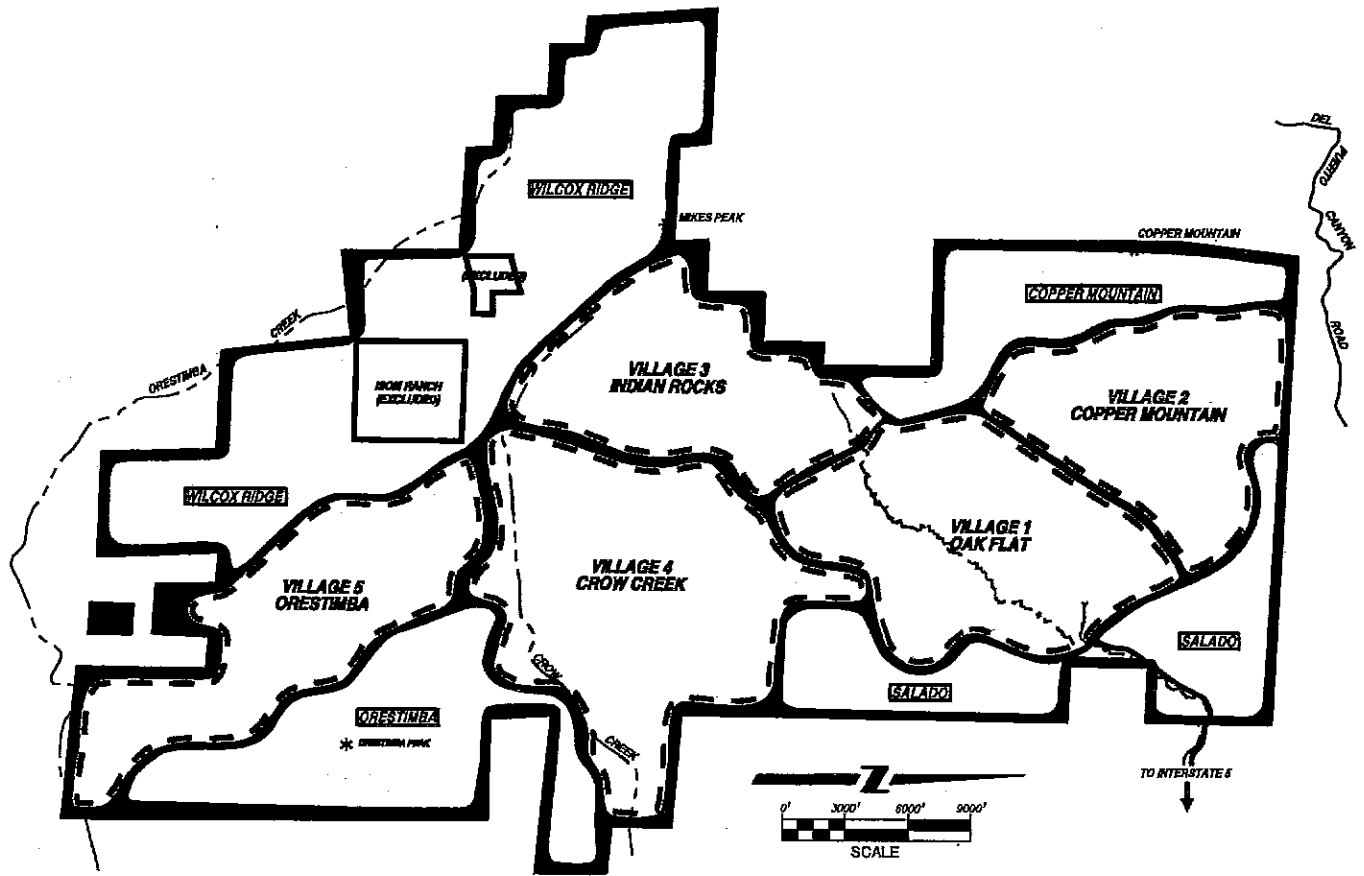


DIABLO GRANDE

'Living with the Future'

Standard Drawings and Specifications



APPROVED:
DIABLO GRANDE

H. Stanley Thompson
H. STANLEY THOMPSON, R.C.E. C32260
DISTRICT ENGINEER

7-23-98
DATE

TABLE OF CONTENTS

STANDARD SPECIFICATIONS

SECTION	04 - DEVELOPMENT REGULATIONS AND DESIGN GUIDELINES
SECTION	16 - CLEARING AND GRUBBING
SECTION	19 - EARTHWORK
SECTION	20 - EROSION CONTROL AND PROJECT PLANTING
SECTION	22 - FINISH ROADWAY
SECTION	24 - LIME STABILIZATION
SECTION	26 - AGGREGATE BASES
SECTION	39 - ASPHALT CONCRETE
SECTION	90 - PORTLAND CEMENT CONCRETES
SECTION	100 - STREET OPENING AND PAVEMENT RESTORATION REGULATIONS

STANDARD DRAWINGS

G - 1	TYPICAL LAYOUT FOR IMPROVEMENT PLANS
G - 2	DESIGN REVISION FORMAT
G - 3	STANDARD ABBREVIATIONS
G - 4	DRAFTING STANDARDS
G - 5	WESTERN HILLS WATER DISTRICT SIGNATURE BLOCK
P - 1	TRIP GENERATION FACTORS
P - 2	50 FT. MINOR COLLECTOR VALLEY AREAS
P - 3	50 FT. MINOR COLLECTOR HILL AREAS
P - 4	60 FT. MAJOR COLLECTOR VALLEY AREAS
P - 5	60 FT. MAJOR COLLECTOR HILL AREAS
P - 6	100 FT. ARTERIAL PARKWAY 4 LANE DIVIDED
P - 7	CUL-DE-SAC VALLEY AREAS
P - 8	CUL-DE-SAC HILL AREAS
P - 9	STANDARD KNUCKLE
P-10	35 FT. PRIVATE LANES
P-11	E.V.A. AND DRIVEWAY EASEMENTS
P-12	EMERGENCY PARKING BAY
C - 1	TYPES A, B, AND C CURB AND GUTTER
C - 2	TYPE D CURB, GUTTER AND SIDEWALK
C - 3	TYPE E CURB, GUTTER AND SIDEWALK
C - 4	TYPE E CURB, GUTTER AND SIDEWALK WITH ATTACHED SIDEWALK

C - 5	SCORE LINES, EXPANSION AND WEAKENED PLAN JOINTS
C - 6	SIDEWALK DETAILS
C - 7	TYPICAL WHEELCHAIR RAMP AT INTERSECTIONS
C - 8	TYPICAL WHEELCHAIR RAMP AT MID-BLOCKS
C - 9	RESIDENTIAL RAMP DRIVEWAY
C-10	COMMERCIAL DRIVEWAY
C-11	FIRE ACCESS DRIVEWAY
U - 1	TRENCH SECTION (EXISTING STREETS)
U - 2	EXISTING STREET TRENCH SECTION 4" AND SMALLER PIPES
U - 3	TRENCH SECTION (NEW CONSTRUCTION)
U - 4	TRENCH SECTION (HDPE PIPE)
E - 1	CONDUIT PULL BOX
E - 2	LIGHT POLE FOUNDATION
E - 3	RESIDENTIAL STREET LIGHTS AND LOCATION
M - 1	BARRICADE FOR TERMINATING STREETS
M - 2	STANDARD REFLECTOR PADDLE BOARD
M - 3	STREET SIGN INSTALLATION
M - 4	STOP SIGN INSTALLATION
M - 5	STOP SIGN, STOP BAR AND LANE SEPARATION LOCATIONS
M - 6	CHAIN LINK FENCE AND GATE
M - 7	MEDIAN LANDSCAPING
M - 8	PARKING AREA STANDARDS
M - 9	DISABLED PARKING

4.0. DEVELOPMENT REGULATIONS AND DESIGN GUIDELINES

Wherever possible, existing development regulations found in the Zoning Ordinance will be utilized. In some cases varied standards are suggested herein for more flexibility, and to make the regulations applicable to the Diablo Grande Specific Plan.

Site Plan and Design Review will be required for all projects in Diablo Grande, either to be reviewed by the Diablo Grande Design Review Committee (DGDRC) and/or by Stanislaus County as designated herein. Draft guidelines for the R-A, R-1, R-2, R-3, Resort Commercial (R-C) (New District), Research Campus Employment (R+D) (New District) are provided on the following pages.

4.01. RURAL RESIDENTIAL DISTRICT (R-A)

General Plan:

Estate Residential

Applicability:

Conservation Areas and portions of Oak Flat, Copper Mountain, Indian Rocks, Crow Creek and Orestimba Villages.

Permitted Uses:

As listed in Section 21.24.020 of the Stanislaus County Zoning Ordinance (SCZO).

Uses Requiring Use Permit:

As listed in Section 21.24.030 of SCZO; except golf courses which shall be reviewed as part of a Preliminary Development Plan by the Planning Commission and Board of Supervisors, with Final Development Plans reviewed by the Planning Director and Public Works Director prior to issuance of a building permit.

Height Limit:

35 Feet Maximum for primary residence; 20 feet maximum for detached accessory structures.

Building Site Area:

3 Acres Minimum, 40 Acres Maximum

Building Site Coverage:

10% Maximum

Conservation Area:

Maximum 50% fenced for housing, accessory structures, equestrian and grazing use; balance conserved.

Lot Width:

200 feet minimum

Yards:

Front: 25 feet minimum from front property line; reduced to 15 feet minimum in steep hill areas

Side: 25 feet minimum each side

Rear: 50 feet minimum

Off-Street Parking:

2 covered parking spaces/dwelling unit minimum (10' x 20' minimum per space)

Design Review:

Site Plan, Design, and Environmental (when in Conservation Area) Review by Diablo Grande Design Review Committee (DGDRC) for each dwelling unit, accessory structure and equestrian use.

4.02. SINGLE FAMILY RESIDENTIAL DISTRICT (R-1)

General Plan:

Low Density Residential (Detached Single Family)

Applicability:

Villages 1-5

Permitted Uses:

Same as Section 21.28.020 of SCZO except mobile homes and duplexes. Golf courses as described in Sec. 4.01.

Uses Requiring Use Permits:

Same as Section 21.28.030 except mobile home parks and including public and quasi-public uses, plus bed and breakfast houses.

Height Limit:

All residences: 35 feet maximum for primary residence; 20 feet maximum for accessory structures; except, under no circumstances shall a structure extend more than 20 feet above a Major Ridgeline. On uphill and downhill lots, the maximum height may exceed 35 feet subject to Site Plan and Design Review for elevation, balcony, apron and landscaping treatment.

Building Site Area:

- R-1-5: 5,000 SQ. FT. minimum
- R-1-8: 8,000 SQ. FT. minimum
- R-1-10: 10,000 SQ. FT. minimum
- R-1-20: 20,000 SQ. FT. minimum
- R-1-40: 40,000 SQ. FT. minimum

Lot sizes may be mixed within Low Density Residential areas based on slope and proximity to golf courses.

Lot Coverage:

- R-1-5 Lots: 50% maximum
- R-1-8 Lots: 45% maximum
- R-1-10 Lots: 40% maximum
- R-1-20 Lots: 35% maximum
- R-1-40 Lots: 25% maximum

Lot Width (measured at building site on pie shaped lots):

- R-1-5 Lots: 50 ft. minimum
- R-1-8 Lots: 70 ft. minimum
- R-1-10 Lots: 85 ft. minimum
- R-1-20 Lots: 120 ft. minimum
- R-1-40 Lots: 140 ft. minimum

Yards:

Lot:	Front Yard:	Side Yard:	Rear Yard:
R-1-5	20 feet min., valley areas 15 feet min, hill areas	5 feet min. each side	20 feet min., on golf 10 feet min one story 15 feet min two story
R-1-8	20 feet min., valley areas 15 feet min., hill areas	5 feet min. each side	20 feet min., on golf 15 feet min., one story 20 feet min two story
R-1-10	20 Feet minimum, valley areas 15 Feet minimum, hill areas	10 Feet minimum each side	20 Feet minimum
R-1-20	20 Feet minimum, valley areas 15 Feet minimum, hill areas	10 Feet minimum, one side; 25 feet combined minimum, both sides	25 Feet minimum
R-1-40	25 Feet minimum, valley areas 15 feet minimum hill areas	20 Feet minimum each side	30 Feet minimum

Off Street Parking:

Minimum 2 covered parking spaces/dwelling unit (10' x 20' each space) for all lots.

Design Review:

Site Plan and Design Review by DGDRRC for each dwelling unit and accessory structure.

4.03. MEDIUM DENSITY RESIDENTIAL DISTRICT (R-2)

General Plan:

Medium Density Residential (Attached and Detached Single Family).

Applicability:

Medium Density Residential areas as shown on Specific Plan and Phased Preliminary Development Plans for Village 1-Oak Flat, Village 4-Crow Creek and Village 5-Orestimba.

Permitted Uses:

Detached single family dwellings on "0-side yard" lots, "z-lots", and smaller lots as part of planned development. Attached single family dwellings in groups of two, three, four or five units including one story patio homes and two

story townhouses. Private recreation facilities including recreation centers, swimming pools, spas, tennis courts, tot lots, putting greens, volleyball courts and similar uses.

Uses Requiring Use Permits:

Churches, day care centers for more than 6 persons, bed and breakfast houses, and public and quasi-public uses.

Height Limits:

35 feet maximum for primary dwelling units and 20 feet maximum for accessory structures.

Lot Area:

Single Family Detached: 4,500 sq. ft.

Duets: 4,000 sq. ft. each unit

Other Attached Dwellings: Not applicable - Based on Site Plan Review.

Lot Coverage:

Single Family Detached: 50%

Duets: 55%

Other Attached Dwellings: Not applicable - Based on Site Plan Review.

Lot Width:

Single Family Detached: 45 ft. min.

Duets: 40 ft. min.

Other Attached Dwellings: Based on Site Plan and Design Review

Yards:

Front: 20 Feet minimum from public right-of-way or private curb line.

Side: Single Family Detached: 5 ft. each side; 8 ft. for "0-side yard".

Duet: 8 ft. minimum one-story, 10 ft. minimum two-story.

Other Attached Dwellings: Not applicable - Based on Site Plan Review for end units.

Rear: 10 Feet minimum rear yard for one story dwelling; 15 feet minimum rear yard for two story dwelling; and 20 feet minimum rear yard backing onto golf course. In absence of rear yards, a minimum of 250 sq. ft. of patio and/or deck area shall be provided per dwelling unit.

Off-Street Parking:

Single Family Detached: 2 covered spaces minimum

Duet: 2 covered spaces per unit minimum

Other Attached Units: 2 covered spaces per unit minimum plus 1/2 open space per unit including parking bays and on-street parking.

Design Review:

Site Plan and Design Review shall be provided for each dwelling unit, building complex and accessory structure by the DGDRC and the Stanislaus County Planning Department/Commission.

4.04. MULTIPLE FAMILY RESIDENTIAL DISTRICT (R-3)

General Plan:

Medium-High Density Residential

Applicability:

To areas designated Medium-High Density Residential on the Specific Plan and designated Multiple Family Residential on the Phase 1 Preliminary Development Plan. Includes development in Villages 1, 4, and 5 and Entry Area (Service Housing).

Permitted Uses:

Multiple Family dwelling units or condominiums primarily in clusters of four or more units per building; and townhouses, duets, "zero-lot line" or patio homes at lower densities with more acreage using Low or Medium Residential density guidelines. Clubhouses and related recreation facilities including swimming pools, spas, tennis courts, tot lots, putting greens and similar uses.

Uses Requiring Use Permit:

Churches, day care centers (more than 6 children), convalescent homes, fraternal lodges, public and quasi-public uses.

Height Limits:

50 Feet maximum height for main buildings, 20 Feet maximum height for accessory structures.

Site Area and Lot Width:

Not applicable

Lot Coverage:

Maximum 55%

Yards:

Front: 20 Feet minimum from front property line or private curb.

- Side: Not Applicable for townhouses or multiple family dwellings.
15 Feet minimum between one story buildings
20 Feet minimum between two story or one and two story buildings. See Medium Density Residential Standards for other dwelling types.
- Rear: Not Applicable for multiple family or townhouse dwellings.
30 feet minimum between buildings. 100 sq. ft. minimum patio area per ground level unit and 50 sq. ft. minimum balcony or deck area per second story unit. See Medium Density Residential Standards for other dwelling types.

Off-Street Parking:

For multiple family units, one covered parking space per dwelling unit minimum; and one open parking space per unit minimum including parking bays and on-street parking. For other dwelling types, two covered parking spaces per dwelling unit.

Design Review:

Site Plan and Design Review will be provided by the DGDRRC and the Stanislaus County Planning Department/Commission for all primary and accessory buildings and recreation facilities.

4.05. RESORT COMMERCIAL DISTRICT (RC)

Applicability:

This is an all inclusive District to be applied to all commercial land uses within Diablo Grande including those designated on the Specific Plan as Resort Commercial and Shopping Center land uses; and those designated on the Phase 1 Preliminary Development Plan as conference/hotel center, golf club, swim and tennis club, health spa, town center, shopping center, winery, restaurants and other commercial uses.

Permitted Uses:

- **Oak Flat Village**

Golf clubhouse, restaurant, pro shop and maintenance facilities, swim and tennis club, pro shop and snack bar, health spa, lodging and snack bar, conference and hotel center, town center offices, shops, restaurants and commercial service areas, shopping center (based on C-1 permitted uses), service stations, mini-markets, and public and quasi-public uses.

- **Crow Creek and Orestimba Village**

Neighborhood shopping center or mini-markets based on C-1 permitted uses and public and quasi-public uses.

- **Villages 1,3,4 and 5**

Golf clubhouses, restaurants, pro shop and maintenance facilities, swim and tennis club, and public and quasi-public uses.

Uses Requiring Use Permit:

Those related uses not listed under permitted uses or in C-1 District.

Height Limits:

35 Feet maximum for main buildings except hotel or conference center which may be up to 100 feet in height. 25 Feet maximum for accessory structures.

Site Area and Lot Width:

(No Minimum)

Lot Coverage:

40% maximum

Yards:

Front: 15 Feet minimum to public right-of-way or private curb landscaped.

Side: 15 Feet minimum - landscaped

Rear: 15 Feet minimum - landscaped

Off-Street Parking:

Based on standards set forth in Chapter 21.76 Off-Street Parking of the Stanislaus County Zoning Ordinance. Exceptions for mixed use and shared parking may be made by the Planning Director as part of County Site Plan and Design Review of each project.

Design Review:

Preliminary Site Plan and Design Review will be conducted by the DGDRRC. Final Site Plan and Design Review will be conducted by the Planning Director and the Stanislaus County Planning Commission except the golf courses and clubhouse in Phase 1 that will be reviewed by the Planning Director and Public Works Director. Architectural elevations, floor plans, landscape plans, fencing plans, sign programs, and lighting plans will be submitted for all RC, Resort Commercial, projects.

4.06. RESEARCH CAMPUS DISTRICT (R+D)

Applicability:

The Research Campus is limited to the Entry Area generally, as portrayed on the Entry Area Plan (Figure 28).

Permitted Uses:

Administrative and professional offices, research and development facilities, warehousing and storage located within a building, light industrial uses including the manufacturing and processing of electronic instruments, computers and component parts, professional and scientific instruments, restaurants, cafeterias and snack bars, public and quasi-public uses, and other "clean" research and development uses that can meet noise, air and odor pollution guidelines determined by Stanislaus County.

Uses Requiring a Use Permit:

Those related uses not listed as permitted uses where conditions of approval may be attached to ensure noise, air and odor compatibility.

Height Limits:

35 Feet Main Buildings
20 Feet Accessory Structures

Site Area and Lot Width:

Minimum Area: 40,000 SQ. FT.
Minimum Lot Width: 150 FT.

Lot Coverage:

Maximum Building Coverage: 40%

Yards:

Front: 20 Feet minimum
Side: 20 Feet minimum
Rear: 20 Feet minimum

Off-Street Parking:

Based on Chapter 21.76 Off-Street Parking, Stanislaus County Zoning Ordinance. Generally, 1 space per 300 square foot of gross floor area except for limited manufacturing and storage uses which are based on number of maximum work shift employees.

Design Review:

All projects shall be subject to preliminary Site Plan and Design Review by the DGDRC. Final Site Plan and Design Review shall be made by the Planning Director and the Stanislaus County Planning Commission.

4.07. OTHER USES

Uses not listed in the preceding sections shall be subject to review by the Stanislaus County Planning Director who will make a determination on the similarity and compatibility with proposed and developed uses. Use found to be similar and compatible will be subject to Site Plan and Design Review on a preliminary basis by the DGDRC and on final review by the Planning Director and County Planning Commission. Those uses that would be considered conditionally compatible with developed and planned uses will be subject to the Use Permit process of Stanislaus County. Those uses considered by the Planning Director not to be compatible with the Diablo Grande Specific Plan will be so determined by the Planning Director in written form subject to the appeal process, in Chapter 21.112 of the County Zoning Ordinance.

5.0. ARCHITECTURAL CHARACTER

In addition to the summary of development regulations and design guidelines proposed in Chapter 4.0, this section provides preliminary graphics and summaries of design concepts setting the architectural character theme of Diablo Grande. While no single architectural style is proposed for the entire Ranch, the following design illustrations reflect Diablo Grande's commitment to architectural, landscaping and site planning excellence.

In addition to the Diablo Grande Design Review Committee's analysis of all development for commitment to design excellence, it is proposed that Stanislaus County share this role for all attached single family, multiple family, commercial and public projects according to the development standards and design guidelines of the Diablo Grande Specific Plan.

Examples of desired architectural character are provided in Figures 19 through 25 and summarized for: the Resort Center, the Resort Hotel/Conference Center, the Winery, the Diablo Grande Clubhouse, a Golf Course and Residential Area Illustrative Site Plan, Single Family Residential, Attached Single Family Residential and Multiple Family Residential housing.

Excerpt: Diablo Grande Specific Plan, Approved October 1993: proposed revisions are in italics.

4.0. DEVELOPMENT REGULATIONS AND DESIGN GUIDELINES

Wherever possible, existing development regulations found in the Zoning Ordinance will be utilized. In some cases varied standards are suggested herein for more flexibility, and to make the regulations applicable to the Diablo Grande Specific Plan.

Site Plan and Design Review will be required for all projects in Diablo Grande, either to be reviewed by the Diablo Grande Design Review Committee (DGDRC) and/or by Stanislaus County as designated herein. *Approved* guidelines for the R-A, R-1, R-2, R-3, Resort Commercial (R-C) (New District), Research Campus Employment (R+D) (New District) are provided on the following pages.

4.01. RURAL RESIDENTIAL DISTRICT (R-A)

General Plan:

Estate Residential

Applicability:

Conservation Areas and portions of Copper Mountain, Indian Rocks, Crow Creek and Orestimba, *and Oak Flat Villages.*

Permitted Uses:

As listed in Section 2.1.24.020 of the Stanislaus County Zoning Ordinance (SCZO).

Uses Requiring Use Permit:

As listed in Section 21.24.030 of SCZO; except golf courses which shall be reviewed as part of a Preliminary Development Plan by the Planning Commission and Board of Supervisors, with Final Development Plans reviewed by the Planning Director and Public Works Director prior to issuance of a building permit.

Height Limit:

35 Feet Maximum for primary residence; 20 feet maximum for detached accessory structures.

Building Site Area:

3 Acres Minimum, 40 Acres Maximum

Building Site Coverage:

10% Maximum

Conservation Area:

Maximum 50% fenced for *housing, accessory structures*, equestrian and grazing use; balance conserved.

Lot Width:

200 feet minimum

Yards:

Front: 25 feet minimum from front property line

Side: 25 feet minimum each side

Rear: 50 feet minimum

Off-Street Parking:

2 covered parking spaces/dwelling unit minimum (10' x 20' minimum per space)

Design Review:

Site Plan, Design, and Environmental (when in Conservation Area) Review by Diablo Grande Design Review Committee (DGDRC) for each dwelling unit and accessory structure.

4.02. SINGLE FAMILY RESIDENTIAL (R-1)**General Plan:**

Low Density Residential (Detached Single Family)

Applicability:

Villages 1-5

Permitted Uses:

Same as Section 21.28.020 of SCZO except mobile homes and duplexes. Golf courses as described in Sec. 4.01.

Uses Requiring Use Permits:

Same as Section 21.28.030 except mobile home parks and including public and quasi-public uses, plus bed and breakfast houses.

Height Limit:

All residences: 35 feet maximum for primary residence; 20 feet maximum for accessory structures; except, under no circumstances shall a structure extend more than 20 feet above a Major Ridge line.

Building Site Area:

R-1-10: 10,000 SQ. FT. minimum

R-1-20: 20,000 SQ. FT. minimum

R-1-40: 40,000 SQ. FT. minimum

Lot sizes may be mixed within Low Density Residential areas based on slope and proximity to golf courses.

Lot Coverage:

- R-1-10 Lots: 40% maximum
- R-1-20 Lots: 35% maximum
- R-1-40 Lots: 25% maximum

Lot Width:

- R-1-10 Lots: 85 ft. minimum *
- R-1-20 Lots: 120 ft. minimum *
- R-1-40 Lots: 140 ft. minimum *

R-10 70 ft
 * Measured at building site on pie shaped lots.

Yards:

Lot:	Front Yard:	Side Yard:	Rear Yard:
R-1-10	20 Ft. minimum, valley areas 15 Ft. minimum, hill areas	10 Ft. minimum each side	20 Ft. minimum
R-1-20	20 Ft. minimum, valley areas 15 Ft. minimum, hill areas	10 Ft. minimum, one side; 25 Ft. combined minimum, both sides	25 Ft. minimum
R-1-40	25 Ft. minimum, valley areas 15 Ft. minimum, hill areas	20 Ft. minimum each side	30 Ft. minimum
<i>R-10</i>	<i>20' 115' 140'</i>	<i>5</i>	<i>20</i>

Off Street Parking:

Minimum 2 covered parking spaces/dwelling unit (10' x 20' each space) for all lots.

Design Review:

Site Plan and Design Review by DGDRC for each dwelling unit and accessory structure.

4.03. MEDIUM DENSITY RESIDENTIAL (R-2)

General Plan:

Medium Density Residential (Attached and Detached Single Family).

Applicability:

Medium Density Residential areas as shown on Specific Plan and Phased Preliminary Development Plans for Village 1-Oak Flat, Village 4-Crow Creek and Village 5-Orestimba.

Permitted Uses:

Detached single family dwelling on "0-side yard" lots, "z-lots", and smaller lots as part of planned development. Attached single family dwelling in groups of two, three, four or five units including one story patio homes and two story townhouses. Private recreation facilities including recreation centers, swimming pools, spas, tennis courts, tot lots, putting greens, volleyball courts and similar uses.

Uses Requiring Use Permits:

Churches, day care centers for more than 6 persons, bed and breakfast houses, and public and quasi-public uses.

Height Limits:

35 feet maximum for primary dwelling units and 20 feet maximum for accessory structures.

Lot Area:

Single Family Detached: 4,500 sq. ft.
Duets: 4,000 sq. ft. each unit
Other Attached Dwellings: Not applicable - Based on Site Plan Review.

Lot Width:

Single Family Detached: 45 ft. minimum
Duets: 40 ft. minimum
Other Attached: Based on Site Plan and Design Review

Yards:

Front: 20 Feet minimum from public right-of-way or private curb line.
Side: Single Family Detached: 5 ft. each side; 8 ft. for "0-side yard."
Duet: 8 ft. minimum one-story, 10 ft. minimum two-story.
Other Attached Dwellings: Not applicable - Based on Site Plan Review for end units.
Rear: 10 Feet minimum rear yard for one story dwelling; 15 feet minimum rear yard for two story dwelling; and 20 feet minimum rear yard backing onto golf course. In absence of rear yards, a minimum of 250 sq. ft. of patio and/or deck area shall be provided per dwelling unit.

Off-Street Parking:

Single Family Detached: 2 covered spaces minimum
Duet: 2 covered spaces per unit minimum
Other Attached Units: 2 covered spaces per unit minimum plus ½ open space per unit including parking bays and on-street parking.

Design Review:

Site Plan and Design Review shall be provided for each dwelling unit, building complex and accessory structure by the DGDRC and the Stanislaus County Planning Department/Commission.

4.04. MULTIPLE FAMILY RESIDENTIAL DISTRICT (R-3)**General Plan:**

Medium-High Density Residential

Applicability:

To areas designated Medium-High Density Residential on the Specific Plan and designated Multiple Family Residential on the Phase 1 Preliminary Development Plan. Includes development in Villages 1, 4, and 5 and Entry Area (Service Housing).

DATE: 01/08/03

RE: SETBACKS @ DIABLO GRANDE PATIO HOMES UNIT 1
PER: KIRK FORD OF STANISLAUS COUNTY, MANNY SOUSA, KENT STEPAN,
AND JOHN DAVID OF THOMPSON-HYSELL ENGINEERS, AND BOB GRAHAM
OF DIABLO GRANDE ARCHITECTURAL/PLANNING DEPT.

FRONT YARD:

12' MIN. SETBACK FROM THE R.O.W. TO THE DWELLING ON LOTS
239, 243, 245, 248, & 254 **ONLY!**

15' MIN. SETBACK FROM THE R.O.W. TO THE DWELLING WHEN
USING A ONE-STORY HOUSE.

20' MIN. SETBACK FROM THE R.O.W. TO THE DWELLING WHEN
USING A TWO-STORY HOUSE.

SIDE YARD:

LOTS SHALL HAVE A MINIMUM OF 4 FEET ON ONE SIDE OF THE LOT,
AND 6 FEET ON THE OTHER SIDE OF LOT. THE POPOUT
(FIREPLACE/MEDIA CENTER) WILL BE ALLOWED TO ENCROACH
INTO THE SETBACK ON THE 6-FOOT SIDE ONLY.

A DISTANCE OF 3 FEET "CLEAR" FROM THE PROPERTY LINE TO THE
OVERHANG OF THE DWELLING OR THE OUTER MOST EDGE OF
DWELLING, WHICHEVER IS GREATER, MUST BE MAINTAINED.

A 10 FOOT MINIMUM IS REQUIRED BETWEEN DWELLINGS (NOT
INCLUDING OVERHANGS OR POPOUTS).

REAR YARD:

10' FEET MINIMUM REAR YARD FOR A ONE-STORY DWELLING.

15' FEET MINIMUM REAR YARD FOR A TWO-STORY DWELLING.

20' FEET MINIMUM REAR YARD FOR ANY DWELLING BACKING ONTO
GOLF COURSE.

FOR ANY OTHER INFORMATION PERTAINING TO THIS UNIT, REFER TO
SECTION 4.03 "MEDIUM DENSITY RESIDENTIAL (R-2)" OF THE
DAIBLO GRANDE STANDARD DRAWINGS AND SPECIFICATIONS.

Permitted Uses:

Multiple Family dwelling units or condominiums primarily in clusters of four or more units per building, and townhouses, duets, “zero-lot line” or patio homes at lower densities with more acreage using Low or Medium Residential density guidelines. Clubhouses and related recreation facilities including swimming pools, spas, tennis courts, tot lots, putting greens and similar uses.

Uses Requiring Use Permit:

Churches, day care centers (more than 6 children), convalescent homes, fraternal lodges, public and quasi-public uses.

Height Limits:

40 Feet maximum height for main buildings, 20 Feet maximum height for accessory structures.

Site Area and Lot Width:

Not applicable.

Lot Coverage:

Maximum 55%

Yards:

Front: 20 Feet minimum from front property line or private curb.

Side: Not Applicable for townhouses or multiple family dwellings.

15 Feet minimum between one story buildings

20 Feet minimum between two story or one and two story buildings. See Medium Density Residential Standards for other dwelling types.

Rear: Not Applicable for multiple family or townhouse dwellings.

30 feet minimum between buildings. 100 sq. ft. minimum patio area per ground level unit and 50 sq. ft. minimum balcony or deck area per second story unit. See Medium Density Residential Standards for other dwelling types.

Off-Street Parking:

For multiple family units, one covered parking space per dwelling unit minimum; and one open parking space per unit minimum including parking bays and on-street parking. For other dwelling types, two covered parking spaces per dwelling unit.

Design Review:

Site Plan and Design Review will be provided by the DGDRC and the Stanislaus County Planning Department/Commission for all primary and accessory buildings and recreation facilities.

4.05. RESORT COMMERCIAL DISTRICT (RC)

Applicability:

This is an all inclusive District to be applied to all commercial land uses within Diablo Grande including those designated on the Specific Plan as Resort Commercial and Shopping Center land uses; and those designated on the Phase 1 Preliminary Development Plan as conference/hotel center, golf club, swim and tennis club, health spa, town center, shopping center, winery, restaurants and other commercial uses.

Permitted Uses:

- **Oak Flat Village**

Golf clubhouse, restaurant, pro shop and maintenance facilities, swim and tennis club, pro shop and snack bar, health spa, lodging and snack bar, conference and hotel center, town center offices, shops, restaurants and commercial service areas, shopping center (based on C-1 permitted uses), service stations, mini-markets, and public and quasi-public uses.

- **Crow Creek and Orestimba Village**

Neighborhood shopping center or mini-markets based on C-1 permitted uses and public and quasi-public uses.

- **Villages 1,3,4, and 5**

Golf clubhouses, restaurants, pro shop and maintenance facilities, swim and tennis club, and public and quasi-public uses.

Uses Requiring Use Permit:

Those related uses not listed under permitted uses or in C-1 District.

Height Limits:

35 Feet maximum for main buildings except hotel or conference center which may be up to 55 feet in height.

20 Feet maximum for accessory structures.

Site Area and Lot Width:

(No Minimum)

Lot Coverage:

40% maximum

Yards:

Front: 15 Feet minimum to public right-of-way or private curb landscaped.

Side: 15 Feet minimum - landscaped.

Rear: 15 Feet minimum - landscaped.

Off-Street Parking:

Based on standards set forth in Chapter 21.76 Off-Street Parking of the Stanislaus County Zoning Ordinance. Exceptions for mixed use and shared parking may be made by the Planning Director as part of County Site Plan and Design Review of each project.

Design Review:

Preliminary Site Plan and Design Review will be conducted by the DGDRC. Final Site Plan and Design Review will be conducted by the Planning Director and the Stanislaus County Planning Commission except the golf course and clubhouse in Phase 1 that will be reviewed by the Planning Director and Public Works Director. Architectural elevations, floor plans, landscape plans, fencing plans, sign programs, and lighting plans will be submitted for all RC, Resort Commercial, projects.

4.06. RESEARCH CAMPUS (R+D)

Applicability:

The Research Campus is limited to the Entry Area generally, as portrayed on the Entry Area Plan (Figure 27).

Permitted Uses:

Administrative and professional offices, research and development facilities, warehousing and storage located within a building, light industrial uses including the manufacturing and processing of electronic instruments, computers and component parts, professional and scientific instruments, restaurants, cafeterias and snack bars, public and quasi-public uses, and other “clean” research and development uses that can meet noise, air and odor pollution guidelines determined by Stanislaus County.

Uses Requiring a Use Permit:

Those related uses not listed as permitted uses where conditions of approval may be attached to ensure noise, air and odor compatibility.

Height Limits:

35 Feet Main Buildings
20 Feet Accessory Structures

Site Area and Lot Width:

Minimum Area: 40,000 SQ. FT.
Minimum Lot Width: 150 FT.

Lot Coverage:

Maximum Building Coverage: 40%

Yards:

Front: 25 Feet minimum
Side: 20 Feet minimum
Rear: 20 Feet minimum

Off-Street Parking:

Based on Chapter 21.76 Off-Street Parking, Stanislaus County Zoning Ordinance. Generally, 1 space per 300 square foot of gross floor area except for limited manufacturing and storage uses which are based on number of maximum work shift employees.

Design Review:

All projects shall be subject to preliminary Site Plan and Design Review by the DGDRC. Final Site Plan and Design Review shall be made by the Planning Director and the Stanislaus County Planning Commission.

Other Uses:

Uses not listed in the preceding sections shall be subject to review by the Stanislaus County Planning Director who will make a determination on the similarity and compatibility with proposed and developed uses. Use found to be similar and compatible will be subject to Site Plan and Design Review on a preliminary basis by the DGDRC and on final review by the Planning Director and County Planning Commission. Those uses that would be considered conditionally compatible with developed and planned uses will be subject to the Use Permit process of Stanislaus County. Those uses considered by the Planning Director not to be compatible with the Diablo Grande Specific Plan will be so determined by the Planning Director in written form subject to the appeal process, in Chapter 21.112 of the County Zoning Ordinance.

SECTION 16

CLEARING AND GRUBBING

16-1.01 Description. This work shall consist of removing all objectionable material from within the project area, bridge construction areas, road approaches, material sites within the project areas through which ditches and channels are to be excavated, and such other areas as may be specified in the special provisions. Clearing and grubbing shall be performed in advance of grading operations and in accordance with the requirements specified in these specifications.

16-1.02 Preservation of Property. Existing project improvements and facilities, adjacent property, utility and non-project facilities, and trees and plants that are not to be removed, shall be protected from injury or damage resulting from the Contractor's operations. Only trees and plants that are designated or marked for removal by the Engineer shall be removed.

16-1.03 Construction. Unless otherwise specified in the special provisions or shown on the plans, the entire length of the project to the widths specified below shall be cleared and grubbed. No payment will be made to the Contractor for clearing and grubbing outside these limits, unless such work is authorized by the Engineer.

The area above the natural ground surface shall be cleared of all vegetable growth, such as trees, logs, upturned stumps, roots of down trees, brush, grass, weeds, and all other objectionable material including concrete or masonry, within the following limits:

- A. Highway construction areas, including structures, frontage roads, or streets, ramps, approaches, ditches and channels having a bottom width of 12 feet or more, and all other accessory roads and connections that are to be constructed. Such areas shall extend to a width of 5 feet outside of structures and excavation and embankment slope lines, except that where slopes are to be rounded, the areas shall extend to the outside limits of slope rounding.
- B. Ditches and channels having a bottom width of less than 12 feet. Such areas shall extend to a width of 2 feet outside the slope lines.
- C. Material sites within the right of way.
- D. Areas enclosed by interchange loops and ramps.

Within the limits of clearing, the areas below the natural ground surface, except in embankment areas where the grading plane is 2 feet or more above the natural ground, shall be grubbed to a depth necessary to remove all stumps, roots, buried logs, and all other objectionable material. Such objectionable material shall not be left in or under embankments or dikes.

All trees, existing stumps and roots within embankment areas where the grading plane is 2 feet or more above the natural ground shall be cut off not more than one foot above the natural ground at any point, or completely removed where a structure is to be constructed, piles are to be placed or driven, subdrainage, trenches are to be excavated, unsuitable material is to be removed, or where the slopes of original hillsides, old or new fill, are cut into in accordance with the requirements in Section 19.

Where the construction is to be performed through orchard, vineyard and other cultivated areas, all orchard trees, vines and other vegetable growth shall be removed from the entire right of way area.

If specified by the special provisions or directed by the Engineer that certain shade and ornamental trees and plants shall be preserved, such trees and plants shall be fully protected from injury by the Contractor at his expense. Trees shall be felled in such a manner as not to injure standing trees, plants, and improvements which are to be preserved.

Tree branches extending over the roadway and which hang within 20 feet of finished grade shall be cut off close to the boles in a workmanlike manner. In connection with the removal of tree branches that extend over the new or widened roadway, the Contractor shall remove other tree branches under the direction of the Engineer, in such a manner that the tree will present a balanced appearance. Scars resulting from the removal of branches shall be treated with a heavy coat of an approved tree paint.

SECTION 19

EARTHWORK

19-1 GENERAL

19-1.01 Description. This work shall consist of performing all operations necessary to excavate all materials, regardless of character and subsurface conditions, from the project area or adjacent thereto; to excavate all materials, of whatever nature, necessary for the construction of foundations for structures and other facilities; to excavate trenches for culverts and other facilities; to excavate drainage and irrigation ditches; to excavate drainage channels; to excavate selected material from the project site and borrow material for use as specified; to construct embankments, including the placing of selected material in connection therewith as specified; to place backfill for structures, culverts, and other facilities; to backfill trenches and depressions resulting from the removal of obstructions; to backfill holes, pits and other depressions within the roadway areas; to apply water; to remove and replace unsuitable material; to excavate and grade road approaches, driveways, and connections; to construct protection dikes; to remove unstable material from the project area, slide material which has come into the project area and material which has slipped from embankments; to prepare basement material for the placing of other material thereon; all as shown on the plans and as specified in these specifications and the special provisions, and as directed by the Engineer, and furnishing all labor, materials, tools, equipment, and incidentals, and for doing all the work that may be required to construct and maintain the roadway facilities.

Clearing and grubbing for earthwork operations shall conform to the provisions in Section 16, "Clearing and Grubbing."

19-1.02 Preservation of Property. Operations shall be conducted in such a manner that existing project facilities, utilities, railroad tracks, and other non-project facilities which are to remain in place and settlement platforms, slope indication devices, piezometers and Engineer's instrumentation, will not be damaged. The Contractor, at his expense, shall furnish and install sheet piling, cribbing, bulkheads, shores, or whatever means may be necessary to adequately support material carrying such facilities, or to support the facilities themselves and shall maintain such supports until they are no longer needed. Temporary pavements, facilities, utilities and installations shall also be protected until they are no longer required. When temporary supports and other protective means are no longer required, they shall be removed and disposed off-site at the contractor's expense.

When hauling is done over county or private streets, and when directed by the Engineer, the loads shall be trimmed and all material removed from shelf areas of vehicles in order to eliminate spilling of material. If directed by the Engineer, the loads shall be watered after trimming to eliminate dust.

19-1.03 Grade Tolerance. Immediately prior to placing subsequent layers of material thereon, the grading plane shall conform to one of the following:

- A. When asphalt concrete or asphalt concrete base is to be placed on the grading plane, the grading plane at any point shall not vary more than 0.05-foot above or below the grade established by the Engineer.
- B. When subbase or base material (other than asphalt concrete base) to be placed on the grading plane is to be paid for by the ton, the grading plane at any point shall not vary more than 0.10-foot above or below the grade established by the Engineer.

19-1.04 Removal and Disposal of Buried Man-Made Objects. If a buried man-made object encountered in excavation is to be removed and its removal and disposal is not included in another item of work, such removal and disposal will be paid for at the contract price per cubic yard for the type of excavation in which such object is encountered. However, if the presence of the object is not indicated on the plans or in the special provisions and its presence could not have been ascertained by visual inspection, the removal and disposal of such object will be paid for as extra work.

19-2 ROADWAY EXCAVATION

19-2.01 Description. Roadway excavation shall consist of all excavation involved in the grading and construction of the roadway, except structure excavation, ditch excavation and any excavation separately designated and paid for as a separate item.

19-2.02 Unsuitable Material. Unsuitable material encountered below the natural ground surface in embankment areas or below the grading plane in excavation areas shall be excavated and disposed of as directed by the Engineer. Unsuitable material is defined as material the Engineer determines to be:

- A. of such unstable nature as to be incapable of being compacted to specified density using ordinary methods at optimum moisture content; or
- B. too wet to be properly compacted and circumstances prevent suitable in-place drying prior to incorporation into the work; or
- C. otherwise unsuitable for the planned use.

The presence of excessive moisture in a material is not, by itself, sufficient cause for determining that the material is unsuitable.

The removal and disposal of such unsuitable material will be paid for as roadway excavation for the quantities involved if the removal of such material is shown on the plans or specified in the special revisions.

If the removal of such unsuitable material is not shown on the plans or specified in the special provisions, the removal and disposal of such unsuitable material will be paid for at the contract price for roadway excavation for the quantities involved unless either the Engineer, prior to removal of any such material, orders the unsuitable material to be removed and disposed of and paid for as extra work. Or the Contractor, prior to performing any such work, requests in writing that the removal and disposal of such unsuitable material be paid for as extra work.

When unsuitable material is removed and disposed of, the resulting space shall be filled with material suitable for the planned use. Such suitable material shall be placed and compacted in layers as hereinafter specified for constructing embankments.

19-2.03 Blasting. Excessive blasting will not be permitted. Any material outside the authorized cross section which may be shattered or loosened because of blasting shall be removed by the Contractor at his expense. The Contractor shall discontinue any method of blasting which leads to overshooting or is dangerous to the public or destructive to property or to natural features.

19-2.04 Slides and Slipouts. Material outside the planned roadway or ditch slopes which is unstable and constitutes potential slides in the opinion of the Engineer, material from slides which has come into the roadway or ditch, and material which has slipped out of new or old embankments shall be excavated and removed. The material shall be excavated to designated lines or slopes either by benching or in such manner as directed by the Engineer. Such material shall be used in the construction of the embankments or disposed of as directed by the Engineer.

The removal, haul and disposal of slide and slipout material, as above specified, will be paid for at the contract price for roadway excavation for the quantities involved unless the Engineer, prior to the removal of any such material, orders the slide or slipout material to be removed and disposed of and paid for as extra work. Or the Contractor, prior to performing any such work, requests in writing that the removal and disposal of any such slide or slipout material be paid for as extra work.

Where slopes previously have been completed by the Contractor, the cost of resloping required in areas where unstable or stable material is removed at the direction of the Engineer will be paid for as extra work.

The cost of pioneering work necessary to make slide or slipout areas accessible to normal excavation equipment and the cost of necessary clearing and grubbing will be paid for as extra work.

Only slide or slipout material which is actually removed as ordered by the Engineer will be paid for.

The above provisions shall not be so construed as to relieve the Contractor from the duty of maintaining all slopes true and smooth. Erosion, regardless of amount or extent, caused by the action of the elements which results in damage to the work or materials, shall in no case be considered a slide or slipout.

Any damage to work resulting from slides or slipouts shall be repaired or restored by the Contractor as directed by the Engineer.

19-2.05 Slopes. Excavation slopes shall be constructed in conformance with the lines and grades established by the Engineer. When completed, the average plane of the slopes shall conform to the slope indicated on the plans and no point on the completed slopes shall vary from the designated slopes by more than 0.5-foot measured at right angles to the slope, except where excavation is in rock no point shall vary more than 2 feet from the designated slope. In no case shall any portion of the slope encroach on the roadbed.

The tops of excavation slopes and the ends of excavations shall be rounded as shown on the plans.

Embankment slopes shall be constructed in conformance with the lines and grades established by the Engineer. The completed slopes within 4 feet of shoulder grade shall not vary more than 0.5-foot from the designated slope, measured at right angles to the slope. slopes below 4 feet shall not vary more than one foot from the designated slope, measured at right angles to the slope.

Median and side slopes which are on 6 to 1 or flatter slope, whether in excavation or embankment, shall be finished in conformance with the lines and grades established by the Engineer. The completed slopes shall not vary more than 0.2-foot from the designated slope, measured at right angles to the slope. Flowlines within medians shall be graded to drain and shall not vary more than 0.1-foot from the grade line established by the Engineer.

If the slope is to be cultivated or straw is to be incorporated into the surface, all loose rocks larger than 2½ inches in maximum dimension, roots and other debris on the surface of the slope shall be removed and disposed of prior to cultivation or incorporation of straw.

If embankments are constructed of large rock, the Engineer may permit the slopes more than 4 feet below shoulder grade to vary from the designated slope more than one foot, but in no case more than 2 feet, if the size of the rock makes it impracticable to construct the slopes within one foot of the designated slope.

19-2.06 Surplus Material. Unless otherwise shown on the plans or specified in the special provisions, surplus excavated material shall be used to widen embankments uniformly or to flatten slopes or it shall be disposed of along the roadway or in other locations as directed by the Engineer. No surplus material shall be disposed of above the grade of the adjacent roadbed nor shall the Contractor borrow or waste material unless authorized in writing by the Engineer.

If the quantity of surplus material is shown on the plans or specified in the special provisions, the quantity shown or specified is approximate only. The Contractor shall satisfy himself that there is sufficient material available for the completion of the embankments before disposing of any material inside or outside the right of way. Any shortage of material, caused by premature disposal of any material by the Contractor, shall be replaced by him and no compensation will be allowed the Contractor for such replacement.

19.2.065 Deficiency Material. If the quantity of acceptable material from excavation is not sufficient to construct the embankment required by the work, the quantity of material needed to complete the embankments shall consist of local borrow or imported borrow, as determined by the Engineer.

The Contractor shall obtain the local borrow or imported borrow in accordance with the provisions in Section 19-7, "Borrow Excavation."

19-2.07 Selected Material. Selected material shall be defined as material which is excavated from a location within the right of way as specified in the special provisions or shown on the plans, and the Contractor shall have no choice in the selection.

Selected material shall be used for topsoil or as a specified layer shall be placed in the roadway prism in accordance with the provisions in Section 19 "Earthwork," for placing embankment material or structure backfill.

When selected material is shown on the plans or designated in the special provisions as a specified layer, spreading and compacting the material shall conform to the provisions in Section 26, "Aggregate Subbases."

When practicable, and processing is not specified, selected material shall be hauled directly from excavation to its final position in the roadway prism and compacted in place and such work will be paid for at the contract price for roadway excavation.

Selected material shall remain in place until it can be placed in final position as provided above. No additional compensation will be allowed for any delay or inconvenience in excavation operations, except that if ordered in writing by the Engineer, selected material may be excavated and stockpiled at locations designated by him and later placed in final position in the roadway prism.

Excavating selected material and stockpiling, if required, will be paid for at the contract price for roadway excavation. Removing the selected material for stockpiles and placing it in final position in the roadway prism will again be paid for at the contract price for roadway excavation, except that the quantities to be paid for will be determined from measurements of the material in the stockpiles prior to removal. No payment for stockpiling of selected material will be made, unless such stockpiling is ordered by the Engineer.

Topsoil placed along the tops of slopes in connection with erosion control work will not be considered as stockpiled material when determining quantities of earthwork to be paid for.

19-3 STRUCTURAL EXCAVATION AND BACKFILL

19-3.01 Description. Structure excavation shall consist of excavation for the construction of foundations for structures; excavation of trenches for the construction of culverts, pipes, rods, deadmen, cutoff walls and other facilities; other excavation designated on the plans or in these specifications or in the special provisions as structure excavation; the control and removal of water and the construction or installation of all cofferdams and other facilities as necessary to accomplish construction of the work; and the subsequent removal of such facilities, except when they are required or permitted by the plans and specifications to remain in place.

Structure backfill shall consist of furnishing, placing and compacting backfill material around structures to the lines designated on the plans or specified or directed by the Engineer.

Structure excavation and structure backfill may be classified on the plans or in the Engineer's Estimate into various types or classifications. When there is a contract pay item for structure excavation (Type A), such excavation shall include all excavation for footings where seal courses are shown on the plans. The requirements of the specifications pertaining specifically to earthwork which is classified on the plans as structure excavation (culvert) and structure backfill (culvert).

Material from structure excavation not used as structure backfill shall be deposited in roadway embankments as provided in Section 19-6, "Embankment Construction," or disposed of as directed by the Engineer.

19-3.02 Excavations for Culverts. When the plans require embankment construction prior to the required excavation the embankment shall first be constructed to the required height as shown on the plans, and for a distance each side of the culvert of not less than 5 times the diameter or height of the culvert, after which the trench shall be excavated and the culvert installed. Where such embankments are to be constructed on a steep slope or at a difficult location, the height of new embankments may be varied as directed by the Engineer before installing culverts.

19-3.025 Culvert Beddings. Culvert beddings shall consist of shape bedding, sand bedding, or soil cement bedding and shall be constructed, where shown or specified, in accordance with the details shown on the plans and these specifications. When more than one type of bedding is permitted, the same bedding shall be used throughout the length of the culvert.

Culvert beddings shall conform to the following requirements:

19-3.025A Shape Bedding. The trench bed shall be shaped to fit the bottom of the culvert, as shown on the plans, and shall provide uniform support throughout the entire length of the culvert. The trench may be excavated below the bottom of the culvert and the shaped bedding constructed by backfilling and compacting culvert backfill material to the required line, grade and shape. Shaping shall be accomplished by use of a template conforming to the outside shape of the culvert established by the Engineer. Such headers may be left in place.

19-3.025B Sand Bedding. Sand shall be free from clay or organic material, suitable for the purpose intended, and shall be of such size that 90 -100% will pass a No. 4 sieve and not more than 5% will pass a No. 200 sieve.

19-3.025C Soil Cement Bedding. Portland cement used in soil cement bedding shall conform to the provisions in Section 90, "Portland Cement Concrete," except that testing will not be required.

Water used for soil cement bedding shall be free from oil, salts and other impurities which would have an adverse effect on the quality of the bedding material.

Aggregate for soil cement bedding shall be either material selected from the excavation, imported material, or a combination thereof; be free from organic material and other deleterious substances; and meet the following grade requirements:

Sieve Sizes	Percentage Passing
1 1/2"-----	100
1"-----	80 - 100
3/4"-----	60 - 100
3/8"-----	50 - 100
No. 4-----	40 - 80
No. 100-----	10 - 40

The aggregate, cement and water shall be proportioned either by weight or by volume. Not less than 282 pounds of cement shall be used for each cubic yard of material produced. The water content shall be sufficient to produce a fluid, workable mix that will flow and can be pumped without segregation of the aggregate while being placed.

Materials for soil cement bedding shall be thoroughly machine-mixed in a pugmill, rotary drum, or other approved mixer. Mixing shall continue until the cement and water are thoroughly dispersed throughout the material. Soil cement bedding shall be placed in the work within one hour after mixing.

Soil cement bedding shall be placed in a uniform manner that will prevent voids in, or segregation of, the bedding, and will not float or shift the culvert. Foreign material which falls into the trench prior to or during placing of the soil cement bedding shall be immediately removed.

Backfilling with earth on culverts set in soil cement bedding shall not commence until 8 hours after the soil cement bedding has been placed.

19-3.03 Cofferdams. Cofferdams for foundation construction shall be carried well below the bottom of the footings and shall be well braced and as watertight as practical. The interior dimensions of cofferdams shall provide sufficient clearance inside the wales for constructing forms and driving piles and to permit pumping outside the forms.

If in the judgment of the Contractor, the clearance provided on the plans between the outside line of the footing and pile or interior wall or surface is not sufficient to permit the driving of piles or building of forms, he may provide such necessary clearance as he may deem necessary. Any such enlargement in excess of one foot outside the dimensions of the footing as shown on the plans shall be considered as being for the sole purpose of expediting the work of the Contractor, and the quantities of such excavation and backfill will not be included in the quantities to be paid for.

Cofferdams which are tilted or moved out of position by any cause during the process of sinking shall be righted or enlarged so as to provide the necessary clearance and proper pier location and such work shall be done by the Contractor at his expense.

In streams at a time of probable flood, cofferdam walls shall be vented at low water elevation to insure equal hydrostatic head both inside and outside of the cofferdam during the period of placing and setting of seals.

No shoring will be permitted in cofferdams which will induce stress, shock, or vibration in the permanent structure.

When permitted by the Engineer, cross struts or bracing may extend through foundation concrete. Such struts or bracing below water will be permitted to remain in place, except in navigable streams or when specified in the special provisions or shown on the plans, to be removed.

Struts or bracing above low water shall be removed and the resulting space filled with concrete of the same mix as that specified for the surrounding concrete.

The Contractor shall submit to the Engineer, for approval, drawings showing his proposed method of cofferdam construction and other details left open to his choice or not fully shown on the plans. The drawings shall be submitted at least 3 weeks in advance of the time the Contractor begins construction of the cofferdams.

After completion of the substructure, the cofferdams with all sheeting and bracing shall be removed to at least 2 feet below the level of the streambed, by the Contractor at his expense, and such removal shall be performed in a manner that will not disturb or mar the finished concrete or masonry.

19-3.06 Structure Backfill. Backfill material shall be placed in uniform layers and shall be brought up uniformly on all sides of the structure or facility. The thickness of each layer of backfill shall not exceed 0.67-foot before compaction except that when compaction is done by ponding and jetting, said thickness shall not exceed 4 feet.

Compaction equipment or methods which may cause excessive displacement or may damage structures shall not be used.

Structure backfill shall not be placed until the structure footings or others portions of the structure or facility have been inspected by the Engineer and approved for backfilling. No backfill material shall be deposited against the back of concrete structures until the concrete has developed a strength of not less than 2,500 pounds per square inch in compression, or until the concrete has been in place for 28 days, whichever occurs first.

Backfill at the inside of bridge wingwalls and abutments shall be placed before curbs or sidewalks are constructed over the backfill and before railings on the wingwalls are constructed.

Compaction of structure backfill by ponding and jetting will be permitted when, as determined by the Engineer, the backfill material is of such character that it will be self-draining when compacted and that foundation materials will not soften or be otherwise damaged by the applied water and no damage from hydrostatic pressure will result to the structure. Ponding and jetting of the upper 4 feet below finished grade will not be permitted. The work shall be performed without damage to the structure and embankment, and in such a manner that water will not be impounded. Ponding and jetting methods shall be supplemented by the use of vibratory or other compaction equipment when necessary to obtain the required compaction.

Unless otherwise shown on the plans or specified in these specifications or the special provisions, structure backfill shall be compacted to a relative compaction of not less than 95 percent.

Structure backfill placed at the following locations shall be compacted to a relative compaction of not less than 90 percent:

1. Oversize drains.
2. Footings for slope protection, slope paving, and aprons.
3. All headwalls, endwalls, and culverts.
4. Retaining walls, except for portions under any surfacing.
5. Inlets in median areas or in traffic interchange loops.
6. Footings and pumping plants not beneath any surfacing.

Unless otherwise shown on the plans or specified in these specifications or the special provisions, material for structure backfill to be compacted to a relative compaction of not less than 95 percent and material to be placed behind retaining walls shall have a Sand Equivalent value of not less than 20 and shall conform to the following grading:

Sieve Sizes	Percentage Passing
3"-----	100
No. 4-----	35 - 100
No. 30-----	20 - 100

Unless otherwise shown on the plans or specified in these specifications or the special provisions, material for structure backfill to be compacted to a relative compaction of not less than 90 percent, except material to be placed behind retaining walls, shall consist of material free of stones or lumps exceeding 3 inches in greatest dimension, organic, or other unsatisfactory material.

At locations where directed by the Engineer, the material used to backfill the outer 2-foot portion of structure backfill adjacent to pipe and culvert inlets and outlets, and structure backfill placed within 2 feet of finished grade around abutments, abutment wingwalls, retaining walls, and other portions of structure shall be compacted impervious material. The impervious backfill shall be an earthy material, as determined by the Engineer to be suitable for such purpose. The Sand Equivalent requirement shall not apply to such material used for structure backfill.

The cells formed by the crib members of crib walls and the space between the crib wall and the limits designated for structure excavation, as shown on the plans or specified, including any space due to material being shown on the plans or specified, including any space due to material being removed outside said limits, shall be backfilled with material conforming to the following grading, quality, placement and compaction requirements:

Structure backfill placed for crib walls shall be of such character that it will not sift or flow through the openings in the wall and shall conform to the type or types listed below for the height of wall.

Backfilling shall progress simultaneously with the erection of the crib wall. Backfill material shall be so placed as to not disturb or damage the crib members, shall be placed in uniform layers before compaction not exceeding the thickness listed in the following table, and shall be compacted by hand tamping, mechanical compaction or other means approved by the Engineer.

Wall Height	Backfill Material Type	Loose Thickness of each Layer of Backfill Material Before Compaction
Under 10 feet-----	C, D, or E	1 foot
10-25 feet-----	D or E	2 feet
Over 25 feet-----	E	4 feet

Backfill

Grading

Material Type	Sieve Size	Percentage Passing	Sand Equivalent	Relative Compaction
C	3"	100	None	90% Min.
D	3"	100	30 Min.	90% Min.
E	No. 4	35-100	None	90% Min.
	3"	100		
	No. 4	25-70		
	No. 50	5-20		
	No. 200	0-5		

Structure backfill placed at bridge piers in waterways and water channels, not beneath any embankment, pavement or slope protection, need not be compacted, shall consist of soil which is free of organic matter, trash or other unsatisfactory material, and shall be placed to the level of the original ground or finished grade.

Where structure excavation is performed and material is removed outside the pay limits designated for structure excavation, as shown on the plans or specified in these specifications or the special provisions, all backfill material placed in said excavation areas shall conform to the backfill.

Material for structure backfill shall be furnished by the Contractor except that the Contractor may use material found in excavation if acceptable by engineer. When there is an item for imported borrow, imported borrow meeting the requirements of structure backfill may be used as structure backfill and no deduction in the quantities of imported borrow to be paid for will be made provided that an equivalent amount of material conforming to the requirements of imported borrow is replaced by the Contractor. Material from structure excavation which is not suitable for use as structure backfill may be used to replace imported borrow or other excavated material.

19-3.065 Pervious Backfill Material. Pervious backfill material shall be placed behind bridge abutments, wingwalls and retaining walls as shown on the plans and in accordance with the following requirements.

Pervious backfill material shall consist of gravel, crushed gravel, crushed rock, natural sands, manufactured sand, or combinations thereof. Pervious backfill material, except for sacked material at wall drain outlets, shall conform to the following grading requirements:

Sieve Sizes	Percentage Passing
2".....	100
No. 50.....	0-100
No. 100.....	0-8
No. 200.....	0-4

Wall drain outlets shall be backed with sacked pervious backfill material, except that the grading for the sacked material shall conform to the grading for the 1½" X ¾" primary aggregate size.

Pervious backfill material shall be placed in layers along with and by the same methods specified for structure backfill . Pervious backfill material at any one location shall be approximately the same grading, and at locations where the material would otherwise be exposed to erosion shall be covered with at least a one foot layer of earthy material approved by the Engineer.

SECTION 20

EROSION CONTROL AND PROJECT PLANTING

20-1 GENERAL

20-1.01 Description. This work shall consist of performing erosion control, planting, and other work necessary for improving the appearance of the roadside, and project site.

Erosion control and planting shall be performed in accordance with these specifications, the special provisions, the details shown on the plans, and as directed by the Engineer.

20-2 MATERIALS

20-2.01 Topsoil. Topsoil obtained from sources within the project shall be excavated to the lines and depths as directed by the Engineer. All lumps or clods shall be broken up before the topsoil is spread.

Imported topsoil shall consist of material obtained from sources outside the limits of the project. Unless designated in the special provisions, the Contractor shall make his own arrangements for obtaining imported topsoil and he shall pay all costs involved.

Imported topsoil shall consist of fertile, friable soil of loamy character, and shall contain an amount of organic matter normal to the region. It shall be obtained from well-drained arable land and shall be reasonably free from subsoil, refuse, roots, heavy or stiff clay, stones larger than one inch in size, coarse sand, noxious seeds, sticks, brush, litter, and other deleterious substances. Imported topsoil shall be capable of sustaining healthy plant life.

20-2.02 Commercial Fertilizer. Commercial fertilizer shall conform to the requirements of the California Food and Agriculture Code.

Commercial fertilizer for erosion control work shall be in pelleted or granular form and shall have a guaranteed chemical analysis of 16 percent nitrogen, 20 percent phosphoric acid, and 0 percent water soluble potash, and shall contain a minimum of 12 percent sulfur.

Commercial fertilizer for highway planting work shall be in pelleted, granular, or tablet form and shall have the chemical analysis specified in the special provisions.

20-2.03 Soil Amendment. Soil amendment shall be a wood or bark product, treated to absorb water quickly, or a relatively dry organic compost derived from sewage sludge or rice hulls; shall be friable and pass a one-inch sieve and shall comply with the requirements in the California Food and Agricultural Code.

Rice hull compost shall not contain living vegetation, dirt or other objectional material, pathogenic viruses, fly larvae, insecticides, herbicides, fungicides nor poisonous chemicals that would inhibit plant growth.

All soil amendment shall be packaged so that compliance can be readily determined, or shall be accompanied by a Certificate of Compliance.

20-2.05 Iron Sulfate. Iron sulfate shall be ferrous sulfate in pelleted or granular form containing not less than 18.5 percent iron expressed as metallic iron. Iron sulfate shall conform to the requirements of the California Food and Agriculture Code.

20-2.06 Straw. Straw shall be derived from wheat, rice, or barley. The Contractor shall furnish evidence that clearance has been obtained from the County Agricultural Commissioner, as required by law, before straw obtained from outside the county in which it is to be used is delivered to the site of the work. Straw that has been used for stable bedding shall not be used.

20-2.07 Fiber. Fiber shall be produced from natural or recycled (pulp) fiber, such as wood chips or similar wood materials or from newsprint, chipboard, corrugated cardboard or a combination of these processed materials, and shall be free of synthetic or plastic materials. Fiber shall not contain more than 7 percent ash as determined by the Technical Association of the Pulp and Paper Industry (TAPPI) Standard T 413, shall contain less than 250 parts per million boron, and shall be otherwise nontoxic to plant or animal life.

Fiber shall have a water-holding capacity by weight of not less than 1,200 percent as determined by the procedure used in the Department's Final Report, CA-DOT-TL-2176-1-76-36, "Water-Holding Capacity of Hydromulch," available at the Transportation Laboratory, 5900 Folsom Boulevard, Sacramento, CA 95819.

Fiber shall be of such character that the fiber will disperse into a uniform slurry when mixed with water. Water content of the fiber before mixing into slurry shall not exceed 15 percent of the dry weight of the fiber. The percentage of water in the fiber is to be applied, and shall not stain concrete or painted surfaces.

A Certificate of Compliance for fiber shall be furnished to the Engineer.

20-2.08 Mulch. Unless otherwise specified in the special provisions or shown in the plans, mulch shall consist of wood chips, tree bark, or shredded bark, or any combination thereof, at the Contractor's option.

Mulch materials produced from pine trees grown in Alameda, Monterey, Santa Clara, Santa Cruz, or San Mateo Counties shall not be used.

Wood chips shall be manufactured from clean wood. The particle size of the chips shall be between 1/2 inch and 3 inches in length, and not less than 3/8 inch in width and 1/16 inch in thickness.

At least 85 percent, by volume, of wood chips shall conform to the sizes specified.

Chips produced from tree trimmings which contain leaves or small twigs will not be accepted.

Tree bark shall have a particle size between 1/2 inch and 1 1/2 inches and shall be free of salt and foreign materials such as clods, coarse objects, sticks, rocks, weeds or weed seeds.

Shredded bark shall be a mixture of shredded bark and wood; shall have a particle size between 1/8 inch and 1 1/2 inches in thickness and one inch to 8 inches in length; and shall be free of salt and deleterious materials such as clods, coarse objects, and rocks. At least 75 percent, by volume, of shredded bark shall conform to the sizes specified.

A Certificate of Compliance for mulch shall be furnished to the Engineer.

20-2.10 Seed. Seed required to be labeled under the California Food and Agricultural Code, shall be labeled by the vendors supplying such seed. Seed shall have been tested for purity and germination not more than 15 months prior to the application of such seed. The test results from such seed testing shall be delivered to the Engineer prior to applying the seed. Seed labels furnished by the seed vendors supplying such seed shall indicate the purity and germination as determined by such seed testing.

Before seeding, the Contractor shall furnish written evidence (seed label or letter) to the Engineer that seed, not required to be labeled under the California Food and Agricultural Code, has been tested for purity and germination by a seed laboratory certified by the Association of Official Seed Analysts, or a seed technologist certified by the Society of Commercial Seed Technologists.

The percentage of seed germination shall include the germination percentage of any hard seed.

Seed with less than the specified purity or germination may be used under the following conditions:

- A. The application rate for such seed shall be increased to compensate for the less than specified purity or germination.
- B. Prior to using such seed, the Contractor shall submit to the Engineer the purity and germination percentages, and the proposed increased application rate for such seed.
- C. No such seed shall be used before the Engineer has approved, in writing, the use of such seed and the increased application rate.
- D. The additional seed required because of the increased application rate shall be furnished and applied at the Contractor's expense.

Seed specified without a purity or germination requirement shall be labeled to include the name, date (month and year) collected, and the name and address of the seed supplier. Said seed, at the time of sowing, shall be from the previous or current year's harvest.

All shipments of seed not accompanied by a valid California Nursery Stock Certificate shall be reported to the County Agricultural Commissioner at the point of destination for inspection and shall be held until released by the Commissioner.

Seed treated with mercury compounds shall not be used.

Legume seed shall be pellet inoculated with a viable bacteria compatible for use with that species of seed. All inoculated seed shall be labeled to show the weight of seed, the date of inoculation, and the weight and source of inoculant materials.

Legume seed shall be pellet-inoculated in accordance with the provisions in Bulletin 1842, "Range-Legume Inoculation and Nitrogen Fixation by Root-Nodule Bacteria," of the University of California Division of Agriculture and Natural Resources. Inoculant shall be added at the rate of 2 pounds of inoculant per 100 pounds of legume seed.

20-2.11 Stabilizing Emulsion. Stabilizing emulsion shall be a concentrated liquid chemical that forms a plastic film upon drying and allows water and air to penetrate. The film shall be nonflammable and shall have an effective life of at least one year.

Stabilizing emulsion shall be nontoxic to plant or animal life and nonstaining to concrete or painted surfaces. In the cured state, the stabilizing emulsion shall not be re-emulsifiable. The material shall be registered with and licensed by the State of California, Department of Food and Agriculture, as an "auxiliary soil chemical".

A Certificate of Compliance for stabilizing emulsion shall be furnished to the Engineer.

20-2.12 Lumber. Lumber shall be construction grade cedar, pressure treated Douglas fir, or heart redwood, rough cut, from sound timber, and shall be straight and free from loose or unsound knots, shakes in excess of 1/3 thickness of the lumber, splits longer than the thickness of the lumber, or other defect which would render the lumber unfit structurally for the purpose intended. Knots in all lumber shall be sound, tight, well spaced, and shall not exceed 2 inches in size on any face. Sweep shall not exceed 0.08 foot in 6 feet.

20-2.13 Plants. Plants shall be the variety and size shown on the plans or in the special provisions and shall conform to the requirements of these specifications.

No plant shall be transported to the planting area that is not thoroughly wet throughout the ball of earth surrounding the roots. Any plant that, in the opinion of the Engineer, has a damaged root ball or is dry or in a wilted condition when delivered to the planting area will not be accepted, and shall be replaced by the Contractor at his expense.

Each plant shall be handled and packed in the approved manner for that species or variety, and all necessary precautions shall be taken to insure that the plants will arrive at the site of the work in proper condition for successful growth. Trucks used for transporting plants shall be equipped with covers to protect plants from windburn.

All plants furnished by the Contractor shall be true to type or name as shown on the plans and shall be tagged identifying the plants by species or variety; however, determination of plant species or variety will be made by the Engineer and his decision shall be final. Plants shall be individually tagged or tagged in groups by species or variety. Carpobrotus cuttings need not be tagged.

All plants shall comply with Federal and State laws requiring inspection for plant diseases and infestations. Inspection certificates required by law shall accompany each shipment of plants, and certificates shall be delivered to the Engineer.

The Contractor shall obtain clearance from the County Agricultural Commissioner, as required by law, before planting plants delivered from outside the County in which they are to be planted. Evidence that such clearance has been obtained shall be filed with the Engineer.

Plants furnished by the Contractor shall be healthy, shapely, and well-rooted, and roots shall show no evidence of having been restricted or deformed at any time. Plants shall be well-grown, free from insect pests and disease, and shall be grown in nurseries which have been inspected by the State Department of Food and Agriculture and have complied with the regulations thereof.

Root condition of plants furnished by the Contractor in containers will be determined by removal of earth from the roots of not less than 2 plants nor more than 2 percent of the total number of plants of each species or variety, except when container-grown plants are from several sources, the roots of not less than 2 plants of each species or variety from each source will be inspected by the Engineer. In case the sample plants are found to be defective, the State reserves the right to reject the entire lot or lots of plants represented by the defective samples. Any plants rendered unsuitable for planting because of this inspection will be considered as samples and will not be paid for.

The Contractor shall notify the Engineer when plants are to be shipped to the project site. Such notification shall be given not less than 10 days prior to the actual shipment date.

20-2.14 Water. Water shall be of such quality that it will promote germination of seeds and growth of plants.

SECTION 22

FINISHING ROADWAY

22-1.01 Description. Upon completion of all construction operations, the entire roadway or roadways shall be finished as specified in these specifications.

The roadbed shoulders shall be trimmed and shaped to the finished cross section to produce smooth surfaces and slopes, and uniform cross sections. In the case of a graded roadbed without surfacing or pavement, the entire roadbed shall be trimmed and shaped to uniform cross sections and slopes.

Stockpiling of material on the finished pavement and drifting of material across the pavement will not be permitted. The finished pavement shall be cleaned of all dirt and foreign material.

The slopes of embankments, excavations, road approaches, road connections, ditches, channel changes, and material sites within or adjacent to the roadway right of way shall be finished to the lines and grades called for by the plans and as provided in Section 19, "Earthwork." Ditches and channels within or adjacent to the roadway right of way shall be cleared of debris and obstructions. Slopes of gutters shall be trimmed to the required grade and cross section. All sewers, culverts and other drainage facilities and their appurtenant structures constructed under the contract shall be cleaned out. Excess earth, debris, or other waste material adjacent to culvert headwalls and endwalls, bridge ends, poles, posts, trees, or other objects shall be removed and the areas shaped as directed by the Engineer and left in a neat and orderly condition. All stones, roots and other waste material exposed on slopes, which are liable to become loosened, shall be removed and disposed of. All materials and debris resulting from clearing and grubbing operations not previously removed, shall be disposed of. All loose rock larger than 2 1/2 inches in maximum dimension shall be removed from the finished roadbed and disposed of.

All materials resulting from the above specified finishing operations shall become the property of the Contractor and shall be disposed of outside the roadway right of way unless otherwise permitted by the special provisions. Earth and rocky material may be disposed of along the roadway as directed by the Engineer.

The entire roadway and right of way shall be left in a neat and presentable condition.

SECTION 24

LIME STABILIZATION

24-1.01 Description. This work shall consist of mixing lime and water with soil and compacting the mixture to the lines, grades and dimensions shown on the plans and as specified in these specifications and the special provisions.

24-1.02 Materials. Material to be stabilized shall be the native soil or embankment, containing no rocks or solids, other than soil clods larger than 2½ inches in any dimension. Removing and disposing of said rocks and solids larger than 2½ inches, from native soil or embankment other than imported borrow, will be paid for as extra work as provided in Section 4-1.03D. Removing and disposing of said rocks and solids larger than 2½ inches from imported borrow shall be at the expense of the Contractor.

Lime shall conform to the requirements in ASTM Designation: C 977 with the exception that when a 250 gram test sample of quicklime is dry sieved in a mechanical sieve shaker for 10 minutes ±30 seconds it shall conform to the following grading requirements:

Sieve Sizes	Percentage Passing
3/8".....	98-100
No. 100.....	0-25
No. 200.....	0-15

A Certificate of Compliance shall be furnished with each delivery of lime and shall be submitted to the Engineer with a certified copy of the weight of each delivery.

Water for mixing with soil and lime shall be free from oil and shall contain not more than 650 parts per million of chlorides as Cl, nor more than 1,300 parts per million of sulfates as SO₄. The water shall not contain an amount of impurities that will cause a reduction in the strength of the stabilized material.

5-3 General. - The amount of lime to be added to the material to be stabilized shall be as specified in the special provisions.

All handling, spreading and mixing operations shall be conducted in such a manner that a hazard is not presented to construction personnel or the public. Lime shall be prevented from blowing by suitable means selected by the Contractor.

If lime of more than one type or from more than one source is used on the project, separate application rates will be determined for lime of each source or type. Lime from more than one source or of more than one type shall not be mixed.

The lime shall be protected from exposure to moisture until used and shall be sufficiently dry to flow freely when handled.

Lime shall not be spread while the ambient temperature is below 35°F, nor when the ambient temperature is expected to drop below 35°F. before mixing and compacting are to be completed.

The in-place moisture of the material to be stabilized shall be maintained above the optimum moisture, as determined by California Test 373, during the mixing operation. During compaction, finish rolling and grading, sufficient water shall be added to the surface of the material to prevent the surface from drying until curing seal is applied.

No traffic other than the equipment performing the work will be allowed to pass over the spread lime, the mixed material or the compacted surface of the lime stabilized material. After application of the curing seal, no traffic will be permitted on the lime stabilized material for a period of 3 days. Damage to curing seal or lime stabilized material shall be repaired promptly by the Contractor at his expense, as directed by the Engineer.

24-1.04 Preparing Material. Unless otherwise ordered or approved by the Engineer, the material to be stabilized shall be placed to the lines, grades and dimensions shown on the plans and compacted to a relative compaction of not less than 90 percent, before lime is added. The surface of the material to be stabilized shall not vary more than 0.08-foot above or below the grade established by the Engineer, before lime is added.

24-1.05 Spreading. Lime shall be spread using equipment which will uniformly distribute the lime over the area to be stabilized.

Tailgate spreading of lime will not be permitted.

Lime shall be spread uniformly on the roadbed, and the rate of spread per square foot shall not vary by more than 10 percent of the rate designated by the Engineer.

Lime may be spread on the prepared material in either a slurry or dry form at the option of the Contractor. Hydrated lime shall not be spread in dry form. Either hydrated lime or quicklime may be used to prepare the slurry.

The distance which lime may be spread ahead of the mixing operation will be determined by the Engineer. In no case shall spread lime be allowed to remain exposed at the end of the work day.

Lime applied in slurry form shall be prepared and distributed using equipment and procedures capable of keeping the slurried lime in suspension and spreading the slurry uniformly over the area to be stabilized. The lime content of the slurry shall be as approved by the Engineer.

24-1.06 Mixing. Mixing lime and the material to be stabilized shall be conducted using equipment capable of mixing the materials uniformly to the depth specified.

Lime and the material to be stabilized may be mixed off site.

Mixing or remixing operations, regardless of the equipment used, shall continue until the material is uniformly mixed and free of streaks or pockets of lime. Prior to compaction, all mixed material other than rock or aggregate previously treated with asphalt, lime, or cement shall comply with the following grading requirements:

Sieve Sizes	Percentage Passing
1".....	98 min.
No. 4	60 min.

When granular lime in dry form is used, the material shall be mixed at least twice. The first and final mixing shall not be performed on the same day.

When the stabilized material, exclusive of one-inch or larger clods, is sprayed with a phenolphthalein alcohol indicator solution, areas showing no color reaction will be considered evidence of inadequate mixing.

The depth of mixing of the lime stabilized material shall not vary more than 0.1-foot from the planned depth at any point. Mixing to a depth that exceeds the planned depth by 10 percent or more shall be considered evidence of an inadequate amount of lime and additional lime shall be added at the Contractor's expense.

The entire mixing operation shall be completed within 7 days of the initial spreading of lime, unless otherwise permitted by the Engineer.

24-1.07 Compaction. Compaction shall begin as soon as possible, but not more than 24 hours after final mixing.

Prior to initial compaction maximum density will be determined in a composite of material from 5 random locations within the test area by California Test 216. the composite sample will be obtained after all mixing has been completed. The moisture content of the composite sample will be determined by California Test 226.

Initial compaction shall be by means of sheepsfoot or segmented wheel rollers. This shall be immediately followed with final compaction by rolling with steel drum or pneumatic-tired rollers. Vibratory rollers will not be allowed.

Where the required thickness is 0.50-foot or less, the mixture shall be compacted in one layer. Where the required thickness is more than 0.50-foot, the mixture shall be compacted in 2 or more layers of approximately equal thickness, and the maximum compacted thickness of any one layer shall not exceed 0.50-foot, except that the maximum compacted thickness of a single layer may be increased provided the Contractor can demonstrate to the Engineer that the equipment and method of operation will provide uniform distribution of the lime and the required compacted density throughout the layer.

Areas inaccessible to rollers shall be compacted to the required relative compaction by other means satisfactory to the Engineer.

The lime stabilized soil shall be compacted to a relative compaction of not less than 95 percent, except that the minimum relative compaction may be reduced to 92 percent provided the Contractor increases the lime content 0.5 percent at his expense.

The relative compaction will be calculated on the dry weight basis.

In-place density of the compacted lime stabilized material will be determined by California Test 231. A composite of material from a minimum of 5 random selected sites, taken at the time in-place density is determined, will be used to determine the in-place moisture content, by California Test 226.

24-1.08 Finish Rolling and Grading. The finished surface of the lime stabilized material shall be the grading plane and at any point shall not vary more than 0.08-foot above or below the grade established by the Engineer, except that when the lime stabilized material is to be covered by material which is paid for by the cubic yard, the surface of the finished lime stabilized material shall not extend above the grade established by the Engineer.

If the compacted material is above the grade tolerances specified in this section, the excess material shall be trimmed, removed, and disposed of. No loose material shall be left on the finished plane. Trimming of excess material shall not be conducted unless finish rolling can be completed within 2 hours of trimming.

All trimmed surfaces shall receive finish rolling consisting of at least one complete coverage with steel drum or pneumatic-tired rollers. Vibratory rollers will not be allowed. Minor indentations may remain in the surface of the finished material after final trimming and rolling. Under no circumstances will it be permissible to add new or trimmed lime stabilized material to fill low areas or to raise the grade of compacted lime stabilized material.

24-1.09 Curing. A curing seal, consisting of SS or CSS grade asphaltic emulsion, shall be furnished and applied to the surface of the top layer of lime stabilized material.

Curing seal shall be applied at a rate of between 0.10- and 0.20-gallon per square yard of surface. The exact rate will be determined by the Engineer.

Curing seal shall be applied within 48 hours of completion of initial compaction and on the same day as trimming and finish rolling are completed. The curing seal shall be applied as soon after finish rolling as is practicable. The lime stabilized material shall be at optimum moisture when the curing seal is applied.

Curing seal shall not be placed when the atmospheric temperature is below 40°F.

Curing by water will not be allowed, unless authorized by the Engineer.

Damage to the curing seal shall be promptly repaired by the Contractor at his expense, as directed by the Engineer.

SECTION 26

AGGREGATE BASES

26-1.01 Description. This work shall consist of furnishing, spreading and compacting aggregate bases as specified in these specifications and the special provisions.

Aggregate bases are designated as Class 2 and Class 3. The class of aggregate base will be shown on the plans or specified in the special provisions.

26-1.02 Materials. Aggregate for the various classes of aggregate base at the time it is deposited on the roadbed shall conform to the following requirements:

26-102A Class 2 Aggregate Base. Aggregate for Class 2 aggregate base shall be free from organic 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 shall conform to the grading and quality requirements shown in the following tables. At the option of the Contractor, the grading for either the 1½-inch maximum or ¾ inch maximum shall be used, except that once a grading is selected it shall not be changed without the Engineer's written approval.

AGGREGATE GRADING REQUIREMENTS Percentage Passing

Sieve Sizes	1½" Maximum		¾" Maximum	
	Operating Range	Contract Compliance	Operating Range	Contract Compaction
2".....	98-100	100	---	---
1½".....	90-100	87-100	---	---
1".....	---	---	100	100
¾".....	50-85	45-90	90-100	87-100
No. 4.....	25-45	20-50	35-60	30-65
No. 30.....	10-25	6-29	10-30	5-35
No. 200.....	2-9	0-12	2-9	0-12

QUALITY REQUIREMENTS

Tests	Operating Range	Contract Compaction
Resistance (R-value).....	-----	78 Min.
Sand Equivalent.....	25 Min	22 Min
Durability Index.....	-----	35 Min.

26-1.02B Class 3 Aggregate Base. Aggregate for Class 3 aggregate base shall conform to the requirements set forth in the special provisions.

26-1.03 Subgrade. The subgrade to receive aggregate base, immediately prior to spreading shall conform to the compaction and elevation tolerance specified for the material involved, and shall be free of loose or extraneous material.

26-1.035 Adding Water. At the time aggregate base is spread it shall have a moisture content sufficient to obtain the required compaction. Such moisture shall be uniformly distributed throughout the material.

26-1.04 Spreading. Aggregate bases shall be delivered to the roadbed as uniform mixtures. The mixture shall be deposited and spread to the required compacted thickness within the tolerance specified in Section 26-1.05, "Compacting," by means which will maintain the uniformity of the mixture. Each layer shall be free from pockets of coarse or fine material.

Where the required thickness is 0.50-foot or less the base material may be spread and compacted in one layer. Where the required thickness is more than .50-foot, the base material 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 0.50-foot.

Aggregate bases, placed on road approaches and connections, street intersection areas, median strip areas, shoulder areas, and at locations which are inaccessible to the spreading equipment, may be spread in one or more layers by any means to obtain the specified results.

When the subgrade for aggregate base consists of cohesionless sand, and written permission is granted by the Engineer, a portion of the aggregate base may be dumped in piles upon the subgrade and spread ahead from the dumped material in sufficient quantity to stabilize the subgrade. Segregation of aggregate shall be avoided and each layer shall be free from pockets of coarse or fine material.

26-1.05 Compacting. Aggregate bases, after compaction, shall be watered as provided in Caltrans Section 17, "Watering."

The relative compaction of each layer of compacted base material shall be not less than 95 percent.

The subsurface of the finished aggregate base at any point shall not vary more than 0.05-foot above or below the grade established by the Engineer.

Base which does not conform to the above requirements shall be reshaped or reworked, watered and thoroughly recompacted to conform to the specified requirements.

SECTION 39

ASPHALT CONCRETE

39-1.01 Description. This work shall consist of furnishing and mixing aggregate and asphalt binder at a central mixing plant, spreading and compacting the mixture, and furnishing and placing pavement reinforcing fabric, all as specified in these specifications and the special provisions.

Asphalt concrete is designated as Type A, Type B, or Open Graded. The type of asphalt concrete will be shown on the plans or specified in the special provisions.

Asphalt concrete shall be produced in a batch mixing plant, a continuous pugmill mixing plant or a drier-drum mixing plant. Proportioning shall be either by hot-feed control or cold-feed control.

39-2.01 Asphalts. Asphalt binder to be mixed with aggregate shall be a steam-refined paving asphalt conforming to the provisions in Caltrans Section 92, "Asphalts," and shall be of the grade designated in the special provisions or as determined by the Engineer. The amount of asphalt binder to be mixed with the aggregate will be specified in the special provisions.

Liquid asphalt for prime coat shall conform to the provisions in Caltrans Section 93, "Liquid Asphalts," and shall be of the grade designated by the contract item or specified in the special provisions.

Asphaltic emulsion for pain binder (tack coat) shall conform to the provisions in Caltrans Section 94, "Asphaltic Emulsions," for the rapid-setting or slow-setting type and grade selected by the Engineer.

Paving asphalt to be used as a binder for pavement reinforcing fabric shall be a steam-refined paving asphalt conforming to the provisions in Section 92, "Asphalts," and shall be Grade AR-4000, unless otherwise ordered by the Engineer.

39-2.02 Aggregate. All aggregates shall be clean and free from decomposed materials, organic material and other deleterious substances. Coarse aggregate is material retained on the No. 4 sieve; fine aggregate is material passing the No. 4 sieve; and supplemental fine aggregate is added fine material passing the No. 30 sieve, including but not limited to, cement and stored fines from dust collectors.

Unless otherwise specified in the special provisions, the aggregate grading of the various types of asphalt concrete shall conform to the following.

<i>Type</i>	<i>Grading</i>
A	¾ inch maximum, coarse
B	¾ inch maximum, medium
Open Graded	¾ inch maximum

The combined aggregate, prior to the addition of asphalt binder, shall conform to the requirements of this section. Conformance with the grading requirements will be determined by California Test 202, modified by California Test 105 when there is a difference in specific gravity of 0.2 or more between the coarse and fine portions of the aggregate or between blends of different aggregates.

In the tables below, the symbol "X" is the gradation which the Contractor proposes to furnish for the specific sieve. The proposed gradation shall meet the gradation shown in the table under "Limits of Proposed Gradation." Changes from one mix design to another shall not be made during the progress of the work unless permitted by the Engineer. However, changes in proportions to conform to the approved mix design shall not be considered changes in mix design.

AGGREGATE GRADING REQUIREMENTS
Types A and B Asphalt Concrete
Percentage Passing

¾" Maximum, Coarse

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
1".....		100	100
¾".....		90-100	87-100
⅜".....		60-75	55-80
No.4.....	45-50	X±5	X±8
No.8.....	32-36	X±5	X±8
No. 30.....	15-18	X±5	X±8
No. 200.....		3-7	0-10

¾" Maximum, Medium

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
1".....		100	100
¾".....		95-100	90-100
⅜".....		65-80	60-85
No.4.....	49-54	X±5	X±8
No.8.....	36-40	X±5	X±8
No. 30.....	18-21	X±5	X±8
No. 200.....		3-8	0-11

½" Maximum, Coarse

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
¾".....		100	100
½".....		95-100	89-100
⅜".....		75-90	70-95
No.4.....	55-61	X±5	X±8
No.8.....	40-45	X±5	X±8
No. 30.....	20-25	X±5	X±8
No. 200.....		3-7	0-10

½" Maximum, Medium

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
¾"		100	100
½"		95-100	89-100
⅜"		80-95	75-100
No.4	59-66	X±5	X±8
No.8.....	43-49	X±5	X±8
No. 30.....	22-27	X±5	X±8
No. 200.....		3-8	0-11

⅜" Maximum

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
½"		100	100
⅜"		95-100	95-100
No.4	73-77	X±6	X±10
No.8.....	58-63	X±6	X±10
No. 30.....	29-34	X±6	X±10
No. 200.....		3-10	0-14

No. 4 Maximum

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
⅜"		100	100
No.4		95-100	95-100
No.8.....	72-77	X±6	X±10
No. 30.....	37-43	X±7	X±11
No. 200.....		3-12	0-16

**Open Graded Asphalt Concrete
Percentage Passing**

½ " Maximum

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
¾"		100	100
½"		95-100	92-100
⅜"	78-89	X±4	X±7
No.4	28-37	X±4	X±7
No.8.....	7-18	X±4	X±5
No.16.....		0-10	0-13
No. 200.....		0-3	0-4

⅜" Maximum

<i>Sieve Sizes</i>	Limits of Proposed Gradation	Operating Range	Contract Compliance
½"		100	100
⅜"		90-100	X±7
No.4	29-36	X±4	X±7
No.8.....	7-18	X±4	X±5
No.16.....		0-10	0-12
No. 200.....		0-3	0-4

The combined aggregate shall conform to the following quality requirements prior to the addition of the asphalt:

	Asphalt Concrete		Open Graded Asphalt Concrete	Asphalt Concrete	
	<u>Type</u>			<u>Base Type</u>	
	A	B		A	B
Percentage of crushed Particles... 205					
Coarse Aggregate (Min.).....	90%	25%	90%	90%	25%
Fine Aggregate (Passing No. 4, Retained on No. 8) (Min.).....	70%	20%	90%	70%	20%
Los Angeles Rattler..... 211					
Loss at 100 Rev. (Max.).....	10%		10%	10%	
Loss at 500 Rev. (Max.).....	45%	50%	40%	45%	50%

Tests	Open California Test	Asphalt Concrete		Graded Asphalt Concrete	Asphalt Concrete	
		Type			Base Type	
		A	B		A	B
Sand Equivalent.....	217					
Contract Compliance (Min.).....		47	42		47	42
Operating Range (Min.).....		50	45		50	45
Film Stripping (Max.)*.....	302			25%		
Kc Factor (Max.).....	303	1.7	1.7		1.7	1.7
Kf Factor (Max.).....	303	1.7	1.7		1.7	1.7

*After mixing with asphalt binder

If the results of either or both the aggregate grading and Sand Equivalent tests do not meet the requirements specified for "Operating Range" but meet the "Contract Compliance" requirements, placement of the asphalt concrete or asphalt concrete base may be continued for the remainder of that day. However, another day's work may not be started until tests, or other information, indicate to the satisfaction of the Engineer that the next material to be used in the work will comply with the requirements specified for "Operating Range."

No single aggregate grading or Sand Equivalent test shall represent more than 500 tons or one day's production, whichever is smaller.

The asphalt concrete mixture, composed of the aggregate proposed for use and the optimum amount of asphalt as determined by California Test 367, shall conform to the following quality requirements:

Tests	California Test	Asphalt Concrete		Open Graded Asphalt Concrete	Asphalt Concrete	
		Type			Base Type	
		A	B		A	B
Swell (Max.).....	305	0.030"	0.030"		0.030"	0.030"
Moisture Vapor Susceptibility (Min.).....	307	30	25		30	25
Stabilometer Value (Min.).....	366	37	35		37	35
Stabilometer Value (Min.) (3/8" or No. 4 Max. AC).....	366	30	30			

39-2.03 Pavement Reinforcing Fabric. Pavement reinforcing fabric shall conform to the provisions in Caltrans Section 88, "Engineering Fabrics."

39-4.01 Subgrade. Immediately prior to applying prime coat or paint binder (tack coat), or immediately prior to placing the asphalt concrete or asphalt concrete base when a prime coat or paint binder (tack coat) is not required, the subgrade to receive asphalt concrete or asphalt concrete base shall conform to the compaction requirement and elevation tolerances specified for the material involved and shall be free of loose or extraneous material. If the asphalt concrete or asphalt concrete base is to be placed on an existing base or pavement which was not constructed as part of the contract, the Contractor shall clean the surface by sweeping, flushing or other means to remove all loose particles of paving, all dirt and all other extraneous material immediately before applying the prime coat or paint binder (tack coat).

39-4.02 Prime Coat and Paint Binder (Tack Coat). A prime coat of liquid asphalt shall be applied to the areas to be surfaced when there is a contract item for such work or when such work is required by the special provisions.

Prime coat shall be applied only to those areas designated by the Engineer.

Prime coat shall be applied at the approximate total rate of 0.25-gallon per square yard of surface covered. The exact rate and number of applications will be determined by the Engineer.

Prime coat shall be applied at a temperature conforming to the range of temperatures provided in Caltrans Section 93-1.03, "Mixing and Applying," for distributor application of the grade of liquid asphalt being used.

A paint binder (tack coat) of asphaltic emulsion shall be furnished and applied in accordance with the provisions in Caltrans Section 94, "Asphaltic Emulsions," and shall be applied to all vertical surfaces of existing pavement, curbs, gutters, and construction joints in the surfacing against which additional material is to be placed, to a pavement to be surfaced, and to other surfaces designated in the special provisions.

Paint binder (tack coat) shall be applied in one application at a rate of from 0.02-to-0.10-gallon per square yard of surface covered. The exact rate of application will be determined by the Engineer.

Before placing a layer of Open Graded asphalt concrete on any other type of asphalt concrete or on an existing bituminous pavement, paint binder (tack coat) shall be applied in one application at a rate of from 0.05-to-0.10-gallon per square yard of surface covered. The exact rate of application will be determined by the Engineer.

At the Contractor's option, paving asphalt may be used for paint binder (tack coat) instead of asphaltic emulsion. If paving asphalt is used, the grade to be used and the rate of application will be determined by the Engineer. The paving asphalt shall be applied at a temperature of not less than 285 degrees Fahrenheit nor more than 350 degrees Fahrenheit.

Prime coat or paint binder (tack coat) shall be applied only so far in advance of placing the surfacing as may be permitted by the Engineer. When asphaltic emulsion is used as a paint binder (tack coat), asphalt concrete shall not be placed until the asphaltic emulsion has cured.

Immediately in advance of placing asphalt concrete or asphalt concrete base, additional prime coat or paint binder (tack coat) shall be applied as directed by the Engineer to areas where the prime coat or paint binder (tack coat) has been damaged, and loose or extraneous material shall be removed, and no additional compensation will be allowed therefor.

39-4.03 Pavement Reinforcing Fabric. Pavement reinforcing fabric shall be placed on existing pavement to be surfaced or between layers of asphalt concrete when such work is shown on the plans, or specified in the special provisions, or ordered by the Engineer.

Before placing the pavement reinforcing fabric, a binder of paving asphalt shall be applied to the surface to receive the pavement reinforcing fabric at an approximate rate of 0.25-gallon per square yard of surface covered. The exact rate will be determined by the Engineer. The binder shall be applied to a width equal to the width of the fabric mat plus 3 inches on each side.

Before applying binder, large cracks, spalls and chuckholes in existing pavement shall be repaired as directed by the Engineer.

The fabric shall be aligned and placed with no wrinkles that lap. The test for lapping shall be made by gathering together the fabric in a wrinkle. If the height of the doubled portion of extra fabric is 1/2 inch or more, the fabric shall be cut to remove the wrinkle, then lapped in the direction of paving. Lap in excess of 2 inches shall be removed.

Pavement reinforcing fabric shall not be placed in areas of conform tapers where the thickness of the overlying asphalt concrete is 0.10-foot or less.

If manual laydown methods are used, the fabric shall be unrolled, aligned, and placed in increments of approximately 30 feet.

Adjacent borders of the fabric shall be lapped 2 to 4 inches. The preceding roll shall lap 2 to 4 inches over the following roll in the direction of paving at ends of rolls or at any break. At fabric overlays, both the binder and the fabric shall overlap the previously placed fabric by the same amount.

Seating of the fabric with rolling equipment after placing will be permitted. Turning of the paving machine and other vehicles shall be gradual and kept to a minimum to avoid damage.

A small quantity of asphalt concrete, to be determined by the Engineer, may be spread over the fabric immediately in advance of placing asphalt concrete surfacing in order to prevent fabric from being picked up by construction equipment.

Public traffic shall not be allowed on the bare reinforcing fabric, except that public cross traffic shall be allowed to cross the fabric, under traffic control, after the Contractor has placed a small quantity of asphalt concrete over the fabric.

Care shall be taken to avoid tracking binder material onto the pavement reinforcing fabric or distorting the fabric during seating of the fabric with rolling equipment. If necessary, exposed binder material shall be covered lightly with sand.

39-5.01 Spreading Equipment. Asphalt pavers shall be self-propelled mechanical spreading and finishing equipment, provided with a screed or strike-off assembly capable of distributing the material to no less than the full width of a traffic lane. Screed action shall include any cutting, crowding or other practical action which is effective on the mixture without tearing, shoving or gouging, and which produces a surface texture of uniform appearance. The screed shall be adjustable to the required section and thickness. The paver shall be provided with a suitable full width compacting device. Pavers that leave ridges, indentations or other marks in the surface shall not be used unless the ridges, indentations or other marks are eliminated by rolling or prevented by adjustment in operation.

The asphalt paver shall operate independently of the vehicle being unloaded or shall be capable of propelling the vehicle being unloaded in a satisfactory manner. The load of the haul vehicle shall be limited to that which will insure satisfactory spreading. While being unloaded the haul vehicle shall be in contact with the machine at all times, and the brakes on the haul vehicle shall not be depended upon to maintain contact between the vehicle and the machine.

No portion of the weight of hauling or loading equipment, other than the connection, shall be supported by the asphalt paver, and no vibrations or other motions of the loader, which could have a detrimental effect on the riding quality of the completed pavement, shall be transmitted to the paver.

When asphalt concrete is placed directly upon asphalt treated permeable base, the asphalt concrete shall be placed with a paver equipped with tracks unless the layer being placed is 0.15-foot or less in compacted thickness.

39-5.02 Compacting Equipment. A minimum of one steel-tired, 2-axle tandem roller weighing not less than 8 tons nor more than 10 tons shall be used for each asphalt paver to compact Open Graded asphalt concrete, and a minimum of 3 rollers consisting of the following shall be used for each asphalt paver to compact all other asphalt concrete and asphalt concrete base:

- One steel-tired roller weighing not less than 8 tons,
 - One steel-tired, 2-axle or 3-axle tandem or 3-wheel roller weighing not less than 12 tons,
- and
- One pneumatic-tired roller.

The 2-axle or 3-axle tandem or 3-wheel roller shall have rolling wheels with a diameter of 40 inches or more.

Except when leveling or when asphalt concrete less than 0.20-foot in compacted thickness is being placed on existing surfacing, pneumatic-tired rollers will not be required when approved vibratory rollers are furnished and used as specified in Section 39-6.03, "Compacting."

Each roller shall have a separate operator. All rolling equipment shall be self-propelled and reversible. The minimum number, weight, and type of rollers required may be reduced or modified in accordance with the provisions of Section 39-6.03, "Compacting," for low rates of production or when alternative equipment is approved by the Engineer.

All rollers shall be equipped with pads and water systems which prevent sticking of asphalt mixtures to the pneumatic- or steel-tired wheels. A parting agent, which will not damage the asphalt mixture, as determined by the Engineer, may be used to aid in preventing the sticking of the mixture to the wheels.

Other equipment, approved by the Engineer in accordance with California Test 113, may be substituted for 3-wheel or tandem rollers when used as specified in Section 39-6.03, "Compacting."

Pneumatic-tired rollers shall be the oscillating type having a width of not less than 4 feet with pneumatic tires of equal size, diameter and having treads satisfactory to the Engineer. Wobble-wheel rollers will not be permitted. The tires shall be spaced so that the gaps between adjacent tires will be covered by the following tires.

The tires shall be inflated to 90 pounds per square inch, or such lower pressure as designated by the Engineer, and maintained so that the air pressure will not vary more than 5 pounds per square inch from the designated pressure. Pneumatic-tired rollers shall be constructed so that the total weight of the roller can be varied to produce an operating weight per tire of not less than 2,000 pounds. The total operating weight of the roller shall be varied as directed by the Engineer.

39-6.01 General Requirements. Placing material in a windrow, then picking it up and placing it in the asphalt paver with loading equipment, will be permitted provided:

- A. The asphalt paver is of such design that the material will fall into a hopper which has a movable bottom conveyor to feed the screed.
- B. The loader (pick-up machine) is constructed and operated so that substantially all of the material deposited on the roadbed is picked up and deposited in the paving machine.
- C. The windrow is deposited only so far in advance of the paver to provide for continuous operation of the paver and not so far as to allow the temperature of the asphalt concrete in the windrow to fall below 260 ° F.

Unless lower temperatures are directed by the Engineer, all mixtures, except Open Graded asphalt concrete, shall be spread, and the first coverage of initial or breakdown compaction shall be performed when the temperature of the mixture is not less than 250° F., and all breakdown compaction shall be completed before the temperature of the mixture drops below 200° F. and not more than 250° F., measured in the hopper of the paving machine. Open Graded asphalt concrete shall be compacted as soon as possible after spreading.

Type A and Type B asphalt concrete shall be placed only when the atmospheric temperature is above 50° F. Asphalt concrete base shall be placed only when the atmospheric temperature is above 40° degrees F.

Open Graded asphalt concrete shall be placed only when the atmospheric temperature is above 70° F. and, where placement is to be on bridges or other structures, when the surface temperature of such structure is above 60° F.

Asphalt concrete and asphalt concrete base shall not be placed when the underlying layer or surface is frozen, or when, in the opinion of the Engineer, weather conditions will prevent the proper handling, finishing, or compaction of the mixtures.

Asphalt concrete shall be spread and compacted in the number of layers of the thickness indicated in the following table. All thicknesses shown are in hundredths of a foot.

Total Thickness Shown on the Plans*	No. Layers	Top Layer Thickness		Next Lower Layer Thickness		All Other Lower Layers Thickness	
		Min.	Max.	Min.	Max.	Min.	Max.
20 or less.....	one	—	—	—	—	—	—
25	2**	12	13	12	13	—	—
30 through 40.....	2	15	20	15	25	—	—
45 or more.....	***	15	20	15	25	15	40

* When pavement reinforcing fabric is shown to be placed between layers of asphalt concrete, the thickness of asphalt concrete above the pavement reinforcing fabric shall be considered to be the "Total Thickness Shown on the Plans" for the purpose of spreading and compacting the asphalt concrete above the pavement reinforcing fabric.

** At the option of the Contractor, may be placed in one layer 0.25' thick.

*** At least 2 layers if total thickness is 0.45-foot. At least 3 layers if total thickness is more than 0.45-foot and less than 0.90-foot. At least 4 layers if total thickness is 0.90-foot or more.

Asphalt concrete base shall be spread and compacted in one or more layers. Each layer of asphalt concrete base shall be not less than 0.20-foot nor more than 0.40-foot in compacted thickness, except that where the total thickness of asphalt concrete to be placed over asphalt concrete base is 0.20-foot or less, the layer of asphalt concrete base below the asphalt concrete shall not exceed 0.25-foot.

A layer shall not be placed over a layer which exceeds 0.25-foot in compacted thickness until the temperature of the layer which exceeds 0.25-foot in compacted thickness is less than 160 degrees F. at mid depth.

Asphalt concrete and asphalt concrete base to be placed on shoulders, and other areas off the traveled way having a width of 5 feet or more, shall be spread in the same manner as specified above. When the shoulders and other areas are less than 5 feet in width, the material may be deposited and spread in one or more layers by any mechanical means that will produce a uniform smoothness and texture. Unless otherwise shown on the plans, asphalt mixtures shall not be handled, spread or windrowed in a manner that will stain the finished surface of any pavement or other improvements.

The completed mixture shall be deposited on the roadbed at a uniform quantity per linear foot, as necessary to provide the required compacted thickness without resorting to spotting, picking-up or otherwise shifting the mixture.

Segregation shall be avoided, and the surfacing shall be free from pockets of coarse or fine material. Asphalt concrete or asphalt concrete base containing hardened lumps shall not be used.

Longitudinal joints in the top layer shall correspond with the edges of proposed traffic lanes. Longitudinal joints in all other layers shall be offset not less than 0.5-foot alternately each side of the edges of traffic lanes. The Engineer may permit other patterns of placing longitudinal joints if he considers that such patterns will not adversely affect the quality of the finished product.

Unless otherwise provided herein or permitted by the Engineer, the top layer of asphalt concrete for shoulders, tapers, transitions, road connections, private drives, curve widenings, chain control lanes, turnouts, left turn pockets, and other such areas, shall not be spread before the top layer of asphalt concrete for the adjoining through lane has been spread and compacted. At locations where the number of lanes is changed, the top layer for the through lanes shall be paved first. When existing pavement is to be surfaced and the specified thickness of asphalt concrete to be spread and compacted on the existing pavement is 0.25-foot or less, shoulders or other adjoining areas may be spread simultaneously with the through lane provided the completed surfacing conforms to the requirements of these specifications. Tracks or wheels of spreading equipment shall not be operated on the top layer of asphalt concrete in any area until final compaction has been completed.

At locations shown on the plans, specified in the special provisions or as directed by the Engineer, the asphalt concrete shall be tapered or feathered to conform to existing surfacing or to other highway and non-highway facilities.

At locations where the asphalt concrete or asphalt concrete base is to be placed over areas inaccessible to spreading and rolling equipment, the asphalt concrete or asphalt concrete base shall be spread by any means to obtain the specified results and shall be compacted thoroughly to the required lines, grades and cross sections by means of pneumatic tampers, or by other methods that will produce the same degree of compaction as pneumatic tampers.

39-6.02 Spreading. All layers, except as otherwise provided in Section 39-6.01, "General Requirements," and in this Section 39-6.02, shall be spread with an asphalt paver. Asphalt pavers shall be operated in such a manner as to insure continuous and uniform movement of the paver.

In advance of spreading asphalt concrete over an existing base, surfacing or bridge deck, if there is a contract item for asphalt concrete (leveling) or if ordered by the Engineer, asphalt concrete shall be spread by any mechanical means that will produce a uniform smoothness and texture to level irregularities, and to provide a smooth base in order that subsequent layers will be of uniform thickness.

When directed by the Engineer, paint binder (tack coat) shall be applied to any layer in advance of spreading the next layer.

Before placing the top layer adjacent to cold transverse construction joints, such joints shall be trimmed to a vertical face and to a neat line. Transverse joints shall be tested with a 12-foot straightedge and shall be cut back as required to conform to the requirements specified in Section 39-6.03, "Compacting," for surface smoothness. Connections to existing surfacing shall be feathered to conform to the requirements for smoothness. Longitudinal joints shall be trimmed to a vertical face and to a neat line if the edges of the previously laid surfacing are, in the opinion of the Engineer, in such condition that the quality of the completed joint will be affected.

39-6.03 Compacting. Compacting equipment shall conform to the provisions of Section 39-5.02, "Compacting Equipment."

A pass shall be one movement of a roller in either direction. A coverage shall be as many passes as are necessary to cover the entire width being paved. Overlap between passes during any coverage, made to insure compaction without displacement of material in accordance with good rolling practice, shall be considered to be part of the coverage being made and not part of a subsequent coverage. Each coverage shall be completed before subsequent coverages are started.

Rolling shall commence at the lower edge and shall progress toward the highest portion, except that when compacting layers which exceed 0.25-foot in compacted thickness, and if directed by the Engineer, rolling shall commence at the center and shall progress outwards.

Compaction of Open Graded asphalt concrete shall consist of 2 coverages. If necessary, only one coverage of the Open Graded asphalt concrete may be ordered by the Engineer to prevent a break in the bond of asphalt between the aggregate particles.

All other asphalt concrete and asphalt concrete base shall be compacted as follows:

Initial or breakdown compaction shall consist of 3 coverages of a layer of asphalt mixture and shall be performed with a 2-axle or 3-axle tandem or a 3-wheel roller weighing not less than 12 tons. Where the thickness of the layer of asphalt mixture is less than 0.15-foot, fewer coverages than specified above may be ordered by the Engineer if necessary to prevent damage to the layer being compacted.

The initial or breakdown compaction shall be followed immediately by additional rolling consisting of 3 coverages with a pneumatic-tired roller. Coverages with a pneumatic-tired roller shall start when the temperature of the mixture is as high as practicable, preferably above 180 degrees F., and shall be completed while the temperature of the mixture is at or above 150 degrees F.

Each layer of asphalt concrete and asphalt concrete base shall be compacted additionally without delay by a final rolling consisting of not less than one coverage with a steel-tired roller weighing not less than 8 tons. Except as otherwise provided for low rates of production, a separate finish roller will be required.

Rolling shall be performed so that cracking, shoving or displacement will be avoided.

Rolling, where 3-axle tandem rollers may be used as specified in this Section 39-6.03, shall be under the control of the Engineer, but in general, no 3-axle tandem roller shall be used in rolling over a crown or on warped sections when the center axle is in the locked position.

Provided it is demonstrated to the satisfaction of the Engineer that one roller can perform the work, the required minimum rolling equipment specified above may be reduced to one 2-axle tandem roller, weighing at least 8 tons, for each paver under any of the following conditions:

A. When asphalt concrete or asphalt concrete base is placed at a rate of 50 tons, or less, per hour at any location.

B. When asphalt concrete or asphalt concrete base is placed at a rate of 100 tons, or less, per hour and at the locations or under the conditions as follows:

1. Placed on miscellaneous areas in accordance with the provisions in Section 39-7.01, "Miscellaneous Areas."

2. When the width to be placed is less than 8 feet.

C. When the total amount of asphalt concrete and asphalt concrete base included in the contract is 1,000 tons, or less.

When rolling equipment is reduced as provided in this Section 39-6.03, the rolling requirements may be reduced to at least 3 complete coverages with said tandem roller.

Alternative compacting equipment, approved by the Engineer in accordance with California Test 113, may be used for the initial or breakdown compaction if operated according to the procedures and under the conditions designated in the approval. Except when leveling or when asphalt concrete less than 0.20-foot in compacted thickness is being placed on existing surfacing, additional compaction with pneumatic-tired rollers will not be required when approved alternative equipment has been used for the initial compaction. A vibratory roller may be used as the finish roller provided that it meets the requirements for a finish roller and is operated with the vibratory unit turned off.

Upon completion of rolling operations, if ordered by the Engineer, the asphalt concrete or asphalt concrete base shall be cooled by applying water. Applying water shall conform to the provisions in Caltrans Section 17, "Watering."

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

When a straightedge 12 feet long is laid on the finished surface and parallel with the center line, the surface shall not vary more than 0.01-foot from the lower edge of the straightedge. The transverse slope of the finished surface shall be uniform to a degree such that no depressions greater than 0.02-foot are present when tested with a straightedge 12 feet long laid in a direction transverse to the center line and extending from edge to edge of a 12-foot traffic lane.

Pavement within 50 feet of a structure or approach slab shall conform to the smoothness tolerances specified in Caltrans Section 51-1.17, "Finishing Bridge Decks."

39-7.01 Miscellaneous Areas. Surfacing of miscellaneous areas, such as median areas (exclusive of inside shoulders), island areas, sidewalks, dikes, gutters, gutter flares, ditches, overside drains, aprons at the ends of drainage structures, and other areas outside the traveled way which are designated on the plans as miscellaneous areas to be paved with asphalt concrete, shall conform to these specifications.

The combined aggregate grading for asphalt concrete placed on miscellaneous areas shall conform to that specified for the asphalt concrete placed on the traveled way, unless otherwise directed by the Engineer. The amount of asphalt binder used in the asphalt concrete placed in dikes, gutters, gutter flares, overside drains and aprons at the ends of drainage structures, unless otherwise directed by the Engineer, shall be increased one percent by weight of the aggregate over the amount of asphalt binder used in the asphalt concrete placed on the traveled way.

The asphalt concrete placed in miscellaneous areas may be spread in one layer. The material shall be compacted to the required lines, grades and cross section.

Dikes shall be shaped and compacted with an extrusion machine or other equipment capable of shaping and compacting the material to the required cross section.

39-7.02 Seal Coat. Where shown on the plans or provided in the special provisions, a fog seal coat shall be applied to the surface of Types A and B asphalt concrete in accordance with the provisions in Caltrans Section 37, "Bituminous Seals."

SECTION 90

PORTLAND CEMENT CONCRETE

90-1.01 Description. Portland cement concrete shall be composed of portland cement, fine aggregate, coarse aggregate, admixtures if used, and water, proportioned and mixed as specified in these specifications.

Concrete for each portion of the work shall be of the Class, cement content in pounds per cubic yard, 28-day compressive strength, or minor concrete as shown on the plans or specified in these specifications or the special provisions.

Class A concrete shall contain not less than 564 pounds of portland cement per cubic yard.
Class B concrete shall contain not less than 470 pounds of portland cement per cubic yard.
Class C concrete shall contain not less than 376 pounds of portland cement per cubic yard.
Class D concrete shall contain not less than 658 pounds of portland cement per cubic yard.
Minor concrete shall contain not less than 564 pounds of portland cement per cubic yard unless otherwise specified in these specifications or the special provisions.

Unless otherwise designated on the plans or specified in these specifications or the special provisions, the amount of portland cement used per cubic yard of concrete in structures or portions of structures shall conform to the following:

<i>Use</i>	<i>Cement Content in pounds</i>
Concrete which is designated by compressive strength:	
Roadway deck slabs and slab spans of highway bridges	658 min., 800 max.
Roof sections of exposed top box culverts	658 min., 800 max.
Other portions of structures	564 min., 800 max.
Concrete not designated by compressive strength:	
Roadway deck slabs and slab spans of highway bridges	658 min.
Roof sections of exposed top box culverts	658 min.
Prestressed members	658 min.
Seal courses	658 min.
Other portions of structures	564 min.

Whenever the 28-day compressive strength shown on the plans is 3,500 pounds per square inch or greater, the concrete shall be considered to be designated by compressive strength. The 28-day compressive strengths shown on the plans which are less than 3,500 pounds per square inch, are shown for design information only and are not to be considered a requirement for acceptance of the concrete.

Concrete designated by compressive strength shall be proportioned such that the concrete will conform to the strength shown on the plans or specified in the special provisions.

The Contractor shall determine the mix proportions for all concrete to be used in concrete structures. The Engineer will determine the mix proportions for all other concrete.

Before using concrete for which the mix proportions have been determined by the Contractor, or in advance of revising such mix proportions, the Contractor shall submit in writing to the Engineer a copy of the mix design.

Compliance with cement content requirements will be verified in accordance with procedures described in California Test 518. Batch proportions shall be adjusted as necessary to produce concrete having the specified cement content.

90-2.01 Portland Cement. Unless otherwise specified, portland cement shall be either "Type IP (MS) Modified" or "Type II Modified". "Type IP (MS) Modified" cement shall conform to the specifications for Type IP (MS) cement in ASTM Designation: C 595 and shall be comprised of an intimate mixture of "Type II Modified" cement and not more than 20 percent of a pozzolanic material. "Type II Modified" cement shall conform to the specifications for Type II cement in ASTM Designation: C 150. In addition, "Type IP (MS) Modified" and "Type II Modified" cement shall conform to the following requirements:

A. The cement shall not contain more than 0.60 percent by weight of alkalis, calculated as the percentage of Na_2O plus 0.658 times the percentage of K_2O , when determined by either direct intensity flame photometry or by the atomic absorption method. The instrument and procedure used shall be qualified as to precision and accuracy in accordance with the requirements of ASTM Designation: C 114.

B. The autoclave expansion shall not exceed 0.50 percent.

C. Mortar, containing the portland cement to be used and Ottawa sand, when tested in accordance with California Test 527, shall not expand in water more than 0.010 percent and shall not contract in air more than 0.048 percent except that when portland cement is to be used for precast prestressed concrete piling, precast prestressed concrete members or steam cured concrete products, the mortar shall not contract in air more than 0.053 percent.

Type III and Type V portland cements shall conform to the specifications in ASTM Designation: C 150, and the modifications listed above except that when tested in accordance with California Test 527, mortar containing Type III portland cement shall not contract in air more than 0.075 percent.

Mineral admixtures may be used to replace a portion of the required portland cement in accordance with the provisions in Section 90-4, "Admixtures."

All cement used in the manufacture of cast-in-place concrete for exposed surfaces of like elements of a structure shall be from the same cement mill.

Cement shall be protected from exposure to moisture until used. Sacked cement shall be piled to permit access for tally, inspection, and identification of each shipment.

Adequate facilities shall be provided to assure that cement meeting the requirements specified in this Section 90-2.01 will be kept separate from other cement in order to prevent any but the specified cement from entering the work. Safe and suitable facilities for sampling cement shall be provided at the weigh hopper, or in the feed line immediately in advance of the hopper.

If cement is used prior to sampling and testing as provided in Caltrans Section 6-1.07, "Certificates of Compliance," and the cement is delivered directly to the site of the work, the Certificate of Compliance shall be signed by the cement manufacturer or supplier of the cement. If the cement is used in ready-mixed concrete or in precast concrete products purchased as such by the Contractor, the Certificate of Compliance shall be signed by the manufacturer of such concrete or product.

Cement furnished without a Certificate of Compliance shall not be used in the work until the Engineer has had sufficient time to make appropriate tests and has approved the cement for use.

90-2.02 Aggregates. Aggregates shall be free from deleterious coatings, clay balls, roots, bark, sticks, rags and other extraneous material.

All natural aggregates shall be thoroughly and uniformly washed before use.

The Contractor, at his expense, shall provide safe and suitable facilities, including necessary splitting devices for obtaining samples of aggregates.

Aggregates shall be of such character that it will be possible to produce workable concrete within the limits of water content provided in Section 90-6.06, "Amount of Water and Penetration."

Aggregates shall have not more than 10 percent loss when tested for soundness in accordance with California Test 214.

The soundness requirement for fine aggregate will be waived, provided that the durability index, D_f , of the fine aggregate is 60, or greater.

The results of Cleanness Value, Sand Equivalent and aggregate grading tests shall conform to the requirements in Section 90-2.02A, "Coarse Aggregate," 90-2.02B, "Fine Aggregate," and 90-3, "Aggregate Gradings," respectively. If the results of any one or more of the said tests do not meet the requirements specified for "Operating Range" but all meet the "Contract Compliance" requirements, the placement of concrete shall be suspended at the completion of the current pour until tests or other information indicate that the next material to be used in the work will comply with the requirements specified for "Operating Range.":

If the results of either or both the Cleanness Value and coarse aggregate grading tests do

not meet the requirements specified for "Contract Compliance," the concrete which is represented by the tests shall be removed. However, if the Engineer determines that said concrete is structurally adequate, the concrete may remain in place.

90-2.02A Coarse Aggregate. Coarse aggregate shall consist of gravel, crushed gravel, crushed rock, crushed air-cooled iron blast furnace slag, or combinations thereof. Crushed air-cooled blast furnace slag shall not be used in any reinforced or prestressed concrete.

Coarse aggregate shall conform to the following quality requirements:

<i>Test</i>	<i>California Test</i>	<i>Requirements</i>
Loss in Los Angeles Rattler (after 500 revolutions)	211	45% max.
Cleanness Value	227	
Operating Range		75 min.
Contract Compliance		71 min.

In lieu of the above Cleanness Value requirements, a Cleanness Value "Operating Range" limit of 71 min. and a Cleanness Value "Contract Compliance" limit of 68 min will be used to determine the acceptability of the coarse aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Caltrans Section 6-1.07, "Certificates of Compliance," certifying that:

1. coarse aggregate sampled at the completion of processing at the aggregate production plant had a Cleanness Value of not less than 82 when tested by California Test 227, and
2. prequalification tests performed in accordance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.02B Fine Aggregate. Fine aggregate shall consist of natural sand, manufactured sand produced from larger aggregate, or a combination thereof. Manufactured sand shall be well graded.

Fine aggregate shall conform to the following quality requirements:

<i>Test</i>	<i>California Test</i>	<i>Requirements</i>
Organic Impurities	213	Satisfactory ¹
Mortar Strengths Relative to Ottawa Sand	515	95% min.
Sand Equivalent	217	75 min.
Operating Range		75 min.
Contract Compliance		71 min.

¹ Fine aggregate developing a color darker than the reference standard color solution may be accepted if it is determined by the Engineer, from mortar strength tests, that a darker color is acceptable.

In lieu of the above Sand Equivalent requirements, a Sand Equivalent "Operating Range" limit of 71 min. and a Sand Equivalent "Contract Compliance" limit of 68 min. will be used to determine the acceptability of the fine aggregate if the Contractor furnishes a Certificate of Compliance, as provided in Caltrans Section 6-1.07, "Certificates of Compliance," certifying that:

1. fine aggregate sampled at the completion of processing at the aggregate production plant had a Sand Equivalent value of not less than 82 when tested by California Test 217, and;
2. prequalification tests performed in accordance with California Test 549 indicated that the aggregate would develop a relative strength of not less than 95 percent and would have a relative shrinkage not greater than 105 percent, based on concrete.

90-2.03 Water. In conventionally reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 1,000 parts per million of chlorides as Cl, nor more than 1,300 parts per million of sulfates as SO₄. In prestressed concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 650 parts per million of chlorides as Cl, nor more than 1,300 parts per million of sulfates as SO₄. In no case shall the water contain an amount of impurities that will cause a change in the setting time of portland cement or more than 25 percent nor a reduction in the compressive strength of mortar at 14 days of more than 5 percent when compared to the results obtained with distilled water.

In non-reinforced concrete work, the water for curing, for washing aggregates, and for mixing shall be free from oil and shall not contain more than 2,000 parts per million of chlorides as Cl, nor more than 1,500 parts per million of sulfates as SO₄.

In addition to the above requirements, water for curing concrete shall not contain any impurities in a sufficient amount to cause discoloration of the concrete or produce etching of the surface.

Water reclaimed from mixer wash-out operations may be used in mixing concrete. Such water shall not contain coloring agents or more than 300 parts per million of alkalis (Na₂O + 0.658 K₂O) as determined on the filtrate. The specific gravity of such water shall not exceed 1.03 and shall not vary more than ±0.010 during any day's operations.

90-3.01 General. Before beginning concrete work, the Contractor shall submit in writing to the Engineer the gradation of the primary aggregate nominal sizes which he proposes to furnish. If a primary coarse aggregate or the fine aggregate is separated into 2 or more sizes, the proposed gradation shall consist of the gradation for each individual size, and the proposed proportions of each individual size, combined mathematically to indicate one proposed gradation. Such gradation shall meet the grading requirements shown in the table in this section, and shall show the percentage passing each of the sieve sizes used in determining the end result.

The Engineer may waive, in writing, the gradation requirements in this Section 90-3.01 and in Sections 90-3.02, "Coarse Aggregate Grading," 90-3.03, "Fine Aggregate Grading," and 90-3.04, "Combined Aggregate Gradings," if, in his opinion, the furnishing of said gradation is not necessary for the type or amount of concrete work to be constructed.

Gradations proposed by the Contractor shall be within the following percentage passing limits:

<i>Primary Aggregate Nominal Size</i>	<i>Sieve Sizes</i>	<i>Limits of Proposed Gradation</i>
1½" x ¾"	1"	19 - 41
1" x No. 4	¾"	52 - 85
1" x No. 4	⅝"	15 - 38
Fine Aggregate	No. 16	55 - 75
Fine Aggregate	No. 30	34 - 46
Fine Aggregate	No. 50	16 - 29

Should the Contractor change his source of supply, he shall submit in writing to the Engineer the new gradations before their intended use.

90-3.02 Coarse Aggregate Grading. The grading requirements for coarse aggregates are shown in the following table for each size of coarse aggregate:

*Percentage Passing
Primary Aggregate Nominal Sizes*

	<i>1 1/2" x 3/4"</i>		<i>1" x No. 4</i>	
<i>Sieve Sizes</i>	<i>Operating Range</i>	<i>Contract Compliance</i>	<i>Operating Range</i>	<i>Contract Compliance</i>
1".....	100	100	100	100
1 1/2".....	88-100	85-100	100	100
1".....	X±18	X±25	88-100	86-100
3/4".....	0 - 17	0 - 20	X±15	X±22
3/8".....	0 - 7	0 - 9	X±15	X±22
No. 4.....	—	—	0 - 16	0 - 18
No. 8.....	—	—	0 - 6	0 - 7

In the above table, the symbol X is the gradation which the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

Coarse aggregate for the 1 1/2" Max. combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," shall be furnished in 2 or more primary aggregate nominal sizes. Each primary aggregate nominal size may be separated into 2 sizes and stored separately provided that if the materials were combined they would conform to the grading requirements for that particular primary aggregate nominal size being separated.

When the 1" Max. combined aggregate grading as provided in Section 90-3.04, "Combined Aggregate Gradings," is to be used, the coarse aggregate may be separated into 2 sizes and stored separately provided that when combined the material shall conform to the grading requirements for the 1" x No. 4 primary aggregate nominal size.

90-3.03 Fine Aggregate Grading. Fine aggregate shall be graded within the following limits:

Percentage Passing

<i>Sieve Sizes</i>	<i>Operating Range</i>	<i>Contract Compliance</i>
3/8".....	100	100
No. 4.....	95-100	93-100
No. 8.....	65-95	61-99
No. 16.....	X±10	X±13
No. 30.....	X±9	X±12
No. 50.....	X±6	X±9
No. 100.....	2 - 12	1 - 15
No. 200.....	0 - 8	0 - 10

In the above table, the symbol X is the gradation which the Contractor proposes to furnish for the specific sieve size as provided in Section 90-3.01, "General."

In addition to the above required grading analysis, the distribution of the fine aggregate sizes shall be such that the difference between the total percentage passing the No. 16 sieve and the total percentage passing the No. 30 sieve shall be between 10 and 40 and the difference between the percentage passing the No. 30 and No. 50 sieves shall be between 10 and 40.

Fine aggregate may be separated into 2 or more sizes and stored separately, provided that when the materials are combined they will conform to the grading requirements specified in this Section 90-3.03.

90-3.04 Combined Aggregate Gradings. Combined aggregate grading limits shall be used only for the design of concrete mixes. Concrete mixes shall be designed so that aggregates are combined in proportions that will produce a mixture within the grading limits for combined aggregates as specified in the Section 90-3.04. Within these limitations, the relative proportions shall be as ordered by the Engineer, except as otherwise provided in Section 90-1.01, "Description."

The combined aggregate grading used in portland cement concrete pavement shall be the 1 1/2" Max. grading.

The combined aggregate grading used in concrete for structures and other concrete items, except when specified otherwise in these specifications or the special provisions, shall be either the 1 1/2" Max. grading or the 1" Max. grading at the option of the Contractor.

Grading Limits of Combined Aggregates

Percentage Passing

Sieve Sizes	Percentage Passing	
	1 1/2" Max.	1" Max.
2"	100	—
1 1/2"	90 - 100	100
1"	50 - 86	90 - 100
3/4"	45 - 75	55 - 100
3/8"	38 - 55	45 - 75
No. 4	30 - 45	35 - 60
No. 8	23 - 38	27 - 45
No. 16	17 - 33	20 - 35
No. 30	10 - 22	12 - 25
No. 50	4 - 10	5 - 15
No. 100	1 - 6	1 - 8
No. 200	0 - 3	0 - 4

Changes from one grading to another shall not be made during the progress of the work unless permitted by the Engineer.

90-4.01 General. Admixtures used in portland cement concrete shall conform to and be used in accordance with the requirements in this Section 90-4 and the special provisions. Admixtures shall be used when specified or ordered by the Engineer and may be used at the Contractor's option as provided herein.

Chemical admixtures and air-entraining admixtures containing chlorides as Cl in excess of one percent by weight of admixture, as determined by California Test 415, shall not be used in prestressed or reinforced concrete.

Calcium chloride shall not be used in any concrete containing steel reinforcement or other embedded metals unless otherwise specified.

Admixtures shall be uniform in properties throughout their use in the work. Should it be found that an admixture as furnished is not uniform in properties, its use shall be discontinued.

If more than one admixture is used, said admixtures shall be compatible with each other so that the desirable effects of all admixtures used will be realized.

90-4.02 Materials. Admixtures shall conform to the requirements of the ASTM Designations shown below:

Chemical Admixtures - ASTM Designation: C 494.

Air-entraining Admixtures - ASTM Designation: C 260.

Calcium Chloride - ASTM Designation: D 98.

Mineral Admixtures - ASTM Designation: C 618, except that the loss on ignition shall not exceed 4 percent.

90-4.04 Required Use of Chemical Admixtures and Calcium Chloride. When the use of a chemical admixture or calcium chloride is specified or ordered by the Engineer, the admixture shall be used at the dosage specified or ordered, except that if no dosage is specified or ordered, the admixture shall be used at the dosage normally recommended by the manufacturer of the admixture.

90-4.05 Optional Use of Chemical Admixtures. The Contractor will be permitted to use Type A or F, water-reducing; Type B, retarding; or Type D or G, water-reducing and retarding admixtures as described in ASTM Designation: C 494 to conserve cement or to facilitate any concrete construction application subject to the following conditions.

When concrete is designated by compressive strength, no reduction in minimum cement content will be allowed.

When concrete is not designated by compressive strength and a water-reducing admixture or a water-reducing and retarding admixture is used, the cement content specified or ordered may be reduced by a maximum of 5 percent by weight except that the resultant cement content shall be not less than 470 pounds per cubic yard.

When a reduction in cement content is made, the dosage of admixture used shall be the dosage used in determining approval of the admixture.

If the specified or ordered cement content is reduced as permitted by this Section 90-4.05, the resultant cement content shall be considered as the amount of portland cement required to satisfy the requirements of Section 90-1.01, "Description," before applying the provisions of Section 90-4.08, "Required Use of Mineral Admixtures," or Section 90-4.09, "Optional Use of Mineral Admixtures."

90-4.06 Required Use of Air-entraining Admixtures. When air-entrainment is specified or ordered by the Engineer, the air-entraining admixture shall be used in amounts to produce a concrete having the specified air content as determined by California Test 504.

90-4.07 Optional Use of Air-entraining Admixtures. When air entrainment has not been specified or ordered by the Engineer, the Contractor will be permitted to use an air-entraining admixture to facilitate the use of any construction procedure or equipment provided that the average air content of 3 successive tests shall not exceed 4 percent and no single test value shall exceed 5 1/2 percent. If the Contractor elects to use an air-entraining admixture in concrete for pavement, he shall so indicate at the time he designates his source of aggregate as provided in Caltrans Section 40-1.015, "Cement Content."

90-4.08 Required Use of Mineral Admixtures. When the use of mineral admixtures in concrete is specified or is ordered by the Engineer, the minimum amounts of mineral admixture and portland cement and the type of cement shall be as specified or ordered. If the use of mineral admixture in concrete is specified or ordered but the minimum amounts of admixture and cement and the cement type have not been specified or ordered, the concrete shall conform to one of the following:

A. The concrete shall contain "Type IP (MS) Modified" cement conforming to the provisions in Section 90-2.01, "Portland Cement," in an amount sufficient to satisfy the specified minimum cement content.

B. The concrete shall contain "Type II Modified" cement conforming to the provisions in Section 90-2.01, "Portland Cement," in an amount not less than 85 percent of the amount required to satisfy the specified minimum cement content. The concrete shall also contain a mineral admixture in an amount not less than 15 percent, by weight, of the amount of cement required to satisfy the specified minimum cement content. Where Section 90-1.01, "Description," specifies a maximum cement content in pounds per cubic yard, the total weight of portland cement and mineral admixture per cubic yard shall not exceed the specified maximum cement content.

90-4.09 Optional Use of Mineral Admixtures. The Contractor will be permitted to replace up to 15 percent of the required portland cement, other than Type IP (MS) Modified or Type III cements, with a mineral admixture in all concrete except where high early strength has been specified or where the use of mineral admixtures is otherwise specified or prohibited. The weight of mineral admixture used shall be equal to or greater than the weight of portland cement replaced.

90-4.10 Proportioning and Dispensing Liquid Admixtures. Chemical admixtures and air-entraining admixtures shall be dispensed in liquid form. Dispensers for liquid admixtures shall have sufficient capacity to measure at one time the prescribed quantity required for each batch of concrete. Each dispenser shall include a graduated measuring unit into which liquid admixtures are measured to within ± 5 percent of the prescribed quantity for each batch. Dispensers shall be located and maintained so that the graduations can be accurately read from the point at which proportioning operations are controlled to permit a visual check of batching accuracy prior to discharge. Each measuring unit shall be clearly marked for the type and quantity of admixture.

Each liquid admixture dispensing system shall be equipped with a sampling device consisting of a valve located in a safe and readily accessible position such that a sample of the admixture may be withdrawn slowly by the Engineer.

If more than one liquid admixture is used in the concrete mix, a separate measuring unit shall be provided for each liquid admixture, and dispensing shall be accomplished by injecting equipment located in such a manner that the admixtures are not mixed at high concentrations and do not interfere with the effectiveness of each other. When air-entraining admixtures are used in conjunction with other liquid admixtures, the air-entraining admixture shall be the first to be incorporated into the mix.

When automatic proportioning devices are required for concrete pavement, dispensers for liquid admixtures shall operate automatically with the batching control equipment. Such dispensers shall be equipped with an automatic warning system in good operating condition which will provide a visible or audible signal at the point at which proportioning operations are controlled when the quantity of admixture measured for each batch of concrete varies from the preselected dosage by more than 5 percent or when the entire contents of the measuring unit are not emptied from the dispenser into each batch of concrete.

Unless liquid admixtures are added to premeasured water for the batch, their discharge into the batch shall be arranged to flow into the stream of water so that the admixtures are well dispersed throughout the batch, except that air-entraining admixtures may be dispensed directly into moist sand in the batching bins provided that adequate control of the air content of the concrete can be maintained.

Liquid admixtures requiring dosages greater than one-half gallon per cubic yard shall be considered to be water when determining the total amount of free water per cubic yard as specified in Section 90-6.06, "Amount of Water and Penetration."

Special admixtures, such as "high range" water reducers which may contribute to a high rate of slump loss, shall be measured and dispensed as recommended by the admixture manufacturer and as approved by the Engineer.

Mineral admixture used in concrete for exposed surfaces of like elements of a structure shall be of the same brand and of the same percentage.

90-6.01 General. All concrete shall be mixed in mechanically operated mixers, except that when permitted by the Engineer, batches not exceeding 1/3 cubic yard may be mixed by hand methods in accordance with the provisions in Section 90-6.05, "Hand Mixing."

Equipment having components made of aluminum or magnesium alloys, which would have contact with plastic concrete during mixing, transporting or pumping of portland cement concrete, shall not be used.

All concrete shall be homogeneous and thoroughly mixed, and there shall be no lumps or evidence of undispersed cements.

Uniformity of concrete mixtures will be determined by differences in penetration as determined by California Test 533 and by variations in the proportion of coarse aggregate as determined by California Test 529.

The difference in penetration, determined by comparing penetration tests on 2 samples of mixed concrete from the same batch or truck mixer load, shall not exceed 1/2 inch. Variation in the proportion of coarse aggregate will be determined from the results of tests of 2 samples of mixed concrete from the same batch or truck mixer load and the difference between the 2 results shall not exceed 6 pounds per cubic foot.

The Contractor, at his expense, shall furnish samples of the freshly mixed concrete and provide satisfactory facilities for obtaining the samples.

90-6.02 Machine Mixing. Concrete mixers may be of the revolving drum or the revolving blade type and the mixing drum or blades shall be operated uniformly at the mixing speed recommended by the manufacturer. Mixers and agitators which have an accumulation of hard concrete or mortar shall not be used.

The temperature of mixed concrete, immediately before placing, shall be not less than 50°F. nor more than 90°F. Aggregates and water shall be heated or cooled as necessary to produce concrete within these temperature limits. Neither aggregates nor mixing water shall be heated to exceed 150° F. If ice is used to cool the concrete, discharge of the mixer will not be permitted until all ice is melted.

The batch shall be so charged into the mixer that some water will enter in advance of cement and aggregates. All water shall be in the drum by the end of the first 1/4 of the specified mixing time.

Cement shall be batched and charged into the mixer by means that will not result in loss of cement due to the effect of wind, or in accumulation of cement on surfaces of conveyors or hoppers, or in other conditions which reduce or vary the required quantity of cement in the concrete mixture.

Paving and stationary mixers shall be operated with an automatic timing device that can be locked by the Engineer. The timing device and discharge mechanism shall be so interlocked that during normal operation no part of the batch will be discharged until the specified mixing time has elapsed.

The total elapsed time between the intermingling of damp aggregates and cement and the start of mixing shall not exceed 30 minutes.

The size of batch shall not exceed the manufacturer's guaranteed capacity.

When producing concrete for pavement or base, suitable batch counters shall be installed and maintained in good operating condition at jobsite batching plants and stationary mixers. The batch counters shall indicate the exact number of batches proportioned and mixed.

Concrete shall be mixed and delivered to the site of the work by means of one of the following combinations of operations:

- A. Mixed completely in a stationary mixer and the mixed concrete transported to the point of delivery in truck agitators or in non-agitating hauling equipment. (Known as central-mixed concrete.)
- B. Mixed partially in a stationary mixer, and the mixing completed in a truck mixer. (Known as shrink-mixed concrete.)
- C. Mixed completely in a truck mixer. (Known as transit-mixed concrete.)
- D. Mixed completely in a paving mixer.

Agitators may be truck mixers operating at agitating speed or truck agitators. Each mixer and agitator shall have attached thereto in a prominent place a metal plate or plates on which is plainly marked the various uses for which the equipment is designed, the manufacturer's guaranteed capacity of the drum or container in terms of the volume of mixed concrete and the speed of rotation of the mixing drum or blades.

Truck mixers shall be equipped with electrically or mechanically actuated revolution counters by which the number of revolutions of the drum or blades may readily be verified.

When shrink-mixed concrete is furnished, concrete that has been partially mixed at a central plant shall be transferred to a truck mixer and all requirements for transit-mixed concrete shall apply. No credit in the number of revolutions at mixing speed shall be allowed for partial mixing in a central plant.

90-6.03 Transporting Mixed Concrete. Mixed concrete may be transported to the delivery point in truck agitators or truck mixers operating at the speed designated by the manufacturer of the equipment as agitating speed, or in non-agitating hauling equipment, provided the consistency and workability of the mixed concrete upon discharge at the delivery point is suitable for adequate placement and consolidation in place, and provided the mixed concrete after hauling to the delivery point conforms to the requirements in Section 90-6.01, "General."

Truck agitators shall be loaded not to exceed the manufacturer's guaranteed capacity. They shall maintain the mixed concrete in a thoroughly mixed and uniform mass during hauling.

Bodies of non-agitating hauling equipment shall be so constructed that leakage of the concrete mix or any part thereof, will not occur at any time, and they shall be self-cleaning during discharge.

Concrete hauled in open-top vehicles shall be protected during hauling against access of rain or exposure to the sun for more than 20 minutes when the ambient temperature exceeds 75° F.

No additional mixing water shall be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer. If the Engineer authorizes additional water to be incorporated into the concrete, the drum shall be revolved not less than 30 revolutions at mixing speed after the water is added and before discharge is commenced.

The rate of discharge of mixed concrete from truck mixer-agitators shall be controlled by the speed of rotation of the drum in the discharge direction with the discharge gate fully open.

When a truck mixer or agitator is used for transporting concrete to the delivery point, discharge shall be completed within 1½ hours, or before 250 revolutions of the drum or blades, whichever comes first, after the introduction of the cement to the aggregates. Under conditions contributing to quick stiffening of the concrete, or when the temperature of the concrete is 85° F., or above, the time between the introduction of cement to the aggregates and discharge shall not exceed 45 minutes.

Each load of ready-mixed concrete delivered at the jobsite, except loads to be used for pavement, shall be accompanied by a ticket showing volume of concrete, the concrete mix identification number, and the total amount of water added to the load. The ticket shall also show the time of day at which the materials were batched and for transit-mixed concrete, the reading of the revolution counter at the time the truck mixer is charged.

Each load of ready-mixed concrete used for paving shall be accompanied by a ticket which shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The ticket shall be stamped with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

90-6.04 Time or Amount of Mixing. Mixing of concrete in paving or stationary mixers shall continue for the required mixing time after all ingredients, except water and admixture if added with water, are in the mixing compartment of the mixer before any part of the batch is released. Transfer time in multiple drum mixers shall be counted as part of the required mixing time.

The required mixing time, in paving or stationary mixers, or concrete used for concrete structures, except minor structures, shall be not less than 90 seconds nor more than 5 minutes, except that when directed by the Engineer in writing, the requirements of the following paragraph shall apply.

The required mixing time, in paving or stationary mixers, except as provided in the preceding paragraph, shall be not less than 50 seconds nor more than 5 minutes.

The minimum required revolutions at the mixing speed for transit-mixed concrete shall not be less than that recommended by the mixer manufacturer, but in no case shall the number of revolutions be less than that required to consistently produce concrete which conforms to the uniformity requirements in Section 90-6.01, "General."

90-6.05 Hand-Mixing. Hand-mixed concrete shall be made in batches not more than 1/3 cubic yard and shall be mixed on a watertight, level platform. The proper amount of coarse aggregate shall be measured in measuring boxes and spread on the platform and the fine aggregate shall be spread on this layer, the 2 layers being not more than one foot in total depth. On this mixture shall be spread the dry cement and the whole mass turned not less than 2 times dry; then sufficient clean water shall be added, evenly distributed, and the whole mass again turned not less than 3 times, not including placing in the carriers or forms.

90-6.06 Amount of Water and Penetration. The amount of water used in concrete mixes shall be regulated so that the consistency of the concrete as determined by California Test 533 is within the nominal penetration range shown in the following table. When the penetration, the mixture of subsequent batches shall be adjusted to reduce the penetration to a value within the nominal range shown. Batches of concrete with a penetration exceeding the maximum penetration shall not be used in the work. When Type F or Type G chemical admixtures are added to the mix, penetration measurements will be taken prior to the addition of such chemical admixtures.

<i>Type of Work</i>	<i>Nominal Penetration (Inches)</i>	<i>Maximum Penetration (Inches)</i>
Concrete pavement	0 - 1	1 ½
Non-reinforced concrete facilities	0 - 1 ½	2
Reinforced concrete structures		
Sections over 12 inches thick	0 - 1 ½	2 ½
Sections 12 inches thick or less	0 - 2	3
Concrete placed under water	3 - 4	4 ½
Cast-in place concrete piles:		
16" diameter or less	1 ½ - 3	3 ½
17" to 24" diameter	1 - 2 ½	3
Over 24" diameter	½ - 2	2 ½

The amount of free water used in concrete shall not exceed 312 pounds per cubic yard, plus 20 pounds for each required 100 pounds of cement in excess of 564 pounds per cubic yard.

The term free water is defined as the total water in the mixture minus the water absorbed by the aggregates in reaching a saturated surface-dry condition.

Where there are adverse or difficult conditions which affect the placing of concrete, the above specified penetration and free water content limitations may be exceeded providing the Contractor is granted permission by the Engineer in writing to increase the cement content per cubic yard of concrete. The increase in water and cement shall be at a ratio not to exceed 30 pounds of water per added 100 pounds of cement per cubic yard. The cost of additional cement and water added under these conditions shall be at the Contractor's expense and no additional compensation will be allowed therefor.

The equipment for supplying water to the mixer shall be constructed and arranged so that the amount of water added can be measured accurately. Any method of discharging water into the mixer for any batch shall be accurate within 1.5 percent of the quantity of water required to be added to the mix for any position of the mixer. Tanks used to measure water shall be designed so that water cannot enter while water is being discharged into the mixer and discharge into the mixer shall be made rapidly in one operation without dribbling. All equipment shall be arranged so as to permit checking the amount of water delivered by discharging into measured containers.

90-7.01 Methods of Curing. All newly placed concrete shall be cured in accordance with the provision in Section 90-7, "Curing Concrete."

The method or methods of curing to be used shall be as specified in these specifications and the special provisions.

90-7.01A Water Method. The concrete shall be kept continuously wet by the application of water for a minimum period of 7 days after the concrete has been placed.

Cotton mats, rugs, carpets, or earth or sand blankets may be used as a curing medium to retain the moisture during the curing period.

When cotton mats, rugs, carpets, or earth or sand blankets are to be used to retain the moisture, the entire surface of the concrete shall be kept damp by applying water with a nozzle that so atomizes the flow that a mist and not a spray is formed, until the surface of the concrete is covered with the curing medium. The moisture from the nozzle shall not be applied under pressure directly upon the concrete and shall not be allowed to accumulate on the concrete in a quantity sufficient to cause a flow or wash the surface. At the expiration of the curing period, the concrete surfaces shall be cleared of all curing mediums.

When concrete bridge decks and flat slabs are to be cured without the use of a moisture retaining medium, the entire surface of the bridge deck or slab shall be kept damp by the application of water with an atomizing nozzle as specified in the preceding paragraph, until the concrete has set, after which the entire surface of the concrete shall be sprinkled continuously with water for a period of not less than 7 days.

90-7.01B Curing Compound Method. Surfaces of the concrete which are exposed to the air shall be sprayed uniformly with a curing compound.

Curing compounds to be used shall be as follows:

- (1) Pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 2, Class B, except the resin type shall be poly-alpha-methylstyrene.
- (2) Pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 2, Class B.
- (3) Pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 2, Class A.
- (4) Non-pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 1, Class B.
- (5) Non-pigmented curing compound conforming to the requirements of ASTM Designation: C 309, Type 1, Class A.
- (6) Non-pigmented curing compound with fugitive dye conforming to the requirements of ASTM Designation: C 309, Type 1-D, Class A.

The infrared scan for the dried vehicle from curing compound (1) shall match the infrared scan on file at the Transportation Laboratory.

The loss of water for each type of curing compound, when tested in accordance with California Test 534, shall not be more than 0.15 kilogram per square meter in 24 hours nor more than 0.45 kilogram per square meter in 72 hours.

The curing compound to be used will be specified elsewhere in these specifications or in the special provisions.

When the use of curing compound is required or permitted elsewhere in these specifications or in the special provisions and no specific kind is specified, any of the curing compounds listed above may be used.

Curing compound shall be applied at a nominal rate of one gallon per 150 square feet, unless otherwise specified.

At any point, the application rate shall be within ± 50 square feet per gallon of the nominal rate specified and the average application rate shall be within ± 25 square feet per gallon of the nominal rate specified when tested in accordance with California Test 535. Runs, sags, thin areas, skips, or holidays in the applied curing compound shall be evidence that the application is not satisfactory.

Curing compounds shall be applied using power operated spray equipment. The power operated spraying equipment shall be equipped with an operational pressure gage and a means of controlling the pressure. Hand spraying of small and irregular areas which are not reasonably accessible to mechanical spraying equipment, in the opinion of the Engineer, may be permitted.

The curing compound shall be applied to the concrete following the surface finishing operation immediately before the moisture sheen disappears from the surface, but before any drying shrinkage or craze cracks begin to appear. In the event of any drying or cracking of the surface, application of water with an atomizing nozzle as specified in Section 90-7.01A, "Water Method," shall be started immediately and shall be continued until application of the compound is resumed or started; however, the compound shall not be applied over any resulting freestanding water. Should the film of compound be damaged from any cause before the expiration of 7 days after the concrete is placed in the case of structures and 72 hours in the case of pavement, the damaged portion shall be repaired immediately with additional compound.

At the time of use, compounds containing pigments shall be in a thoroughly mixed condition with the pigment uniformly dispersed throughout the vehicle. A paddle shall be used to loosen all settled pigment from the bottom of the container, and a power driven agitator shall be used to disperse the pigment uniformly throughout the vehicle.

Agitation shall not introduce air nor any other foreign substance into the curing compound.

The manufacturer shall include in the curing compound the necessary additives for control of sagging, pigment settling, leveling, deemulsification or other requisite qualities of a satisfactory working material. Pigmented curing compounds shall be manufactured so that the pigment does not settle badly, does not cake or thicken in the container, and does not become granular or curdled. Any settlement of pigment shall be a thoroughly wetted, soft, mushy mass permitting the complete and easy vertical penetration of a paddle. Settled pigment shall be easily redispersed, with minimum resistance to the sidewise manual motion of the paddle across the bottom of the container, to form a smooth uniform product of the proper consistency.

All curing compounds shall remain sprayable at temperatures above 40° F. They shall not be diluted or altered in any manner after manufacture.

The curing compound shall be packaged in clean 55-gallon barrels or round 5-gallon containers or shall be supplied from a suitable storage tank located at the jobsite. The containers shall comply with Department of Transportation Code of Federal Regulations, Hazardous Materials Regulations Board, Reference 49CFR. The 55-gallon barrels shall have removable lids and airtight fasteners. Five-gallon containers shall be round and have standard full open head and bail. Lids with bungholes will not be permitted. On-site storage tanks shall be kept clean and free of all contaminants. Each tank shall have a permanent system designed to completely redisperse any settled material without introducing air or any other foreign substance.

Steel containers and lids shall be lined with a coating which will prevent destructive action by the compound or chemical agents in the air space above the compound. The coating shall not come off the container or lid as skins. Containers shall be filled in a manner that will prevent skinning. Plastic containers shall not react with the compound.

Each container shall be labeled with the manufacturer's name, kind of curing compound, batch number, number of gallons, date of manufacture and volatile organic compound (VOC) content. The label shall also warn that the curing compound containing pigment shall be well stirred before use. Precautions concerning the handling and the application of curing compound shall be shown on the label of the curing compound containers in accordance with the Construction Safety Orders and General Industry Safety Orders of the State of California.

All containers of curing compound shall be labeled to indicate that the contents fully comply with all rules and regulations concerning air pollution control in the State of California.

When the curing compound is shipped in tanks or tank trucks, a shipping invoice shall accompany each load. The invoice shall contain the same information as that required herein for container labels.

Curing compound will be sampled by the Engineer at the source of supply or at the jobsite, or at both locations.

Curing compound shall be formulated so as to maintain the specified properties for a minimum of one year. The Engineer may require additional testing before use to determine compliance with these specifications if the compound has not been used within one year or whenever the Engineer has reason to believe the compound is no longer satisfactory.

All tests will be conducted in accordance with the latest ASTM test methods and methods in use by the Transportation Laboratory.

90-7.01C Waterproof Membrane Method. The exposed finished surfaces of concrete shall be sprayed with water, using a nozzle that so atomizes the flow that a mist and not a spray is formed, until the concrete has set, after which the curing membrane shall be placed. The curing membrane shall remain in place for a period of not less than 72 hours.

Sheeting material for curing concrete shall conform to the specifications of AASHTO Designation: M 171 for white reflective materials.

The sheeting material shall be fabricated into sheets of such width as to provide a complete cover for the entire concrete surface. All joints in the sheets shall be securely cemented together in such a manner as to provide a waterproof joint. The joint seams shall have a minimum lap of 0.33-foot.

The sheets shall be securely weighted down by placing a bank of earth on the edges of the sheets or by other means satisfactory to the Engineer,

Should any portion of the sheets be broken or damaged before the expiration of 72 hours after being placed, the broken or damaged portions shall be immediately repaired with new sheets properly cemented into place.

Sections of membrane which have lost their waterproof qualities or have been damaged to such an extent as to render them unfit for curing the concrete shall not be used.

90-7.01D Forms-In-Place Method. Formed surfaces of concrete may be cured by retaining the forms in place. The forms shall remain in place for a minimum period of 7 days after the concrete has been placed, except that for members over 20 inches in least dimension the forms shall remain in place for a minimum period of 5 days.

All joints in the forms and the joints between the end of forms and concrete shall be kept moisture tight during the curing period. Cracks in the forms and cracks between the forms and the concrete shall be resealed by methods subject to the approval of the Engineer.

90-7.02 Curing Pavement. The entire exposed area of the pavement, including edges, shall be cured by the waterproof membrane method, or curing compound method using a pigmented curing compound as the contractor may elect. Should the side forms be removed before the expiration of 72 hours following the start of curing, the exposed pavement edges shall also be cured. If the pavement is cured by means of the curing compound method, the sawcut and all portions of the curing compound which have been disturbed by sawing operations shall be restored by spraying with additional curing compound.

Curing shall commence as soon as the finishing process provided in Caltrans Section 40-1.10, "Final Finishing," has been completed. The method selected shall conform to the requirements specified in Section 90-7.01, "Methods of Curing."

When curing compound method is used, the compound shall be applied to the entire pavement surfaced by mechanical sprayers. Spraying equipment shall be of the fully atomizing type equipped with a tank agitator which provides for continual agitation of the curing compound during the time of application. The spray shall be adequately protected against wind and the nozzles shall be so oriented or moved mechanically transversely as to result in the minimum specified rate of coverage uniformly on all exposed faces. Hand spraying of small and irregular areas and areas inaccessible to mechanical spraying equipment, in the opinion of the Engineer, will be permitted. When the ambient temperature is above 60° F., the Contractor shall fog the surface of the concrete with a fine spray of water as specified in Section 90-7.01A, "Water Method." The surface of the pavement shall be kept moist between the hours of 10:00 a.m. and 4:30 p.m. on the day the concrete is placed, however the fogging done after the curing compound has been applied shall not begin until the compound has set sufficiently to prevent displacement. Fogging shall be discontinued if ordered in writing by the Engineer.

90-7.03 Curing Structures. All newly placed concrete for cast-in-place structures, other than highway bridge decks, shall be cured by the water method, the forms-in-place method, or, as permitted herein, by the curing compound method, all in accordance with the requirements in Section 90-7.01, "Methods of Curing."

The curing compound method using a pigmented curing compound may be used on concrete surfaces of construction joints, surfaces which are to be buried underground, and surfaces where only Ordinary Surface Finish is to be applied and on which a uniform color is not required and which will not be visible from any public traveled way. If the Contractor elects to use the curing compound method on the bottom slab of box girder spans, the curing compound shall be curing compound (1).

The top surface of highway bridge decks shall be cured by both the curing compound method, and by the water method. The curing compound shall be curing compound (1). The curing compound shall be applied progressively during the deck finishing operations immediately after finishing operations are completed on each individual portion of the deck. The water cure shall be applied not later than 4 hours after completion of deck finishing or, for portions of the decks on which finishing is completed after normal working hours, the water cure shall be applied not later than the following morning.

Concrete surfaces of minor structures, as defined in Section 51-1.02, "Minor Structures," shall be cured by the water method, the forms-in-place method, or by the curing compound method.

When deemed necessary by the Engineer during periods of hot weather, water shall be applied to concrete surfaces being cured by the curing compound method or by the forms-in-place method, until the Engineer determines that a cooling effect is no longer required. Such application of water will be paid for as extra work as provided in Caltrans Section 4-1.03D.

90-7.04 Curing Precast Concrete Members. Precast concrete members shall be cured for not less than 7 days by the water method in conformance with Section 90-7.01A, "Water Method," or by steam curing, at the option of the Contractor. Steam curing for precast members shall conform to the following provisions.

A. After placement of the concrete, members shall be held for a minimum 4-hour presteaming period. If the ambient air temperature is below 50° F., steam shall be applied during the presteaming period to hold the air surrounding the member at a temperature between 50° and 90° F.

B. To prevent moisture loss on exposed surfaces during the presteaming period, members shall be covered as soon as possible after casting or the exposed surfaces shall be kept wet by fog spray or wet blankets.

C. Enclosures for steam curing shall allow free circulation of steam about the member and shall be constructed to contain the live steam with a minimum moisture loss. The use of tarpaulins or similar flexible covers will be permitted, provided they are kept in good repair and secured in such a manner to prevent the loss of steam and moisture.

D. Steam at the jets shall be low pressure and in a saturated condition. Steam jets shall not impinge directly on the concrete, test cylinders, or forms. During application of the steam the temperature rise within the enclosure shall not exceed 40° F. per hour. The curing temperature throughout the enclosure shall not exceed 150° F. and shall be maintained at a constant level for a sufficient time necessary to develop the required transfer strength. Control cylinders shall be covered to prevent moisture loss and shall be placed in a location where temperature is representative of the average temperature of the enclosure.

E. Temperature recording devices that will provide an accurate continuous permanent record of the curing temperature shall be provided. A minimum of one temperature recording device per 200 feet of continuous bed length will be required for checking temperature.

F. Members in pretension beds shall be detensioned immediately after the termination of steam curing while the concrete and forms are still warm or the temperature under the enclosure shall be maintained above 60° F. until the stress is transferred to the concrete.

G. Curing of precast concrete will be considered completed after termination of the steam curing cycle.

90-7.05 Curing Precast Prestressed Concrete Piles. All newly placed concrete for precast prestressed concrete piles shall be cured in accordance with Section 90-7.04, "Curing Precast Concrete Members," except that piles with a class designation ending in C (corrosion resistant) shall be cured as follows:

Piles shall be either steam cured or water cured. If water curing is used, the piles shall be kept continuously wet by the application of water in accordance with the provisions in Section 90-7.01A, "Water Method," except that the minimum curing period shall be 14 days.

If steam curing is used, the steam curing provisions in Section 90-7.04, "Curing Precast Concrete Members," shall apply except that the piles shall be kept continuously wet for their entire length for a period of not less than 7 days including the holding and steam curing periods.

90-7.06 Curing Slope Protection. Concrete slope protection shall be cured in accordance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Concreted-rock slope protection shall be cured in accordance with any of the methods specified in Section 90-7.01, "Methods of Curing," or with a blanket of earth kept wet for 72 hours, or by sprinkling with a fine spray of water every 2 hours during the daytime for a period of 3 days.

90-7.07 Curing Miscellaneous Concrete Work. Exposed surfaces of curbs shall be cured by pigmented curing compounds as provided in Section 90-7.01B, "Curing Compound Method,"

Concrete sidewalks, gutter depressions, island paving, curb ramps, driveways, and other miscellaneous concrete areas shall be cured in accordance with any of the methods specified in Section 90-7.01, "Methods of Curing."

Shotcrete shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

Mortar and grout shall be cured by keeping the surface damp for 3 days.

After placing, the exposed surfaces of sign structure foundations, including pedestal portions, if constructed, shall be cured for at least 72 hours by spraying with water, or by a moist earth blanket, or by any of the methods provided in Section 90-7.01, "Methods of Curing."

90-8.01 General. In addition to the requirements of Caltrans Section 7-1.16, "Contractor's Responsibility for the Work and Materials," the Contractor shall protect concrete as provided in this Section 90-8.

Concrete shall not be placed on frozen or ice-coated ground or subgrade nor on ice-coated forms, reinforcing steel, structural steel, conduits, precast members, or construction joints.

Under rainy conditions, placing of concrete shall be stopped before the quantity of surface water is sufficient to damage surface mortar or cause a flow or wash of the concrete surface, unless the Contractor provides adequate protection against damage.

All concrete that has been frozen, or damaged by other causes, as determined by the Engineer, shall be removed and replaced by the Contractor at his expense.

90-8.02 Protecting Concrete Structures. All structure concrete and shotcrete used as structure concrete shall be maintained at a temperature of not less than 45° F. for 72 hours after placing and at not less than 40° F. for an additional 4 days. When required by the Engineer, the Contractor shall submit a written outline of his proposed methods for protecting the concrete.

90-8.03 Protecting Concrete Paving. Pavement concrete shall be maintained at a temperature of not less than 40° F. for 72 hours. When required by the Engineer, the Contractor shall submit a written outline of his proposed methods for protecting the concrete.

Except as provided in Caltrans Section 7-1.08, "Public Convenience," the Contractor shall protect concrete pavement against all construction and other activities which abrade, scar, discolor, reduce texture depth, lower coefficient of friction or otherwise damage the surface. Stockpiling, drifting or excessive spillage of soil, gravel, petroleum products, and concrete or asphalt mixes on the surface of concrete pavement is prohibited unless otherwise specified in these specifications, the special provisions or permitted by the Engineer.

When ordered by the Engineer or shown on the plans or specified in the special provisions, pavement crossings shall be constructed for the convenience of public traffic. The material and work necessary for the construction of such ramps, and their subsequent removal and disposal, will be paid for at the contract unit prices for the items of work involved and if there are no contract items for the work involved, payment for pavement crossings will be made by extra work as provided in Caltrans Section 4-1.03D. Where public traffic will be required to cross over the new pavement, and if directed by the Engineer, Type III portland cement shall be used in concrete. When Type III portland cement is used in concrete, and if permitted in writing by the Engineer, the pavement may be opened to traffic as soon as the concrete has developed a modulus of rupture of 550 pounds per square inch.

The modulus of rupture will be determined by California Test 523.

No traffic or Contractor's equipment, except as hereinafter provided, will be permitted on the pavement before a period of 10 calendar days has elapsed after the concrete has been placed, nor before the concrete has developed a modulus of rupture of at least 550 pounds per square inch. Concrete that fails to attain a modulus of rupture of 550 pounds per square inch within 10 days shall not be opened to traffic until directed by the Engineer.

Equipment for sawing weakened plane joints will be permitted on the pavement as specified in Section 40-1.08B, "Weakened Plane Joints."

When requested in writing by the Contractor, the tracks on one side of paving equipment will be permitted on the pavement after a modulus of rupture of 350 pounds per square inch has been attained, provided that:

- A. Unit pressure exerted on the pavement by the paver shall not exceed 20 pounds per square inch.
- B. Tracks with cleats, grousers, or similar protuberances shall be modified or shall travel on planks or equivalent protective material, so that the pavement is not damaged.
- C. No part of the track shall be closer than one foot from the edge of pavement.

In the case of visible cracking of, or other damage to the pavement, operation of the paving equipment on the pavement shall be immediately discontinued.

Any damage to the pavement resulting from early use of pavement by the Contractor's equipment as provided above shall be repaired by the Contractor at his expense.

90-9.01 General. Concrete compressive strength requirements consist of a minimum strength which must be attained before various loads or stresses are applied to the concrete and, for concrete designated by strength, a minimum strength at the age of 28 days. The various strengths required are specified elsewhere or are shown on the plans.

The compressive strength of concrete will be determined from test cylinders which have been fabricated from concrete sampled in accordance with California Test 539. Test cylinders will be molded and initial field cured in accordance with California Test 540. Test cylinders will be cured and tested after receipt at the testing laboratory in accordance with California Test 521. A strength test shall consist of the average strength of 2 cylinders fabricated from material taken from a single load of concrete, except that, if any cylinder should show evidence of improper sampling, molding, or testing, said cylinder shall be discarded and the strength test shall consist of the strength of the remaining cylinder.

When concrete compressive strength is specified as a prerequisite to applying loads or stresses to a concrete structure or member, test cylinders for other than steam cured concrete will be cured in accordance with Method 1 of California Test 540. The compressive strength of concrete determined for such purposes will be evaluated on the basis of individual tests.

When concrete is designated by 28-day compressive strength rather than by cement content, the concrete strength to be used as a basis for acceptance of other than steam cured concrete will be determined from cylinders cured in conformance with Method 1 of California Test 540.

No single 28-day strength test shall represent more than 300 cubic yards.

When a precast concrete member is steam cured, the compressive strength of the concrete will be determined from test cylinders which have been handled and stored in accordance with Method 3 of California Test 540. The compressive strength of steam cured concrete will be evaluated on the basis of individual tests representing specific portions of production. When such concrete is designated by 28-day compressive strength rather than by cement content, the concrete shall be considered to be acceptable whenever its compressive strength reaches the specified 28-day compressive strength provided such strength is reached not more than 28 days after the member is cast.

When concrete is specified by compressive strength, prequalification of materials, mix proportions, mixing equipment, and procedures proposed for use, will be required prior to placement of such concrete. Prequalification shall be accomplished by the submission of acceptable certified test data or trial batch reports by the Contractor. Prequalification data shall be based on the use of materials, mix proportions, mixing equipment, procedures, and size of batch proposed for use in the work.

Certified test data, in order to be acceptable, must indicate that not less than 90 percent of at least 20 consecutive 28-day tests exceed the specified strength, and non of said tests are less than 95 percent of specified strength. Strength tests included in such data shall be the most recent tests made on concrete of the proposed mix design and all shall have been made within one year of the proposed use of the concrete. Trial batch test reports, in order to be acceptable, must indicate that the average compressive strength of 5 consecutive concrete cylinders, taken from a single batch, at not more than 28 days after molding shall be at least 600 pounds per square inch greater than the specified 28-day compressive strength, and no individual cylinder shall have a strength less than the specified strength. Data contained in the report shall be from trial batches which were produced within one year of the proposed use of specified strength concrete in the project. Whenever air-entrainment is required, the air content of trial batches shall be equal to or greater than the air content specified for the concrete without reduction due to tolerances.

All tests shall be performed in accordance with either the appropriate California Test methods or the comparable ASTM test methods. All equipment employed in testing shall be in good condition and shall be properly calibrated. If the tests are performed during the life of the contract, the Engineer shall be notified sufficiently in advance of performing the tests in order to witness the test procedures.

The certified test data and trial batch test reports shall include the following information:

- A. Date of mixing.
- B. Mixing equipment and procedures used.
- C. The size of batch in cubic yards and the weight, type and source of all ingredients used.
- D. Penetration of the concrete.
- E. The air content of the concrete if an air-entraining admixture is used.
- F. The age at time of testing and strength of all concrete cylinders tested.

All certified test data and trial batch test reports shall be signed by an official of the firm which performed the tests.

When approved by the Engineer, concrete from trial batches may be used in the work at locations where concrete of a lower quality is required and such concrete will be paid for as the type or class of concrete required at that location.

After materials, mix proportions, mixing equipment, and procedures for concrete have been prequalified for use, additional prequalification by testing of trial batches will be required prior to making any changes which, in the judgement of the Engineer, could result in a lowering of the strength of the concrete below that specified.

The Contractor's attention is directed to the time required to test trial batches and the Contractor shall be responsible for production of trial batches at a sufficiently early date so that the progress of the work is not delayed.

When precast concrete members are manufactured at the plant of an established manufacturer of precast concrete members, the mix proportions of the concrete shall be determined by the Contractor, and a trial batch and prequalification of the materials, mix proportions, mixing equipment, and procedures will not be required.

90-10.01 General. Concrete for minor structures, slope paving, curbs, sidewalks and other concrete work, when designated as minor concrete on the plans, in the specifications, or in the contract item, shall conform to the provisions specified herein.

The Engineer, at this discretion, will inspect and test the facilities, materials and methods for producing the concrete to insure that a minor concrete of the quality suitable for use in the work is obtained.

90-10.02 Materials. Minor concrete shall conform to the following requirements:

90-10.02A Portland Cement. Portland cement shall conform to the provisions in Section 90-2.01, "Portland Cement."

90-10.02B Aggregate. Aggregate shall be clean and free from deleterious coatings, clay balls, roots and other extraneous materials. The Contractor shall submit to the Engineer for approval, a grading of the combined aggregate proposed for use in the minor concrete. After acceptance of the grading, all aggregate furnished for minor concrete shall conform to said grading, unless a change is authorized in writing by the Engineer.

The Engineer may require the Contractor to furnish periodic test reports of the aggregate grading furnished. The maximum size of aggregate used shall be at the option of the Contractor, but in no case shall the maximum size be larger than 1½ inches nor smaller than ¾ inch.

The Engineer may waive, in writing, the gradation requirements in this Section 90-10.02B, if, in his opinion, the furnishing of said gradation is not necessary for the type or amount of concrete work to be constructed.

Mineral admixture will be required in the manufacture of concrete containing aggregate that is determined to be "deleterious" or "potentially deleterious" when tested in accordance with ASTM Designation: C 289. The use of mineral admixture in such concrete shall conform to the requirements in Section 90-4.08, "Required Use of Mineral Admixtures," except the use of Class C mineral admixture will not be permitted.

90-10.02C Water. Water used for washing, mixing, and curing shall be free from oil, salts, and other impurities which would discolor or etch the surface or have an adverse effect on the quality of the concrete.

90-10.02D Admixtures. The use of admixtures shall conform to the provisions in Section 90-4, "Admixtures."

90-10.03 Production. Cement, water, aggregate, and admixtures shall be stored, proportioned, mixed, transported, and discharged in conformance with recognized standards of good practice, which will result in concrete that is thoroughly and uniformly mixed, that is suitable for the use intended, and which conforms to requirements specified herein. "Recognized standards of good practice" are outlined in various industry publications such as are issued by American Concrete Institute, AASHTO, or California Department of Transportation.

The cement content of minor concrete shall conform to the provisions in Section 90-1.01, "Description."

The amount of water used shall result in a consistency of concrete conforming to the provisions in Section 90-6.06, "Amount of Water and Penetration." Additional mixing water shall not be incorporated into the concrete during hauling or after arrival at the delivery point, unless authorized by the Engineer.

Discharge of ready-mixed concrete from the transporting vehicle shall be made while the concrete is still plastic and before any stiffening occurs. An elapsed time of 1½ hours (one hour in non-agitating hauling equipment), or more than 250 revolutions of the drum or blades, after the introduction of the cement to the aggregates, or a temperature of concrete of more than 90° F. will be considered as conditions contributing to the quick stiffening of concrete. The Contractor shall take whatever action is necessary to eliminate quick stiffening, except that the addition of water will not be permitted.

The required mixing time in stationary mixers shall be not less than 50 seconds nor more than 5 minutes.

The minimum required revolutions at mixing speed for transit-mixed concrete shall be not less than that recommended by the mixer manufacturer, and shall be increased, if necessary, to produce thoroughly and uniformly mixed concrete.

Each load of ready-mixed concrete shall be accompanied by a ticket which shall be delivered to the Engineer at the discharge location of the concrete, unless otherwise directed by the Engineer. The ticket shall be clearly marked with the date and time of day when the load left the batching plant and, if hauled in truck mixers or agitators, the time the mixing cycle started.

A Certificate of Compliance in accordance with the provisions in Caltrans Section 6-1.07, "Certificates of Compliance," shall be furnished to the Engineer, prior to placing minor concrete from a source not previously used on the contract, stating that minor concrete to be furnished meets all contract requirements, including minimum cement content specified.

90-10.04 Curing Concrete. Curing minor concrete shall conform to the requirements in Section 90-7, "Curing Concrete."

90-10.05 Protecting Concrete. Protecting minor concrete shall conform to the provisions in Section 90-8, "Protecting Concrete," except the concrete shall be maintained at a temperature of not less than 40° F. for 72 hours after placing.

SECTION 100

STREET OPENING AND PAVEMENT RESTORATION REGULATIONS

100-1 Moratorium. Permission to excavate in newly resurfaced streets will not be granted for three years after completion of street resurfacing. For those streets with chip seal or slurry seal coatings, the moratorium shall be for 18 months. Utilities shall determine alternative methods of making necessary repairs to avoid excavating in newly resurfaced streets. Exceptions to the above are as follows:

1. Emergency which endangers life or property.
2. Interruption of essential utility service.
3. Work that is mandated by City, State or Federal legislation.
4. Service for buildings where no other reasonable means of providing service exists.
5. Other situations deemed by Diablo Grande to be in the best interest of the general public.

100-2 General. The following regulations pertain to street excavations:

100-3 Permits.

1. Except in extreme emergency, street opening permits must be taken out in advance of excavation work. An extreme emergency is considered to exist only when life or property is endangered or when an essential utility service is interrupted during weekends, holidays, or between 5 p.m. and 8 a.m. of normal working days.
2. A plan showing approximate location of excavation will be acceptable provided that an "as-built" plan shall be submitted when the location of excavation changes substantially from the original plan.
3. Permits for street opening shall be valid for six (6) months. The estimated date of commencement and completion of work shall be indicated in all permits. Conflicts in the schedules of work under two or more permits shall be resolved by the permittees involved.
4. As a condition of the permit to excavate, the applicant must have been provided an inquiry identification number by a regional notification center (USA) pursuant to Section 4216, Chapter 1153, Assembly Bill #1606 of the California State Law.

100-4 Excavation.

1. All excavated material not suitable for backfilling shall be removed from the job site within twenty four (24) hours. Excavated material suitable for backfilling may be stored on the job site for a maximum of five (5) working days, provided it does not occupy any more street space than the permit allows and provided this material is completely prevented from blowing, washing, or being thrown about at all times.
2. No trench shall be opened on any street which is not backfilled at the end of the day. With prior approval of the permit inspector, the trench may be left open at the end of the day with adequate safety precautions for vehicular and pedestrian traffic.

100-5 Backfill.

1. Trenches shall be backfilled with sand or suitable site excavated material. Compaction of backfill shall be in accordance with Drawing U-1 or U-2.
2. Unless otherwise specified, initial backfill shall be sand, gravel, crushed aggregate or native free-draining granular material. If, in the opinion of the Engineer, the native material is unsuitable for initial backfill, the Engineer may require the Developer to test the native material, at the Developer's expense. For native material to be considered suitable it shall have a sand equivalent of not less than 30 or a coefficient of permeability greater than 1.4 inches per hour. The initial backfill shall be free of rocks or clods greater than 3 inches in diameter and shall be free of organic or other unsuitable material.
3. All native backfill material shall be free of rocks and clods greater than 3 inches in diameter and free of organic or other unsuitable material.
4. In the event that native backfill materials as described in the above paragraph are not available in the trench spoils, material shall be imported to satisfy the requirements of this section.
5. When undermining has occurred, remove existing pavement as required to compact backfill.
6. Certificates shall be obtained from an independent testing laboratory verifying that compaction meets or exceeds the requirements of this section. The number of tests will be specified on the permit. The intent of these tests is to assure that pavement is properly restored. Tests will generally be required on all major excavations (excavations lasting longer than five (5) working days). The number of tests required will increase if results are poor and decrease if good compaction is consistently obtained.
7. The Diablo Grande Engineer shall be notified one (1) day in advance of any backfilling and paving work.

100-6 Paving.

1. Trenches shall be paved as shown on Drawing U-1. Sawcutting of the existing pavement shall be in neat straight lines. To allow for proper placement of the new pavement section, damaged pavement outside of the original trench cut lines shall be removed by cutting in lines perpendicular to or parallel to the original trench lines. No diagonal cuts are to be made. Undamaged pavement of three (3) feet or less between two damaged areas shall also be removed.
2. Pavement will be restored using the "T Section" shown on Drawing U-1. For trenches in moratorium streets parallel to the center line of the street, the entire lane shall be key-cut one and one-half inches (1-½") deep and repaved with asphalt concrete. For trenches in moratorium streets with chip seal or slurry seal coatings, the entire lane shall be resurfaced with these coatings, the entire lane shall be resurfaced with these coatings.
3. Trenches in concrete streets shall be paved with concrete pavement. The thickness of the new pavement shall be equal to the thickness of the existing pavement with the minimum thickness to be six (6) inches in the roadway.
4. Trenches in all streets with asphalt wearing surfaces shall be paved to meet the greater of the following:
 - a. Engineer's calculations based on soil conditions and traffic index.
 - b. Nine inches (9") class 2 aggregate base topped with three inches (3") of asphalt concrete wearing surface.
 - c. Match the existing pavement section.
5. Pavement shall be restored within fourteen (14) working days from the time

the trench is backfilled. For minor excavations such as service installations, the pavement shall be restored within thirty (30) working days from the time the trench is backfilled. The asphalt concrete wearing surface shall be placed within two (2) working days after placement of asphalt concrete base, weather permitting.

6. Prior to placing asphalt concrete, the existing asphalt concrete shall have a vertical face so that new AC paving can be butt joined. No feathering of new paving to existing paving is allowed. The vertical faces shall be tack coated. In moratorium streets, placement of the final one and one-half inches of AC wearing surface shall be done by a paving machine or spreader box in order to eliminate the uneven, wash-board effect that results from hand spreading. Asphalt concrete shall be delivered and compacted in accordance with the Standard Specifications.
7. Asphalt pavement shall be compacted to obtain a minimum relative compaction of ninety-five percent (95%). The asphalt concrete wearing surface will be smooth enough so that there is no irregularity greater than five-sixteenths of an inch (5/16") in ten feet (10') in any direction.
8. On major streets steel plates shall be used when ordered by the permit inspector to facilitate traffic flow and to protect the excavation until finished pavement is restored. Steel plates used to bridge a street opening shall be ramped to the elevation of the adjacent pavement and secured against movement in any direction. Temporary ramps shall be constructed of asphalt and shall have a gradual slope. On all other streets, temporary asphalt cutback is permitted.
9. Utility trenches shall be color coded with a four (4) inch painted mark at the beginning and end of each trench at each intersection when paving is completed. The color assigned to each franchised utility is as follows:

PG&E Electric (red)	Street Repair (Dark green)
Evans Telephone (orange)	Propane (yellow)
Western Hills Water & Sewer (white)	T.C.I./Cable
10. Wheelchair ramps shown on Drawing No. C-7 or C-8 shall be constructed where any portion of the curb at a legal pedestrian crosswalk or any portion of the sidewalk in immediate contact with such curb is removed, except where there is an existing wheelchair ramp in the crosswalk or where there is a subsidewalk basement behind the crosswalk.

100-7 Defects.

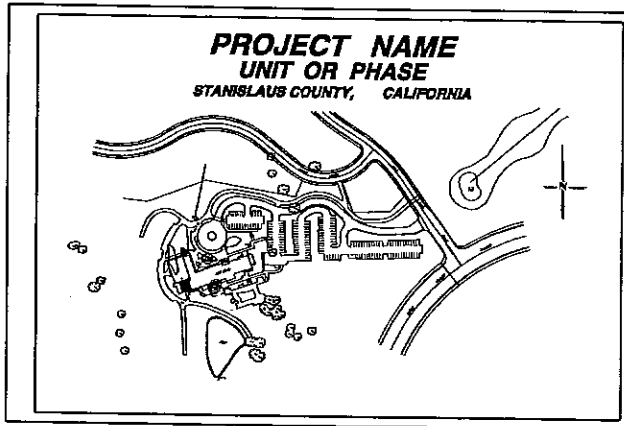
1. Depressed trench pavement shall be repaired as follows:
 - a. Wearing surface defects - remove and restore wearing surface.
 - b. Major defects - excavate, remove and restore surface and base.
 - c. The severity of the defect will be determined by the Permit Inspector.
2. Work not complying with the above requirements will be rejected, removed and redone to the satisfaction of the District Engineer.
3. Utilities shall be responsible to correct trench defects until such time as the street is resurfaced.

100-8 Miscellaneous:

1. Street excavation signs shall be installed at the project site at least two (2) days in advance of any construction work lasting five (5) days or more.

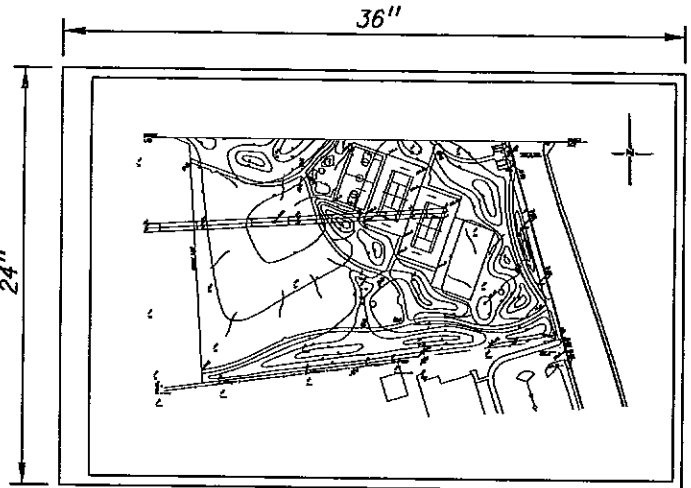
Signs must state name of utility company and contractor, twenty four (24) hour telephone number, and type of construction.

2. Standard Specifications and Plans will apply for any regulations not covered in this section.
3. Any violation of the above regulations may result in the revocation of the street opening permit and/or be subject to a police citation or fine.



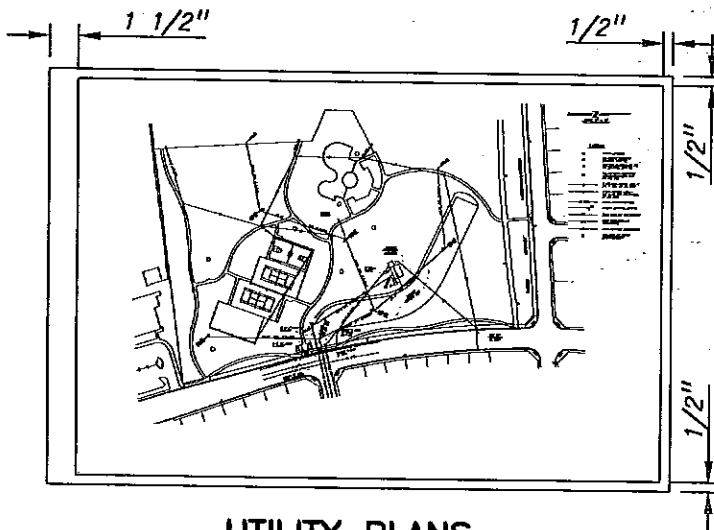
COVER SHEET

COVER SHEET SHALL INCLUDE THE PROJECT TITLE AN OVERALL VIEW OF THE PROJECT AND THE UNIT OR PHASE NUMBER, IF APPLICABLE.



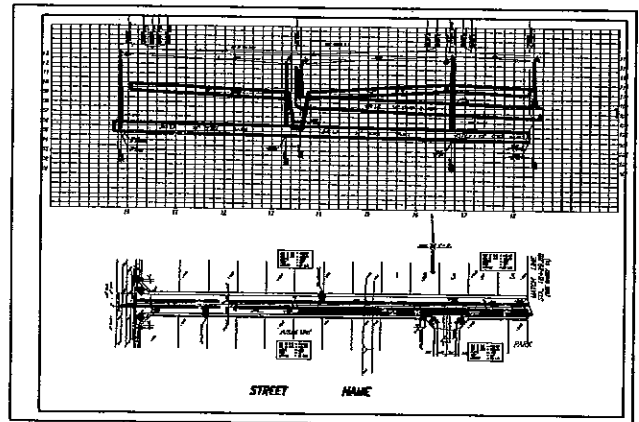
GRADING PLAN

GRADING PLAN SHALL INCLUDE STREET CROSS-SECTIONS, PAVEMENT THICKNESS TABLE FOR ALL PAVEMENT WITHIN PROJECT, AS WELL AS TOP OF CURB ELEVATIONS, PAD GRADES, STREET SLOPES AND, WHERE APPLICABLE, RETAINING WALL DETAILS.



UTILITY PLANS

UTILITY PLANS SHALL INCLUDE SEWER, WATER AND STORM DRAIN PIPE LENGTHS AND SIZES, RIM AND INVERT ELEVATIONS FOR ALL MANHOLES.



PLAN AND PROFILES

PLAN AND PROFILE SHEETS SHALL INCLUDE STATIONS FOR ALL MANHOLES, CATCHBASINS, GRADE BREAKS, CLEANOUTS, BLOW-OFFS, ETC. AND FOR ALL CURB RETURNS, BEGINNINGS AND ENDS OF CURVES, ENDS OF CUL-DE-SACS, MATCH LINES AND SUBDIVISION BOUNDARIES. HORIZONTAL SCALE SHALL BE 1"=20' TO 1"=60'.

THE PLAN SET SHALL INCLUDE A VICINITY MAP, A SHEET INDEX, LIST OF ABBREVIATIONS, LEGEND OF SYMBOLS, GENERAL NOTES, STANDARD DETAILS, TOPOGRAPHY PLAN AND TRAFFIC DRAWINGS (IF REQUIRED).

ALL DRAWINGS THAT REQUIRE APPROVAL BY DIABLO GRANDE SHALL HAVE THE DIABLO GRANDE SIGNATURE BLOCK, AS SHOWN ON STANDARD DRAWING NO. G-5.

DRAWN BY:	D.S.
CHECKED BY:	M.P.
SCALE:	NONE
REVISED	BY

TYPICAL LAYOUT FOR IMPROVEMENT PLANS



Diablo Grande
 STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:
A. Stanley Thompson
 DISTRICT ENGINEER RCE 32260
 THOMPSON-HYSELL ENGINEERS, INC.

DATE: 01/01/98
 DRAWING NO.

G - 1

36"

24"

LOCATION OF REVISION

REVISION NUMBER

DIABLO GRANDE SIGNATURE BLOCK

REVISION BLOCK

<small>APPROVED BY:</small> DIABLO GRANDE <small>THOMPSON-HYSELL ENGINEERS, INC.</small>			<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="3">REVISIONS</th></tr> <tr><th>NO.</th><th>DESCRIPTION</th><th>DATE</th></tr> <tr><td style="text-align: center;">△</td><td>EXAMPLE</td><td>12/07/95</td></tr> </table>	REVISIONS			NO.	DESCRIPTION	DATE	△	EXAMPLE	12/07/95	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr><th colspan="2">COMPANY NAME</th></tr> <tr><td colspan="2">ADDRESS & PHONE NUMBER</td></tr> </table>	COMPANY NAME		ADDRESS & PHONE NUMBER	
REVISIONS																	
NO.	DESCRIPTION	DATE															
△	EXAMPLE	12/07/95															
COMPANY NAME																	
ADDRESS & PHONE NUMBER																	

NOTES:

1. EACH DESIGN REVISION SHALL BE NUMBERED CONSECUTIVELY WITH THE REVISION NUMBER ENCLOSED WITHIN A TRIANGLE AND DESCRIBED IN THE REVISION BLOCK.
2. THE REVISION SHALL BE INDICATED BY A "CLOUD" AND A REVISION TRIANGLE (PER NOTE 1) SHALL BE PLACED WITHIN THE CLOUD TO IDENTIFY THE REVISION.
3. IF THE NUMBER OF REVISIONS IS SUCH THAT THE REVISED DRAWING WOULD BE MADE ILLEGIBLE, A SEPERATE SHEET MAY BE ADDED WITH PRIOR APPROVAL BY THE DISTRICT ENGINEER.

DRAWN BY: D.S.	<h2 style="margin: 0;">DESIGN REVISION FORMAT</h2>	APPROVED BY: <i>A. Stanley Thompson</i>	
CHECKED BY: M.P.		DISTRICT ENGINEER	RCE 32260
SCALE: NONE		THOMPSON-HYSELL ENGINEERS, INC.	
REVISED	BY	DATE: 01/01/96	<h1 style="margin: 0;">G - 2</h1>
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		DRAWING NO.	

© AT
 ± PLUS OR MINUS (NOT EXACT)
 C OR CL CENTERLINE
 F OR FL FLOWLINE
 P OR PL PROPERTY LINE
 Ø DIAMETER
 □ SQUARE FEET
 # POUND; NUMBER

 AB AGGREGATE BASE
 AC ASPHALT CONCRETE
 A/C AIR CONDITIONING
 ACP ASBESTOS CEMENT PIPE
 AD ADDENDUM
 ADH ADHESIVE
 ADJ ADJUSTABLE
 ADPT ADAPTER
 AGG AGGREGATE
 AH AHEAD
 ALT ALTERNATE; ALTERNATIVE
 APPROX APPROXIMATE
 ARCH ARCHITECTURAL
 ARV AIR RELEASE VALVE
 ASB AGGREGATE SUB-BASE
 ASSY ASSEMBLY
 AUTO AUTOMATIC
 AUX AUXILIARY

 BC BEGINNING OF CURVE
 BCR BEGIN CURB RETURN
 BD BOARD
 BORY BOUNDARY
 BK BACK
 BKT BRACKET
 BLDG BUILDING
 BLK BLOCK
 BLV BALL VALVE
 BM BENCHMARK
 BO BLOWOFF; BOTTOM OF
 BOT BOTTOM
 BPR BACK PRESSURE REGULATOR
 BRG BEARING
 BSL BUILDING SETBACK LINE
 BTU BRITISH THERMAL UNIT
 BV BUTTERFLY VALVE
 BVC BEGINNING OF VERTICAL CURVE

 C & G CURB AND GUTTER
 CAP CAPACITY
 CB CATCH BASIN
 CF CUBIC FEET
 CFM CUBIC FEET PER MINUTE
 CFS CUBIC FEET PER SECOND
 CIP CAST IRON PIPE
 CIPC CAST IN PLACE CONCRETE PIPE
 CIR CIRCLE
 CJ CONSTRUCTION JOINT
 CLR CLEAR; CLEARANCE
 CMP CORRUGATED METAL PIPE
 CMU CONCRETE MASONRY UNIT
 CO CLEAN OUT
 CONC CONCRETE
 COND CONDUIT
 CONN CONNECTION
 CONST CONSTRUCTION
 CORR CORRUGATED
 CP CONTROL PANEL
 CRS COURSE
 CTR CENTER
 CV CHECK VALVE
 CW COLD WATER
 CY CUBIC YARD

 D OR SD STORM DRAIN
 DET DETAIL
 DIA DIAMETER
 DIM DIMENSION
 DIP DUCTILE IRON PIPE
 DN DOWN
 DW DRIVEWAY
 DWG DRAWING

 EA EACH
 EC END OF CURVE

ECR END OF CURB RETURN
 EFF EFFLUENT
 EL OR ELEV ELEVATION
 ELECT ELECTRICAL
 EOL END OF LINE
 EP EDGE OF PAVEMENT
 EQ EQUAL
 ERV EXPLOSION RELIEF VALVE
 ESMT EASEMENT
 EVC END OF VERTICAL CURVE
 EX OR EXIST EXISTING
 EXP EXPANSION
 EXP JT EXPANSION JOINT
 EXT EXTERIOR; EXTENSION

 FA FLAME ARRESTOR
 FAB FABRICATED
 FC FLEXIBLE COUPLING
 FH FIRE HYDRANT
 FLEX FLEXIBLE
 FLR FLOOR
 FM FORCE MAIN
 FPM FEET PER MINUTE
 FPS FEET PER SECOND
 FT FEET
 FTG FOOTING

 G GAS
 GA GAUGE OR GAGE
 GAL GALLONS
 GALV GALVANIZED
 GB GRADE BREAK
 GEN GENERAL
 GI GALVANIZED IRON
 GND GROUND
 GPD GALLONS PER DAY
 GPM GALLONS PER MINUTE
 GR GRADE
 GSP GALVANIZED STEEL PIPE

 HDR HEADER
 HORIZ HORIZONTAL
 HP HIGH POINT
 HVAC HEATING, VENTILATING AND AIR CONDITIONING
 HW HOT WATER
 HWL HIGH WATER LEVEL

 ID INSIDE DIAMETER
 IN INCH
 IND INDUSTRIAL
 INSUL INSULATED; INSULATION
 INSTR INSTRUMENTATION
 INT INTERIOR, INTERNAL
 INV INVERT
 IRR IRRIGATION
 ISBM IMPORTED SUB-BASE MATERIAL

 JB JUNCTION BOX
 JT JOINT

 L LENGTH
 LB POUND
 L.F. LINEAL FEET OR LINEAR FEET
 LIN LINEAR; LINEAL
 LP LOW POINT

 MAN MANUAL
 MAX MAXIMUM
 MECH MECHANICAL
 MEMB MEMBRANE
 MET METAL
 MFR MANUFACTURER
 MG MILLION GALLONS
 MGD MILLION GALLONS PER DAY
 MH MANHOLE
 MIN MINIMUM
 MISC MISCELLANEOUS
 MJ MECHANICAL JOINT
 ML MATCH LINE
 MTR MOTOR; MITER

 N NORTH
 NA NOT APPLICABLE

NC NORMALLY CLOSED
 NO NORMALLY OPEN; NUMBER
 NOM NOMINAL
 NTS NOT TO SCALE

 OC ON CENTER
 OD OUTSIDE DIAMETER
 OG ORIGINAL GROUND / GRADE
 OH OVERHEAD
 OPP OPPOSITE

 PC PORTLAND CEMENT
 PCC POINT OF COMPOUND CURVATURE
 PI POINT OF INTERSECTION
 PL PROPERTY LINE
 PP POWER POLE
 PRC POINT OF REVERSE CURVATURE
 PRI PRIMARY
 PRV PRESSURE REDUCING VALVE
 PSI POUNDS PER SQUARE INCH
 PT POINT
 PUE PUBLIC UTILITY EASEMENT
 PVC POLYVINYL CHLORIDE PIPE
 PW POTABLE WATER

 R RADIUS
 RCP REINFORCED CONCRETE PIPE
 REF REFERENCE
 REQD REQUIRED
 RET RETURN
 RPM REVOLUTIONS PER MINUTE
 RR RAILROAD
 RT RIGHT
 RV RESISTANCE VALUE
 R/W RIGHT-OF-WAY

 S OR SS SANITARY SEWER
 SCH SCHEDULE
 SCL STEEL CEMENT LINED PIPE
 SCLG STEEL CEMENT LINED & COATED PIPE
 SD OR D STORM DRAIN
 SEC SECONDARY
 SECT SECTION
 SED SEDIMENTATION
 SHT SHEET
 SNS STREET NAME SIGN
 SPEC SPECIFICATIONS
 SQ SQUARE
 STA STATION
 STD STANDARD
 STRUCT STRUCTURAL
 SUPP SUPPORT
 SURF SURFACE
 SUSP SUSPENDED
 SV SHUTOFF VALVE
 S/W SIDEWALK
 SYM SYMMETRICAL
 SYS SYSTEM

 T TELEPHONE
 TAN TANGENT
 TC TOP OF CURB
 TEMP TEMPORARY
 THRU THROUGH
 TI TRAFFIC INDEX
 TOW TOP OF WALL
 TPE TREE PLANTING EASEMENT
 TRANS TRANSFORMER
 TYP TYPICAL

 V VENT
 VAC VACUUM
 VAR VARIES
 VB VALVE BOX
 VC VERTICAL CURVE
 VCP VITRIFIED CLAY PIPE
 VERT VERTICAL

 W WATER
 W/ WITH
 W/O WITHOUT
 WP WATERPROOF; WATERPROOFING
 WS WATER SUPPLY; WATER SURFACE
 WT WEIGHT

DRAWN BY: D.S.
 CHECKED BY: M.P.
 SCALE: NONE
 REVISED BY

STANDARD ABBREVIATIONS



Diablo Grande
 STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:
Stanley Thompson
 DISTRICT ENGINEER
 THOMPSON-HYSELL ENGINEERS, INC.

DATE: 01/01/96
 DRAWING NO.

G - 3

1. ALL IMPROVEMENT PLANS, CONSTRUCTION DRAWINGS AND ALL MAPS AND PLATS SUBMITTED TO THE DIABLO GRANDE DISTRICT ENGINEER FOR CONSIDERATION SHALL CONFORM TO AND BE PREPARED IN CONFORMANCE WITH THE ENCLOSED STANDARDS.
2. TITLE BLOCK AND OTHER RELATED LETTERING SHALL BE IN ACCORDANCE WITH STANDARD ACCEPTED ENGINEERING PRACTICE.

TYPICAL IMPROVEMENT PLAN LEGEND

LEGEND		
EXISTING	PROPOSED	DESCRIPTION
		SUBDIVISION BOUNDARY
		LOT LINE
		CENTERLINE
		CURB, GUTTER AND SIDEWALK
		STORM DRAIN LINE
		SANITARY SEWER LINE
		WATER LINE
		IRRIGATION LINE
		CATCH BASIN
		MANHOLE
		CLEANOUT
		FIRE HYDRANT
		BLOW OFF
		WATER VALVE
		ELECTROLIER
		SURVEY MONUMENT
		MONUMENT IN MONUMENT WELL
		STOP SIGN WITH STREET NAMES
		SIGN
		SEWER LATERAL
		WATER LATERAL
		DRIVEWAY
		FENCE
		MASONRY WALL
		VALLEY GUTTER
		CURB RETURN W/ HANDICAP RAMP

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2>DRAFTING STANDARDS</h2>	APPROVED BY: DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96 DRAWING NO. G-4

5"


APPROVED:
DIABLO GRANDE

THOMPSON-HYSELL ENGINEERS, INC. DATE
DISTRICT ENGINEER

1 5/8"

NOTES:

1. EACH SHEET SHALL BE SIGNED BY A REGISTERED CIVIL ENGINEER.
2. SIGNATURE BLOCK SHALL BE LOCATED ON ALL SHEETS THAT SHOW DESIGN FEATURES WHICH MUST BE APPROVED BY THE DISTRICT ENGINEER.

DRAWN BY: D.S.	DIABLO GRANDE SIGNATURE BLOCK	APPROVED BY: <i>H. Stanley Thompson</i> DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
CHECKED BY: M.P.		DATE: 01/01/96
SCALE: NONE		DRAWING NO. G - 5
REVISED	BY	 Diablo Grande STANISLAUS COUNTY, CALIFORNIA

TRIP GENERATION FACTORS

THE FOLLOWING TRIP END FACTORS SHALL BE USED IN DETERMINING THE AVERAGE DAILY TRAFFIC INVOLVED IN STREET DESIGN.

TRIP END: THE ORIGIN OR DESTINATION OF A TRIP. EACH TRIP HAS TWO ENDS.

G.S.F.: GROSS SQUARE FEET OF FLOOR AREA.

SINGLE FAMILY	9.55 TE / DWELLING UNIT
ATTACHED SINGLE FAMILY	5.86 TE / DWELLING UNIT
MUTIPLE FAMILY	6.47 TE / DWELLING UNIT
SEASONAL/RETIREMENT SF/ASF	3.16 TE / DWELLING UNIT
SEASONAL/RETIREMENT MF	3.16 TE / DWELLING UNIT
HOTEL	10.00 TE / ROOM
MOTEL	9.60 TE / ROOM
DAY CARE / PRESCHOOL	79.00 TE / 1000 G.S.F.
SHOPPING CENTER/TOWN CENTER	28.27 TE / 1000 G.S.F.
GENERAL OFFICE	16.31 TE / 1000 G.S.F.
OFFICE PARK	20.70 TE / 1000 G.S.F.
MEDICAL OFFICE	75.00 TE / 1000 G.S.F.
RESEARCH CAMPUS	8.00 TE / 1000 G.S.F.
RESTAURANT	96.51 TE / 1000 G.S.F.
FAST FOOD/DRIVE THRU	680 TE / 1000 G.S.F.
FREE STANDING RETAIL	73.70 TE / 1000 G.S.F.
SUPERMARKET	126 TE / 1000 G.S.F.
PUBLIC SERVICES	0.79 TE / 1000 G.S.F.
SERVICE STATION	133 TE / PUMP OR 748 TE
GOLF COURSE	8.00 TE / ACRE
PARK	5.00 TE / ACRE

MINIMUM DESIGN TRAFFIC INDEX CHART

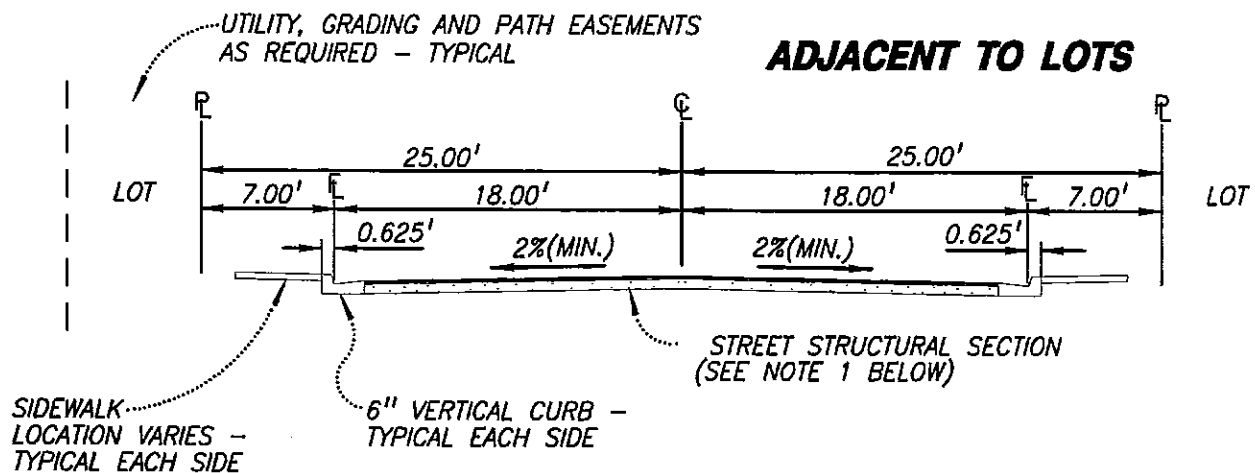
PREDOMINANT USE	MINOR AND CUL-DE-SAC	LOCAL AND COLLECTOR	MAJOR AND ARTERIAL
RESIDENTIAL	5.0	6.0	7.0
COMMERCIAL	6.0	7.0	8.0

FOR LAND USES AND / OR DEVELOPMENTS NOT SHOWN ABOVE CONTACT THE DISTRICT ENGINEER.

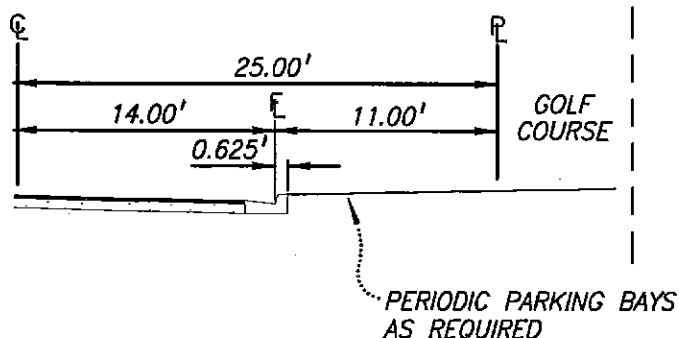
SOURCES:

"TRIP GENERATION" AN INFORMATIONAL REPORT, INSTITUTE OF TRANSPORTATION ENGINEERS (5TH EDITION) PERIODIC UPDATE, AND OTHER TRIP GENERATION PUBLICATIONS.

DRAWN BY: D.S.	TRIP GENERATION FACTORS	APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
CHECKED BY: M.P.		RCE 3226a
SCALE: NONE		DATE: 01/01/96
REVISED	BY	DRAWING NO. P-1
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		



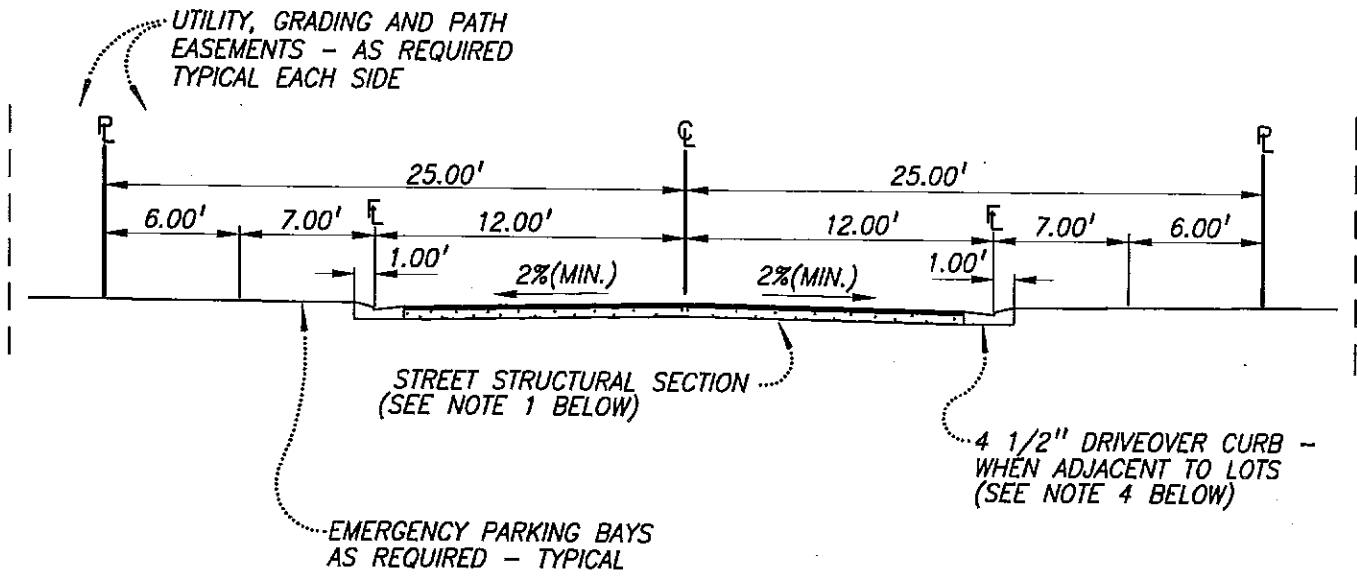
ADJACENT TO GOLF COURSE



NOTES:



1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.

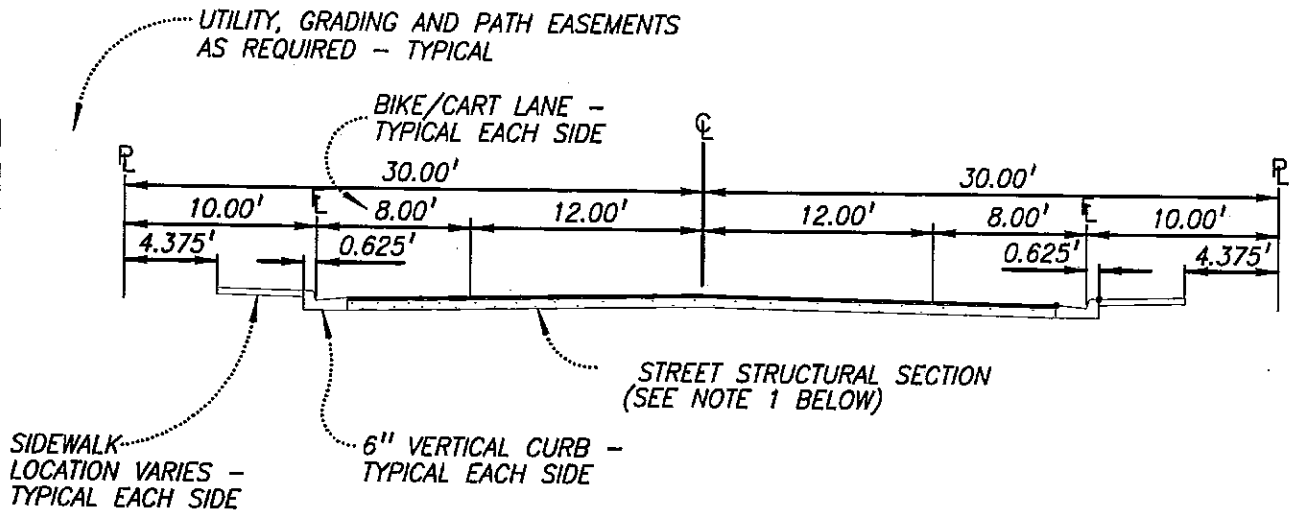
DRAWN BY: D.S.	50 FT. MINOR COLLECTOR VALLEY AREAS	APPROVED BY:	 DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
CHECKED BY: M.P.		DATE: 01/01/96	RCE 32266
SCALE: NONE		DRAWING NO.	P - 2
REVISED	BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	



NOTES:


1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.
3. REFER TO STANDARD DRAWING P-10 FOR EMERGENCY PARKING BAY DETAIL.
4. 6" VERTICAL CURB (DIABLO GRANDE STD. DWG. C-1) SHALL BE USED WHEN ADJACENT TO GOLF COURSE.

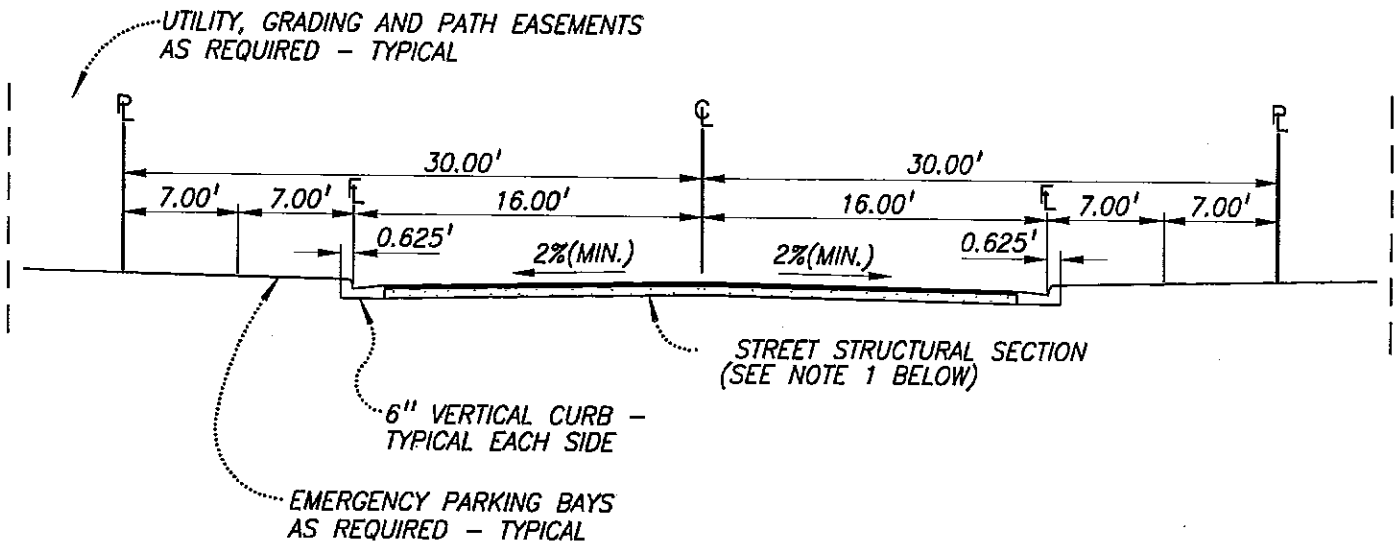
DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2 style="margin: 0;">50 FT. MINOR COLLECTOR HILL AREAS</h2>	APPROVED BY:  DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
 Diablo Grande STANISLAUS COUNTY, CALIFORNIA		P - 3



NOTES:


1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.

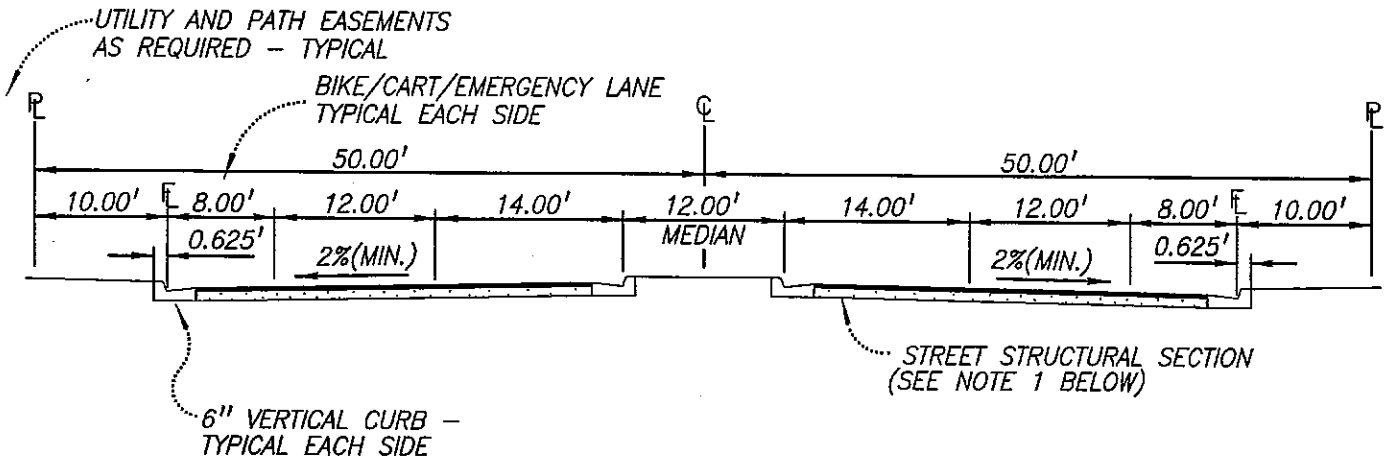
DRAWN BY: D.S.		60 FT. MAJOR COLLECTOR VALLEY AREAS	APPROVED BY:
CHECKED BY: M.P.			<i>A. Stanley Thompson</i>
SCALE: NONE			DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	 Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96
			DRAWING NO. P - 4



NOTES:

1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.
3. REFER TO STANDARD DRAWING P-10 FOR EMERGENCY PARKING BAY DETAIL.

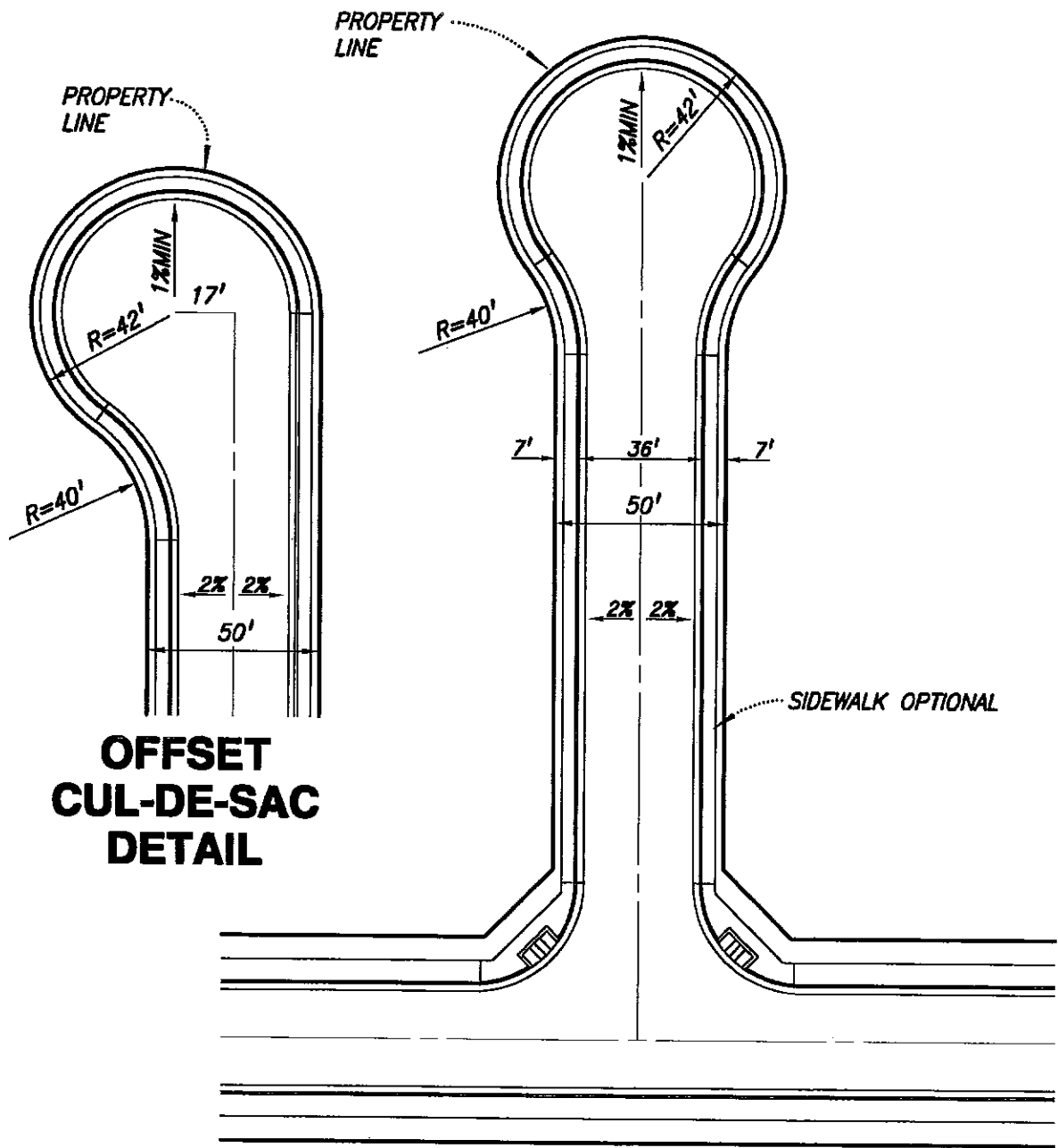
DRAWN BY: D.S.	60 FT. MAJOR COLLECTOR HILL AREAS	APPROVED BY: <i>A. Stanley Thompson</i>	
CHECKED BY: M.P.		DISTRICT ENGINEER	RCE 32260
SCALE: NONE		THOMPSON-HYSELL ENGINEERS, INC.	
REVISED	 Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/98	P - 5
		DRAWING NO.	



NOTES:

1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.

DRAWN BY: D.S.		100 FT. ARTERIAL PARKWAY 4 LANE DIVIDED	APPROVED BY:
CHECKED BY: M.P.			<i>D. Stanley Thompson</i>
SCALE: NONE			DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96
			DRAWING NO. P-6

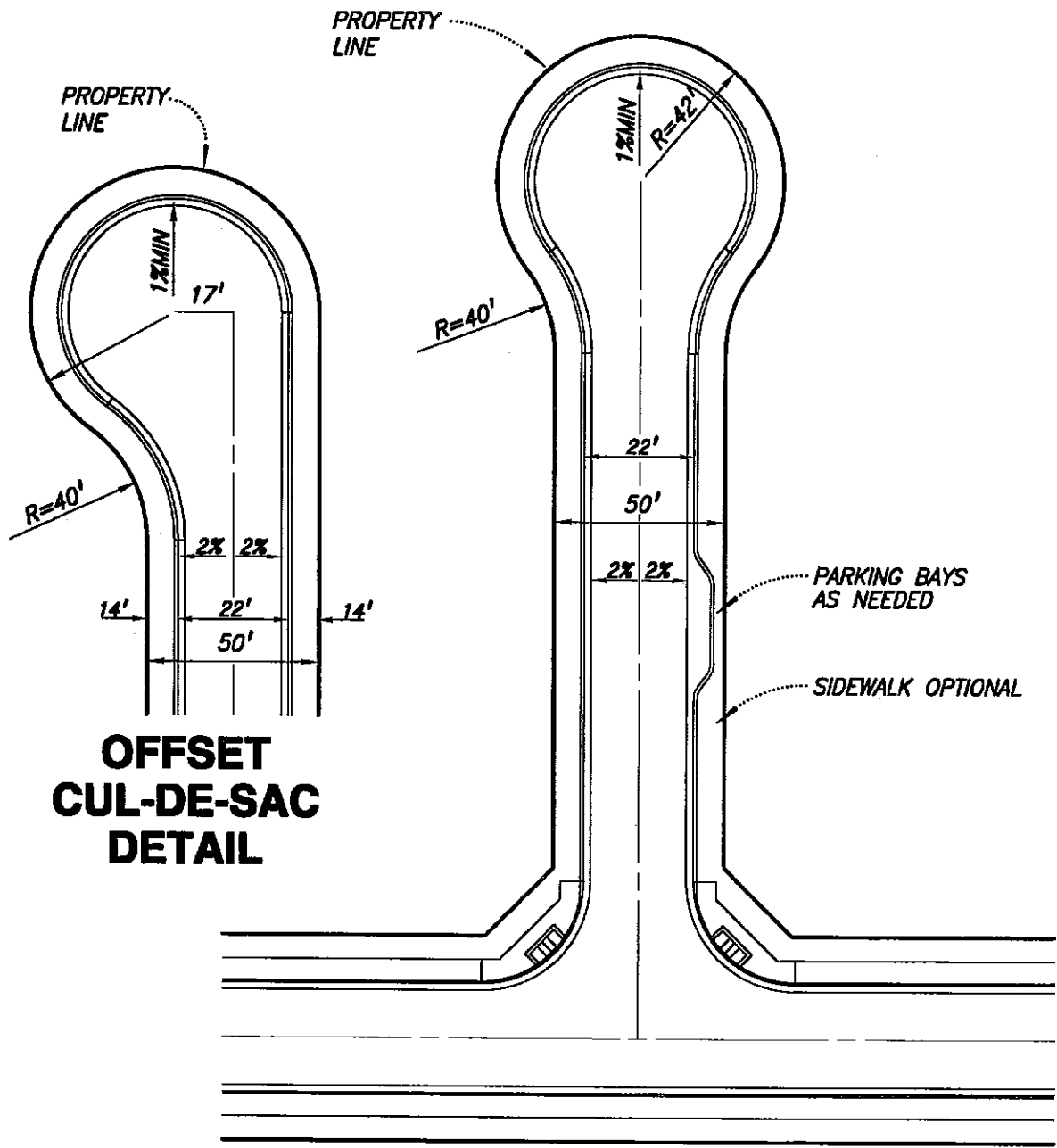


**OFFSET
CUL-DE-SAC
DETAIL**

NOTES:

1. REFER TO STANDARD DRAWING P-2 FOR STREET SECTIONS.
2. REFER TO STANDARD DRAWING P-9 FOR CURB RETURN RADII.

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	CUL-DE-SAC VALLEY AREAS	APPROVED BY: <i>H. Stanley Thompson</i> DISTRICT ENGINEER RLE 32260 THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		P-7

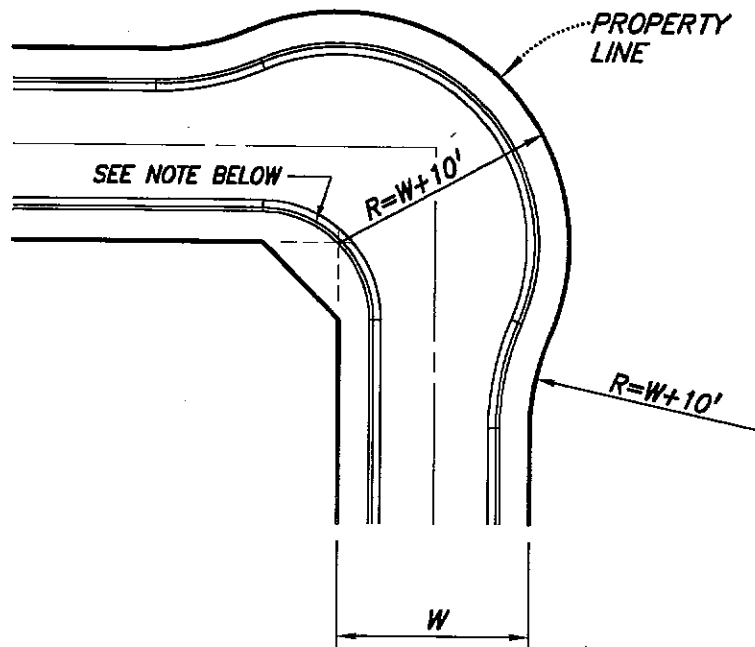


**OFFSET
CUL-DE-SAC
DETAIL**

NOTES:

1. REFER TO STANDARD DRAWING P-10 FOR EMERGENCY PARKING BAY DETAIL.
2. REFER TO STANDARD DRAWING P-9 FOR CURB RETURN RADII.

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2>CUL-DE-SAC HILL AREAS</h2>	APPROVED BY: <i>H. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		P - 8



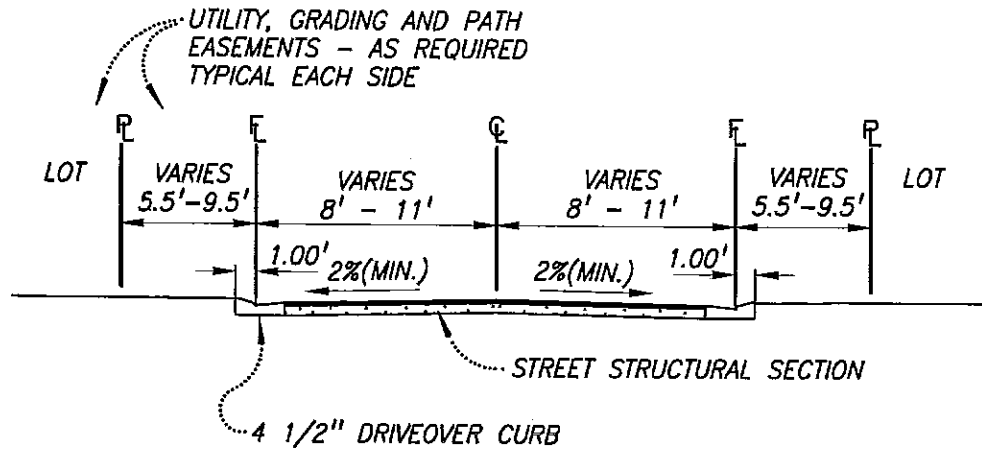
TABLE

STREET	WIDTH (W)	KNUCKLE RADII (W + 10')
MINOR COLLECTORS & CUL-DE-SACS	50'	60'
MAJOR COLLECTORS	60'	70'
ARTERIALS	100'	110'

NOTE:

CURB RETURN RADIUS AT FLOWLINE SHALL EQUAL 30' FOR ALL STREETS EXCEPT AT INTERSECTIONS OF TWO 50' VALLEY COLLECTORS AND/OR CUL-DE-SACS, IN WHICH CASE THE RADIUS SHALL EQUAL 22'.

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h1>STANDARD KNUCKLE</h1>	APPROVED BY: <i>W. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		P - 9

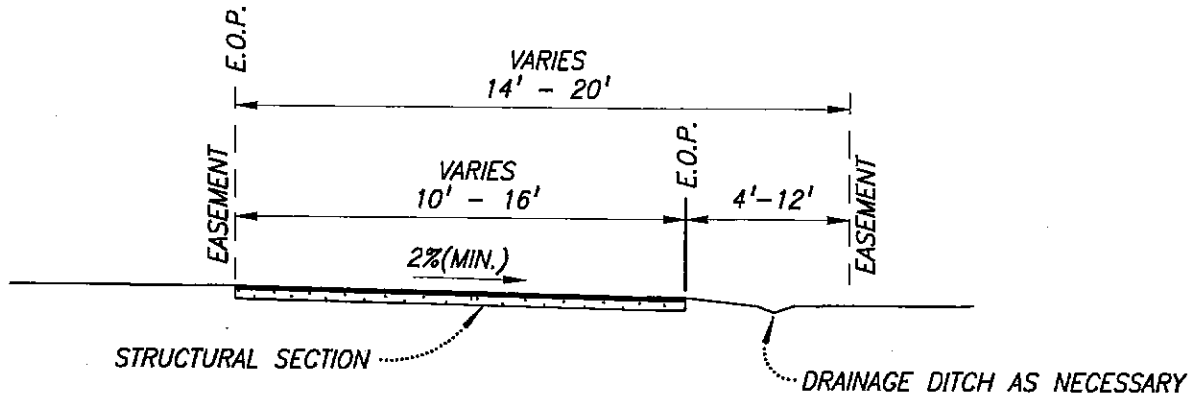


NOTES:

1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. REFER TO STANDARD DRAWING P-1 FOR MINIMUM DESIGN TRAFFIC INDEX.
3. PAVEMENT WIDTHS MAY VARY FROM 16' TO 22' (MEASURED AT FLOWLINE OF GUTTER) DEPENDING UPON NUMBER OF LOTS SERVED AND PARKING BAYS WHICH WILL BE PROVIDED AS NECESSARY. SEE TABLE BELOW.

NUMBER OF LOTS	3-5	6-12
PAVEMENT WIDTH	16'	22'

DRAWN BY: D.S.	35 FT. PRIVATE LANES	APPROVED BY: <i>H. Stanley Thompson</i>
CHECKED BY: M.P.		DISTRICT ENGINEER RCE 32260
SCALE: NONE		THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	DATE: 01/01/96
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		DRAWING NO. P - 10

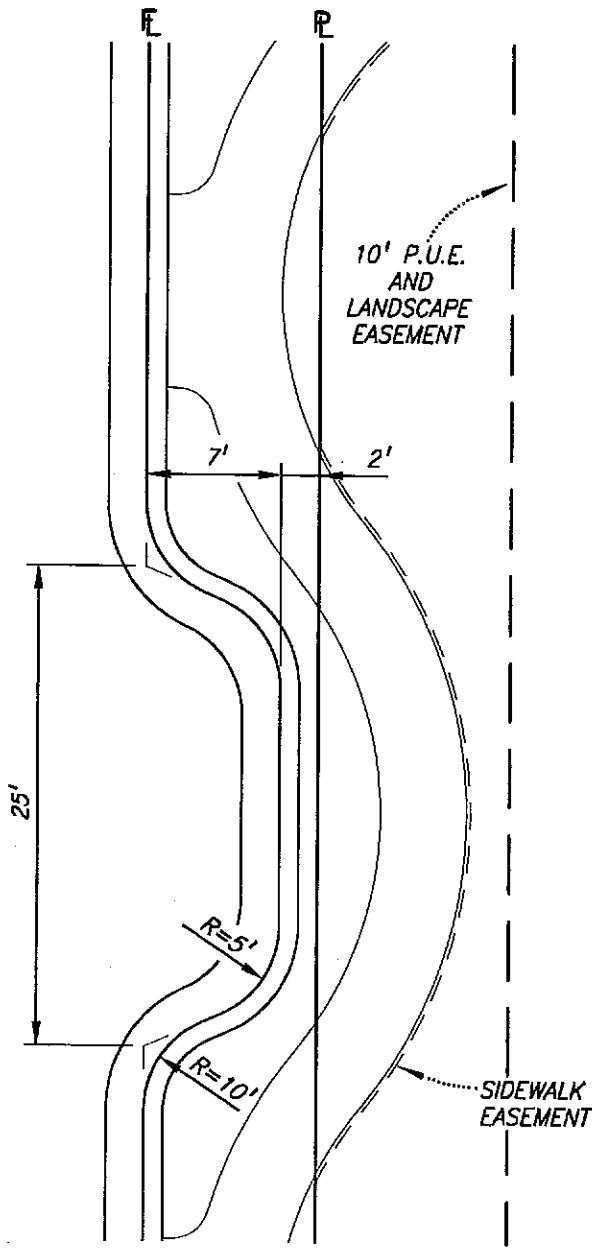


NOTES:

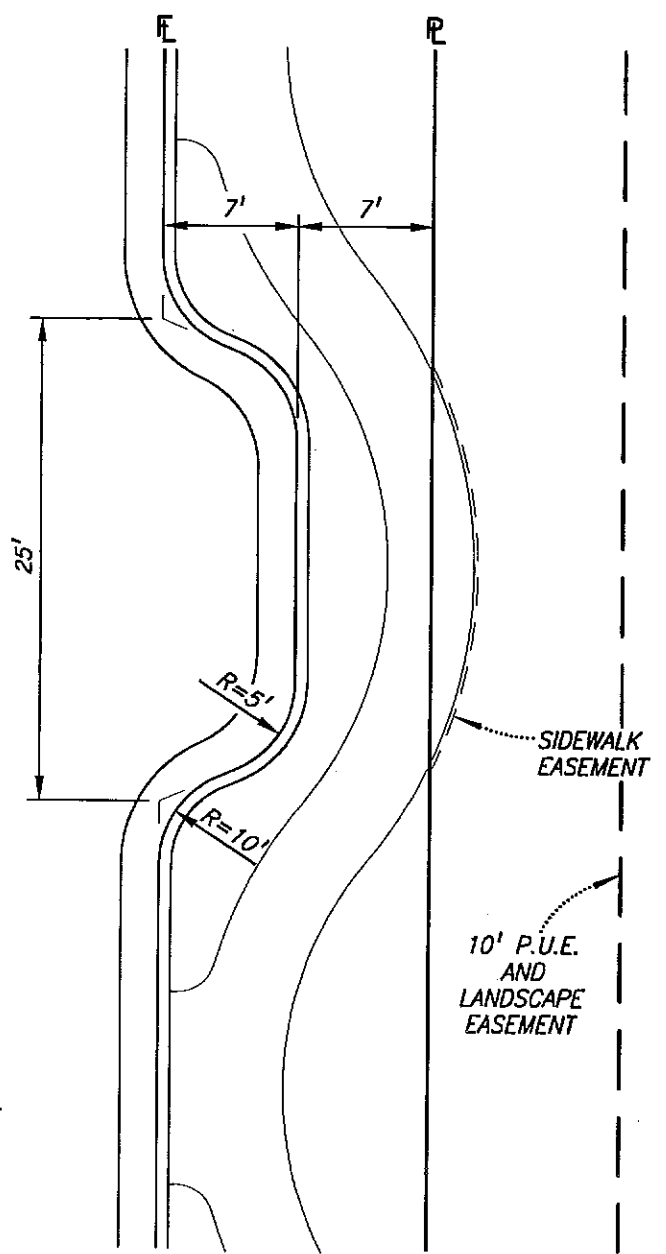
1. STREET DESIGN SHALL BE APPROVED BY THE DISTRICT ENGINEER BASED UPON ENGINEERING ANALYSIS AND GEOTECHNICAL REPORT. THE DESIGN ENGINEER SHALL SUBMIT PAVEMENT CALCULATIONS FOR ALL PROPOSED STREETS.
2. PAVEMENT WIDTHS MAY VARY FROM 10' TO 16' DEPENDING UPON NUMBER OF LOTS SERVED.

NUMBER OF LOTS	1-2	3-ABOVE	E.V.A.
PAVEMENT WIDTH	10'	16'	12'

DRAWN BY: D.S.		E.V.A. AND DRIVEWAY EASEMENTS	APPROVED BY: <i>A. Stanley Thompson</i>
CHECKED BY: M.P.			DISTRICT ENGINEER RFE 32260
SCALE: NONE			THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 04/29/98
			DRAWING NO. P-11



50 FT. R/W

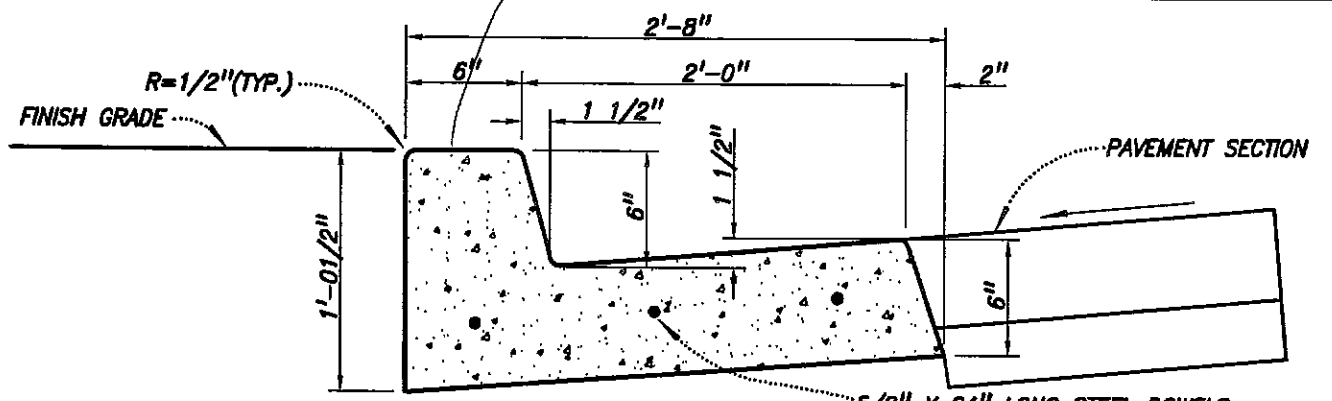


60 FT. R/W

NOTES:

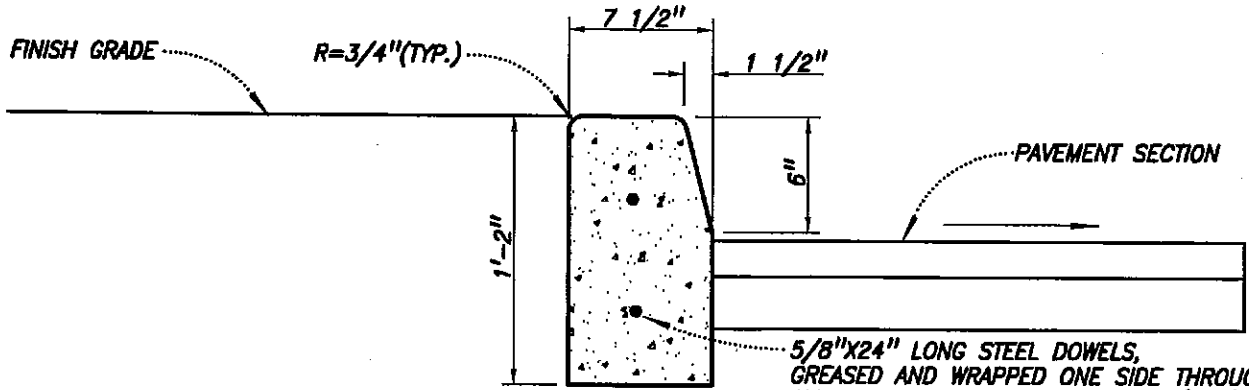
1. REFER TO STANDARD DRAWING P-3 FOR 50 FT. MINOR COLLECTOR STREET SECTION IN HILL AREAS.
2. REFER TO STANDARD DRAWING P-5 FOR 60 FT. MAJOR COLLECTOR STREET SECTION IN HILL AREAS.

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2>EMERGENCY PARKING BAY</h2>	APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		P - 12



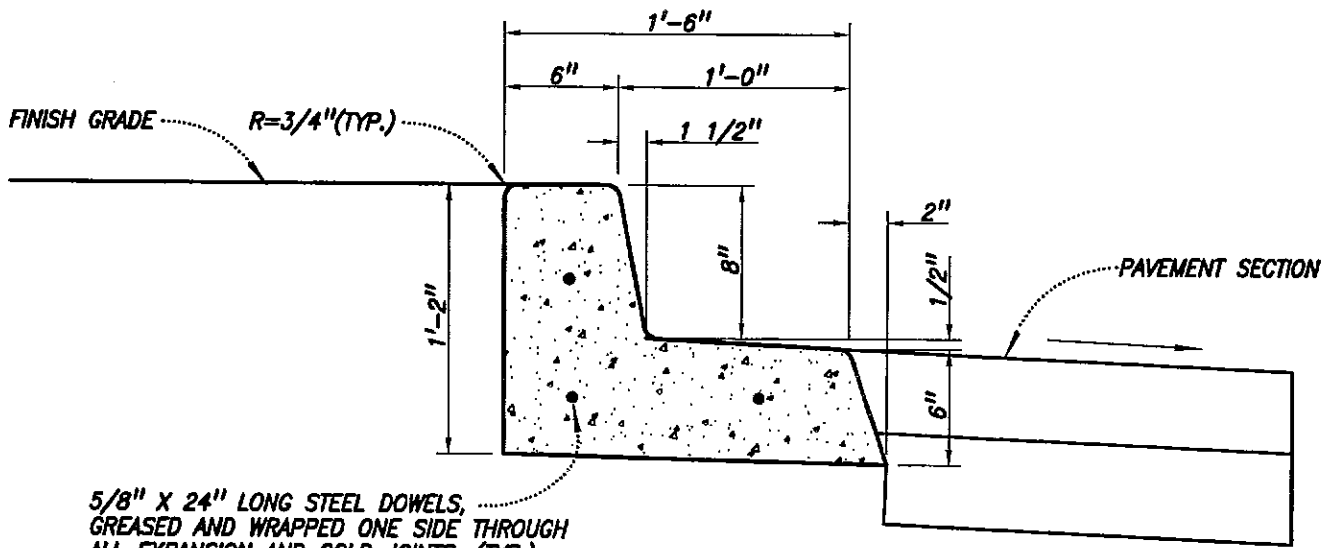
TYPE 'A' 6" VERTICAL CURB AND GUTTER

5/8" X 24" LONG STEEL DOWELS,
GREASED AND WRAPPED ONE SIDE THROUGH
ALL EXPANSION AND COLD JOINTS. (TYP.)



TYPE 'B' 6" VERTICAL CURB

5/8" X 24" LONG STEEL DOWELS,
GREASED AND WRAPPED ONE SIDE THROUGH
ALL EXPANSION AND COLD JOINTS. (TYP.)




TYPE 'C' 8" VERTICAL CURB AND APRON

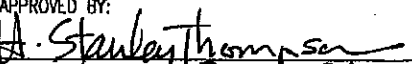
5/8" X 24" LONG STEEL DOWELS,
GREASED AND WRAPPED ONE SIDE THROUGH
ALL EXPANSION AND COLD JOINTS. (TYP.)

DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

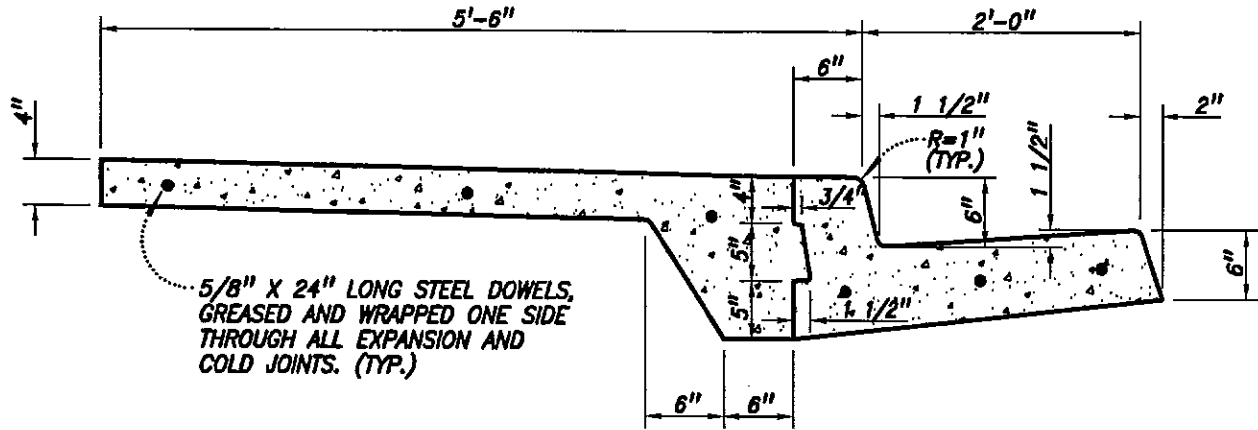
**TYPES A, B AND C
CURB AND GUTTER**

Diablo Grande
STANISLAUS COUNTY, CALIFORNIA



APPROVED BY:	 DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
DATE: 01/01/96	
DRAWING NO.	

C-1



TYPE 'D' 6" VERTICAL CURB, GUTTER AND SIDEWALK

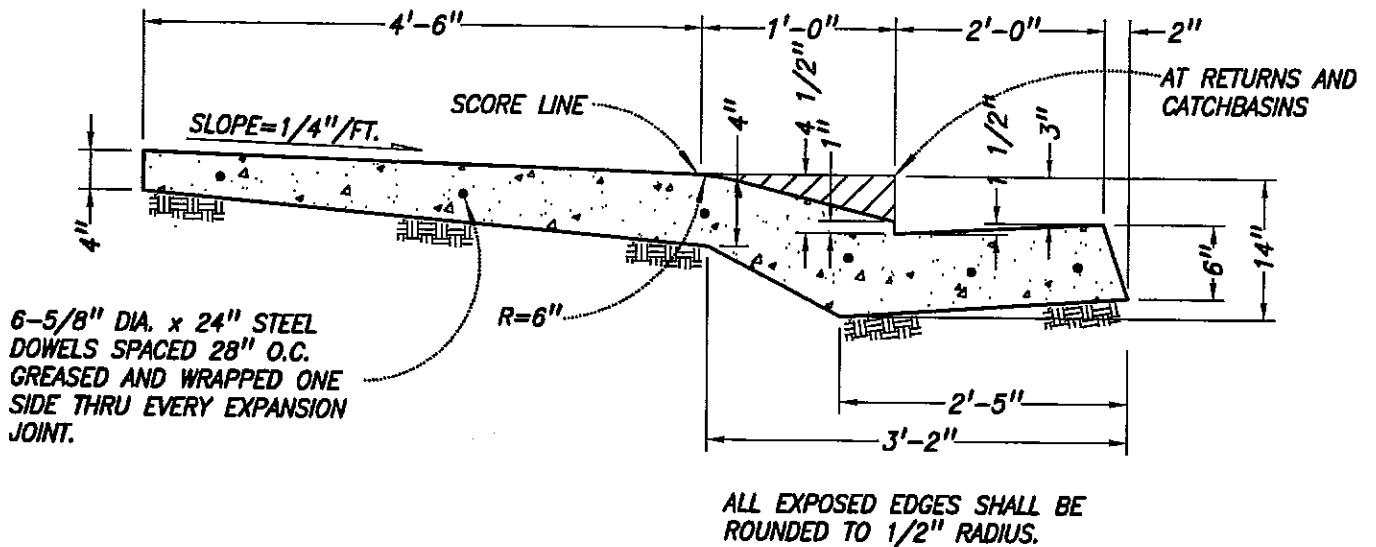
NOTES:

1. REFER TO STD. DWGS. C-5 & C-6 FOR DETAILS AND LOCATIONS OF SCORE MARKS, WEAKENED PLANE JOINTS, CONSTRUCTION JOINTS AND EXPANSION JOINTS.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CURRENT DIABLO GRANDE STANDARD SPECIFICATIONS.
3. THE CURB, GUTTER AND SIDEWALK MAY BE POURED MONOLITHICALLY IF DESIRED.
4. IN LIEU OF THE KEY SHOWN, A 1 1/2" X 3 1/2" RECTANGULAR KEY MAY BE USED.
5. ALL CURB, GUTTER AND SIDEWALK SHALL HAVE A FINE HAIR BROOM FINISH.

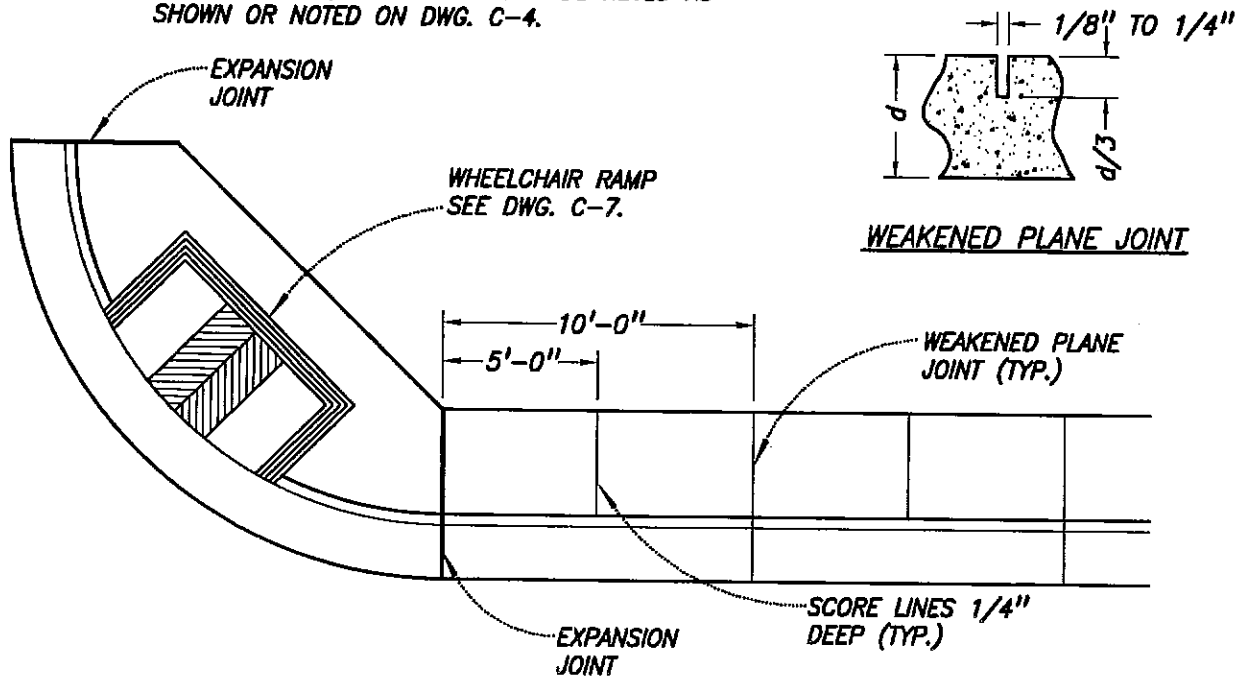
DRAWN BY: D.S.	TYPE "D" CURB, GUTTER AND SIDEWALK	APPROVED BY: <i>A. Stanley Thompson</i>
CHECKED BY: M.P.		DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
SCALE: NONE		DATE: 01/01/96
REVISED	BY	DRAWING NO. C-2
 Diablo Grande STANISLAUS COUNTY, CALIFORNIA		

NOTES:

THIS DRIVE OVER CURB PERMITTED ON STREETS IN R-1 AND R-2 RESIDENTIAL AREAS. COLLECTORS AND ARTERIALS MUST HAVE VERTICAL CURBS.



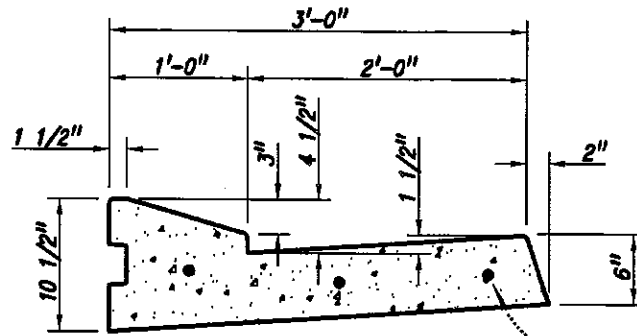
IF CURB, GUTTER AND SIDEWALK ARE NOT POURED MONOLITHICALLY, SEGMENTS SHALL BE KEYED AS SHOWN OR NOTED ON DWG. C-4.



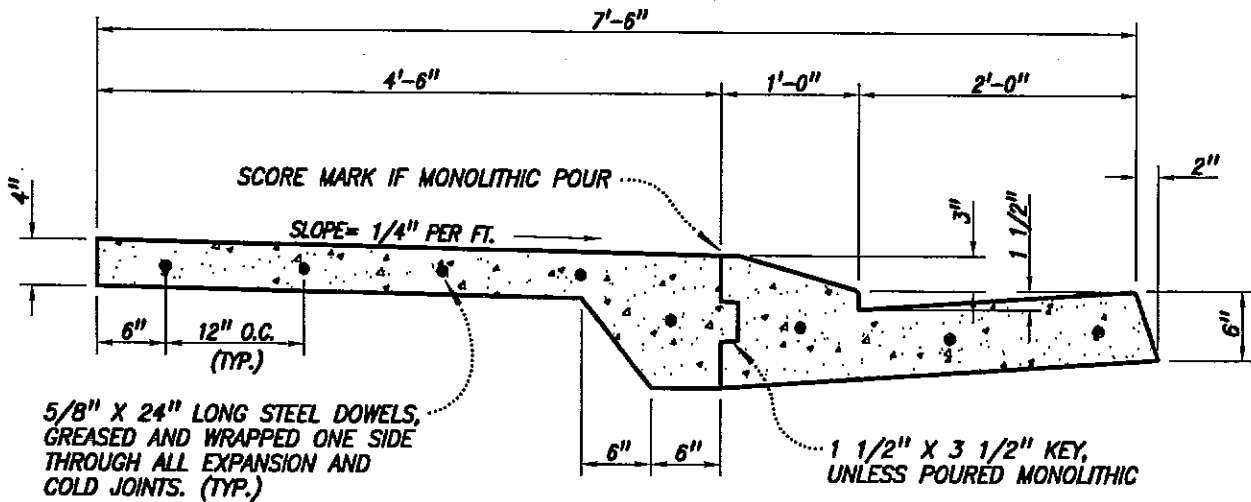
NOTES:

1. FINE HAIR BROOM FINISH ON CURB, GUTTER AND SIDEWALK.
2. CONSTRUCT EXPANSION JOINTS 150' C.C. MAXIMUM AND AT RETURNS, LIGHT POLES, HYDRANTS, BOTH SIDES OF DRIVEWAYS AND OTHER FIXED OBJECTS.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CURRENT DIABLO GRANDE STANDARD SPECIFICATIONS.

DRAWN BY: K.L.		TYPE "E" CURB, GUTTER AND SIDEWALK	APPROVED BY: <i>H. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	
CHECKED BY: M.P.			DATE: 01/01/96	
SCALE: NONE			DRAWING NO. C-3	
REVISED	BY	DIABLO GRANDE Diablo Grande STANISLAUS COUNTY, CALIFORNIA		



TYPE 'E' 4 1/2" DRIVE-OVER CURB AND GUTTER

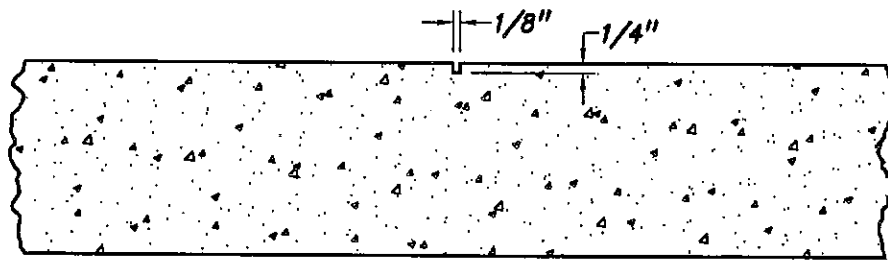


TYPE 'E' CURB, GUTTER AND SIDEWALK

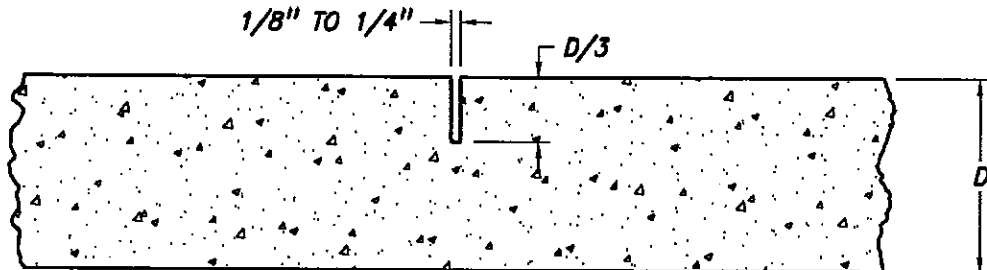
NOTES:

1. REFER TO STD. DWGS. C-5 & C-6 FOR DETAILS AND LOCATIONS OF SCORE MARKS, WEAKENED PLANE JOINTS, CONSTRUCTION JOINTS AND EXPANSION JOINTS.
2. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CURRENT DIABLO GRANDE STANDARD SPECIFICATIONS.
3. THE CURB, GUTTER AND SIDEWALK MAY BE POURED MONOLITHICALLY IF DESIRED.
4. IN LIEU OF THE KEY SHOWN, A 1 1/2" X 3 1/2" RECTANGULAR KEY MAY BE USED.
5. ALL CURB, GUTTER AND SIDEWALK SHALL HAVE A FINE HAIR BROOM FINISH.

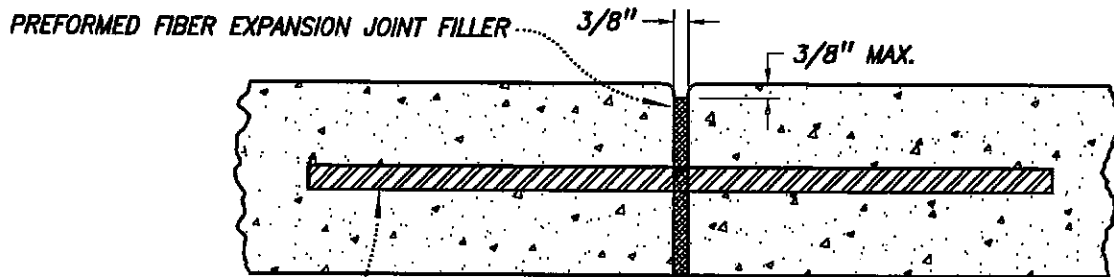
DRAWN BY: D.S.		TYPE "E" CURB & GUTTER WITH ATTACHED SIDEWALK	APPROVED BY: <i>H. Stanley Thompson</i>	
CHECKED BY: M.P.			DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	
SCALE: NONE			DATE: 01/01/98	
REVISED	BY	DIABLO GRANDE Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DRAWING NO. C-4	



SCORE LINE

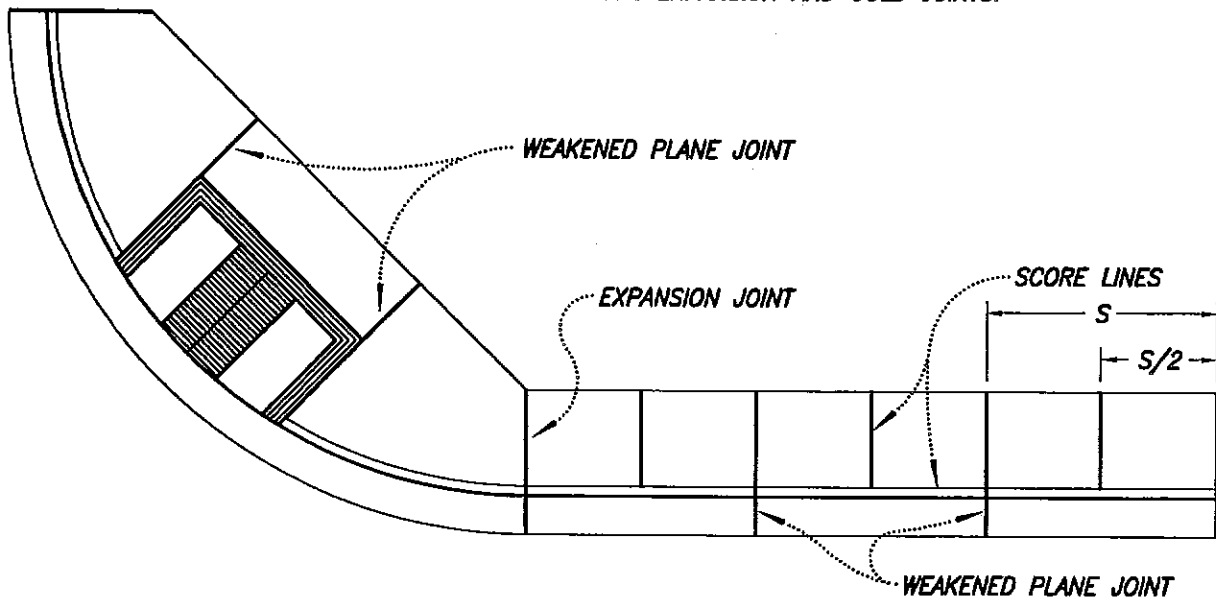


WEAKENED PLANE JOINT



EXPANSION JOINT

5/8" X 24" LONG STEEL DOWELS, GREASED AND WRAPPED ONE SIDE THROUGH ALL EXPANSION AND COLD JOINTS.



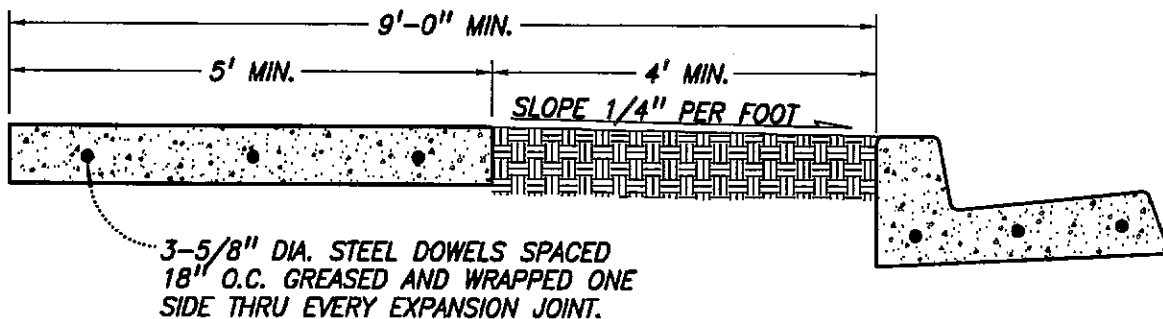
DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

SCORE LINES, EXPANSION & WEAKENED PLANE JOINTS



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

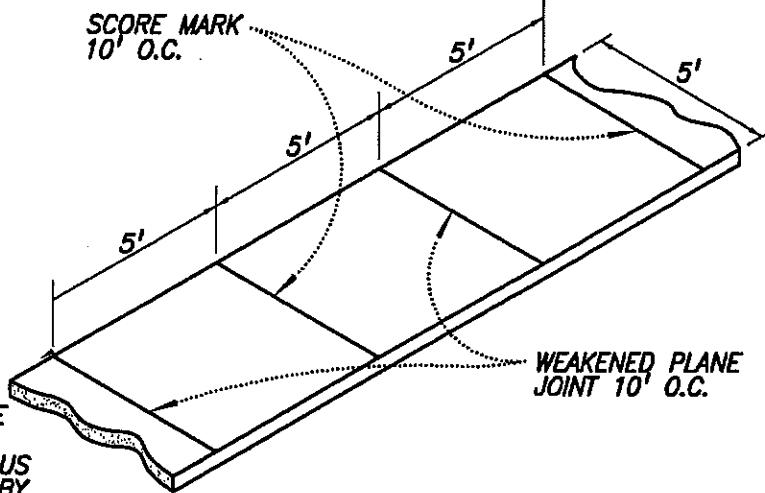
APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	DATE: 01/01/98
DRAWING NO.	C-5



TYPE "A" CURB AND GUTTER

NOTES:

1. FINE HAIR BROOM FINISH ON CURB, GUTTER AND SIDEWALK.
2. CONSTRUCT EXPANSION JOINTS 150' C.C. MAX. AND AT RETURNS, LIGHT POLES, HYDRANTS, BOTH SIDES OF DRIVEWAYS AND OTHER FIXED OBJECTS.
3. CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE APPLICABLE SECTIONS OF THE CURRENT DIABLO GRANDE STANDARD SPECIFICATIONS.
4. CLASS 4 AGGREGATE SUBBASE SHALL CONFORM TO THE PROVISIONS OF SECTION 25 OF THE STANDARD SPECIFICATIONS. CLASS 4 AGGREGATE SUBBASE MATERIAL SHALL BE CLEAN AND FREE FROM VEGETABLE MATTER AND OTHER DELETERIOUS SUBSTANCES. THE PERCENTAGES COMPOSITION BY WEIGHT OF CLASS 4 AGGREGATE GRADING WHEN DETERMINED BY TEST METHOD NO. CALIFORNIA 202.

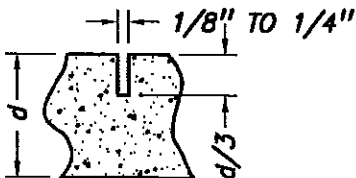
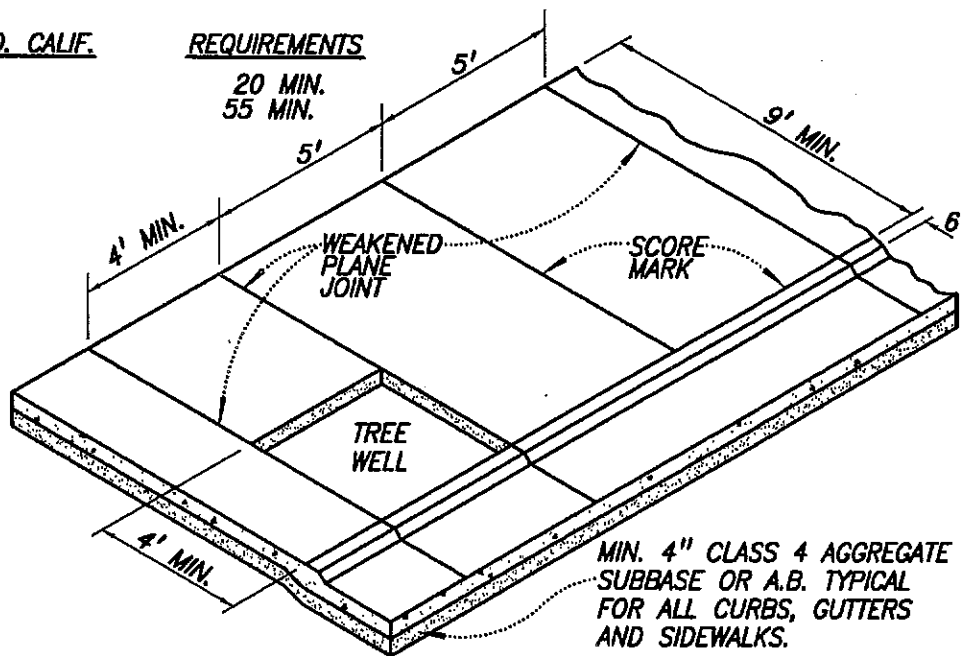


TYPE "A" CURB, GUTTER AND SIDEWALK

SIEVE SIZES	PERCENTAGE PASSING
2 1/2	100%
NO. 200	2- 35

CLASS 4 AGGREGATE SUBBASE MATERIAL SHALL ALSO CONFORM TO THE QUALITY REQUIREMENTS SHOWN IN THE FOLLOWING TABLE:

TESTS	TEST METHOD NO. CALIF.	REQUIREMENTS
SAND EQUIVALENT RESISTANCE	217 301	20 MIN. 55 MIN.



WEAKENED PLANE JOINT

TYPE "D" CURB, GUTTER AND SIDEWALK WITH TREE WELLS

DRAWN BY: K.L.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

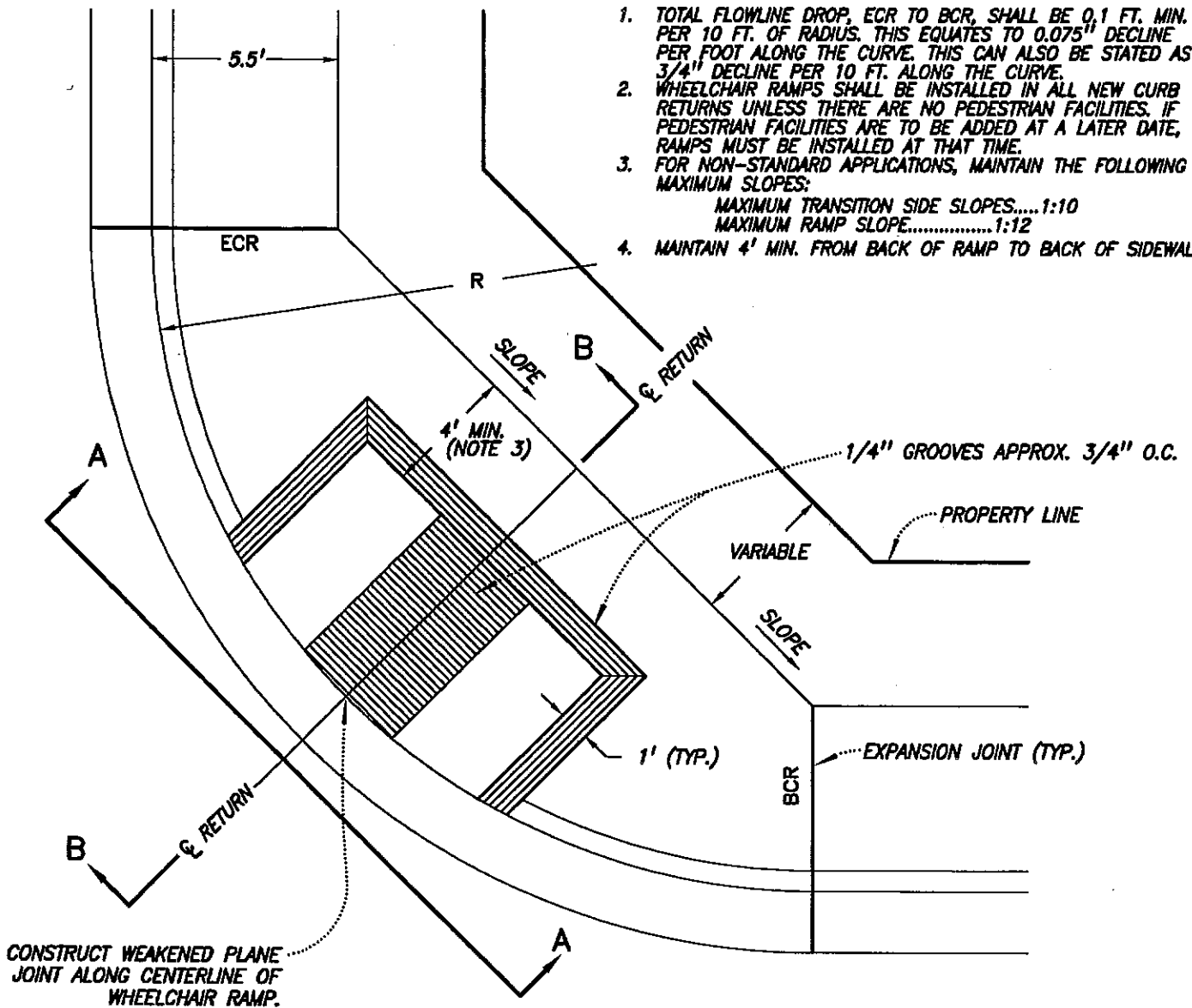
SIDEWALK DETAILS



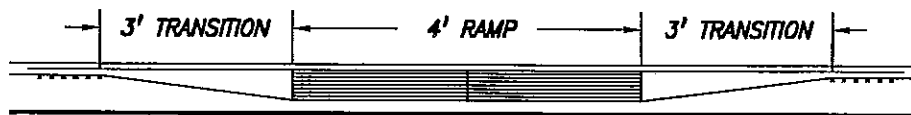
Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	DATE: 01/01/96	DRAWING NO. C-6
--	----------------	------------------------

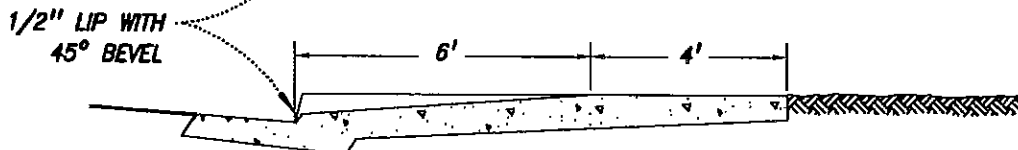
1. TOTAL FLOWLINE DROP, ECR TO BCR, SHALL BE 0.1 FT. MIN. PER 10 FT. OF RADIUS. THIS EQUATES TO 0.075" DECLINE PER FOOT ALONG THE CURVE. THIS CAN ALSO BE STATED AS 3/4" DECLINE PER 10 FT. ALONG THE CURVE.
2. WHEELCHAIR RAMP SHALL BE INSTALLED IN ALL NEW CURB RETURNS UNLESS THERE ARE NO PEDESTRIAN FACILITIES. IF PEDESTRIAN FACILITIES ARE TO BE ADDED AT A LATER DATE, RAMP MUST BE INSTALLED AT THAT TIME.
3. FOR NON-STANDARD APPLICATIONS, MAINTAIN THE FOLLOWING MAXIMUM SLOPES:
 MAXIMUM TRANSITION SIDE SLOPES.....1:10
 MAXIMUM RAMP SLOPE.....1:12
4. MAINTAIN 4' MIN. FROM BACK OF RAMP TO BACK OF SIDEWALK.



CONSTRUCT WEAKENED PLANE JOINT ALONG CENTERLINE OF WHEELCHAIR RAMP.



VIEW A-A



SECTION B-B

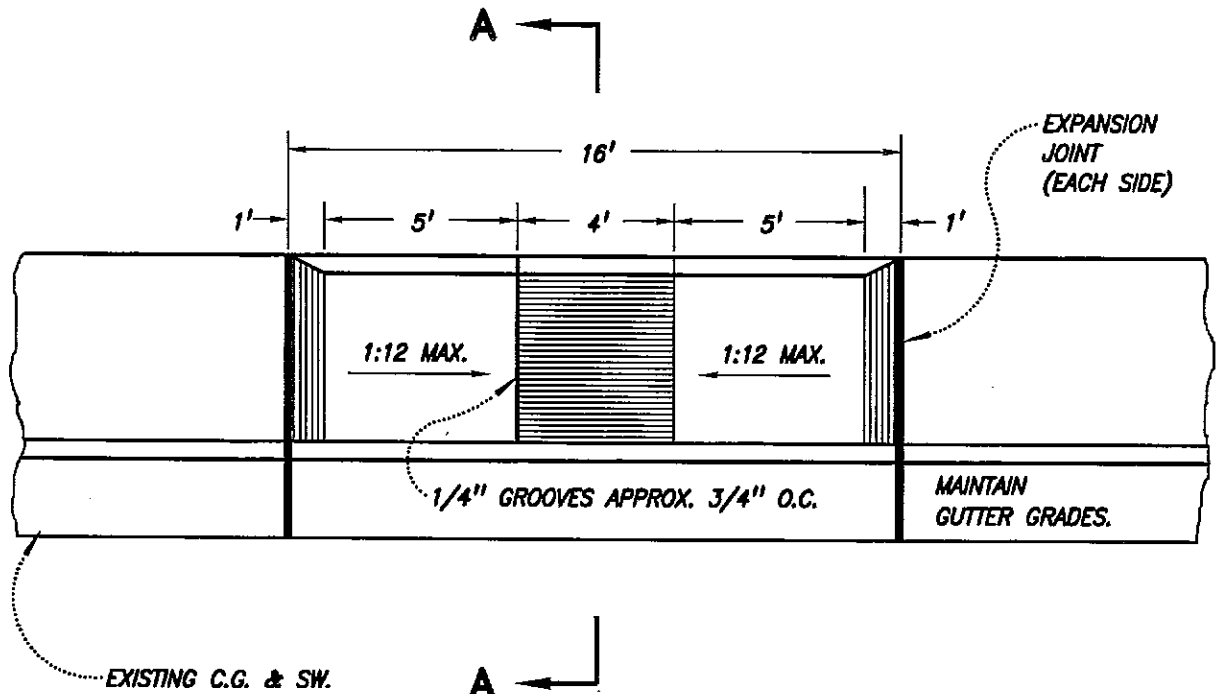
DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

TYPICAL WHEELCHAIR RAMP AT INTERSECTIONS

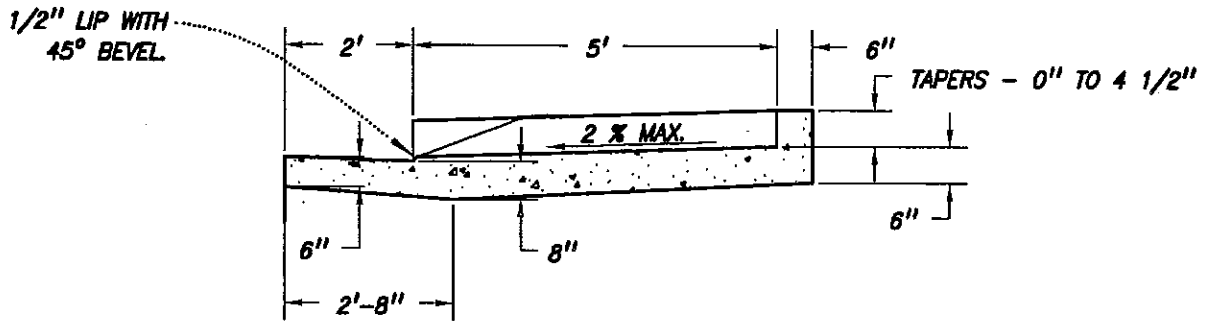


Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:	<i>A. Stanley Thompson</i>
DISTRICT ENGINEER	RCE 32260
THOMPSON-HYSELL ENGINEERS, INC.	
DATE: 01/01/96	C-7
DRAWING NO.	

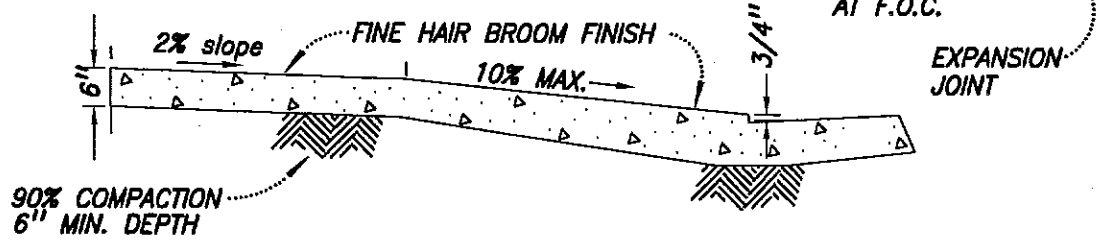
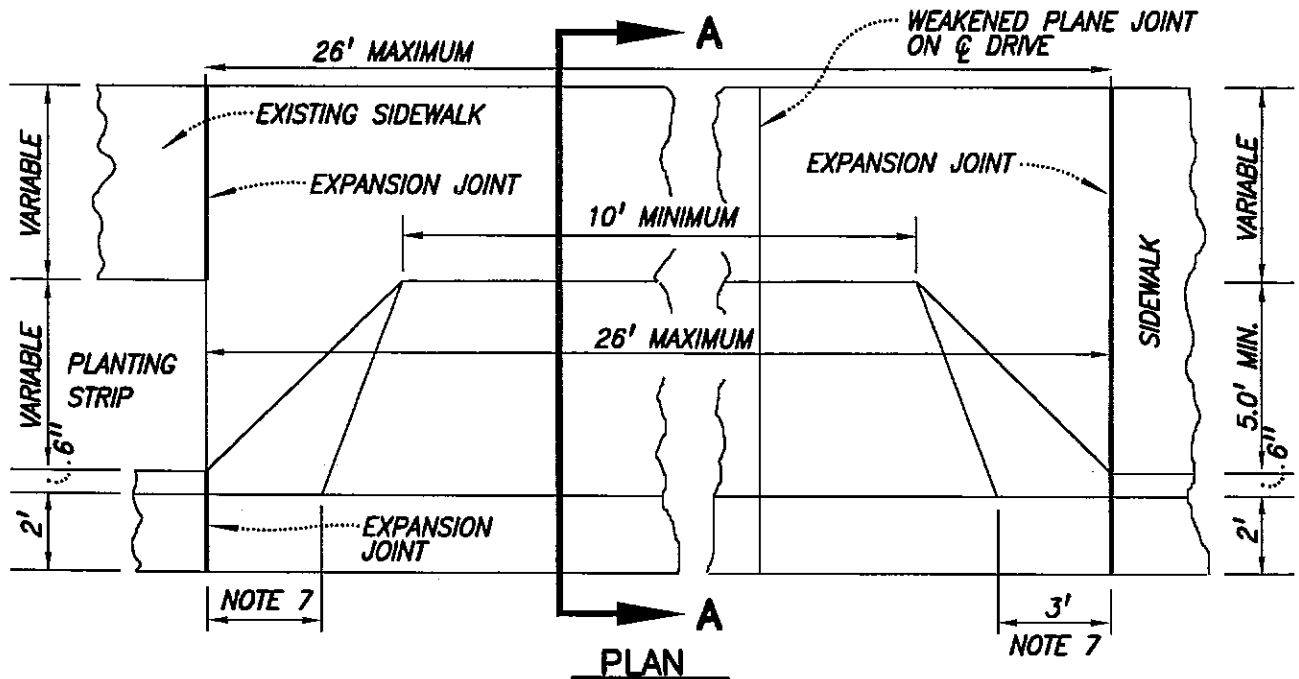


PLAN VIEW



SECTION A-A

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2>TYPICAL WHEELCHAIR RAMP AT MID - BLOCKS</h2>	APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		C - 8



SECTION A - A

NOTES

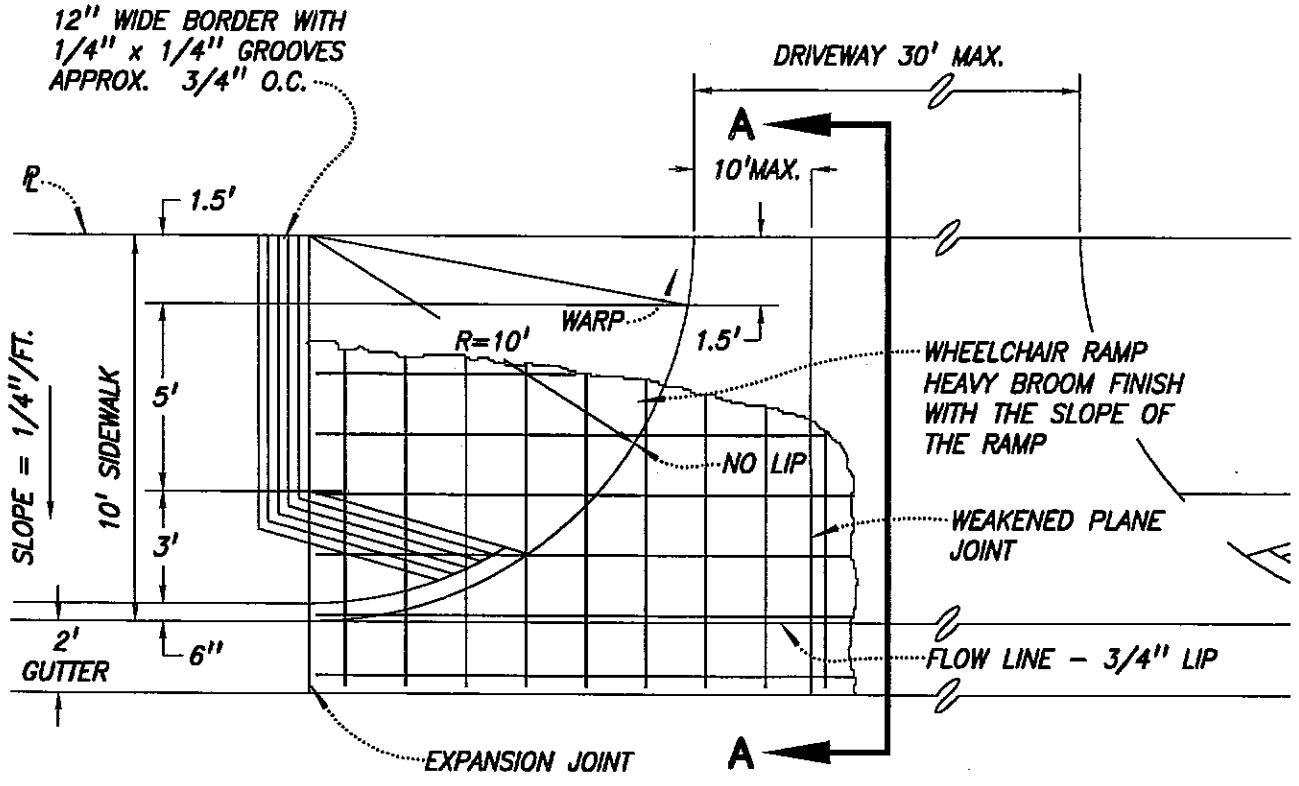
1. DRIVEWAY TO CONFORM WITH EXISTING SIDEWALK. ALL CONCRETE TO BE CLASS B (5 SACK).
2. IF WALK EXISTS, IT SHALL BE REMOVED AND REPLACED WITH PORTLAND CEMENT CONCRETE 6" THICK.
3. WHERE HIGH STREET CROWN EXISTS, DRIVEWAY RAMP MAY BE EXTENDED TO BACK OF SIDEWALK. DISABILITY RAMPS SHALL BE ACCOMMODATED.
4. WHERE DRIVEWAY PROVIDES ACCESS TO A ONE-WAY STREET, APPROPRIATE SIGNS AS SPECIFIED BY THE DISTRICT ENGINEER WILL BE REQUIRED.
5. DRIVEWAY RAMP SHALL BE AS WIDE AS EXISTING DRIVEWAY INTO YARD, ROUNDED UP TO NEXT EVEN FOOT. (10' MIN. AT THROAT, 26' MAX. AT FLOWLINE.)
6. IN EVENT OF OBSTRUCTIONS IN PARKWAY (E.G. POWER POLES, ETC.) WIDTH MAY BE MODIFIED TO MEET EXISTING CONDITIONS AS APPROVED BY THE DISTRICT ENGINEER.
7. PARKWAY WARP WINGS SHALL BE 3' FOR 6" OR HIGHER CURB. FOR 4 1/2" CURB, WARP WINGS SHALL BE 2'.
8. WHEN IT IS NOT POSSIBLE TO PROVIDE 2' OF FULL CURB HEIGHT (WITH STANDARD 3' WARPS ON EITHER SIDE) BETWEEN ADJACENT DRIVEWAYS, A COMMON DRIVEWAY SHALL BE INSTALLED.
9. FINE HAIR BROOM FINISH ON ALL DRIVEWAYS.

DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

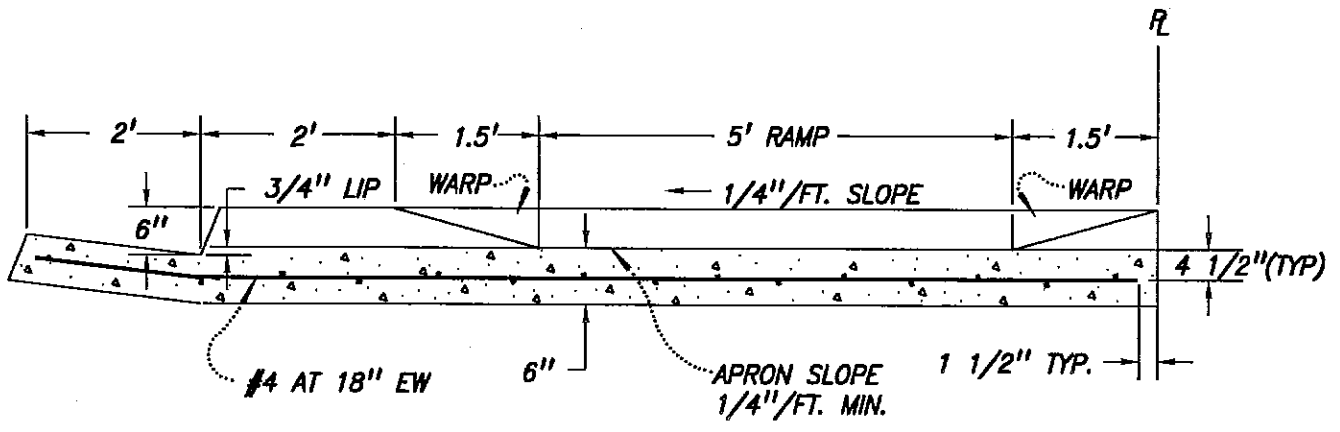
**RESIDENTIAL
RAMP DRIVEWAY**

Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER, RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
DATE: 01/01/96
DRAWING NO. C-9

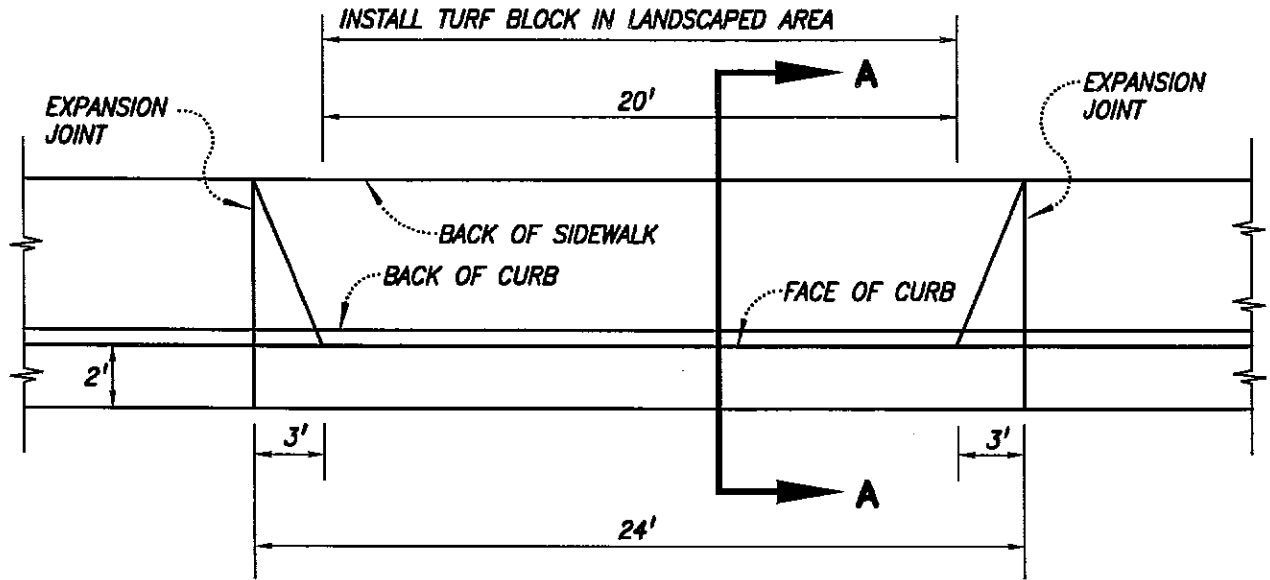


PLAN

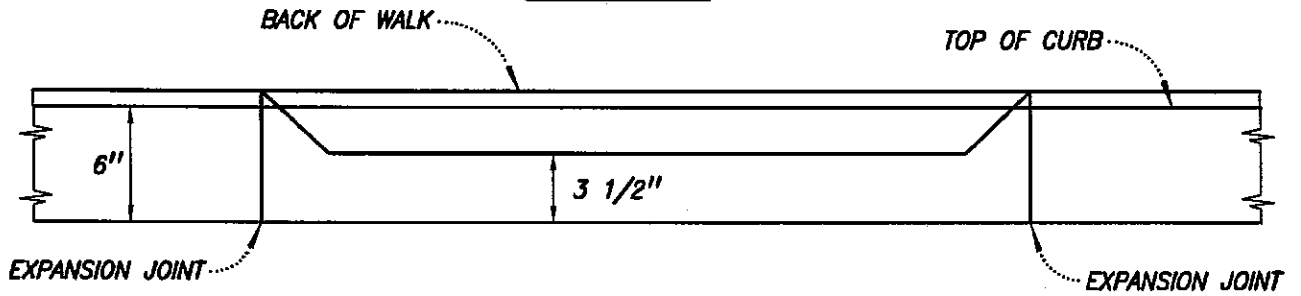


SECTION A-A

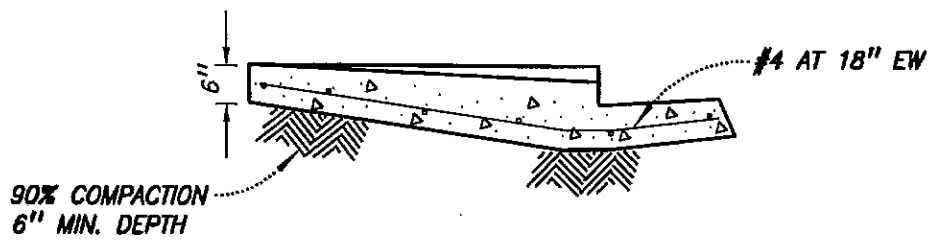
DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h2>COMMERCIAL DRIVEWAY</h2>	APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY		DATE: 01/01/96 DRAWING NO.
		C-10
Diablo Grande STANISLAUS COUNTY, CALIFORNIA		



PLAN VIEW





PROFILE AT CURB LINE



SECTION A - A

NOTE:

SEE STD. DWG. C-9 FOR DETAILS
NOT SHOWN ON THIS DRAWING.

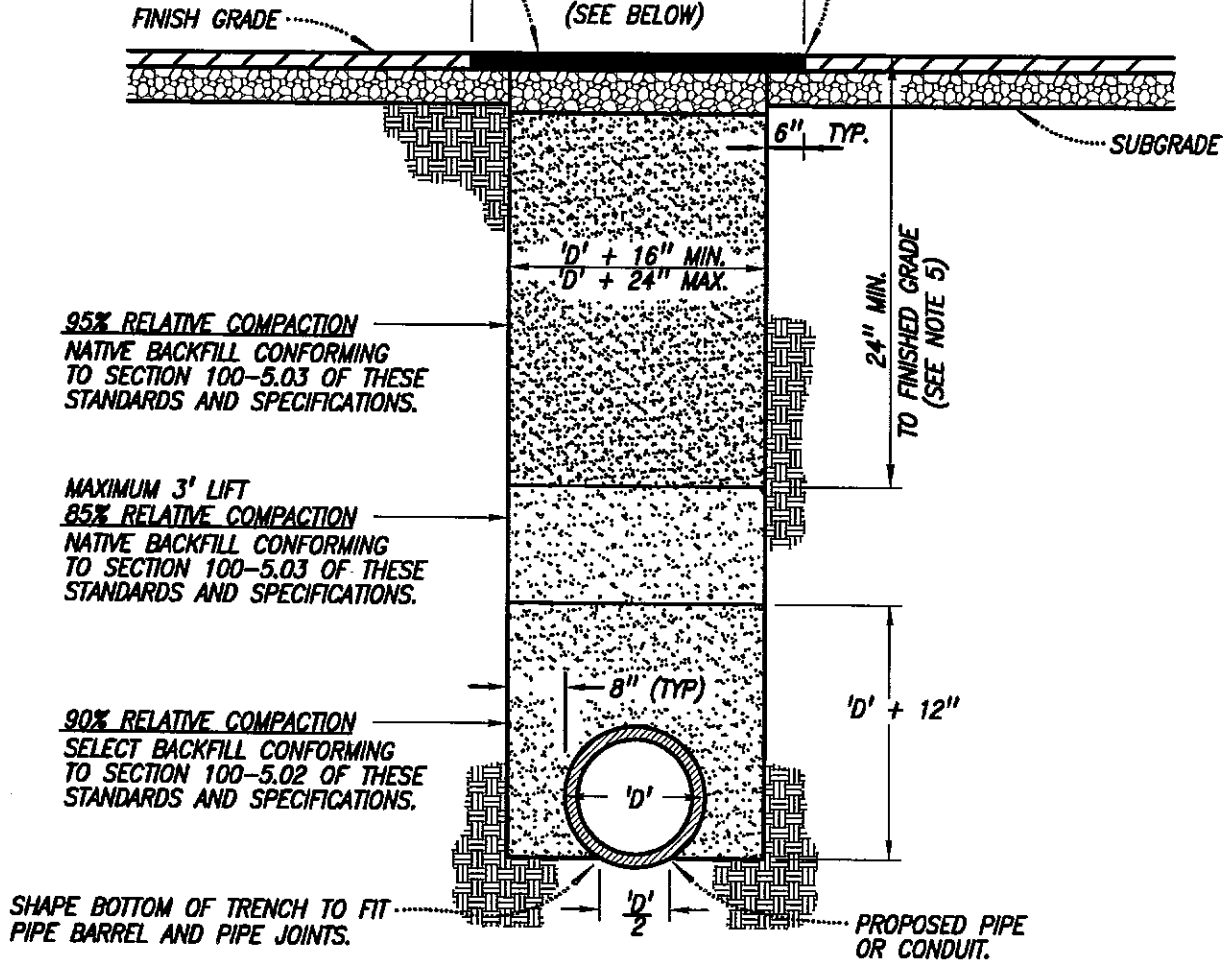
DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	FIRE ACCESS DRIVEWAY	APPROVED BY:  DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.
REVISED BY	 Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96 DRAWING NO. C-11

PAVEMENT SECTION AS SPECIFIED IN AN "ENCROACHMENT PERMIT", OR APPROVED PLAN, SHALL TAKE PRECEDENCE OVER THE PAVEMENT SECTION AS DESCRIBED IN SECTION 100-6 OF THESE STANDARDS AND SPECIFICATIONS.

NEW PAVEMENT TO BE 1/8" HIGHER THAN ADJACENT PAVEMENT. APPLY FOG SEAL COAT OF CSS-1 OR SS-1 ASPHALT EMULSION.

REPLACE TRENCH SECTION (SEE BELOW)

DIAMOND SAW CUTTING MILLING OR OTHER APPROVED DEVICE SHALL BE USED. REPAVE TO A CLEAN STRAIGHT EDGE (TYP).



TYPICAL TRENCH SECTION IN EXISTING IMPROVED STREETS

NOTES:

- FOR RIGID PIPE CONTRACTOR MAY AT HIS EXPENSE EXCAVATE 6" BELOW THE BOTTOM OF THE PIPE AND REPLACE WITH SAND OR AGGREGATE SUBBASE IN LIEU OF SHAPING BOTTOM OF TRENCH TO FIT PIPE BARREL. JOINTS SHALL BE SHAPED IN EITHER CASE.
- WHEN TRENCH AND EXCAVATION IS IN EXISTING PAVED STREETS, REPLACE PAVEMENT 6" ON EACH SIDE OF TRENCH.
- DEVIATION FROM ABOVE MAY BE ALLOWED WHEN APPROVED BY THE DISTRICT ENGINEER.
- TRENCH - WHERE THE TRENCH SECTION PARALLELS THE EXISTING CURB AND GUTTER, THE EDGE OF THE TRENCH SHALL BE A MIN OF 1' FROM THE LIP OF THE EXISTING GUTTER. THE PAVEMENT SHALL BE REMOVED AND REPLACED TO THE LIP OF THE GUTTER.
- CONTROLLED DENSITY FILL (CDF) MAY BE USED IN LIEU OF SPECIFIED BACKFILL METHOD. MINIMUM TRENCH WIDTH MAY BE REDUCED TO 2 1/2" CLEAR OF EACH SIDE OF PIPE.
- FLEXIBLE PIPE SHALL HAVE A 6" BEDDING OF GRANULAR MATERIAL AS DESCRIBED IN NOTE 1.
- ~D" INDICATES OUTSIDE DIAMETER.
- ALL VERTICAL EDGES OF EXISTING ASPHALT CONCRETE SHALL BE TACK COATED.

DRAWN BY:	D.S.
CHECKED BY:	M.P.
SCALE:	NONE
REVISED	BY

**TRENCH SECTION
(EXISTING STREETS)**

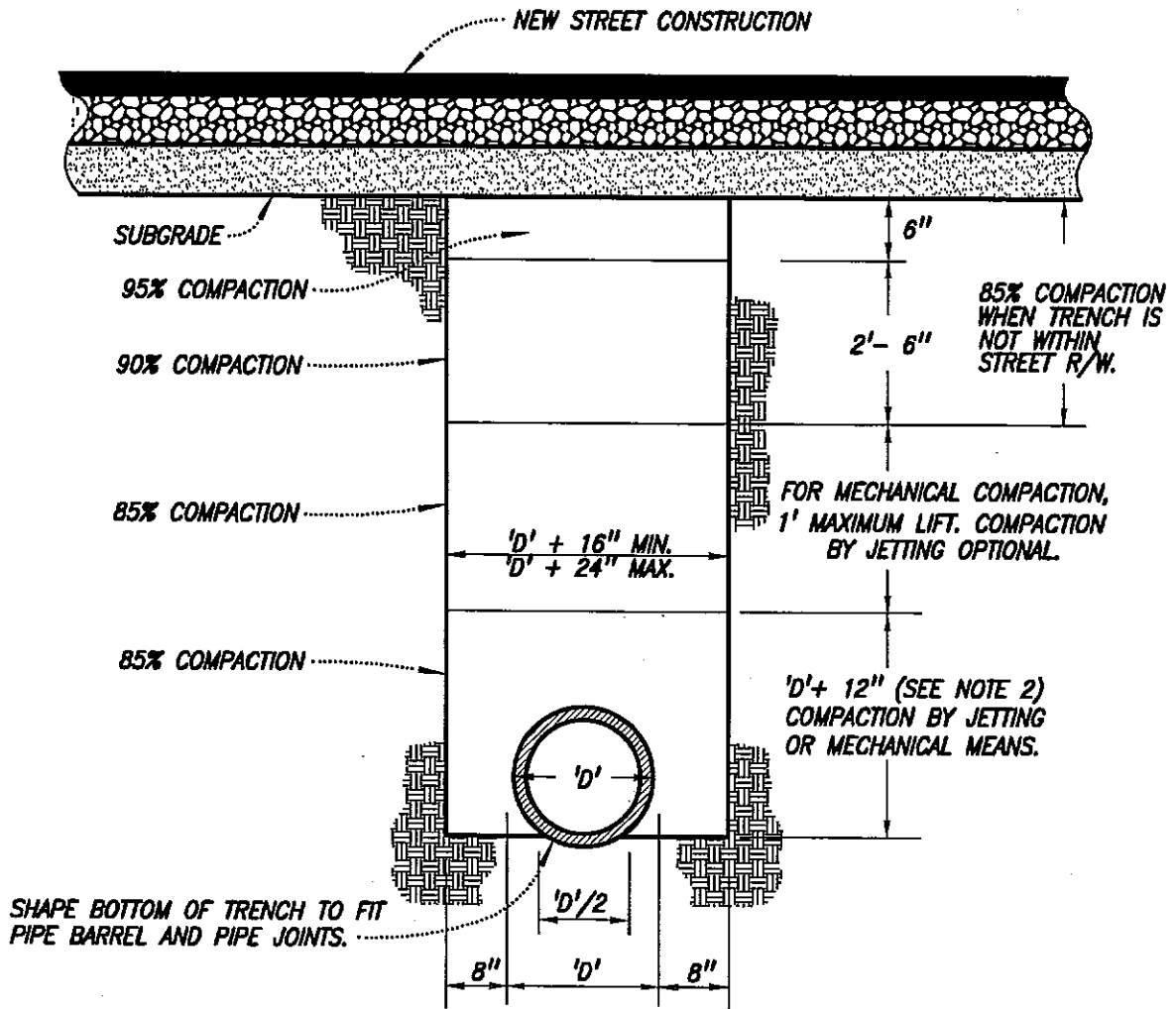


Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:
A. Stanley Thompson
DISTRICT ENGINEER
RCE 32260
THOMPSON-HYSELL ENGINEERS, INC.

DATE: 01/01/96
DRAWING NO.

U-1



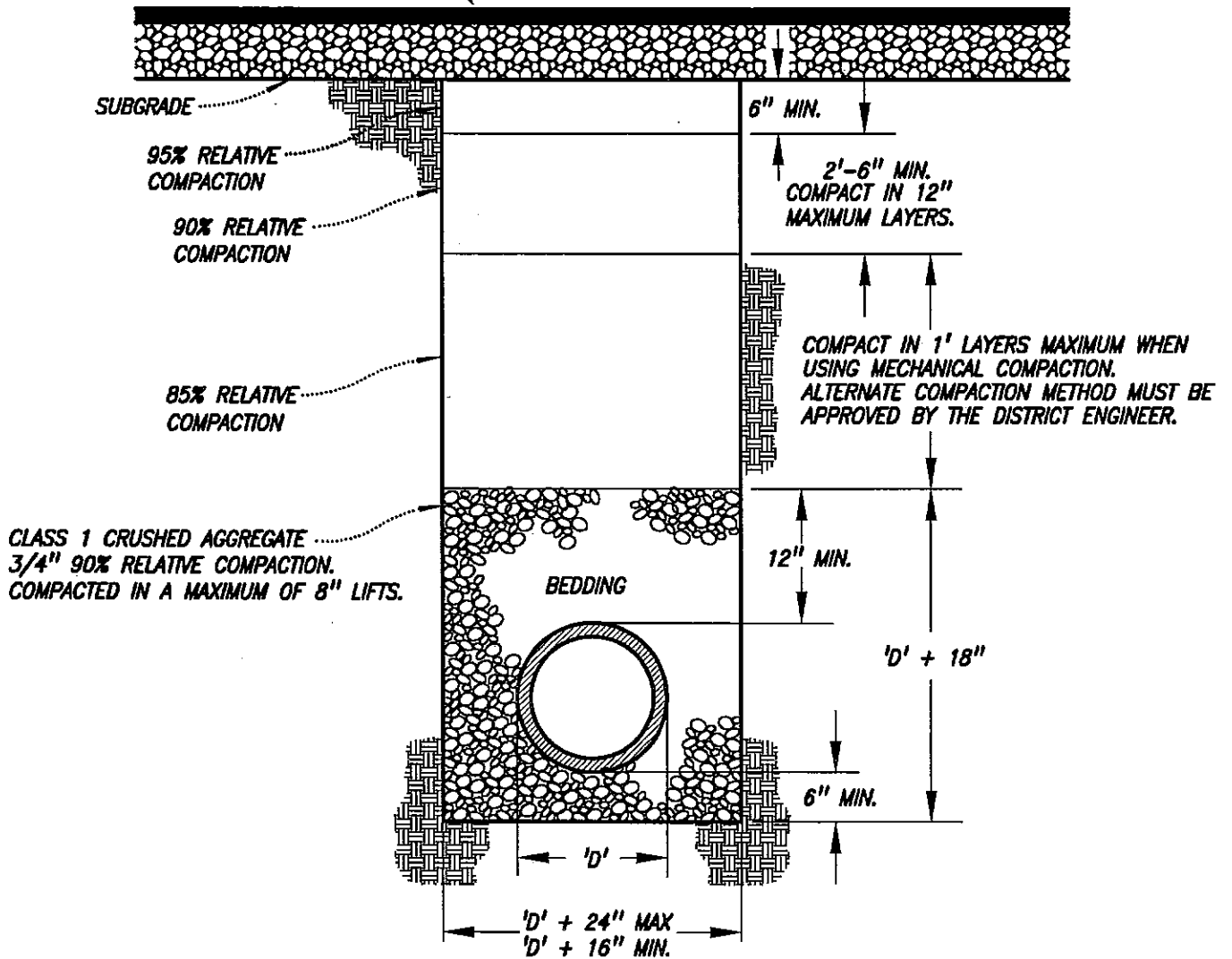
TYPICAL TRENCH SECTION IN EXISTING IMPROVED STREETS

NOTES:

1. THIS PIPE BEDDING DETAIL IS APPLICABLE TO STABLE SOIL CONDITIONS ONLY.
2. BEDDING AROUND PIPE SHALL CONFORM TO STD. DWG. U-5.
3. THIS TRENCH SECTION MAY BE USED FOR UNIMPROVED STREET RIGHTS OF WAY OR EASEMENTS.

DRAWN BY: D.S.		TRENCH SECTION (NEW CONSTRUCTION)	APPROVED BY:
CHECKED BY: J.R.			<i>A. Stanley Thompson</i>
SCALE: NONE			DISTRICT ENGINEER RCE 32260 THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96
			DRAWING NO. U-3

NEW OR EXISTING STREET
SEE NOTE NO. 1



TYPICAL TRENCH SECTION IN EXISTING IMPROVED STREETS

NOTES:

1. IF CONSTRUCTED IN AN EXISTING STREET, THE PAVEMENT AND SUBGRADE SHALL BE SUBJECT TO THE CONDITIONS SHOWN ON STD. DWG. U-1.
2. THIS PIPE BEDDING DETAIL SUITABLE TO STABLE SOIL CONDITIONS ONLY.
3. REFER TO SECTION 71 IN THE STANDARD SPECIFICATIONS.

HDPE: HIGH DENSITY POLYETHYLENE PIPE

DRAWN BY:	D.S.
CHECKED BY:	M.P.
SCALE:	NONE
REVISED	BY

**TRENCH SECTION
(HDPE PIPE)**



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

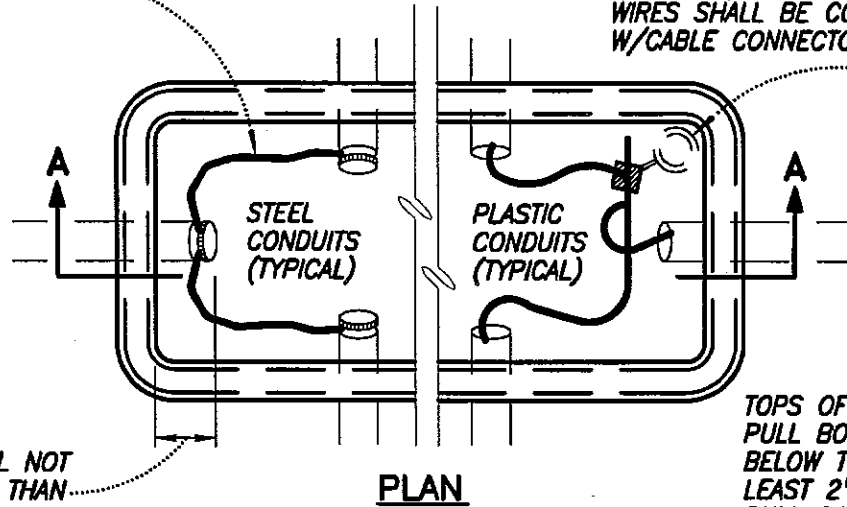
APPROVED BY:
H. Stanley Thompson
DISTRICT ENGINEER
THOMPSON-HYSELL ENGINEERS, INC. RCE 32260

DATE: 01/01/96
DRAWING NO.

U - 4

ENDS OF ALL STEEL CONDUITS ENTERING PULL BOX SHALL BE CAPPED W/O-Z, TYPE "GB" BRONZE GROUNDING BUSHINGS & CONNECTED TOGETHER W/NO. 8 COPPER WIRE.

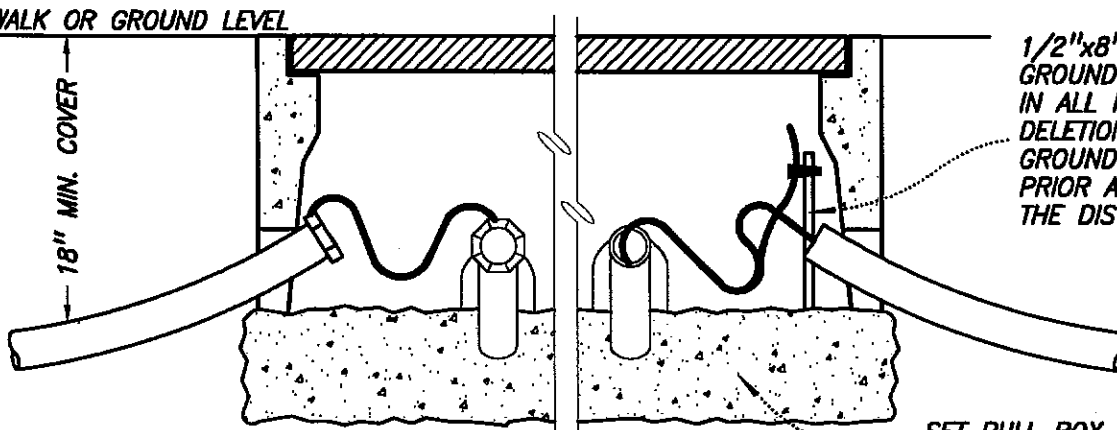
ALL NON-METALLIC CONDUIT SHALL HAVE A NO. 8 COPPER BONDING/GROUNDING WIRE. (EXCEPT THE CONDUIT BETWEEN THE P.G.& E. SERVICE POINT/POLE AND FIRST STREET LIGHT PULL BOX). THESE BONDING/GROUNDING WIRES SHALL BE CONNECTED IN PULL BOX W/CABLE CONNECTORS - BURNDY-SERVIT NO. KS-15 OR APPROVED EQUAL MEETING CALTRANS SPECIFICATIONS.



CONDUIT SHALL NOT EXTEND MORE THAN 3" INTO PULL BOX.

TOPS OF ALL CONDUITS ENTERING PULL BOX SHALL BE AT LEAST 8" BELOW TOP OF PULL BOX AND AT LEAST 2" ABOVE THE BOTTOM OF PULL BOX.

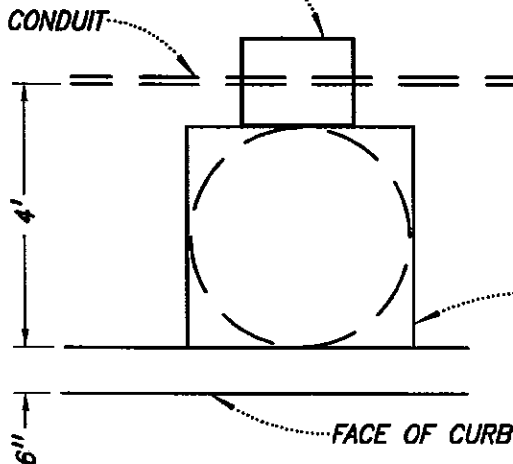
SIDEWALK OR GROUND LEVEL



1/2"x8' COPPERWELD GROUND ROD REQUIRED IN ALL PULL BOXES. DELETION OF THE GROUND ROD REQUIRES PRIOR APPROVAL BY THE DISTRICT ENGINEER.

SET PULL BOX ON 6" OF 3/4" MAX. CRUSHED ROCK OR 1/2" MAX. PEA GRAVEL.

NO. 3 1/2 PULL BOX



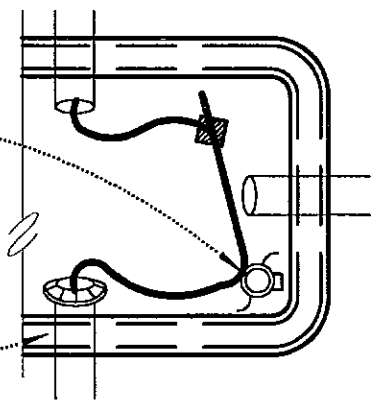
CONDUIT AND PULL BOX LOCATION

SECTION A-A

GROUND ROD AND CLAMP SHALL BE DRIVEN IN CORNER OF PULL BOX NO MORE THAN 3" FROM EITHER INSIDE WALL. GROUND ROD SHALL BE 8'x1/2" COPPERWELD.

3"x3" CONCRETE STREET LIGHT BASE

STEEL CONDUIT RISER TO STANDARD



GROUNDING DETAIL

DRAWN BY: K.L.

CHECKED BY: M.P.

SCALE: NONE

REVISED BY

CONDUIT PULL BOX



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

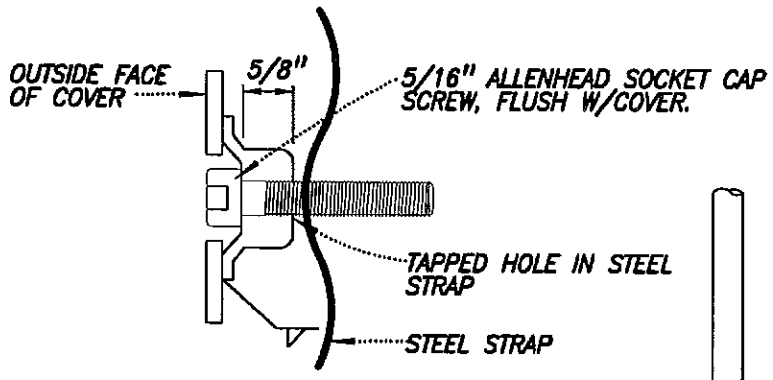
APPROVED BY:

A. Stanley Thompson
DISTRICT ENGINEER / BCE 32260
THOMPSON-HYSELL ENGINEERS, INC.

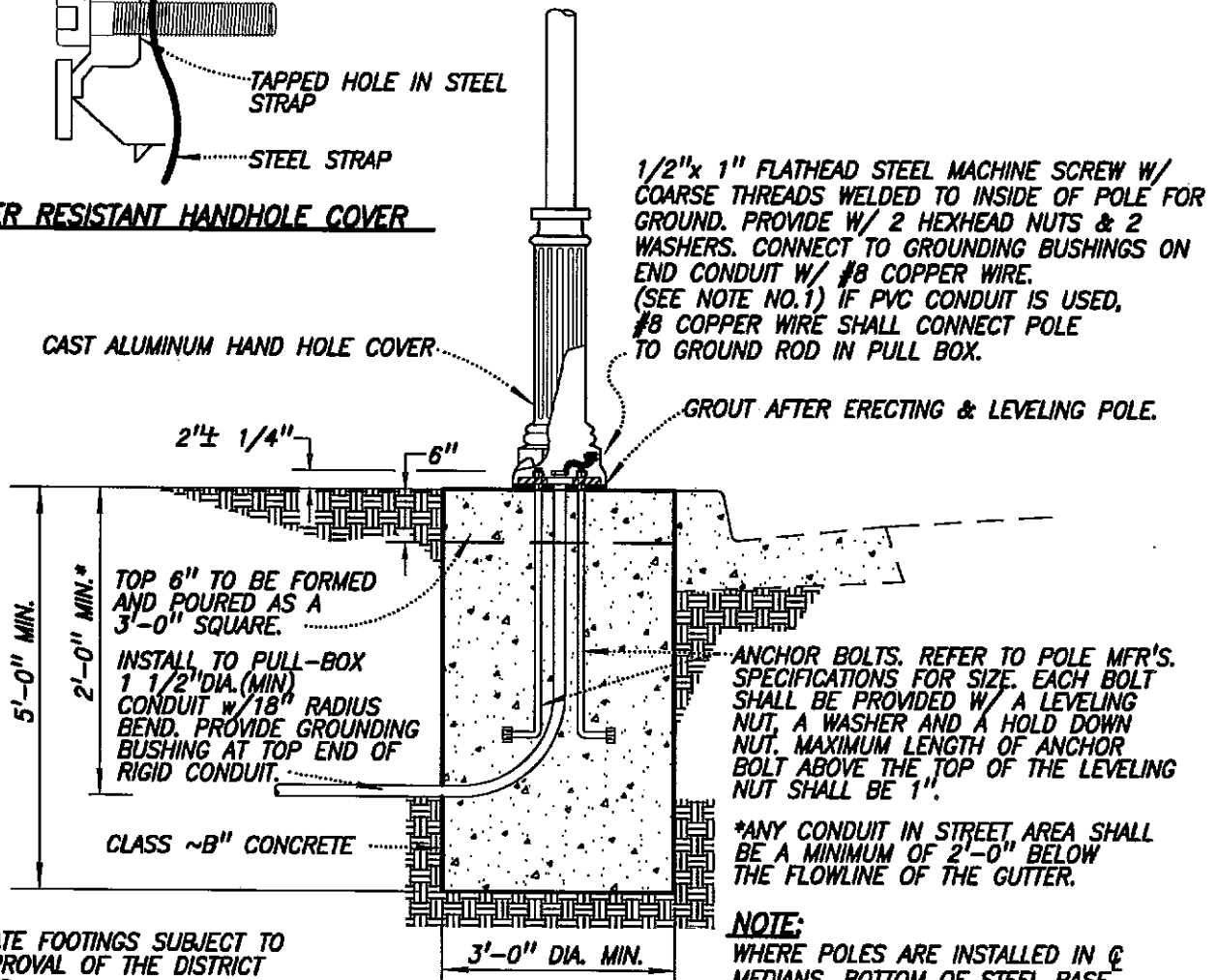
DATE: 01/01/96

DRAWING NO.

E - 1



TAMPER RESISTANT HANDHOLE COVER

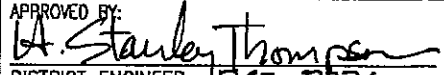



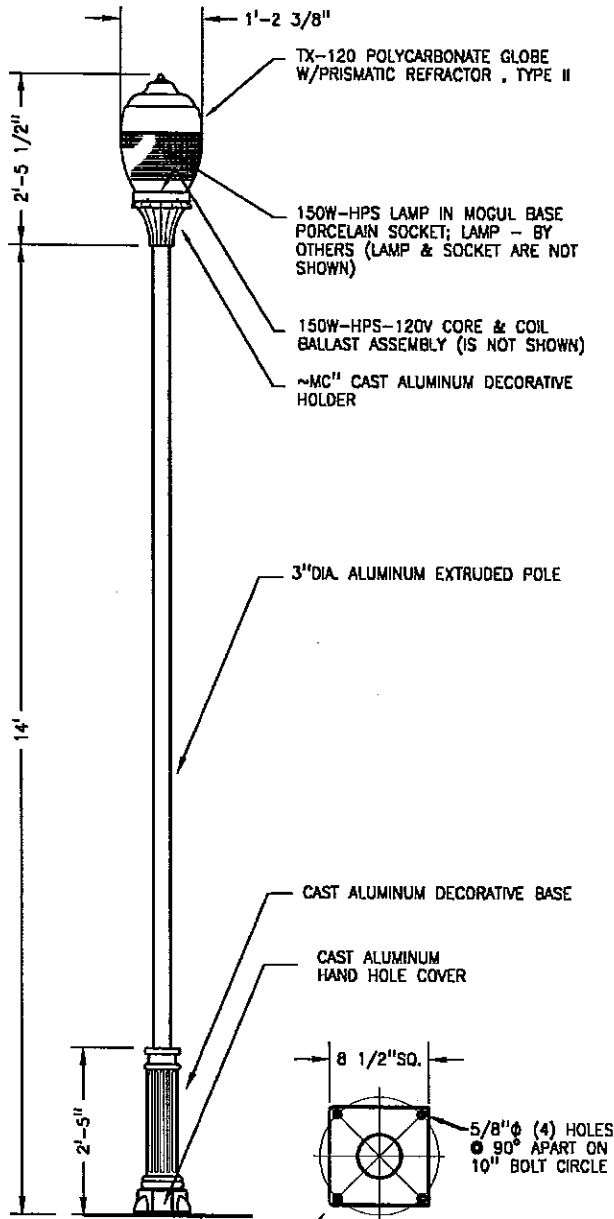
ALTERNATE FOOTINGS SUBJECT TO THE APPROVAL OF THE DISTRICT ENGINEER.

NOTE:
WHERE POLES ARE INSTALLED IN @ MEDIANS, BOTTOM OF STEEL BASE PLATE MUST BE INSTALLED 2 3/4" ABOVE MEDIAN CROWN IN ORDER TO PROVIDE FOR CROSS-SLOPE ON MEDIAN PAVING.

NOTES:

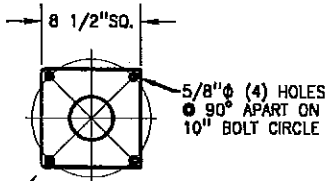
1. A 1/2" DIA. TAPPED HOLE IN HANDHOLE COVER HOLDING FLANGE MAY BE SUBSTITUTED.
2. CONDUIT WITHIN THE TRAVELED WAY SHALL BE STEEL. PVC ELECTRICAL CONDUIT MAY BE UTILIZED OUTSIDE TRAVELED WAY.

DRAWN BY: E.T. CHECKED BY: M.P. SCALE: NONE REVISED BY:	<h2 style="margin: 0;">LIGHT POLE FOUNDATION</h2> <p style="margin: 0;">Diablo Grande STANISLAUS COUNTY, CALIFORNIA</p>	APPROVED BY:  DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC. DATE: 01/01/96 DRAWING NO.
		RCE 32260 <h1 style="margin: 0;">E - 2</h1>



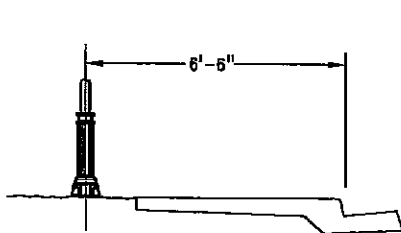
DRAWINGS COURTESY OF TRIMBLEHOUSE CORPORATION

BASE DETAIL

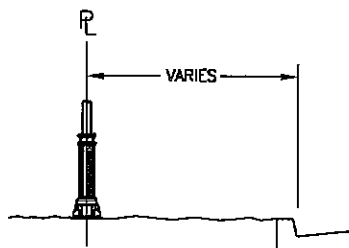


LUMINAIRE SHALL BE "TRIMBLEHOUSE CORPORATION" TX-120MC-150-HPS-120V-RSAMB-14'-3"-CTBS, OR APPROVED EQUAL, UNLESS OTHERWISE NOTED ON PLANS OR IN THE SPECIFICATIONS AND APPROVED BY THE DISTRICT ENGINEER.

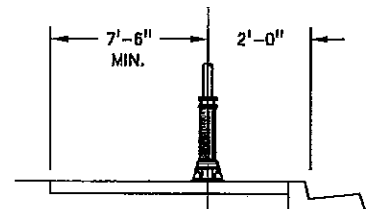
1. STREET LIGHT STANDARDS SHALL BE PLACED AT ALL INTERSECTIONS, THE ENDS OF CUL-DE-SACS AND COURTS 100 FEET OR MORE IN DEPTH, AND EVENLY SPACED, DEPENDING ON BLOCK LENGTH, 250 FEET MAXIMUM BETWEEN LIGHTS, UNLESS OTHERWISE APPROVED BY THE DISTRICT ENGINEER.
2. WIRING SHALL BE UNDERGROUND IN 1 1/2" UL APPROVED CONDUIT (SPECIAL CONDITIONS MAY REQUIRE VARIATION OF CONDUIT SIZE AS APPROVED BY THE DISTRICT ENGINEER) AND SHALL BE INSTALLED AS DIRECTED BY DIABLO GRANDE. ALL CONDUCTORS SHALL BE COPPER. ALL GROUNDING CONDUCTORS SHALL BE BARE OR HAVE A GREEN INSULATION. ALL GROUNDED CONDUCTORS SHALL HAVE A WHITE OR NATURAL GRAY INSULATION. PHASE TAPING IS NOT ALLOWED. (ALL COLORING MUST BE PERMANENT).
3. OVERHEAD SERVICE TO A STREET LIGHT STANDARD IS NOT ALLOWED.
4. CONDUIT SYSTEM SHALL BE COMPLETE FROM THE STREET LIGHT TO THE P.G.& E. SOURCE.
5. INSTALL A PULL BOX BY EACH ELECTROLIER PER DIABLO GRANDE STANDARD DRAWING E-1, MINIMUM NO. 3-1/2 LID MARKING "STREET LIGHT". PULL BOXES OTHER THAN CONCRETE MUST BE APPROVED BY THE DISTRICT ENGINEER.
6. SEE STANDARD DRAWINGS E-1 AND E-2 FOR ADDITIONAL DETAILS.
7. ALL MATERIALS AND INSTALLATION SHALL BE IN ACCORDANCE WITH SECTIONS 86-1, 86-2 & 86-6 OF THE STATE OF CALIFORNIA STANDARD SPECIFICATIONS.
8. WATERPROOF FUSED SPLICE CONNECTORS SHALL BE INSTALLED IN THE BASE OF THE POLE ADJACENT TO THE HAND HOLE IN EACH STANDARD.
9. WIRE IN POLE FROM LUMINAIRE TO PULL BOX AT BASE OF POLE SHALL BE #14 COPPER MINIMUM TO SERVICE A SINGLE LUMINAIRE, #10 COPPER MINIMUM TO SERVICE TWO OR MORE LUMINAIRES.
10. WIRE IN UNDERGROUND CONDUIT SHALL NOT BE SMALLER THAN #10 COPPER SERVING A SINGLE LUMINAIRE WITHIN 150' OF THE SERVICE POINT, #8 COPPER OR LARGER SERVING TWO OR MORE LUMINAIRES.
11. THE OWNER OR CONTRACTOR FOR ANY LIGHTING PROJECT IS REQUIRED TO PAY P.G.& E. CO. THE CONNECTION FEE BEFORE ACCEPTANCE BY THE DISTRICT.
12. ALL BONDING/GROUNDING WIRE SHALL BE INSTALLED AS SHOWN ON "CONDUIT PULL BOX" STD. DWG. E-1



COLLECTOR



35' PRIVATE LANE



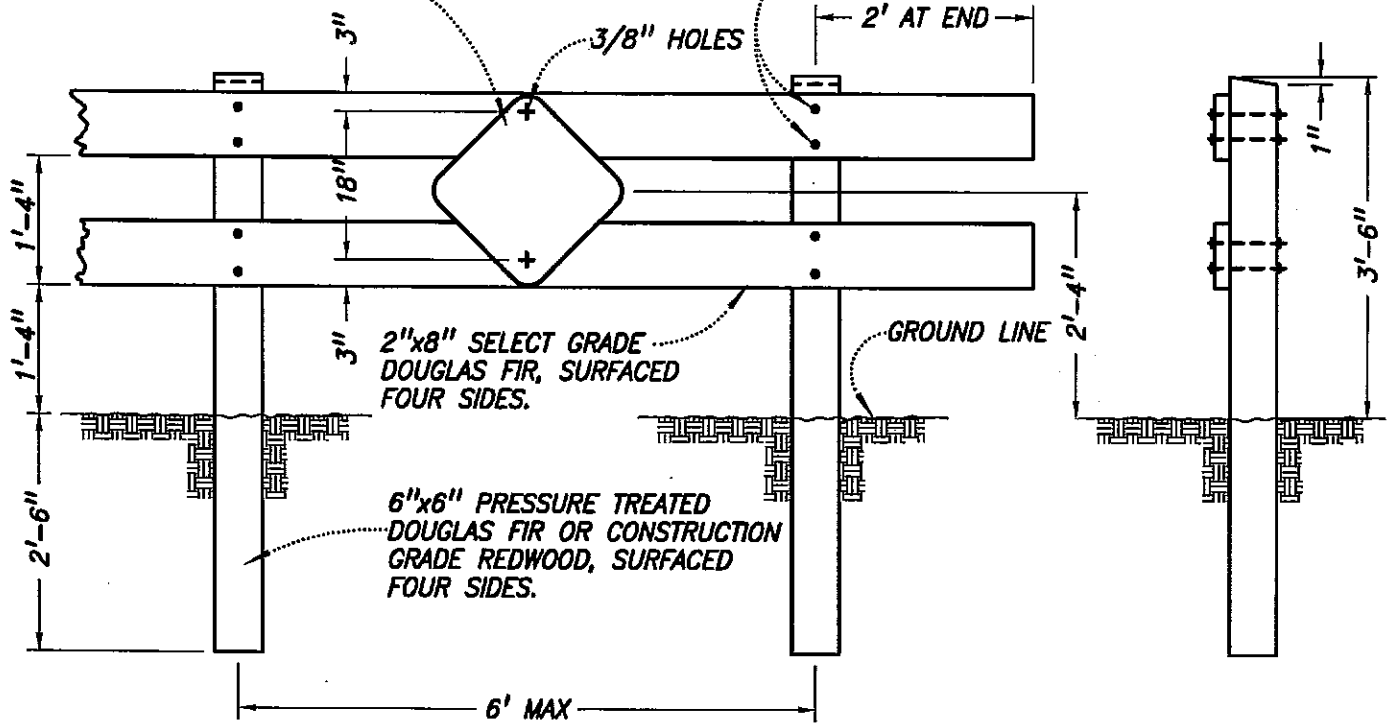
COMMERCIAL

LOCATIONS FOR STREET LIGHTS

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE REVISED: BY:	<h2>RESIDENTIAL STREET LIGHTS TYPE AND LOCATION</h2> <p>Diablo Grande STANISLAUS COUNTY, CALIFORNIA</p>	APPROVED BY: DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC. DATE: 01/01/96 DRAWING NO.
		E - 3

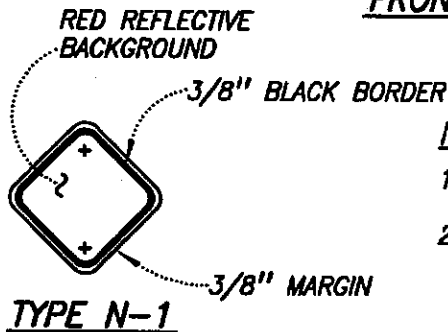
REFLECTOR SIGN - CALIFORNIA
 HIGHWAY CODE TYPE N-1 OR W-31
 SIZE 18"x18" - YELLOW

3/8" GALVANIZED BOLTS
 AND WASHERS.



FRONT ELEVATION

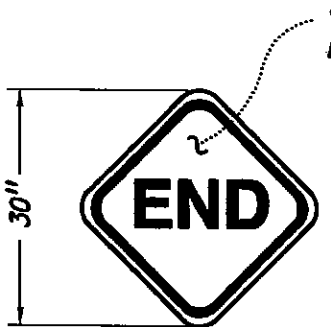
END VIEW



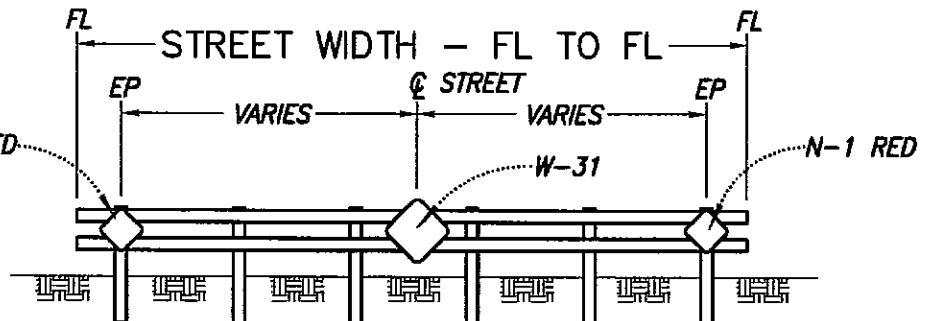
TYPE N-1

NOTES:

1. BARRICADES TO BE AS WIDE AS STREET TRAVELED WAY (FL TO FL).
2. BARRICADES TO BE PAINTED WHITE USING TWO COATS OF "EXTERIOR ALKYD RESIN HI-GLOSS ENAMEL" OVER A COMPATIBLE PRIMER - APPLY REFLECTIVE GLASS BEADS.



CALTRANS W-31



NOTE: ONLY THREE REFLECTOR SIGNS REQUIRED.

DRAWN BY: K.L.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

**BARRICADE FOR
 TERMINATING STREETS**

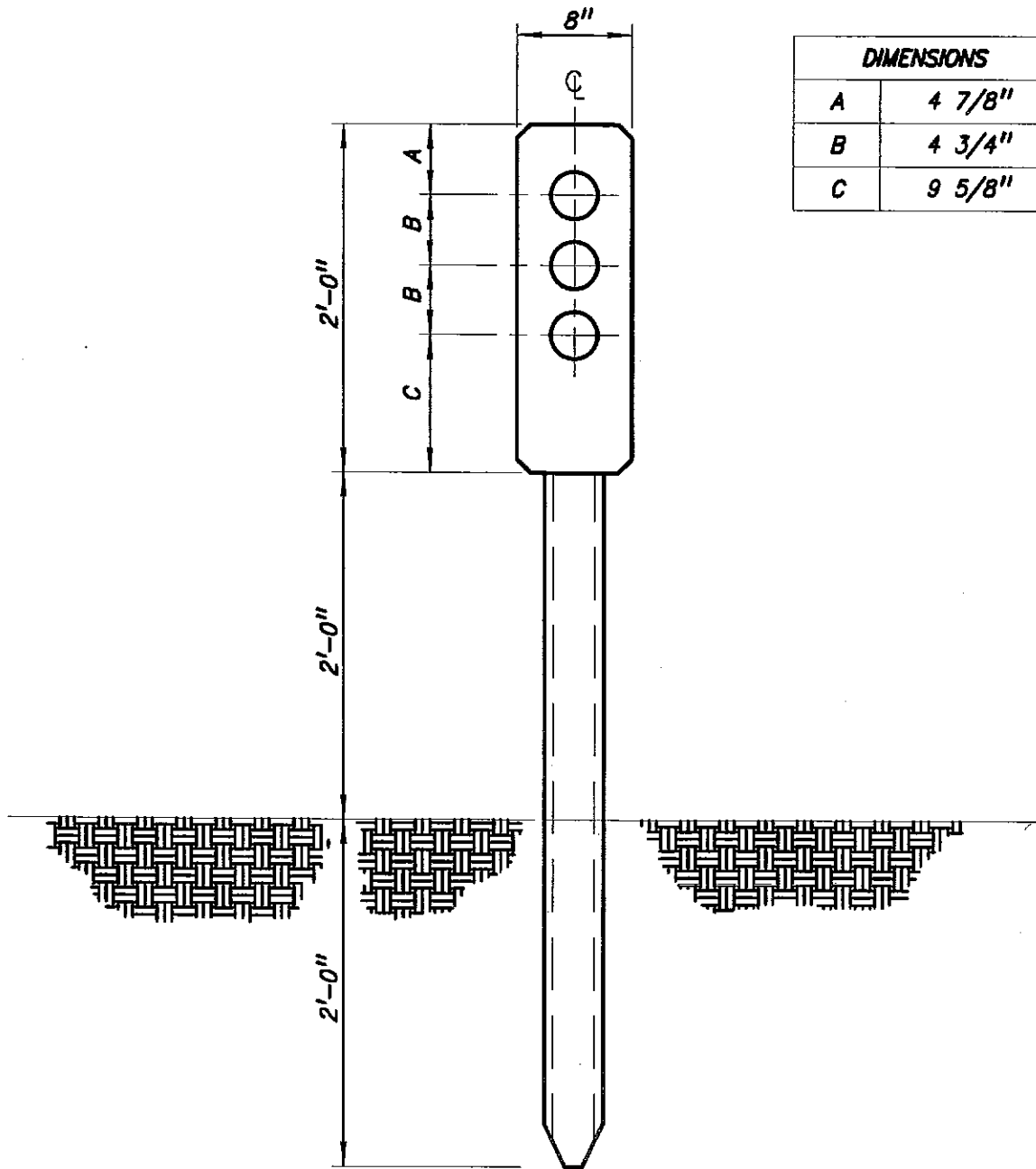


Diablo Grande
 STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:
A. Stanley Thompson
 DISTRICT ENGINEER RCE 32260
 THOMPSON-HYSELL ENGINEERS, INC.

DATE: 01/01/96
 DRAWING NO.

M - 1



DIMENSIONS	
A	4 7/8"
B	4 3/4"
C	9 5/8"

NOTES:

1. CONFORMS TO STATE STANDARD WGOR.
2. SPACING SHALL BE AT 5' INTERVALS OR AS REQUIRED BY THE DISTRICT ENGINEER.
3. STANDARD REFLECTOR SHALL BE CONSTRUCTED OF HIGH IMPACT PLASTIC.

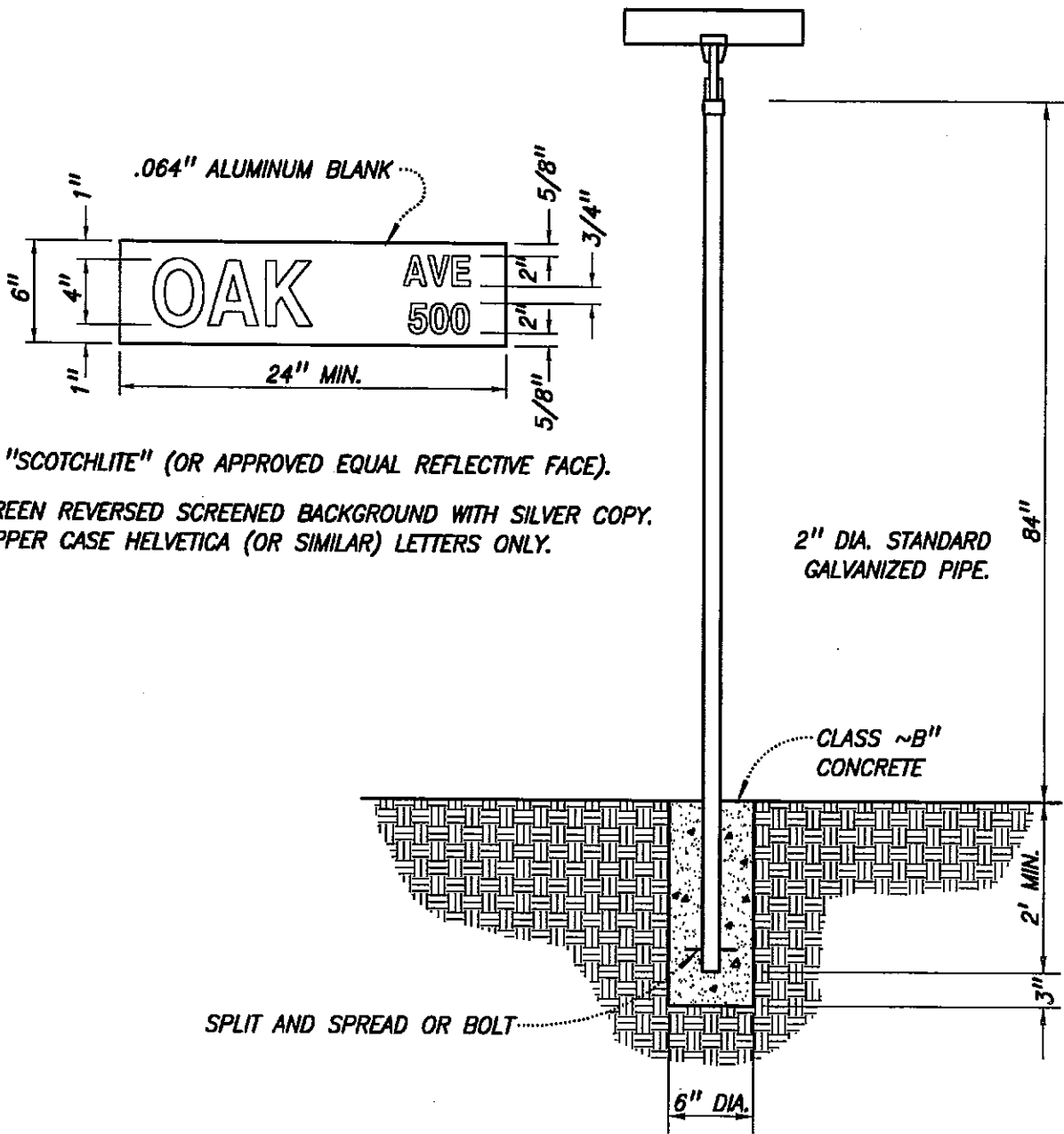
DRAWN BY: E.T.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

**STANDARD REFLECTOR
PADDLE BOARD**



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY: <i>M. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	DATE: 01/01/96	M - 2
DRAWING NO.		



NOTES:

1. STREET SIGNS SHALL BE PLACED ON LIGHT STANDARD WHENEVER POSSIBLE.
2. STREET SIGN SHALL BE PLACED ON TOP OF STOP SIGN POST IF NO LIGHT STANDARD IS AVAILABLE. (SEE STD. DWG. M-4)

DRAWN BY: D.S. CHECKED BY: M.P. SCALE: NONE	<h1>STREET SIGN INSTALLATION</h1>	APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER REG 32260 THOMPSON-HYSELL ENGINEERS, INC.
DIABLO GRANDE		DATE: 01/01/96 DRAWING NO.
DIABLO GRANDE STANISLAUS COUNTY, CALIFORNIA	M - 3	

STREET SIGN TO BE PLACED
ON TOP OF STOP SIGN POST
IF NO LIGHT STANDARD IS
AVAILABLE. SEE STD DWG. M-3
FOR STREET SIGN DETAIL.



CALTRANS REGULATORY SIGN
R-1 (STOP) 30" X 30"

2" DIA. STANDARD
GALVANIZED PIPE.

84"

CLASS "B"
CONCRETE

2' MIN.

3"

SPLIT AND SPREAD OR BOLT

6" DIA.

DRAWN BY: D.S.
CHECKED BY: M.P.
SCALE: NONE

STOP SIGN INSTALLATION

APPROVED BY:
A. Stanley Thompson
DISTRICT ENGINEER RCE 32260
THOMPSON-HYSELL ENGINEERS, INC.

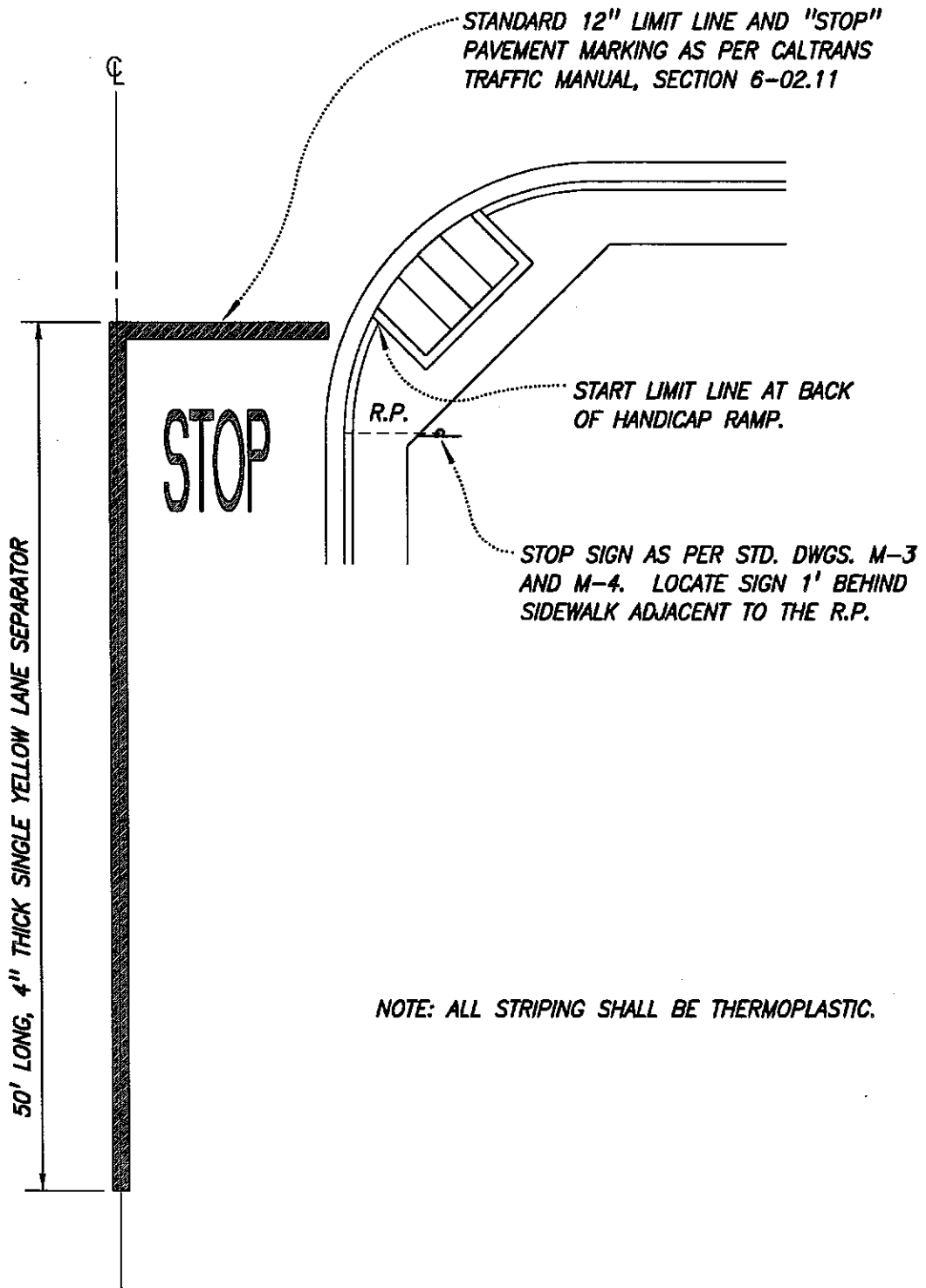
REVISED BY



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

DATE: 01/01/96
DRAWING NO.

M-4

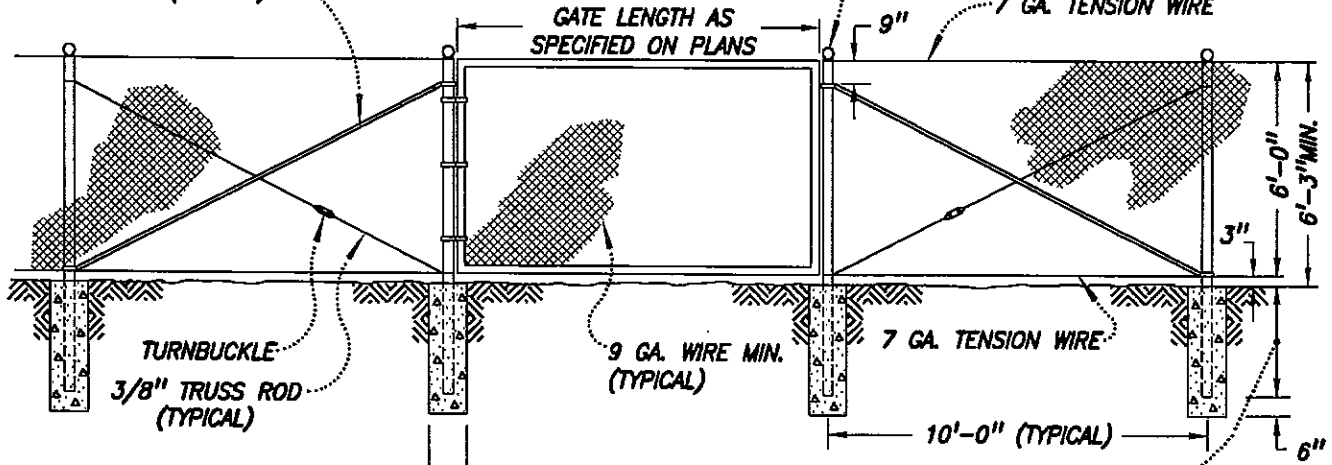


NOTE: ALL STRIPING SHALL BE THERMOPLASTIC.

DRAWN BY: D.S.		STOP SIGN, STOP BAR AND LANE SEPARATION LOCATIONS	APPROVED BY: <i>A. Stanley Thompson</i>
CHECKED BY: M.P.			DISTRICT ENGINEER RCE 32260
SCALE: NONE			THOMPSON-HYSELL ENGINEERS, INC.
REVISED	BY	Diablo Grande STANISLAUS COUNTY, CALIFORNIA	DATE: 01/01/96
			DRAWING NO.

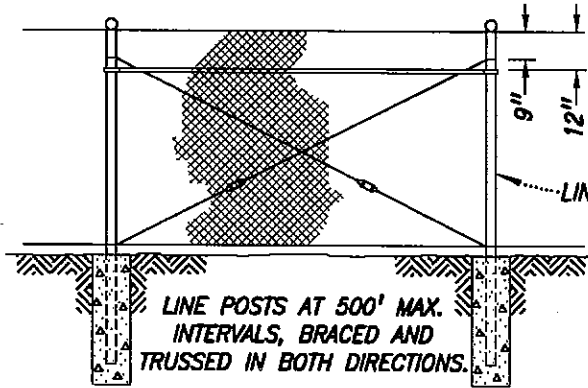
GATE POSTS TO BE 2.875"O.D. 5.79#/FT. MIN.
 SIZE TO BE DETERMINED BY WIDTH OF GATE.

1.66"O.D. 2.27#/FT. BRACE
 (TYPICAL)



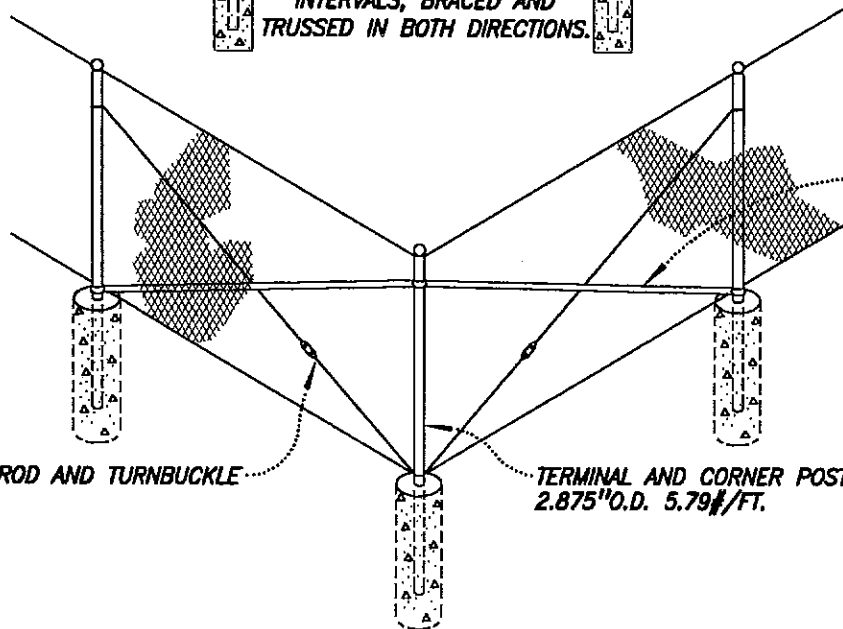
NOT LESS THAN 3 TIMES MAX. CROSS
 SECTION OF POST W/ MINIMUM OF 8"

2'-6" FOR FABRIC LESS THAN 60" HIGH
 3'-0" FOR FABRIC 60" AND OVER



LINE POSTS, 1.9"O.D. 2.72#/FT.

LINE POSTS AT 500' MAX.
 INTERVALS, BRACED AND
 TRUSSED IN BOTH DIRECTIONS.



BRACE 1.66"O.D. 2.27#/FT.

3/8" TRUSS ROD AND TURNBUCKLE

TERMINAL AND CORNER POSTS
 2.875"O.D. 5.79#/FT.

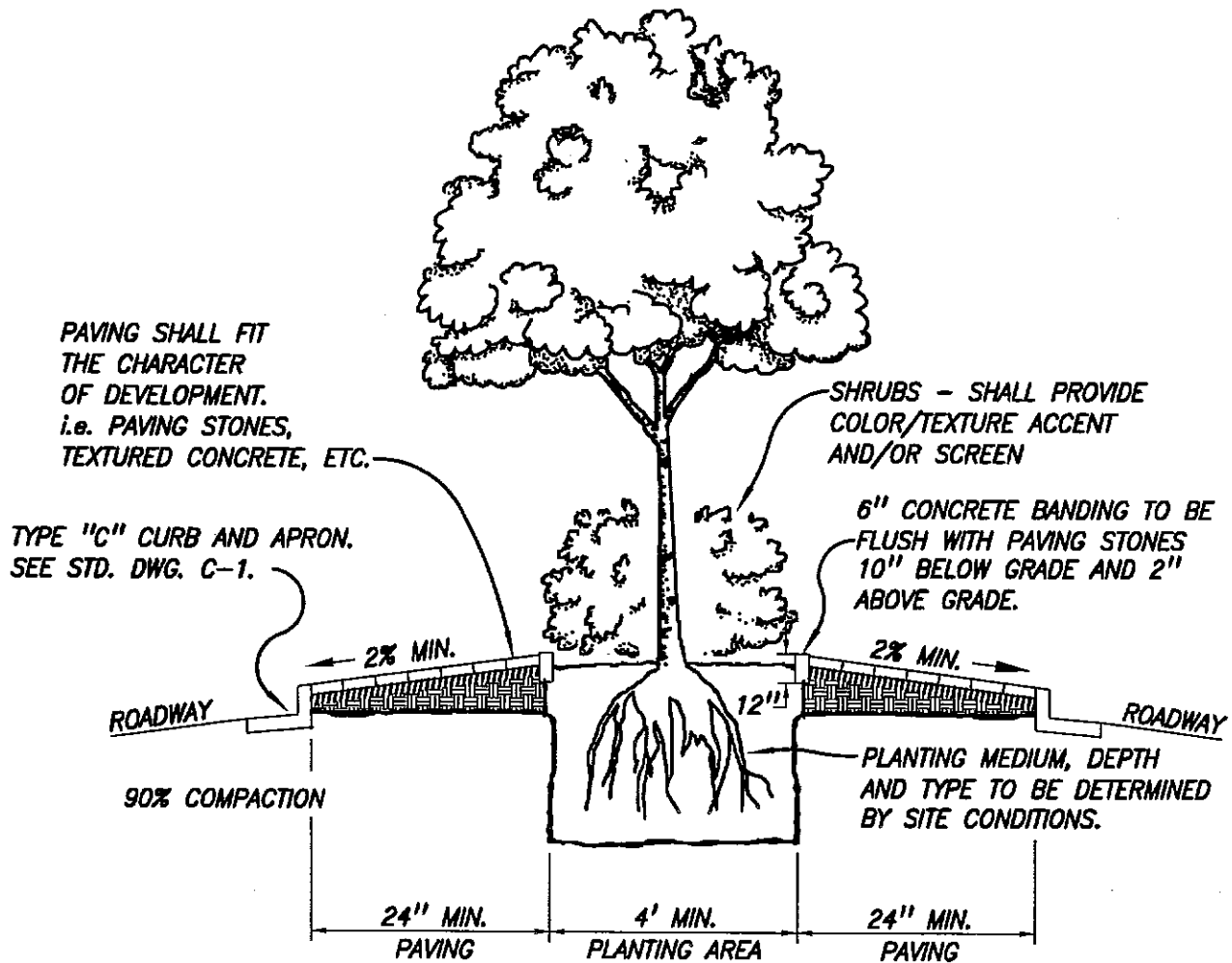
DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

CHAIN LINK FENCE AND GATE



Diablo Grande
 STANISLAUS COUNTY, CALIFORNIA

APPROVED BY: <i>A. Stanley Thompson</i> DISTRICT ENGINEER THOMPSON-HYSELL ENGINEERS, INC.	DATE: 01/01/96
DRAWING NO. M - 6	



NOTES:

1. TREES SHALL BE SELECTED FROM THE DISTRICT'S TREE PLANTING LIST. THEY SHALL BE PLANTED A MINIMUM OF 30' TO A MAXIMUM OF 50' ON CENTER SPACING, OR MAY BE PLANTED IN GROUPS FOR AN INFORMAL PLANTING EFFECT USING THE SAME NUMBER OF TREES, AS DETERMINED BY THE DISTRICT LANDSCAPE ARCHITECT.
2. SHRUBS SHALL BE PLANTED IN GROUPINGS TO PROVIDE A CONSISTENT PLANTING SCHEME. SHRUBS SHALL REQUIRE MINIMUM MAINTENANCE AND BE DROUGHT TOLERANT.
3. A GROUND COVER OR TURF AREA MAY BE INCLUDED BETWEEN THE PLANTING AND PAVING AREAS WHERE APPLICABLE, MAINTENANCE SHALL BE PROVIDED BY A MAINTENANCE AGREEMENT OR HOME OWNER'S ASSOCIATION.
4. COMPLETE LANDSCAPE AND IRRIGATION PLANS AND DETAILS SHALL BE SUBMITTED FOR REVIEW AND APPROVAL AS PART OF THE DEVELOPMENT PLANS. ALL DESIGN PROPOSALS SHALL BE SUBJECT TO APPROVAL BY THE DISTRICT LANDSCAPE ARCHITECT AND THE DISTRICT ENGINEER.

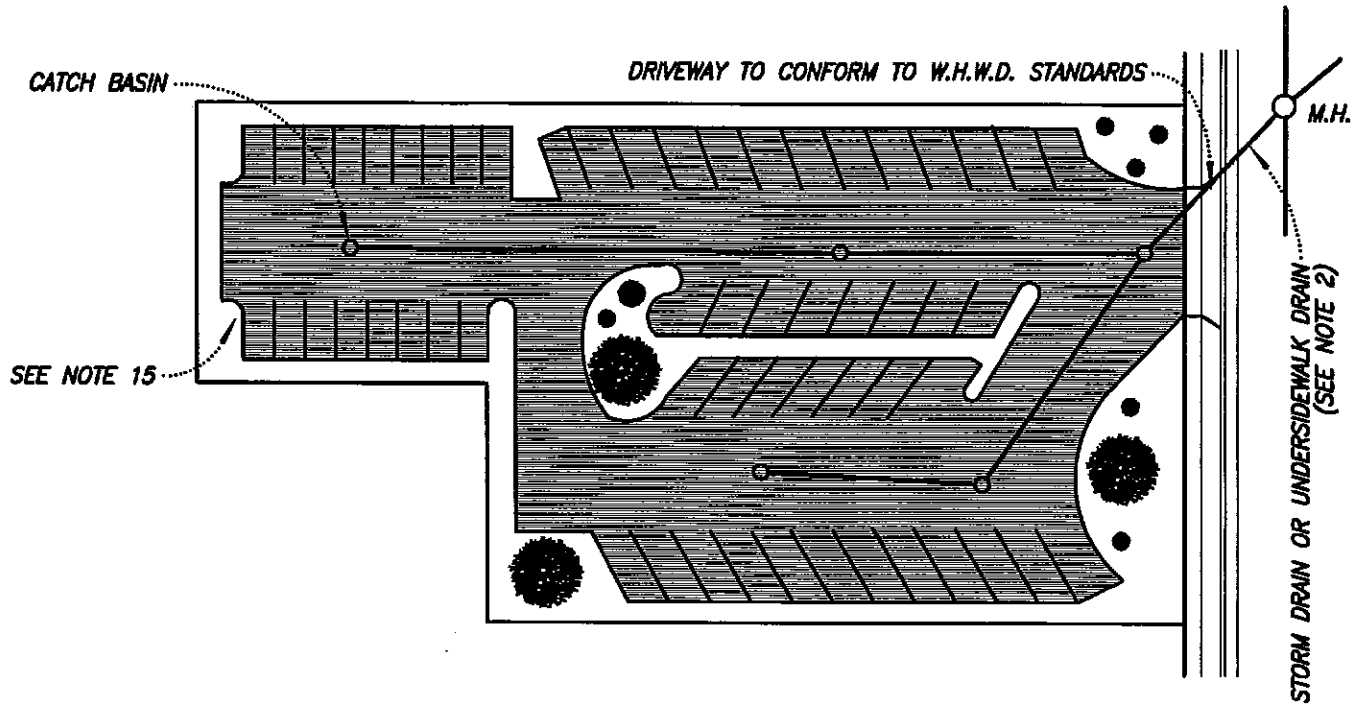
DRAWN BY:	D.S.
CHECKED BY:	M.P.
SCALE:	NONE
REVISED	BY

MEDIAN LANDSCAPING



Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:	<i>A. Shirley Thompson</i>
DISTRICT ENGINEER	RCE 32260
THOMPSON-HYSELL ENGINEERS, INC.	
DATE:	01/01/96
DRAWING NO.	M-7



1. THE MINIMUM STANDARD FOR PARKING AREAS SHALL BE BASED ON A T.I. = 4 AND AN R = 5. ALTERNATE DESIGN SHALL BE REVIEWED AND APPROVED BY THE DISTRICT ENGINEER.

DESIGNED ACCORDINGLY.

3. A MINIMUM CROSS SLOPE OF 1% IS REQUIRED.
4. PARKING LAYOUT AND DESIGN SHALL BE IN CONFORMANCE WITH STD. DWGS.
5. ANY PARKING LAYOUT NECESSITATING A CUL-DE-SAC OR SIMILAR TURNING FACILITY FOR REVERSING THE DIRECTION OF TRAVEL IN ORDER TO EXIT FROM THE AREA OR ANY PARKING SPACES WILL GENERALLY BE DISCOURAGED, AND IT MUST BE REVIEWED AND ACCEPTED BY THE DISTRICT ENGINEER PRIOR TO INCORPORATION INTO THE PLAN.
6. PARKING OR BACKING AREA WITHIN A PARKING LOT SHALL NOT EXTEND INTO THE PUBLIC RIGHT-OF-WAY.
7. IN ALL PARKING LOT DESIGN, PROVISIONS SHALL BE MADE FOR THE MANEUVERING OF EMERGENCY VEHICLES, AND THE ARRANGEMENT SHALL BE REVIEWED AND ACCEPTED BY DISTRICT ENGINEER PRIOR TO INCORPORATION INTO THE PLAN.
8. ALL UNUSABLE AREAS SHALL BE LANDSCAPED WHERE PRACTICAL.
9. CONTINUOUS CONCRETE CURBING SHALL BE USED AS WHEEL STOPS WHEREVER POSSIBLE. THE USE OF BUMPER BLOCKS IS DISCOURAGED.
10. END STALLS SHOULD BE PROTECTED FROM THE TURNING MOVEMENTS OF OTHER VEHICLES.
11. HANDICAPPED STALLS SHALL COMPLY WITH THE STATE BUILDING CODE AND DIABLO GRANDE STANDARD PLANS AND SPECIFICATIONS.
12. DEAD-END 90° PARKING SHALL BE PROVIDED WITH ADEQUATE TURNING ROOM.
13. IN LOCATIONS WHERE PARALLEL PARKING IS PERMITTED OR POSSIBLE, AN ADDITIONAL 3 FEET SHALL BE ADDED TO THE AISLE WIDTH TO ACCOMODATE PARKED VEHICLES ON ONE SIDE OR AN ADDITIONAL 11 FEET SHALL BE ADDED TO THE AISLE WIDTH TO ACCOMODATE PARKED VEHICLES ON BOTH SIDES (I.E., PARKING ON ONE SIDE 28 FEET, ON BOTH SIDES 36 FEET). PARALLEL PARKING IS CONSIDERED POSSIBLE WHEREVER 20 FEET OR MORE OF CLEAR, REASONABLY STRAIGHT CURB EXISTS.

DRAWN BY: D.S.	
CHECKED BY: M.P.	
SCALE: NONE	
REVISED	BY

PARKING AREA STANDARDS

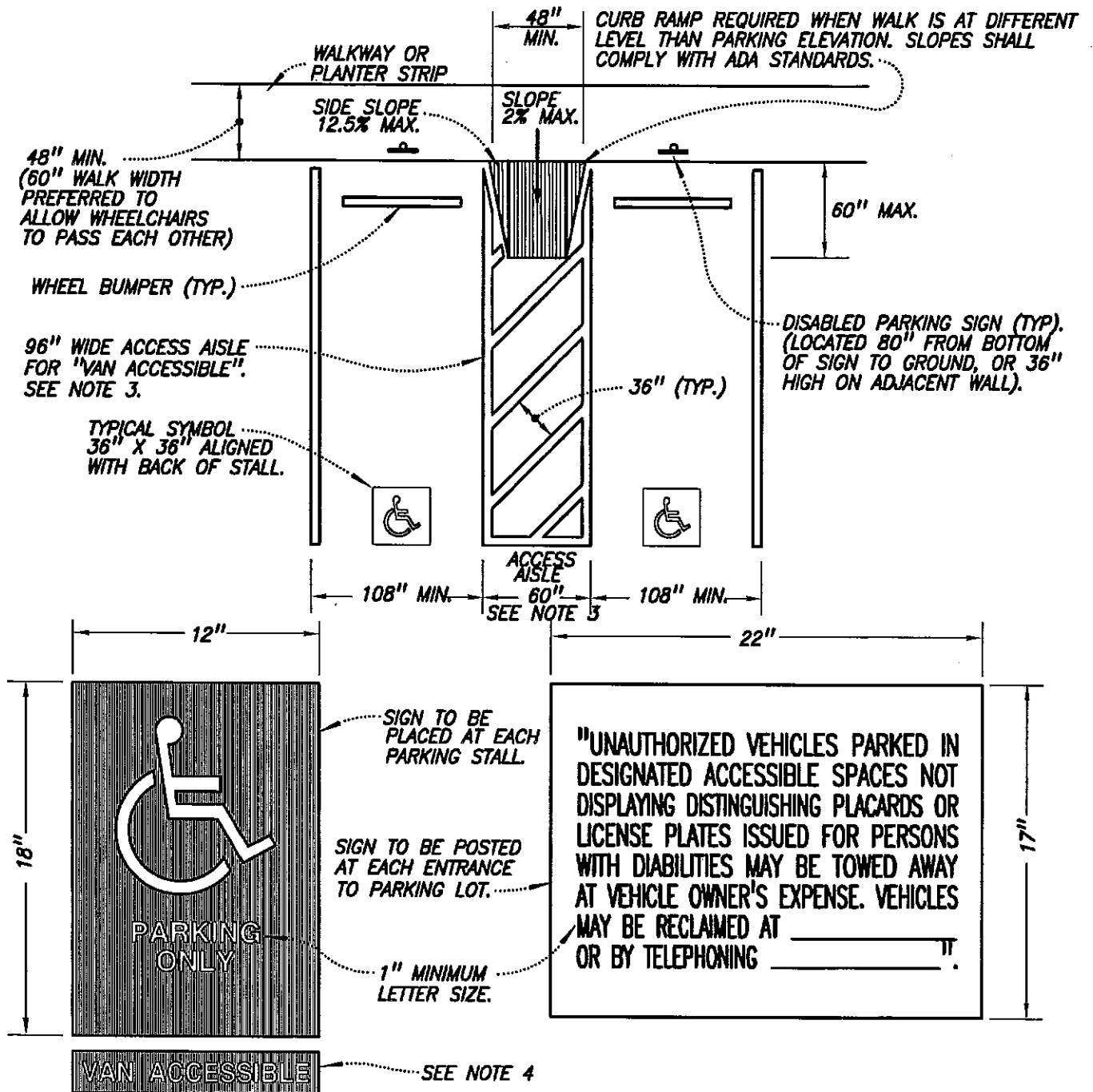


Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:
A. Stanley Thompson
DISTRICT ENGINEER
THOMPSON-HYSELL ENGINEERS, INC. RCE 32260

DATE: 01/01/96
DRAWING NO.

M - 8



1. IF PARKING STALL IS OUTLINED IN BLUE, THE PROFILE OF THE WHEELCHAIR AND OCCUPANT SHALL BE PAINTED DIRECTLY ONTO THE PAVEMENT SURFACE.
2. IF PARKING STALL IS OUTLINED IN WHITE, THE PROFILE OF THE WHEELCHAIR AND OCCUPANT SHALL BE PAINTED WHITE ON A BLUE BACKGROUND AND THE ENTIRE STENCIL OUTLINED IN WHITE.
3. ONE IN EVERY EIGHT ACCESSIBLE SPACES, BUT NOT LESS THAN ONE SHALL BE DESIGNATED AS "VAN ACCESSIBLE", WHICH SHALL BE SERVED BY AN ACCESS AISLE A MINIMUM OF 96" WIDE.
4. IF VAN ACCESSIBLE, A SUPPLEMENTARY "VAN ACCESSIBLE" SIGN MUST BE ADDED BENEATH THE "PARKING ONLY" SIGN.

DRAWN BY: D.S.

CHECKED BY: M.P.

SCALE: NONE

REVISED BY

DISABLED PARKING

DIABLO GRANDE

Diablo Grande
STANISLAUS COUNTY, CALIFORNIA

APPROVED BY:

D. Stanley Thompson
DISTRICT ENGINEER
THOMPSON-HYSELL ENGINEERS, INC.

DATE: 01/01/96

DRAWING NO.

M - 9