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## Chapter 11 4R & Minor Reconstruction Projects

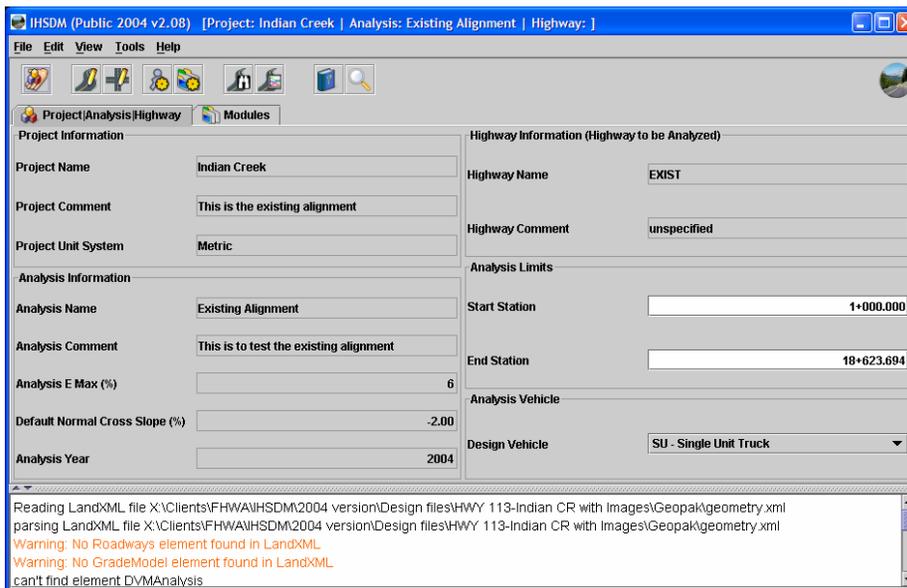
This chapter will discuss the different modules that will be run during 4R and minor reconstruction projects. The workflows will describe how to tell IHSDM which reports to run.

### Conceptual Design

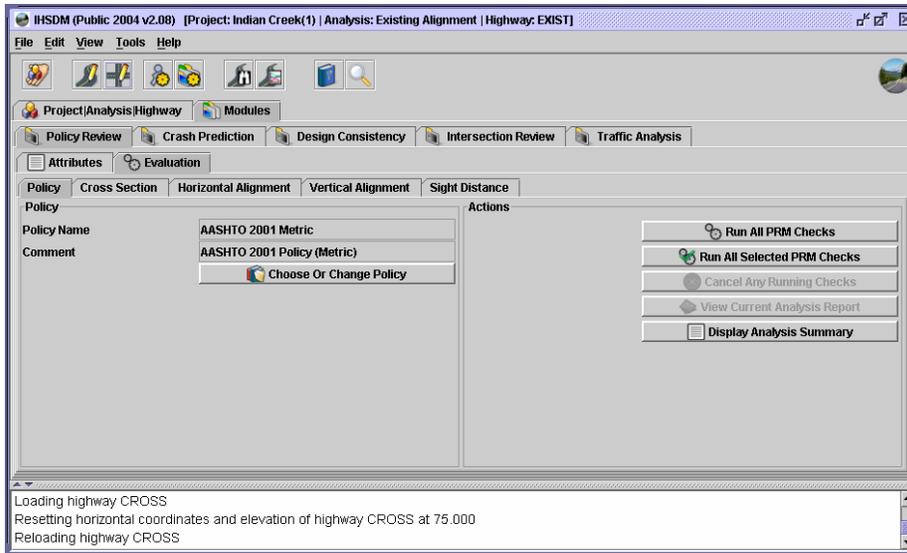
The following workflows will describe all of the possible reports for this stage of a 4R project. Some data may not be available for all projects, such as Vertical Alignment and Superelevation. The purpose of this workflow is to guide the user on using as many reports as possible. The user should use as-builts as much possible while entering data into IHSDM.

### Workflow 1: Policy Review for 4R Conceptual Design

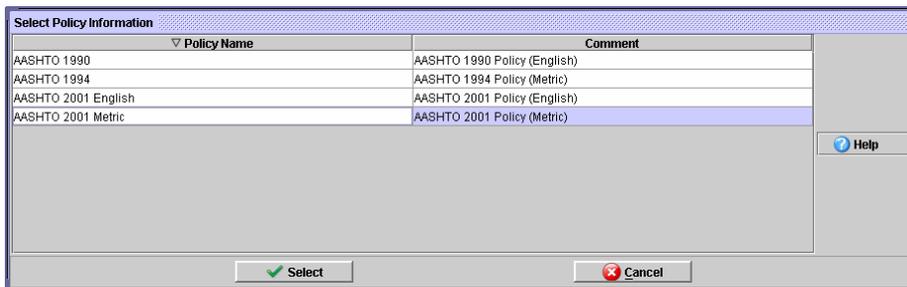
1. Access the IHSDM main dialog box which look like this:



2. Click on the Modules>Policy Review>Evaluation tab to get the following dialog box:

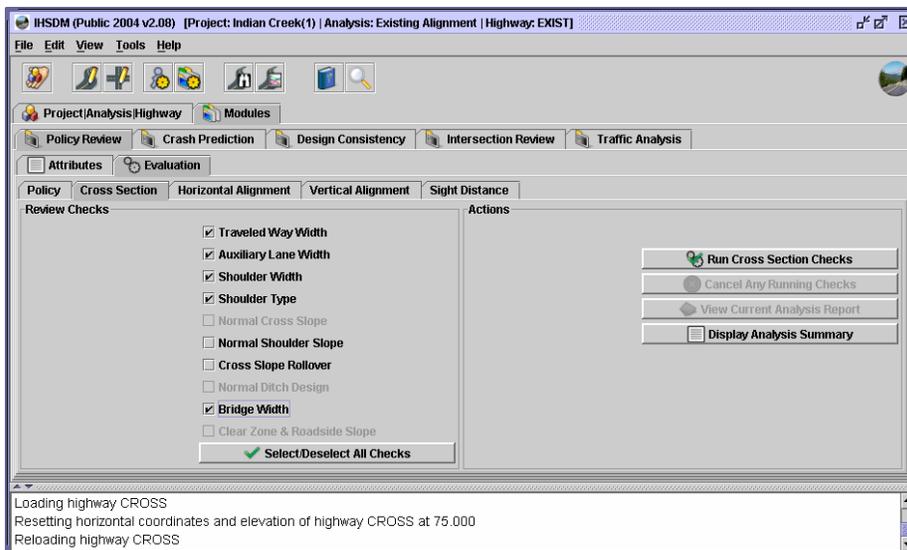


3. Make sure the correct policy is referenced. If it is not click on the Choose or Change Policy button to get the following dialog box:



4. Highlight the correct policy and choose Select.

5. Pick the Cross Section tab to get the following dialog box:



6. Pick the items to check the design policy against. The designer should have the traveled way width, any auxiliary lane widths, average shoulder width, shoulder type, and any bridge widths at a

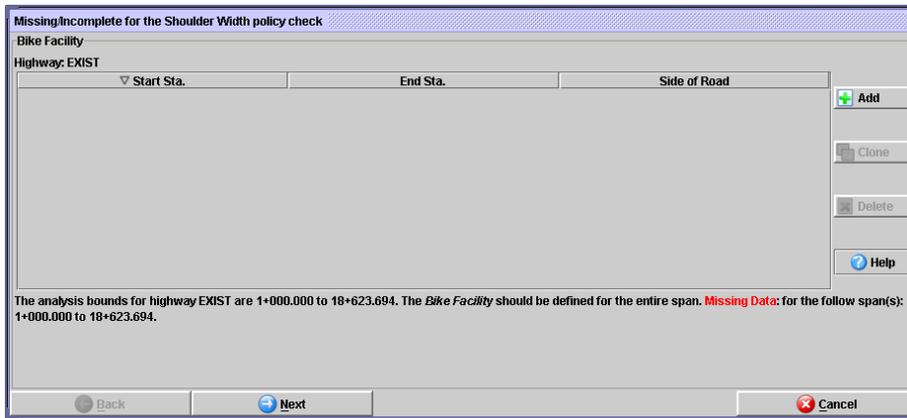
minimum for this type of project. If the designer has shoulder slope data, he will be able to run the normal shoulder slope and cross slope rollover checks.

7. Pick the Run Selected Checks button. IHSDM will start running and will indicate its working in the upper right corner with a red

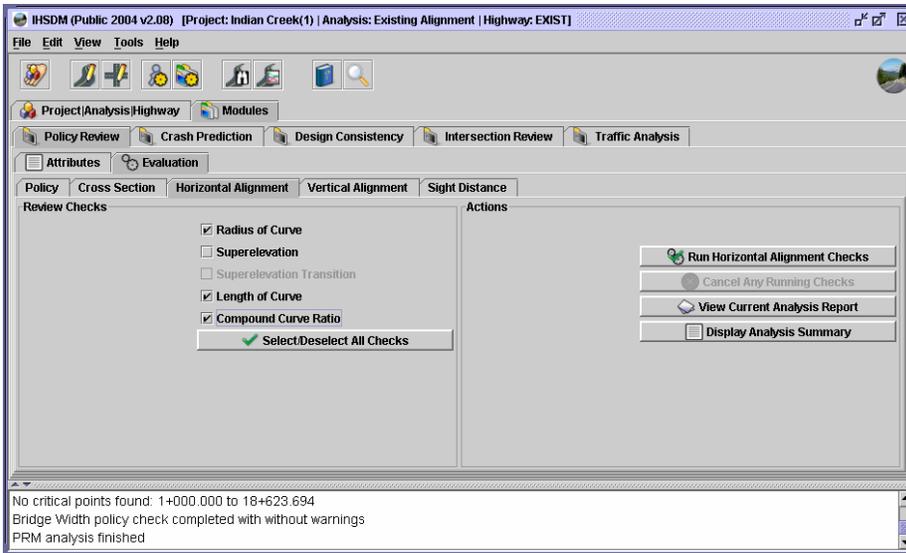


pie through the IHSDM logo. Depending on the length of the project, the IHSDM calculations could take a couple of minutes.

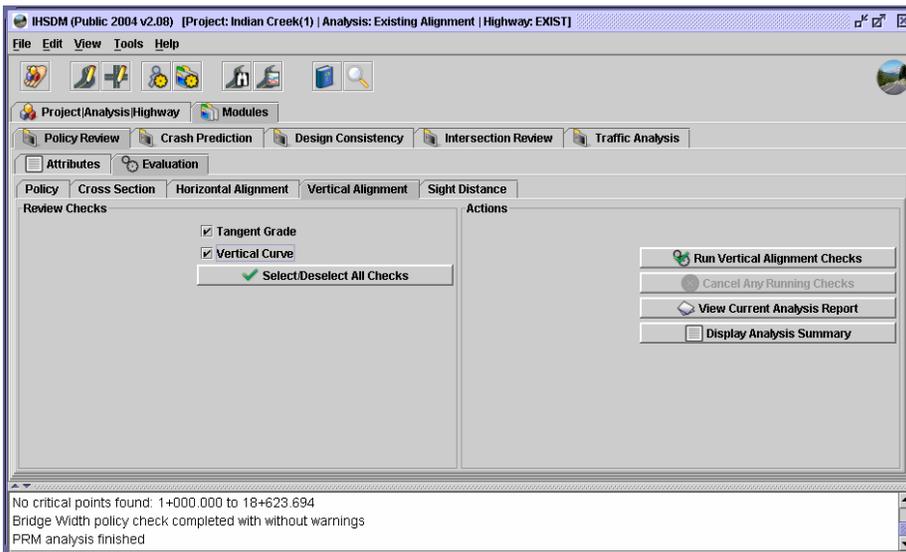
8. If the following dialog box appears during the run, then IHSDM does not have enough data to run a check analysis. The user can either enter the data or choose Finish and IHSDM will ignore that analysis.



9. Once IHSDM has completed its analysis, pick the View Current Analysis Report. IHSDM will launch the web browser to view the report.
10. Go back to the IHSDM main dialog box.
11. Pick the Horizontal Alignment tab:

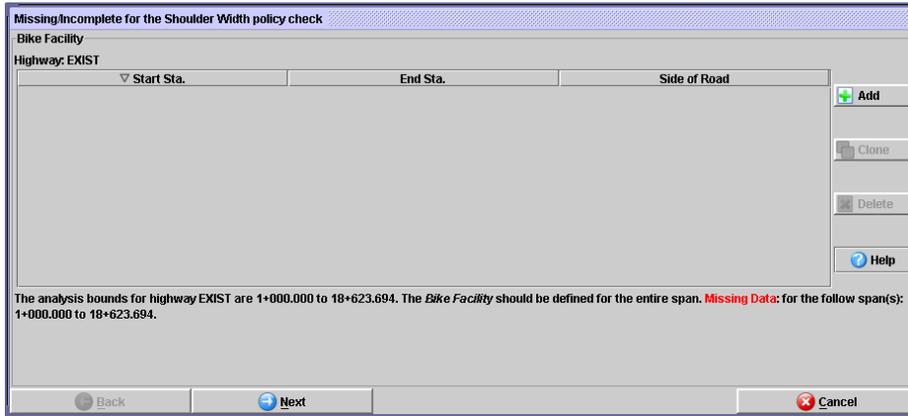


12. At a minimum, the designer should check the Radius of Curve, Length of Curve, and Compound Curve Ratio. If the designer has the superelevation information, the Superelevation button should be checked.
13. Pick Run Selected Checks
14. After IHSDM is complete, pick the View Current Analysis Report button. Notice that IHSDM appended the new report to the previous report.
15. Pick the Vertical Alignment tab to get the following dialog box:



16. If the designer has vertical information, both buttons should be checked.
17. Pick the Run Selected Checks button.
18. If the following dialog box appears during the run, IHSDM does not have enough data to run a check analysis. The user can either

*enter the data or choose finish and IHSDM will ignore that analysis.*



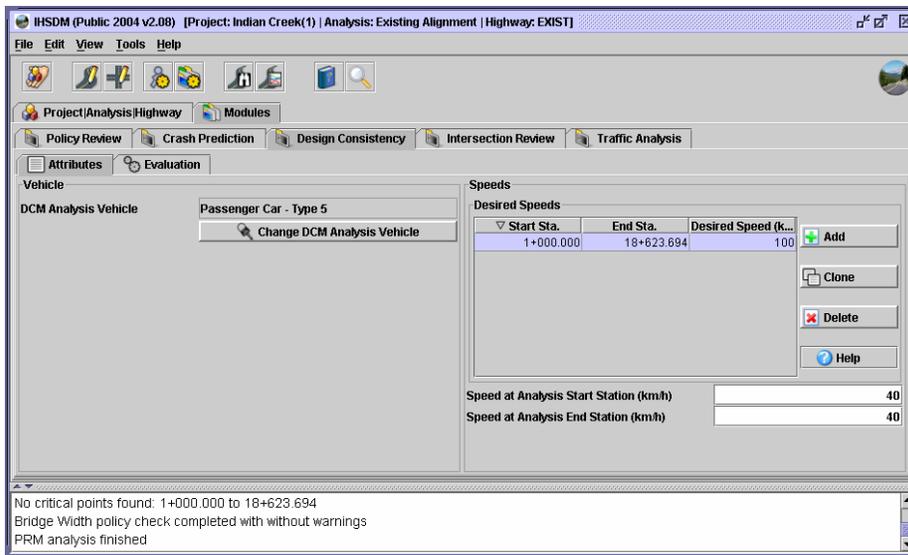
19. Pick the View Current Analysis Report button.

20. Print the report for review.

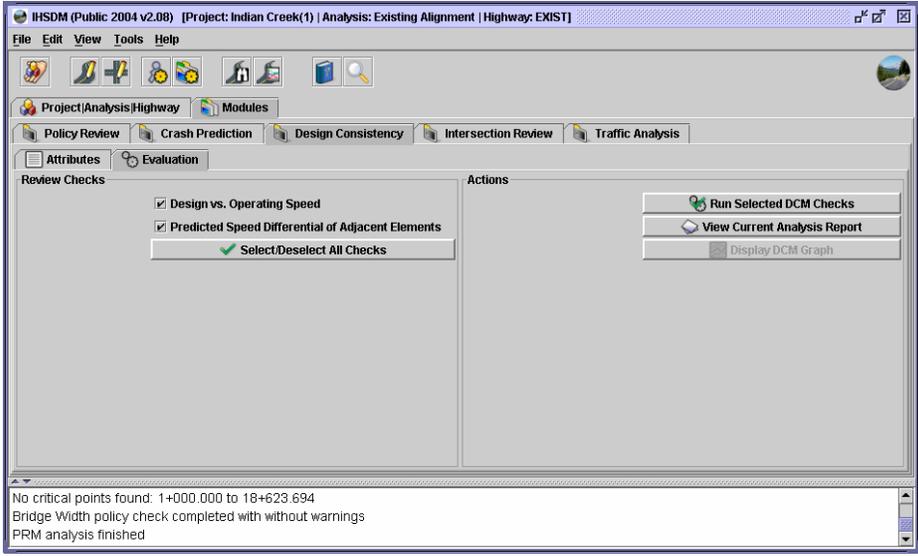
These reports will indicate possible deficient areas along the alignment that the project manager and designer may want to address further.

## Workflow 2: Design Consistency Review for 4R CD

1. From the IHSDM main dialog box, pick the Design Consistency Tab to get the following:



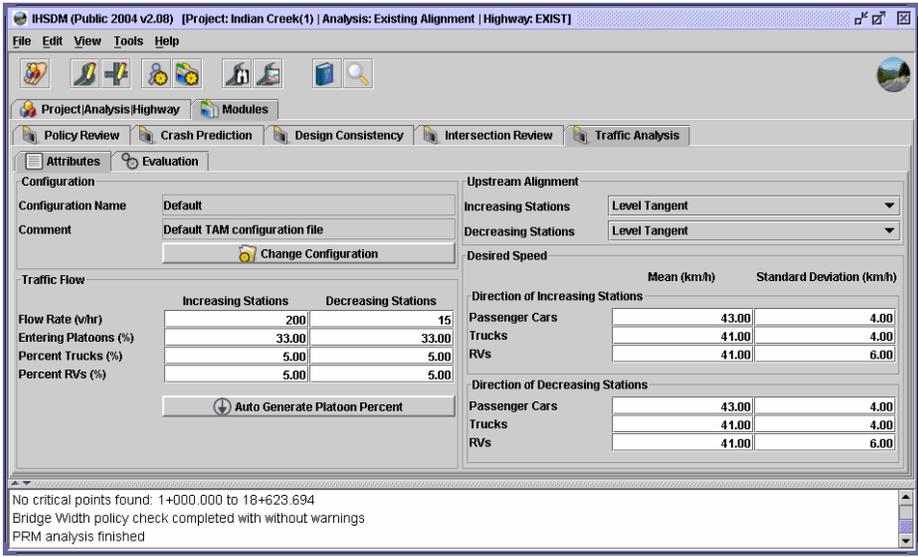
2. Make sure DCM Analysis Vehicle, Desired Speed, and Speed at Analysis Start/End Stations are correct and pick the Evaluation Tab. To get the following dialog box:



3. The user should be able to mark both buttons and pick Perform Selected Checks.
4. Pick View Current Analysis Report to open a web browser and view the report.

### Workflow 3: Traffic Analysis for 4R CD

1. From the IHSDM main dialog box, pick the Traffic Analysis Tab to get the following:



2. Review/edit the data shown and pick the Evaluation Tab.

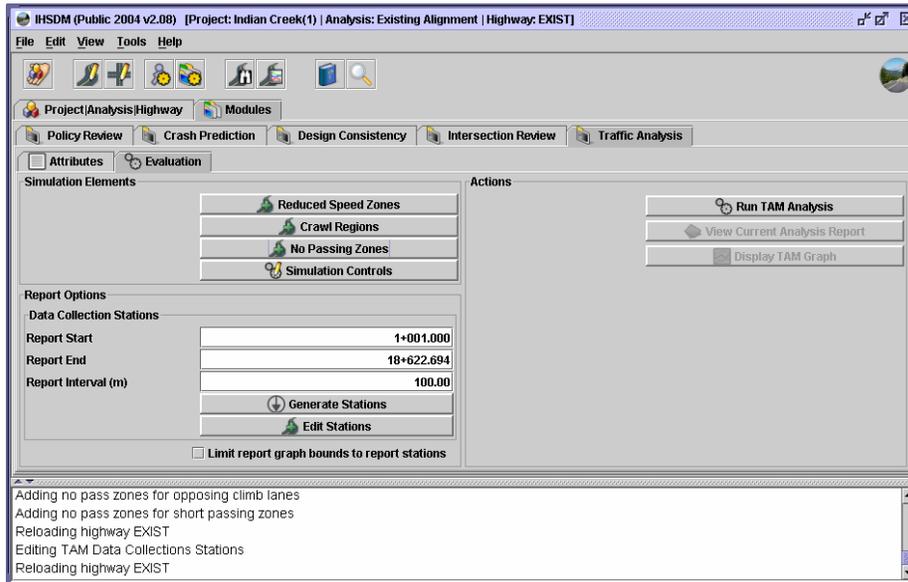


Pick the Auto Generate Platoon Percent button  to update the traffic flow data fields.



To automatically calculate the no passing zones, select the Evaluation tab and then the No Passing Zones dialog button, then pick Automatic Calculation button.

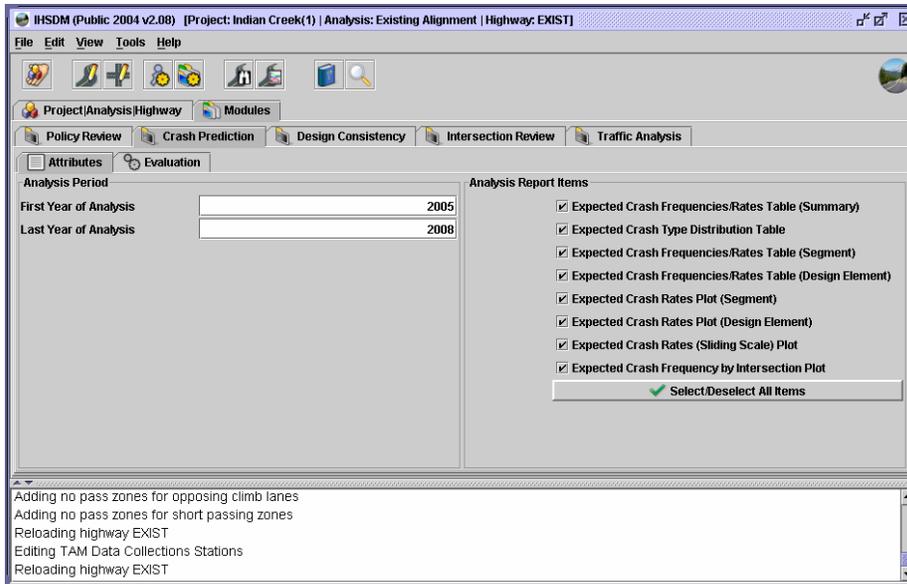
3. The following dialog box appears:



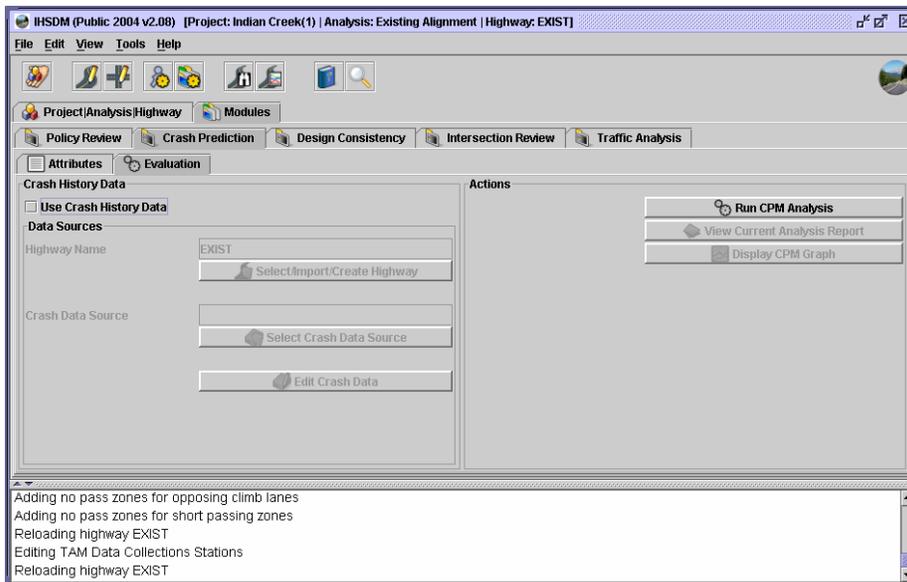
4. Pick Run TAM Analysis. Depending on the length of the project, analysis could take awhile.
5. Pick View Current Analysis Report to open a web browser and view the report.

## Workflow 4: Running Crash Prediction for CD

1. From the IHSDM main dialog box pick the Crash Prediction tab to get the following dialog box:



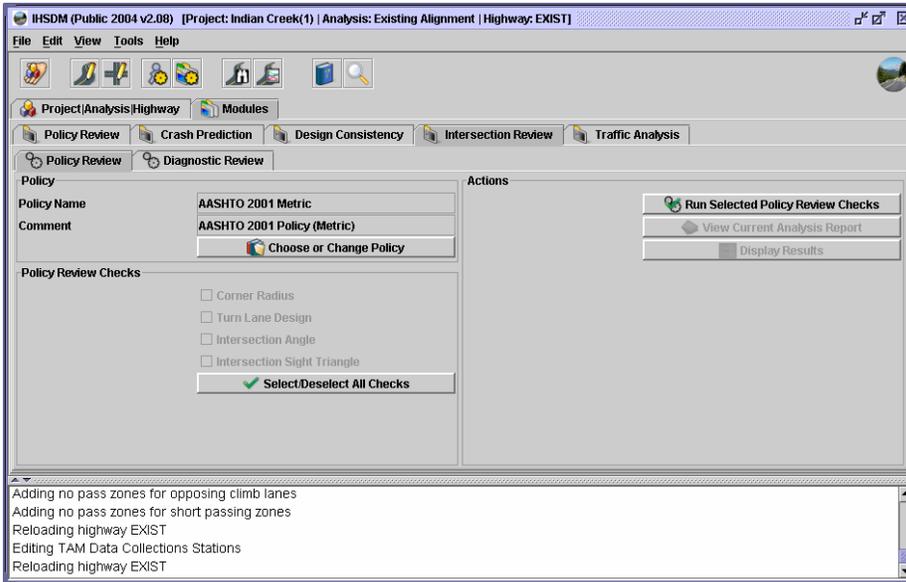
2. Put in the desired Years for the analysis and mark the boxes for the desired reports. Then pick the evaluation tab to get the following dialog box:



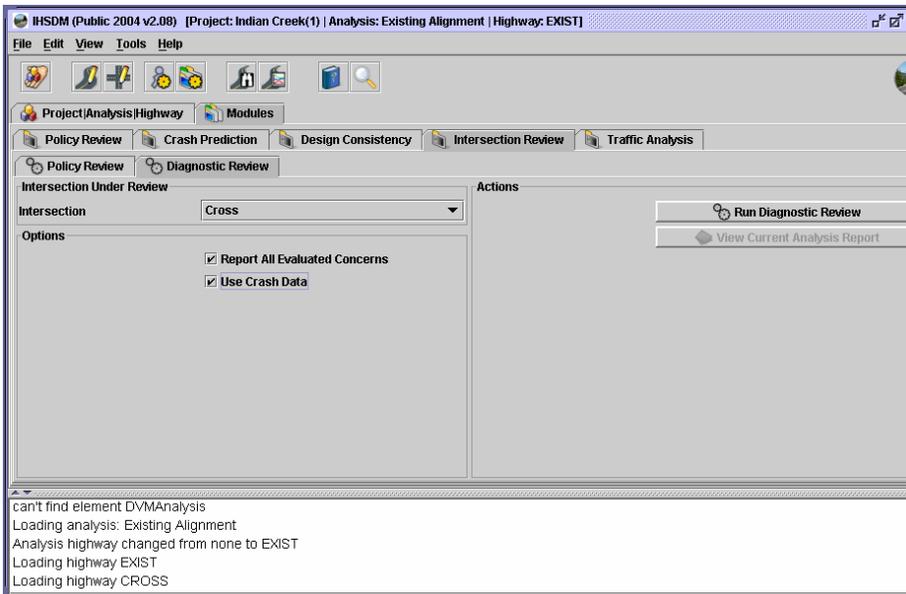
3. If the Crash History Data is available and it is appropriate to use the data (see the CPM Engineer's Manual, section 3.5: "Crash Prediction When Site-Specific Crash History Data are Available"), then mark the Use Crash History Data box and verify that all the information is correct then pick Run Analysis.
4. IHSDM may ask some questions then tell the user when done with analysis.
5. After analysis is complete, pick View Current Analysis Report to view report.

## Workflow 5: Intersection Review for 4R CD

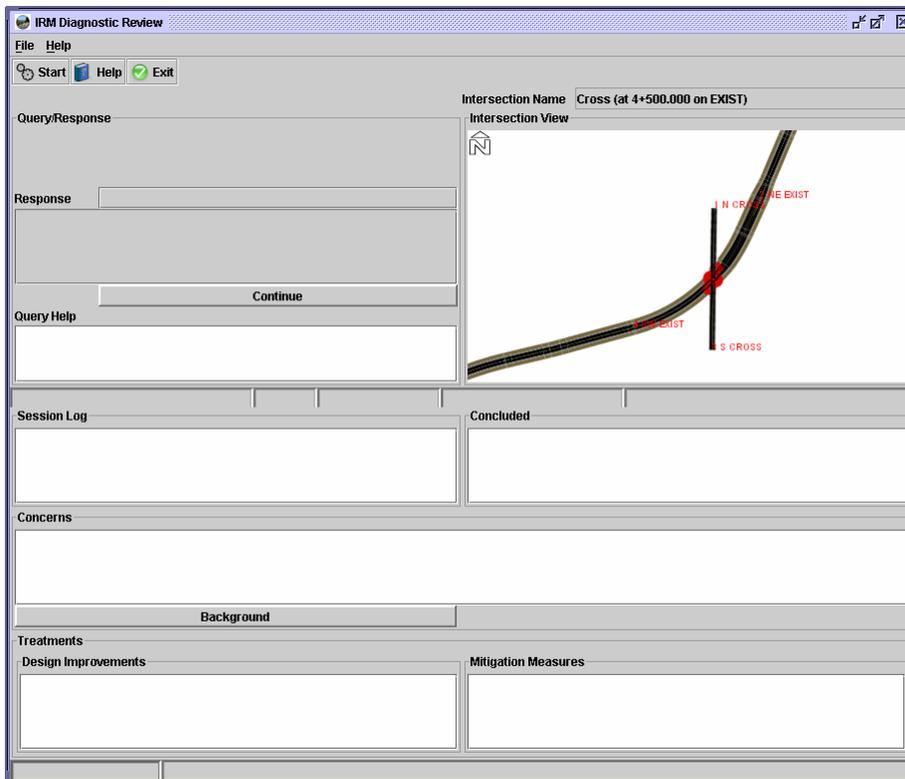
1. From the IHSDM main dialog box, pick the Intersection Review Tab to get the following:



2. The Policy Review is not available in IHSDM yet so pick the Diagnostics Review tab to get the following dialog box:



3. Select the side road of the intersection, mark both check boxes and pick the Run Diagnostics Review button.
4. After a few seconds, IHSDM will come up with another dialog box that looks like this:



5. Press the Start button  in the upper left corner to start the analysis. IHSDM will query the user for required information not already input, e.g., whether a given sight triangle or line of sight is clear of obstructions.
6. The words "The review is complete" will appear in the bottom of the dialog box when IHSDM is done. Press the Exit button  to get back to the main dialog box.
7. Pick the View Current Analysis Report Button to review the results of the analysis.

## Preliminary Design

Once a couple of alternative alignments have been chosen, the user will need to create a new analysis for each alternative and run the Policy Review, Design Consistency and Crash Prediction Modules.

If there are areas of sight distance concern, the user will need to input the obstruction offsets for those areas prior to running the Policy Review Module.

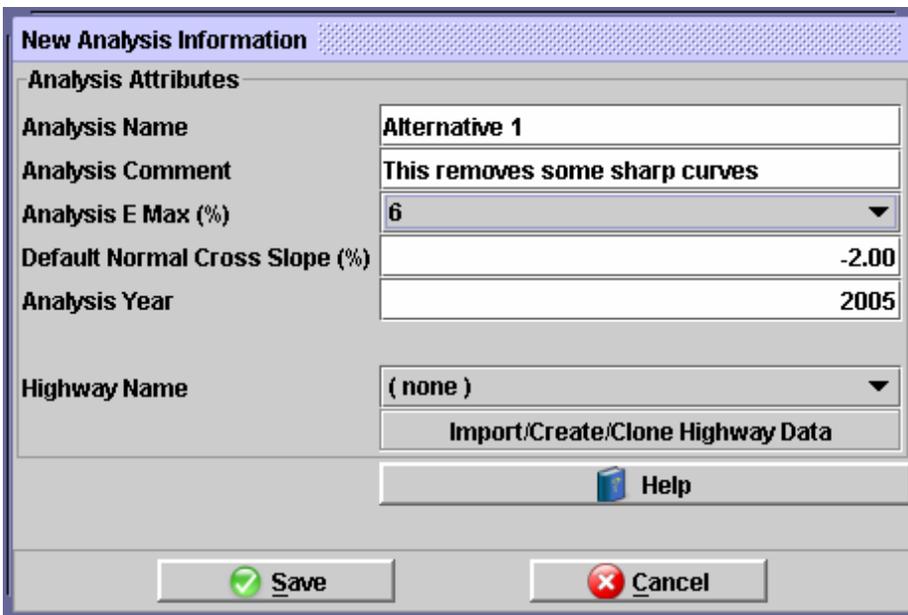
The following workflow will describe how to create a new analysis. Before beginning this process, the user will need to create an input file for the new alignment using Land XML. This process is defined in [Workflow 2 of Chapter 2](#):

## Workflow 6: Creating a New Analysis for Alternatives

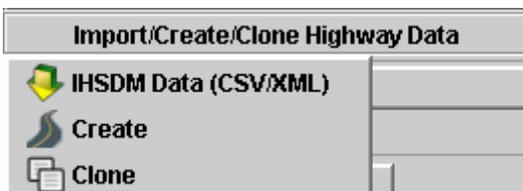
1. From the IHSDM main dialog box pick *File>Analysis>New Analysis*.



2. This will bring up the following dialog box:



3. Fill in the appropriate boxes and pick the *Import/Create/Clone Highway Data* button to get the following:



4. Pick *IHSDM Data (CSV/XML)* to get the *Highway Dataset Import Wizard*.

5. Highlight the new alignment file and pick Next to get to the Edit the highway dataset attributes dialog box.
6. Highlight the new alignment and pick finish
7. Pick Finish to get to this dialog box:

The screenshot shows a dialog box titled "New Analysis Information". It contains several input fields and buttons. The "Analysis Attributes" section includes:  
- Analysis Name: Alternative 1  
- Analysis Comment: This removes some sharp curves  
- Analysis E Max (%): 6  
- Default Normal Cross Slope (%): -2.00  
- Analysis Year: 2005  
- Highway Name: EXIST  
Below these fields are three buttons: "Import/Create/Clone Highway Data", "Help", and "Save". At the bottom of the dialog are "Save" and "Cancel" buttons.

8. Pick Save. The can go to the alternative alignment for analysis by selecting File>Analysis>Open Analysis.

Once the alignment is entered the user will need to add the information described in chapters 3 through 8 before proceeding with the Policy Review and Design Consistency modules.

## Final Design

Once the final design is completed the designer can update IHSDM based on the changes made and rerun workflows 1 through 5 to verify that the final design has corrected all the deficiencies it was meant to.

Remember to input the obstruction offsets for the areas of sight distance concern prior to running the modules.