APPENDIX D:

Shasta County Fire Safe Standards

CHAPTER 6

FIRE SAFETY STANDARDS

Adopted:	September 22, 1981
Revised:	August 7, 1986
	September 29, 1988
	April 1, 1992
	September 4, 1992
	May 15, 2001
	June 1, 2003

6.0 GENERAL POLICIES

6.01 AUTHORITY

These standards shall be administered and implemented by the County Fire Warden, his or her designees, and as otherwise authorized by the Board of Supervisors by adoption of these standards.

6.02 SCOPE

These standards shall apply to subdivisions, parcel maps, use permits, administrative permits, building permits, mobile home installation permits, and other developments which require the issuance of a permit by the County of Shasta.

6.03 CONSISTENCY WITH OTHER STANDARDS AND REGULATIONS

a. Portions of these standards are required by the California Code of Regulations (CCR) Title 14, Division 1.5, Chapter 7, Subchapter 2, Articles 1-5. Such sections are noted with the CCR section in parenthesis after the section. As minimum State of California Regulations, these sections would supersede other Shasta County regulations and standards.

b. Sections not noted with the CCR in parenthesis are locally adopted standards which exceed or differ from the requirements of the regulations of the State of California. These standards are adopted by resolution and may be superseded by other Shasta County Ordinances.

c. These standards are intended to be minimum standards. If other County Standards require a higher standard of development, then the other standard prevails. Where these standards require a higher standard of development, these standards prevail.

6.1 ACCESS

a. The following standards shall establish minimum access requirements for public safety. The road and driveway networks shall provide safe access for emergency wildland fire equipment and civilian evacuation concurrently and shall provide unobstructed traffic circulation during a wildfire emergency. The road and driveway network shall also provide all-weather, safe access for emergency personnel responding to medical aids, traffic accidents, and structure fires. The standards shall apply to subdivisions, parcel maps, use permits, administrative permits, building permits, mobile home installation permits, and any other developments which require the issuance of a permit by the County of Shasta.

b. In accordance with Sections 6.91 thru 6.94 of these standards, the County Fire Warden or the approving authority may approve or recommend the approval of exceptions to the access standards where the same practical effect can be achieved and where reasonable access can be provided to assure adequate evacuation routes for the public and adequate access routes for emergency personnel and equipment. In determining whether the same practical effect can be achieved, the approving authority shall apply and make findings concerning the performance criteria set forth in Section 6.92.

c. For single family residential building permits and residential mobile home installation permits, off-site improvements will not be required if adequate physical access is existing as determined by the County Fire Warden. Private bridges on access roads must be certified by a licensed engineer when required by the County Fire Warden. If modifications are necessary in order to provide adequate physical access for fire apparatus, then a building or grading permit shall be obtained and the necessary modifications shall be made.

d. For administrative and use permits, off-site improvements will not be required on public roads and streets constructed prior to January 1, 1992, if adequate physical access exists and the County Fire Warden finds that any increase in personal density created by the project will not adversely affect public safety.

6.11 GENERAL ROAD DESIGN REQUIREMENTS

Scope:

It shall be the intent of the Fire Safety Standards to provide for safe access for emergency fire equipment, civilian evacuation, and unobstructed traffic circulation by requiring the construction of continuous or through roadways and limiting the length and use of dead-end roads.

6.11.1 Dead-end Road Length:

The maximum length of a dead-end roads shall not exceed the following cumulative lengths, regardless of the number of parcels served. Cumulative lengths refer to the combined lengths of dead-end roads accessed from the particular dead-end road in question.

Parcels less than one acre in size - 800 feet
Parcels one acre or larger in size - 1000 feet

6.11.1.1 Exception:

The County Fire Warden or approving authority may grant an exception to the maximum length dead-end road standards for parcels 40 acres or larger in size providing the cumulative dead-end road(s) servicing such a parcel are not over 5280 feet in length. In considering such an exception, the County Fire Warden or approving authority shall make findings that the exception does not adversely affect public safety in the area.

6.11.2 Construction Standard:

Continuous or through roads constructed in areas designated by the General Plan as Urban (UR), Suburban (SR), Commercial (C) and Industrial (I) shall be constructed in accordance with Chapter 2 of the Development Standards. Continuous or through roads constructed in all other areas, may be constructed as emergency fire escape roads as determined by the County Fire Warden and the Director of the Department of Public Works. Emergency fire escape roads shall be constructed in accordance with the minimum road standards as specified in Section 6.14 of the Fire Safety Standards.

6.11.3 Density:

When an area or project is accessed by a single paved road and the area or project contains more than 50 parcels or is intended to be occupied by more than 150 persons, then the area or project shall be required to construct a continuous road system that provides a minimum of two (2) paved access roads designed in accordance with Chapter 2 of the Development Standards

6.11.4 Open Space and Greenbelts:

Projects creating open space and greenbelt areas shall provide adequate fire department access to such areas as determined by the County Fire Warden or approving authority.

6.12 PRIVATE ROAD, PUBLIC ROAD, AND NON- RESIDENTIAL DRIVEWAY STANDARDS

a. The following standards are minimum standards and may be superseded by the requirements of Chapter 2 of the Development Standards when said requirements are more stringent then these minimum standards.

b. Non-residential driveways shall provide fire department access from nearest Shasta County recognized private or public roadway to within 150 feet of any portion of the exterior wall of each building on the premises. An exception to subsection (b) may be approved by the County Fire Warden when buildings (s) are completely protected with an approved automatic fire sprinkler system.

c. Following are minimum road and non-residential driveway construction standards:

1. Width – Eighteen (18) feet, unobstructed. (CCR T. 14, Section 1273.01)

2. Shoulders - one (1) foot wide on each side of driving surface.

3. Vertical Clearance - Fifteen (15) feet, unobstructed. (CCR T. 14, Section 1273.07)

4. Surface

   a. All-weather, capable of supporting 40,000 pound load. (CCR T.14, Section 1273.02)

   b. Those portions of roadways and driveways with grades greater than 12% shall be paved in accordance with Chapter two of the Development Standards.

5. Horizontal Curvature (CCR T.14, Section 1273.04)

   a. Not less than 50 feet inside radius

   b. Curves having an inside radius of 50-100 feet shall have a minimum surfacing width of 22 feet.

   c. Curves having an inside radius of 100-200 feet shall have a minimum surfacing width of 20 feet.

6. Vertical Curvature – Vertical curves shall be designed by a licensed engineer to accommodate fire apparatus.

7. Turnarounds

   a. Dead-end roads shall be provided with a turnaround.

   b. Dead-end non-residential driveways over 150 feet in length shall be provided with a turnaround within 50 feet of the building.

   c. Turnarounds shall be constructed in accordance with Figure 2-40. Turnarounds shall have all-weather surfaced radius of not less than 40 feet on roads. On roads, the right-of-way shall have a radius of not less than 50 feet.

   d. Hammerhead or “T” turnarounds may be approved for parcel maps by the approving authority upon considering recommendations by the Department of Public Works and the County Fire Warden. Alternative turnarounds shall be constructed in accordance with Figure 2-40.

   e. Hammerhead or “T” turnarounds may be approved on non-residential driveways by the County Fire Warden. Alternative turnarounds shall be constructed in accordance with Figure 2-40.

8. Hydrant Turnouts

   a. Roads and commercial driveways less than 28 feet in width shall be provided with turnouts at each fire hydrant.

   b. Turnouts shall be a minimum of 10 feet wide and 30 feet long with a minimum 25 foot taper at each end as per attachment FS-4. (CCR T. 14, Sections 1273.06 and 1275.15)

   c. An exception to the turnout requirement may be granted by the County Fire Warden when fire hydrants are required at intersections.

9. Structures (Bridges, Culverts, etc.)

   a. Structures shall be designed and constructed to AASHTO HS20-44 loading or to carry the maximum legal load specified in the California Vehicle Code (CCR T.14, Section 1273.07)

   b. Bridges having limitations shall be provided with signing that designates the limitations including vertical clearance limitations, weight limitations, and single lane conditions. (CCR T.14, Section 1273.07)

c. One-lane bridges shall provide unobstructed visibility from one end to the other and shall be provided with turnouts at both ends as per attachment FS-4. (CCR T.14, Section 1273.07)

10. Grades – shall not exceed 16%. (CCR T.14, Section 1273.03)

11. One-way roads may be allowed by the approving authority upon considering recommendations from the County Fire Warden that such roads will provide safe emergency access for fire equipment, civilian evacuation, and unobstructed traffic circulation during emergencies. One-way roads shall provide a minimum twelve (12) feet wide traffic lane. One-way roads shall not exceed 2,640 feet in length. One-way roads over 1320 feet in length shall provide a turnout at approximately the midpoint. One-way roads may not provide direct access to more than 10 dwelling units. One-way roads shall connect to a two-lane roadway at both ends. (CCR T.14, Section 1273.08)

12. Obstructions – minimum widths and vertical clearance shall be maintained.

13. Gates

    a. Gates on private roads and commercial driveways shall be a minimum of 20 feet in width. (CCR T.14, Section 1273.11)

    b. Gates shall be set back a minimum of 30 feet from the edge of pavement of adjacent roadways. (CCR T.14, Section 1273.11)

    c. Electronic security gates shall provide for fire department access. Plans shall be submitted to the County Fire Warden or his / her designee for review and approval prior to any construction.

14. Speed Control Bumps on private roads and driveways shall not exceed four (4) inches in height.

6.13 RESIDENTIAL DRIVEWAY STANDARDS

a. The following standards are minimum driveway standards to be applied to residential driveways serving no more than three (3) residences located on a single parcel. Residential driveways servicing four (4) or more residences shall meet the requirements of Section 6.12. (CCR T.14, Section 1271.00)

b. Residential driveways shall provide fire department access from the nearest Shasta County recognized private or public roadway to within 50 feet of each residence on the parcel. (CCR T.14, Section 1273.10)

c. Following are minimum residential driveway standards:

1. Width

   a. Sixteen (16) feet, unobstructed.

   b. The County Fire Warden may approve widths of twelve (12) feet for short distances. The lesser widths may be utilized at bridges, culverts, gates, and cattle guards, and in areas where unique topographic conditions exist.

2. Shoulders – One (1) foot wide on each side of driveway.

3. Vertical clearance, fifteen (15) feet, unobstructed. (CCR T.14, Section 1273.10)

4. Surface

   a. Capable of supporting 40,000 pound load. (CCR T.14, Section 1273.02)

   b. All-weather surface width of not less than twelve (12) feet of the driveway. Minimum surface thickness of 4” of compacted class 3 aggregate base rock.

   c. Driveways with a grade of over 12% slope shall be paved in accordance with the flaglot driveway standard in Figure 2-16 of the Development Standards.

5. Horizontal curves shall have an inside radius of <u>not</u> less than 50 feet.

6. Vertical curves shall have a minimum length of not less than 100 feet or be designed to accommodate fire equipment as approved by the County Fire Warden or approving authority. See illustration FS-5.

7. Turnarounds

   a. Driveways exceeding 200 feet in length shall be provided with a turnaround within 50 feet of the residences. (CCR T.14, Section 1273.10)

   b. Turnarounds shall be constructed in accordance with Figure 2-42 of the Development Standards.

8. Hydrant Turnouts – If a fire hydrant is located along a residential driveway, then a turnout shall be provided as per Attachment FS-4. (CCR T.14, Sections 1273.06 and 1275.15)

9. Bridges and Culverts

   a. Bridges and culverts shall be designed and constructed to AASHTO HS20-44 loading or to carry the maximum legal load specified by the California Vehicle Code. (CCR T.14, Section 1273.07).

   b. Bridges having limitations shall be posted with signs designating the limitations including vertical clearance and weight limitations. (CCR T.14, Section 1273.07)

10. Grades shall not exceed 16%. (CCR T.14, Section 1273.03)

11. Gates

   a. Gates shall be a minimum of twelve (12) feet wide. (CCR T.14, Section 1273.11)

   b. Gates shall be set back a minimum of 30 feet from the edge of pavement of the adjacent roadway. (CCR T.14, Section 1273.11)

   c. Electronic security gates shall provide for fire department access. Plans shall be submitted to the County Fire Warden or his/her designee for review and approval prior to any construction.

6.14 EMERGENCY FIRE ESCAPE ROAD STANDARDS

Scope:

The following construction standards shall apply to the creation of an emergency fire escape road. The construction standards shall apply only to the emergency fire escape road and not an existing road unless a portion of an existing road becomes part of an emergency fire escape road.

The following standards are minimum standards and may be superseded by the requirements of Chapter 2 of the Development Standards.

6.14.1 Definition:

Emergency Fire Escape Road: A road designed and constructed primarily to provide an alternate route of civilian vehicular egress, in the event of a wildfire, from an area accessed by only one ingress/egress road, and that the area served by the one ingress/egress road exceeds the minimum dead-end road length as indicated in Section 6.11.

6.14.2 Delineation:

Applicant shall submit improvement plans indicating the proposed location and placement of the emergency fire escape road to the Shasta County Fire Department and the Department of Public Works.

6.14.3 Location and Placement:

The County Fire Warden and the Director of the Department of Public Works shall determine the final location and placement of emergency fire escape roads. Emergency fire escape roads shall be located in relationship to topography, fuel types and fuel density in the project area, and serviceability of existing ingress road.

Emergency fire escape roads shall provide a second means of vehicular egress and shall be sufficiently separated from the primary vehicular ingress road to prevent both roadways from being simultaneously obstructed during a wildland fire.

6.14.4 Right of Ways:

Right-of-ways or easements shall be a minimum of 30-feet in width and shall be sufficient to permit construction and maintenance of the required road improvements. Applicant shall acquire and offer rights-of-ways or easements for dedication to the County of Shasta.

6.14.5 Construction Standards:

Emergency fire escape roads shall be either:

A) Constructed to the standards of a permanent road division emergency fire escape road pursuant to Section 6.14.6 and be maintained by the permanent road division or,

B) Constructed to the standards of a paved emergency fire escape road pursuant to Section 6.14.7.

6.14.6 Permanent Road Division Emergency Fire Escape Road Construction Standards:

Emergency fire escape roads constructed as a permanent road division emergency fire escape road shall be constructed to the following standards and as shown in Figure

FS-8:

6.14.6.1 Width:

A) Shall be a minimum of 18 feet in width, unobstructed; and

B) Shall provide 1-foot shoulders on each side of road.

6.14.6.2 Surface:

Shall be an 18-foot wide all-weather surface with a minimum thickness of 4 inches of compacted class-3 aggregate base rock (excluding shoulders).

6.14.6.3 Vertical Clearance:

Vertical clearance shall not be less than 15 feet unobstructed.

6.14.6.4 Grades:

Grades shall not exceed 16%.

6.14.6.5 Horizontal Curves:

A) Horizontal curves shall have an inside radius of not less than 50 feet.

B) Curves having an inside radius of 50-100 feet shall have a minimum surfacing width of 22 feet.

C) Curves having an inside radius of 100-200 feet shall have a minimum surfacing width of 20 feet.

6.14.6.6 Vertical Curvature:

Vertical curves shall have a minimum length of not less than 100 feet.

6.14.6.7 Bridges and Culverts:

Bridges and culverts shall be designed by a licensed engineer, and be constructed to AASHTO HS20-44 loading (40,000 pound vehicle load) or to carry the maximum legal load specified in the California Vehicle Code.

6.14.6.8 Gates:

Gates may be installed in areas so that an emergency fire escape road not provide through access on a continual basis.

A) The gate opening shall be minimum of 20 feet in width.

B) Gates shall be designed to open without the use of a key, tools, or any special knowledge or effort. Gates shall not be locked.

C) Gates shall not be rendered unusable by using chains, bolts, and latches or barricaded.

6.14.6.9 Signs:

Signs shall be constructed and installed adjacent to the beginning of the emergency fire escape road as shown in Figure FS-9.

6.14.7 Paved Emergency Fire Escape Road Construction Standards:

Emergency fire escape roads constructed as paved emergency fire escape roads shall be constructed to the same standards in accordance with Section 6.14.6 as a permanent road division emergency fire escape road, except that the aggregate base shall be surfaced with 0.17’ X 18’ of asphalt concrete as shown in Figure FS-8.

6.2 STREET SIGNS AND BUILDING NUMBERING

6.21 ADDRESS FOR BUILDINGS

a. Every building or structure, except accessory buildings shall be provided with a street address marker located with respect to the nearest public highway, street or road servicing such building or structure so as to be clearly visible and legible at all times from the roadway. Each dwelling unit shall be separately identified. (CCR T.14, Section 1274.08)

b. Numbers and/or letters shall be a minimum of 4 inches in height, 3/8 inch stroke, reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.09)

c. Each building, except accessory buildings, shall have a permanently posted address which shall be posted at the intersection of the driveway and the road. Addresses shall be visible from both directions of travel. Where multiple addresses are required at a single driveway, they shall be mounted on single post. (CCR T.14, Section 1274.10)

   Exception: Buildings located within 100 feet of the road may post the address on the surface of the wall facing the road providing that the address is clearly visible from the road.

d. The address shall be posted prior to the final building inspection by the Shasta County Building Division.

e. Address posting shall be maintained. (CCR T.14, Section 1274.10)

6.22 STREET IDENTIFICATION SIGNING

a. Newly constructed or approved public and private roads shall be identified by a name or number that is non-duplicating and consistent with the Shasta County road naming system. (CCR T.14, Section 1274.04)

b. Signs identifying roads, streets, and private lanes shall be placed at the intersection of those roads, streets and/or private lanes and shall be clearly visible from both directions of travel for a distance of at least 100 feet. (CCR T.14, Sections 1274.02 and 1274.05)

c. Letters and numbers for street and road signs shall be a minimum of 3 inches in height, 3/8 inch stroke, reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.01)

6.23 STREET LIMITATION SIGNING

a. Newly constructed and approved public and private roads shall be provided with signs identifying any access limitations such as weight limitation, vertical clearance, dead-end road, one-way road, single-lane condition, and other similar limitations. (CCR T.14, Section 1274.06)

b. Limitations shall be clearly posted at two locations:

- the intersection proceeding the traffic limitation

- at a location not more than 100 feet before the actual area of traffic limitation (CCR T.14, Section 1274.06)

c. Letters and numbers for limitation signs shall be a minimum of 3 inches in height, 3/8 inch stroke reflectorized, and contrasting with the background color. (CCR T.14, Section 1274.01)

6.3 FIRE PROTECTION WATER STANDARDS

With A Central Water System

a. The standards in this section apply to new developments within the boundaries of a public or private water service jurisdiction having a pressurized water system that contains water mains that are six inches in diameter or larger in size. The standards in Section 6.31 (c) will not be applied by Shasta County to permit applications for single-family residences on parcels that were created prior to January 1, 1989.

b. For land divisions, the required water system, including hydrants, must be installed and in service or bonded for prior to recording the map.

c. For use permits, building permits and other developments, the required water system must be installed and in service prior to the foundation inspection by the Shasta County Building Division.

d. For single family residential construction, mobile home installation permit or for a building permit for substantial improvements to any such structures as defined by Section 5.01.080 of the Shasta County Ordinance Code, an approved fire hydrant shall be installed at an approved location on water mains four inches or larger in size within 750 feet of the parcel or, the applicant shall contribute to the fire hydrant fund.

6.31 FIRE FLOW AND HYDRANT SPACING

a. New water facilities shall provide the following flow requirements in addition to the average daily demand.

b. Proof of the ability to comply with the fire flow requirements shall be submitted with the application for development. Proof may consist of a letter of certification from the responsible water supply entity.

c. See below:

	Land Use	Min. Flow	Min. Flow w/Sprinklers	Maximum Hydrant Spacing	Maximum Driving Distance *
1.	Single-family residential lots larger than one acre in size***	500 gpm	N/A	750’	750’
2.	Single-family residential lots, one-half to one acre in size.	750 gpm****	N/A	500’	300’
3.	Single-family residential lots, less than one-half acre in size and mobile home parks	1000 gpm****	N/A	500’	300’
4.	Multiple residential, 3-8 units per acre, one story, neighborhood business (C-1 Zone District)	1500 gpm	1000 gpm	500’	300’
5.	Multiple residential, 9 or more units per acre; one and two stories; commercial or industrial buildings not to exceed 10,000 square feet **	2000 gpm	1250 gpm	300’	200’
6.	Multiple residential, 3 stories or higher; commercial or industrial buildings over 10,000 square feet**	2500 gpm	1500 gpm	300’	200’

See next page for asterisked items.

* Maximum Driving Distance from Hydrant to Building

** For specific projects or occupancies, greater fire flows may be required.

*** For land divisions creating large lots, a maximum of one hydrant per proposed building site shall be required.

**** Fire flows of not less than 500 gpm will be acceptable if the responsible water supply entity is implementing an adopted capitol improvement plan to upgrade the water system to provide the needed fire flows. Plans shall be approved by the County Fire Warden.

d. Fire flows and hydrant spacing for new developments utilizing the planned development zone district, density averaging or clustering will be based upon the actual density created by the clustering.

e. In order to qualify for the sprinkler fire flow reduction, a building must be completely protected by an automatic sprinkler system installed in accordance with NFPA 13 and the latest edition of the Uniform Building Code Standards. Approved backflow prevention device(s) may be required by the responsible water supply entity.

f. If the fire flows listed above are greater than those required by the Insurance Services Office Guide for Determination of Needed Fire Flow, the lesser fire flow shall be allowed for the development. However, system design may be required to meet higher fire flow requirements for future development or expansion.

g. On residential and commercial projects where minimum fire flow or hydrant size or spacing cannot be achieved, the Fire Warden may, where reasonable fire protection can otherwise be supplied, approve reduced fire flows, hydrant size or increase spacing if alternate facilities or construction methods can be provided to assure reasonable fire protection.

6.32 DURATION

The minimum fire flow requirements detailed in Section 6.31 above shall be sustained for a period of at least two hours.

6.33 PRESSURE

The water supply system shall be designed to maintain normal operating pressures of not less than 20 psig at the required fire flow. Static pressure at the hydrant should not exceed 150 psig.

6.34 WATER LINE SIZE AND DESIGN

The distribution system shall be of adequate size and so designed, in conjunction with related facilities, to maintain the minimum fire flow and pressure required. Minimum pipe size for new water lines that supply or may be anticipated to supply fire hydrants shall be not less than six inches in diameter. Water line materials shall be approved by the responsible water supply entity.

6.35 LOCATION

a. Fire hydrants shall be attached to the distribution system at locations approved by the responsible fire protection agency and water supply entity providing service.

b. Fire hydrants should be located not closer than 50' to the building being protected unless a second hydrant is available as approved by the responsible fire department.

c. Fire hydrants installed after January 1, 1992, shall be located at a turnout or turnaround along the road or driveway so that fire apparatus using the hydrant will not block the roadway. (CCR T.14, Section 1275.15) Turnouts shall be constructed in accordance with illustration FS-4. An exception to the turnout may be granted by the County Fire Warden when fire hydrants are located at intersections.

6.36 MATERIALS AND HYDRANTS

a. Six inch fire hydrants shall conform to A.W.W.A. standards with one 4 ½" and two 2 ½" NST connections. All fire hydrants shall be a dry barrel type. Each hydrant shall be fitted with a 5 ¼" main valve opening and installed as per illustration FS-2.

b. Fire hydrants shall be:

1. Mueller Centurion A-423
2. Kennedy Guardian K-81A
3. Waterous Pacer WB-67
   with oil reservoir

   bronze seat ring

   weather shield and one piece bronze nut

   mechanical attached nozzles

4. or equivalent, as approved by the respective water service and fire protection agency.

c. Each hydrant gate valve shall be supplied with an 8” valve box with metal cover, set to finish grade and installed to allow operation of gate valve as per FS-2 illustration.

d. All hydrants, valves, fittings, pipe, and installation shall be approved by the responsible fire protection agency and water supply entity providing service.

e. Protective barriers shall be provided when required by the respective fire department or water supply entity and shall be installed as per illustration FS-3.

6.37 HYDRANT INSTALLATION

a. Fire hydrants shall be installed in accordance with FS-2 illustrations and items 1 through 6 of illustration FS-1.

b. Hydrant installations are to be inspected in a timely manner by the responsible water supply entity or fire agency prior to burial.

6.38 HYDRANT MAINTENANCE AND MARKING

a. It is essential that hydrants be in operable condition when they are needed; therefore, hydrant maintenance is an important part of these standards.

It is recommended that water and fire districts enter into an agreement to specify which maintenance tasks will be the responsibility of each respective district.

b. A written record of hydrant inspections and maintenance should be maintained.

c. The following hydrant maintenance schedule is recommended:

2 year intervals

- paint hydrant - taking care that paint does not interfere with valve stem operation or cap removal

1 year interval

- flush and flow-test hydrant

6 month interval

- check for leaks in valves and repair
- operate and check street valve
- lubricate valve stem
- lubricate threads on outlets and caps

d. Marking – public hydrant barrels should be painted chrome yellow in color; private hydrant barrels should be painted red in color.

e. Hydrants installed after January 1, 1992, shall be identified by reflectorized blue markers.

1) On paved roadways located below 2,000 foot elevation, reflectorized blue markers shall be installed in accordance with the State Fire Marshall's Guidelines for Fire Hydrant Markings Along State Highways and Freeways, May 1988. See illustration FS-7;

or

Hydrants shall be identified by a reflectorized blue dot (minimum three inch diameter) mounted on a metal post located within three (3) feet of the hydrant. The blue dot shall be three (3) feet to five (5) feet above ground level and clearly visible from the road/driveway. (CCR T.14, Section 1275.20)

2) Along paved roads located at or above the 2,000 foot elevation, and along unpaved roads or driveways, hydrants shall be identified by a reflectorized blue marker on a metal post as specified above. (CCR T.14, Section 1275.20)

f. Flammable vegetation shall be cleared within eight (8) feet of fire hydrants (CCR T.14, Section 1275.15).

g. Landscaping over four (4) inches in height shall not be permitted within eight (8) feet of fire hydrants.

h. Fences, structures, obstructions, and hydrant protection posts shall not be permitted within three (3) feet of fire hydrants.

6.4 FIRE PROTECTION WATER STANDARDS
No Central Water System

The following standards shall apply for new developments within areas without a central water distribution facility (either public or private) as described in Section 6.3a.

6.41 DEVELOPMENT WITHIN WATER AGENCY SPHERE OF INFLUENCE

Developments within the sphere of influence of a public water agency or adjacent to a private water system (as described in Section 6.3) may be required to connect to the water system and to meet the requirements of Section 6.3. The respective Fire District and water supply entity shall make recommendations to the Planning Commission or other appropriate board as to whether or not connection to the water system should be required.

6.42 RESIDENTIAL REQUIREMENTS

a. Each project shall be analyzed for individual requirements by the responsible fire department. Single-family residences outside the boundaries of a public or private water system will normally have water supplied by a fire department water tender.

b. Land divisions that create parcels less than two acres in size shall construct a central water system meeting the requirements listed in Section 6.3.

c. Land divisions that create parcels less than five acres in size shall be located within five road miles of a fire station. Said fire station shall be recognized by the County Fire Warden as being capable of providing fire protection services to the lots being created.

d. If usable and reliable water supplies exist on site, the responsible fire department may require access to such supplies. Access may be either an all-weather road for direct drafting or a gravity flow minimum 3” feeder line with 2 ½” NST gated valve outlet. Examples of water supplies are swimming pools, ponds, lakes, creeks, streams, irrigation ditches, etc.

6.43 FIRE FLOW – Commercial

a. Commercial, industrial, multiple residential (4 units or more) and public assemblies shall develop a private water system that meets the Insurance Services Office Schedule for Needed Fire Flow, June 1980 Edition;

or

Shall participate in a public entity that has plans for developing a water system to provide the needed fire flows. Said plans shall be approved by the County Fire Warden or his representative.

b. On projects where minimum fire flow, hydrant size or spacing cannot be achieved, the Fire Warden may, where reasonable fire protection can otherwise be supplied, approve reduced fire flows, hydrant size or increase spacing if alternate facilities or construction methods can be provided to assure reasonable fire protection.

6.5 BUILDING CONSTRUCTION STANDARDS

6.51 BUILDING SETBACKS

All buildings and accessory buildings constructed on parcels one acre or larger in size shall be setback a minimum of thirty (30) feet from all property lines and road easements. (CCR T.14, Section 1276.01)

6.52 ROOFING

Roofing materials on buildings and accessory buildings constructed within Shasta County shall have a Class “A” or Class “B” fire retardancy rating as specified by Uniform Building Code Standard No. 32-7.

6.53 CHIMNEY

Each structure equipped with a fireplace, stove, or other device that burns any solid or liquid fuel shall provide and maintain a spark arrester over the outlet of the chimney, stovepipe or duct as specified in this section (Public Resources Code 4291 (f)).

A spark arrester is defined as a device constructed of nonflammable material, 12 gauge minimum welded or woven wire mesh, with ½ inch openings or cast iron plate, 3/16 inch minimum thickness or other material found satisfactory by the enforcement agency and having ½ inch perforations for arresting burning carbon or sparks installed in such a manner as to be visible for the purposes of inspection and maintenance as required by Title 24, California Administrative Code, Section 2-1217.

6.54 RAFTERS

The spaces between rafters, the wall plate line and the underside of the roof sheathing shall be filled with solid blocking. No more ventilation than the minimum required by UBC shall be allowed. All vent spacings required by UBC shall be screened.

6.6 FUEL MODIFICATION

6.61 DISPOSAL OF VEGETATION

Disposal, including chipping, burning or removal to a landfill site approved by the local jurisdiction, of flammable vegetation and fuels removed during or caused by site development and/or construction, road and driveway construction, or fuel modification, shall be completed prior to recording the map for land divisions or final inspection for building permits. Disposal of vegetation by onsite burial is not permitted. (CCR T.14, Section 1276.02)

6.62 GREENBELTS

Subdivisions and other developments, which propose greenbelts such as parks, golf courses, irrigated landscaped areas, playgrounds, parking lots, orchards, etc. as a part of the development plan, shall locate said greenbelts strategically to provide a separation between wildland fuels and structures (CCR T.14, Section 1276.03). The location of greenbelts shall be approved by the County Fire Warden.

6.63 VEGETATION CLEARANCES AROUND STRUCTURES

Combustible vegetation shall be cleared around all structures for a distance of not less than 30 feet on each side; or to the property line. This does not apply to specimen trees or irrigated landscaping that will not transmit fire from the native vegetation to the structure. (Public Resources Code Section 4291)

6.7 FLAMMABLE AND COMBUSTIBLE LIQUIDS

6.71 ABOVEGROUND STORAGE TANKS FOR MOTOR VEHICLE FUEL – DISPENSING STATIONS

a. Except as provided in Sections 6.72 and 6.73, flammable and combustible liquid storage tanks at motor vehicle fuel-dispensing stations shall be located in accordance with divisions VI and IX of Article 79 of the Uniform Fire Code as adopted by the County of Shasta.

b. The County Fire Warden and his/her designees may grant approval in writing for the installation of aboveground storage tanks for flammable and/or combustible fuels for motor vehicle fuel-dispensing stations as set forth in Sections 6.72 and 6.73.

c. Fuel-dispensing stations shall obtain any required permits or clearances from the Shasta County Planning Division.

d. Prior to operation of a fuel-dispensing station, an approved Hazardous Material Business Plan shall be filed with the Shasta County Division of Environmental Health.

e. Storage of over 600 gallons requires notification to State Water Resource Control Board.

6.72 VAULTED TANKS OF CONCRETE OR EQUIVALENT

a. Vaulted tanks may be located at commercial, industrial, governmental, or manufacturing establishments and are only intended for fueling vehicles used in connection with the business.

b. Class I and Class II liquids (such as diesel and gasoline) may be dispensed into motor vehicles from listed and approved concrete-vaulted tanks or tanks providing equivalent fire protection of not less than two hours on all tank surfaces. Tanks shall have UL Listing Label attached.

c. Tanks shall not exceed 2,000 gallons individual or aggregate capacity, except for Class II liquids installed in accordance with Section 6.73 and/or exceptions processed in accordance with Section 6.91 through 6.94.

d. Tanks shall be located a minimum of fifteen (15) feet from all property lines and fifteen (15) feet from any buildings on the same property.

e. Vaulted Tanks shall be provided with automatic fuel shut-off devices capable of stopping the delivery of fuel when the level in the tank reaches 90 percent of tank capacity.

f. Warning and identification signs shall be clearly posted on the tank in accordance with the current edition of the Uniform Fire Code. Signs shall identify tank contents and flammability; prohibit smoking and open flames within 25 feet; and require vehicle motors to be stopped when fueling.

g. Protection posts shall be installed in accordance with Figure FS-3 to safeguard the tank against damage from vehicles.

h. Dispensing systems shall be in accordance with the current edition of the Uniform Fire Code. Dispensing devices are allowed to be installed on top of vaulted tanks. Antisiphon devices shall be installed at each pipe connection when such piping extends below the top of the tank.

i. Venting and electrical controls, including emergency pump shut-off switch, shall be in accordance with the current edition of the Uniform Fire Code. A permit shall be obtained from the Building Division for all electrical work.

j. A fire extinguisher with a minimum 2-A, 20B:C rating shall be provided within 75 feet walking distance of the vaulted tank and dispensing area at a location approved by the fire agency having jurisdiction.

k. Simultaneous tank filling and fuel dispensing into motor vehicles is prohibited and signs shall be posted to this effect.

l. The vaulted-tank area and dispensing area shall be graded in such a manner that any fuel spilled will not drain towards buildings or other exposures.

6.73 ABOVEGROUND STORAGE TANKS WITHOUT VAULTS

a. Aboveground tanks may be located at commercial, industrial, governmental, or manufacturing establishments and are only intended for fueling vehicles used in connection with the business and/or as otherwise permitted by Article 79 of the current edition of the Uniform Fire Code.

b. Aboveground tanks without vaults may only be located in the following zone districts and/or as otherwise permitted by Article 79 of the current edition of the Uniform Fire Code:

1) Exclusive Agriculture (EA) District

2) Timber Production (TP) District

3) Timberland (TL) District

4) Mineral Resource (MR) District

5) Light Industrial (M-L) District

6) General Industrial (M) District

7) Public Facilities (PF) District

c. Only Class II fuels (such as diesel) may be dispensed into motor vehicles from approved or listed aboveground tanks without vaults. Class I fuels (such as gasoline) shall be dispensed from underground tanks special enclosures, or vaulted tanks as specified in Section 6.72 and the current edition of the Uniform Fire Code.

d. Aboveground tanks shall have a maximum individual capacity of 12,000 gallons and a maximum aggregate capacity of 24,000 gallons.

e. Tanks shall be located a minimum of:

1) 100 feet from any property line.

2) 50 feet from the nearest side of the edge of a road, not including internal driveways on the parcel.

3) 50 feet from any building on the same property.

4) 50 feet from any fuel dispenser.

f. Only tanks that are designed, and approved or listed for aboveground storage of Class II combustible liquids shall be used. Underground tanks shall not be installed for aboveground use.

g. The area surrounding the tank(s) shall be provided with a concrete and/or solid masonry-diked area with a concrete floor. The volumetric capacity of the diked area shall not be less than 115 percent of the amount of Class II fuel stored within the diked area. Walls of diked areas shall not exceed six (6) feet above the interior grade. Walls shall be designed and certified by a licensed engineer to be liquid-tight and to withstand a full hydrostatic head. The concrete floor of the diked area shall slope away from the tanks towards the walls of the dike. Diked areas containing two or more tanks shall be subdivided by channels or intermediate dikes. Provisions shall be made for draining or removing water from diked areas in a

manner that will protect the environment and not constitute a hazard. Water removal by a sump and pump is preferred; however, drainage by a valve which is operable from outside the dike is acceptable. Such a valve shall be kept locked in the closed position except when water is being drained from the diked area.

h. A means shall be provided for determining the liquid level in each tank and this means shall be accessible to the delivery operator. Provisions shall be made either to automatically stop delivery of liquid to the tank when the liquid level in the tank reaches 98 percent of capacity or to sound an audible alarm when the liquid level in the tank reaches 95 percent of capacity.

i. Class II liquids shall not be dispensed from the tank by gravity flow or by pressurization of the tank. An antisiphon device shall be installed to prevent the release of fuel by siphon flow. A solenoid valve may be required at the tank outlet when the tank elevation produces a gravity head.

j. If a submersible pump system is used, a listed emergency shut-off valve shall be installed at each dispensing device. If a suction pump-type dispensing device is used, a listed vacuum-activated shut-off valve with a shear section or equivalent-type valve shall be installed directly under each dispensing device.

k. Piping shall be protected from physical damage. Piping subject to external corrosion shall be protected by approved or listed corrosion-resistant materials such as fiberglass reinforced plastic.

l. Tanks shall be protected from unauthorized entry either by chain-link fence at least six (6) feet high around the tank or around the perimeter of the yard area.

m. Diked areas shall be kept free of vegetation and combustible materials.

n. The delivery connection shall be located within the diked area. A check valve and shut-off valve with a quick-connect coupling or a dry-break valve shall be installed at the connection and disconnection location for tank filling.

o. Tanks and dispensing areas shall be clearly posted with warning and identification signs in accordance with the current edition of the Uniform Fire Code.

p. The remote fuel dispensing system shall be protected against physical damage by a six (6) inch high concrete curb or protection posts installed in accordance with Figure FS-3.

q. Venting and electrical controls including the emergency pump shut-off switch shall be in accordance with the current edition of the Uniform Fire Code.

r. A permit shall be obtained from the Building Division for the tank foundations and all electrical work.

s. A fire extinguisher with a minimum 2-A, 20B:C rating shall be provided within 75 feet walking distance of the diked-tank area and the dispensing area at a location approved by the fire agency having jurisdiction.

t. Plans for the motor vehicle fuel dispensing facility and the aboveground tank installation shall be submitted to the County Fire Warden or fire agency having jurisdiction for review and approval prior to any construction.

6.8 (Reserved for future additions to Standards.)

6.9 POLICIES AND STANDARDS; EXCEPTIONS; APPEALS

6.91 POLICIES AND STANDARDS NOT A LIMITATION

The policies and standards established by this chapter are not a limitation upon the powers of an approving authority to protect public health and safety and to ensure consistency between the projects and all elements of the General Plan, all other applicable laws, policies and standards of Shasta County, and all applicable state and federal laws and standards. The approving authority by 4/5 vote or greater may, with appropriate findings, grant an exception to the design and construction standards for an individual project in order to avoid physical obstructions which are extremely difficult or impossible to remove; to avoid irreparable damage to natural features; and to handle similar situations which are unforeseen by these standards. Exceptions from the generally applicable Standards shall result in the same practical effect of the general standards by meeting the performance criteria listed in Section 6.92.

6.92 CRITERIA FOR EXCEPTIONS AND APPEALS

a. The approving authority shall apply the following criteria when granting exceptions or appeals:

1. Exceptions shall provide defensible space consistent with the “SRA Fire Safe Regulations.” (CCR T.14, Section 1270.09)

2. Exceptions shall provide safe emergency access for fire equipment.

3. Exceptions shall provide for unobstructed traffic circulation during an emergency.

4. Exceptions shall provide for safe civilian evacuation during an emergency.

5. Exceptions shall not cause delays in emergency response or interfere with the ability of emergency personnel to locate an incident.

6. Exceptions shall provide a sufficient quantity of water for both wildfire and structural fire fighting at a location where it is immediately available to emergency personnel.

7. Exceptions shall not result in fuel modification that would adversely effect access or defensible space thereby jeopardizing civilian and firefighter safety.

b. The approving authority shall consider recommendations from the County Fire Warden and/or the fire agency having jurisdiction in the exception or appeals process. The County Fire Warden and/or fire agency having jurisdiction shall provide documentation outlining the effects of the requested exception on fire protection services.

c. The approving authority shall make a written statement of findings as to the reason for the decision. A copy shall be provided to the applicant and the County Fire Warden.

6.93 EXCEPTIONS

a. Requests for exceptions shall be made in writing to the County Fire Warden by the applicant or the applicant’s authorized representative. Requests shall state the specific section(s) for which an exception is requested, material facts supporting or justifying the exception, and proposed alternative mitigation measures.

b. For projects or permits under the jurisdiction of the Planning Division, the County Fire Warden will forward requests for exceptions to the Planning Commission or Board of Administrative Review along with his or her recommendations. The Planning Commission or Board of Administrative Review may grant or deny an exception in accordance with Section 6.92.

A request for exception on a project subject to an administrative permit may, at the discretion of the Director of Resource Management, be referred to the County Fire Warden for approval or denial of the exception in accordance with Section 6.92.

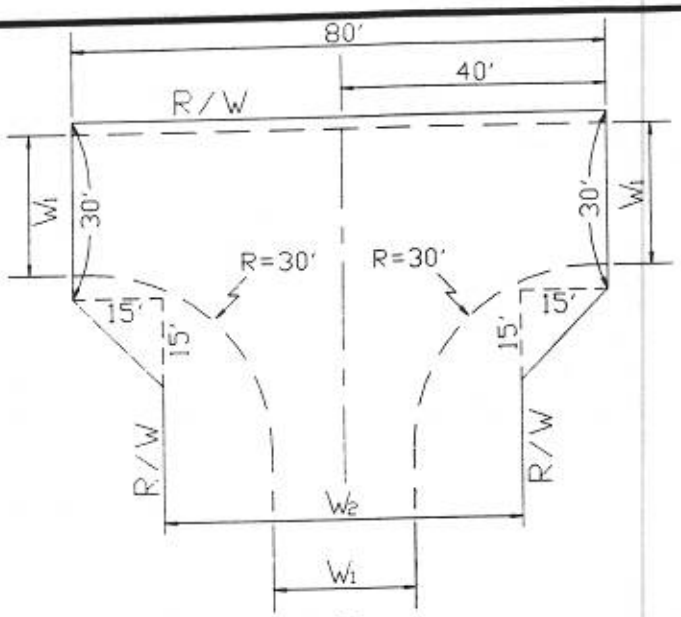
c. For permits under the jurisdiction of the Building Division, the County Fire Warden may grant or deny the exception in accordance with Section 6.92.

6.94 APPEALS

a. Where an exception is not granted by the approving authority, appeals shall be processed in the manner provided for in the Shasta County Code. Planning Commission or Board of Administrative Review appeals shall be processed in accordance with Section 15.08.140. Building permit appeals shall be processed in accordance with Section 16.04.080.

b. Upon appeal, the Board of Building Appeals may grant or deny an exception in accordance with Section 6.92.

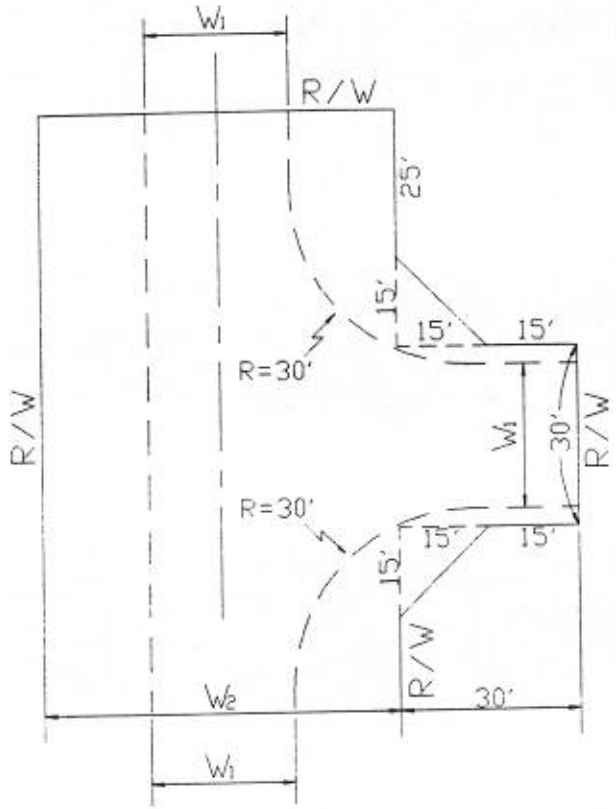
c. Upon appeal, the Board of Supervisors may grant or deny an exception in accordance with Section 6.92.



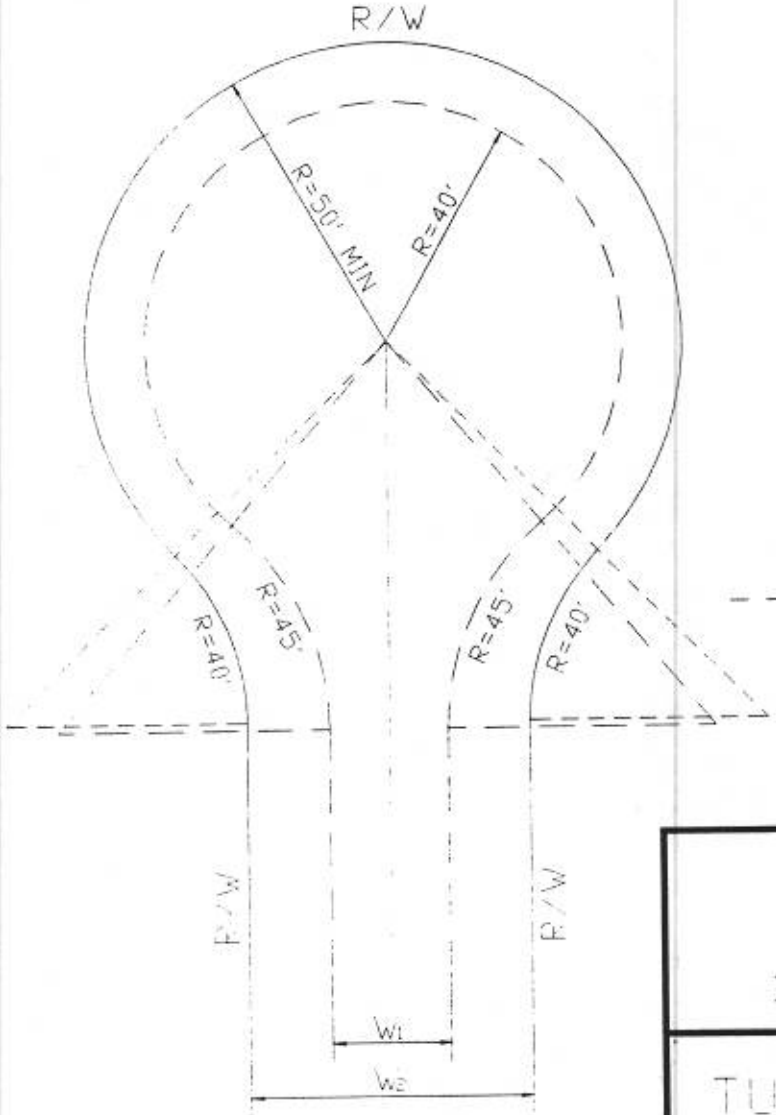
ALT A

NOTE

ALT. 'C' IS PREFERRED
ALT. 'A' AND 'B' MAY BE ALLOWED UPON APPROVAL BY THE DIRECTOR OF PUBLIC WORKS



ALT B



ALT C

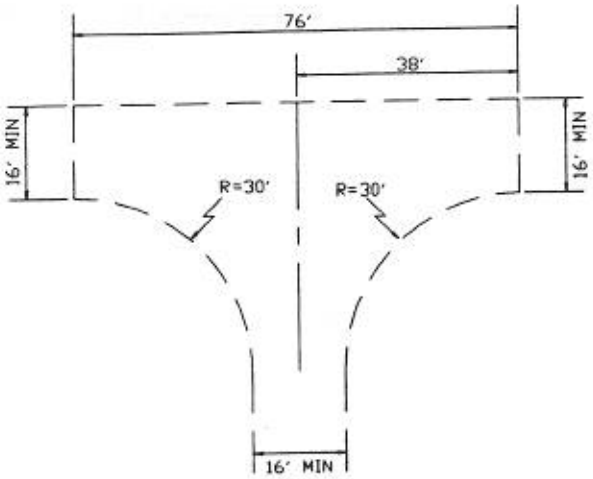
- - - - - = EDGE OF PAVEMENT
W_1 = WIDTH OF REQUIRED ROAD
W_2 = WIDTH OF REQUIRED R/W

STATE OF CALIFORNIA
COUNTY OF SHASTA
DEPARTMENT OF PUBLIC WORKS

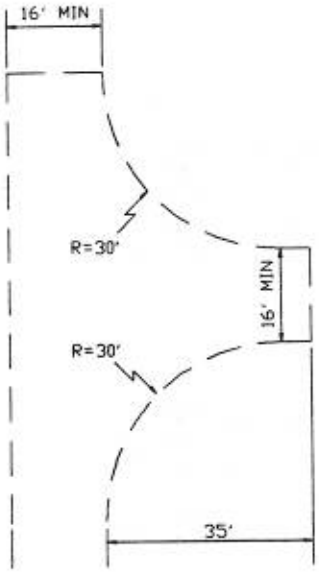
TURNAROUND ALTERNATES

(TO BE USED IN RURAL GENERAL PLAN DESIGNATION)

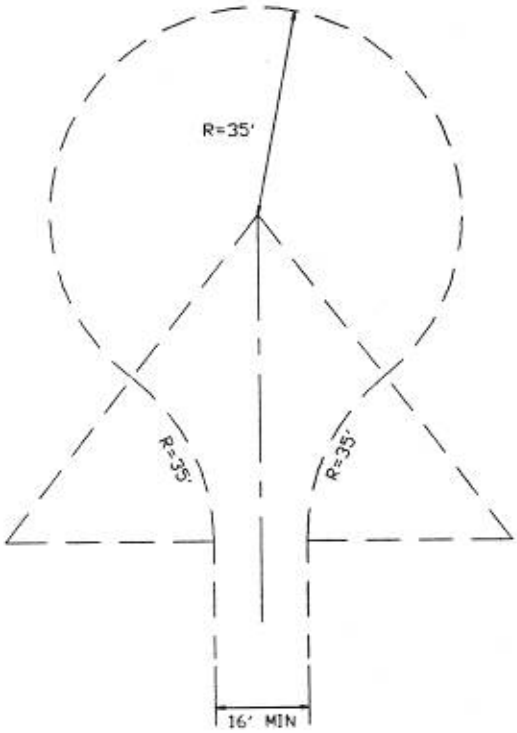
Fig 2-40



ALT A



ALT B



ALT C

- - - - Boundary of cleared and leveled area.

STATE OF CALIFORNIA

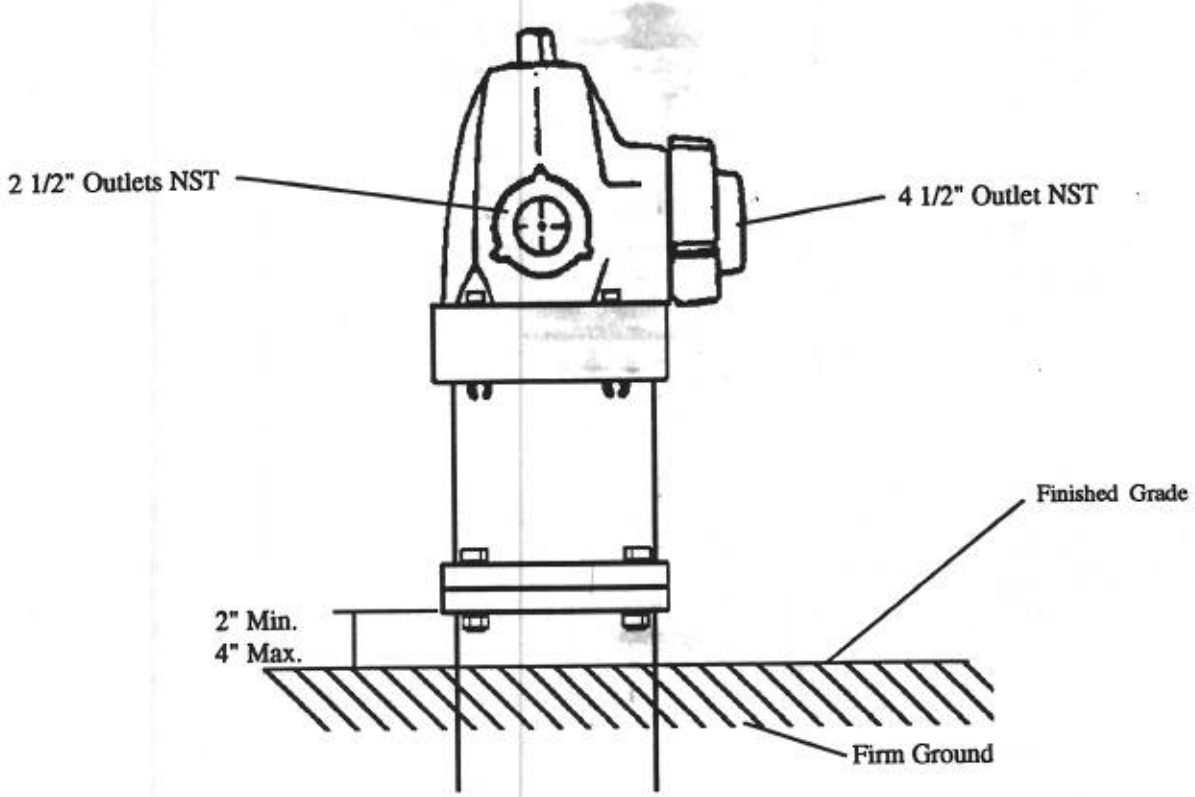
COUNTY OF SHASTA

DEPARTMENT OF PUBLIC WORKS

MINIMUM FIRE STANDARD TURNAROUND ALTERNATES

(FOR PRIVATE DRIVEWAYS OVER 200 FEET IN LENGTH)

Fig. 2-42



NOTES:

(1) Each hydrant must be gated between the hydrant and street main.

(2) Each hydrant shall be placed in such a manner that the 4 1/2 inch outlet faces the street.

(3) Fire hydrants shall be placed a minimum of 4 feet and maximum of 10 feet from the edge of the road surface or turnout, or as otherwise approved by the respective fire district and water service entity.

(4) Barrel must be of dry type.

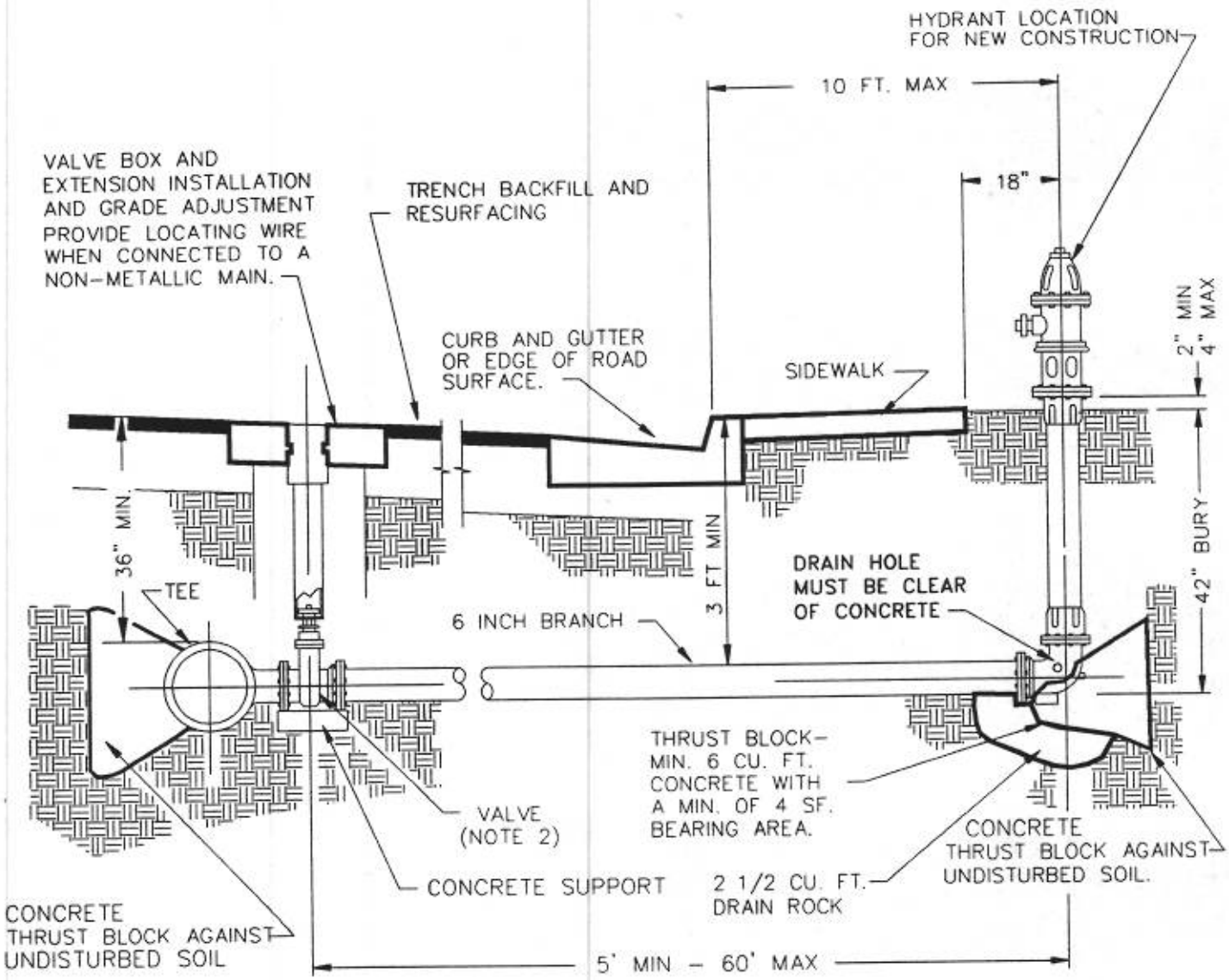
(5) Hose threads on outlets shall be National Standard dimensions.

(6) Hydrants shall NOT be less than 18 inches or more than 25 inches above the grade of the roadway or driveway.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

MINIMUM FIRE STANDARD
FIRE HYDRANT
DRY BARREL TYPE

Fig. FS-1



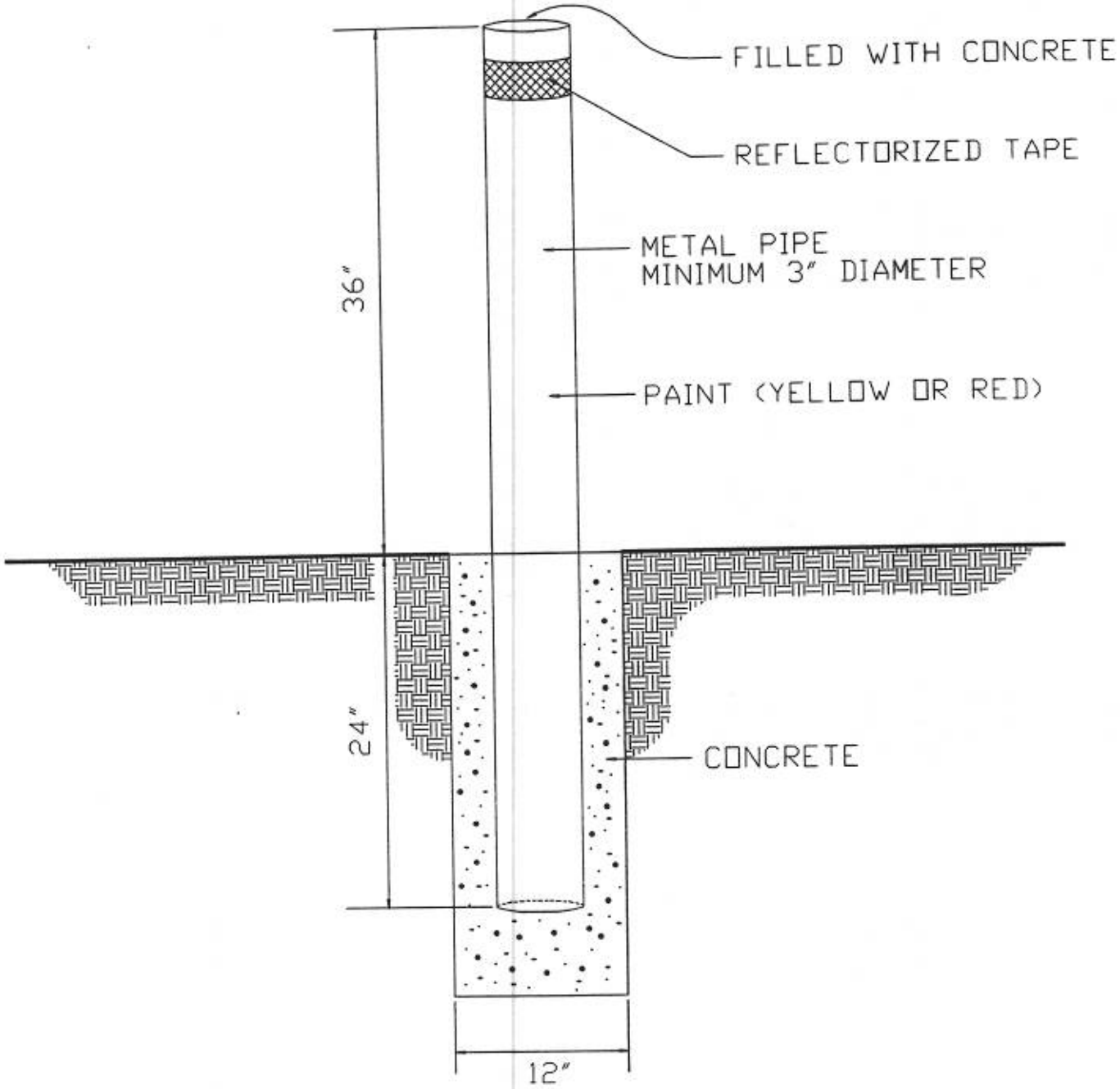
NOTES:

1. ALL CONSTRUCTION SHALL BE INSPECTED BY THE RESPONSIBLE AGENCY PRIOR TO BURIAL.
2. FOR ALLOWABLE FIRE HYDRANTS, VALVES, PIPE AND FITTINGS SEE SECTION 5.36. (GATE VALVE ACCORDING TO A.W.W.A. STANDARDS)
3. HYDRANT BURY DEPTH MAY VARY WITH PRIOR APPROVAL OF THE WATER SERVICE ENTITY.
4. PRIVATE ON-SITE HYDRANT LOCATIONS TO BE APPROVED BY THE FIRE AGENCY HAVING JURISDICTION.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

FIRE HYDRANT INSTALLATION

Fig. FS-2



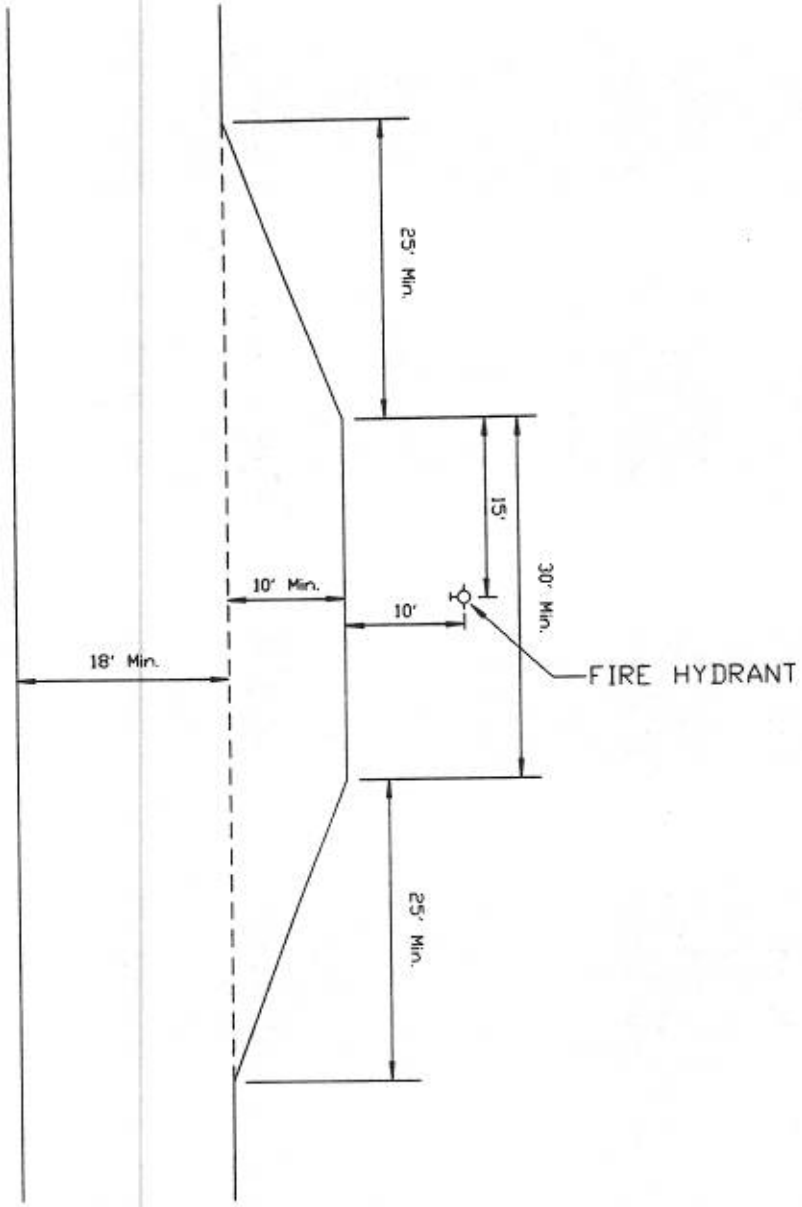
*** NOT FOR USE ON PUBLIC OR PRIVATE ROADWAYS

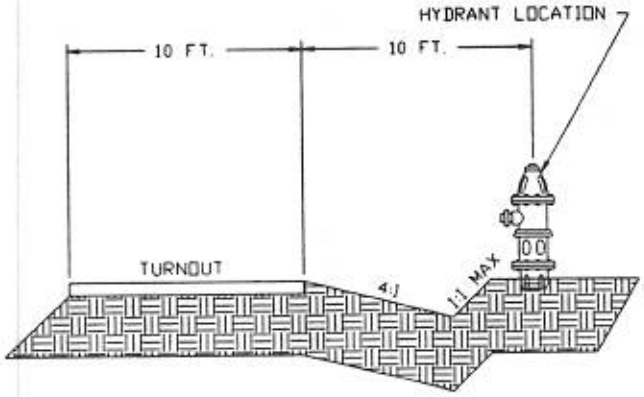
FOR USE ON PRIVATE PROPERTY ONLY

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

MINIMUM FIRE STANDARD
HYDRANT
PROTECTION POST

Fig. FS-3





STATE OF CALIFORNIA

COUNTY OF SHASTA

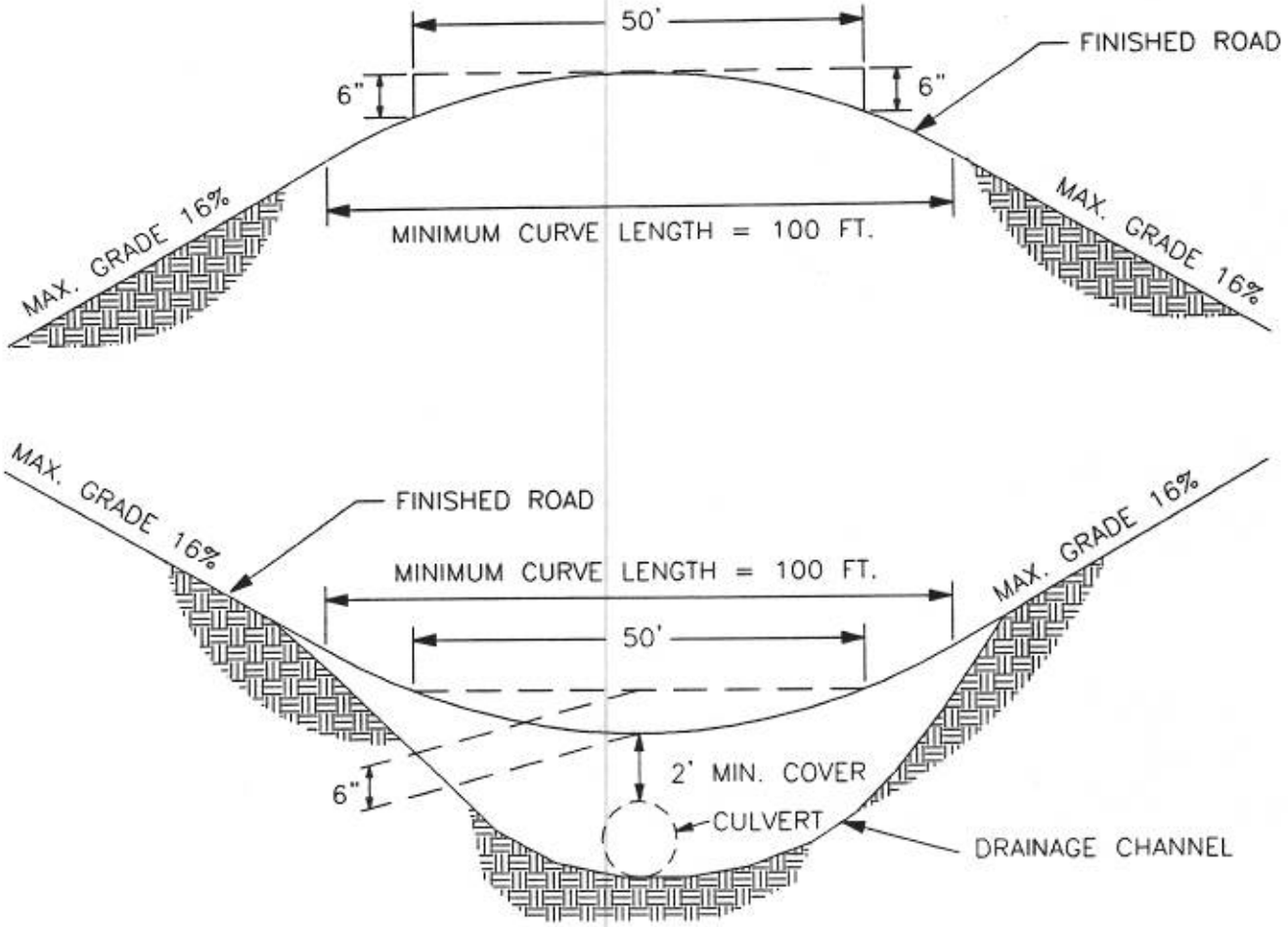
FIRE DEPARTMENT

TURNOUT

FOR FIRE HYDRANTS

Fig. FS-4

*** NOT DRAWN TO SCALE



NOTES:

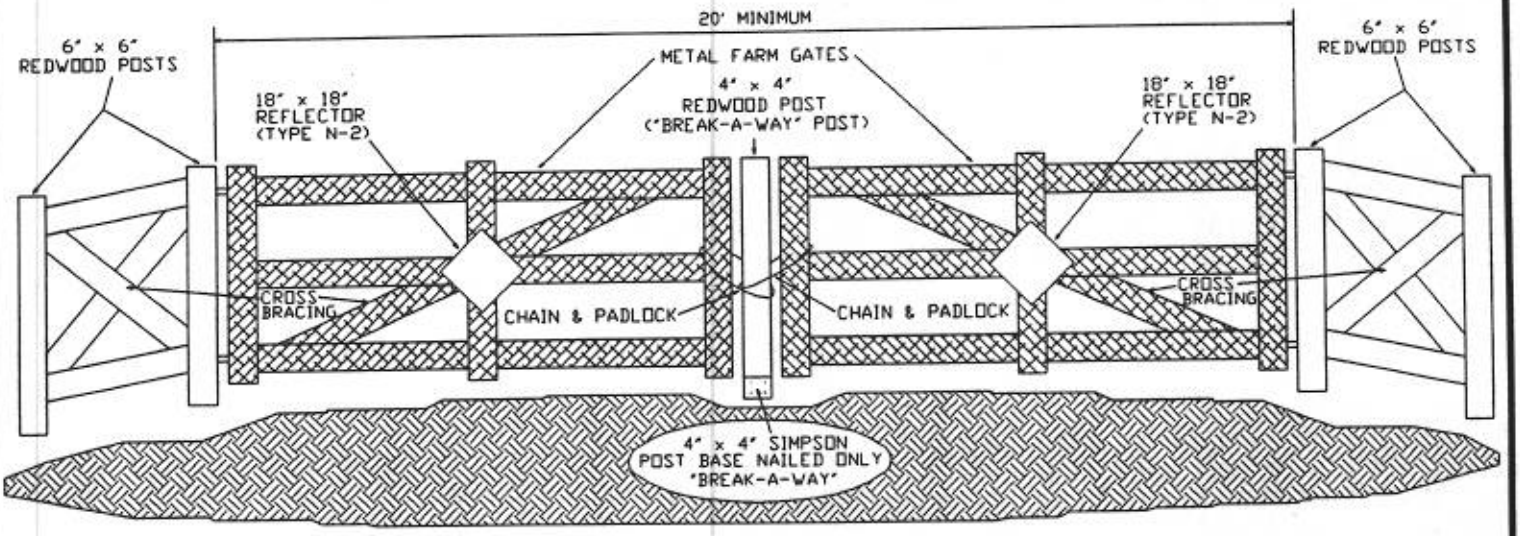
1. Culvert size to be established by a licensed Engineer.
2. Culverts should have a minimum depth of 24" of cover or an amount equal to 1/2 of the diameter of the culvert, whichever is greater.
3. Contact the Shasta County Building Division to determine whether a grading permit is required.
4. Contact the California Department of Fish and Game prior to grading within creeks and drainages.

STATE OF CALIFORNIA
COUNTY OF SHASTA
FIRE DEPARTMENT

TYPICAL VERTICAL CURVES

FOR PRIVATE RESIDENTIAL DRIVEWAYS

Fig. FS-5



*** NOTES: 1) All exposed surfaces to be painted with 2 coats of white exterior grade paint.

2) Set all posts in 3' of concrete.

3) 2 SEPARATE CHAINS AND PADLOCKS, ONE SET FOR EACH GATE

STATE OF CALIFORNIA

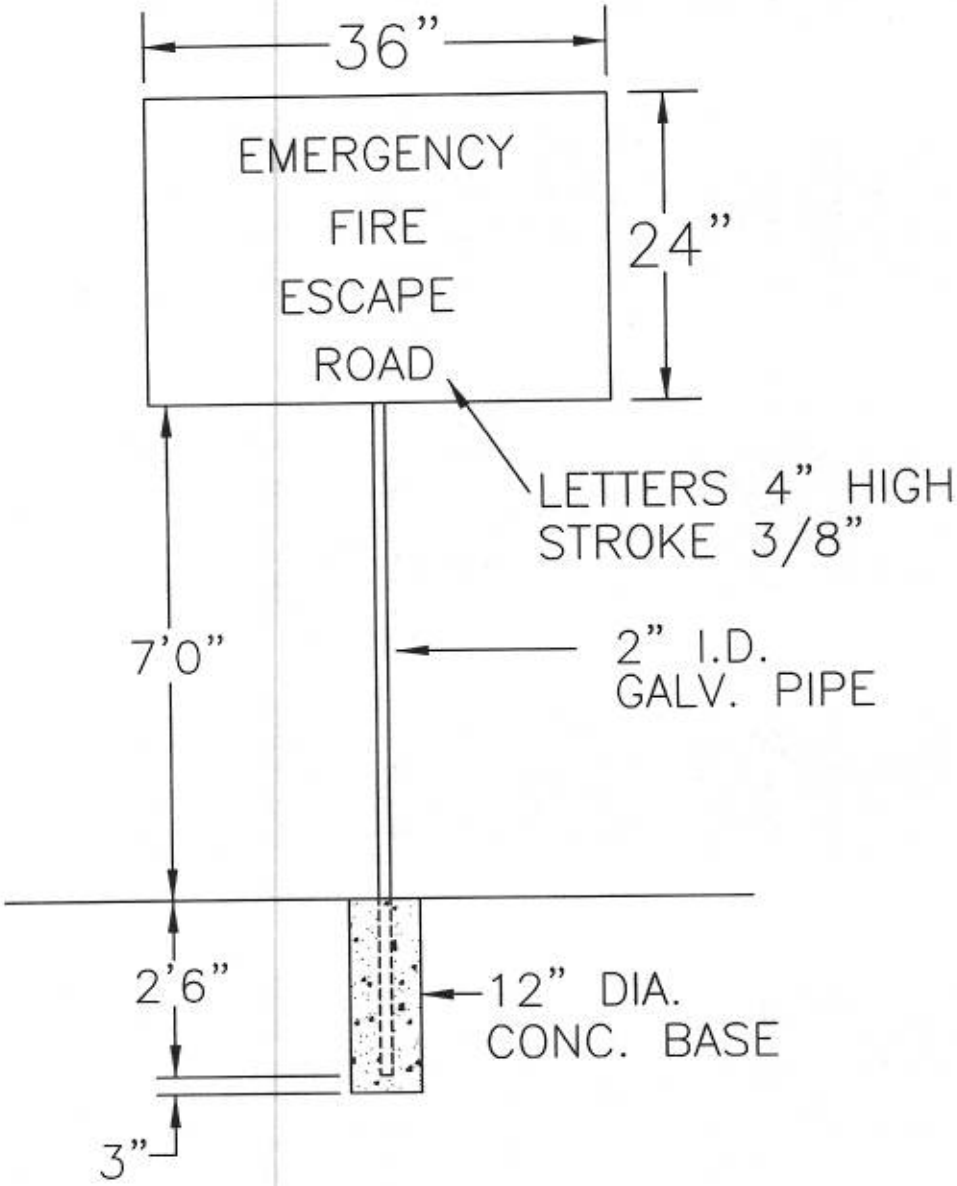
COUNTY OF SHASTA

FIRE DEPARTMENT

BREAK-A-WAY

GATE ASSEMBLY

Fig. FS-6



REFLECTIVE WHITE LETTERS ON
REFLECTIVE GREEN BACKGROUND

SCALE: NTS	DATE: 01-2003	SHASTA COUNTY DEPARTMENT OF PUBLIC WORKS

SIGN

FOR EMERGENCY FIRE ESCAPE ROAD

FS-9