

Appendix V

Special Notes

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This appendix explains special notes which commonly appear as part of the normal output. The special notes should be carefully reviewed to assure an accurate profile. If the reason the notes appear are not satisfactorily substantiated, the job may be rerun obtaining trace printout. (A source listing is required to interpret program traces.)

Statement Number	Notes and Remarks
1221	NUMBER PROFILES TOO LARGE. The number of profiles calculated exceeds limit of 14.
1262	TAILWATER IS BELOW BRIDGE TRAPEZOID BOTTOM PROGRAM ABORTING AT SECTION X. The water surface elevation at the downstream cross section is below the trapezoid bottom specified on the SB record for this section. Remodel the invert of the downstream cross section to raise the water surface elevation or modify the SB trapezoid.
1340	RECORD NOT RECOGNIZED. First two columns in input record read did not correspond to any of the standard alphanumeric characters used to identify records.
1362	XKOR INCREASED TO 1.2. The orifice coefficient was zero or minus and was therefore changed to 1.2 since 1.0 is the minimum value. (SB.2)
1365	SB RECORD, BWP = 0. On the special bridge method record SB, the pier width omitted. If there are no piers, this is satisfactory. (SB.6)
1366	SB RECORD, BAREA = 0. On the special bridge method record SB, the area of the bridge when flowing full is omitted and therefore this job has been terminated. (SB.7)
1400	CCHV = , CEHV - . A change in contraction and expansion losses has been made. (NC.4 and NC.5)
1415	INQ EXCEEDS NUMQ. The field of the QT records to be used for the current Q, specified by variable INQ, contained no flow data. (INQ,J1.2)
1445	Q EXCEEDS 19. The number of discharges on the QT record exceed the maximum allowable number of 19.
1452	NV RECORDS EXCEED 4. The number of items specified on the NV record exceed the allowable.
1455	NV RECORD USED. A table of Manning's 'n' values for the channel and corresponding elevations was used.

Statement Number	Notes and Remarks
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- 1481 EL(N) DON'T INCREASE. The elevations on the NV records must increase when the channel roughness is varied with elevation and therefore, the job has been terminated.
- 1490 NH RECORD USED. Manning's 'n' value varied horizontally in accordance with values on NH record.
- 1518 NH RECORD STATIONS NOT INCREASING. The stations on the NH record specifying changes in Manning's roughness must increase and therefore, the job has been terminated.
- 1525 NH VALUES EXCEED 20. Manning's roughness coefficient specified on the NH record exceeded the allowable number.
- 1530 MANNINGS N VALUES FOR CHANNEL COMPOSITED. The criterion described in Section 2.3 is used to determine whether a composite 'n' value should be computed. This message indicates a composite value was computed, and the value is printed as the channel 'n' (variable XNCH). (See J6.3 for user control.)
- 1535 Q = 0. The discharge was not specified on the QT or J1 records.
- 1537 START TRIB COMP. Since a negative section number was used, the profile is to be computed on a tributary starting with the water surface elevation which was computed for the same (positive) section number on the main stem.
- 1553 STARTING NC RECORD OMITTED. The starting values on the NC record were not given. The roughness values assumed were very small (.00001).
- 1645 INT SEC ADDED BY RAISING SEC X, Y, FT AND MULTIPLYING BY Z. An intermediate cross section was calculated by the computer and inserted between two cross sections specified by input data.
- 1707 STCHL OF X, GREATER THAN Y. The station of the left bank is larger than the station of the right bank. The value of STCHL is changed to equal the first station of the cross section. (X1.3)
- 1740 CHIMP TEMPLATE DOES NOT INTERSECT CROSS SECTION, STMAX SET EQUAL TO X. The projected side slopes of the template do not cross the GR data.
- 1807 BT RECORDS EXCEED 100 PTS. Number of points describing the bridge (BT record) exceed allowable.
- 1857 BT RECORD, STA DON'T INCREASE. The roadway stations on the BT record should increase. Data should be corrected.
- 1860 XLCEL OF X, EXCEEDS RDEL OF Y. The low chord elevation of X exceeds the corresponding value of the top of roadway Y. Data should be corrected. (BT records)
- 1912 GR RECORDS, STATIONS DON'T INCREASE. The ground profile points do not increase in horizontal station. The station must be equal to, or greater than the previous station.

Statement Number	Notes and Remarks
2020	NUMBER EL, STA, PTS EXCEED 100. The number of points used to describe the ground profile for the current cross section exceed the allowable. Additional GR points may have been generated by encroachment options.
2077	GR RECORDS MISSING. The GR records for a given X1 record with NUMST greater than zero were not given.
2096	WSEL NOT GIVEN, AVG OF MAX, MIN USED. The starting water surface elevation was not given and therefore, has been assumed as halfway between the maximum and minimum elevation in the cross section. (J1.9)
2620	NO IMPROVEMENT MADE TO THIS SECTION. The subroutine CHIMP has been requested by the CI record and the excavation described will not cut the existing cross section.
2725	WSEL EXCEEDS LIMITS OF TABLE FOR MANNING'S 'n'. An assumed water surface elevation fell outside the elevation limits which specified Manning's 'n' values on NV record. Table values were extrapolated for 'n' values.
2750	NUMBER OF COMPUTED POINTS EXCEED 100. The number of points added by subroutine CHIMP have caused the total to exceed one hundred. Reduce the number of points on the GR record.
2800	NATURAL Q1 = A, WSEL = B, EMC Q1 = C, WSEL = D, RATIO = E. See explanation in Section 11.1, Appendix II, page II-6.
3073	NEGATIVE SLOPE, WSEL = , EG = , PCWSE = , XEG = , WLEN = RESTART COMPUTATIONS AT SECNO = , USING 'n' VALUES COMPUTED FOR SECNO = . A negative slope of the energy gradient has been computed while trying to calculate roughness values that will exactly duplicate the observed high water marks. Due to this condition, the computations will start over again using the previous section's roughness values.
3075	SET S = SAVE. The computed slope at this section was negative or zero. The slope was set equal to the computed average slope between this and the previous section.
3170	NO ENCROACHMENT MORE THAN 800 XSEC. The number of cross sections for a given data set exceeded the maximum allowable for encroachment analysis.
3235	SLOPE TOO STEEP, EXCEEDS X. The computed slope of the energy grade line exceeded X, and critical depth has probably been crossed. If this cross section is a bridge, the special bridge method should be used in lieu of the normal bridge.
3265	DIVIDED FLOW. The area below the computed water surface elevation is divided into two or more segments by high ground. If this condition occurs for three or more cross sections consecutively, then separate profiles should be run up each leg of the divided flow as the water surface elevations are not necessarily identical at each cross section.
3280	CROSS SECTION EXTENDED X FEET (METERS). The cross section's ends have been projected vertically 50 feet (meters) in order to calculate the hydraulic properties of the cross section. Exactly X feet (meters) of this extension were used. If this vertical assumption could produce unreasonable results, the input data should be corrected.

Statement Number	Notes and Remarks
3301	HV CHANGED MORE THAN HVINS. The difference between velocity heads computed for the current and previous cross sections exceeded the allowable specified by input as HVINS (or .5 feet if HVINS = 0, J1.7).
3302	WARNING: CONVEYANCE CHANGE OUTSIDE OF ACCEPTABLE RANGE, KRATIO = . The ratio (KRATIO) of the conveyance of this cross section to the conveyance of the previous section is outside the following range: $0.7 < KRATIO < 1.4$. This could indicate that additional cross sections are required if the reach lengths are long.
3370	NORMAL BRIDGE, NRD = X, MIN ELTRD = Y, MAX ELLC = Z. The normal bridge method was used for this cross section. The number of points used in describing the bridge deck are given.
3377	BLOSS READ IN. The difference in water surface elevation between the previous and current cross section was given by input data. (X2.6)
3420	BRIDGE W.S. = X, BRIDGE VELOCITY = Y. The water surface elevation under the bridge is specified by X and the velocity through the bridge is Y.
3470	ENCROACHMENT STATIONS = W,X TYPE = Y TARGET = Z. The values of STENCL and STENCR (left and right encroachment stations) are W and X. The method used in determining these stations is method Y and the specified target (width or percent) for that method is Z. If the target is a percent, a ratio less than one is used instead of percent so that a percent target can be distinguished from a top width target.
3495	OVERBANK AREA ASSUMED NONEFFECTIVE, XLBEL = X, RBEL = Y. The effective area option (IEARA) was used and the computed water surface elevation was below at least one of the bank elevations specified by X and Y and therefore, this flow area was assumed noneffective. (X3.1)
3649	NUMBER SECTION EXCEED LIMIT. The number of cross sections for the given data set exceeds limit of 800.
3685	20 TRIALS ATTEMPTED WSEL, CWSEL. The number of trials in balancing the assumed and computed water surface elevations for the standard step procedure of backwater has reached 20. Check the assumed water elevation for reasonableness.
3693	PROBABLE MINIMUM SPECIFIC ENERGY. This note is similar to 7185 except it is not certain (only probable), that critical depth has been crossed. It is known that no depth of flow assumed in any of the trials produced an energy grade line elevation as high as the minimum energy at critical depth.
3700	BRIDGE STENCL = X, STENCR = Y. The bridge profile has been encroached upon, the left and right encroachment stations are X and Y.
3710	WSEL ASSUMED BASED ON MIN DIFF. At the conclusion of 20 trials the assumed water surface elevation will be made equal to the elevation that came the closest to balancing. This condition usually occurs near the top of banks when the effective area option is used (IEARA = 10). Check results for reasonableness.

Statement Number	Notes and Remarks
3720	ASSUMED CRITICAL DEPTH. Critical depth has been assumed for this cross section. This assumption should be verified by inspection of channel properties. Additional cross sections may need to be inserted in order to preserve the assumption of gradually varying flow.
3790	DATA ERROR. JOB DUMPED. The computer detected an error in input and terminated that particular job (profile), but continued on with the next job of the input data.
3800	PREVIOUS ST GREATER THAN CURRENT. Either an input error caused the stations of the GR record to not increase or a programming error has been found.
3805	Q = 0. The discharge was not specified for this job.
3810	HT IS -. The height (HT), determined by subtracting the ground elevation from the assumed water surface elevation, has been found to be negative. Corrections for bridge deck (ELTRD - ELLC) used in the normal bridge method will have caused this note if any ELLC is greater than the corresponding ELTRD. If this is not the case a program error has been found, and a trace may be required to determine the source of the error.
3820	STA(N) GREATER STMAX. One of the stations of the points on the current ground profile records (GR) was greater than the maximum station for this profile.
3830	AROB OR ALOB IS - A negative area in the left or right overbank has been computed. A program error probably has been detected. A trace may be required to determine the program error.
3840	SECTION NOT HIGH ENOUGH. The computed water surface elevation exceeds the maximum specified on input records, therefore, the cross section ends have been vertically raised 50 feet.
3965	REACH OF - NOT EQUAL TO SECNO OF -. The J4 record has been used to specify routing reaches which must be equal to the section numbers (SECNO) on the first field of the X1 record. The section numbers must also be in increasing order.
4020	80 TRIALS NOT ENOUGH FOR CRITICAL DEPTH. This note indicates a data error or program error has been detected. If no data error is detected, job may be rerun, with ITRACE equal to one, in order to obtain reason for failure of parabolic optimization process.
4478	FLOATING ICE COVER, ICE THICKNESS LOB = X, CH = Y, ROB = Z. Computations at this cross section include the hydraulic effects of a stationary floating ice cover. Ice cover thickness in left overbank is X feet or meters, channel thickness is Y feet or meters and right overbank thickness is Z feet or meters.
4575	CRITICAL DEPTH ASSUMED BELOW ELLC OF - EGLC = - EGC = - WSEL = -. Critical depth is being computed in a bridge section and the minimum energy below the low chord is less than the minimum energy above the top of the bridge.

Statement Number	Notes and Remarks
4677	BRIDGE DECK DEFINITION ERROR AT STATIONS X Y. The low chord or top of road line, defined on the BT records for a normal bridge, has intersected the ground line as defined on the GR records. The program will not account for the bridge deck blockage between GR stations X and Y.
5020	SPECIAL BRIDGE. The input has specified that the bridge routine to be used for this cross section is the special bridge method.
5070	VARIABLE ELCHU OR ELCHD ON RECORD SB NOT SPECIFIED. The elevations of the channel upstream and downstream of the bridge are not specified on input fields and have therefore, been assumed equal to the minimum elevation for the previous cross section. (SB.9 and SB.10)
5105	VARIABLE ELCHU ON SC CARD NOT SPECIFIED. The upstream invert elevation of the culvert is not specified in the input data (SC.9). ELCHU and ELCHD (SC.10) have been assumed equal to the minimum elevation of the previous cross section.
5110	ELCHU LESS THAN ELCHD. In the special culvert option, the upstream invert elevation is less than the downstream value (adverse slope). The profile analysis is aborted.
5115	SUPERCRITICAL FLOW--SPECIAL CULVERT OPTION NOT AVAILABLE. The profile is aborted because the special culvert option is only available for subcritical flow. Change IDIR (J1.4) to zero.
5120	INCORRECT VALUE FOR FHWA CHART NUMBER. An incorrect value of the FHWA Chart Number (SC.8) is entered. The profile is aborted. Correct the chart number.
5125	INCORRECT VALUE FOR FHWA SCALE NUMBER. An incorrect value of the FHWA Scale Number (SC.8) is entered for the specified chart number (SC.8). The profile is aborted. Correct the chart or scale number.
5130	EGIC TOO LARGE; REDUCED TO XXXX. The energy gradient elevation (culvert inlet control flow) computed while assuming there is no weir flow is very high. This value is reduced to a more realistic value for the computation of weir flow.
5135	EGOC TOO LARGE; REDUCED TO XXXX. The energy gradient elevation (culvert outlet control flow) computed while assuming there is no weir flow is very high. This value is reduced to a more realistic value for the computation of weir flow.
5140	NORMAL DEPTH EXCEEDS CULVERT HEIGHT. The culvert normal depth exceeds the culvert height. It is therefore assumed equal to the culvert height.
5145	30 TRIALS OF NORMAL DEPTH NOT ENOUGH; POSSIBLY INVALID. After 30 iterations, the program cannot obtain a normal depth value within the predefined precision. The normal depth is assumed equal to the value obtained at the last iteration.
5150	EG OF XXXX LESS THAN XEG OF XXXX. The upstream energy gradient elevation of the culvert is less than the downstream value, indicating negative losses. The upstream energy gradient elevation is therefore assumed equal to the downstream energy gradient.

Statement Number	Notes and Remarks
5155	20 TRIALS OF QWEIR NOT ENOUGH; POSSIBLY INVALID. While computing culvert flow and weir flow, the total discharge cannot be balanced with the actual discharge after 20 iterations.
5160	CULVERT BACKWATER, FROUDE > 1; JOB DUMPED. The culvert backwater routine starts with a supercritical flow condition. Therefore, the job has been terminated.
5165	CULVERT BACKWATER, STEP < 0; JOB DUMPED. While computing the length for each iteration (step) the program has ended up with a negative value. Therefore, the job has been terminated.
5170	100 TRIALS OF CULVERT BACKWATER NOT ENOUGH. The culvert backwater profile requires more than 100 iterations. Therefore, the inlet depth DEPIN is set equal to the outlet depth DEPOUT.
5175	20 TRIALS OF QELTRD NOT ENOUGH; ASSUMED = XXXX. QELTRD is the maximum discharge through the culvert before any weir flow occurs. The program cannot obtain a correct value of QELTRD after 20 iterations.
5180	RISE (SC.5) LESS THAN OR EQUAL TO ZERO. The user has entered a rise or diameter value (SC.5) which is zero or negative. Therefore, the culvert has no cross-sectional area and cannot be analyzed.
5185	BOX SPAN (SC.6) LESS THAN OR EQUAL TO ZERO. The user has entered a chart number (SC.8) which is within the range of 8 through 12. This indicates that a box culvert is to be analyzed. However, the user has entered a span (SC.6) value which is zero or negative. Therefore, the box culvert has no cross-sectional area and cannot be analyzed.
5227	DOWNSTREAM ELEV IS X, NOT Y, HYDRAULIC JUMP OCCURS DOWNSTREAM (IF LOW FLOW CONTROLS). The upstream momentum is so great that the water downstream of the bridge is supercritical and not subcritical.
5290	UPSTREAM ELEVATION IS X NOT Y, NEW BACKWATER REQUIRED. Since supercritical flow was assumed by input and since the bridge obstruction drowns out the supercritical flow upstream of the bridge, new backwater is required, from the bridge upstream.
5470	ERROR DS DEPTH WRONG SIDE CRITICAL. The calculated depth in the low flow routine was determined on the wrong side of critical depth. A trace may be required to determine cause.
6070	LOW FLOW BY NORMAL BRIDGE. When the pier width is specified as zero for the special bridge method and when low flow controls, the friction loss is computed using the normal bridge method instead of the special bridge method. (SB.6=0)
6110	EGLWC OF X LESS THAN XEG OF Y. The energy gradient elevation for the controlling low flow is less than the energy gradient for the previous cross section indicating negative losses. The energy gradient elevation for the current cross section is therefore, assumed equal to that for the previous energy gradient (no loss) and the run has been continued.

Statement Number	Notes and Remarks
6180	SUPERCRITICAL FLOW, PRESSURE FLOW. Based on a comparison of EGPRS and EGLWC (the higher controls) the program concluded pressure flow. The solution of pressure flow in combination with supercritical flow is generally not compatible. The bridge model should be examined for possible input errors.
6400	TRIAL AND ERROR FOR CHANNEL Q FAILED. For the low flow and weir flow combination, the discharge through the channel must be determined. In trying to determine the discharge through the channel by an iterative process, the assumed and computed discharges do not agree in 50 trials. The allowable error of one percent is too severe for the computation or a programming inadequacy has been detected.
6790	POSSIBLE INVALID SOLUTION 20 TRIALS OF EG NOT ENOUGH. In determining the energy grade line elevation for a combination of weir flow and low flow, the discharge computed for an assumed energy grade line elevation could not balance with the actual discharge to be used in the water surface profile determination. When this condition occurs, the job should be rerun using the trace feature and the cause of this failure determined.
6840	FLOW IS BY WEIR AND LOW FLOW. The minimum top of roadway in one or both overbank dips below the low chord over the bridge and the resulting water surface elevation, which is below the low chord over the bridge, was computed using Class A low flow under the bridge and weir flow in the low overbank.
6870	D.S. ENERGY OF X HIGHER THAN COMPUTED ENERGY OF Y. The energy grade line elevation of X for the previous (downstream) cross section is higher than the current cross section's computed energy grade line elevation of Y. The current energy grade line elevation was computed for a combination of weir and pressure flow. The energy grade line elevation for this cross section has been assumed equal to the previous energy elevation in order to eliminate negative losses. The weir coefficients used apparently were too efficient or a very long flat weir section has been encountered.
7185	MIN SPECIFIC ENERGY. The computer determined that it was impossible to proceed from the previous cross section to the current cross section without crossing critical depth and therefore, critical depth has been assumed for the current cross section. In other words, maximum losses cannot produce an energy elevation as high as the minimum energy at critical depth. If this note occurs for several consecutive cross sections, it is apparent that the wrong type of flow (IDIR) has been assumed for this segment of the profile. The cross sections should be reversed, IDIR changed and the profile rerun.
7230	SLOPE-AREA TRIALS EXCEED 100. In determining the starting water surface elevation using the slope of the energy grade line from input, 100 trials were not sufficient to balance the calculated discharge with the actual discharge (Q). If this condition occurs, an error in the input data or a programming error has been encountered. Rerun with trace feature if input data appear satisfactory.
8190	PLOTTED POINTS (BY PRIORITY).. - - - ETC. This note gives the priority for plotting the values for the cross section. If two or more points are close enough together that a single space of the printer cannot distinguish between them, then only the last point plotted will be seen on the output. For instance, the energy gradient elevation (E) will hide the water surface elevation (W) for very small velocity heads.

Statement Number	Notes and Remarks
8560	XSEC POINT - , X, EL, ST - Y, Z. The subscript computed for the current point was too low or too high to be plotted and is therefore, not shown on the cross section. The <i>X</i> indicates the type of point being plotted (<i>X</i> for ground point). The elevation and station of this point are printed out as <i>Y</i> and <i>Z</i> .
8930	RDST NOT ON GR Record. The roadway station printed out here does not appear on the ground profile record (GR). For the normal bridge method all stations on the BT record must also appear on the GR record. This note can be ignored for the special bridge method.