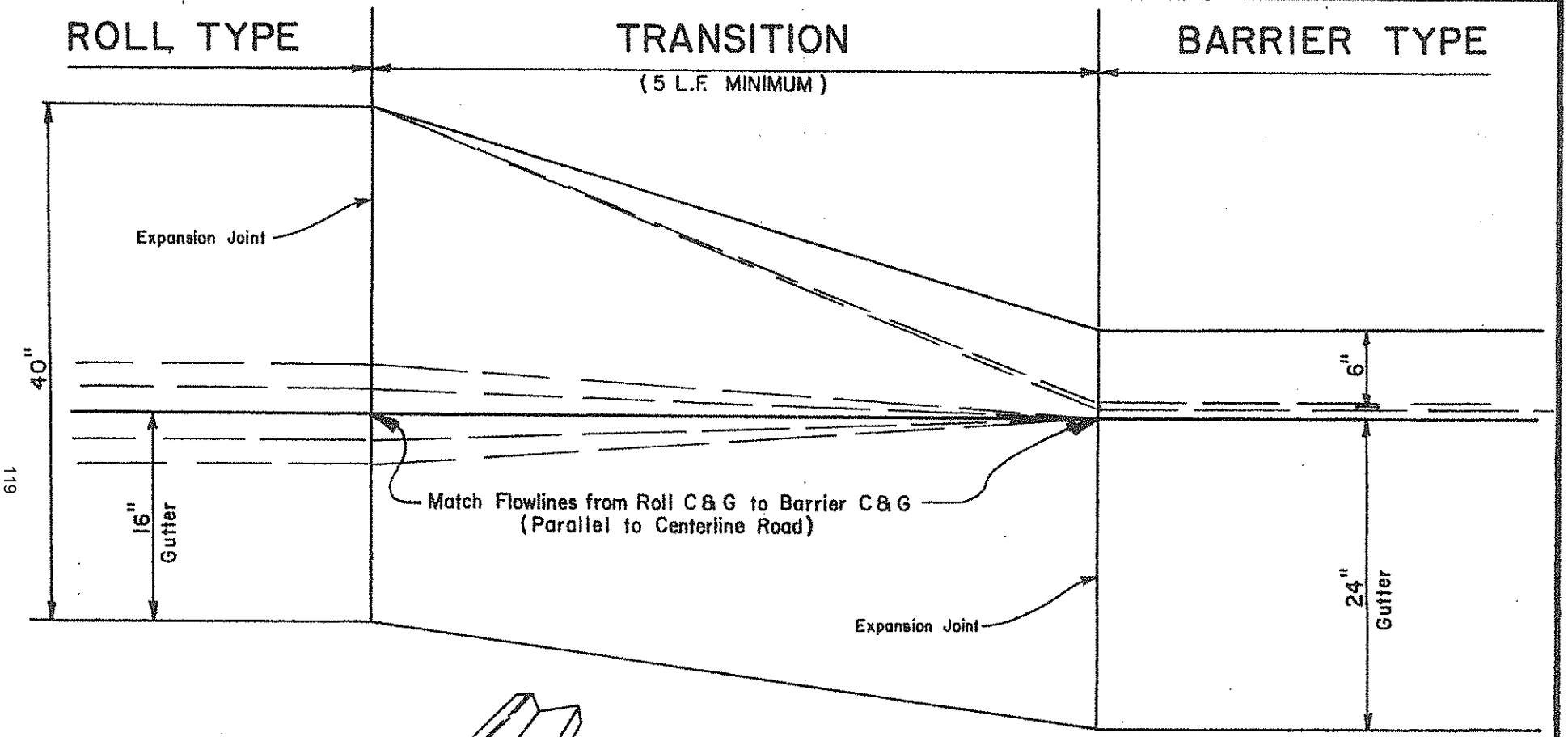
f. The roadside ditch (e) may be eliminated where paved width 'A' is 17' or greater and ditch is not needed to carry calculated gutter flow.

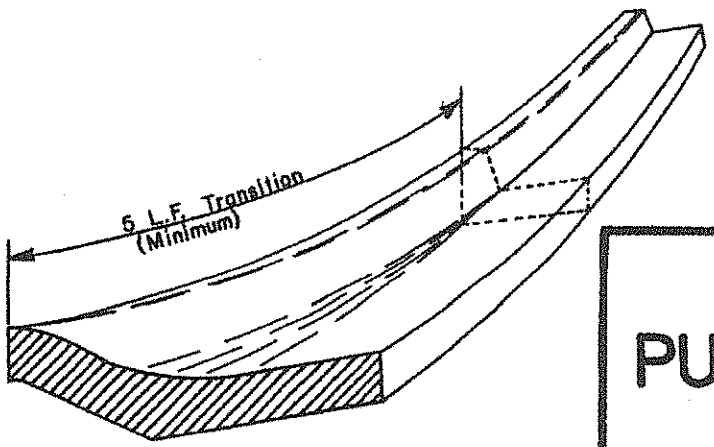
PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

STRUCTURAL ROAD DETAILS

PLATE NO. A-10



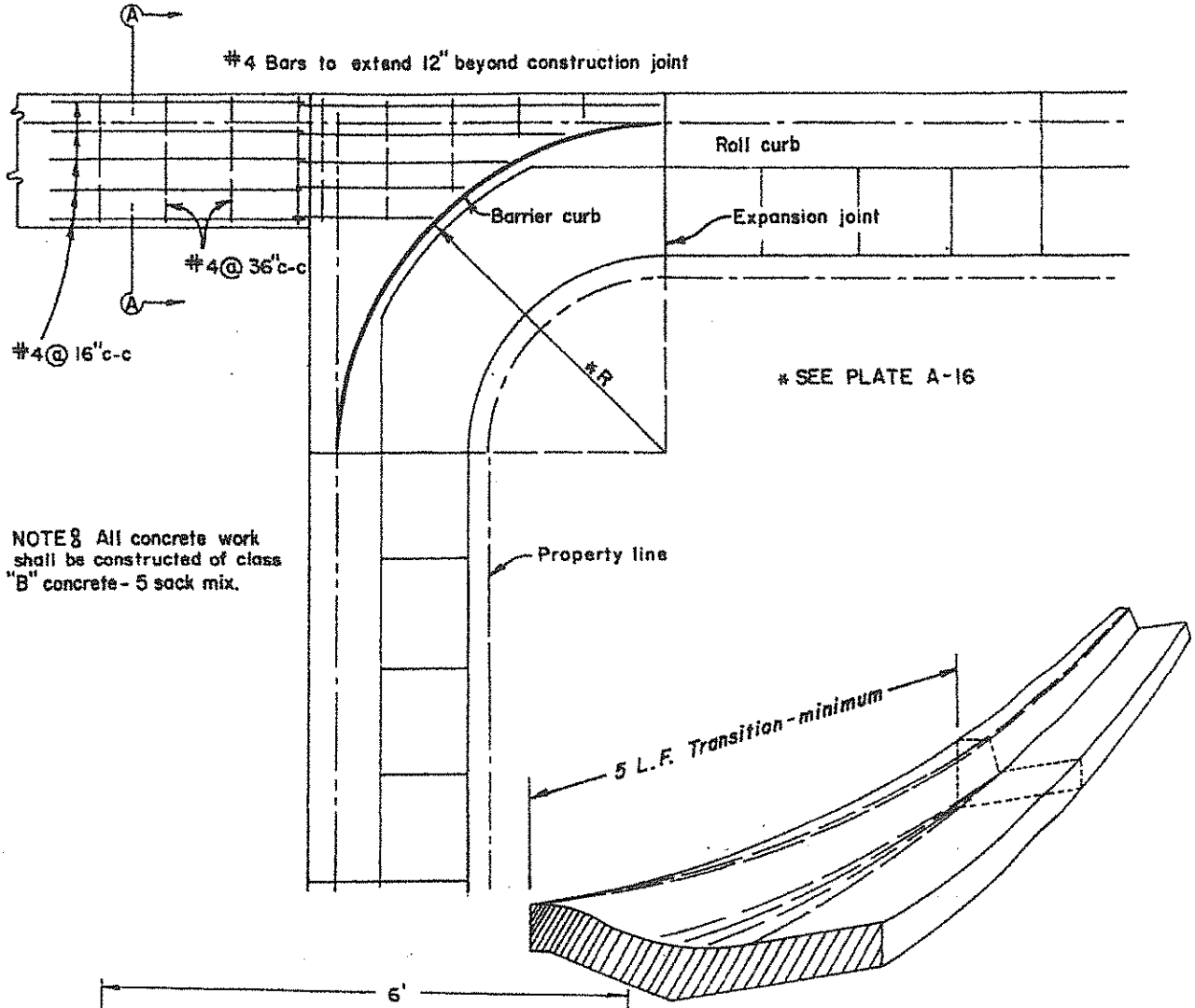


PUBLIC ROAD STANDARDS

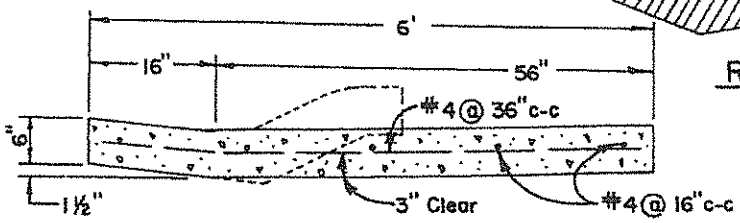
TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

CURB AND GUTTER
TRANSITION
ROLL TO BARRIER

PLATE NO. A-13



ROLL TO BARRIER TRANSITION



SECTION A – A

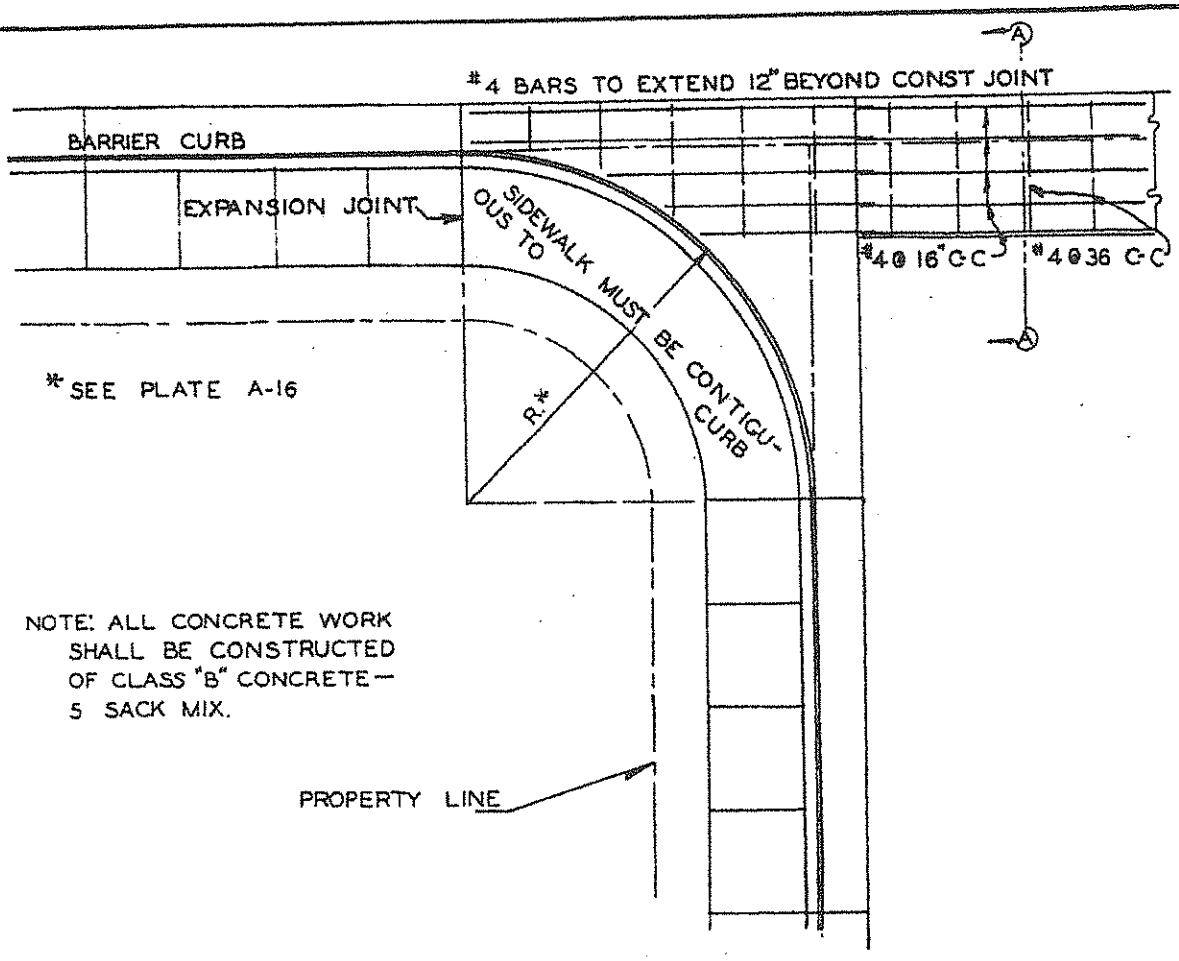
REVISED 9-5-89

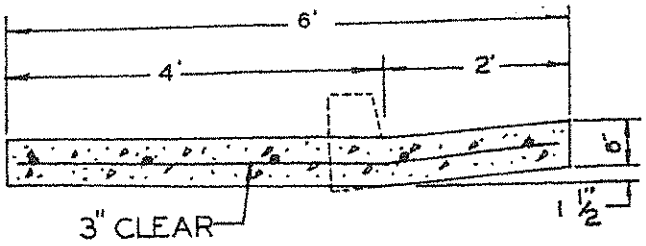
PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CONTINUOUS GUTTER TRANSITION

PLATE NO. A-14





APPLICABLE USE WITH BARRIER TYPE CURB

SECTION A-A

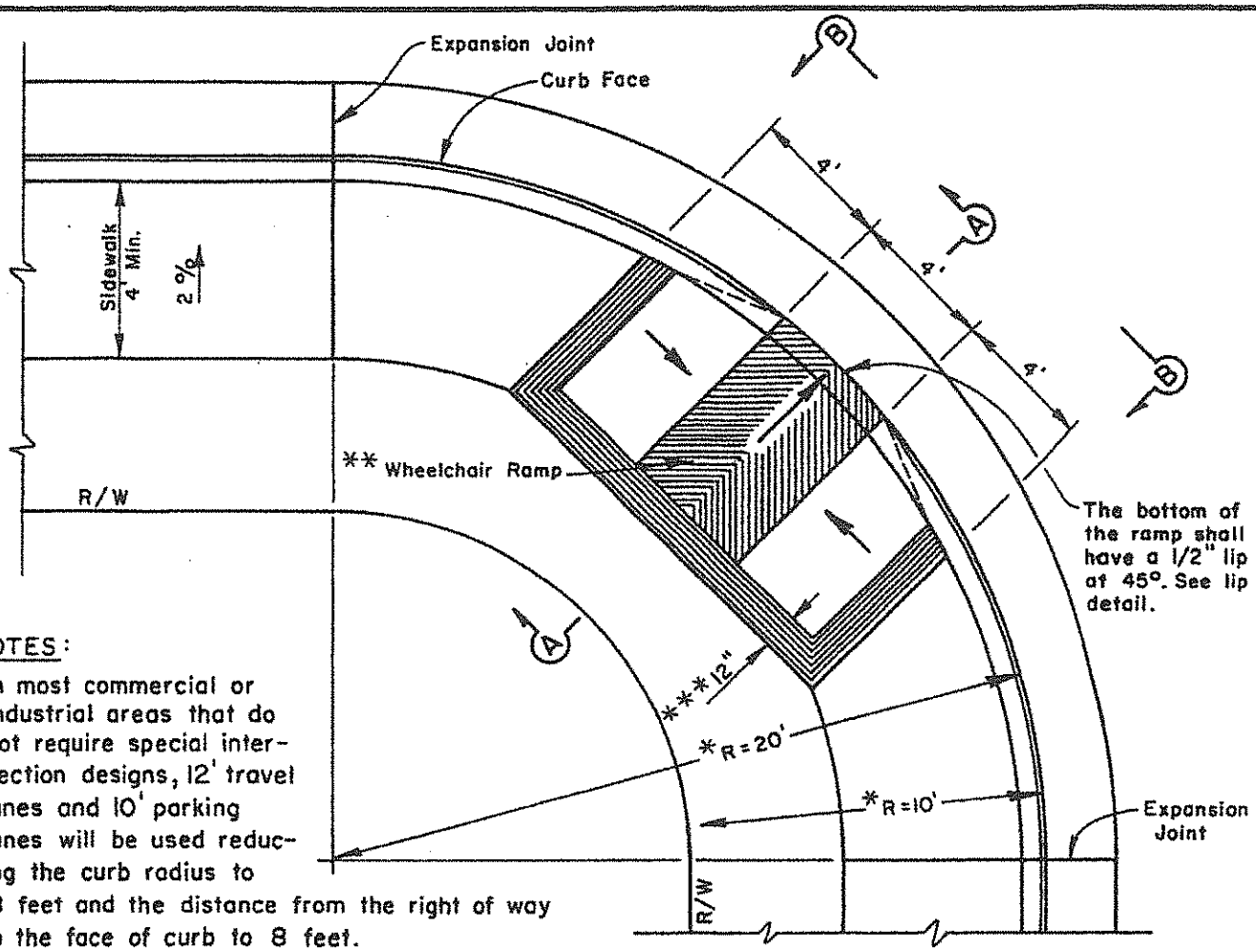
REVISED 9-5-89

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CONTINUOUS GUTTER CURB RETURN

PLATE NO. A-15

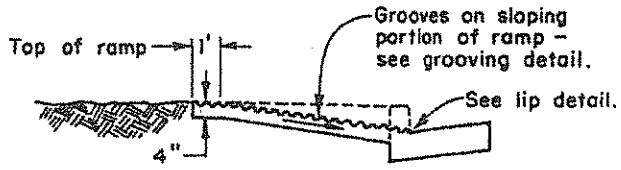


NOTES:

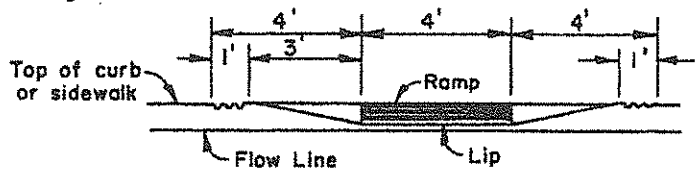
* In most commercial or industrial areas that do not require special intersection designs, 12' travel lanes and 10' parking lanes will be used reducing the curb radius to 18 feet and the distance from the right of way to the face of curb to 8 feet.

** Wheelchair ramps shall be located in the center of curb return. It shall be grooved in a herringbone pattern with 1/4" grooves approximately 1 1/2" o.c. See grooving detail. Grooves should be aligned parallel to crosswalk stripes to direct blind pedestrians into the correct crosswalk.

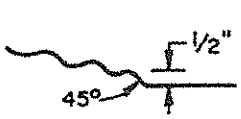
*** The ramp shall have a 12" wide border with 1/4" grooves approximately 3/4" o.c. See grooving detail.



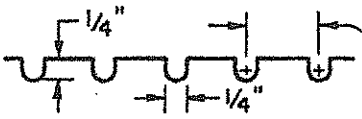
SECTION A-A



SECTION B-B



LIP DETAIL



GROOVING DETAIL

Approximately 3/4" at border and 1 1/2" on sloping portion of ramp.

REVISED 9-89

PUBLIC ROAD STANDARDS

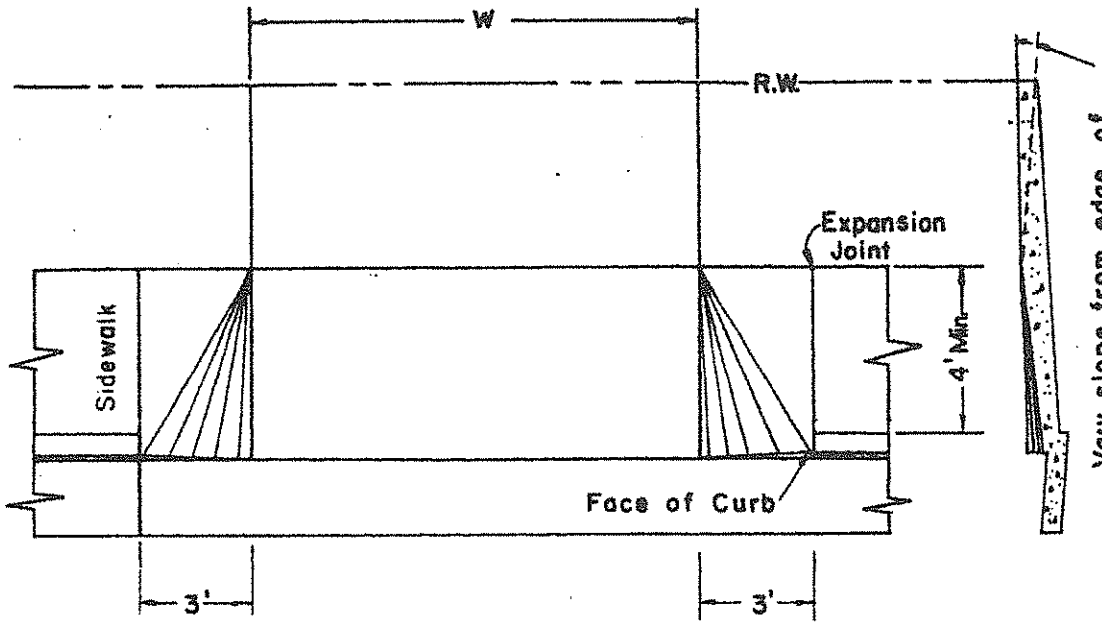
TULARE COUNTY ORDINANCE CODE SECTION No. 7080

CURB RETURN DETAIL

PLATE A-16

NOTE: Driveway approaches need only to extend to the back of sidewalk location where approved by the engineer and A.C. pavement continues.

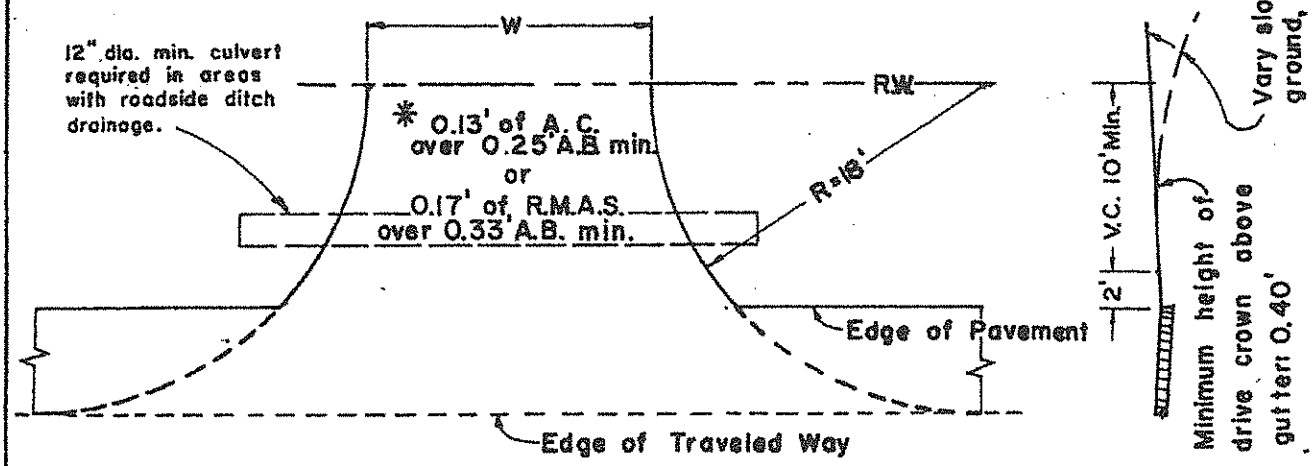
NOTE: See sheet A-18 for further details of concrete driveway.



URBAN DRIVEWAY

* NOTE:

If County maintained road is surfaced with A.C. then A.C. approach is required. If County maintained road is R.M.A.S. surfacing then R.M.A.S. or A.C. approach is required.



RURAL DRIVEWAY

TYPE	W-MIN.	W-MAX.
Residential	9'	24'
Commercial	15'	35'

NOTES:

1. All commercial drives shall be of urban type except in mountain areas where approved by Engineer.
2. Where drives are constructed on diked roads, the A.C. dike shall be extended down the drive to R.W.

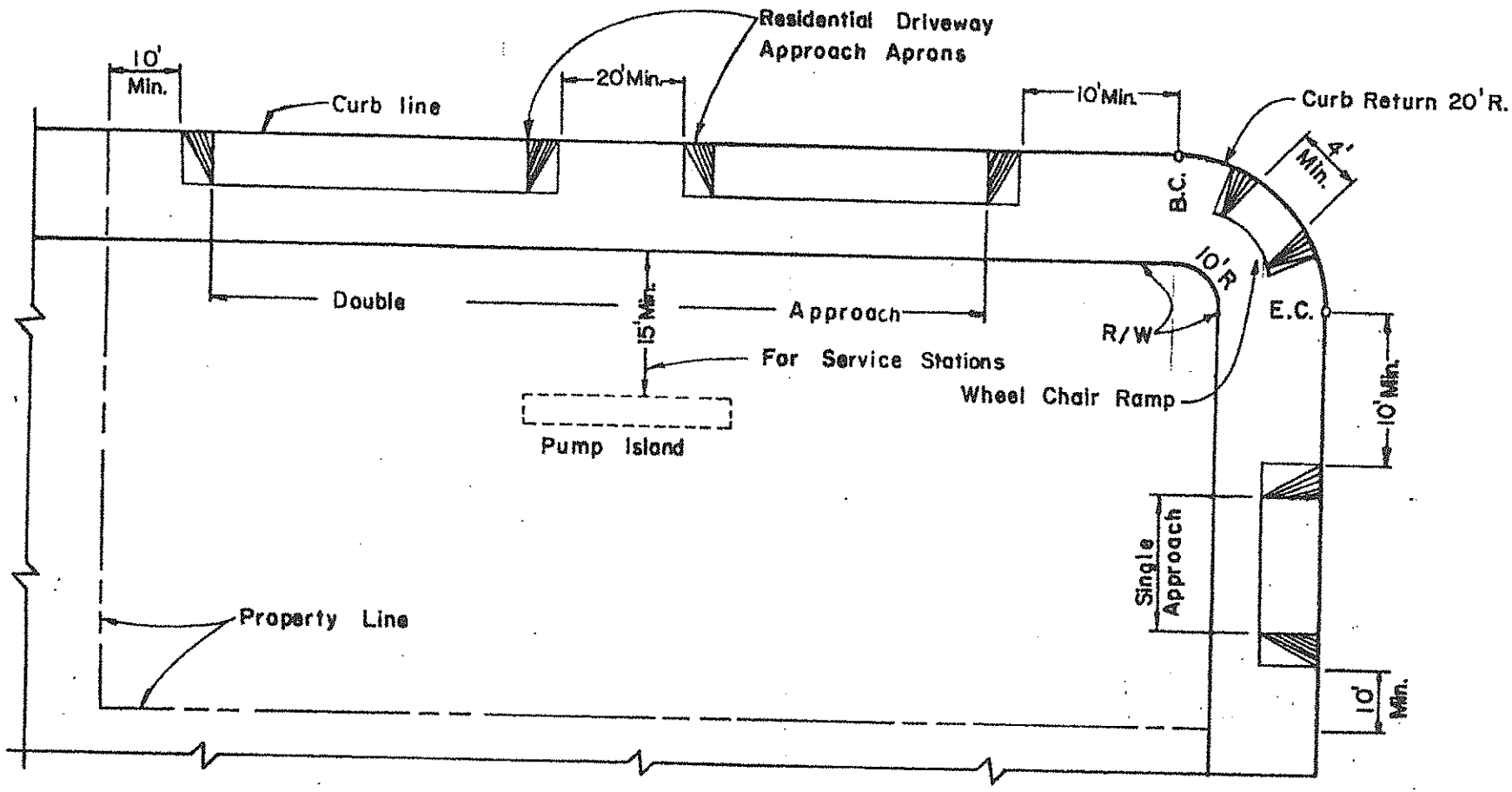
REVISED	7-10-79	G.R.M.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION _ NO. 7080

DRIVEWAY DETAILS

PLATE NO. A-17



Notes:

Not more than 60% of frontage to be in driveway opening, measured at Property Line.

For Driveway Approach Details see plate no. A-18

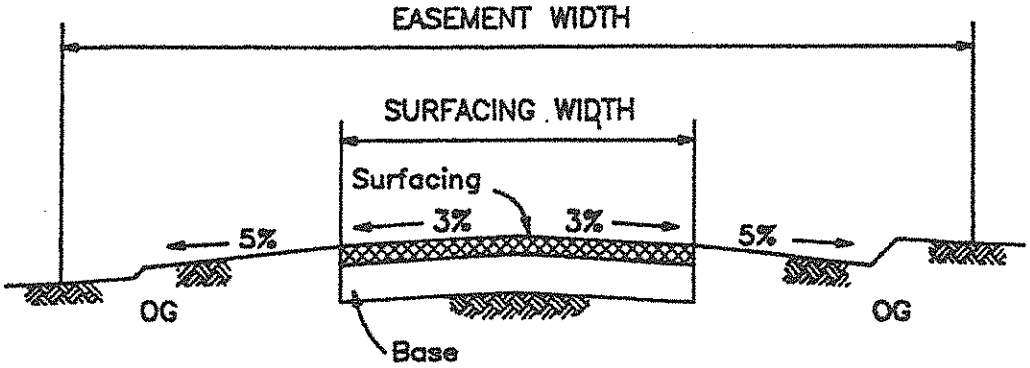
For Curb Return Details see plate No. A-16

PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

COMMERCIAL
DRIVEWAY APPROACH

PLATE NO. A-17A



EASEMENT AND SURFACING WIDTHS ***			STRUCTURAL SECTION (minimum) ***		
NO. OF PARCELS TO BE SERVED *	EASEMENT WIDTH (ft.)	PAVEMENT WIDTH (ft.)	NO. OF PARCELS TO BE SERVED *	BASE	SURFACING
1	18	10	1–2	3" AB(3)	OIL PENETRATION **
2	18	16	3	3" AB(3)	1.5" RMAS or AC
3	20	18	4	AB (3)	RMAS or AC
4	26	20		Use TI = 4.0 for thickness	

NOTES:

1. A 37' paved radius turnaround bulb shall be constructed within a 45' easement radius at the end of access easements serving 2,3, and 4 parcels. In the SRA, turnarounds will also be required for access easements serving one parcel with more than two buildings or four or more dwelling units. Turnaround bulbs shall be paved to a 40' radius within a 48' easement radius.
2. Private Vehicular Access connections to County roads shall be constructed in accordance with Plate No. A–17.
3. When more than four parcels are served, County Road Standards for right–of–way, surfacing widths, and structural section shall apply.
4. When RMAS is used, the oil quantity and the quality of aggregate will be tested using test method No. Calif. 304 and other tests as required in Section III–B6 of these standards.
5. Compaction of OG and AB shall be to a minimum of 90% relative compaction. Compliance tests will be taken as directed by the Public Works Director.
6. Improvement Standards for public roads shall be applicable for those standards not specifically stated in these Private Vehicular Access Easement Standards.

ABBREVIATIONS

RMAS	= ROAD MIX ASPHALT SURFACING	AC	= ASPHALTIC CONCRETE
AB(3)	= CLASS III AGGREGATE BASE	SRA	= STATE RESPONSIBILITY AREA
OG	= ORIGINAL GROUND	TI	= TRAFFIC INDEX

* Parcels served which do not have public road frontage

** Penetrating oil shall be SC 800 grade

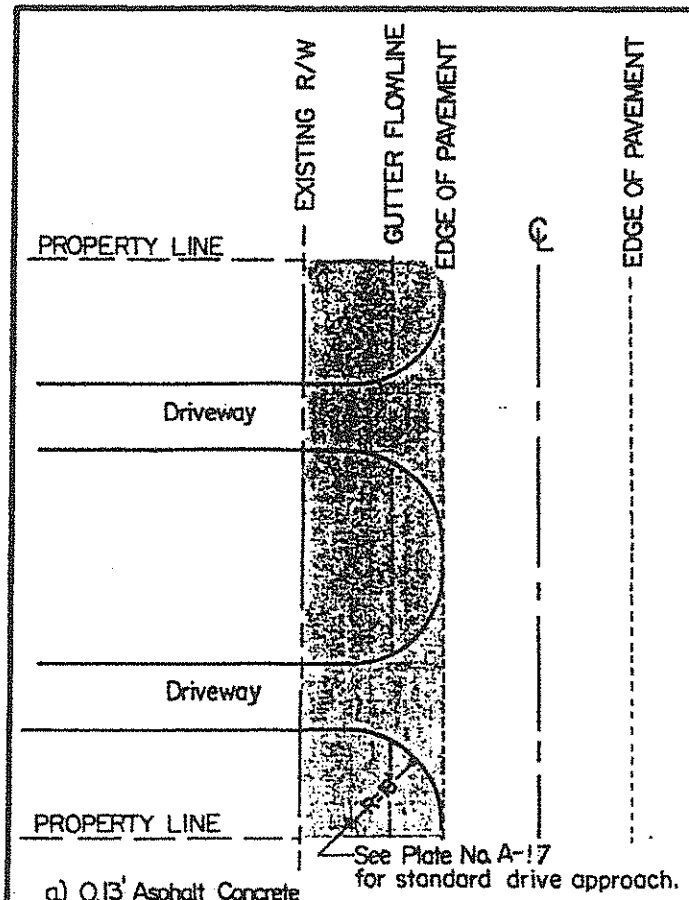
*** In the SRA, surfacing widths and structural section requirements for PVAEs serving three parcels, two parcels, or one parcel with more than two buildings or four or more dwelling units shall be improved to the following standards. Structural section requirements shall consist of AB(3) surfaced with AC or RMAS designed using a TI of 3.0. Pavement width shall be 18 feet, within an easement width of 20 feet. Grades shall not exceed 16 percent.

PRIVATE VEHICULAR ACCESS EASEMENT STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

VEHICULAR ACCESS EASEMENTS

PLATE NO. A–17–B

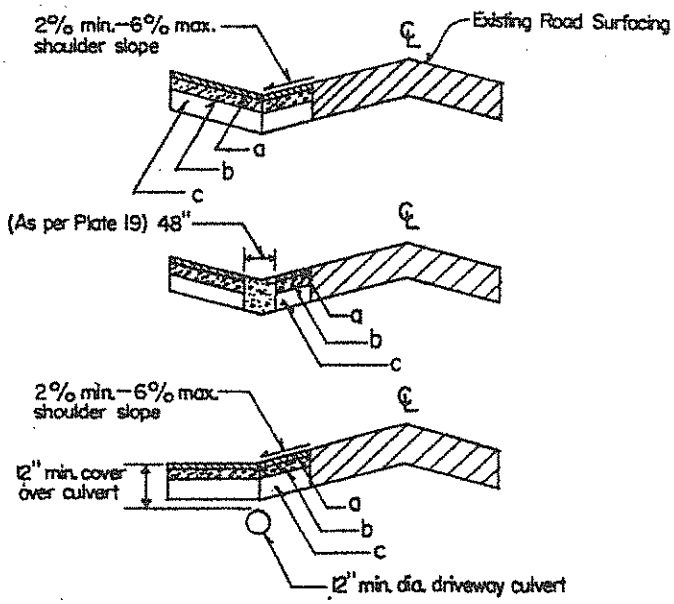


a) 0.13' Asphalt Concrete
b) 0.25' Min. Aggregate Base.– 95% Compacted
c) 0.50' Orginal Ground– 95% Compacted

NOTES:

Roadside drainage to be provided by use of asphalt gutter (0.5% min. slope), or concrete Vee gutter (0.4% min. slope), or 12" min. dia. culvert.

1. The granting of permission to perform frontage paving is not intended to allow driveway approach widths, at the existing R/W line, that exceed the standards. Approach widths and locations shall be defined by means approved by the Road Commissioner.
2. The diameter and length of driveway culvert shall be determined by the Road Commissioner based upon the hydraulic capacity needed and other field conditions. Driveway culverts shall be standard culverts designed to withstand traffic loads and soil conditions.
3. Vee gutter shall be placed at normal curb and gutter location and with a minimum flowline slope of 0.4% as per plate A-19.



REVISED 9-5-89

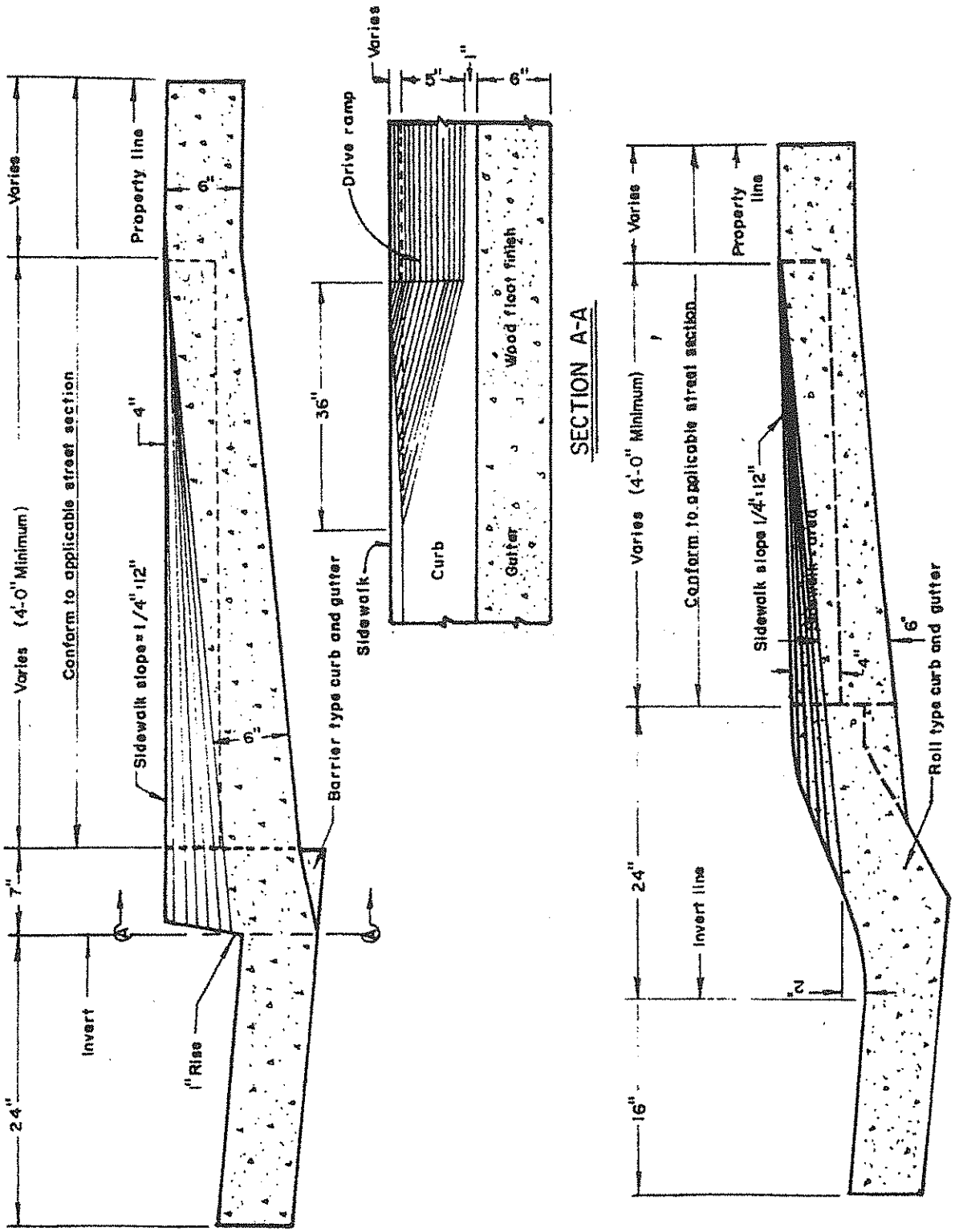
PUBLIC ROAD STANDARDS

(DOES NOT APPLY INSIDE URBAN IMPROVEMENT AREA BOUNDARY)

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

RURAL FRONTAGE
PAVING DETAILS

PLATE NO. A-17C

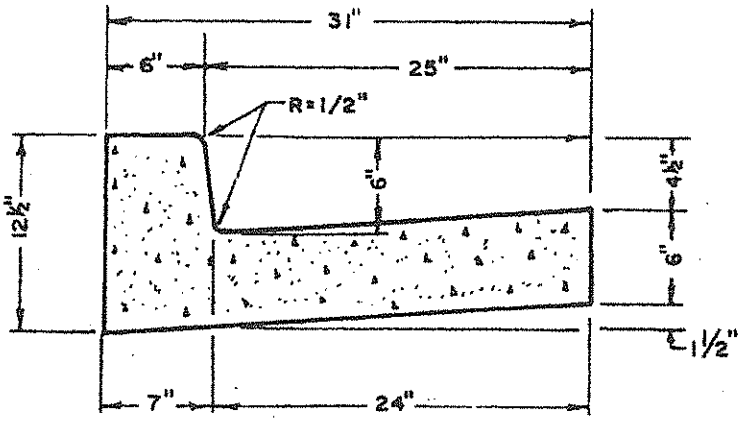


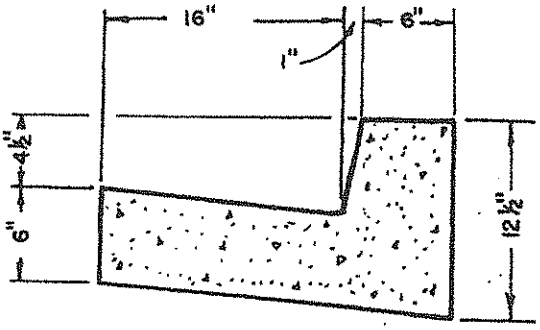
PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

DRIVEWAY
APPROACH

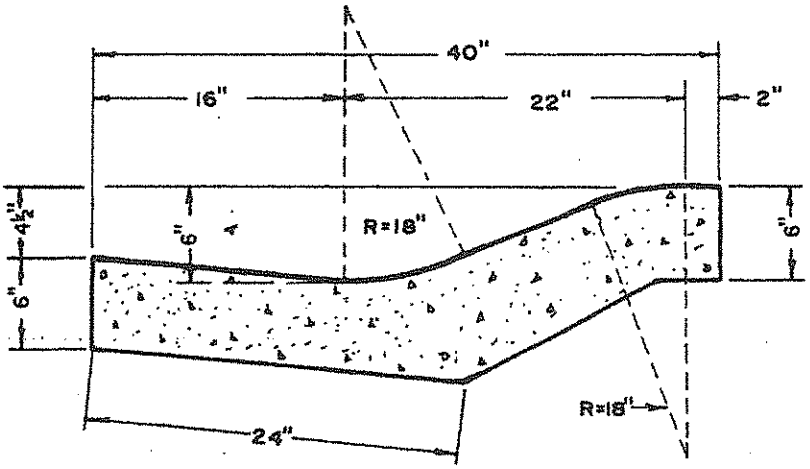
PLATE NO. A-18





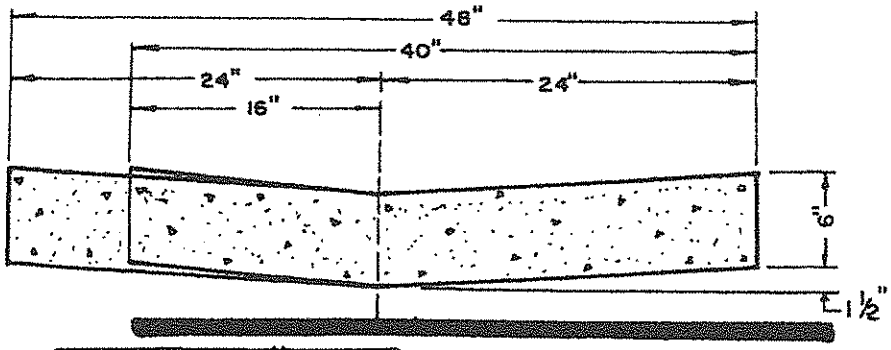
To be used only on returns where Roll-Barrier transition is required.

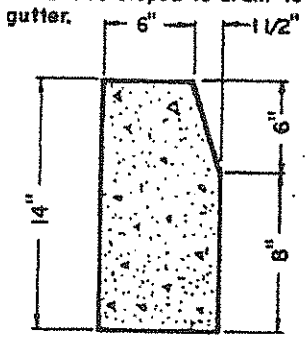
CURB and GUTTER
BARRIER TYPE



CURB and GUTTER
ROLL TYPE

Notes: Barrier type curb and gutter shall have a minimum gradient of 0.15 feet per 100 feet.
Roll type curb and gutter shall have a minimum gradient of 0.40 feet per 100 feet.
All concrete shall be of class "B" concrete- 5 sack mix
Area between back of curb and and property line shall be back filled and sloped to drain to gutter.





CURB

Shall not be used as continuous gutter at intersection.

Vee gutter shall have a minimum gradient of 0.40 feet per-100feet.

VEE GUTTER

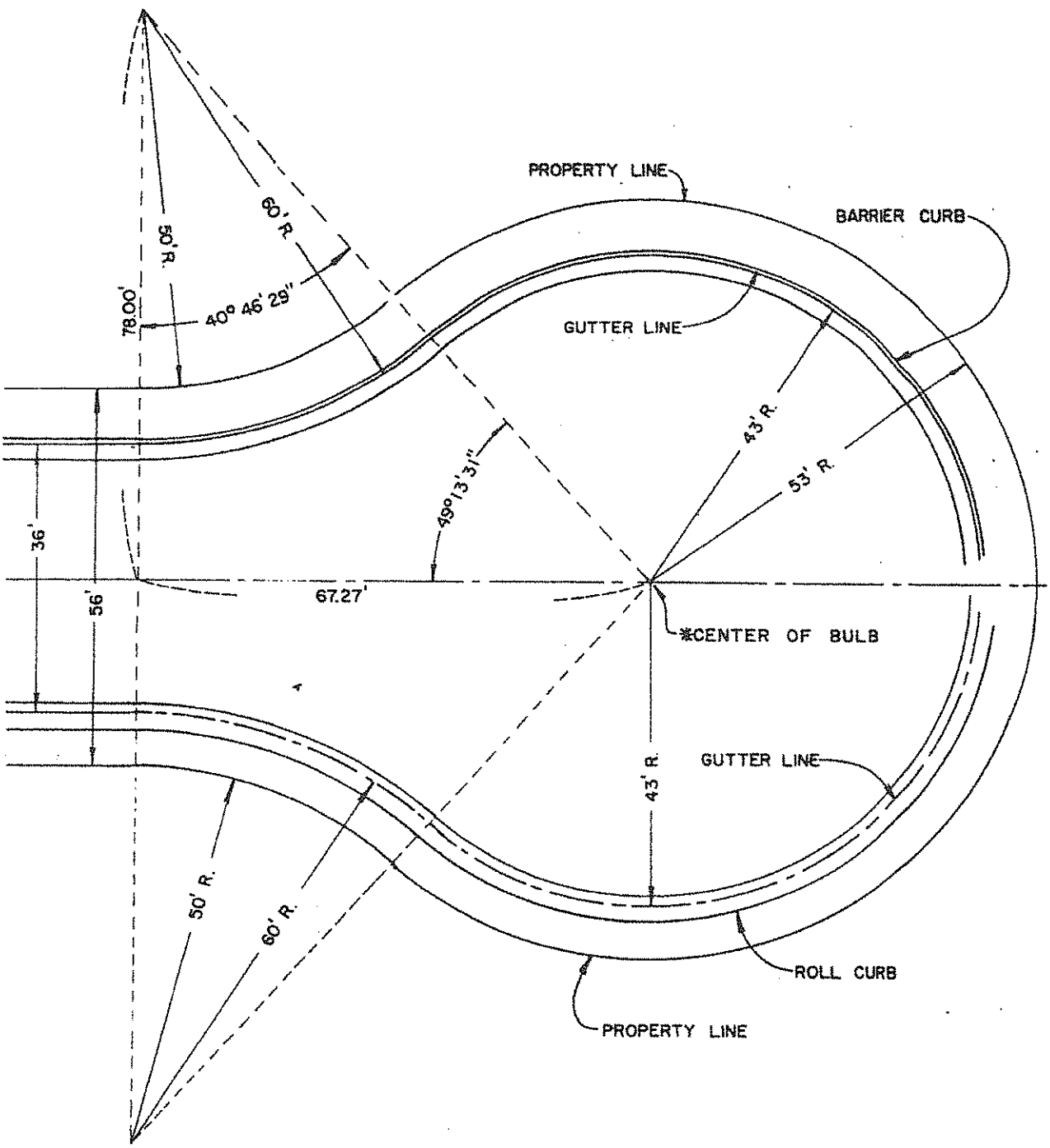
REVISED 9-5-89

PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

CURB and GUTTER

PLATE NO. A-19



* Elevation of pavement surface at center of bulb shall be designed to allow pavement slope to gutter of 2% minimum.

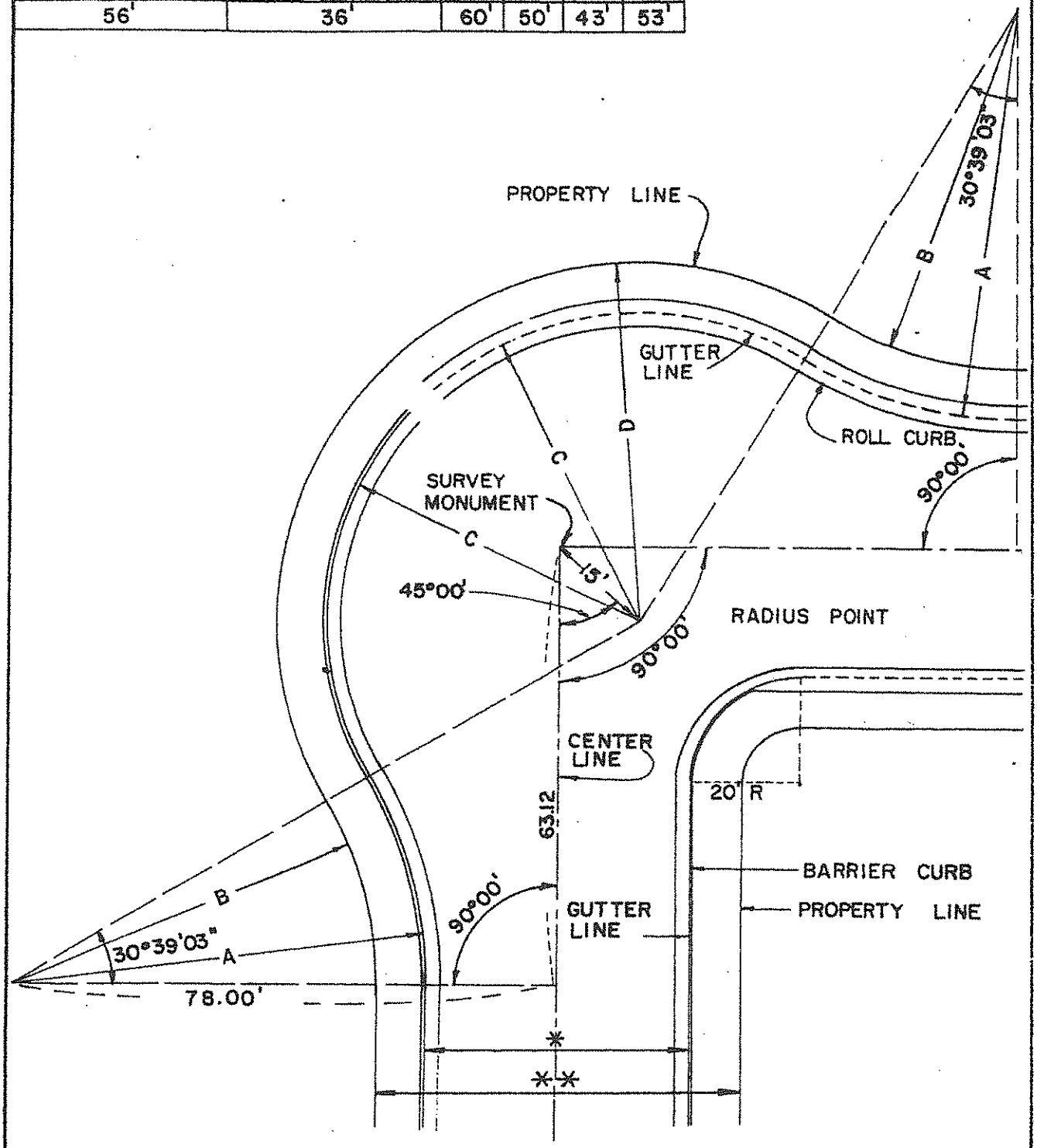
PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CUL-DE-SAC

PLATE NO. A-20

** WIDTH OF RIGHT OF WAY	* CURB TO CURB ROAD WIDTH	LENGTH OF RADIUS			
		A	B	C	D
60'	40'	58'	48'	45'	55'
56'	36'	60'	50'	43'	53'

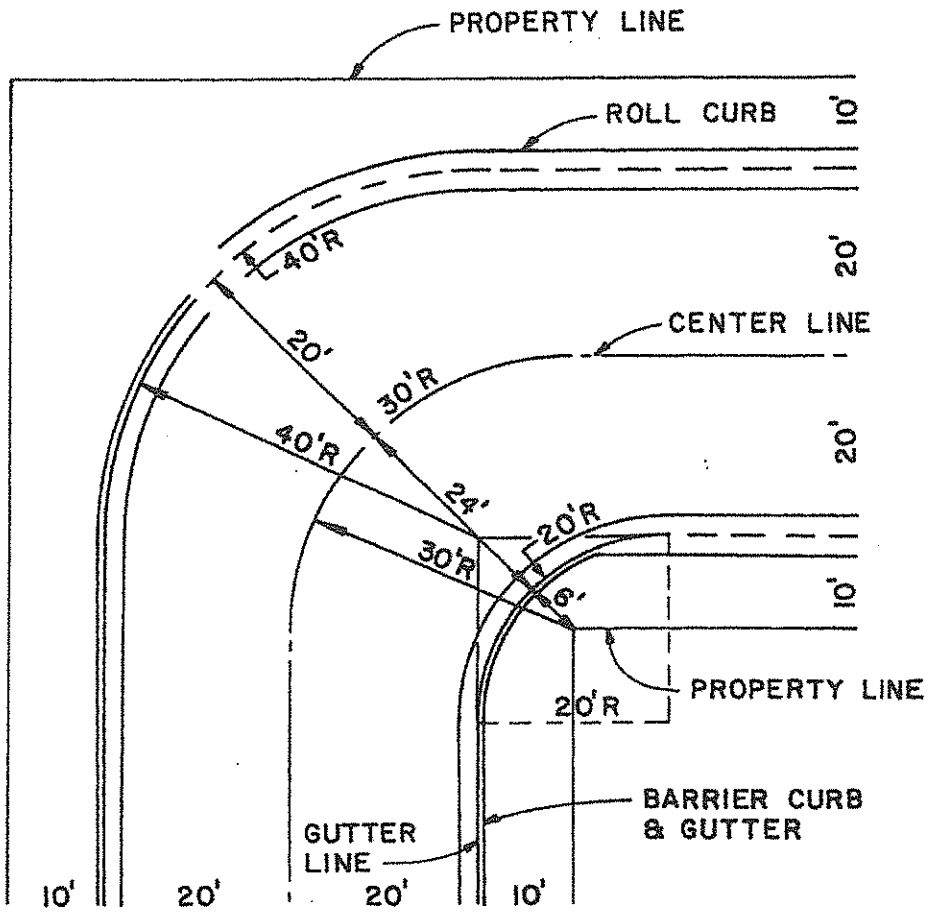


PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

STREET BULB CONNECTION

PLATE NO. A-21

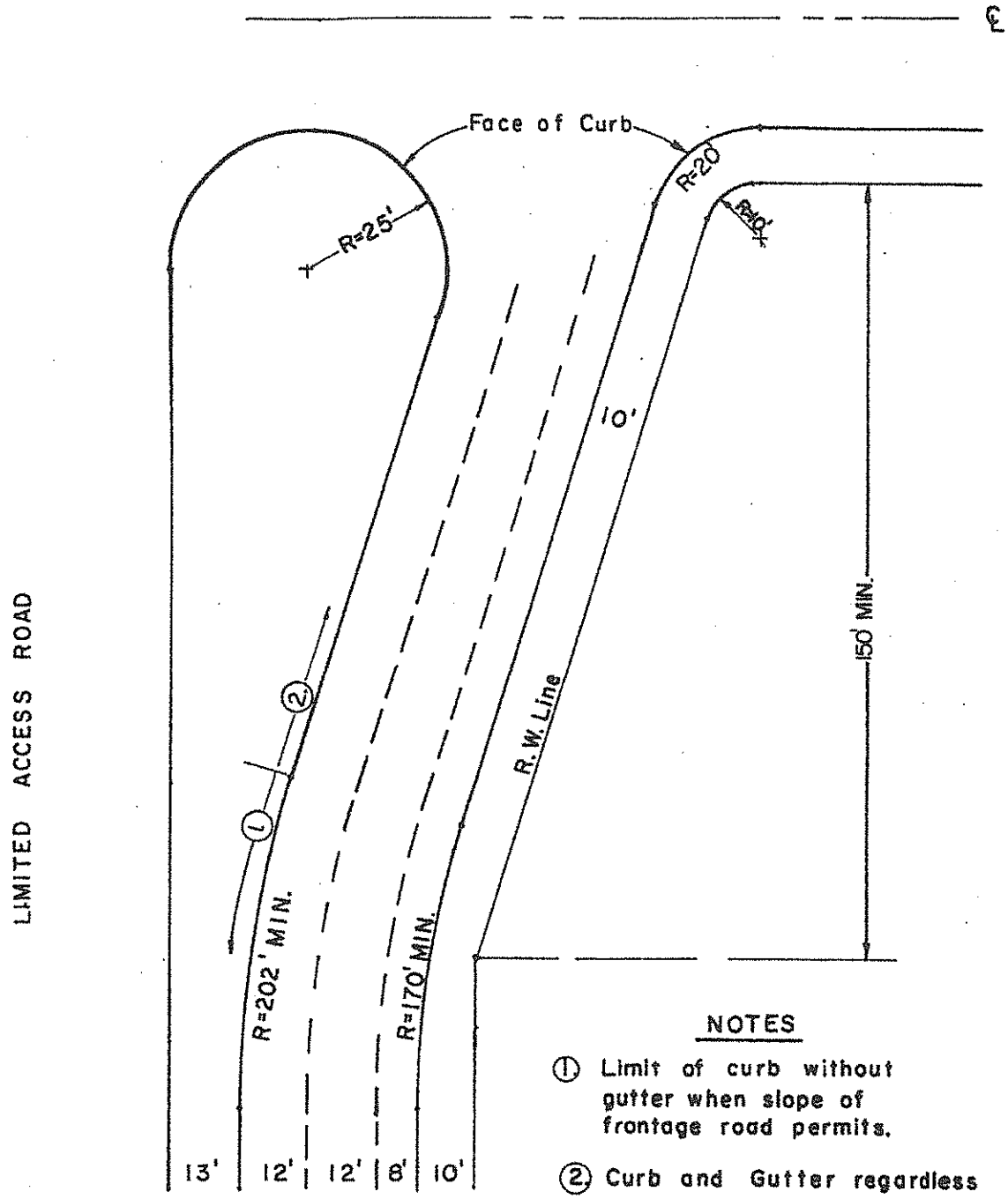


PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

STREET CONNECTION
WITHOUT BULB

PLATE NO. A-21-a



NOTES

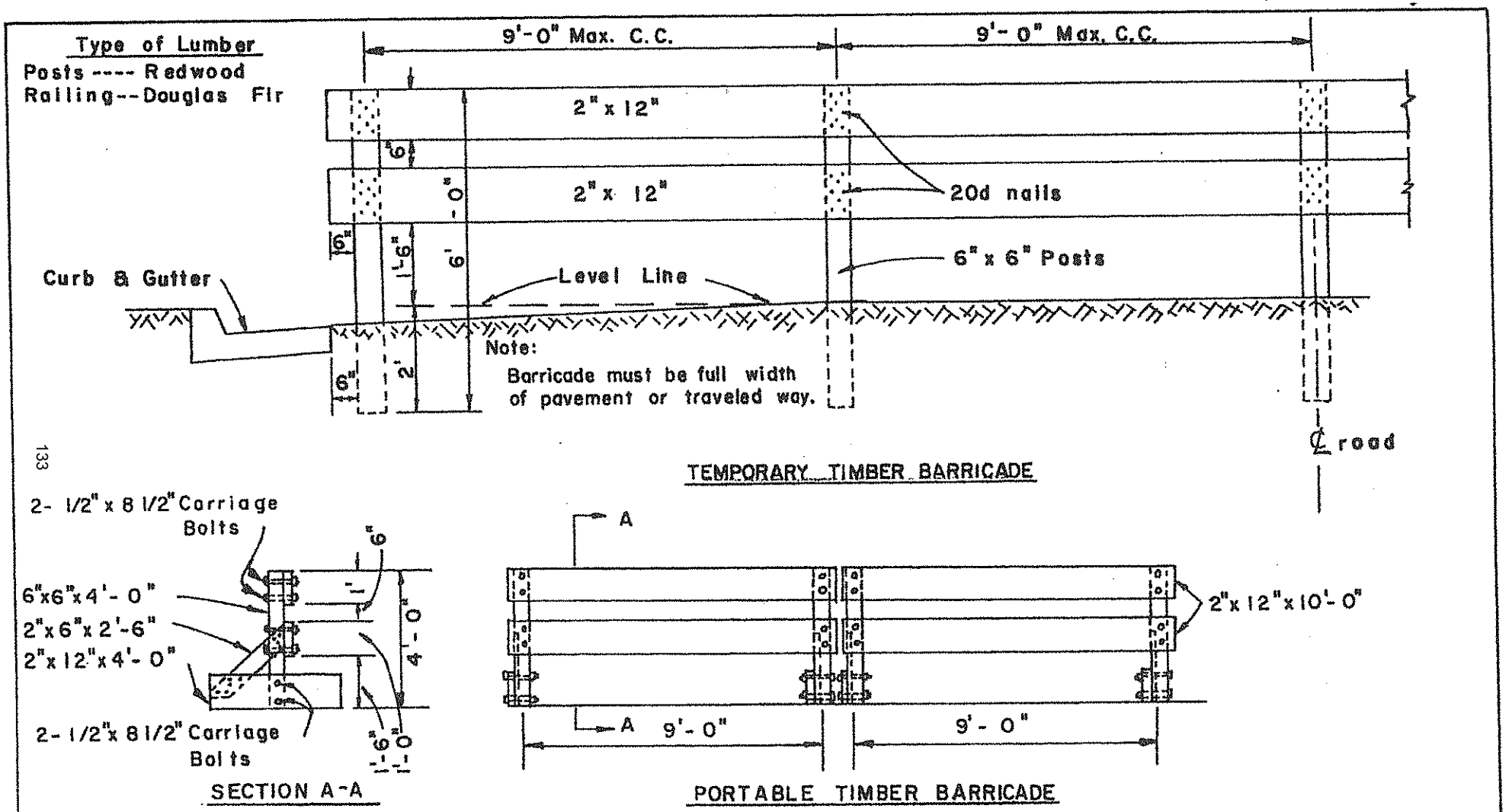
1. Limit of curb without gutter when slope of frontage road permits.
2. Curb and Gutter regardless of slope of frontage road.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO.7080

FRONTAGE ROAD BULB LAYOUT

PLATE NO. A-22



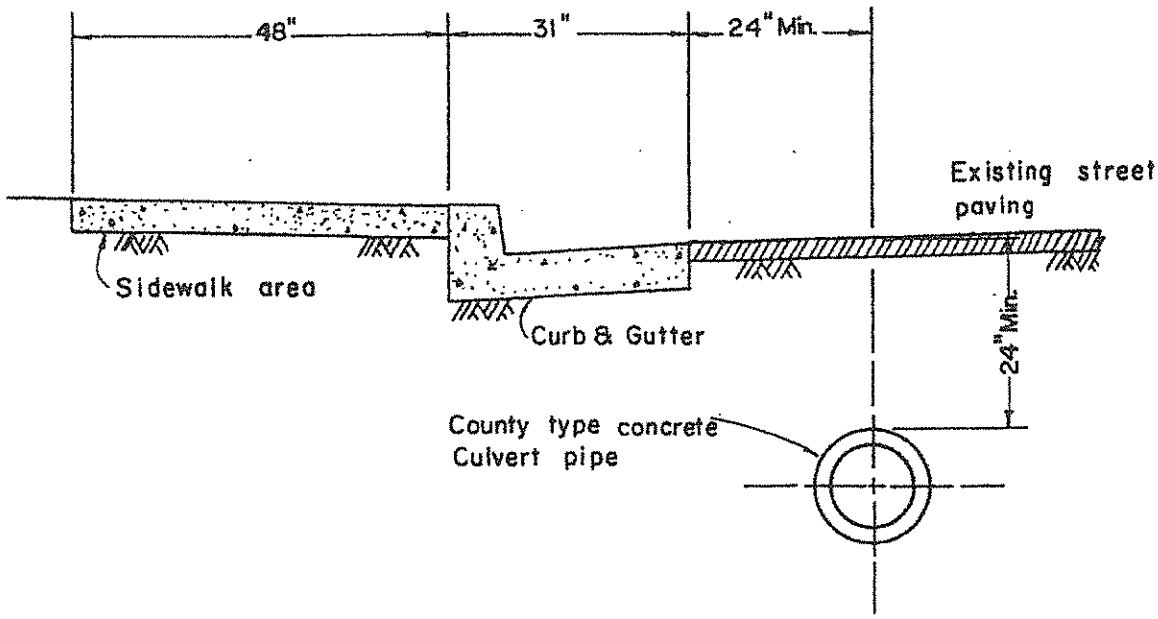
Note:
Appropriate signs to be designated by the Road Commissioner. All signs to be in accordance with the State of California Standards.
Two coats of white paint shall be applied to the surface of all lumber.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO.7080

BARRICADES

PLATE NO.A-23



STRENGTH REQUIREMENTS:

Design and Test Requirements of County type Concrete Culvert pipe are given in the following table:

INSIDE DIAMETER INCHES	MIN. SHELL THICKNESS INCHES	MINIMUM CIRCULAR REINF. (a.)	ULTIMATE LOAD REQUIREMENTS THREE-EDGE BEARING METHOD LB. PER LIN. FT.	D-LOAD
12	2	NONE	3000	3000
15	2	NONE	2750	2200
18	2 1/4	NONE	2700	1800
21	2 1/2	.086	3000	1700
24	2 5/8	.086	3000	1500

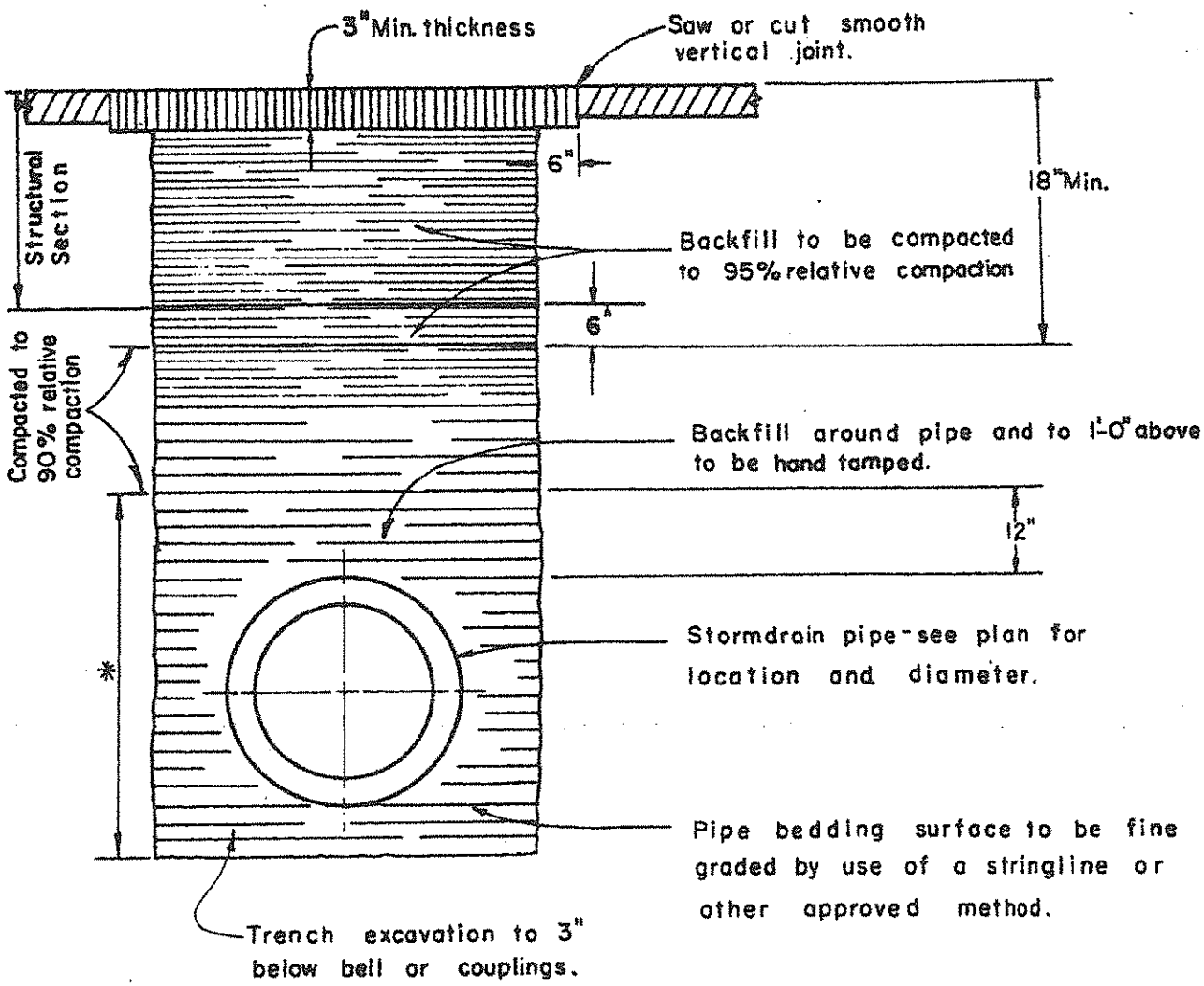
(a) In square inches per linear foot of pipe barrel. One line of reinforcement of the specified area or greater shall be placed in the barrel of the pipe equally distant from its inner and outer surfaces.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

PIPE LOCATION AND STRENGTH REQUIRMENT

PLATE NO. A-24



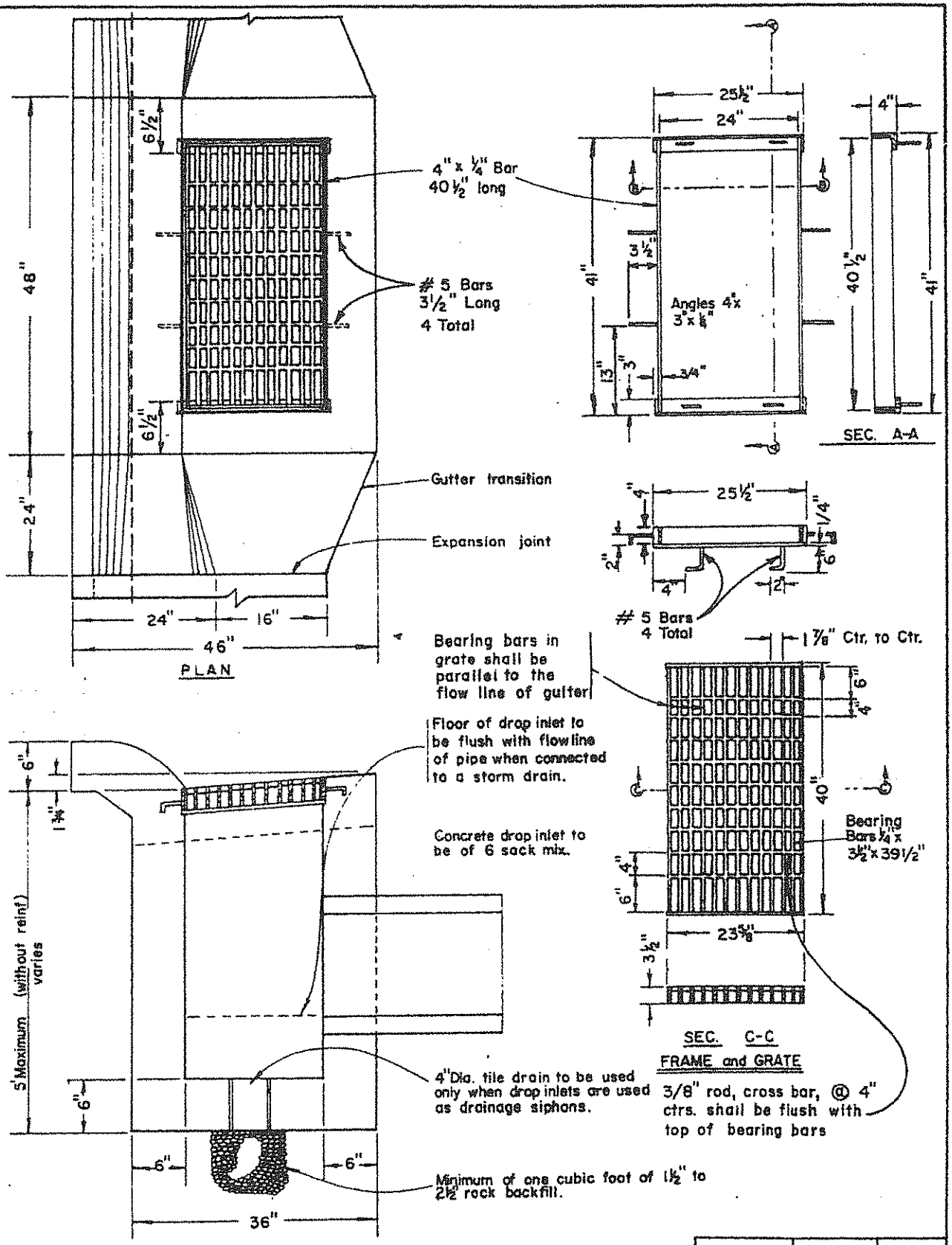
*Backfill around pipe and to 1'-0" above top of pipe may be material from the excavation only if it has a sand equivalent of 30 minimum. For plastic pipe backfill around pipe and to 1'-0" above top of pipe may be material from the excavation only if it is coarse sand or decomposed granite free of rocks larger than 1 1/2" diameter.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

BACKFILL AND STREET EXCAVATION

PLATE NO. A-25



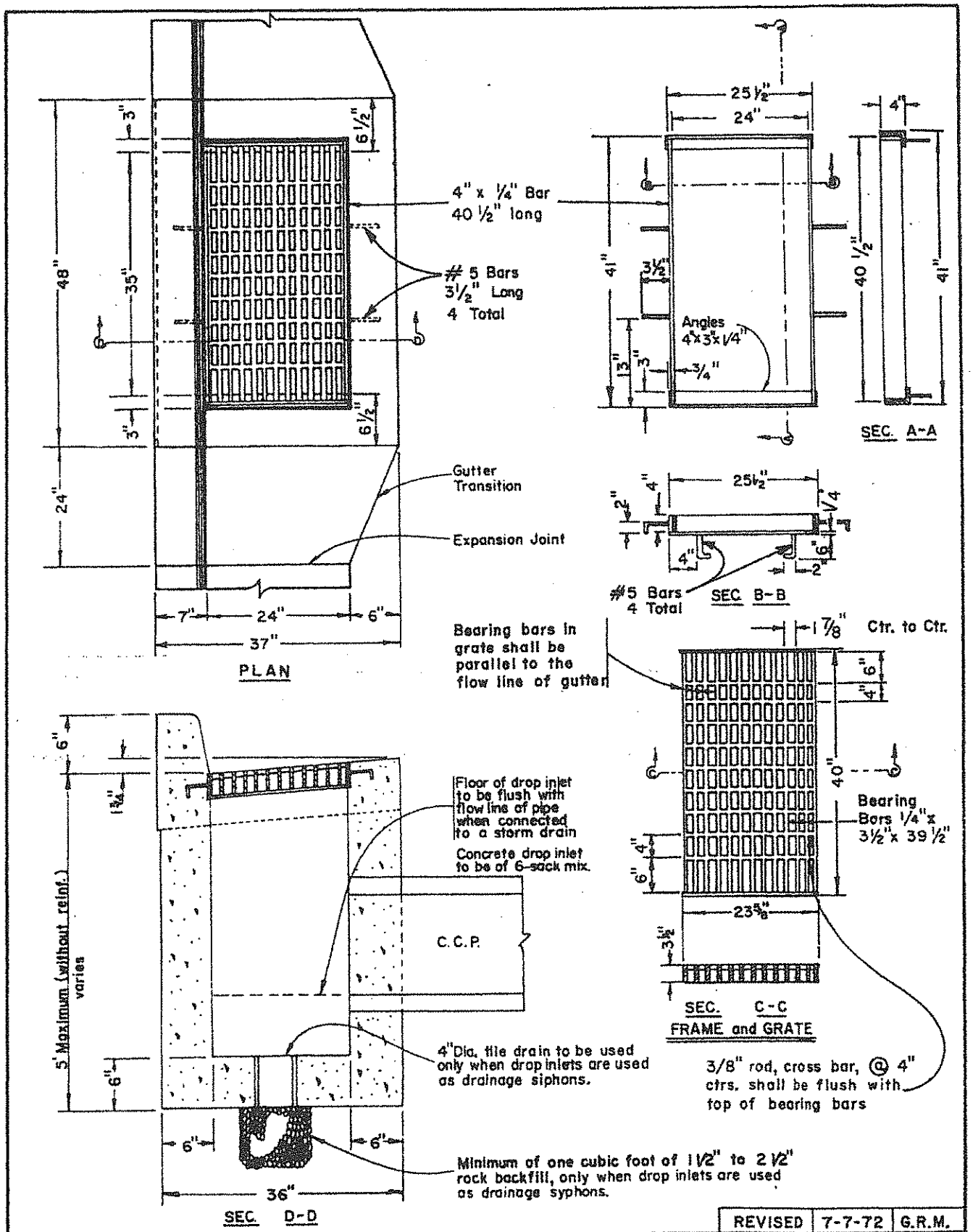
REVISED	7-7-72	G.R.M.

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

PUBLIC ROAD STANDARDS

ROLL CURB
DROP INLET

PLATE NO. A-26.



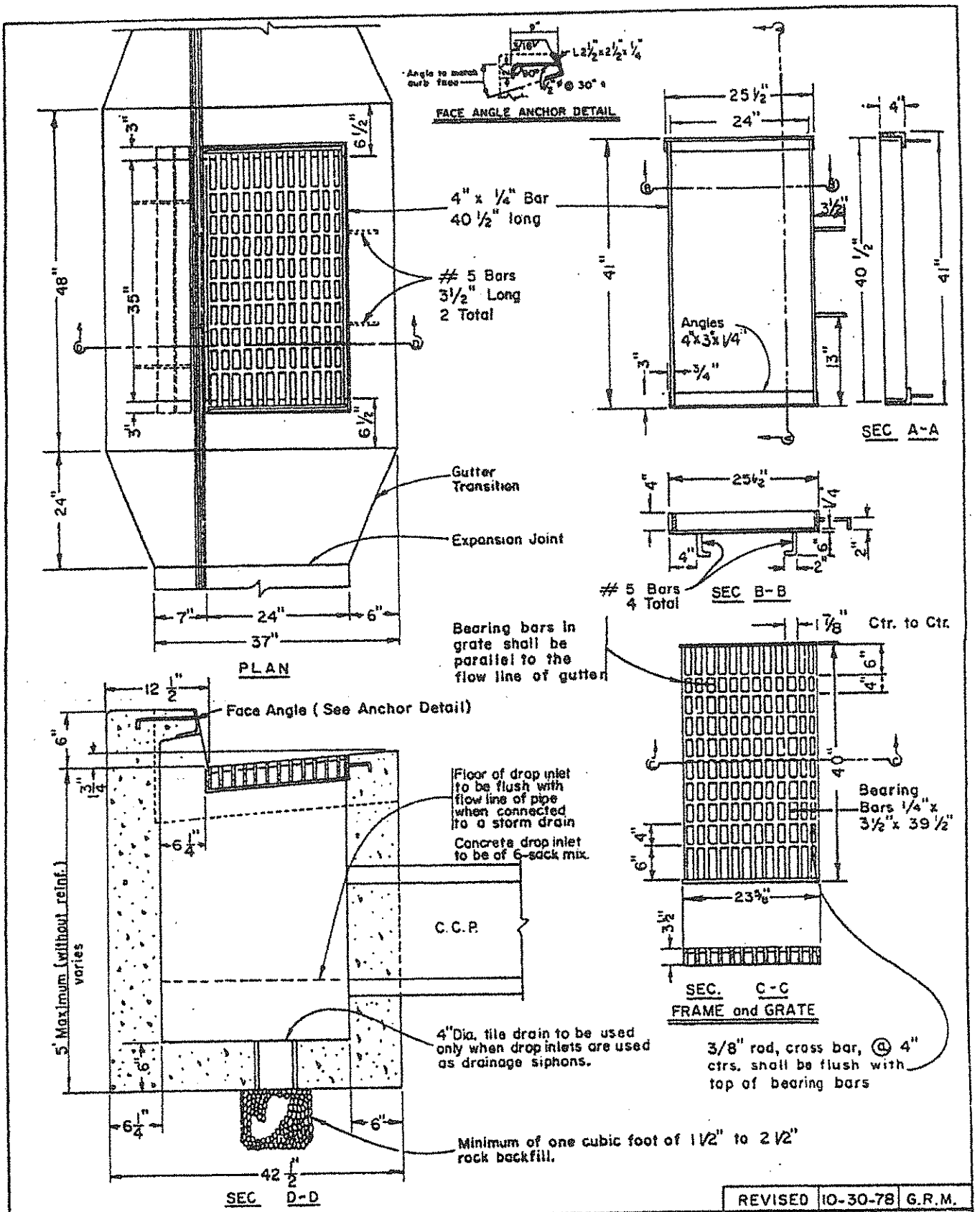
REVISED	7-7-72	G.R.M.

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

PUBLIC ROAD STANDARDS

BARRIER CURB
DROP INLET

PLATE NO. A-27



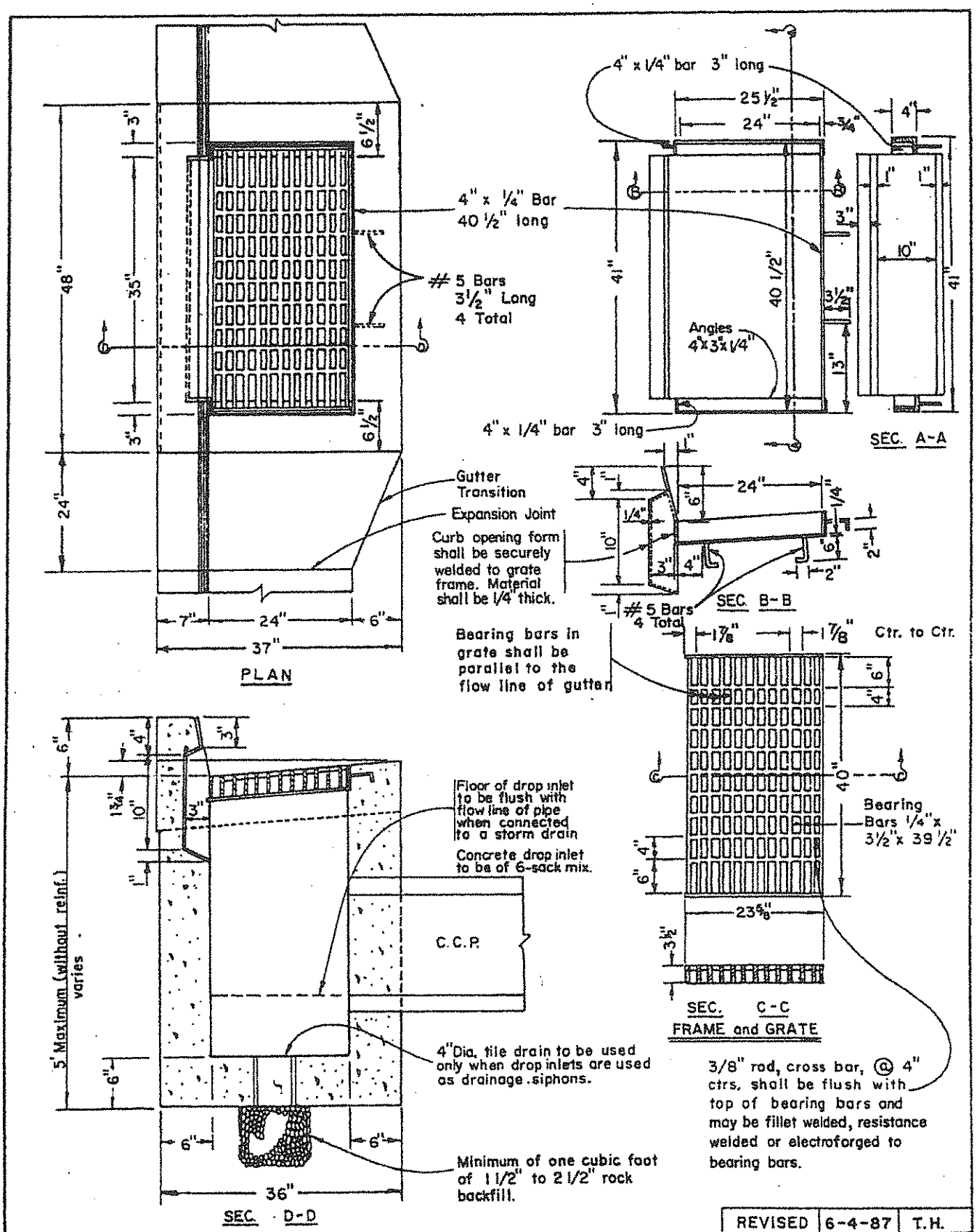
REVISED	10-30-78	G.R.M.

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

PUBLIC ROAD STANDARDS

BARRIER CURB
SIDE OPENING
DROP INLET

PLATE NO. A-27a



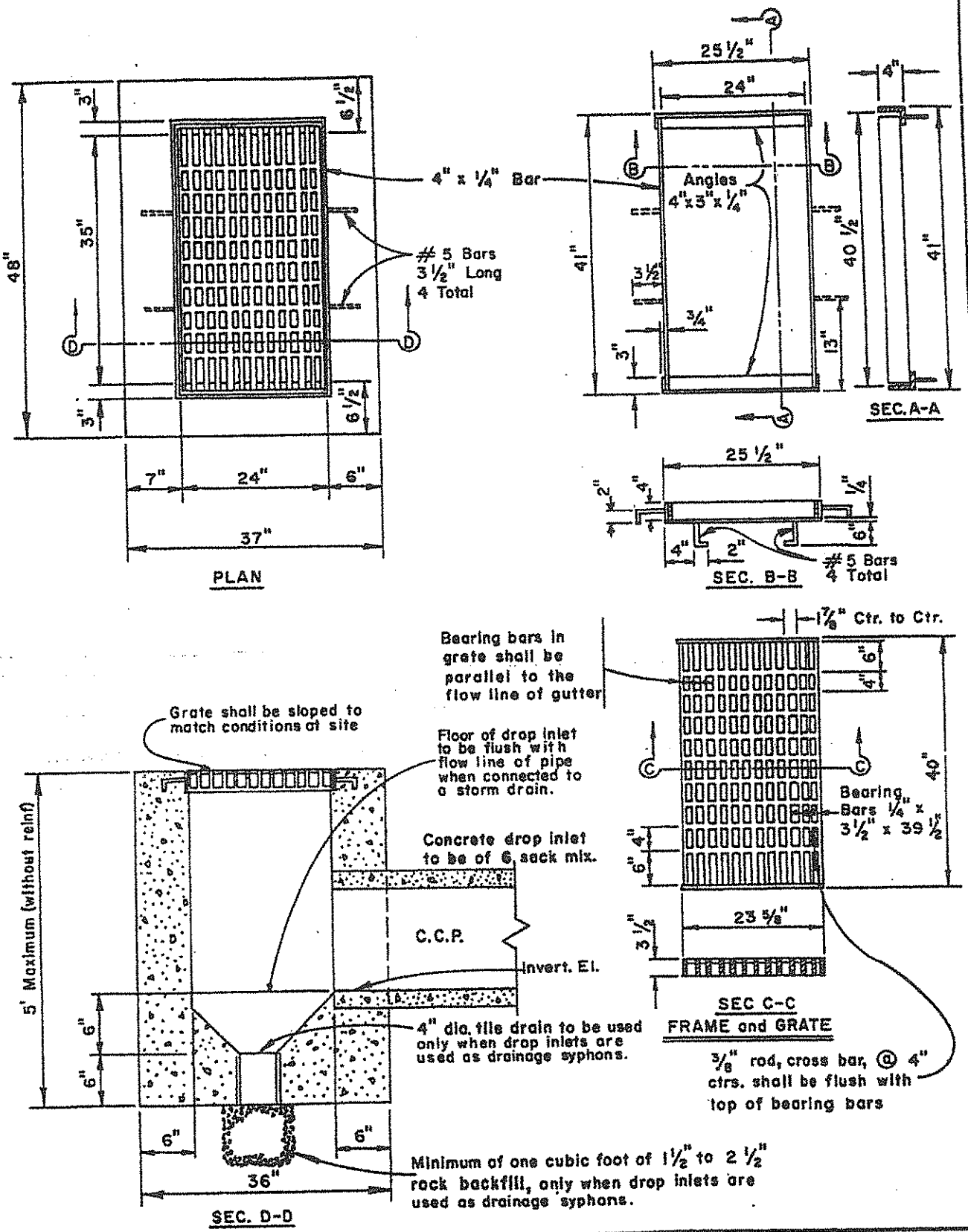
REVISED	6-4-87	T.H.

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

PUBLIC ROAD STANDARDS

BARRIER CURB
SIDE OPENING
DROP INLET

PLATE NO. A-27 b

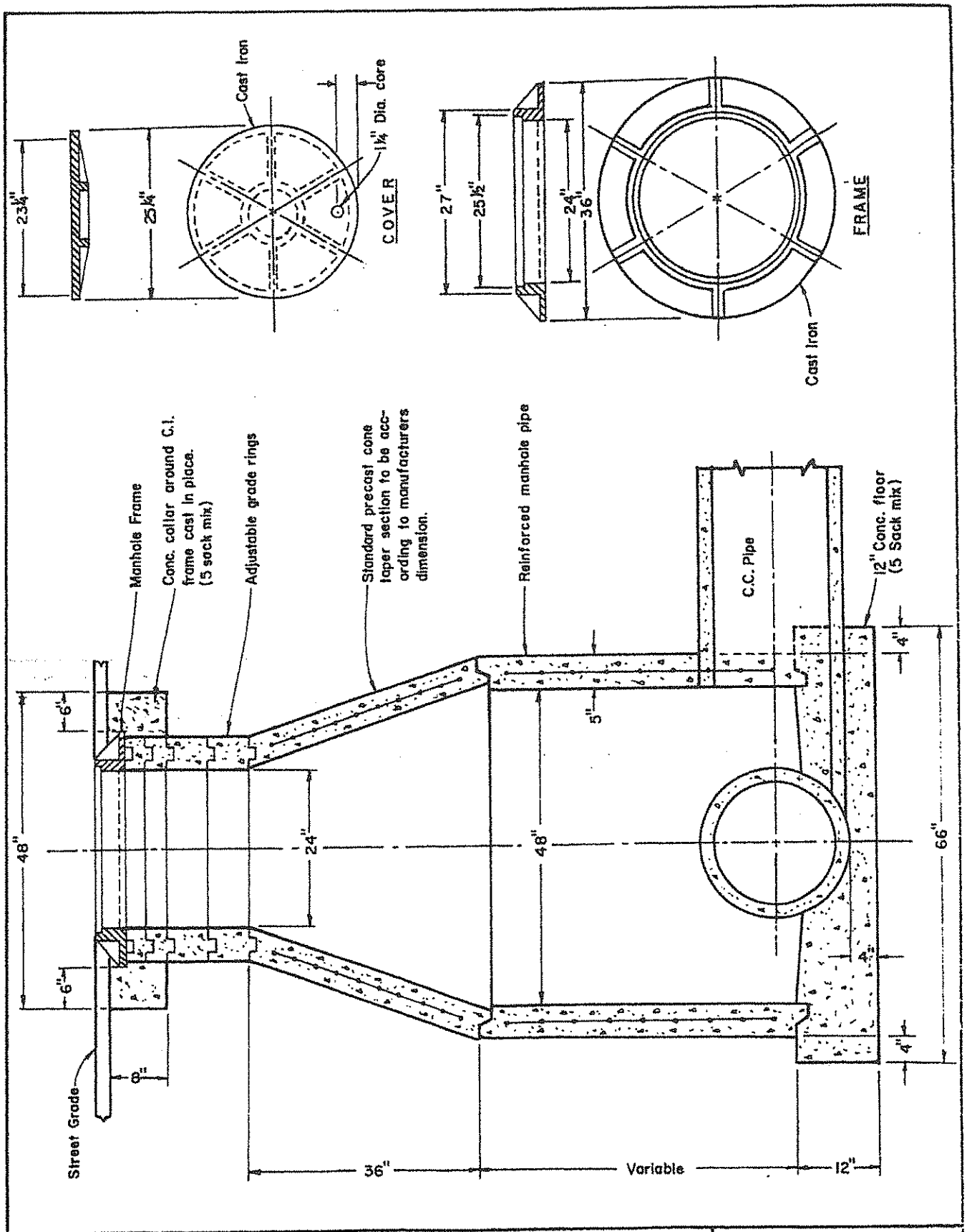


TYPE "A" DROP INLET
PUBLIC ROAD STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

TYPE A DROP INLET
WITHOUT CURB & GUTTER

PLATE NO. A-27c

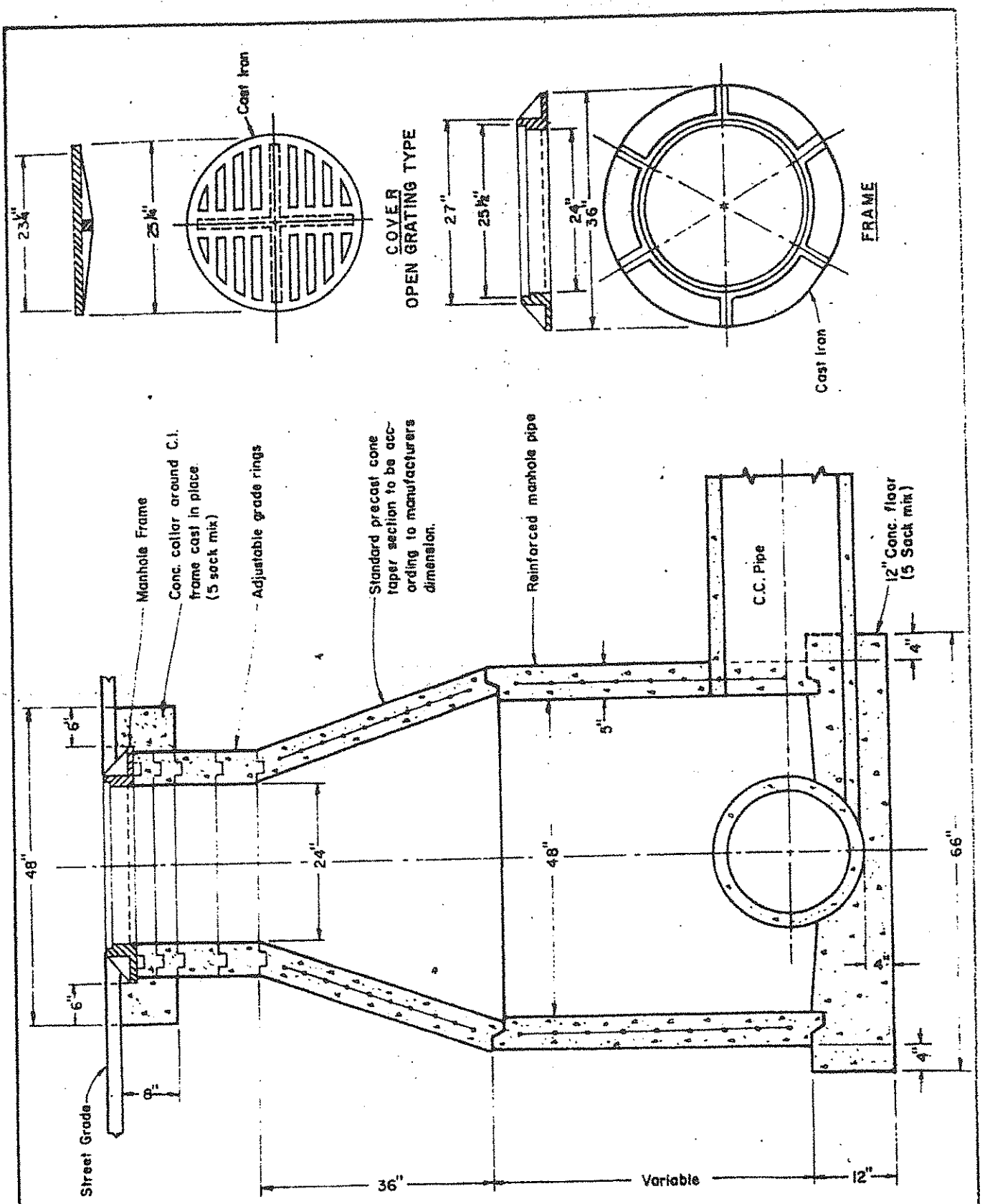


DRAINAGE STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

MANHOLE FRAME
AND COVER

PLATE NO. A-28

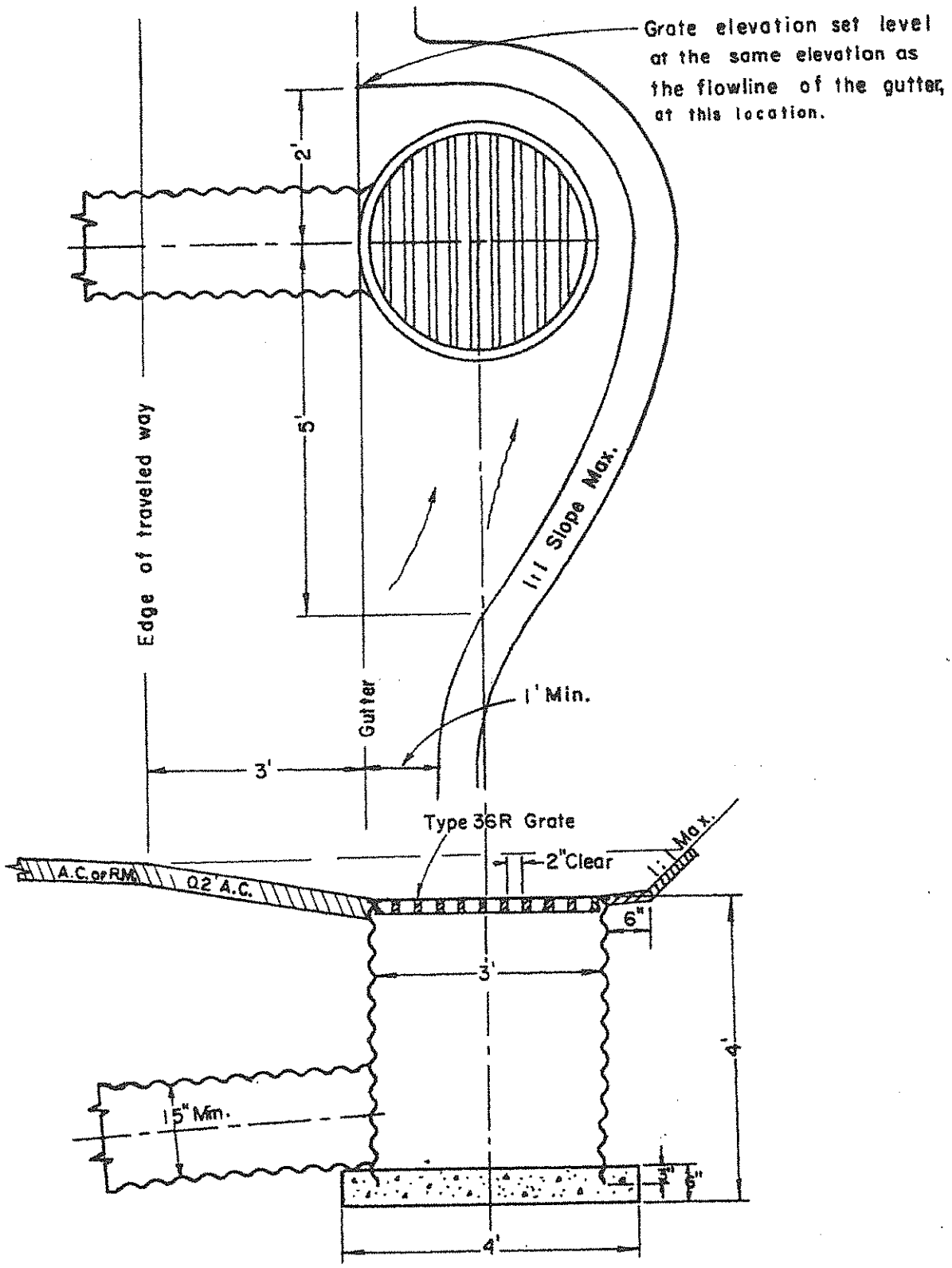


TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

DRAINAGE STANDARDS

MANHOLE WITH OPEN GRATING COVER

PLATE NO. A-28c



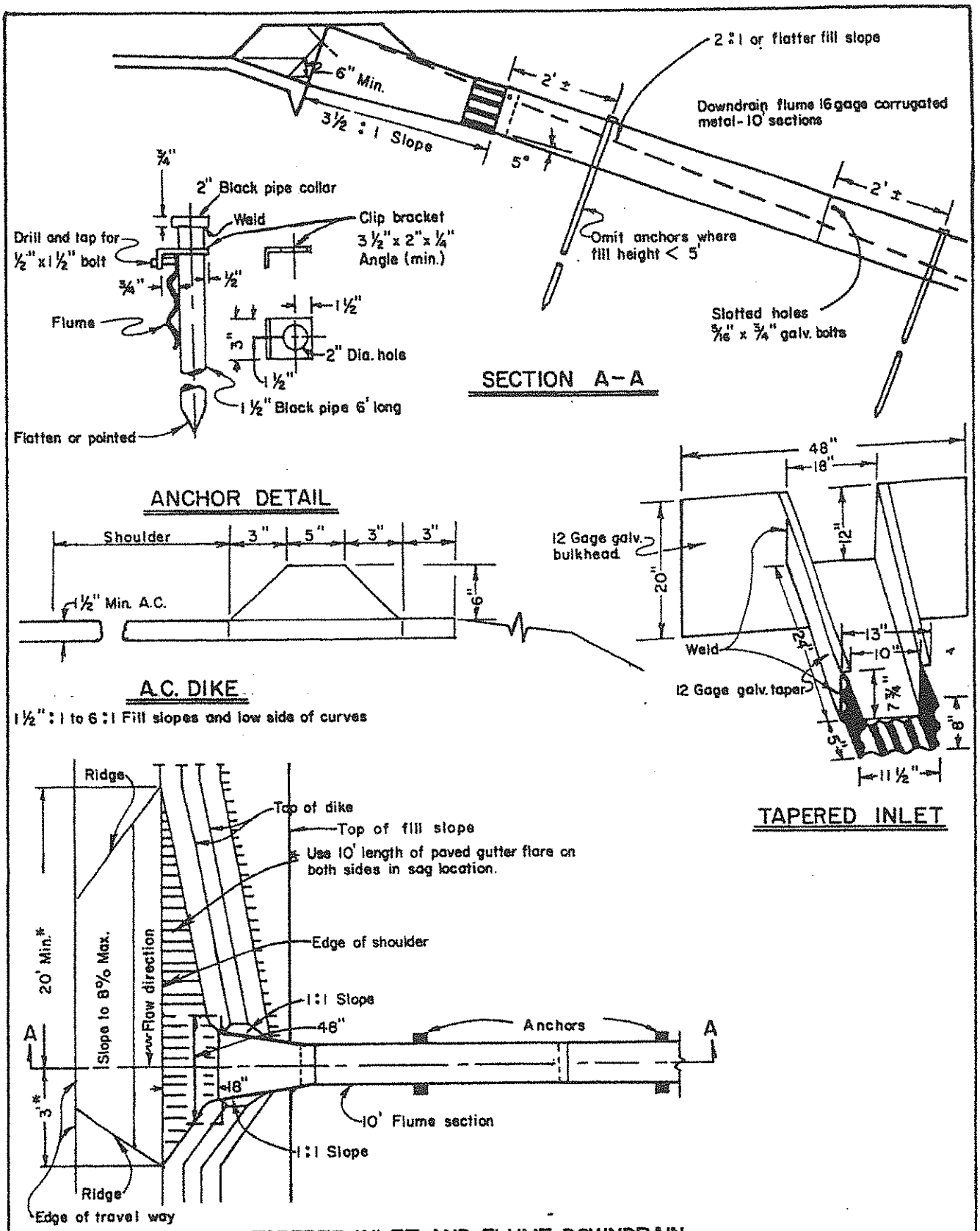
PUBLIC ROAD STANDARDS

MOUNTAINOUS AREAS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CROSS DRAIN INLET DETAIL

PLATE NO. A-29M



PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

TAPERED INLET AND FLUME DOWNDRAIN

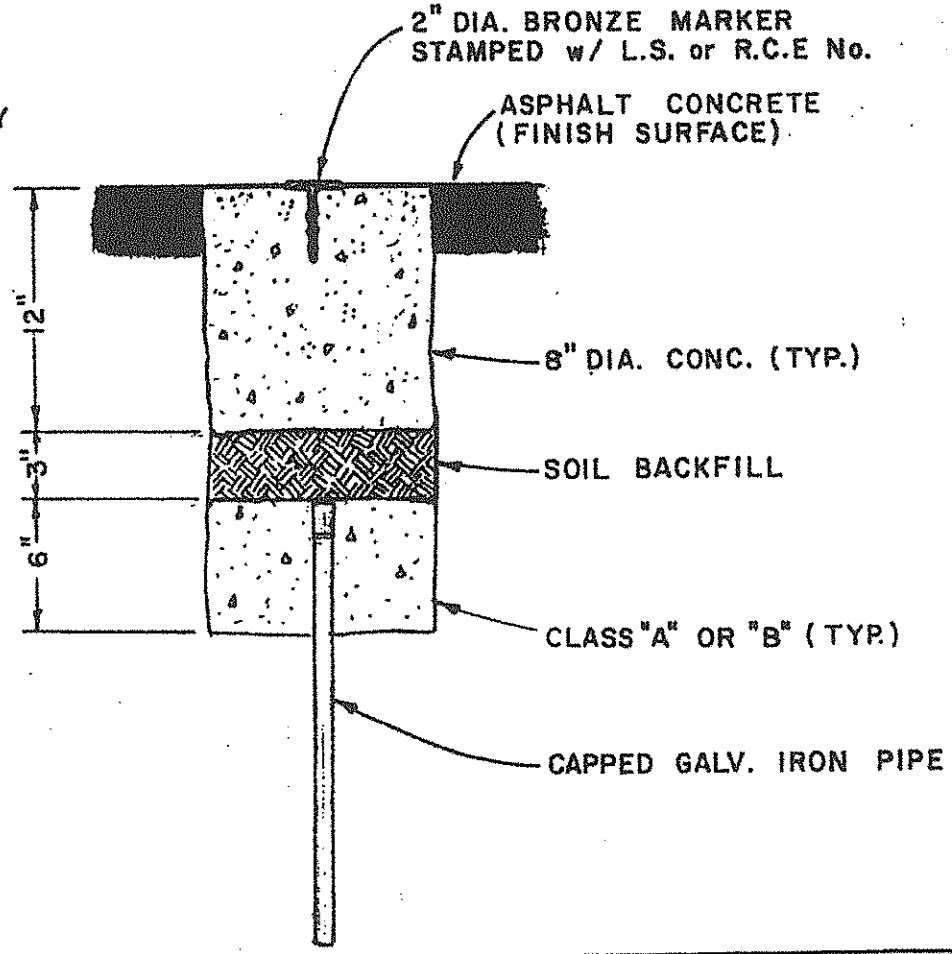
PLATE NO. A-30M

NOTES:

1. ALL MONUMENTS AND REFERENCES SHALL BE PERMANENTLY TAGGED OR MARKED WITH L.S. or R.C.E. No. (Bus. & Prof. Code Sec. 8772)

2. STREET MONUMENTS FOR GOV'T. CORNERS AND TRACT BOUNDARY CORNERS SHALL BE 2" x 24" MINIMUM. (Gov't. Code Sec. 27580, Ord. Code Sec. 7074)

3. OTHER STREET MONUMENTS FOR CENTERLINE INTERSECTIONS, ETC., SHALL BE 1/2" x 18" MINIMUM. (Ord. Code Sec. 7074)

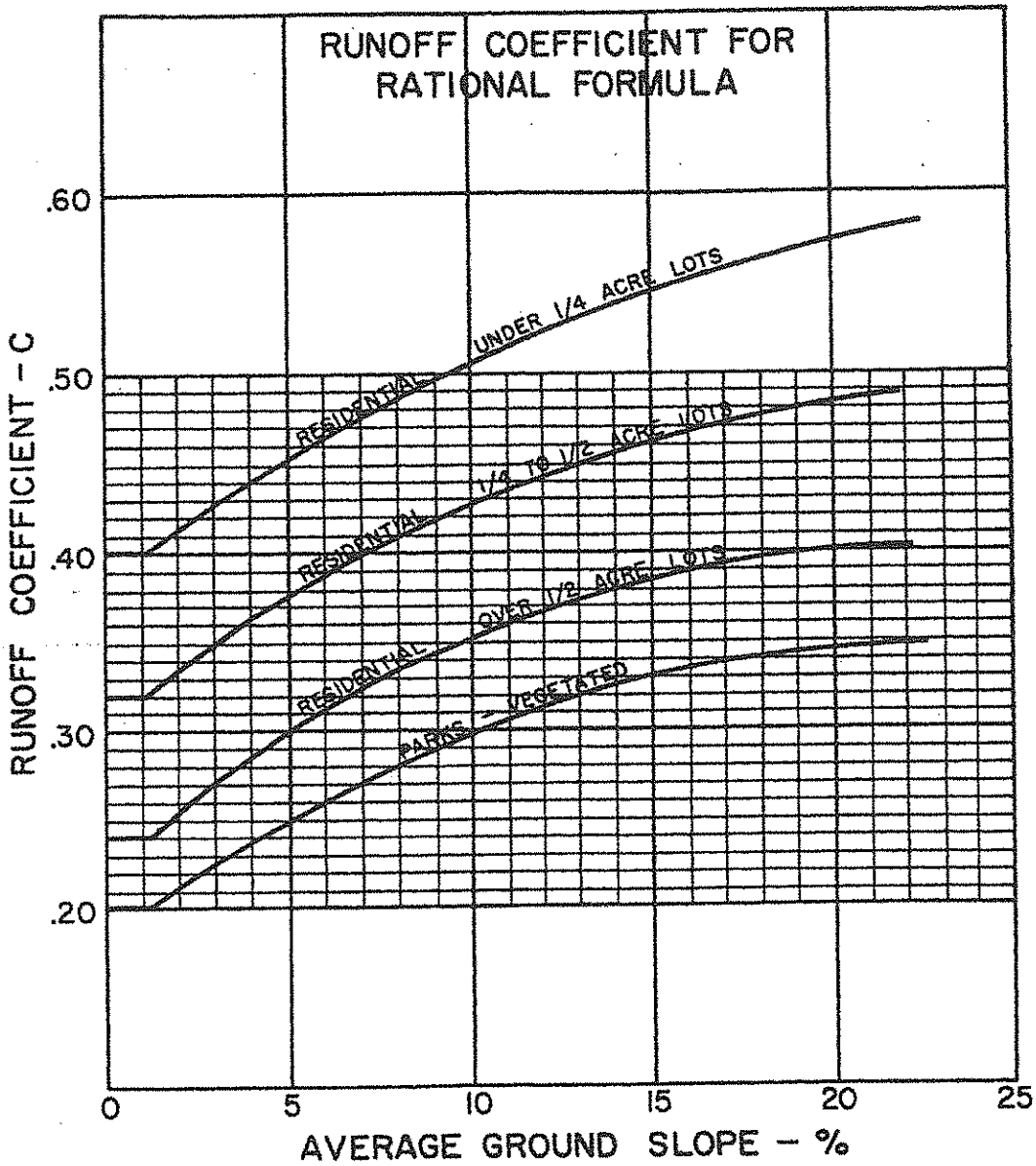


PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

STREET MONUMENT

PLATE NO. A-31



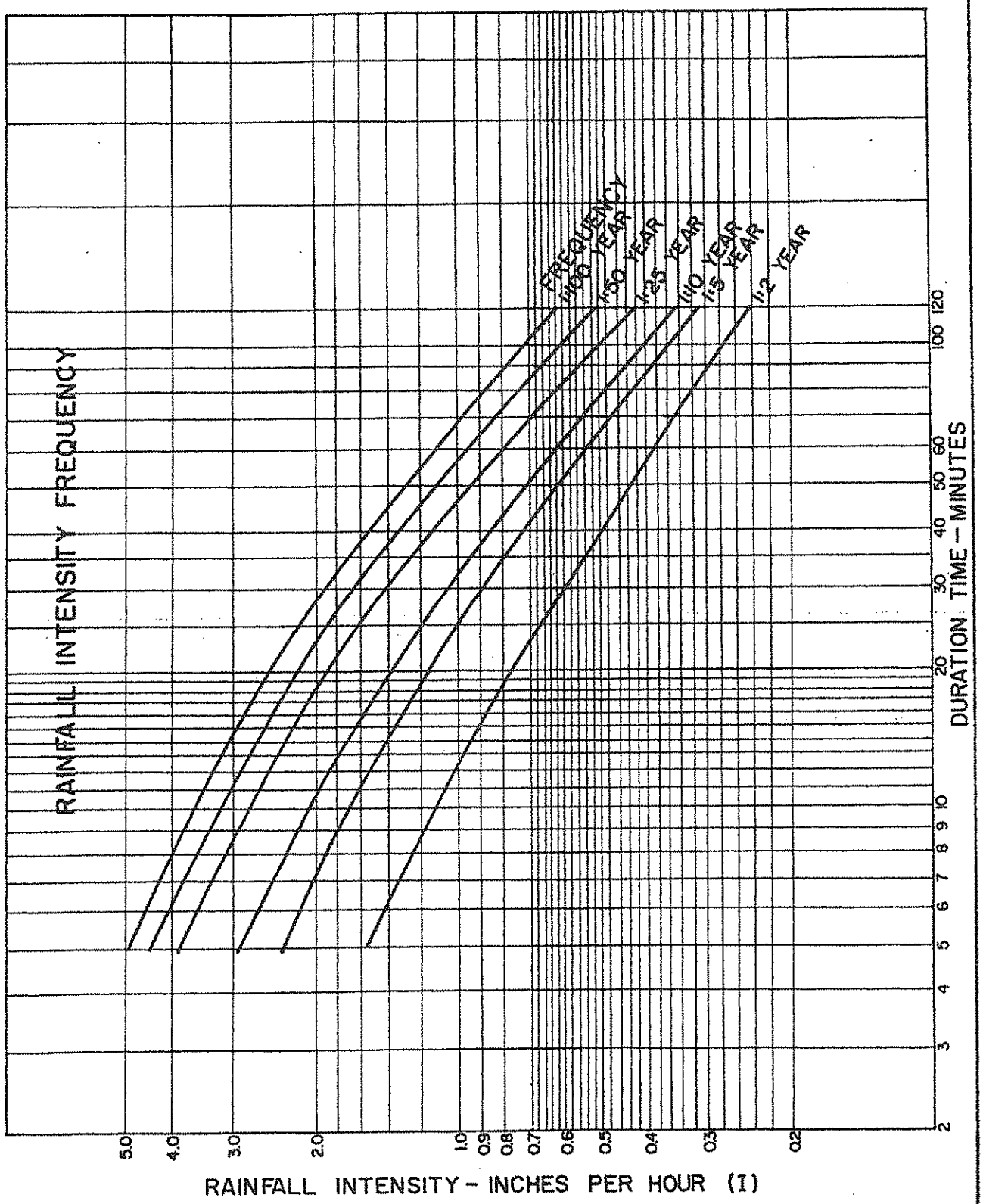
NOTE: USE C=0.85 FOR COMMERCIAL, INDUSTRIAL AND MULTIPLE RESIDENTIAL AREAS

DRAINAGE STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

RUNOFF COEFFICIENT

PLATE NO. B-1



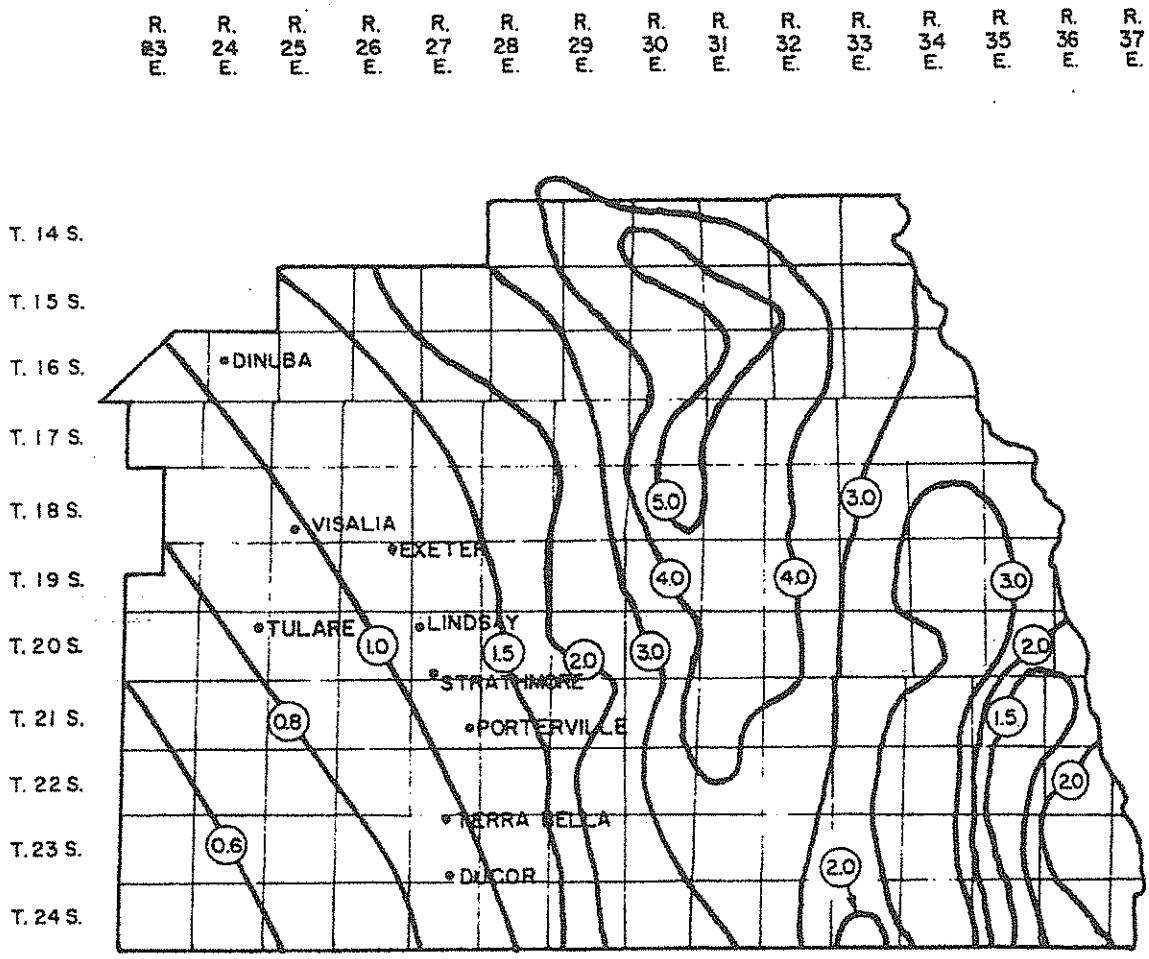
DRAINAGE STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

INTENSITY
DURATION CURVES

PLATE NO. B-2

TULARE COUNTY



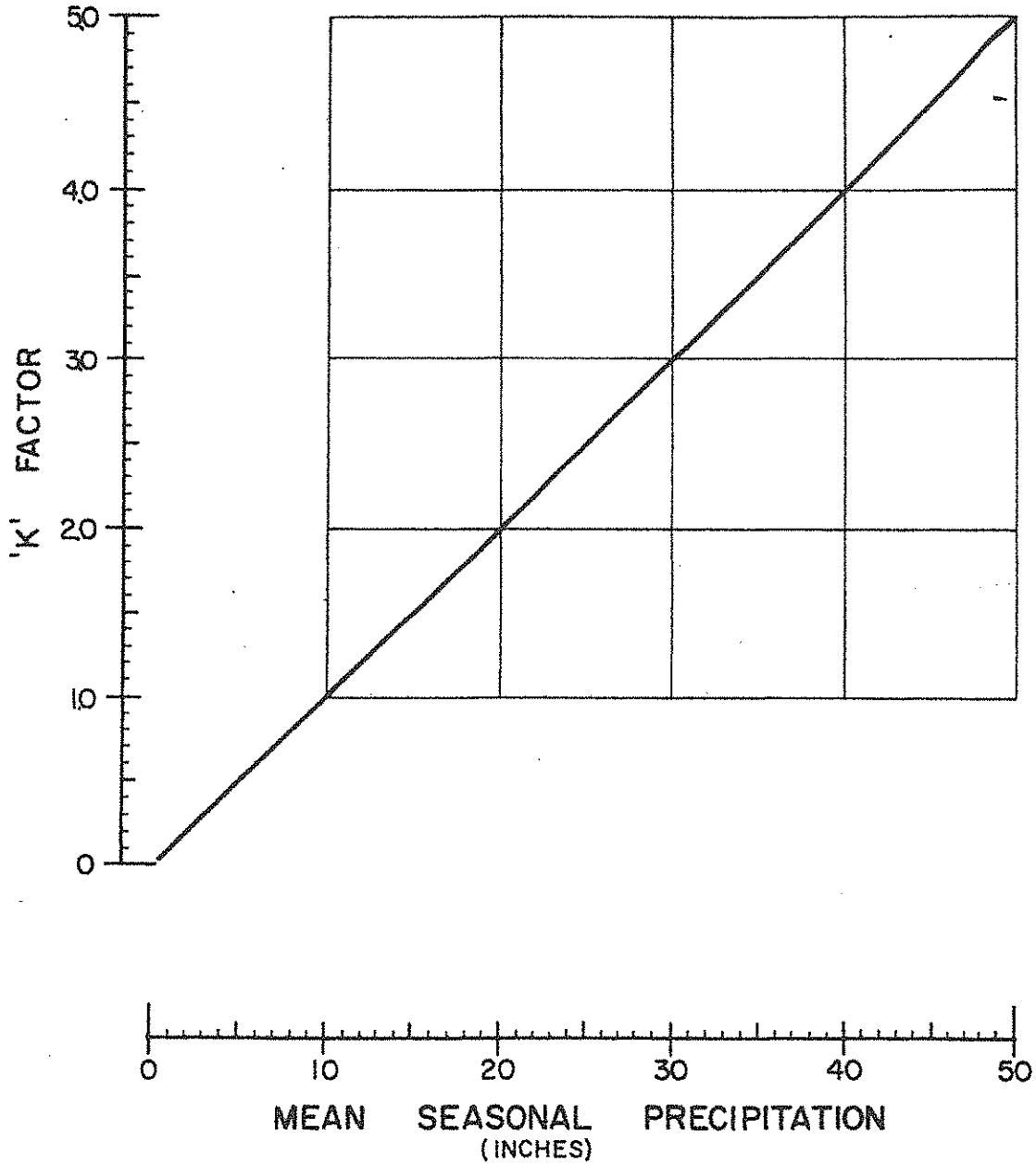
(1.0) INDICATES 'K' FACTOR TO BE USED WITH THE MODIFIED RATIONAL FORMULA (Q=KCIA)

DRAINAGE STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

RATIONAL FORMULA 'K' FACTOR

PLATE NO. B-3



DRAINAGE STANDARDS

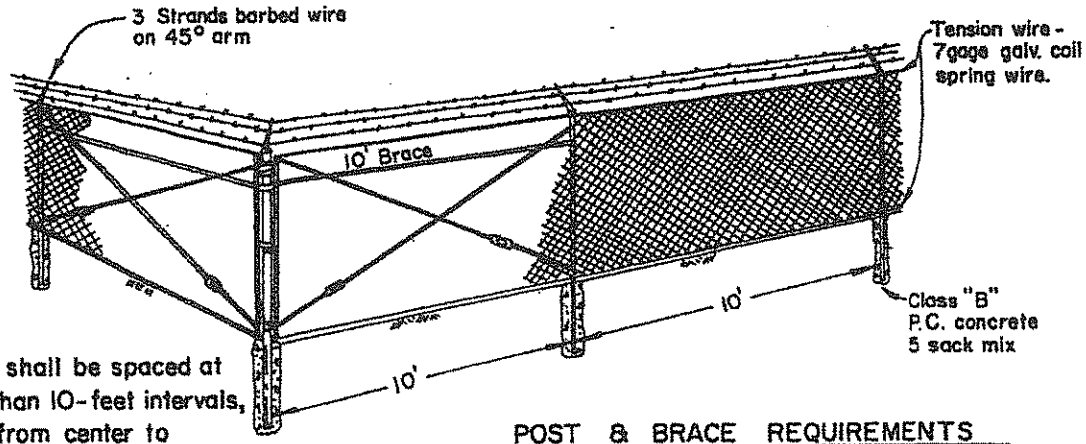
TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

'K' FACTOR TO
PRECIPITATION

PLATE NO. B-4

Post tops, extension arms, stretcher bars and other required fittings and hardware shall be steel or malleable iron or wrought iron and shall be galvanized.

Wire used in the manufacture of the fabric shall be 11-gage for all fence 84" or less in height, and shall be woven into approximately 2-inch mesh.

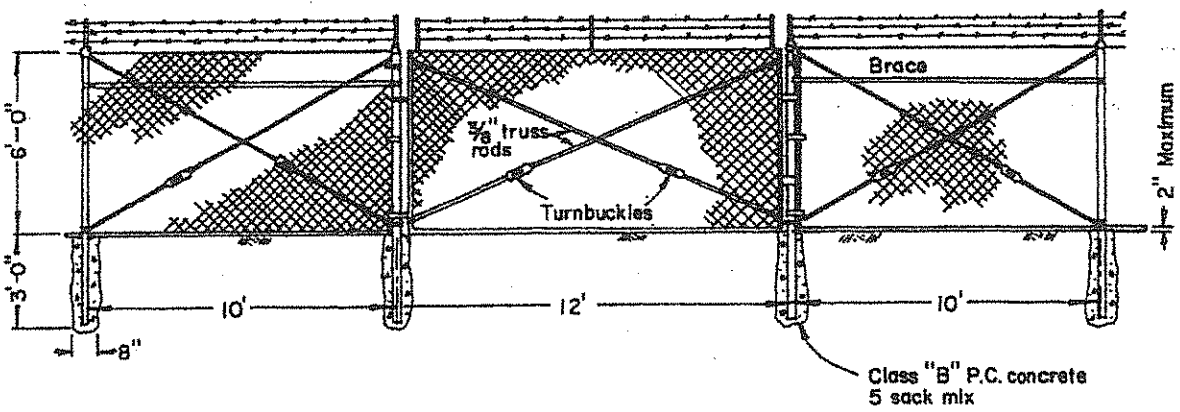


Line posts shall be spaced at not more than 10-feet intervals, measured from center to center of posts.

End, corner, and gate posts shall be braced to the nearest line post with galvanized diagonal or horizontal braces used as compression members and galvanized ⅝" steel truss rods with turnbuckles used as tension members.

POST & BRACE REQUIREMENTS

LOCATION	TYPE	MIN. SIZE	MIN. WT. (LB/FT.)
End and corner posts	Pipe	2.351 O.D.	3.10
Line posts	Pipe	1.869 O.D.	2.31
Braces	Pipe	1.630 O.D.	1.93
Gate posts	Pipe	3.960 O.D.	8.65



Gate frame shall be constructed of not less than 1½" galvanized pipe and shall be cross trussed with ⅝" adjustable truss rods. The corner of gate frames shall be fastened together with a malleable iron fitting.

The gate shall be hung by at least two (2) steel or malleable iron hinges not less than three inches (3") in width, and a malleable catch and locking attachment.

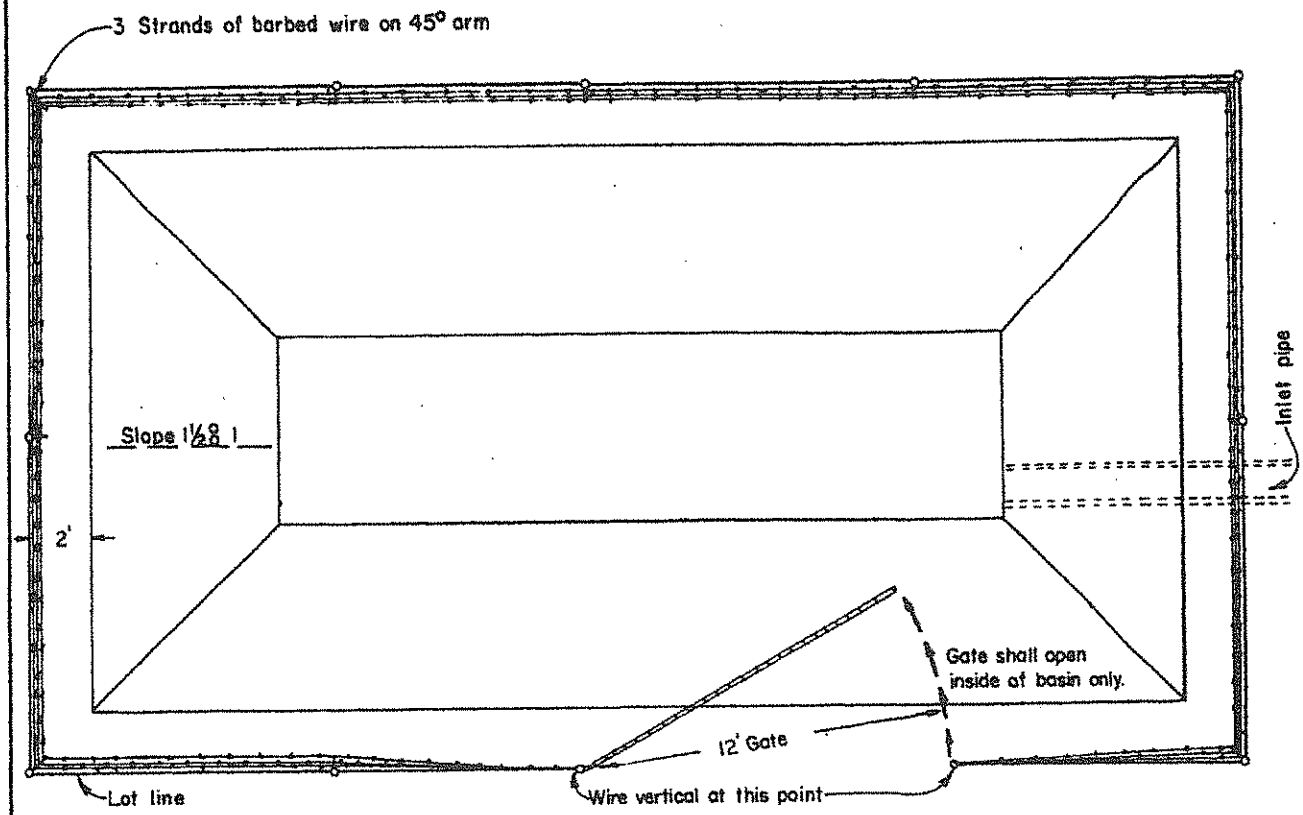
All posts shall be a minimum of 9' long.

PUBLIC ROAD STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

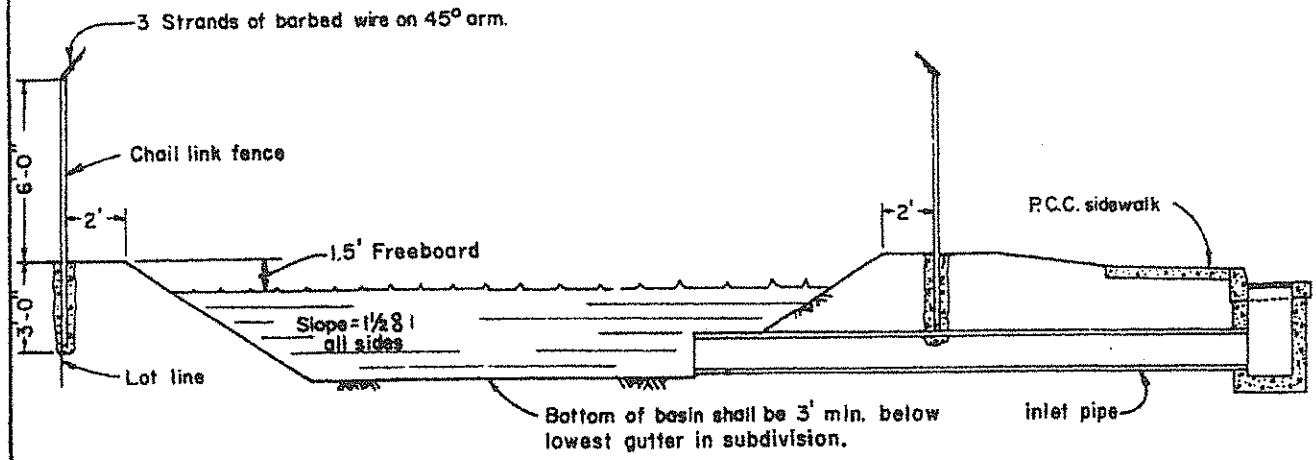
CHAIN LINK FENCING

PLATE NO. B-5



GENERAL NOTES

Fence to be placed on lot line.
Maximum depth of water in ponding basin - 3'-0".
Fence post to be placed in class "B" P.C. Concrete.
Access gate 12'-0" minimum, open inside of basin only.
Entire area of ponding lot to be treated with soil sterilant to one foot outside of fence or to back of concrete curb or sidewalk.
The soil sterilant to be used and rate of application must be approved by the Public Works Director before being applied.
Where ponding basin is on corner lot, fence shall follow curve of lot line.

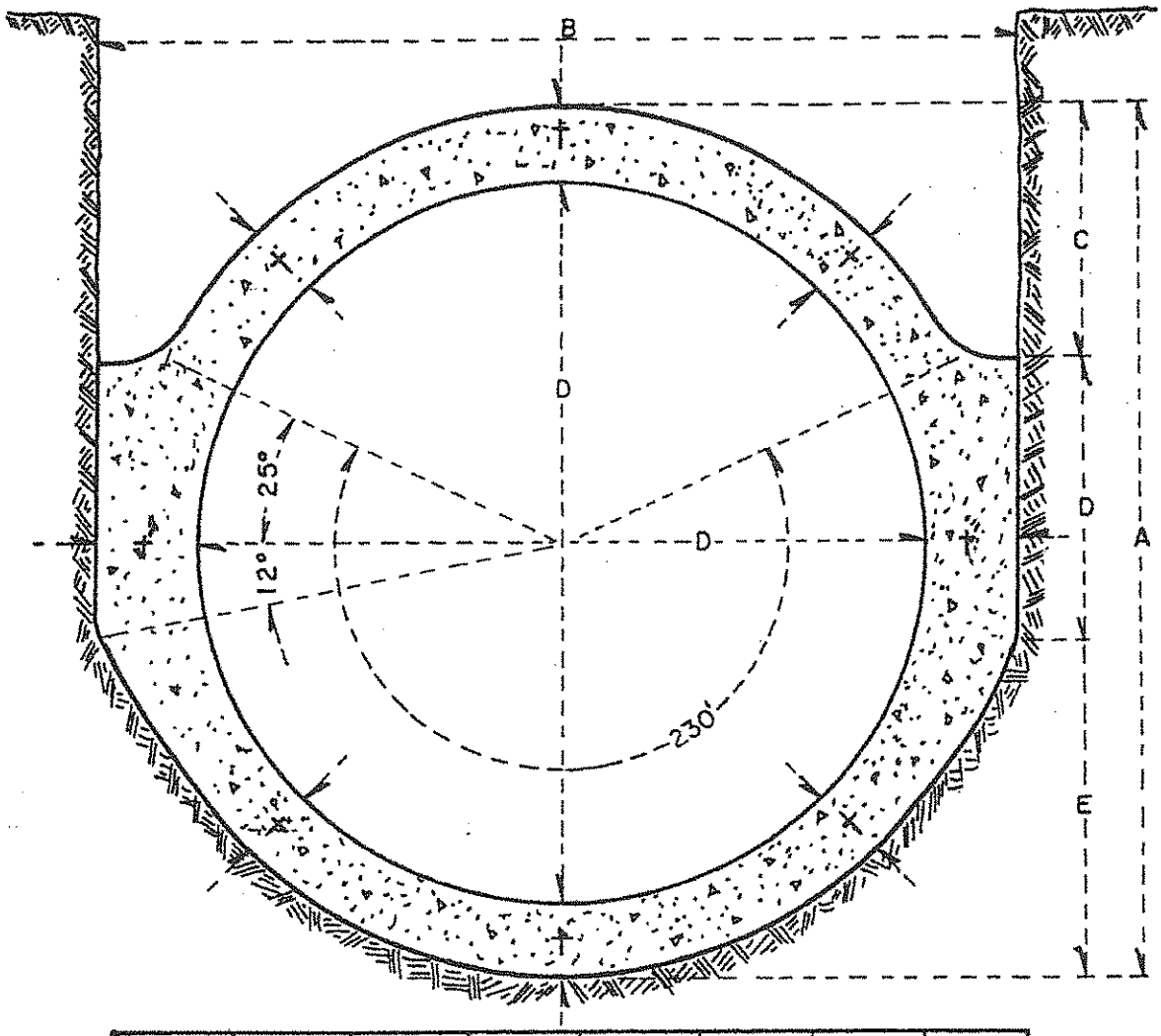


DRAINAGE STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

PONDING BASIN DETAILS

PLATE NO. B-6



D	t	t'	B	C	D	E	A
24	3	3 3/4	31 1/2	8 1/2	10	11 1/2	30
30	3	3 3/4	37 1/2	10	12	14	36
36	3 1/2	4 1/4	44 1/2	12 1/2	14	16 1/2	43
42	4	4 3/4	51 1/2	14 1/2	16	19 1/2	50
48	5	6 1/2	61	16 1/2	19	22 1/2	58
54	5 1/2	7 1/2	69	18 1/2	21	25 1/2	65
60	6	8	76	21	23	28	72
72	7	8 1/2	89	25	27 1/2	33 1/2	86

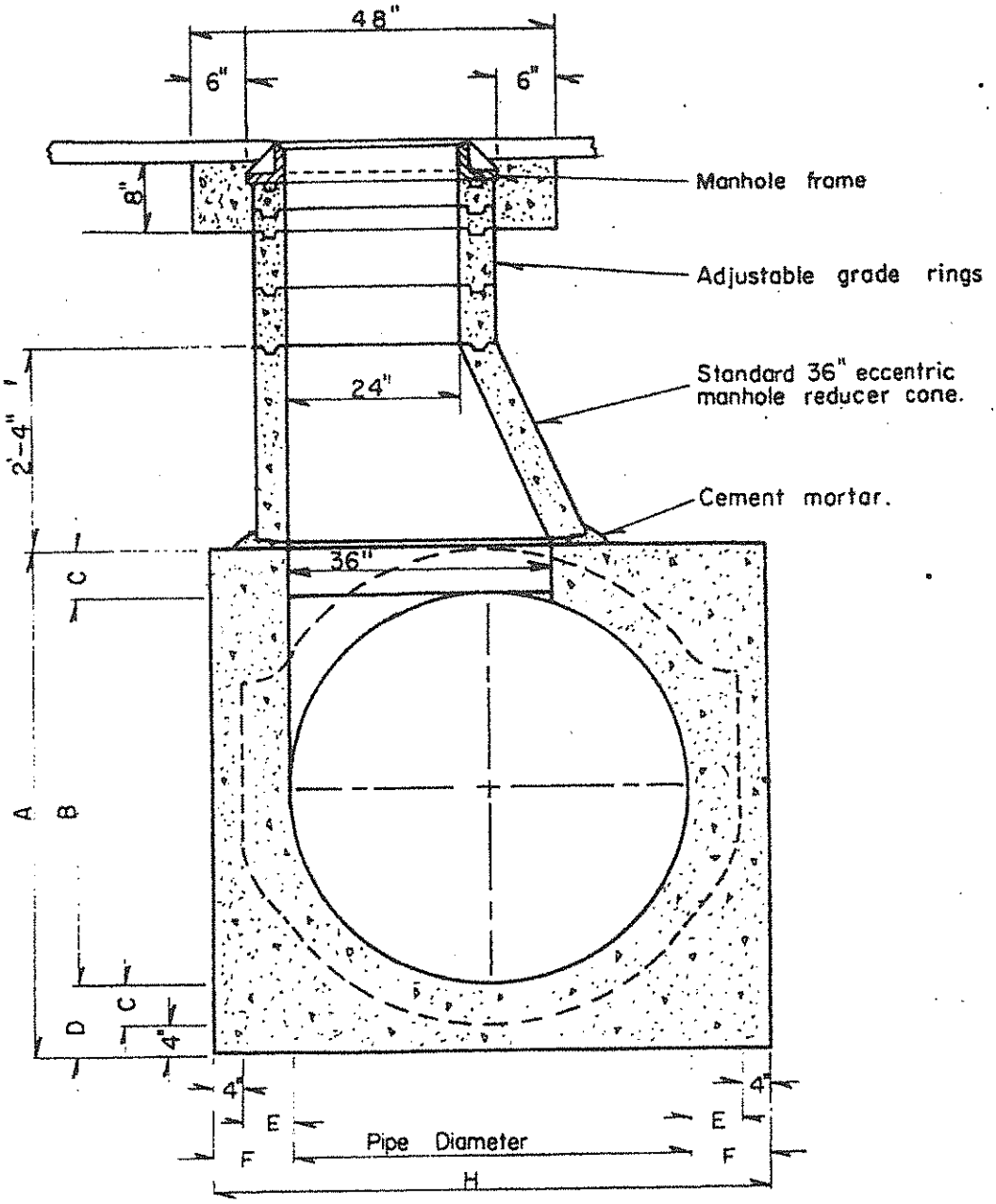
All dimensions in inches.

DRAINAGE STANDARDS

TULARE COUNTY ORDINANCE CODE, SECTION NO. 7080

CAST-IN-PLACE CONCRETE PIPE SECTION

Plate No. B-7



*H equals width parallel to pipe flowline also.

Pipe Dia.	A	B	C	D	E	F	H*
36	49 1/2	36	3 1/2	7 1/2	4 1/2	8 1/2	53
42	56	42	4	8	5	9	60
48	63	48	5	9	6	10	68
54	69 1/2	54	5 1/2	9 1/2	6 1/2	10 1/2	75
60	76	60	6	10	7	11	82
66	83	66	6 1/2	10 1/2	7 1/2	11 1/2	89
72	90	72	7	11	8	12	96

All dimensions in inches.

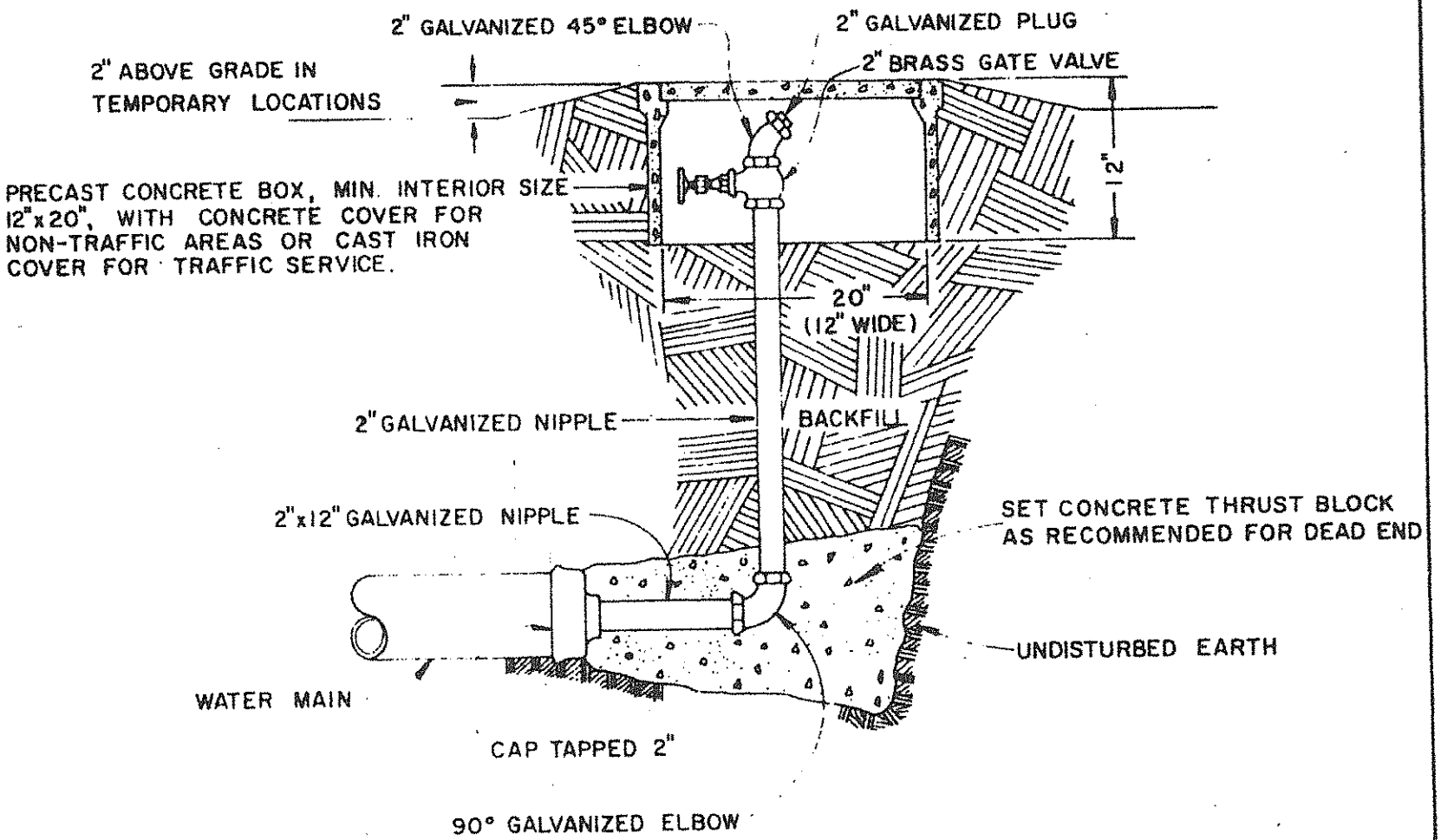
DRAINAGE STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

CAST-IN-PLACE MANHOLE

PLATE NO. B-8

WATER SYSTEM STANDARDS

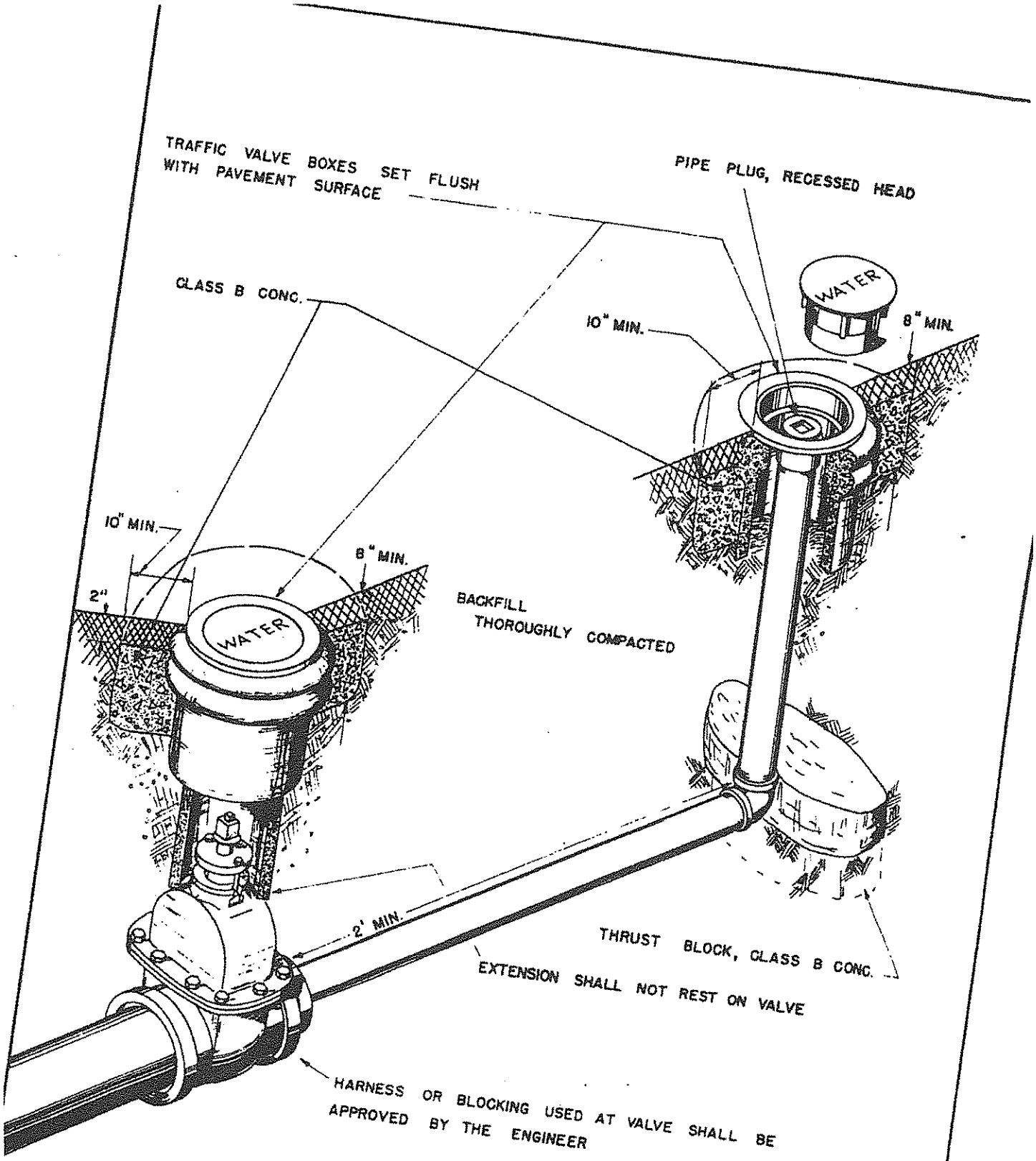


ELEVATION

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

BLOW-OFF WITH 2" VALVE

PLATE No. WS-1

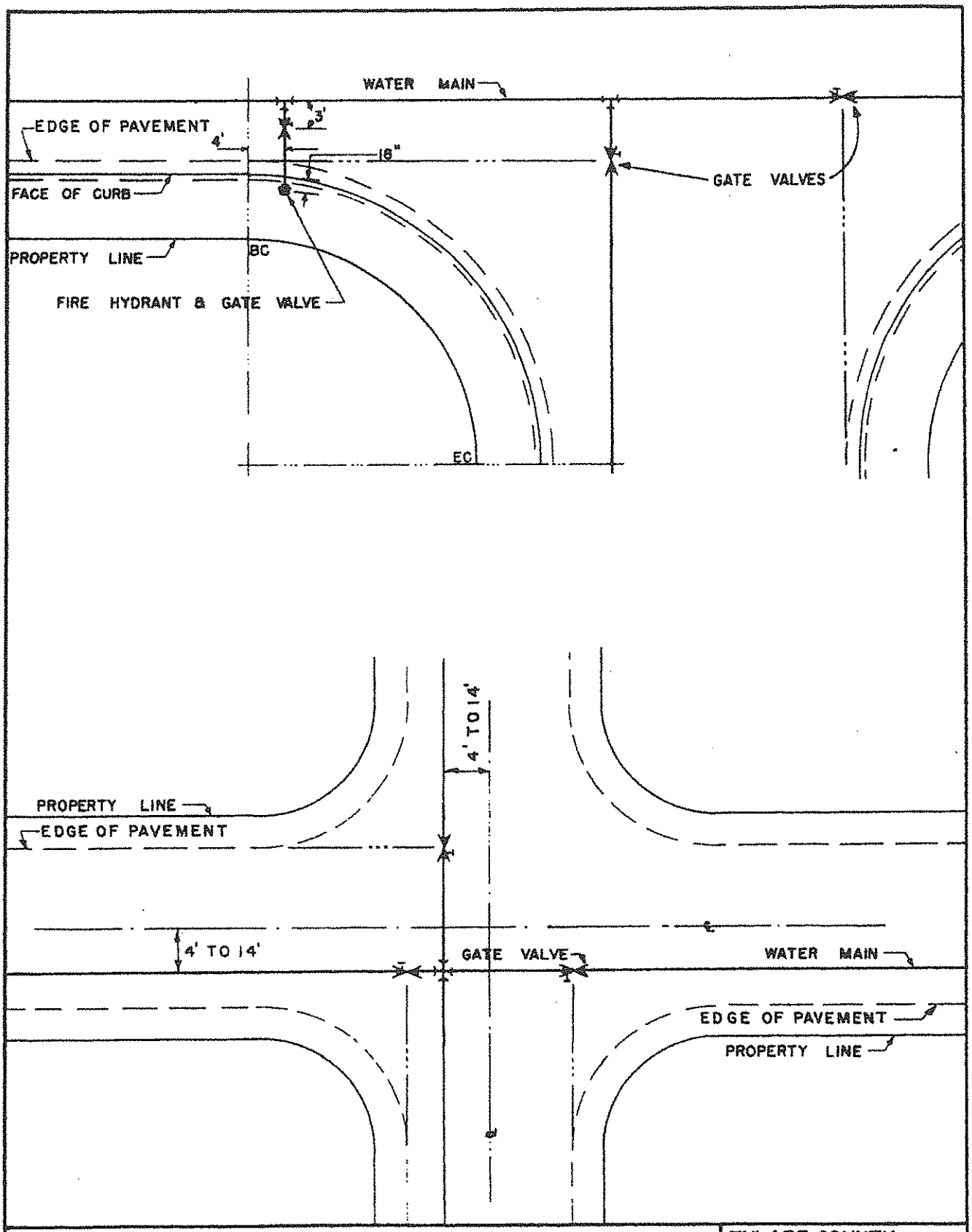


WATER SYSTEM STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

BLOW-OFF WITH 6" VALVE

PLATE

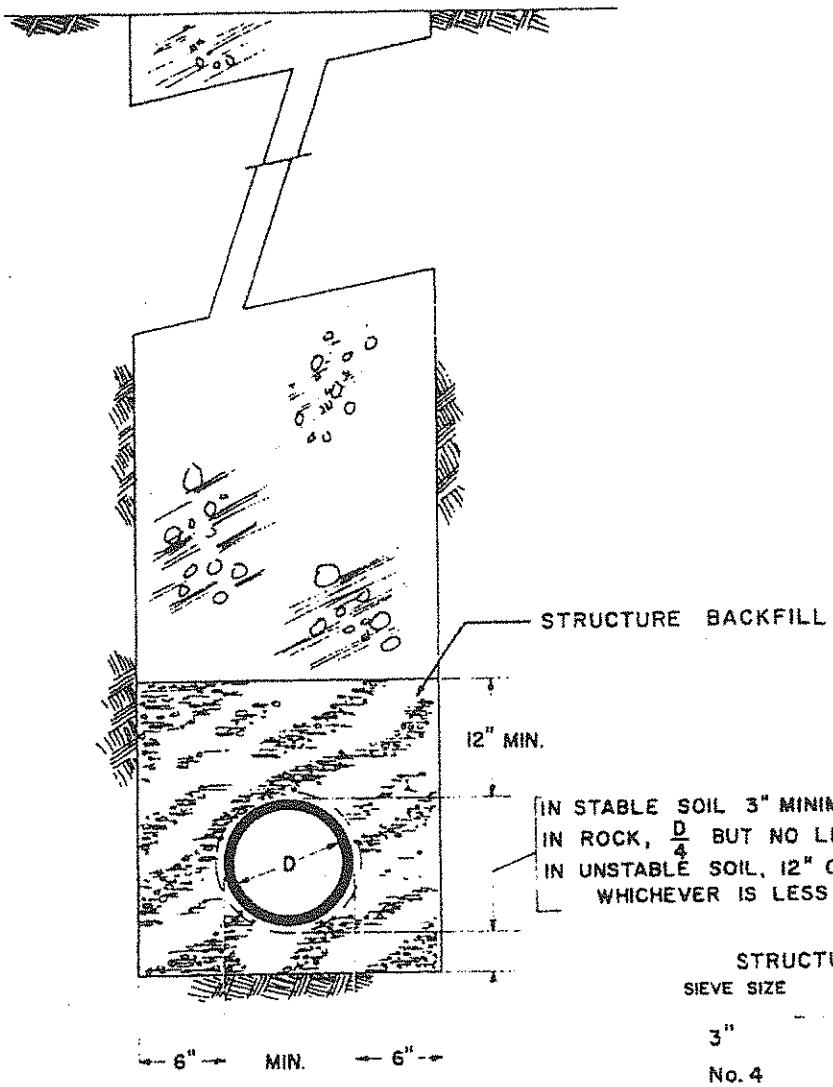


WATER SYSTEM STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION No. 7080

LOCATION OF VALVES
& HYDRANTS AT
INTERSECTIONS

PLATE No. WS-3



STRUCTURE BACKFILL

SIEVE SIZE	PERCENT PASSING
3"	100
No. 4	35 — 100

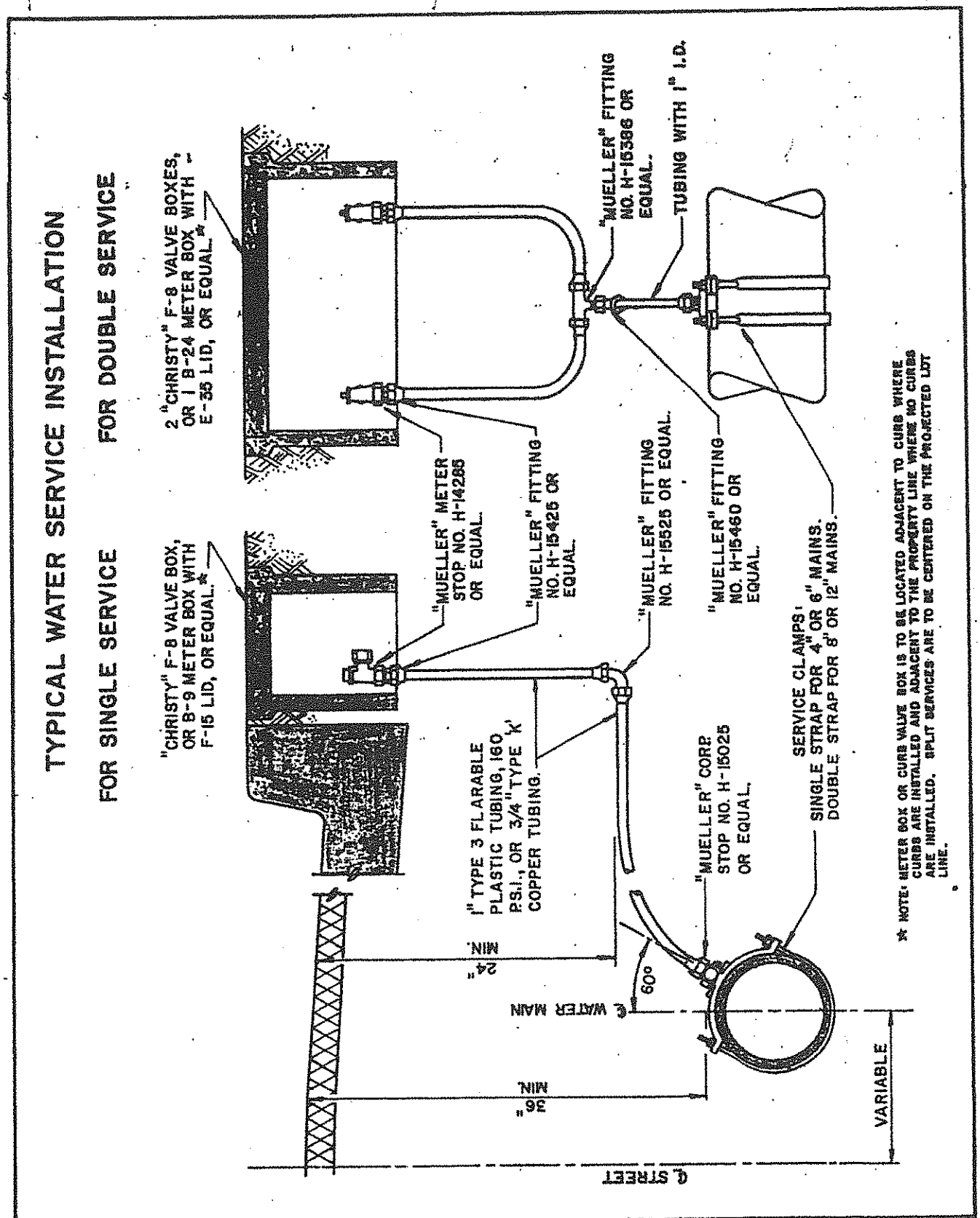
ANY OVEREXCAVATION SHALL BE BACKFILLED WITH APPROVED BEDDING MATERIAL

WATER SYSTEM STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION No. 7080

PIPE BEDDING

PLATE No. WS-4



WATER SYSTEM STANDARDS

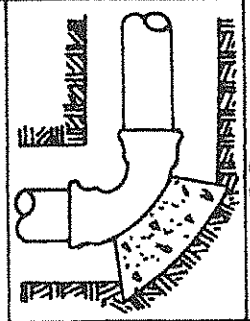
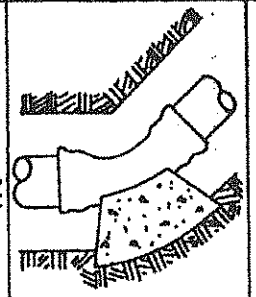
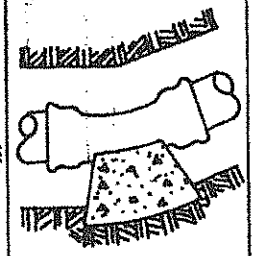
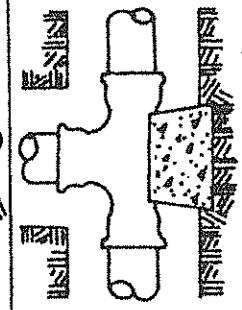
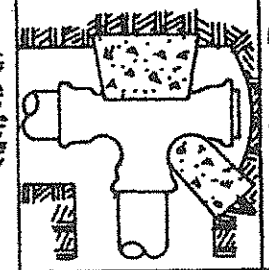
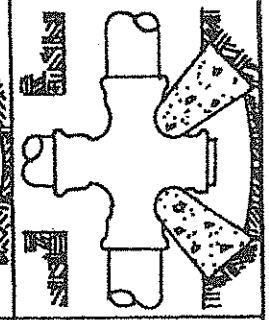
TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

DOMESTIC WATER SERVICES

PLATE NO. WS-5

WATER SYSTEM STANDARDS

REQUIRED BEARING AREA – TOTAL SQUARE FEET

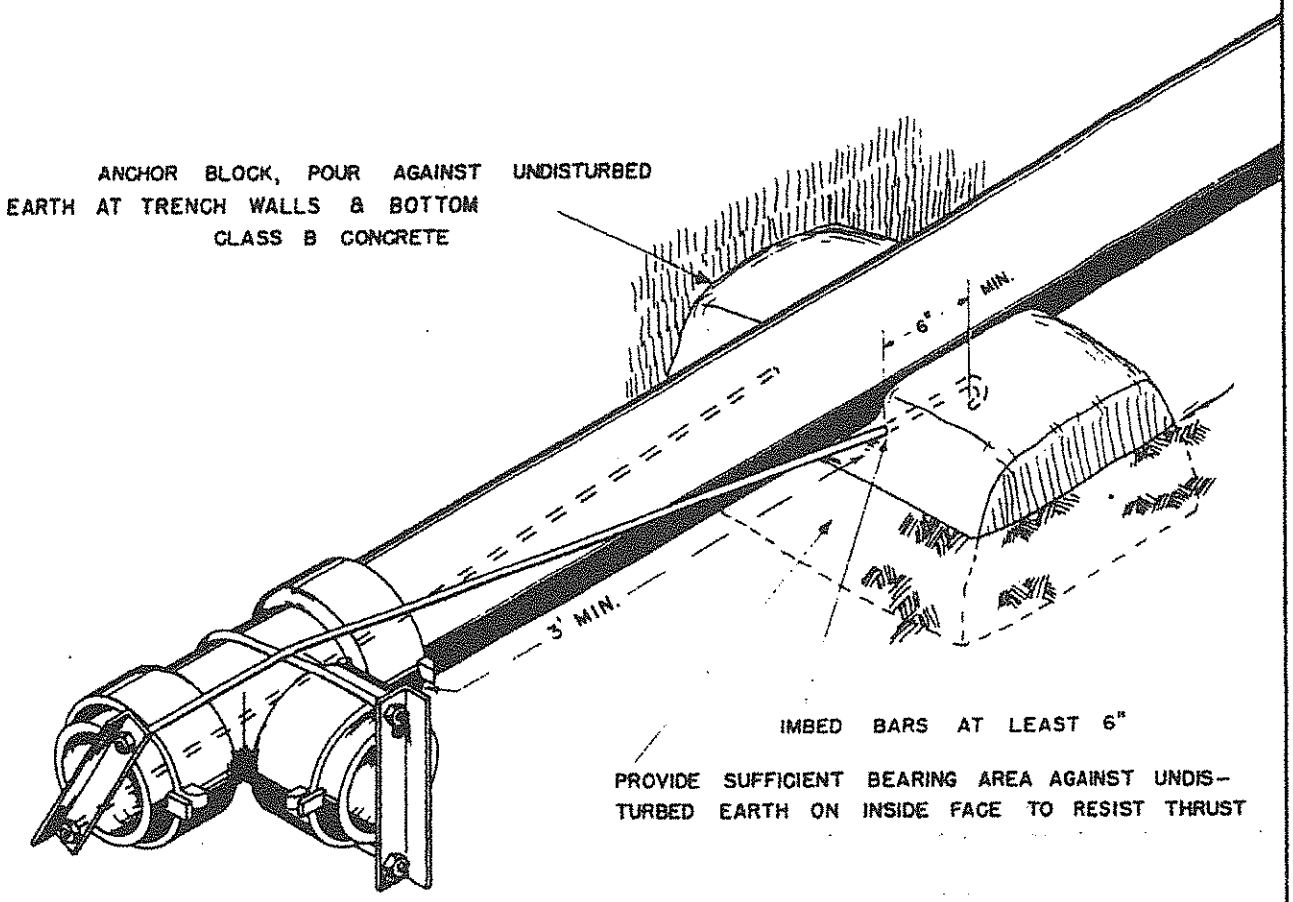
TYPE OF FITTING		90° BEND	45° BEND	11 1/4° OR 22 1/2° BEND	TEE OR DEAD END	TEE w/PLUG	CROSS w/ PLUG
TYPICAL INSTALLATION							
SIZE OF PIPE	4"	2	1	1	2	2	2
	6"	4	2	1	3	4	4
	8"	7	4	2	5	7	7
	10"	12	6	3	8	12	12
	12"	16	10	5	12	16	16

NOTES:
(1) THRUST BLOCKS TO BE CONSTRUCTED OF CLASS "B" CONCRETE
(2) AREAS GIVEN ARE FOR CLASS 150 PIPE AT PRESSURE OF 150 P.S.I. IN SOIL WITH 2000 P.S.F. BEARING CAPACITY.
INSTALLATIONS USING DIFFERENT PIPE, TEST PRESSURES, AND/OR SOIL TYPES SHOULD ADJUST AREAS ACCORDINGLY, SUBJECT TO APPROVAL OF ENGINEER.
(3) BLOCKS TO BE POURED AGAINST UNDISTURBED SOIL.
(4) JOINTS AND FACE OF PLUG TO BE KEPT CLEAR OF CONCRETE.
(5) MINIMUM THICKNESS OF THRUST BLOCKS TO BE 6 INCHES.

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

THRUST BLOCK BEARING AREA REQUIREMENTS

PLATE NO. WS-6

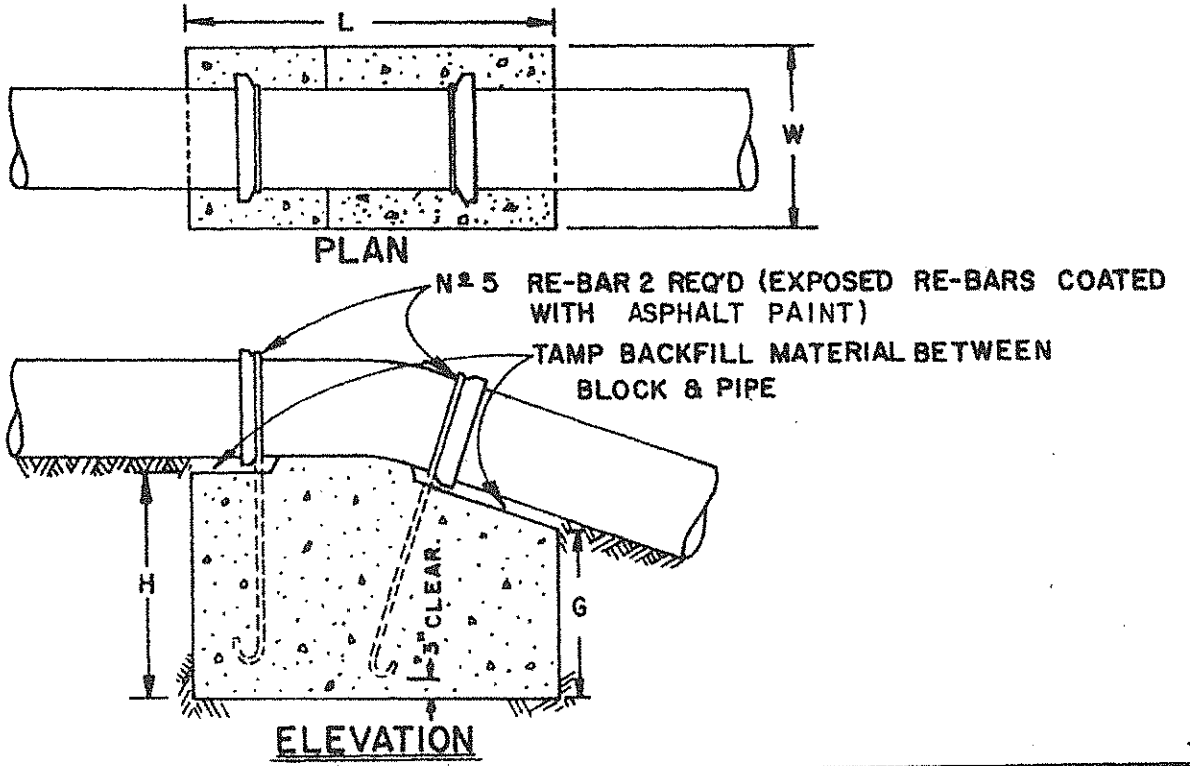


HARNESS & ANCHOR BLOCK SHALL BE DESIGNED TO WITHSTAND THRUSTS DEVELOPED BY THE TEST PRESSURE

BARE STEEL TO BE ASPHALT COATED

WATER SYSTEM STANDARDS	TULARE COUNTY ORDINANCE CODE SECTION No. 7080
	PIPE HARNESS
	PLATE No. WS-7

WATER SYSTEM STANDARDS



THRUST BLOCK DIMENSIONS-UPWARD THRUST

PIPE SIZE	11 1/4" BEND				22 1/2" BEND				45° BEND			
	L	W	H	G	L	W	H	G	L	W	H	G
4"&6"	2'-0"	2'-0"	1'-0"	9"	2'-0"	2'-0"	2'-0"	1'-0"	3'-0"	2'-0"	2'-0"	6"
8"	2'-0"	2'-0"	1"-0"	9"	3'-0"	2'-0"	2'-0"	1'-0"	4'-6"	2'-0"	3'-0"	6"
10"	3'-0"	2'-0"	2'-0"	1'-8"	4'-0"	2'-0"	2'-0"	1"-0"	6'-0"	2'-0"	3'-8"	8"
12"	3'-0"	2'-0"	2'-0"	1'-8"	6'-0"	2'-0"	2"-0"	1'-0"	7'-0"	2'-6"	4"-0"	6"

TULARE COUNTY
ORDINANCE CODE
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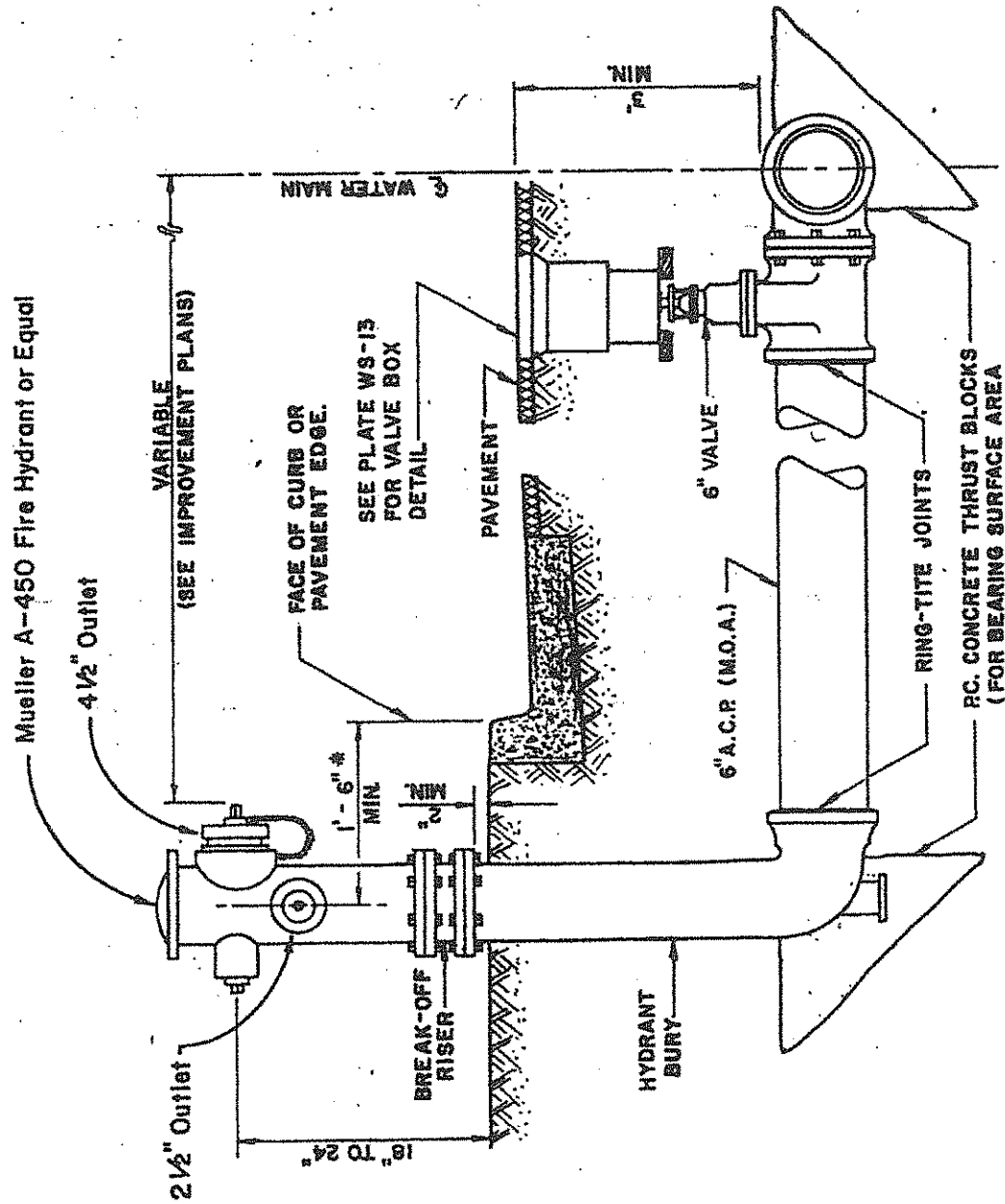
THRUST BLOCKING
AT VERTICAL BENDS

PLATE No. WS-8



* When sidewalk is constructed, or if within Urban Improvement Area, distance shall be 5'-0" min.

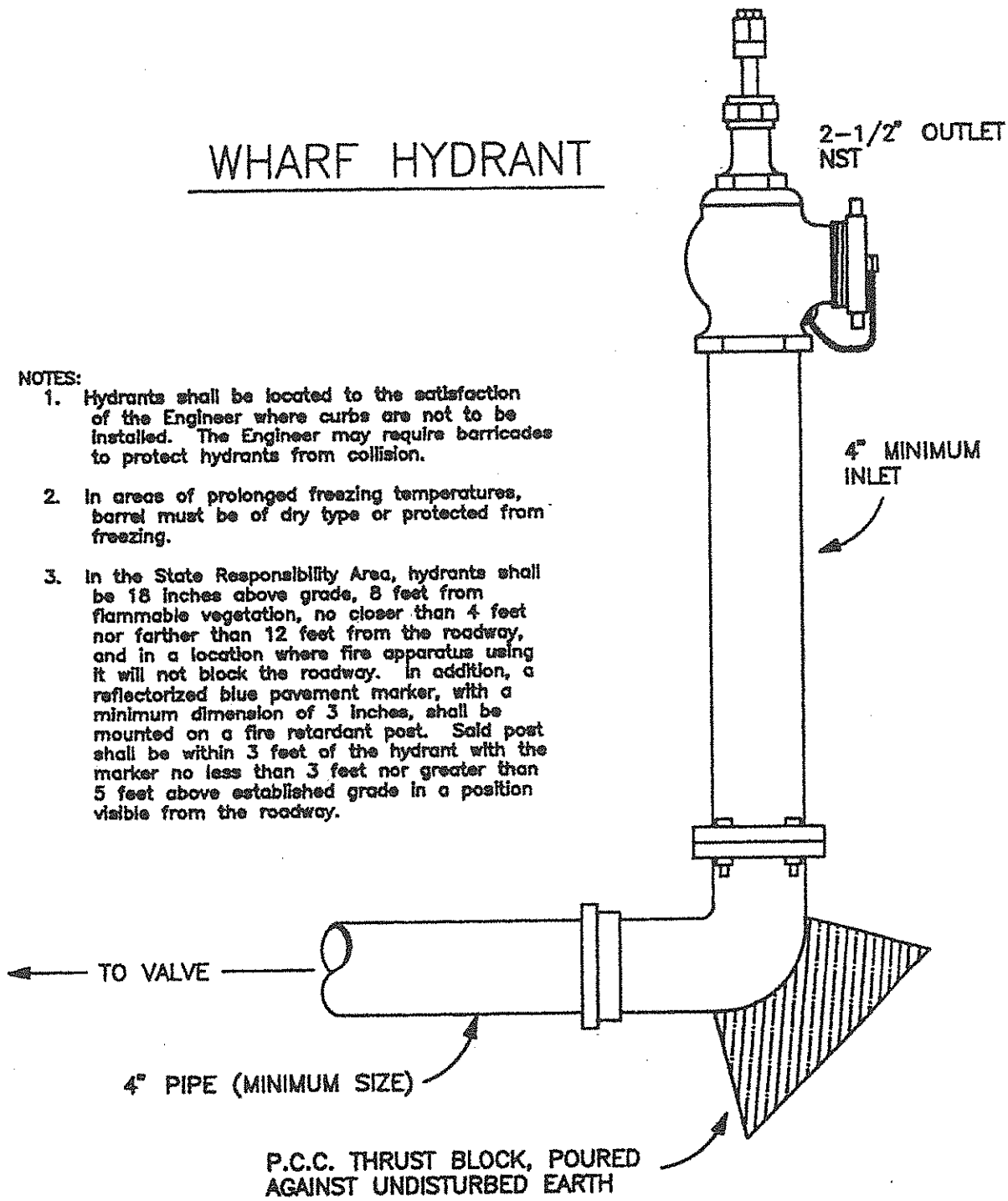
WATER SYSTEM STANDARDS

TULARE COUNTY
ORDINANCE CODE
SECTION NO. 7080

FIRE HYDRANT
INSTALLATION
(WET BARREL)

PLATE NO. WS-9

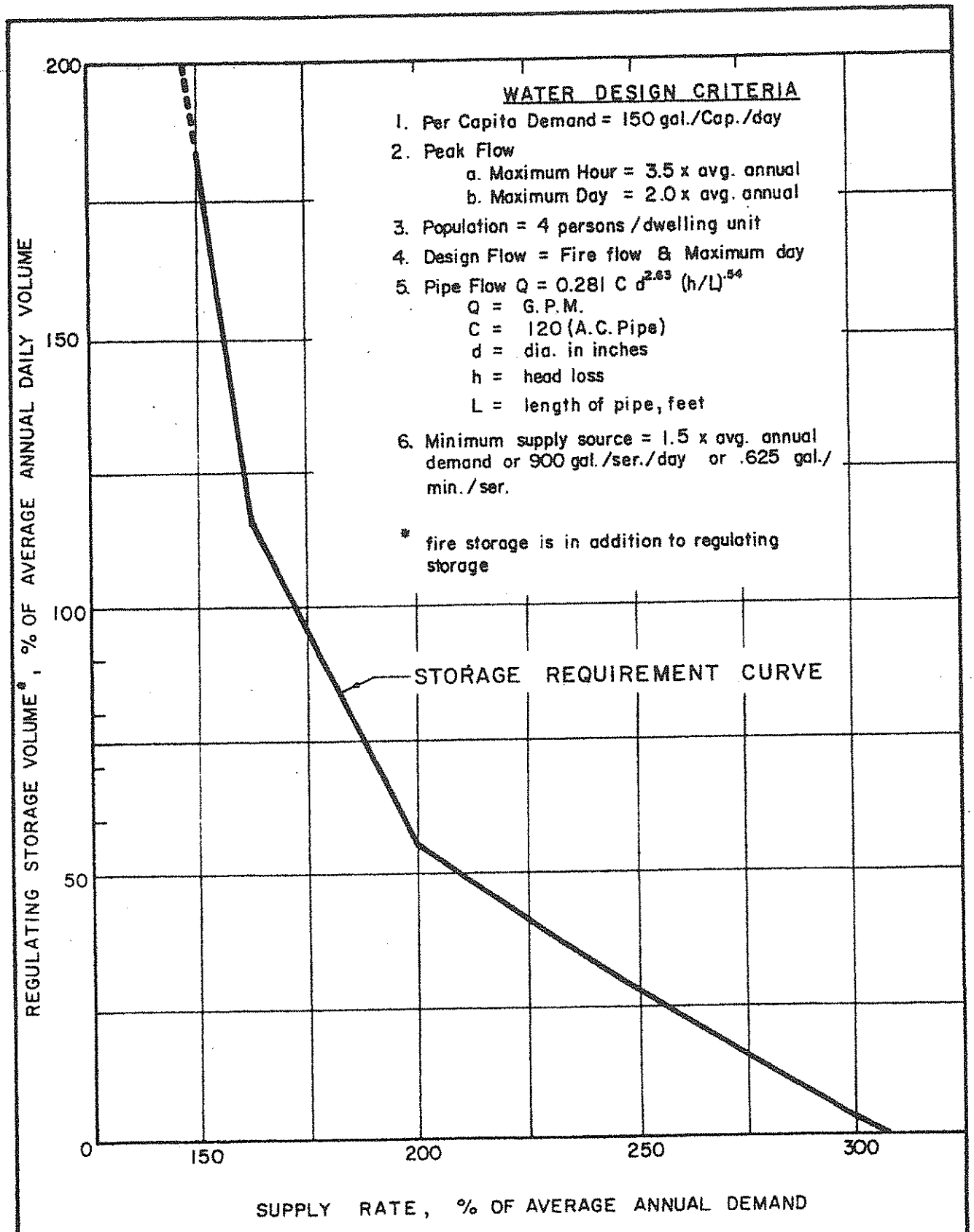
WHARF HYDRANT



NOTES:

1. Hydrants shall be located to the satisfaction of the Engineer where curbs are not to be installed. The Engineer may require barricades to protect hydrants from collision.
2. In areas of prolonged freezing temperatures, barrel must be of dry type or protected from freezing.
3. In the State Responsibility Area, hydrants shall be 18 inches above grade, 8 feet from flammable vegetation, no closer than 4 feet nor farther than 12 feet from the roadway, and in a location where fire apparatus using it will not block the roadway. In addition, a reflectorized blue pavement marker, with a minimum dimension of 3 inches, shall be mounted on a fire retardant post. Said post shall be within 3 feet of the hydrant with the marker no less than 3 feet nor greater than 5 feet above established grade in a position visible from the roadway.

WATER SYSTEM STANDARDS	TULARE COUNTY ORDINANCE CODE SECTION NO. 7080
	FIRE HYDRANT INSTALLATION MOUNTAINOUS AREAS
	PLATE NO. WS-10

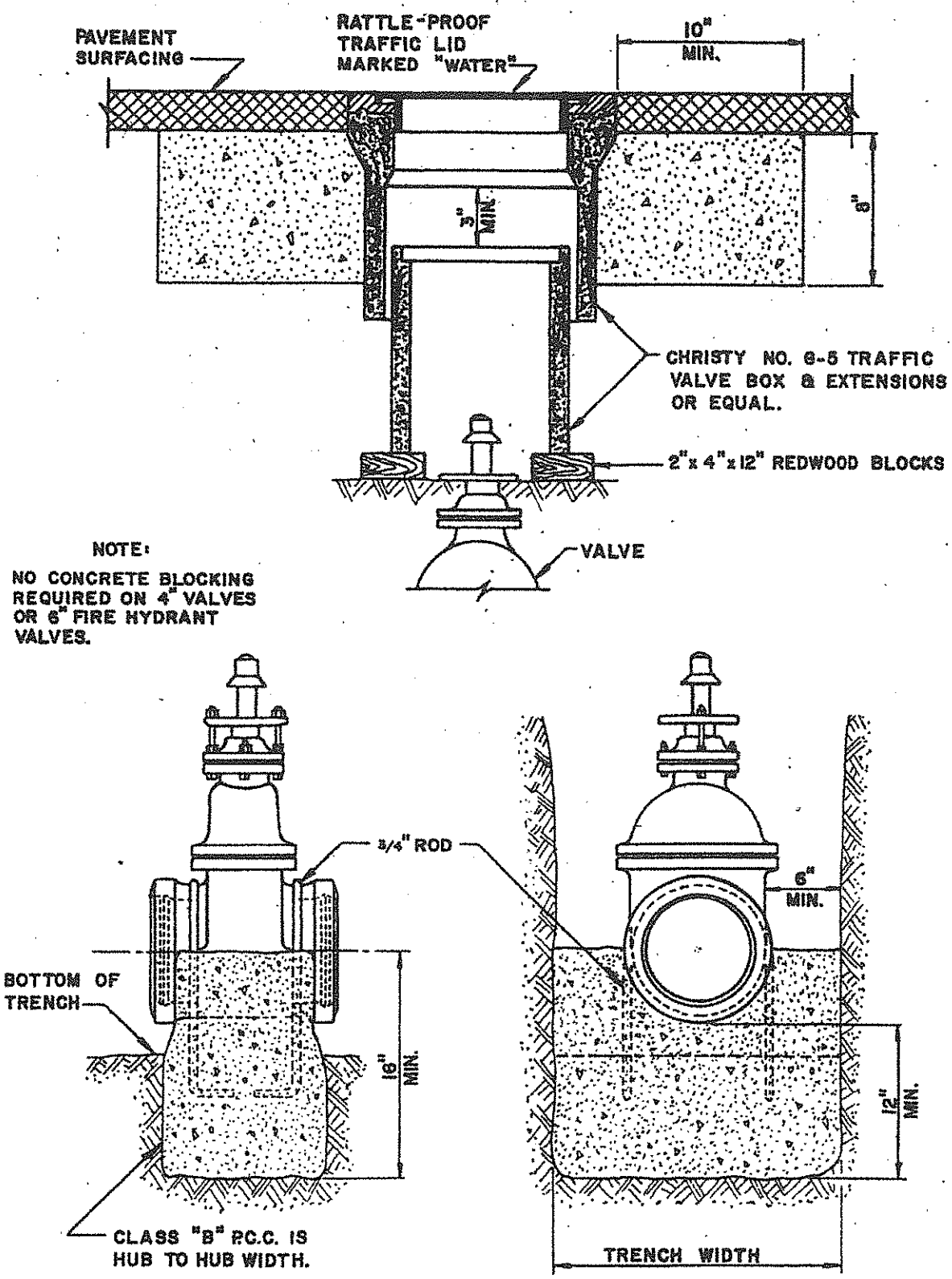


PUBLIC WATER SYSTEMS

TULARE COUNTY ORDINANCE CODE SECTION No. 7080

FLOW DESIGN AND STORAGE REQUIREMENTS

PLATE No. WS-11

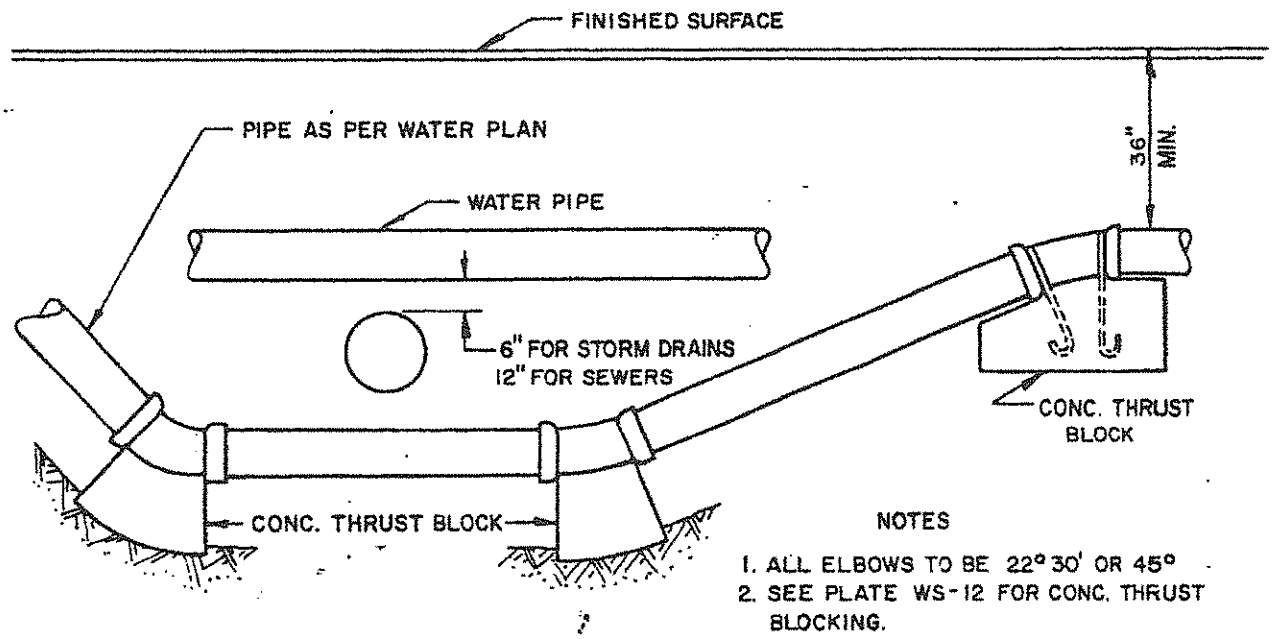


WATER SYSTEM STANDARDS

TULARE COUNTY ORDINANCE CODE SECTION NO. 7080

GATE VALVE BLOCKING & COVERS

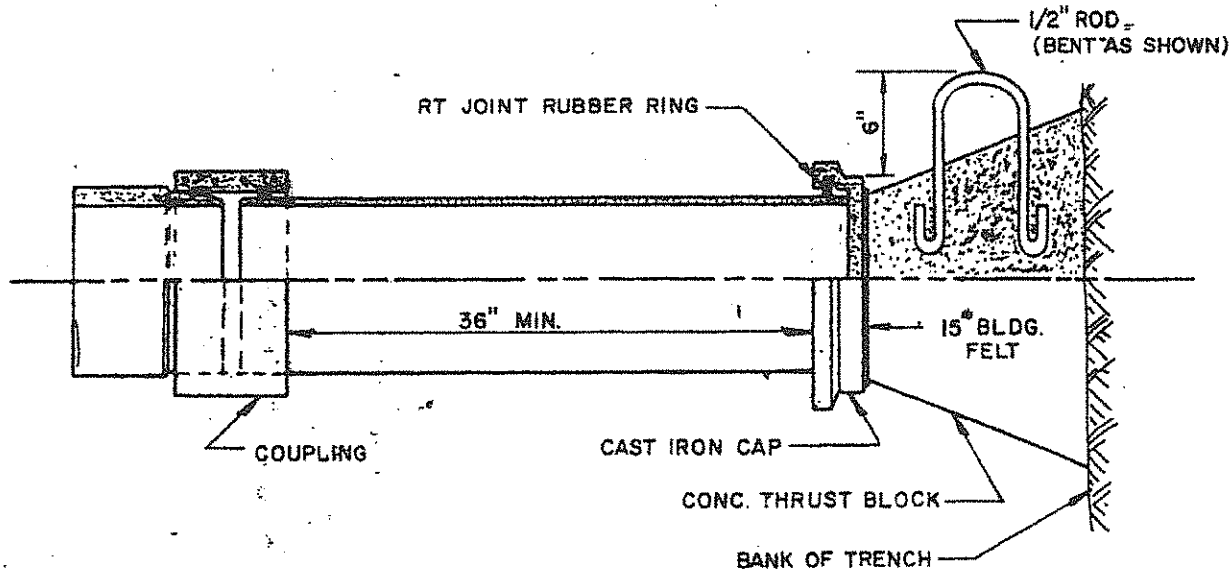
PLATE NO. WS - 13



NOTES

1. ALL ELBOWS TO BE 22° 30' OR 45°
2. SEE PLATE WS-12 FOR CONC. THRUST BLOCKING.

UNDER & OVER CROSSING-DETAIL



BULL PLUG ASSEMBLY DETAIL

WATER SYSTEM STANDARDS	TULARE COUNTY ORDINANCE CODE SECTION NO. 7080
	UTILITY CROSSINGS AND BULL PLUG ASSEMBLY
	PLATE NO. WS-14

4. SRA Fire Safe Standards

TITLE 14 - NATURAL RESOURCES
DIVISION 1.5 - DEPARTMENT OF FORESTRY
CHAPTER 7 - FIRE PROTECTION
Subchapter 2 SRA Fire Safe Regulations
Articles 1-5

ARTICLE 1. ADMINISTRATION

1270. Title

These regulations shall be known as the "SRA Fire Safe Regulations," and shall constitute the basic wildland fire protection standards of the California Board of Forestry.

NOTE: Authority cited: Section 4290 Public Resources Code. Reference: Sections 4102, 4126, 4127, and 4290, Public Resources Code.

1270.01. Purpose

These regulations have been prepared and adopted for the purpose of establishing minimum wildfire protection standards in conjunction with building, construction and development in SRA. A local jurisdiction may petition the Board for certification pursuant to Section 1270.03. Where Board certification has not been granted, these regulations shall become effective September 1, 1991. The future design and construction of structures, subdivisions and developments in State Responsibility Area (SRA) shall provide for basic emergency access and perimeter wildfire protection measures as specified in the following articles. These measures shall provide for emergency access; signing and building numbering; private water supply reserves for emergency fire use; and vegetation modification. The fire protection standards which follow shall specify the minimums for such measures.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1270.02. Scope

These regulations do not apply to existing structures, roads, streets and private lanes or facilities. These regulations shall apply as appropriate to all construction within SRA approved after January 1, 1991. Affected activities include but are not limited to:

(a) Permitting or approval of new parcels, excluding lot line adjustments as specified in Government Code (GC) Section 66412(d),

(b) application for a building permit for new construction, not relating to an existing structure,

(c) application for a use permit,

(d) the siting of manufactured homes (manufactured homes are as defined by the National Fire Protection Association, National Fire Code, Section 501A, Standard for Fire Safety Criteria for Manufactured Home Installations, Sites and Communities, Chapter 1, Section 1-2, Definitions, page 4, 1987 edition and Health and Safety Code Sections 18007, 18008, and 19971).

(e) road construction, including construction of a road that does not currently exist, or extension of an existing road.

Exemption: Roads required as a condition of tentative parcel maps prior to the effective date of these regulations; roads for agricultural or mining use solely on one ownership; and roads used solely for the management and harvesting of wood products.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1270.03. Local Ordinances

Nothing contained in these regulations shall be considered as abrogating the provisions of any ordinance, rule or regulation of any state or local jurisdiction providing such ordinance, rule, regulation or general plan element is equal to or more stringent than these minimum standards. The Board may certify local ordinances as equaling or exceeding these regulations when they provide the same practical effect.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4117 and 4290, Public Resources Code.

1270.04. Provisions for Application of these Regulations

This subchapter shall be applied as follows:

(a) local jurisdictions shall provide the Director with notice of applications for building permits, tentative parcel maps, tentative maps, and use permits for construction or development within SRA.

(b) Director shall review and make fire protection recommendations on applicable construction or development permits or maps provided by the local jurisdiction.

(c) the local jurisdiction shall ensure that the applicable sections of this subchapter become a condition of approval of any applicable construction or development permit or map.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1270.05. Inspection Authority

(a) Inspection shall be made pursuant to Section 1270.06 by:

(1) the Director, or

(2) local jurisdictions that have assumed state fire protection responsibility on SRA lands, or

(3) local jurisdictions where these regulations have been implemented through that jurisdiction's building permit or subdivision approval process.

(b) Reports of violations shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

NOTE: Authority cited: Sections 4119 and 4290, Public Resources Code. Reference: Section 4290, Public Resources Code.

1270.06. Inspections.

The inspection authority may inspect for compliance with these regulations. When inspections are conducted, they should occur prior to: the issuance of the use permit; certificate of occupancy; the recordation of the parcel map or final map; the filing of a notice of completion; or the final inspection of any project or building permit.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4119, 4290 and 4291, Public Resources Code.

1270.07. Exceptions to Standards

Upon request by the applicant, exceptions to standards within this subchapter and mitigated practices may be allowed by the inspection authority, where the exception provides the same overall practical effect as these regulations towards providing defensible space.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1270.08. Requests for Exceptions

Requests for an exception shall be made in writing to the inspection authority by the applicant or the applicant's authorized representative. The request shall state the specific section(s) for which an exception is requested, material facts supporting the contention of the applicant, the details of the exception or mitigation measure proposed, and a map showing the proposed location and siting of the exception or mitigation measure.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1270.09. Appeals

Where an exception is not granted by the inspection authority, the applicant may appeal such denial to the local jurisdiction. The local jurisdiction may establish or utilize an appeal process consistent with existing local building or planning department appeal processes. Before the local jurisdiction makes a determination on an appeal, the inspection authority shall be consulted and shall provide to that local jurisdiction documentation outlining the effects of the requested exception on wildland fire protection.

If an appeal is granted, the local jurisdiction shall make findings that the decision meets the intent of providing defensible space consistent with these regulations. Such findings shall include a statement of reasons for the decision. A written copy of these findings shall be provided to the CDF Ranger Unit headquarters that administers SRA fire protection in that county.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1271.00. Definitions

Accessory building: Any building used as an accessory to residential, commercial, recreational, industrial, or educational purposes as defined in the California Building Code, 1989 Amendments, Chapter 11, Group M, Division 1, Occupancy that requires a building permit.

Agriculture: Land used for agricultural purposes as defined in a local jurisdiction's zoning ordinances.

Building: Any structure used or intended for supporting or sheltering any use or occupancy that is defined in the California Building Code, 1989 Amendments, Chapter 11, except Group M, Division 1, Occupancy. For the purposes of this subchapter, building includes mobile homes and manufactured homes, churches, and day care facilities.

CDF: California Department of Forestry and Fire Protection.

Dead-end road: A road that has only one point of vehicular ingress/egress, including cul-de-sacs and looped roads.

Defensible space: The area within the perimeter of a parcel, development, neighborhood or community where basic wildland fire protection practices and measures are implemented, providing the key point of

defense from an approaching wildfire or defense against encroaching wildfires or escaping structure fires. The perimeter as used in this regulation is the area encompassing the parcel or parcels proposed for construction and/or development, excluding the physical structure itself. The area is characterized by the establishment and maintenance of emergency vehicle access, emergency water reserves, street names and building identification, and fuel modification measures.

Development: As defined in Section 66418.1 of the California Government Code.

Director: Director of the Department of Forestry and Fire Protection or his/her designee.

Driveway: A vehicular access that serves no more than two buildings, with no more than 3 dwelling units on a single parcel, and any number of accessory buildings.

Dwelling unit: Any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and/or sanitation for not more than one family.

Exception: An alternative to the specified standard requested by the applicant that may be necessary due to health, safety, environmental conditions, physical site limitations or other limiting conditions such as recorded historical sites, that provides mitigation of the problem.

Fire valve: see hydrant.

Fuel modification area: An area where the volume of flammable vegetation has been reduced, providing reduced fire intensity and duration.

Greenbelts: A facility or land-use, designed for a use other than fire protection, which will slow or resist the spread of a wildfire. Includes parking lots, irrigated or landscaped areas, golf courses, parks, playgrounds, maintained vineyards, orchards or annual crops that do not cure in the field.

Hammerhead/T: A roadway that provides a "T" shaped, three-point turnaround space for emergency equipment, being no narrower than the road that serves it.

Hydrant: A valved connection on a water supply/storage system, having at least one 2 1/2 inch outlet, with male American National Fire Hose Screw Threads (NH) used to supply fire apparatus and hoses with water.

Local Jurisdiction: Any county, city/county agency or department, or any locally authorized district that issues or approves building permits, use permits, tentative maps or tentative parcel maps, or has authority to regulate development and construction activity.

Occupancy: The purpose for which a building, or part thereof, is used or intended to be used.

One-way road: A minimum of one traffic lane width designed for traffic flow in one direction only.

Roads, streets, private lanes: Vehicular access to more than one parcel; access to any industrial or commercial occupancy; or vehicular access to a single parcel with more than two buildings or four or more dwelling units.

Roadway: Any surface designed, improved, or ordinarily used for vehicle travel.

Roadway structures: Bridges, culverts, and other appurtenant structures which supplement the roadway bed or shoulders.

Same Practical Effect: As used in this subchapter, means an exception or alternative with the capability of applying accepted wildland fire suppression strategies and tactics, and provisions for fire fighter safety, including:

(a) access for emergency wildland fire equipment,

(b) safe civilian evacuation,

(c) signing that avoids delays in emergency equipment response,

(d) available and accessible water to effectively attack wildfire or defend a structure from wildfire, and

(e) fuel modification sufficient for civilian and fire fighter safety.

Shoulder: Roadbed or surface adjacent to the traffic lane.

State Board of Forestry (SBOF): A nine member board, appointed by the Governor, which is responsible for developing the general forest policy of the state, for determining the guidance policies of the Department of Forestry and Fire Protection, and for representing the state's interest in federal land in California.

State Responsibility Area (SRA): As defined in Public Resources Code Sections 4126-4127; and the California Code of Regulations, Title 14, Division 1.5, Chapter 7, Article 1, Sections 1220-1220.5.

Structure: That which is built or constructed, an edifice or building of any kind, or any piece of work artificially built up or composed of parts joined together in some definite manner.

Subdivision: As defined in Section 66424 of the Government Code.

Traffic lane: The portion of a roadway that provides a single line of vehicle travel.

Turnaround: A roadway, unobstructed by parking, which allows for a safe opposite change of direction for emergency equipment. Design of such area may be a hammerhead/T or terminus bulb.

Turnouts: A widening in a roadway to allow vehicles to pass.

Vertical clearance: The minimum specified height of a bridge or overhead projection above the roadway.

Wildfire: As defined in Public Resources Code Sections 4103 and 4104.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1271.05. Distance Measurements

All specified or referenced distances are measured along the ground, unless otherwise stated.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1272.00. Maintenance of Defensible Space Measures.

To ensure continued maintenance of properties in conformance with these standards and measures and to assure continued availability, access, and utilization of the defensible space provided for in these standards during a wildfire, provisions for annual maintenance shall be included in the development plans and/or shall be provided as a condition of the permit, parcel or map approval.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

ARTICLE 2. EMERGENCY ACCESS

1273.00. Intent

Road and street networks, whether public or private, unless exempted under Section 1270.02(e), shall provide for safe access for emergency wildland fire equipment and civilian evacuation concurrently, and shall provide unobstructed traffic circulation during a wildfire emergency consistent with Sections 1273.00 through 1273.11.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.01. Road Width

All roads shall be constructed to provide a minimum of two nine-foot traffic lanes providing two-way traffic flow, unless other standards are provided in this article, or additional requirements are mandated by local jurisdictions or local subdivision requirements.

NOTE: Authority cited: Section 4290, Public Resources Code. References: Sections 4290 and 4291, Public Resources Code.

1273.02. Roadway Surface

The surface shall provide unobstructed access to conventional drive vehicles, including sedans and fire engines. Surfaces should be established in conformance with local ordinances, and be capable of supporting a 40,000 pound load.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.03. Roadway Grades

The grade for all roads, streets, private lanes and driveways shall not exceed 16 percent.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.04. Roadway Radius

(a) No roadway shall have a horizontal inside radius of curvature of less than 50 feet and additional surface width of 4 feet shall be added to curves of 50-100 feet radius; 2 feet to those from 100-200 feet.

(b) 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.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.05. Roadway Turnarounds

Turnarounds are required on driveways and dead-end roads as specified in this article. The minimum turning radius for a turnaround shall be 40 feet from the center line of the road. If a hammerhead/T is used, the top of the "T" shall be a minimum of 60 feet in length.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.06. Roadway Turnouts Not required in TC improvement standards since we have no one-way roads.

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

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.07. Roadway Structures

(a) All driveway, road, street, and private lane roadway structures shall be constructed to carry at least the maximum load and provide the minimum vertical clearance as required by Vehicle Code Sections 35550, 35750, and 35250.

(b) 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.

(c) A bridge with only one traffic lane may be authorized by the local jurisdiction; however, it shall provide for unobstructed visibility from one end to the other and turnouts at both ends.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resource Code.

1273.08. One-Way Roads

All one-way roads shall be constructed to provide a minimum of one 10-foot traffic lane. The local jurisdiction may approve one-way roads. 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 2640 feet in length. A turnout shall be placed and constructed at approximately the midpoint of each one-way road.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.09. Dead-End Roads

(a) The maximum length of a dead-end road, including all dead-end roads accessed from that dead-end road, shall not exceed the following cumulative lengths, regardless of the number of parcels served:

parcels zoned for less than one acre	800 feet
parcels zoned for 1 acre to 4.99 acres	1320 feet
parcels zoned for 5 acres to 19.99 acres	2640 feet
parcels zoned for 20 acres or larger	5280 feet

All lengths shall be measured from the edge of the roadway surface at the intersection that begins the road to the end of the road surface at its farthest point. Where a dead-end road crosses areas of differing zoned parcel sizes, requiring different length limits, the shortest allowable length shall apply.

(b) Where parcels are zoned 5 acres or larger, turnarounds shall be provided at a maximum of 1320

foot intervals.

(c) Each dead-end road shall have a turnaround constructed at its terminus.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.10. Driveways

All driveways shall provide a minimum 10 foot traffic lane and unobstructed vertical clearance of 15 feet along its entire length.

(a) 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.

(b) A turnaround shall be provided at all building sites on driveways over 300 feet in length, and shall be within 50 feet of the building.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1273.11. Gate Entrances

(a) Gate entrances shall be at least two feet wider than the width of the traffic lane(s) serving that gate.

(b) All gates providing access from a road to a driveway shall be located at least 30 feet from the roadway and shall open to allow a vehicle to stop without obstructing traffic on that road.

(c) Where a one-way road with a single traffic lane provides access to a gated entrance, a 40 foot turning radius shall be used.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

ARTICLE 3. SIGNING AND BUILDING NUMBERING

1274.00. Intent

To facilitate locating a fire and to avoid delays in response, all newly constructed or approved roads, streets, and buildings shall be designated by names or numbers, posted on signs clearly visible and legible from the roadway. This section shall not restrict the size of letters or numbers appearing on street signs for other purposes.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.01. Size of Letters, Numbers and Symbols for Street and Road Signs

Size of letters, numbers, and symbols for street and road signs shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.02. Visibility and Legibility of Street and Road Signs

Street and road signs shall be visible and legible from both directions of vehicle travel for a distance of at least 100 feet.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.03. Height of Street and Road Signs

Height of street and road signs shall be uniform county wide, and meet the visibility and legibility standards of this article.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.04. Names and Numbers on Street and Road Signs

Newly constructed or approved public and private roads and streets must be identified by a name or number through a consistent countywide system that provides for sequenced or patterned numbering and/or non-duplicating naming within each county. All signs shall be mounted and oriented in a uniform manner. This section does not require any entity to rename or renumber existing roads or streets, nor shall a roadway providing access only to a single commercial or industrial occupancy require naming or numbering.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.05. Intersecting Roads, Streets and Private Lanes

Signs required by this article identifying intersecting roads, streets and private lanes shall be placed at the intersection of those roads, streets, and/or private lanes.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.06. Signs Identifying Traffic Access Limitations

A sign identifying traffic access or flow limitations, including but not limited to weight or vertical clearance limitations, dead-end road, one-way road or single lane conditions, shall be placed:

(a) at the intersection preceding the traffic access limitation, and

(b) no more than 100 feet before such traffic access limitation.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.07. Installation of Road, Street and Private Lane Signs

Road, street and private lane signs required by this article shall be installed prior to final acceptance by the local jurisdiction of road improvements.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.08. Addresses for Buildings

All buildings shall be issued an address by the local jurisdiction which conforms to that jurisdiction's overall address system. Accessory buildings will not be required to have a separate address; however, each dwelling unit within a building shall be separately identified.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.09. Size of Letters, Numbers and Symbols for Addresses

Size of letters, numbers and symbols for addresses shall be a minimum 3 inch letter height, 3/8 inch stroke, reflectorized, contrasting with the background color of the sign.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1274.10. Installation, Location and Visibility of Addresses

(a) All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

(b) Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

(c) Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

(d) Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

ARTICLE 4. EMERGENCY WATER STANDARDS

1275.00. Intent

Emergency water for wildfire protection shall be available and accessible in quantities and locations specified in the statute and these regulations, in order to attack a wildfire or defend property from a wildfire. Such emergency water may be provided in a fire agency mobile water tender, or naturally occurring or manmade containment structure, as long as the specified quantity is immediately available.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1275.01. Application

The provisions of this article shall apply when new parcels are approved by a local jurisdiction. The emergency water system shall be available on-site prior to the completion of road construction, where a community water system is approved, or prior to the completion of building construction, where an individual system is approved.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1275.10. General Standards

Water systems that meet or exceed the standards specified in Public Utilities Commission of California (PUC) revised General Order #103, Adopted June 12, 1956 (Corrected September 7, 1983, Decision 83-09-001), Section VIII Fire Protection Standards and other applicable sections relating to fire protection water delivery systems, static water systems equaling or exceeding the National Fire Protection Association (NFPA) Standard 1231, "Standard on Water Supplies for Suburban and Rural Fire Fighting", 1989 Edition, or mobile water systems that meet the Insurance Services Office (ISO) Rural Class 8, 2nd Edition 3-80, standard shall be accepted as meeting the requirements of this article. These documents are available at CDF Ranger Unit Headquarters.

Nothing in this article prohibits the combined storage of emergency wildfire and structural firefighting water supplies unless so prohibited by local ordinance or specified by the local fire agency.

Where freeze protection is required by local jurisdictions, such protection measures shall be provided.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Section 4290 and 4291, Public Resources Code.

1275.15. Hydrant/Fire Valve

(a) The hydrant or fire valve shall be 18 inches above grade, 8 feet from flammable vegetation, no closer than 4 feet nor farther than 12 feet from a roadway, and in a location where fire apparatus using it will not block the roadway.

The hydrant serving any building shall:

(1) be not less than 50 feet nor more than 1/2 mile by road from the building it is to serve, and

(2) be located at a turnout or turnaround, along the driveway to that building or along the road that intersects with that driveway.

(b) The hydrant head shall be brass with 2 1/2 inch National Hose male thread with cap for pressure and gravity flow systems and 4 1/2 inch draft systems. Such hydrants shall be wet or dry barrel as required by the delivery system. They shall have suitable crash protection as required by the local jurisdiction.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1275.20. Signing of Water Sources

Each hydrant/fire valve or access to water shall be identified as follows:

(a) if located along a driveway, a reflectorized blue marker, with a minimum dimension of 3 inches shall be located on the driveway address sign and mounted on a fire retardant post, or

(b) if located along a street or road,

(1) a reflectorized blue marker, with a minimum dimension of 3 inches, shall be mounted on a fire retardant post. The sign post shall be within 3 feet of said hydrant/fire valve, with the sign no less than 3 feet nor greater than 5 feet above ground, in a horizontal position and visible from the driveway, or

(2) as specified in the State Fire Marshal's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

ARTICLE 5. FUEL MODIFICATION STANDARDS

1276.00. Intent

To reduce the intensity of a wildfire by reducing the volume and density of flammable vegetation, the strategic siting of fuel modification and greenbelts shall provide (1) increased safety for emergency fire equipment and evacuating civilians; and (2) a point of attack or defense from a wildfire.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1276.01. Setback for Structure Defensible Space

(a) All parcels 1 acre and larger shall provide a minimum 30 foot setback for buildings and accessory buildings from all property lines and/or the center of a road.

(b) For parcels less than 1 acre, local jurisdictions shall provide for the same practical effect.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1276.02. Disposal of Flammable Vegetation and Fuels

Disposal, including chipping, burying, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels caused by site development and construction, road and driveway construction, and fuel modification shall be completed prior to completion of road construction or final inspection of a building permit.

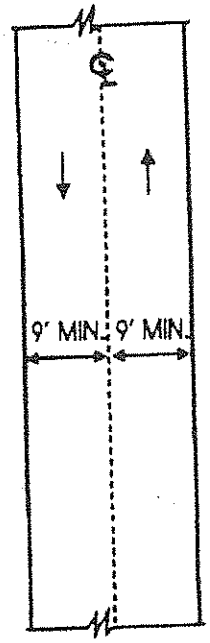
NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

1276.03. Greenbelts

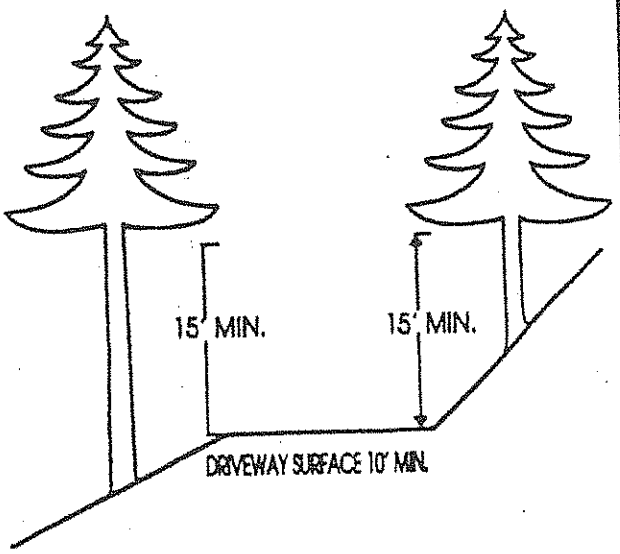
Subdivisions and other developments, which propose greenbelts as a part of the development plan, shall locate said greenbelts strategically, as a separation between wildland fuels and structures. The locations shall be approved by the inspection authority.

NOTE: Authority cited: Section 4290, Public Resources Code. Reference: Sections 4290 and 4291, Public Resources Code.

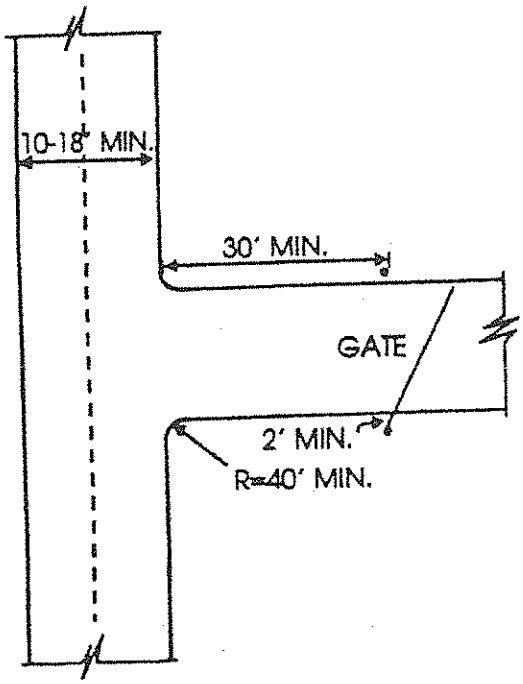
****END****



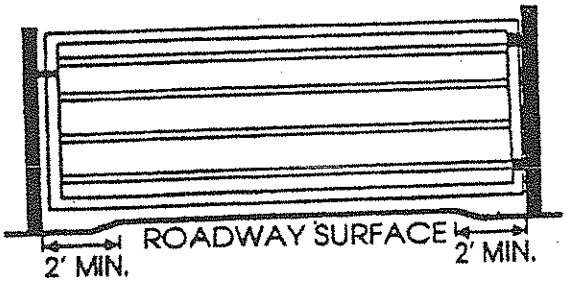
TWO-LANE ROAD



DRIVEWAY



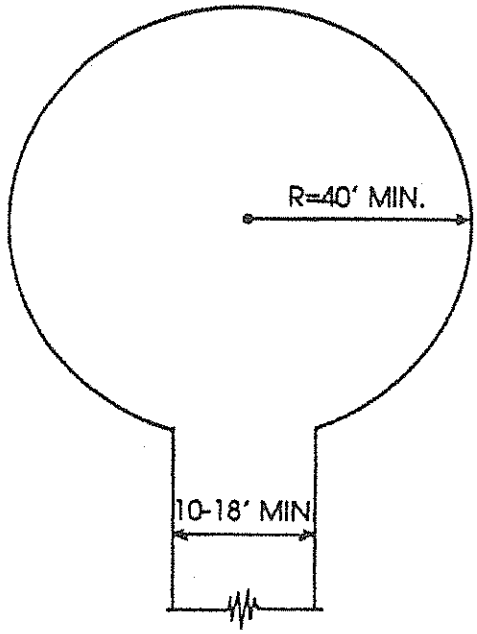
GATED ENTRANCES



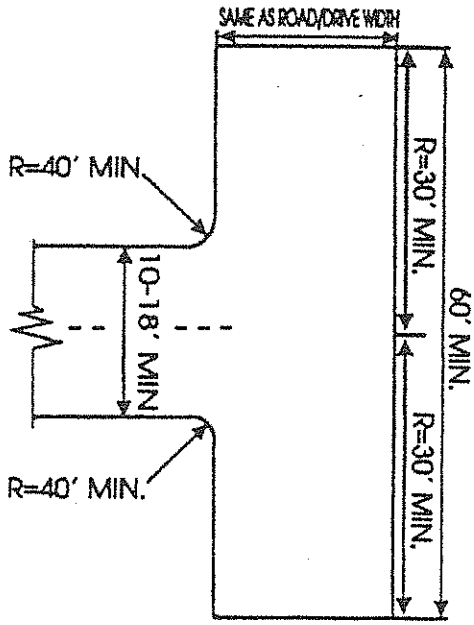
GATES

GATES, ROADWAY WIDTHS AND VERTICAL CLEARANCE

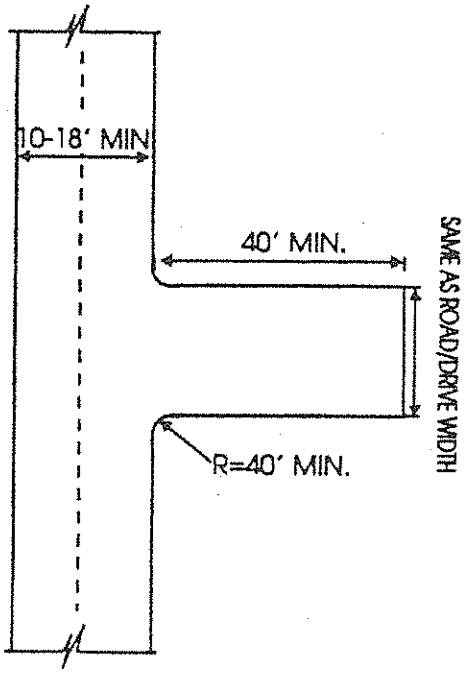
PRC 4290 GUIDEBOOK
CALIFORNIA DEPARTMENT OF FORESTRY & FIRE PROTECTION



TURNAROUND



HAMMERHEAD/T



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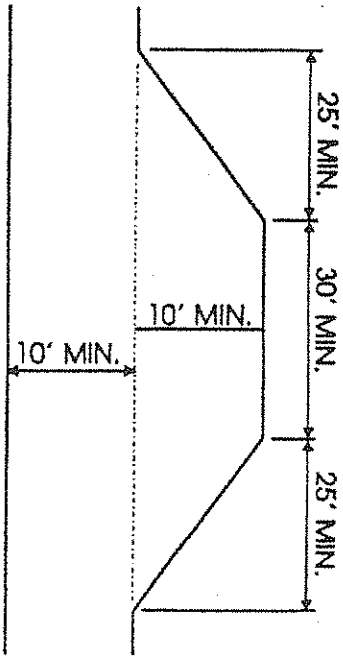

TURNOUT

TURNOUTS AND TURNAROUNDS

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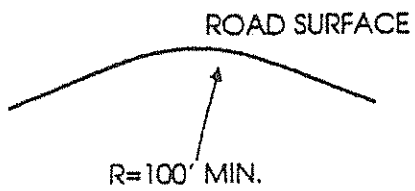
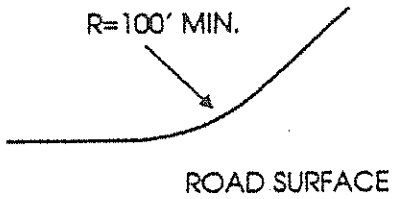
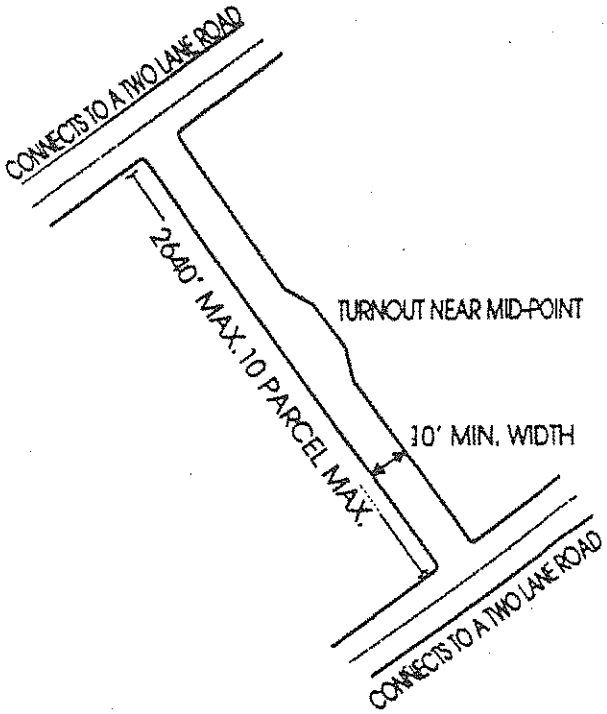
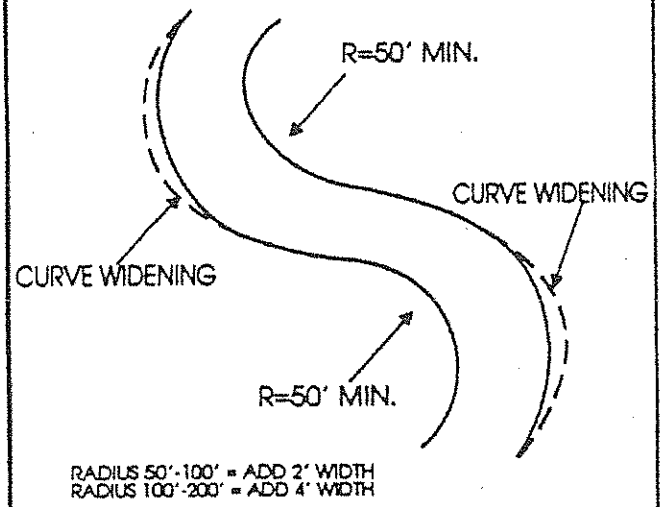
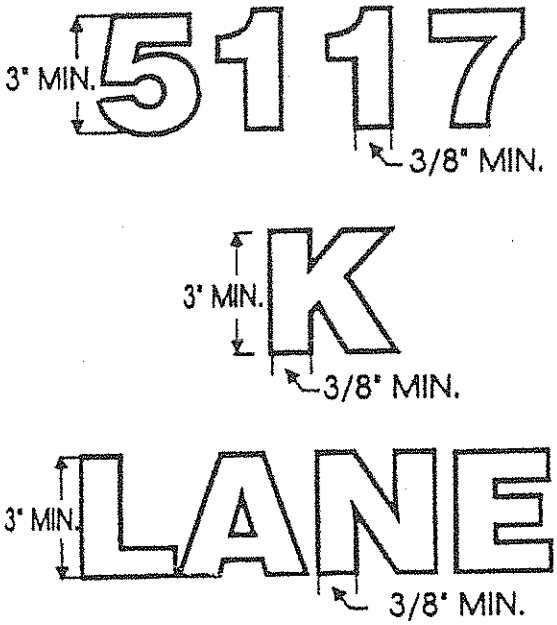
FORESTRY & FIRE PROTECTION











CURVES, ADDRESSES & ONE-WAY ROADS

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5. Bear/Animal Resistant Containers

Constructing Bear-resistant Waste Enclosures

Bears are incredibly strong, powerful animals. Their massive shoulders give them the ability to bend and pry metal, and break into structures and cars. Storing waste in an enclosed, sturdy structure is usually more of a deterrent to bears than storing waste outdoors in a plastic bear-resistant cart; however, building an enclosure that is impenetrable by a bear is difficult. Sturdy structures that have minimal gaps and openings are harder for bears to get into, making it less likely that a bear will expend the energy to break into and damage the structure.

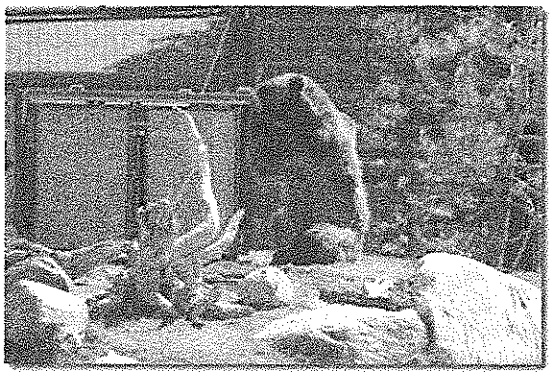


Photo provided by Canshed

Bear-resistant Waste Enclosure Requirements for the Secure Trash Regulation Zone

One option for securing waste from bears is to store your trash and compost in a bear-resistant enclosure until it is collected directly from the enclosure by your waste hauler. Not all waste haulers that serve Boulder may offer this service, so please contact your waste hauler for information about the services offered.

The definition and criteria for a bear-resistant enclosure, as described in Rule 6-3-12.A(14), is:

> *A "Bear Resistant Enclosure" shall be an enclosed structure, made of metal, wood, stone, brick, concrete or the equivalently sturdy material, consisting of five (5) sides and a secure door or cover, which shall have a latching device of sufficient design and strength to prevent access by bears. A garage or other building that meets the foregoing criteria can be a "Bear Resistant Enclosure."*

Waste enclosures may not require a city permit to install, but enclosures that are designed to be fixed in place need to satisfy all applicable regulations of Title 9 of the Boulder Revised Code (B.R.C.) 1981. Examples of these regulations include: minimum setbacks, building separation, maximum building coverage, site triangles, etc.

In most residential zones, depending on the specific design of the trash enclosure, it may also contribute "floor area" toward the maximum allowed floor area ratio if the floor-to-ceiling height within the trash enclosure is greater than six feet. For more information about code regulations and requirements, contact a Project Specialist in Planning and Development Services with the specifications of your proposed enclosures so they can provide information specific to your property. Email plandevelop@bouldercolorado.gov or call 303-441-1880.

Bear-Resistant Enclosure Design Guidelines

The city ordinance does not specify design or hardware requirements; however, the following guidelines are based on structures that have been successful in deterring bears in other communities.

The sides of the structure should extend to the ground and the door should not have more than a two-inch gap along the bottom. The door must have a latching device of sufficient design and strength to prevent access by wildlife. Ventilation openings should be covered with a heavy gauge steel mesh or other material of sufficient strength to prevent access.

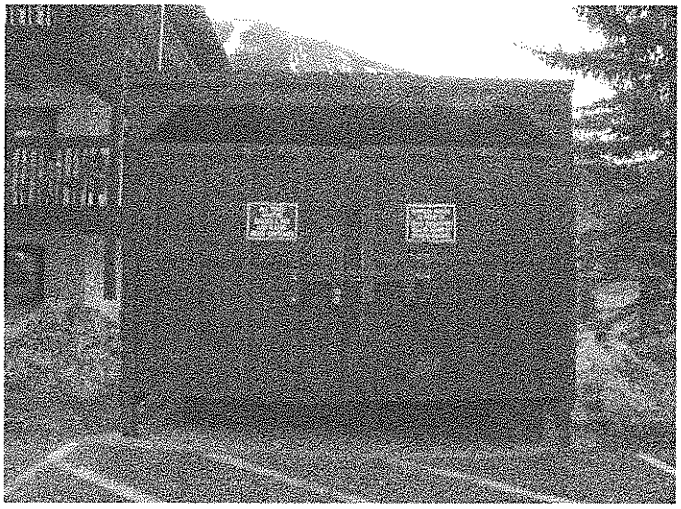
Other features include:

- Metal crossbars to latch the doors;
- Metal-framed wood doors for strength;
- Minimal gaps (ideally 3/8" or less); and/or
- Ventilation openings covered with metal mesh or material of sufficient strength to prevent wildlife access;

Examples of Enclosures

Not Recommended

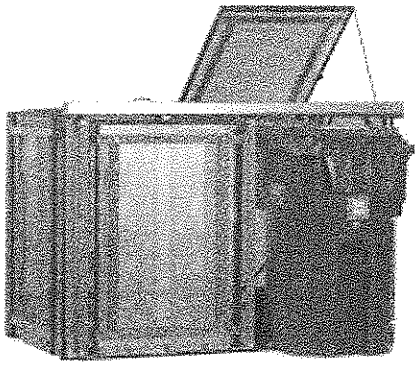
The large gaps at the top and bottom allow bears to enter.

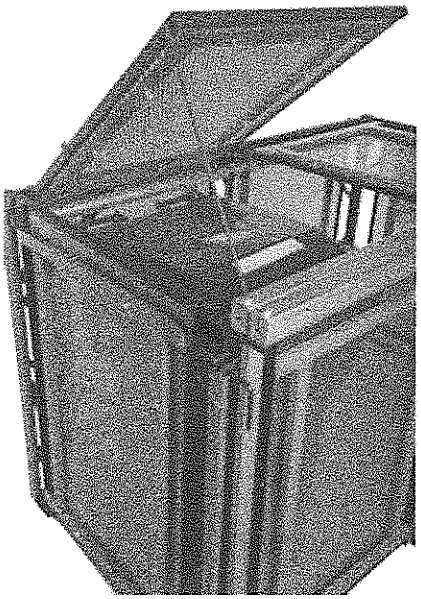


Recommended

Waste enclosures are not *required to* be bear-resistant certified, but this ***Canshed*** enclosure is produced in Boulder, has been tested with grizzly bears, and is certified bear-resistant.

Visit www.canshed.us.com for more information.





Recommended

An enclosed wood structure with minimal gaps around the doors and between the door and the ground. This structure has not certified as bear-resistant but meets the ordinance criteria.

STANDARD (NON-EMERGENCY) RULE

Rule Establishing Requirements for Bear Resistant Containers, Dumpsters and Enclosures

This rule establishes requirements for Bear Resistant Containers, Dumpsters and Enclosures

(a) A "Bear Resistant Container" shall be a fully enclosed container that meets the standards of testing and a "passing" rating by the Interagency Grizzly Bear Committee (IGBC) as bear resistant.

(b) A "Bear Resistant Dumpster" shall be an enclosed structure, made of metal, consisting of five (5) sides and a secure door or cover, which shall have a latching device of sufficient design and strength to prevent access by bears. A Bear Resistant Dumpster must include a door, chute or other similar access point for use that self-latches and is secure from bears in the closed position.

(c) A "Bear Resistant Enclosure" shall be an enclosed structure, made of metal, wood, stone, brick, concrete or the equivalently sturdy material, consisting of five (5) sides and a secure door or cover, which shall have a latching device of sufficient design and strength to prevent access by bears. A garage or other building that meets the foregoing criteria can be a "Bear Resistant Enclosure."

STANDARD (NON-EMERGENCY) RULE

The Adopting Authority establishes this rule to set requirements for bear resistant containers, dumpsters and enclosures and inform the public of those requirements.

Legal Authority: Title 1, Chapter 4, "Rulemaking," and Section 6-3-11, "City Manager Authorized to Issue Rules," B.R.C. 1981

Approved as to form and legality for adoption on April 25, 2014 (date).
_____ (signature), (~~Assistant/Deputy~~) City Attorney.

Approved before publication by City Manager ~~or delegate~~ on April 25, 2014 (date).
_____ (signature), City manager (title),
Adopting Authority.

Three copies of the rule filed with City Clerk on 4/25/2014 (date).

Notice publication date (15-day comment period) in the Daily Camera: 4/28/2014 (date).

Rule approved and adopted with/without change after considering public comment by City Manager ~~or delegate~~ on May 19, 2014 (date)
_____ (signature), City Manager (title),
Adopting Authority.

Adopted rule re-filed with City Clerk and effective on May 20, 14 (date)