Appendix H – References

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Caltrans Standard Plans for Temporary Traffic Control Systems ("T" sheets) are available at:

https://dot.ca.gov/programs/design/ccs-standard-plans-and-standard-specifications

American Association of State Highway and Transportation Officials (AASHTO)'s "Roadside Design Guide" 4th Edition, Chapter 11 "Erecting Mailboxes on Streets and Highways", available for purchase at:

https://store.transportation.org/

STATE OF CALIFORNIA • DEPARTMENT OF TRANSPORTATION

ENCROACHMENT PERMIT FEE SCHEDULE

TR-0166 (Rev. 01/2025)

CODE	PERMIT TYPE	DEPOSIT REQUIRED	REVIEW	INSPECTION
	GENERAL			
AD	Arcades, awnings and marquees	6	AX	AX
AH	Adopt-A-Highway	EXEMPT	EXEMPT	EXEMPT
AP	Transportation Art Program	EXEMPT	EXEMPT	EXEMPT
AS	Airspace Development	AD, **	AD, **	AD, **
BR	Banners, decorations	6	AX	AX
BS	Bus shelters & benches	EXEMPT	EXEMPT	AX
CC	City/County issued permits	---	---	---
CD	Commercial Development	15	AX	AX
CN	Chain Installer	2 + vest*		
CS	Curb/gutter/sidewalk	6	AX	AX
CU	Coupon Racks & Newspaper vending machines at SRRAs	6	AX	AX
CU	Adopt-A-Kiosk (TSIC)	EXEMPT	EXEMPT	EXEMPT
CU	SRRA Vending Machines	EXEMPT	EXEMPT	EXEMPT
	Cooperative Agreements	AD	AD	AD
FN	Fence – New/Modified	6	AX	AX
GM	Gateway Monument	EXEMPT	EXEMPT	EXEMPT
ID	Community Identification	EXEMPT	EXEMPT	EXEMPT
MB	Mailbox	EXEMPT	EXEMPT	EXEMPT
MC	Contractor's yard and plant, Grading, mowing grass, material removal, structures, parking meters, tieback, widening, freeway & conventional striping	6	AX	AX
MM	Blue Star and Memorial Markers	EXEMPT	EXEMPT	EXEMPT
MW	Monitoring Wells	6	AX	AX
OA	Visibility Improvement Request	6	AX	AX
OP	Oversight Projects	AD	AD	AD
RX	Railroad Crossing	EXEMPT	EXEMPT	EXEMPT
SC	State Contract – Early entry	1	1	0
SI	Signs	6	AX	AX
SV	Land, archeological, traffic counts, research project, accident reconstruction, literature distribution	6	AX	AX
TN	Tunneling (> 30 inches)	15	AX	AX
WL	Wall	15	AX	AX
	DRAINAGE			
DM	Minor Drainage	6	AX	AX
DD	Major Drainage	15	AX	AX
	FILMING			
FF	Filming in Facilities	0	AX	AX
FI	Intermittent Traffic control	0	2	0
FL	Traffic Control	0	AX	AX
FO	No moving traffic	0	1	0
FR	Film rider	0	AX	AX
FS	Special	0	AX	AX
CODE	**PERMIT YPE**	**DEPOSIT REQUIRED**	**REVIEW**	**INSPECTION**
	GEO-PHYSICAL TESTING			
GC	Cable crossing	6	AX	AX
GV	Seismic Vibrator	6	AX	AX
	LANDSCAPE			
LC	Conventional Highway	6	AX	AX
LF	Freeway	6	AX	AX
LM	Maintenance	6	AX	AX
LT	Tree Trim/removal	6	AX	AX
	RIDER			
RD	Caltrans initiated rider	EXEMPT	EXEMPT	EXEMPT
RT	Time extension rider	2	2	AX
RW	Modify work rider	6	AX	AX
	ROAD APPROACH/ DRIVEWAY			
RC	Commercial	6	AX	AX
RM	Resurface, reconstruct, reissue	6	AX	AX
	New Owner	1	AX	AX
RP	Public/Private	6	AX	AX
RS	Single family/agricultural	6	AX	AX
	SPECIAL EVENT			
SE	Special Event	6	AX	AX
	SIGNALS / LIGHTING			
SN	Signal – new/modify	15	AX	AX
TK	Traffic Control, signals, lighting	6	AX	AX
	UTILITIES			
BB	Broadband	DEF	AX	AX
UB	Utilities in or on a bridge	DEF	AX	AX
UC	Conventional Aerial	DEF	AX	AX
UE	Annual Maintenance	DEF	2	AX
UF	Access-controlled Aerial	DEF	AX	AX
UJ	Utility Crossing	DEF	AX	AX
UL	Longitudinal Encroachments	DEF	AX	AX
UR	State required relocation	EXEMPT	EXEMPT	EXEMPT
US	Service, pothole, modify	DEF	AX	AX
UT	Open-cut Road	DEF	AX	AX

NOTES:

* No fee for the first vest. A replacement vest will be issued upon payment of the

** For wireless installations on conventional highway right-of-way that doesn't require lease and are processed through Encroachment Permits Office, a fee schedule with Deposit of 6 hours and of "AX" must be followed.

AD –

AX – Actual expenditures must be collected.

DEF – Deferred Billing (Utilities only).

State of California Business, Transportation and Housing Age

Memorandum

To: ALL DISTRICT DIRECTORS

Attention Deputy District Directors
District Permit Engineers

Date : November 9, 1994

File No. : 617
Encroachment Permits

From: DEPARTMENT OF TRANSPORTATION
DIRECTOR'S OFFICE

Subject: Exception to Policy - Uncased High-pressure Natural Gas Pipeline Crossings

Encroachment Permits Manual Section 623, entitled "Transverse Boring and Jacking", requires that all new pipeline installations six inches and larger that cross a State highway must be placed within a casing that is bored and jacked under the highway.

Having examined the pros and cons of cased versus uncased natural gas transmission pipelines, Caltrans will now allow uncased natural gas pipeline crossings in specific circumstances. Because our primary concerns are for public safety, the integrity of the highway facility and the mechanical protection of the pipeline itself, it is necessary to limit requests for transverse natural gas transmission line crossings without casings to locations where the following conditions are met:

1) The pipeline owner agrees that the crossing will be designed for construction in accordance with the Code of Federal Regulations, Title 49, Part 192, and/or the California Public Utilities Commission General Orders No. 112-D with respect to natural gas pipelines. The crossing design shall be comprehensive in all respects including but not limited to material specification, pipe wall thickness determination, coating selection, and cathodic protection. Soil conditions at each site shall be analyzed for characteristics that may prove harmful to the protective pipe coating. This analysis shall be used by the pipeline owner in selecting a protective pipe coating sufficient to withstand the potential for gouging or peeling during the boring and jacking operation, or other methods approved by Caltrans. The final condition of the coating will be determined by the pipeline owner through monitoring of the boring and jacking operation, visually inspecting the exiting initial pipe segment, and electrical testing by an engineer or technician with expertise in cathodic protection. The test data shall be noted on the as-built drawings. Remedial action will be taken if the condition of the coating is such that cathodic protection is not practical.

2) The minimum depth of cover within State highway right of way, from the final ground line (finished grade or original ground) to the top of the proposed gas carrier pipeline, is two and one-quarter meters (7' - 6"). If the location is such that it is not practical to achieve the above depth of cover, then an engineered protective cover (such as a reinforced concrete structure) may be provided outside of pavement areas in lieu of casing. At

no time shall the minimum depth of cover be less than one and one-tenth meters (42").

3) The permit specifies that the uncased gas carrier pipeline shall, as a minimum, be designed for a Class 3 Location (Code of Federal Regulations referenced above) for hard surfaced roads, highways, public streets, and railroads. (See attached *Excerpts From Code of Federal Regulations, Design Factor to be Used for Natural Gas Pipelines*.)

4) The existence of the crossing is adequately identified by signing at the right-of-way line, with at least one identifying sign which is visible from the roadway in each direction of travel.

5) The pipeline owner agrees to provide as-built drawings at completion of the pipeline crossing, with a letter certifying that the pipeline was installed properly and in accordance with the permit plans (including approved changes to the permit plans), and meets industry and regulatory standards for such installation.

6) All other applicable requirements of Section 623 of the Encroachment Permits Manual are satisfied.

All permit applications requesting installations of such uncased natural gas pipeline crossings six inches or larger in diameter and meeting the above requirements may be approved by the highway district. All permit applications for uncased pipeline crossings deviating from the above requirements shall be submitted to the Chief of the Office of Project Planning and Design for exception approval in the usual manner.

R. P. WEAVER
Deputy Director
Project Development

JCHaggard:jl
bcc:
DHBenjamin
WPSmith
GPeck
JVan Berkel
DLeFevre
JHaggard
DParks - NTM&R
AGugino - Structures Maint.
WMorehead - Structures
PCotter - Structures
DHBenjamin's Pend
WPSmith's Pend
Director's Office Chron
Director's Office Read
OPPD File

Attachment

EXCERPTS FROM CODE OF FEDERAL REGULATIONS ,

DESIGN FACTOR TO BE USED FOR NATURAL GAS PIPELINES

In the design of steel natural gas pipelines the Minimum Yield Strength for the grade of steel used is reduced by a Design Factor (F). This Design Factor is determined by the type of road being crossed by the pipeline and a Class Location established by Code of Federal Regulations, Title 49, Part 192 (Office of the Federal Register, 1990)

The Class Location depends on the occupancy of buildings or activities within an area that extends 660 feet (200 m) either side of the pipeline centerline for a continuous 1 mile (1.6 km) segment of the pipeline. There are four Class Locations as follows:

Class 1. Location that has 10 or less buildings intended for human occupancy.

Class 2. Location that has more than 10 but less than 46 buildings intended for human occupancy.

Class 3. a) Any location that has 46 or more buildings intended for human occupancy ; or

b) Area where pipeline lies less than 300 feet (91 m) of either a building or a small well-defined outside area (such as a playground. recreation area, outdoor theater, or other place of public assembly) that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12-month period. (The days or weeks need not to b consecutive).

Class 4. Location where buildings of four or more stories are prevalent.

The design factor used for a specific Class Location also depends on the kind of roac involved as indicated on the following Table.

Design Factor (F)

	Class Location			
Kind of Thoroughfare	1	2	3	4
Privately owned roads	0.72	0.60	0.50	0.40
Unimproved public roads	0.60	0.60	0.50	0.40
Hard surfaced roads, highways public streets, and railroads	0.60	0.50	0.50	0.40

Example: A pipe made of X42 grade of steel which has a Minimum Yield Strength (MYS) of 42,000 psi used in a Class 4 location at a hard surface road crossing would be designed using a reduced Minimum Yield Strength, by applying a Design Factor of 0.4, of 16,800 psi.

CONTROLLED LOW STRENGTH MATERIAL

Controlled low strength material (CLSM) shall consist of a workable mixture of aggregate, cementitious materials, and water. Controlled low strength material shall conform to the provisions in Section 19-3, "Structure Excavation and Backfill," of the Standard Specifications and these special provisions.

At the option of the Contractor, controlled low strength material may be used as structural backfill for pipe culverts within trenches.

When controlled low strength material is used for structure backfill, the width of the excavation shown on the plans may be reduced so that the clear distance between the outside of the pipe and the side of the excavation, on each side of the pipe, is a minimum of 6 inches except that 12 inches shall be required for pipes 42 inches and greater in diameter or span when height of cover is greater than 20 feet. Controlled low strength material shall not be used with underground structures having a span greater than 20 feet.

Controlled low strength material in new construction shall not be permanently placed higher than the basement soil. For trenches in existing pavements, permanent placement shall be no higher than the bottom of any existing pavement permeable drainage layer; if no drainage layer(s) are present, permanent placement in existing pavements shall be no higher than: a) 1 inch below the bottom of the existing asphalt concrete, or b) no higher than the top of base below existing Portland cement concrete pavements. When used, the minimum height that controlled low strength material placed relative to the pipe invert shall be: 0.5 d (diameter) for rigid pipe and 0.7 d for flexible pipe.

When controlled low strength material is proposed for use, the Contractor shall submit a mix design and test data to the Engineer for approval prior to excavating the trench for which controlled low strength material is proposed for use. The test data shall demonstrate that the mix design provides:

a) For pipe culverts having a height of cover of 20 feet or less, a 28-day compressive strength between 50 and 100 psi is required; for height of cover greater than 20 feet, a minimum 28-day compressive strength of 100 psi is required. Compressive strength shall be determined by ASTM Test Method D4832, "Preparation of Testing of Soil-Cement Slurry Test Cylinders."

b) When controlled low strength material is used as structure backfill for pipe culverts, the sections of pipe culvert in contact with the controlled low strength material shall meet the requirements of Chapter 850 of the Highway Design Manual using the minimum resistivity, pH, chloride content, and sulfate content of the hardened controlled low strength material. Minimum resistivity and pH shall be determined by California Test 643, the chloride content shall be determined by California Test 422, and the sulfate content shall be determined by California Test 417.

c) Cement shall be: any type of Portland cement conforming to the provisions of ASTM Designation C 150; any type blended hydraulic cement conforming to ASTM C 595M; or any type blended hydraulic cement conforming to the physical requirements of ASTM C 1157M. Testing will not be required.

d) Admixtures may be used in conformance with Section 90-4 of the Standard Specifications and the following: Chemical admixtures containing chlorides as CI in excess of 1 percent by mass of admixture, as determined by California Test 415, shall not be used.

Materials for controlled low strength material shall be thoroughly machine-mixed in a pugmill, rotary drum, or other approved mixer. Mixing shall continue until the cementitious material and water are thoroughly dispersed throughout the material. Controlled low strength material shall be placed in the work within 3 hours after mixing.

Controlled low strength material shall be placed in a uniform manner that will prevent voids in, or segregation of, the backfill, and will not float or shift the culvert. Foreign material that falls

into the trench prior to or during placing of the controlled low strength material shall be immediately removed.

When controlled low strength material is to be placed within the traveled way or otherwise to be covered by paving or embankment materials, it shall achieve a maximum indentation diameter of 3 inches prior to covering and opening to traffic. Penetration resistance shall be as measured by ASTM Test Method C 6024, "Standard Test Method for Ball Drop on Controlled Low Strength Material to Determine Suitability for Load Application."

Controlled low strength material used as structure backfill for pipe culverts will be considered structure backfill for compensation purposes.