California High-Speed Train Project

In Progress Draft
TECHNICAL MEMORANDUM

Designer's Responsibilities and Utility Requirements for 15% Design Level
TM 2.7.4

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for the California High-Speed Rail Authority

System Level Technical and Integration Reviews

The purpose of the review is to ensure:

- Technical consistency and appropriateness
- Check for integration issues and conflicts

System level reviews are required for all technical memoranda. Technical Leads for each subsystem are responsible for completing the reviews in a timely manner and identifying appropriate senior staff to perform the review. Exemption to the System Level technical and integration review by any Subsystem must be approved by the Engineering Manager.

System Level Technical Reviews by Subsystem:

Systems:	*Signed document on file* Eric Scotson	10 Nov 08 Date
Infrastructure:	*Signed document on file* John Chirco	10 Nov 08 Date
Operations:	*Signed document on file* Paul Mosier	10 Nov 08 Date
Maintenance:	*Signed document on file* Paul Mosier	10 Nov 08 Date
Rolling Stock:	*Signed document on file* Frank Banko	10 Nov 08 Date

TABLE OF CONTENTS

ABSTRACT 1

1.0 INTRODUCTION 2

1.1 PURPOSE OF THE TECHNICAL MEMORANDUM 2
1.2 STATEMENT OF TECHNICAL ISSUE 2
1.3 GENERAL INFORMATION 2
1.3.1 Definition of Terms 2
1.3.2 Units 4

2.0 STATEMENT OF TECHNICAL TOPIC 5

2.1 GENERAL 5
2.2 POLICY CONSIDERATIONS 5
2.2.1 Utility Agreements and Cost of Relocation 5
2.2.2 Betterments 5
2.2.3 Right of Way Encroachment 5
2.3 LAWS AND CODES 7
2.4 APPLICABILITY TO CODE OF FEDERAL REGULATIONS 7
2.5 CLEARANCE REQUIREMENTS 7
2.5.1 Underground Utilities 7
2.5.2 Overhead Utilities 8
2.5.3 Above Ground Utilities 8
2.5.4 Exempt Utilities 8
2.5.5 Location of Proposed Utilities 8

3.0 ASSESSMENT/ANALYSIS 9

3.1 GENERAL 9
3.2 IDENTIFYING AND LOCATING EXISTING UTILITIES 9
3.3 IDENTIFYING AND LOCATING PROPOSED UTILITIES 9
3.4 IDENTIFICATION OF PROPOSED UTILITIES FOR OPERATION OF CHSTP 9
3.5 IDENTIFICATION OF PROPOSED UTILITIES FOR CONSTRUCTION 9
3.6 QUALITY LEVELS FOR LOCATING UTILITIES 10
3.7 DOCUMENTATION OF UTILITY INFORMATION 10
3.7.1 Utility Company Correspondence 10
3.7.2 Retention of Records 10
3.7.3 Composite Plans 11
3.7.4 Utility Inventory with Preliminary Disposition 11
3.8 ASSESSING UTILITY IMPACTS 11
3.8.1 Identification of Impacts 11
3.8.2 Relocation 11
3.8.3 Adjustment and/or Protection of Existing Utilities within the HSR ROW 11
3.8.4 Abandonment of Utilities 12
3.8.5 Probable Construction Quantities and Costs 12
3.8.6 Permitting and Approvals 12
3.8.7 Construction Activities, Staging and Sequencing 12
3.8.8 Beyond 15% Design Level Plans 12

4.0 SUMMARY AND RECOMMENDATIONS 13

5.0 SOURCE INFORMATION AND REFERENCES 14

6.0 DESIGN MANUAL CRITERIA 15

6.1 UTILITY REQUIREMENTS FOR 15% DESIGN LEVEL 15
6.2 RIGHT OF WAY ENCROACHMENT 15
6.2.1 Encroachment Justifications 15
6.3 CLEARANCE REQUIREMENTS 16
6.3.1 Underground Utilities 16
6.3.2 Overhead Utilities 17
6.3.3 Above Ground Utilities 17
6.3.4 Exempt Utilities 17
6.3.5 Location of Proposed Utilities 17

APPENDIX A: TRANSVERSE SUBSURFACE UTILITY ENCROACHMENT 18

EXHIBIT A - TRANSVERSE SUBSURFACE UTILITY ENCROACHMENT 18

APPENDIX B: SAMPLE UTILITY LOGS 19

EXHIBIT B-1 UTILITY INFORMATION LOG 19
EXHIBIT B-2 UTILITY OWNER CONTACT INFORMATION 19
EXHIBIT B-3 UTILITY OWNER CONTACT LOG 19
EXHIBIT B-4 UTILITY LOG INDEX 19

ABSTRACT

This Technical Memorandum provides guidance on the responsibilities and expectations for advancing the design of utilities to the 15% Design Level for the California High-Speed Train Project (CHSTP). This guidance offers standards and procedures for the location, assessment, protection and placement of underground and overhead utilities located within and in proximity of the California High-Speed Rail Authority right of way. Particular emphasis is placed on early identification, disposition and documentation of existing and proposed major utilities that may impact CHSTP construction or operational activities.

The approach for assessing and addressing utility impacts is broadly based on the desire to limit the number of transverse encroachments, eliminate longitudinal encroachments, and prevent any maintenance of utilities from within the Authority's right of way. This document does not address storm drains and irrigation systems. Guidance for design and identification of these facilities will be included in separate technical memoranda. Composite drawings for 15% Design Level will include utilities and storm drains on the same plan in order to allow adequate review of potential conflicts.

6.0 DESIGN MANUAL CRITERIA

6.1 UTILITY REQUIREMENTS FOR 15% DESIGN LEVEL

The CHSTP shall follow design criteria of the following documents for 15% Design Level utility engineering design:

- California Department of Transportation, Highway Design Manual
- California Department of Transportation, Project Development Procedures Manual
- California Public Utility Commission General Orders, Public Utility Codes, Rules of Practice and Procedure, and the Policies and Guidelines.
- The Manual for Railway Engineering of the American Railway Engineering and Maintenance of Way Association (AREMA) Manual
- Provisions of this Technical Memorandum
- Requirements of individual utility owners

In the case of differing values, the standard followed shall be that which results in the satisfaction of all applicable requirements. In the case of conflicts, exception documentation for the conflicting standard is to be prepared and approval is to be secured as required by the agency requiring an exception, whether it is an exception to the standards of the CHSTP or another agency.

6.2 RIGHT OF WAY ENCROACHMENT

An encroachment is defined as any structure or object of any kinds which is within the right of way but not part of the CHSTP facility. Encroachments allow temporary or permanent use of Authority right of way by a utility, a public entity, or a private party. Encroachments include all public and private utilities within the right of way.

CHSTP policy is, to the extent that is reasonable and feasible, exclude access points for utilities from within access controlled right of way. This policy is intended to provide a safe environment for operation of CHSTP, minimize the disruption to the traveling public, and assure safety of utility employees during maintenance of utility facilities.

Utilities that transport hazardous materials will not be allowed in a railroad tunnel under any circumstances.

6.2.1 Encroachment Justifications

Access to utilities from within the Authority right of way is an exception to CHSTP criteria.

Where longitudinal or transverse encroachments and installations are required, the designer must ensure the following:

1 An alternate location is not feasible, from the standpoint of providing efficient utility services in a manner conducive to safety, durability, and economy of maintenance and operations.

2 The accommodation will not adversely affect the design, construction, operation, maintenance, safety, or stability of the railway facility.

3 The accommodation will not interfere with or impair the proposed use or future expansion of the railway facility.

4 The disapproval of the use of the right of way would result in an immitigable impact to the owner, the environment, or the public.

5 The utility be located in such a manner that it can be serviced, maintained, and operated without being accessed from the railroad right of way and will not adversely affect safety or cause damage to the Authority facility.

Longitudinal Encroachments

Existing Utility Longitudinal Encroachments

Longitudinal utility encroachments within the railroad right of way are considered on a case-by-case basis.

Existing longitudinal utilities located within the existing or proposed right of way shall be relocated to the outside of the right of way unless they can be shown to meet the encroachment justification requirements noted above.

New Utility Longitudinal Encroachments

New non-CHSTP utilities will not be permitted to be installed longitudinally within the access controlled area of the CHSTP.

Transverse Encroachments

New utility installations, and adjustments or relocation of existing utilities, may be permitted to cross the Authority right of way. To the extent feasible and practicable, they should cross on a line generally normal to, but not less than 60^{o} (degrees) from the railroad longitudinal alignment. Transverse crossings that are at less than 60^{o} from the railroad longitudinal alignment shall be classified as longitudinal encroachment.

Transverse utility encroachments shall comply with the encroachment justification requirements noted above.

Air space leases for wireless communications facilities fall under the general guideline for transverse encroachments and are to be reviewed and approved by the Authority which may develop special guidelines for wireless communication facilities.

6.3 CLEARANCE REQUIREMENTS

The minimum requirements for utility clearance shall be as defined by the California Public Utilities Commission, Caltrans HDM and PDPM, AREMA, owners' requirements and this Technical Memorandum. The designer shall use the most stringent and conservative clearance requirements as determined from these documents. These requirements apply to CHSTP-related facilities as well as those owned by others.

6.3.1 Underground Utilities

Underground facilities located within the right of way except for electrical and communication lines must be located in a steel casing pipe (3/8" minimum thickness) with welded joints. Where a portion of the line crosses under the tracks or is located within 45 feet of the nearest track centerline, it must meet the requirements of Exhibit A. When the facility or portions of it do not come closer than 45 feet from the nearest CHSTP track centerline, requirements for encasement and burial depths shall be determined on a case-by-case basis. In addition, high and low risk facilities shall comply with the following requirements:

High Risk facilities

- Maintain 500 feet minimum horizontal separation from other High Risk facilities
- Maintain 5 feet minimum horizontal separation from other Low Risk facilities
- Maintain 20 feet minimum horizontal separation from load carrying structural elements

Low Risk facilities

- Maintain 3 feet minimum horizontal separation from other Low Risk facilities
- Maintain 5 feet minimum horizontal separation from load carrying structural elements and 3 feet minimum horizontal separation from other structures
- Maintain 1 foot minimum vertical separation from drainage conduits

The above clearances are minimum requirements. The designer shall verify the adequacy of these standards. Deviation from standards requires design exceptions.

Electrical and communication lines within the right of way must comply with the above requirements except that a duct bank can be used in lieu of steel casing pipe. All underground electrical facilities within the planned construction area must meet the minimum clearance requirements as defined in CPUC General Orders.

6.3.2 Overhead Utilities

Except for electrical and communication lines, overhead utilities shall cross the tracks at local street overpasses. Such utilities shall either be contained within the overpass structure, or if it is attached to the outside of the overpass structure, it will be encased in a steel casing sleeve. Where electrical and communication lines cannot be accommodated in an overpass structure, their design shall be governed by the requirements of CPUC General Orders.

6.3.3 Above Ground Utilities

In exclusive Authority right of way, all above ground utilities shall be moved outside of the right of way or conform to the requirements of Sections 6.3.1 and 6.3.2, “Underground Utilities” and “Overhead Utilities”. In shared corridors, where design and location of existing utilities may be governed by existing agreements, and where relocation of the utility will have significant impact with respect to cost, environment or public inconvenience, the designer shall investigate the use of fencing, walls, cages, or other sources of protection in order to separate or isolate the utility from CHSTP features.

6.3.4 Exempt Utilities

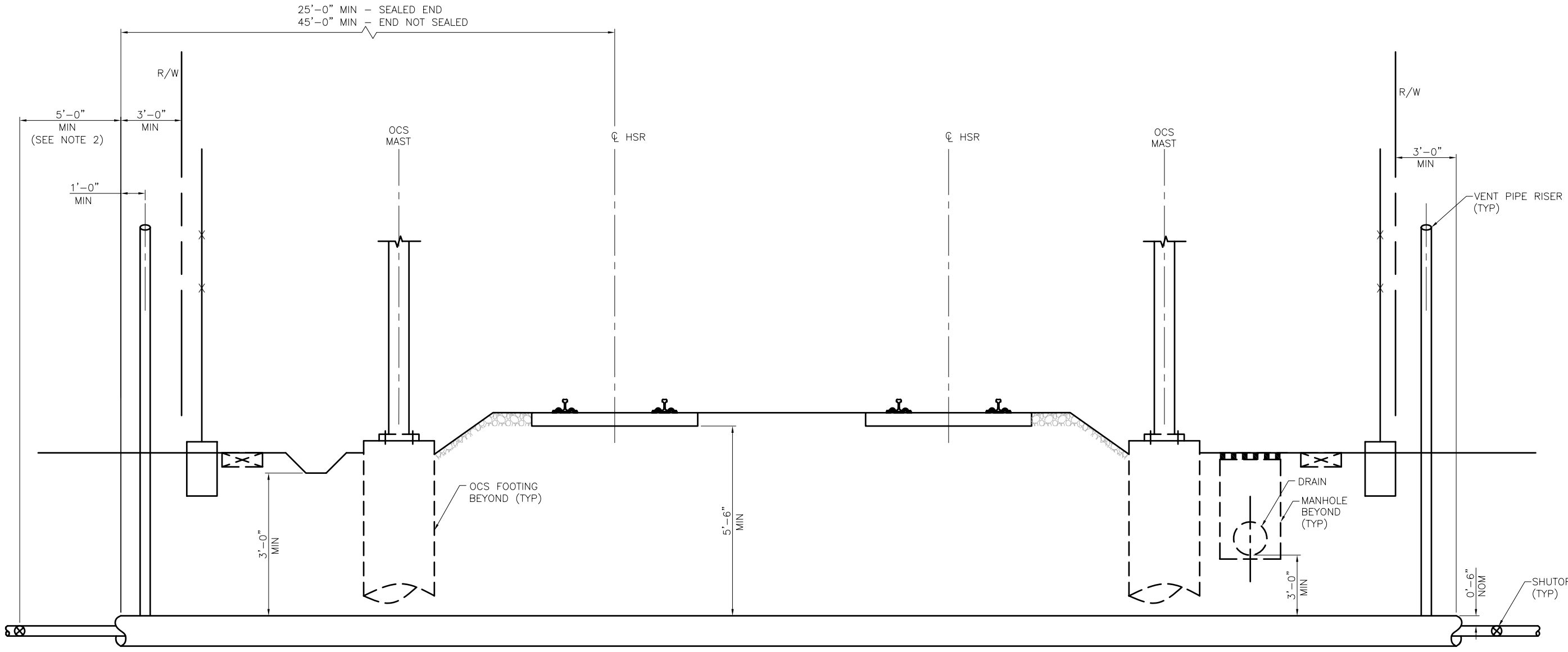
All utilities shall follow the guidelines set forth in this document. Exemptions from these requirements will not be permitted. Where the requirements of this technical memorandum can not be met, the Design Variance process shall be followed. The Design Variance protocol is presented in Technical Memorandum.1.1.8 – Design Variance Guidelines..

6.3.5 Location of Proposed Utilities

To the extent that is reasonable and feasible, proposed utilities that are not related to the operation and maintenance of CHSTP shall be located outside the Authority right of way. The location, design, and construction of relocated or proposed utilities shall meet the requirements of CPUC General Orders and the provisions of the Authority.

APPENDIX A: TRANSVERSE SUBSURFACE UTILITY ENCROACHMENT

EXHIBIT A - TRANSVERSE SUBSURFACE UTILITY ENCROACHMENT



TRAVERSE SUBSURFACE UTILITY ENCROACHMENT
NTS

NOTES:

1. FOR ADDITIONAL REQUIREMENT, SEE AREMA VOL. 1, CHAP. 1, PART 5.
2. SHUTOFF VALVE MUST BE ACCESSIBLE FROM OUTSIDE THE R/W. IT MAY NOT BE REQUIRED ON BOTH SIDES.
3. THE CASING SHALL CONTINUE 3'–0" BEYOND THE R/W LINE.
4. TRANSVERSE UTILITIES SHALL BE SITED AWAY FROM MANHOLES, OCS FOOTINGS, AND OTHER HSR SUBSURFACE ELEMENTS.

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APPENDIX B: SAMPLE UTILITY LOGS

EXHIBIT B-1 UTILITY INFORMATION LOG

EXHIBIT B-2 UTILITY OWNER CONTACT INFORMATION

EXHIBIT B-3 UTILITY OWNER CONTACT LOG

EXHIBIT B-4 UTILITY LOG INDEX

Exhibit B-1
Utility Information Log

No.	Region	Owner	Dwg No.	Station	Facility Type	Size	Units	Length	% Cost Allocation	Disposition

Exhibit B-2
Utility Contact Information

No.	Region	Owner	Contact	Address	City	Zip	Phone	Fax	Email	No. of Impacts	Agreement

Exhibit B-3
Utility Owner Contact Log

No.	Region	Owner	Date	Correspondence Type	Initiated By	Description

Exhibit B-4
Utility Log Index

Heading	Explanation
No.	Sequentially number each entry
Region	Regional Consultant
Owner	Utility Owner
Station	Stationing along the alignment to locate the facility
Facility Type	Type of utility being conveyed
Size	Size of utility facility
Units	Units of measure for the size of utility
Length	Length of utility being impacted-Use separate entries for abandonment and relocated utilities
% Cost Allocation	Percentage of construction cost to be borne by CHSRA (requires input by CHSRA)
Disposition	State the type of work being performed (Abandoned, relocated)
Contact	Name of a contact person representing the Owner
Address	Street Address of the Owner
City	Owner's City location
Zip	Zip Code of the Owner's contact location
Phone	Phone number for Owner's representative
Fax	Fax number for Owner's representative
Email	Email address for Owner's representative
No. of Impacts	Number of utilities belonging to this owner that is being impacted by CHSTP
Agreement	Indicate whether an agreement should be entered into with this owner
Date	Date of contact with Owner
Correspondence Type	Type of correspondence with Owner (phone, fax, letter, email)
Description	Description of the discussion and/or request. Include reference to email or letter dates