HC Cable User Guide

Revisions

1/11/2012	Brice	NOAA changed the procedure for downloading annual tide data as well as the format of the data. Updated HC_TIDE program and documented the new procedures for downloading the tide data.

Introduction

This manual describes the installation and use of HC Cable, a software program for computing anchor cable tensions for the Hood Canal Floating Bridge. Tidal predictions are taken directly from the NOAA web site for Seattle, WA and adjusted to Port Gamble, WA. Tide predictions are used by the HC Cable program to predict cable tension values and gauge readings.

HC Cable consists of a program for a Windows Mobile device and a personal computer. For all intents and purposes, these programs are identical. Specific differences will be highlighted throughout this manual.

Software Installation

The following procedure describes the installation process. This procedure will install HC Cable on both the Windows Mobile device and the personal computer. The installation will include all of the necessary tidal data for 2008.

> Tidal data for other years can be obtained and installed to the Windows Mobile device and the personal computer as described below. Alternatively, you can contact Rick Brice in the WSDOT Bridge and Structures Office (360-705-7174) and have an automated installation procedure created.

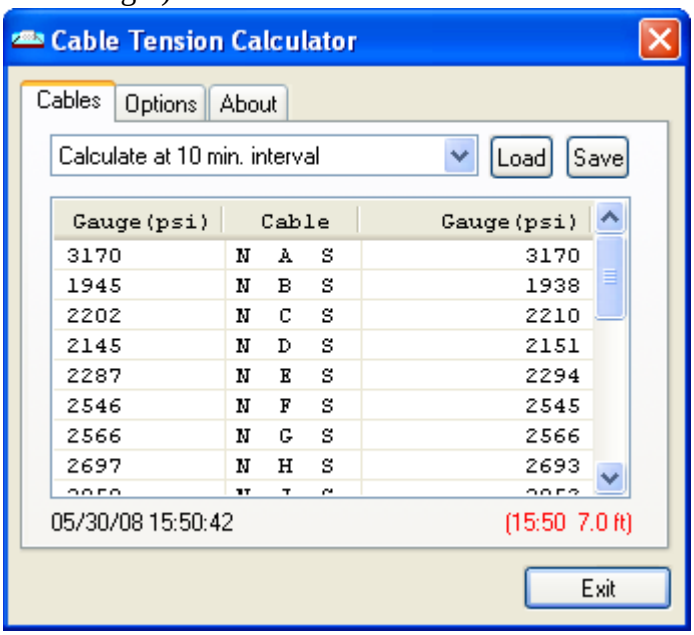
1. To install HC Cable, obtain the HC_Cable.msi installation package from the WSDOT Bridge and Structure Office.
2. Put your Windows Mobile device in its docking port or otherwise connect it to your computer for synchronization.
3. Double click on the HC_Cable.msi file to begin the installation process. Simply follow the on-screen instructions.
4. When prompted, follow any addition instructions given on the Windows Mobile device.

Running HC Cable

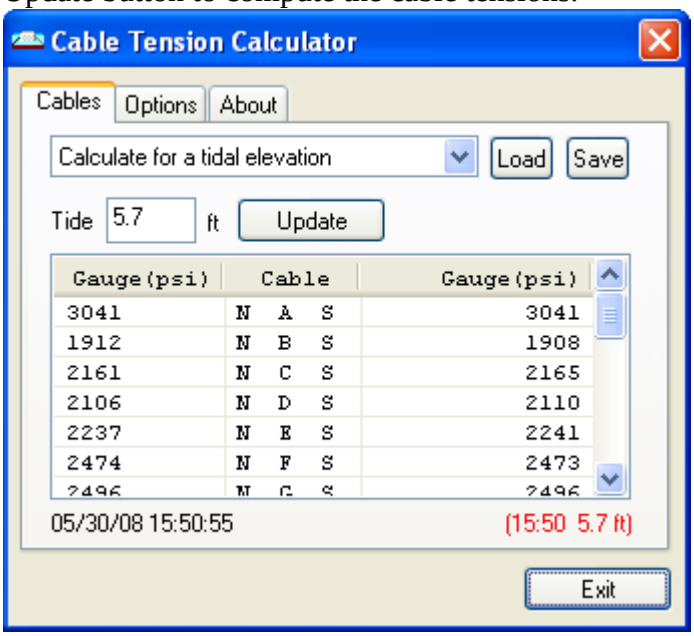
HC Cable has two modes of operation; Real-Time Mode and Static Mode. In Real-Time Mode cable predicted tensions and gauge pressures are automatically updated on a 10

minute interval. In Static Mode, the operator inputs a tidal elevation and HC Cable will predict the corresponding cable tensions and gauge pressures.

Start HC Cable by selecting Start | Programs | HC Cable. This will start the program in Real-Time Mode as shown below. The compact user interface displays the predicted gauge pressures for the various cables, the current date and time (shown in black at the bottom left), and the time and water elevation used in the predictions (shown in red at the bottom right).

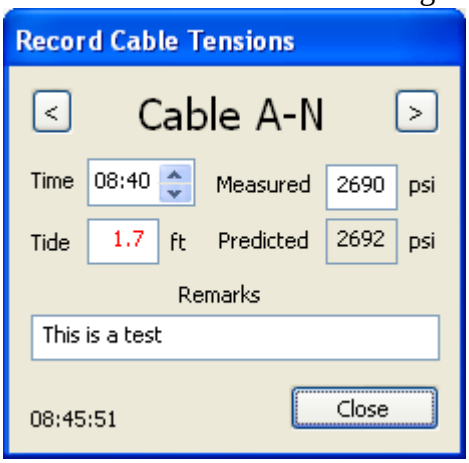


Use the mode selector to switch to Static mode. Enter a water elevation and press the Update button to compute the cable tensions.



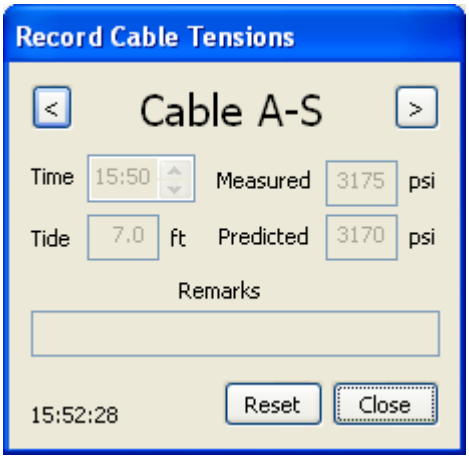
Recording Actual Gauge Readings

The actual gauge readings can be recorded in HC Cable and saved to disk for later analysis. To record a gauge reading, double click on a row in the cable list. This will open the Record Cable Tensions dialog.



Enter the measured pressure and an optional remark. Additionally, you can adjust the tide time and predicted tide elevation by entering appropriate values.

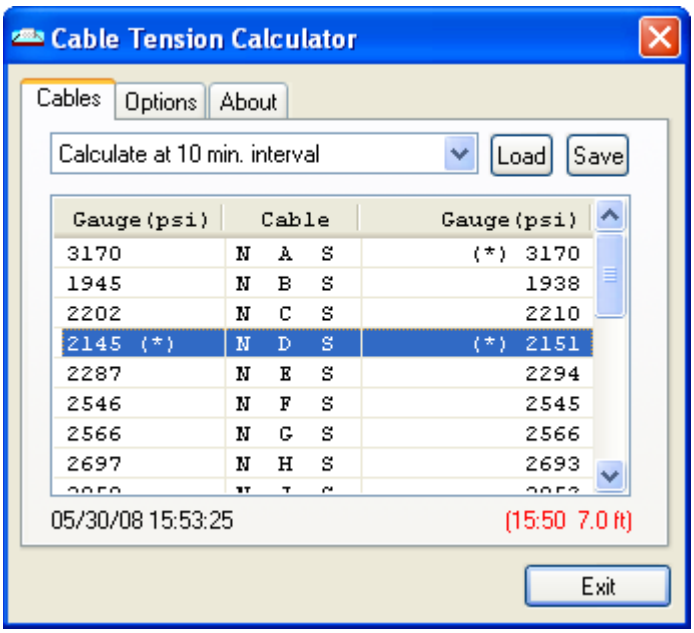
Use the left and right arrow buttons to switch to the previous and next cable. Once you move from this cable record, the record becomes locked. If you return to the record all of the input fields will be disabled.



To unlock the record, press the Reset button.

To delete a record, simply make the Measured field blank.

An (*) symbol will be displayed in the cable list to indicate that data has been recorded for a particular cable.



Press the Save button to save the data. When the Windows Mobile Device is docked with the desktop computer, the data will be automatically synchronized by Microsoft ActiveSync. The data file can then be e-mailed to the Bridge and Structures Office for processing and analysis. Details of the data file format are given below.

Cable records that were previously saved can be loaded by pressing the Load button and selecting the file.

Daylight Saving Time

HC Cable automatically adjusts for daylight saving time on the desktop computer. However, some Windows Mobile devices do not support daylight saving time. To remedy this, go to the Options tab and check the Daylight Saving Time option if the device's clock has been adjusted for daylight saving time.

NOTE: If your personal computer is automatically adjusting for daylight saving time and the mobile device is synchronizing its clock with the personal computer, the clock and daylight saving time settings on the mobile device may get out of phase. It is recommended that you disable the clock synchronization feature of Microsoft ActiveSync.

Cable Tension Data File

The cable tension data file is a text file containing comma delimited data. The data fields are:

- Cable Identifier
- Date of gauge reading
- Time of gauge reading in local standard time
- Water elevation at time of gauge reading

- Predicted gauge reading
- Time of actual gauge reading in local standard time
- Actual gauge reading
- Remarks

If an actual gauge reading was not recording, the actual gauge reading field will contain a value of -1.

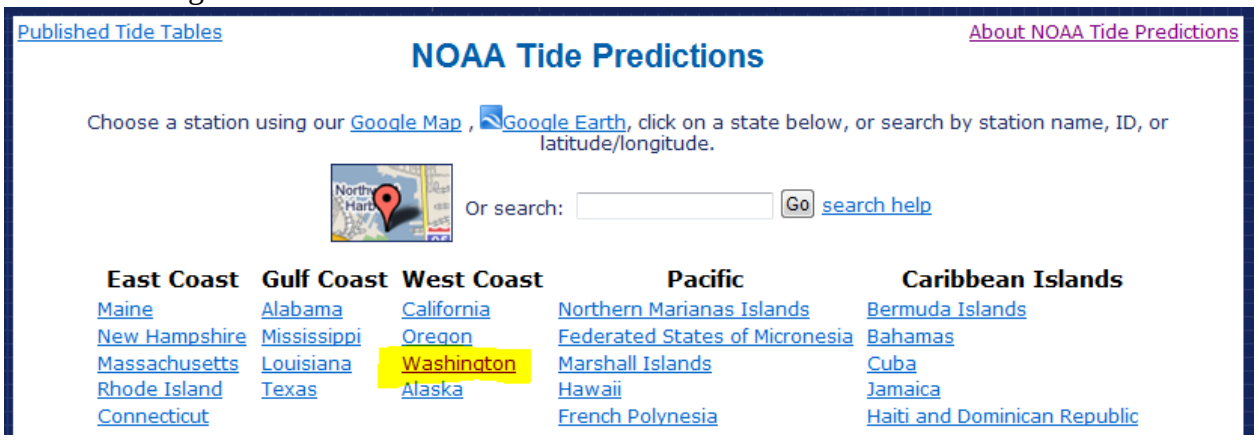
Updating tide predictions for HC CABLE

The tide prediction files used by HC Cable must be updated annually. Updating these files is a three phase process. First, on your desktop computer, the yearly tide data is downloaded from NOAA, then it is processed into monthly tide files, and finally the tide data is updated on your Windows Mobile device.

Getting the yearly tide data from NOAA (Updated 2012)

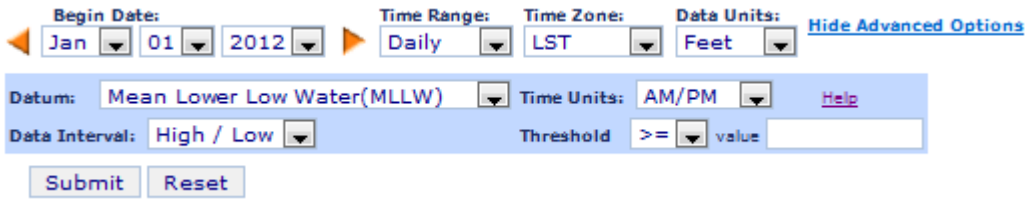
1. Go to the NOAA Tides and Currents web site (http://tidesandcurrents.noaa.gov/)
2. Select Products | Tides | NOAA Tide Predictions

3. Select Washington state



4. Select SEATTLE, PUGET SOUND, Station ID 9447130

5. Select the time data options as shown here



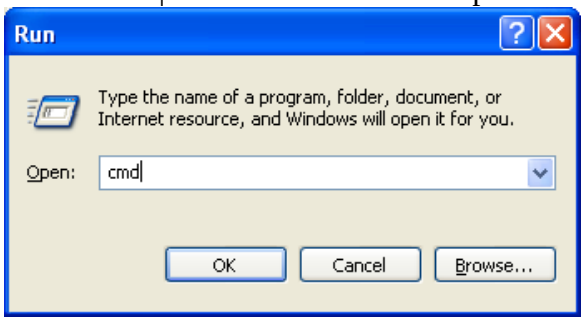
6. Press the Submit button to generate the tide data
7. Press the Annual TXT button to view a listing of the tide data

8. Right click in the tide data window and choose Select All
9. Right click again and choose Copy
10. Open Notepad and choose Paste
11. Select File | Save As… Save the file with the name Seattle<year> where you substitute the actual year for <year> (e.g. Seattle2012)

Creating the monthly tide files

NOTE: You must be using HC_TIDES version 2.

1. Select Start | Run and enter cmd to open a command console



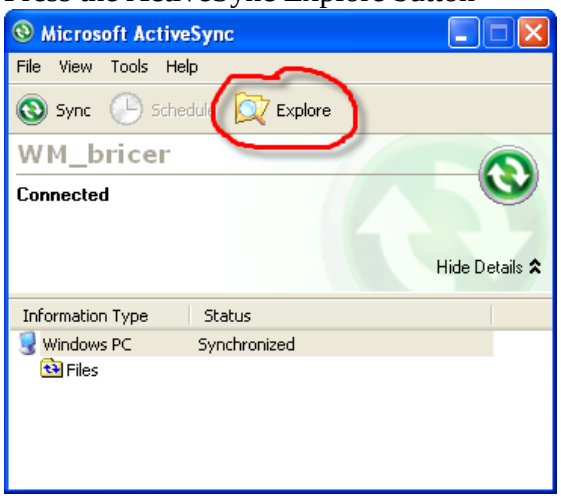
2. At the DOS prompt enter
   cd “c:\Program Files\WSDOT\HC Cable”
3. Run the program HC_TIDES
   > HC_TIDES <year>

If <year> is omitted, the current year is assumed unless the date is between Dec 15 and Dec 31. In this case, HC_TIDES will assume that you are generating tide data for the next year.

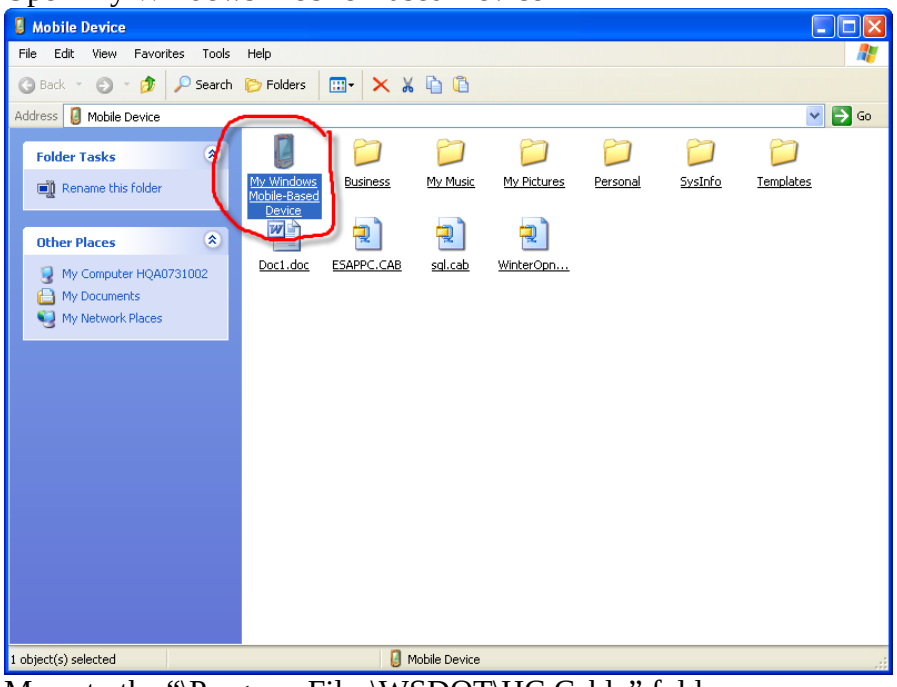
4. HC_TIDES will produce 12 monthly tide data files named PortGamble<mon><year>.tides (e.g PortGambleJan2012.tides)

Transferring the tide data to a Windows Mobile Device

1. Put your Windows Mobile Device in its docking port
2. Active Microsoft ActiveSync
3. Press the ActiveSync Explore button



4. Open My Windows Mobile-Based Device



5. Move to the “\Program Files\WSDOT\HC Cable” folder

6. Drag and drop all of the TIDES files generated by HC_TIDES in “c:\Program Files\WSDOT\HC Cable” on your desktop computer to the “\Program Files\WSDOT\HC Cable” folder on your mobile device.