

**REVIEW DRAFT**

*I-5 Columbia River Crossing Partnership:  
Conceptual Engineering & Environmental Analysis*

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Web-Integrated Database

Technical Memorandum #B1.7

**Prepared by**

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## **INTRODUCTION**

As part of the I-5 Columbia River Crossing Partnership; Conceptual Engineering and Environmental Analysis, Kittelson & Associates, Inc. (KAI) has developed a web-integrated database containing the information gathered during Tasks B1.1 and B1.2 of this project. During these two project tasks KAI gathered and catalogued design guidance materials and past conceptual engineering and environmental analysis materials completed for the I-5 Columbia River Crossing Partnership project work.

The web-integrated database is a warehouse for I-5 Bridge Influence Area-related project data. Currently, it contains much of the past work completed for this project. However, as the project proceeds, the database can be used as a tool for project team members to locate past work and store current work. The web-integrated database will ultimately contain all of the information developed for the I-5 Columbia River Crossing Partnership.

## **DATABASE CONTENTS**

At the beginning of this project, David Evans and Associates, Inc. (DEA) provided a CD compilation of past I-5 work completed by DEA. The Oregon Department of Transportation (ODOT) and the Washington State Department of Transportation (WSDOT) provided conceptual drawings that were completed as part of the Bridge Influence Area Study.

In addition, KAI requested additional material from ODOT and WSDOT including documents related to previous environmental analyses, resource documents, design criteria, any schematic concept development, traffic operations and safety analyses and any documentation related to the preliminary concept evaluation. The final document request and a summary of the material provided back to KAI is included in Appendix A.

Subsequent to the data request, KAI had meetings with ODOT and WSDOT staff as well as staff from David Evans & Associates, and Parsons Brinkerhoff to provide our staff with a better understanding of the past work and the available data.

There are currently 503 records in the database. All of the material received was manually categorized according to the listing shown in Appendix B. To the extent that a document fits in multiple categories it was coded as such.

## **DATABASE ORGANIZATION AND USE**

The database is organized in a manner largely consistent with how information is included in an environmental impact statement. It is expected that all users will either be planners or engineers familiar with the environmental review process. Exhibit 1 is a screen capture of the opening page of the database.

## Exhibit 1. Basic Search Screen with Notes

[Logout](#)

### Basic Search

Please select the desired information below to perform a basic search. Leaving all of the categories unchecked will retrieve all the documents in the database. Clicking on the arrow next to a category will retrieve all the documents for that specific category.

[Advanced Search](#)

**Category**

**All Categories**

**Introductory Material**

**Environmental Considerations**

Soils and Geology

Cultural Resources (including historic and archeological)

Hydrology, Hydraulics, Water Quality

Visual

Natural Resources (Terrestrial, Wetlands, Aquatics)

Air Quality

Land Use

Noise

Socioeconomics

Hazardous Materials

Environmental Justice

Energy

**Conceptual Engineering**

Conceptual Designs

Traffic Operations Analysis

Design Guidance and Criteria

Safety Analyses

Other Source Documents

Horizontal Alignment Information

Base mapping

Vertical Alignment Information

Topographic Information

Cost Estimating Information

Concept Schematics

Bridge lift information

Modeling Data

Tolling Information

Traffic Volumes

**Evaluation or Comparison**

**List of Agencies or Persons Contacted**

**Funding**

**Freight**

[Advanced Search](#)

**Categories**  
Categories are loosely defined by subjects in an EIS context.

Categories

Sub-categories

Click on the little arrows to go straight to a listing of documents in the associated category.

I:\profile\6780\report\draft\6780f001.cdr

The database's interface offers users a number of search options. First, the search box, located at the top of the page, works similarly to other search engines – users enter desired topic, subject, author, or any other identifying text, and click the 'submit' button. Second, users have the option to ignore the search box and use the category (the gray bars) and subcategory (in green) choices instead. These categories and subcategories parallel pertinent areas in an Environmental Impact Statement and provide a few additional subject areas. The database will search for documents that are in any of the categories and/or subcategories checked. Third, users may combine the first two search functions by typing in desired text in the search box and checking the boxes of desired categories and/or subcategories. Finally, users interested in only a specific category or subcategory may immediately view the (sub)category's documents by clicking on the arrow to the right of the category/subcategory

name. The database will return all documents if no search text is entered and no categories or subcategories checked.

The basic search will return any document matching any of the search criteria entered – any text, category or subcategory checked. Exhibit 2 provides an example of a search result.

### Exhibit 2. Search Results View

The screenshot shows a search results interface. At the top right is a 'Logout' button. The main heading is 'Search Results' with a callout box pointing to it that says 'Number of records found.' Below this, it says '2 records found'. There are two paragraphs of instructions: 'To view the document directly from this page, simply click on the Document Name link which will open a new window.' and 'To save the document, right click the Document Name link, choose 'Save Target As..' and choose the location where you would like to save the document.' Below the instructions, it says 'Showing 1 to 2 of 2 records'. There are two document entries. The first entry has a callout box pointing to its 'Document ID' (15C10371) that says 'Unique number arbitrarily assigned. Users can search by these numbers to find specific documents.' The second entry has a callout box pointing to its 'Document Name' (15C10346\_Natural Resources Tech Memo rev2.doc) that says 'Click on this link to view and/or download the document.' There is also a callout box pointing to the 'Document Name' of the first entry that says 'Return to the Basic Search screen.' At the bottom left, there is a 'Perform Another Search' link. A 'Document Profile' link is also visible next to the second document's author information.

**Search Results** Logout

Number of records found.

2 records found

To view the document directly from this page, simply click on the Document Name link which will open a new window.

To save the document, right click the Document Name link, choose 'Save Target As..' and choose the location where you would like to save the document.

Showing 1 to 2 of 2 records

<b>Document ID:</b>	15C10371
<b>Title:</b>	EIA Draft Report
<b>Date Created:</b>	10/30/2001
<b>Lead Author:</b>	NA
<b>Authoring Company:</b>	Portland / Vancouver I-5 Trade Partnership
<b>Document Type:</b>	pdf (Adobe Acrobat)
<b>Document Name:</b>	<a href="#">15C10371_EIA Draft Report.pdf</a> (18.55 MB)

Unique number arbitrarily assigned. Users can search by these numbers to find specific documents.

<b>Document ID:</b>	15C10346
<b>Title:</b>	Natural Resources Tech Memo
<b>Date Created:</b>	10/8/2001
<b>Author:</b>	Alex Dupey
<b>Authoring Company:</b>	David Evans & Associates
<b>Document Type:</b>	Microsoft Word Document
<b>Document Name:</b>	<a href="#">15C10346_Natural Resources Tech Memo rev2.doc</a> (79.5 KB)

Click on this link to view and/or download the document.

Document Profile

Return to the Basic Search screen.

Perform Another Search

i:\projfile\6780\report\draft\6780f002.cdr

For more search options, users can click on the 'Advanced Search' link either to the right of the search box or at the bottom of the page to refine their search. The advanced search adds three search options. Exhibit 3 provides a screen capture of the advanced search menu.

### Exhibit 3. Advanced Search Screen with Notes

## Advanced Search

Please select the desired information below to perform an advanced search. Leaving all of the categories unchecked will retrieve all the documents in the database. Clicking on the arrow next to a category will retrieve all the documents for that specific category.

[Advanced Search Tips](#)

<b>Search Text:</b> <input type="text"/>	<input type="button" value="Submit"/>	<a href="#">Basic Search</a>
<b>Using</b>		
<input checked="" type="radio"/> Any Word <input type="radio"/> All Words		
<b>Category</b>		
<input type="checkbox"/> <b>All Categories</b>		
<input type="checkbox"/> <b>Introductory Material</b> (+)		
<input type="checkbox"/> <b>Environmental Considerations</b> (+)		
<input type="checkbox"/> Soils and Geology (+)	<input type="checkbox"/> Cultural Resources (including historic and archeological) (+)	
<input type="checkbox"/> Hydrology, Hydraulics, Water Quality (+)	<input type="checkbox"/> Visual (+)	
<input type="checkbox"/> Natural Resources (Terrestrial, Wetlands, Aquatics) (+)	<input type="checkbox"/> Air Quality (+)	
<input type="checkbox"/> Land Use (+)	<input type="checkbox"/> Noise (+)	
<input type="checkbox"/> Socioeconomics (+)	<input type="checkbox"/> Hazardous Materials (+)	
<input type="checkbox"/> Environmental Justice (+)	<input type="checkbox"/> Energy (+)	
<input type="checkbox"/> <b>Conceptual Engineering</b> (+)		
<input type="checkbox"/> Conceptual Designs (+)	<input type="checkbox"/> Traffic Operations Analysis (+)	
<input type="checkbox"/> Design Guidance and Criteria (+)	<input type="checkbox"/> Safety Analyses (+)	
<input type="checkbox"/> Other Source Documents (+)	<input type="checkbox"/> Horizontal Alignment Information (+)	
<input type="checkbox"/> Base mapping (+)	<input type="checkbox"/> Vertical Alignment Information (+)	
<input type="checkbox"/> Topographic Information (+)	<input type="checkbox"/> Cost Estimating Information (+)	
<input type="checkbox"/> Concept Schematics (+)	<input type="checkbox"/> Bridge lift information (+)	
<input type="checkbox"/> Modeling Data (+)	<input type="checkbox"/> Tolling Information (+)	
<input type="checkbox"/> Traffic Volumes (+)		
<input type="checkbox"/> <b>Evaluation or Comparison</b> (+)		
<input type="checkbox"/> <b>List of Agencies or Persons Contacted</b> (+)		
<input type="checkbox"/> <b>Funding</b> (+)		
<input type="checkbox"/> <b>Freight</b> (+)		
<b>Search Type</b>		
<input type="checkbox"/> <b>All Search Types</b>		
<input type="checkbox"/> Document ID	<input type="checkbox"/> Author	
<input type="checkbox"/> Title	<input type="checkbox"/> Authoring Company	
<input type="checkbox"/> Filename	<input type="checkbox"/> Document Type	
<b>Date Range</b>		
From: <input type="text"/>	(mm/dd/yyyy) To: <input type="text"/>	(mm/dd/yyyy)

[Basic Search](#)

## Advanced Search Options

**Pink Box – “Using”:** The first new search option is to search only for documents that match *all* of the search criteria the user enters in the search box. Search criteria may include words and numbers that are document identification codes, document author, authoring company, category, or other identifying feature from a searched-for document’s profile. Users may toggle between searching for *any* of the criteria they enter or *all* of the criteria they enter.

**Purple Box – “Search Type”:** The second option is to search for a specific document profile. Specific information about the document – its profile – is available for searching. The document’s profile includes document information such as author, authoring company, document identification code (assigned by KAI), and document type (Excel, Word, or AutoCAD, for example). Advanced searches will look in all fields of the document profile, unless users limit the search to specific fields by selecting (“checking”) the boxes of those fields. For example, if a user is only interested in documents authored by David Evans & Associates, the user would check the “authoring company” box and type “David Evans & Associates” in the Search Box.

It should be noted that some documents have incomplete profiles. If the searched-for field (i.e. “author” or “title”) is not known for some documents, those documents will not show up when users search only those fields.

**Yellow Box – “Date Range”:** The third option is to search by date range. The date of creation of a document is part of its profile and users may search for all documents created during a certain time period. Again, if the document’s creation date is unknown, it will not be shown as a result of the search.

## Adding Documents to the Database

Database administrators may add documents to the database. When an administrator logs in, there is an “Add a Document” link below the “Advanced Search” link at the bottom of the page. The link directs the administrator to the “Add a Document” page (see Exhibits 4A and 4B) where he or she is prompted to add the document’s information profile (date of creation, author, authoring company, etc.). Fields that require input are indicated with a red asterisk. Also, at least one category or subcategory must be chosen by clicking on the box to the left of the category. Once information is entered, the administrator clicks the submit button. The administrator will be prompted to review the just-entered document information for accuracy. If the information is accurate, the next step is to locate the document. If edits to the information need to be made, click on the “Make Changes” button. Once the information is correct, click on the “browse” button and use the resulting dialogue box to indicate the location of the file to be entered. When the dialogue box is pointing to the desired file, click “open.” Once the document’s location has been indicated and its information has been entered, click the “Submit” button to add the document and its profile to the database. If required information is not entered or the document location is invalid, an error message will prompt the administrator to correct the omission.

## Exhibit 4A: Add a Document Screen Capture, page 1

[Logout](#)

### Add a Document -- Step 1 of 2:

Please fill in the form below to add the new document to the system. Fields marked with \* are required.

**Note:** You will get an opportunity to upload the document on the next page.

Title:	<input type="text"/> *
Date Created:	<input type="text"/> (mm/dd/yyyy)
Author:	<input type="text" value="Choose One"/> *
Authoring Company:	<input type="text" value="Choose One"/> *
Access Level:	<input type="text" value="Everyone"/> *
Subject:	<input type="text"/>
Description:	<input type="text"/>

**Please check the categories for the document \***

- All Categories**
  - Introductory Material**
  - Environmental Considerations**
    - Soils and Geology
    - Hydrology, Hydraulics, Water Quality
    - Natural Resources (Terrestrial, Wetlands, Aquatics)
    - Land Use
    - Socioeconomics
    - Environmental Justice
    - Cultural Resources (including historic and archeological)
    - Visual
    - Air Quality
    - Noise
    - Hazardous Materials
    - Energy
- Conceptual Engineering**
  - Conceptual Designs
  - Design Guidance and Criteria
  - Other Source Documents
  - Base mapping
  - Topographic Information
  - Concept Schematics
  - Modeling Data
  - Traffic Volumes
  - Traffic Operations Analysis
  - Safety Analyses
  - Horizontal Alignment Information
  - Vertical Alignment Information
  - Cost Estimating Information
  - Bridge lift information
  - Tolling Information
- Evaluation or Comparison**
- List of Agencies or Persons Contacted**
- Funding**
- Freight**



## Exhibit 4B: Add a Document Screen Capture, page 2

[Logout](#)

### Add a Document -- Step 2 of 2:

Below is the information that you are going to submit. Please review it and if you need to make changes, hit 'Make Changes', otherwise hit 'Submit'.

Document Information:	
Title:	Example
Date Created:	10/11/2004
Author:	Kate Dean
Authoring Company:	David Evans & Associates
Access Level:	Everyone
Subject:	ABC
Description:	123
Categories Selected:	Conceptual Engineering
Upload Document:	
Please hit Browse and attach the document that you would like to upload.	
Document:	<input type="text"/> <input type="button" value="Browse..."/>

## DATABASE SPECIFICS

The database was built to be easy-to-use, intuitive, and somewhat similar to other familiar databases, such as Google©. The nature of the material and design dictates the need for a few unique features. First, some types of documents, specifically PDFs, do not retain a profile automatically. Thus, users should be aware that the author, authoring company, and date information of PDF documents are often missing, which will affect search results. Second, the database was built using full text titles for everything but document types. A search for “DEA” or “ODOT” will be fruitless; spell out “David Evans & Associates” and “Oregon Department of Transportation”. However, if users search for document types, they should use the document suffixes, (‘.doc’ for Word documents and ‘.xls’ for Excel documents). Third, the search type “filename” is a distinctive feature of this database. Much of the information had been organized using the Microsoft Windows file folders and extensions. Documents were saved in groups that corresponded with stages, objectives, or deliverables of the Strategic Process. We wanted to maintain the ability of users to search for a document using that organization structure. The file name is the path name of the document’s original location, for example I-5\_Partnership\_DEA\4-0 Technical Analysis Results\Supporting Documents\EMME2 Model Output\Miscellaneous\CrossRiverTruckTrips.xls. Finally, the database is *not* text-search enabled; in other words, the database will search document information such as title, author, authoring company, and other information, but *not* the actual text of the document.

## TECHNICAL INFORMATION

This application was developed using ASP running on IIS5 Windows 2000, and connects to SQL Server 2000 databases. Corporate licensed standard versions of the programs have been used during development. There are currently 503 files that take up 20 MB. Files are currently located in a folder named *documents* under the root web folder. The web application and document archive need to be hosted on a Windows 2000 server, and the database and information about the documents should be stored on a SQL 2000 server. The database is about 3 gigabytes (GB) in size and expected to grow up to 5 GB.

KAI used previously developed algorithms and code designed in-house in the development of this database. The agency has the license to use that code for this application only, and cannot use it in other applications. KAI will make any modifications to the application at the additional expense to the agency.

### Application Migration Directions

The following information is provided to allow for the future migration of this database from KAI's network to another network:

1. Create a site on a web server and copy all ASP pages and the Documents folder (currently 3 GB, but could grow to 5 GB).
2. Restore the database to your SQL Server. It is called *I5RiverCrossing*.
3. Create an ODBC connection to your SQL Database from the web server. Use System DSN (with SQL Server authentication). The data source name is *i5rivercrossing*. Username and password are provided in the ASP page *openconnection.asp* in the folder *include*. Both ASP pages (*openconnection.asp* and *checklogin.asp*) will need to be updated if the name of the data source is changed to anything other than *i5rivercrossing*.
4. Add the database user specified in the *openconnection.asp* page by going to *security*, then to *Logins*, found in the SQL Server Enterprise Manager. Change the user and password information for authentication by changing the information in the ASP pages, using the same procedure.

### Security

There are currently no security features for stored files. Anyone with file location information can access them. User access is password protected. There are a total of two user types: general user and administrative user. All general users use the same username (*i5user*) and password (*project2004*). The administrative username is *admin*, and the password is *i52004webprj*. Security measures like encrypted passwords, and documents have not been included at this time.

## **APPENDIX A. DOCUMENT REQUEST AND SUMMARY OF RESPONSE**

## **APPENDIX B. TABLE OF DATABASE CATEGORIES**

## Table of Database Categories

	Introductory Material	10 000
Environmental Considerations	Soils and Geology	20 010
	Hydrology, Hydraulics, Water Quality	20 020
	Natural Resources (Terrestrial, Wetland, Aquatics)	20 030
	Land Use	20 040
	Socioeconomics	20 050
	Environmental Justice	20 060
	Cultural Resources (including historic & archeological)	20 070
	Visual	20 080
	Air Quality	20 090
	Noise	20 100
	Hazardous Materials	20 110
	Energy	20 120
Conceptual Engineering	Concept Schematics	30 050
	Conceptual Designs	30 010
	Design Guidance and Criteria	30 020
	Other Source Documents	30 030
	Base mapping	30 040
	Topographic Information	30 045
	Traffic Volumes	30 065
	Modeling Data	30 060
	Traffic Operations Analysis	30 070
	Safety Analyses	30 080
	Horizontal Alignment Information	30 090
	Vertical Alignment Information	30 100
	Cost Estimating Information	30 110
	Bridge lift information	30 120
Tolling Information	30 130	
Funding	60 000	
Freight	70 000	
Evaluation or Comparison	40 000	
List of Agencies or Persons Contacted	50 000	