

4.00.00.00 – ESTIMATING

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(REV 7/2016)

4.01.00.00 – GENERAL

4.01.01.00 Introduction

The R/W estimate is the first step in building a credible budget. Estimates are prepared for all transportation projects regardless of whether capital expenditures for right of way on the transportation project exist. The elements of an estimate allow R/W Planning and Management to forecast capital outlay support personnel requirements, capital outlay expenditures, and future programming needs. Estimate data is entered into PMCS on the EVNT RW and COST RW1-6 Screens, in addition to the Estimating section of ROWMIS.

Since various levels of Caltrans' management, the CTC, the Legislature, and local agencies use R/W estimates, it is extremely important that R/W estimates be realistic and reliable. Overestimating may result in a project being deferred or eliminated. Underestimating understates the Department's financial obligations and may adversely affect supplemental funding or staffing needs.

4.01.02.00 Project Development, Programming, and Budgeting

Direct communication between R/W and Project Development staff is essential during all phases of the project development process. This process starts with the Project Initiation phase (PID) and carries through to completion of Plans, Specifications, and Estimates (PS&E). When it is determined that an estimate is needed, the program manager or project engineer submits a request to R/W. This is the beginning of a series of requests and estimates corresponding to changes that occur as the project develops.

As part of the estimating process, R/W will review right of way requirements submitted in the estimate request. R/W must notify the requesting unit (program manager or project engineer) if its review identifies design deficiencies. Deficiencies may include lack of replacement access, insufficient right of way width, any damage to a remainder parcel that has not been addressed, or any other unresolved issues. R/W will identify those proposed design features that could have a dramatic effect on value.

4.01.03.00 **Contingency Costs**

Contingency costs are applied to acquisition and utility relocation costs for all estimates. Contingencies for relocation assistance, clearance/demolition, and title and escrow costs may be applied when considered appropriate. Contingency costs provide for possibilities such as administrative settlements, condemnation awards, utility overruns, interest payments, and unanticipated goodwill payments.

When preparing an estimate for a Project Study Report (PSR) or equivalent, R/W should apply a contingency rate of at least 25% unless district experience dictates otherwise. When preparing an estimate for a Project Report (PR), R/W should always base contingency costs on district experiences.

4.01.04.00 **R/W Data Sheet Approval**

The Senior Agent responsible for Estimating shall review and recommend approval of all R/W Data Sheets prepared by staff. The Region/District R/W Manager or designee shall approve all R/W Data Sheets. The following statement will be included directly above the approver's signature block in all R/W Data Sheets:

I have personally reviewed this Right of Way Data Sheet and all supporting information. I certify that the probable highest and best use, estimated values, escalation rates, and assumptions are reasonable and proper, subject to the assumptions and limiting conditions set forth; and I find this Data Sheet complete and current.

4.01.05.00 **Log of Estimates**

A log of all requests for original and revised estimates shall be maintained by the Region/District Estimating unit.

4.01.06.00 **Estimate File**

The Senior Agent responsible for Estimating must ensure that a file is maintained for each project for which a R/W estimate is prepared. The file will remain active until the right of way portion of the project is completed, at which time it will become part of the project file.

4.01.06.01 Filing System

For efficient retrieval of previous estimates or other information, the following procedure shall be implemented:

- Establish a file when the initial request for an estimate is received.
- Identify the file by county-route-post mile, expenditure authorization/project ID number, project limits, and requesting unit.
- Maintain the file in chronological sequence.

4.01.06.02 File Contents

The individual estimate file shall contain:

- The map(s) used in preparing the estimate, with date of original map(s) and dates of subsequent revisions. If, due to size or number, the maps cannot be maintained in the file, a reference should be placed in the file indicating where the maps are filed. Regardless of whether the maps are maintained in the file or in another location, they are part of the file and are to be retained in accordance with file retention requirements.
- Copies of all memoranda of requests and responses.
- Copies of all R/W Data Sheets (including attachments), Preliminary Estimates, Conceptual Cost Estimates, and Estimate Worksheets prepared for the project, along with accompanying R/W Data Sheet Transmittal Memoranda.
- Comparable sales and all other data used to prepare the estimate.
- A diary annotating by date and person making the entry each action taken regarding estimates on the project. The diary shall contain all actions the estimator takes throughout the life of the project.

4.01.07.00 **Preliminary Estimates**

R/W is often asked to provide a rough estimate without sufficient lead time or adequate mapping. These estimates are prepared using, at a minimum, the first page of the Data Sheet and the Transmittal Memorandum. The face of the R/W Data Sheet for this type of estimate is marked in bold caps:

“NOT VALID FOR BUDGETING OR PROGRAMMING PURPOSES”

The reasons for this notation are indicated in the Transmittal Memorandum.

4.01.07.01 **Conceptual Cost Estimates**

A Conceptual Cost Estimate (CCE) is a specific type of preliminary estimate that may be requested from R/W during PID phase. The current Conceptual Cost Estimate was developed in response to the *Memorandum: Interim SHOPP Project Initiation Report Project Initiation Document* outlining the multi-divisional development of the revised interim SHOPP PIR guidance and template, led by the Division of Transportation Planning (DOTP). Additional information can be found at the [Project Initiation Documents page](#). This Interim SHOPP PIR guidance identifies minimum PID requirements to be captured in estimates. The CCE should include:

- An estimate of “accurate and reliable” support costs for PA&ED
- An estimate of a reliable range for support & capital for future phases
- A reliable estimated schedule for completion of right of way

The purpose of this estimate is to provide the necessary project information to complete a work plan estimate for R/W support resources needed for the 0 Phase (PA&ED) component of a project, as well as to provide a rough order of magnitude estimate.

The CCE Request will contain the basic project information, the proposed right of way requirements, and estimate mapping. The request will also note if a field review is requested or is not required at this time. See [04-EX-07, K Phase Conceptual Cost Estimate Request – Right of Way](#).

The CCE Estimate Form will be completed only if the CCE Request is submitted to R/W. See [04-EX-08, K Phase Conceptual Cost Estimate Form – Right of Way](#).

4.01.08.00 Project Estimate Mapping

R/W Engineering is ultimately responsible for project estimate mapping. Guidelines for cost estimate map preparation are found in the R/W Manual, Chapter 6, Right of Way Engineering, Section 6.04.00.00, and the [Plans Preparation Manual \(PPM\)](#), Section 4-2. Some districts have made arrangements for R/W to receive mapping suitable for estimating purposes from other functional units; these arrangements are acceptable as long as the estimate mapping is in compliance with the outlined requirements.

4.01.09.00 Training

Each agent assigned estimating responsibilities should receive a thorough orientation on why estimates are prepared and how they are used. Ideally, an estimator should have practical experience as an appraiser and have taken the basic appraisal courses, at the very least. Additional courses in building cost estimating and a working familiarity with various cost estimating resources are recommended.

4.01.10.00 Hazardous Waste Site Identification

In the early stages of the project development process, Region/District Project Development and Environmental units will identify sites or facilities that have the potential for being contaminated with hazardous waste or materials. The presence of hazardous waste or materials in future right of way can cause costly project delays if discovered late in the project development process. It is imperative, therefore, that every effort be made to ensure early detection of hazardous waste sites.

As part of the estimating process, estimators must field review subject parcels. If an estimator suspects a hazardous waste site or hazardous materials are present in the proposed right of way and have not been previously identified, the estimator must immediately send written notification to the Region/District Project Development and Environmental units and both Region/District and R/W Hazardous Waste Coordinators. A copy of the memorandum is to be attached to the R/W Data Sheet.

When field reviewing subject properties, estimators should pay special attention to improvements where structural components could contain large amounts of hazardous materials, such as asbestos. In addition, present and prior land uses may indicate the potential for contamination on the site, as well as the possible presence of underground storage tanks that may be in use or have been used for the storage of hazardous materials.

Examples of existing or former uses where hazardous wastes or material may exist include:

- Commercial and industrial sites, such as: service stations; muffler shops; bulk plants; paint manufacturing companies; machine shops; plating works; dry cleaning plants; chemical and fertilizer companies that may use or have used solvents, cleaning compounds, catalysts, cutting oils, plating solutions, dyes, paints, or other chemicals.
- Junkyards, auto wrecking yards, dumps, or landfills.
- Underground or aboveground tank storage facilities for liquid hydrocarbons, pesticides, or other toxic materials.
- Asbestos siding, roofing, flooring, or insulation on or in existing buildings.
- Disposal dumps or pits that may contain agricultural chemicals or industrial wastes.
- Utility substations or storage/maintenance facilities.
- Sites where contamination may have resulted from an adjacent property owner's operation, or where regulatory action involves implementation of hazardous waste regulations.
- Military bases and reservations.
- Atomic energy sites.
- Railroad sites.

4.01.11.00 Use of Incentive Payment Program

If use of an incentive payment program is proposed or requested, these additional costs should be reflected in the R/W estimate as best as possible. If used, incentive payments must be applied to all parcels on a project regardless of type, size, appraisal amount, or ownership (including public agencies). Incentive payments are based on a lump sum payment of 10% of the appraised value of all parcels under the same ownership with a minimum payment of \$1,000 and a maximum payment of \$100,000. Use of incentive payments should be discussed with, at minimum, the Estimating Senior prior to use in an estimate.

4.02.00.00 – PREPARING THE ESTIMATE

4.02.01.00 Estimating Theory

Estimates are forecasts of anticipated costs for properties that will be acquired at a future date. An estimating procedure has been developed to assist in identifying these costs. All districts must use this procedure in developing estimates unless an alternate method receives R/W Headquarters' prior approval.

The estimating procedure asks the estimator to look into the future to try to determine, to the highest degree possible, the value of subject properties at the time they are to be acquired (assumed to be the year of R/W Certification). This is accomplished in the following manner:

1. Determine the subject's most probable highest and best use including stage of development and probable improvements at the time of acquisition.
2. Determine the current value for the subject based on the rationale described in 1 above.
3. Determine value at time of acquisition by applying an escalation rate to the current value.

For Example: 20 acres of agricultural land today may have an estimated value of \$1,000 per acre. It is anticipated that at the time of acquisition this property will have been developed into a commercial-industrial park site. Commercial-industrial property has a current land value of \$10,000 per acre. The estimator determines the subject's current value based on future use. Therefore, the subject's estimated current value based on the future use is \$10,000 per acre for a total of \$200,000. If the escalation factor has been established at 10%, for example, the subject's escalated value would be \$11,000 per acre for a total of \$220,000.

4.02.02.00 Property Values

Although estimates are opinions, they are expected to be as solidly based as possible using appraisal principles. The estimator is not expected, however, to be put in the time and effort that goes into an appraisal.

The estimator is allowed to use indicators of value that may not typically be acceptable in appraising. If District Appraisal staff has previously verified comparable sales and listings data, the estimator shall obtain this information. To prepare an estimate, the estimator will use this information as well as less direct indicators of market value such as:

- Staff appraisals of comparable properties.
- Assessor's information.
- Multiple listing service sales data.
- Observed listings.
- Information from brokers.

Factors to consider when preparing an estimate include increases in real estate values due to changes in land use resulting from anticipation of the proposed project, probable increases in values due to real estate improvements under construction at the time of the estimate, and any extraordinary costs that can be anticipated.

District experience and the experiences of other districts with payments for loss of goodwill should also be considered and factored into the estimate.

4.02.03.00 Curative Damages/Construction Contract Work

For estimating purposes, activities commonly referred to as Construction Contract Work (CCW) will be considered as Curative Damages when it is anticipated they will be satisfied with a cash payment to be included in the amount payable under clause 2(A) of the R/W Contract. (See R/W Manual Section 8.05.12.00, "Cost to Cure Damages.") If it is known at the estimating stage that the roadway contractor will satisfy Curative Damage type obligations during construction, the obligations will still be referred to as Construction Contract Work.

Project Development usually estimates the costs of Curative Damages and/or Construction Contract Work. Estimates for Curative Damages are to be included in Section 1.A. (Acquisition) on the R/W Data Sheet. This will ensure that Curative Damages are included as acquisition costs in the COST RW1-5 Screens and when the project is programmed. Estimates for Construction Contract Work will be included in the R/W Data Sheet in Section 1.G. (Construction Contract Work). Costs on this line are not entered in the COST RW Screens.

Construction Contract Work is a Right of Way obligation regardless of how it is accomplished. It is Right of Way's responsibility to take a proactive role in ensuring that CCW costs in Section 1.G. of the R/W Data Sheet are provided to Project Development for inclusion in the PS&E.

4.02.04.00 **Properties With Hazardous Waste or Materials**

When estimating properties where hazardous waste or materials are known to exist, the estimator will observe the valuation guidelines found in Appraisal Chapter 7, Section 7.04.12.06.

4.02.05.00 **Limiting Conditions**

Limiting conditions are constraints that can reduce an estimate's reliability. They may include inadequate mapping or design information or short lead time. They are always stated in the appropriate section of the R/W Data Sheet; e.g., limiting conditions relating to acquisition are documented in section 6, while limiting conditions relating to utilities are documented in section 7 (see [Exhibit 04-EX-01](#)).

4.02.06.00 **Assumptions**

Assumptions are made both because of limiting conditions and the need to predict future costs far in advance of actual expenditures. They can be made on a parcel-by-parcel basis or may apply to the whole project. Estimators are expected to make reasonable assumptions. When more than one reasonable assumption can be made, the estimator is expected to select the assumption that yields the highest supported anticipated cost. All assumptions are to be documented in the appropriate section of the R/W Data Sheet; e.g., those relating to acquisition are documented in section 6, while those relating to utilities are documented in paragraph 7 (see [Exhibit 04-EX-01](#)).

Following are specific applications of the above general policy;

- Estimates will always represent the *most reasonable* and justifiable project delivery schedules.
- Estimates should always be based on the most probable "worst case" and "highest cost" assumptions.

- When estimates are made for a project where several alternatives are under consideration, the estimate used for initial programming purposes should be the same alternative that is used for the construction cost estimate. If the alternative for the construction cost estimate has not been selected, the estimate for the most probable highest cost alternate of those considered by district management as most likely to be adopted shall be used. Estimates should not be artificially inflated by using the cost of an alternative included for study that does not have a realistic chance of being adopted.
- When in doubt because of inadequate right of way or construction details or other factors, a full acquisition should be assumed.
- For businesses, district experience and the experiences of other districts with payments for loss of goodwill in similar circumstances should be considered. Projected payments should be included in the estimate.

4.02.07.00 Documenting Limiting Conditions and Assumptions

It is very important to document limitations within which the estimate was prepared and assumptions made in developing the estimate. Without a clear understanding of this information, Project Development staff using the estimate will not know whether they have a very rough approximation or a complete estimate that is consistent with the current state of development of the project. In addition, statements of limiting conditions and assumptions may alert design staff to certain design conditions that if modified could reduce or increase project cost. Statements documenting the following limiting conditions and assumptions are to be included in the appropriate section of the R/W Data Sheet; e.g., those relating to acquisition are documented in paragraph 6, while those relating to utilities are documented in paragraph 7 (see [Exhibit 04-EX-01](#)):

- The specific parcels that may be partial acquisitions but are assumed to be full acquisitions due to incomplete mapping and/or design.
- The specific number of parcels with businesses where it is expected a payment for the loss of goodwill will be required.
- Any known or anticipated extraordinary cost for difficult or controversial acquisition cases based on the district's experience with the subject or similar type of property owner.

- The anticipated additional costs for projects with aggressive schedules that will require rights of entry and/or condemnation proceedings.
- Any other unusual documented higher costs that are anticipated, such as revisions to the general plan, a city incorporation that may affect value, and other governmental actions or projects.
- Long lead time utility relocations.

4.02.08.00 **Estimate Content**

4.02.08.01 **R/W Data Sheet**

The completed [R/W Data Sheet \(Exhibit 04-EX-01\)](#) is the formal R/W estimate. The Data Sheet, with attachments, contains all relevant information and estimate conclusions.

Workload data from the R/W Data Sheet is entered in the EVNT RW screen. Cost data from the R/W Data Sheet is entered into the COST RW1-5 screens.

A Data Sheet is required for all viable alternates on all proposed projects. If an item on the Data Sheet is not applicable, it should be so indicated. A copy of the COST RW1 Screen reflecting the estimate is to be attached to the Data Sheet for the Preferred Alternate. (COST RW1 Screens are to contain escalated cost.) A [Utility Information Sheet \(Exhibit 04-EX-05\)](#) and a [Railroad Information Sheet \(Exhibit 04-EX-06\)](#) should be used whenever involvements dictate. The Data Sheet, including all attachments, becomes a part of the planning document for which it was prepared (PSR, PSSR, IPR, PR, PID, etc.). Copies of all Data Sheets and attachments and all supporting information, including comparable sales (specify which comparable sales or other data were used to estimate the value of each parcel), are to be placed in the estimate file. The first page of the Data Sheet contains data necessary for PMCS and should be used as the PMCS input document. Refer to [Exhibit 04-EX-01](#), pages 5-6 for instructions on completing the Data Sheet.

4.02.08.02 R/W Estimate Worksheet

The estimator will use the R/W Estimate Worksheet to arrive at individual parcel costs for each project alternate. Because of the varied forms used by the districts and types of projects estimated, statewide standardization of this form will not be mandated. [Exhibit 04-EX-02](#) is a suggested format for the R/W Estimate Worksheet. To ensure that correct data is entered into PMCS, each district must use a worksheet form which contains the following 17 items for each parcel in the estimate.

1. Parcel type (see [Exhibit 04-EX-03](#) for definition)
2. Parcel number
3. Postmile designation/kilometer post
4. Estimated cost
5. RAP cost
6. Clearance/demolition cost
7. Number of RAP displacements
8. Number of clearance/demolition units
9. Number of construction permits
10. Construction contract work cost
11. Title and escrow fees
12. Area in right of way
13. Area in excess
14. Permitter
15. Estimated cost of permit
16. Type of permit
17. Fiscal year when expenditure will occur

To standardize information entered into PMCS, any customized district forms used should be designed to maintain sequential order of the first six items shown above. Data for items 1 through 5 are required for each parcel in the estimate. Data for items 6 through 17 will be provided as appropriate. Information contained in the R/W Estimate Worksheet is summarized in the R/W Data Sheet. Copies of all worksheets are placed in the estimate file.

4.02.08.03 **Project Permit Fees**

Project permit fees are those costs attributed to permits that must be acquired by the Department and *are required to construct the project*. The most common of these permits are Fish and Game 1601 permits, Water Resource Control Board National Pollutant Discharge Elimination System Permits (NPDES), and Regional Water Quality Control Board 401 Water Quality Certifications. Typically these and other permits are acquired during the project's Project Development stage. The fees for these permits are usually one-time expenses, although payment for time extensions on specific permits may occur. Although R/W does not participate in acquiring these permits, they will be treated as R/W capital expenses, and R/W must budget for them.

At the R/W Estimating stage, the R/W estimator will contact the Project Manager to obtain a list of required permits. This list shall include, at a minimum, the name of the permitter, type of permit, total anticipated cost, and the fiscal year when the fees are anticipated to be expended. This information shall be entered into Sections 14-17 of the [Estimate Worksheet \(Exhibit 04-EX-02\)](#). These costs will ultimately be reflected in the [R/W Data Sheet \(Exhibit 04-EX-01\)](#) under Section 1, Right of Way Cost Estimate, Subsection A., Project Permit Fees.

4.02.08.04 **R/W Data Sheet Transmittal Memorandum**

The [R/W Data Sheet Transmittal Memorandum \(Exhibit 04-EX-04\)](#) (internal Caltrans link) is used to transmit R/W Data Sheets to the unit requesting the estimate. The memorandum should contain a recapitulation of the limiting conditions and assumptions stated in the Data Sheet, along with a discussion of right of way lead time requirements.

4.03.00.00 – ESCALATION RATES

4.03.01.00 General

Escalation can be defined as an increase in cost due to upward changes in market conditions. Because costs typically do increase over time, escalation rates must be developed for estimating purposes. The rates are in the form of percentages and may be districtwide or countywide, although individual project rates should be developed and used wherever possible for the greatest accuracy.

The estimator prepares escalation rates for right of way costs; the utility estimator prepares escalation rates for utility relocation costs. (See also Chapter 13, Utility Relocation, for information on escalation rates for utility relocation costs.) The appropriate functional area should review supporting data, including the analysis used to substantiate rates, before the data is used. Escalation rate documentation is to be maintained in the estimate files.

4.03.02.00 Factors Affecting Escalation Rates

Escalation rates are influenced by many factors, such as increases in development and building costs, legislation, inflation, and general economic conditions. The effect of these factors can be estimated but cannot be precisely determined.

4.03.03.00 Methods of Determining Escalation Rates

Data used in establishing escalation rates may be found in assessed value trends from repeating sales, the direction and trends of future development of areas, private and governmental forecasts, and construction and building cost indices. Past experience in estimating, appraising, and acquisition in the subject area should not be overlooked.

Judgment and experience aid the estimator in determining the proper rate. Improved methods of determining proper rates should be continuously sought.

4.03.04.00 Individual Escalation Rates

Right of way and utility costs may escalate at different rates. To accommodate these differences, separate escalation rates for right of way (which includes land, improvements, damages, RAP, demolition, and goodwill) and utilities may be applied.

Separate utility escalation rates can be used to show more reliable costs in the Program Documents. This can be important when utility costs are changing more rapidly than other right of way costs. Costs should be escalated to the year of R/W Certification, except where unusual circumstances dictate otherwise. *(For example: Knowledge that a contract for relocation of a utility may have to be let a year or more before highway construction begins.)* Knowledge of the escalated utility costs as an item separated from right of way costs contributes to the effectiveness of the Program Documents.

4.03.05.00 Using Escalation Rates

Escalation rates are applied to estimated costs for acquisition, RAP, utility relocation, etc. Estimated costs are escalated to the year of R/W Certification and then spread over the anticipated years of acquisition (including after R/W Certification if applicable). These costs are entered into the COST RW1 Screen, a copy of which is to be attached to the R/W Data Sheet.

4.04.00.00 – UPDATING THE ESTIMATE

4.04.01.00 General

Estimates are prepared during various stages of the project development process. Preliminary estimates prepared at the beginning of the planning process need not be updated unless other units specifically request an update.

Any written request for a revised data sheet may require a field review, a review of property ownerships, a new utility estimate, and a check with the environmental unit.

Estimates prepared for Project Initiation Documents (PID), such as PSRs, PSSRs, and PRs, must be updated whenever project scope, scheduling, or value changes sufficiently to warrant the update. Updating an estimate may involve little more than substituting an amended page to an otherwise current R/W Data Sheet or could involve preparing a new Data Sheet.

4.04.02.00 For Programming Purposes

Once projects are part of one of the Department's Program Documents (STIP, SHOPP, TSM, etc.), updating of estimates may occur whenever it is determined the estimate is no longer valid.

At a minimum, all projects in the Department's Program Documents will be reviewed and updated at the Project Report stage. When cost estimates are performed for programming purposes, estimates for active projects must be kept current and updated at least once a year, in accordance with the Project Development Procedures Manual (Chapter 20).

4.04.03.00 Final Cost Estimates At R/W Certification and Construction Contract Acceptance

Final cost estimates representing all capital and support costs (phase 2 and phase 9) are required for all programs, except Minor, Maintenance, and Local Public Agency off-system projects. Typically performed by the R/W Project Coordinator and/or Planning and Management staff, the R/W Estimator may assist as needed to estimate remaining costs.

At the Certification stage, final cost estimates are attached to R/W Certifications 1 or 2. For R/W Certifications other than a 1 or 2, the final cost estimate may be deferred until the R/W Certification is updated or upgraded (deferral not to exceed 12 months).

Final cost estimates are also required at the time of Construction Contract Acceptance (CCA).

See Programming and Budgeting policy for more information on final cost estimates.

CHAPTER 4

ESTIMATING

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EXHIBITS

<u>Exhibit No.</u>	<u>Title</u>
04-EX-01	Right of Way Data Sheet
04-EX-02	Right of Way Estimate Worksheet
04-EX-03	Parcel Type Definitions
04-EX-04	Right of Way Data Sheet Transmittal Memorandum (for internal Caltrans use)
04-EX-05	Utility Information Sheet
04-EX-06	Railroad Information Sheet
04-EX-07	K Phase Conceptual Cost Estimate <u>Request</u> – Right of Way
04-EX-08	K Phase Conceptual Cost Estimate <u>Form</u> – Right of Way

Exhibits are located online:

- [External Exhibits site](#)
- [Internal Exhibits site](#) (internal Caltrans link)

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