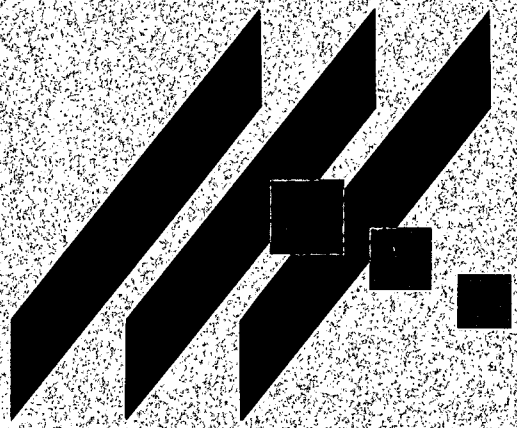
MKEC ENGINEERING CONSULTANTS, INC.



DRAINAGE REPORT

FOR

WOODLAND LAKES COMMUNITY CHURCH

DECEMBER 2001

411 N. WEBB ROAD • WICHITA, KS 67206 • 316-684-9600 • FAX 316-684-9100

Drainage Report
Woodland Lakes Community Church

MKEC Project 00031
December 19, 2001

Location

The site is between the Kansas Turnpike (I-35) and Lincoln, east of Greenwich Road in the south half of the northwest quarter of Section 27, T27S, R2E. Adjacent plats include Seltzer Elementary School (east), and Windsor Park Addition (south). Three large unplatted parcels comprising a total of 4.3 acres lie along Greenwich Road and form most of the west boundary for the site. Two of these parcels are part of this proposed plat.

Dimensions are roughly 1050 feet north-south, and 1080 feet east-west. The total platted area, including the detention reserve (Reserve "A") is approximately 26.4 acres.

Existing Site Conditions

Soils

According to the NRCS (SCS) Sedgwick County Soil Survey, virtually the entire site is in the Rosehill and Irwin Series: silty clay, 1 to 3 percent slopes; well-drained soil on upland divides and in even side slopes. Substratum is a calcareous shaly clay. In places the surface layer is calcareous. The Hydrologic Soil Group (HSG) for both soils is "D".

Current Development

The parcel is currently undeveloped agricultural land.

Landform and Slope

The site is on an upland divide. A natural channel lies to the west, and a small channel appears to be forming at the south side approximately 1,900 feet east of Greenwich. Elevations vary from approximately 1363 at the northeast corner, to 1340 in the southeast corner. Slopes are 2.5 to 3.5 percent.

Runoff from the property flows west toward Greenwich Road. It is combined with flows from north of I-35. A 42-inch RCP passes flows under I-35 near the middle of the north property line into a low area passing through the east one-third of the three parcels just south of I-35 along Greenwich Road.

Drainage Conditions

No portion of the site is included in a regulatory floodplain (FIRM Panel 225, Sedgwick County, June 3, 1986). The nearest regulatory floodplain is on Spring Branch, approximately one-half mile south of the site.

Channels adjacent to the site are minor tributaries to Spring Branch. Terrain is rolling, with regional slopes on the order of 30 to 40 feet per mile. Soils in the site are in the Rosehill and Irwin series, both with assigned hydrologic soil group (HSG) D. The pertinent portion of the Andover, Kansas

USGS Quadrangle is copied and attached (Appendix A), showing the site location and extent of off-site drainage areas.

The runnoff from the watershed flows to a ditch in the right of way east of Greenwich Road. A TR-20 analysis of the watershed indicates a 100-year flow rate of approximately 260 cfs at Lincoln and Greenwich. Culverts under Lincoln and driveways, south of Lincoln, to Greenwich Road are single 24-inch CMPs or equivalent CMPAs. Because the culverts are relatively small, flow covers part of the east Greenwich Road driving lane in all but the smallest events.

Downstream of Site. The major drainage feature in the area is Spring Branch, a tributary of Fourmile Creek. Spring Branch flows eastward along the south section line, approximately one-mile from the site. Several small lakes have been constructed in the immediate area, including one just east of Greenwich Road on Spring Branch, and one north of Spring Branch on an unnamed tributary in the Windsor Park Addition, also just east of Greenwich Road.

Discharge from the site will be to the Greenwich Road right of way, approximately 1,500 feet north of the Spring Branch bridge. The effective Flood Insurance Rate Map shows the 100-year water surface elevation at the downstream side of the Spring Branch bridge to be 1331. The existing flow line elevation in the ditch just north of Lincoln, approximately 1,500 feet from the bridge, is 1331.24 feet.

Approximately 350 feet south of Lincoln, a tributary to Spring Branch crosses Greenwich Road into the Windsor Park area. Based on information taken from the USGS topographic map and using the HEC-1 computer program in a simple, single basin analysis, the 100-year peak flow rate just east of Greenwich is 944 cfs. This channel continues across Bayley Street into a fishing lake in Windsor Park, then to another lake immediately south on Spring Branch's channel. The 100-year peak flow rate just west of Greenwich was similarly calculated as 836 cfs.

Field investigation and cursory survey was completed for the Windsor Park fishing lake dam and the culverts under Bayley. The field information, runoff calculations, and hydraulic analyses indicate that water flows over the Bayley street/culvert section following heavy rain, and that Bayley can control backwater elevations for the culvert at the intersection of Greenwich and Lincoln.

(This was corroborated by discussion with a Windsor Park resident, who indicated that Bayley Street is usually under water after heavy rains. Culvert analysis using the HY8 computer program with survey data and the calculated flow rates indicate that flows exceeding about 620 cfs flow over Bayley, with a water surface elevation of 1333 using the 100-year flow. HY8 analysis of the Greenwich culvert just north of Bayley indicates that water also flows over Greenwich during the 100-year event.)

While Bayley will likely be the ultimate control for backwater conditions at Lincoln, small culverts (24-inch) currently control the water surface elevations at Lincoln and Greenwich during most events. The calculated pre-development 100-year flow, for the watershed shown in Appendix B, to the Lincoln culvert and the two driveway culverts is 260 cfs. This far exceeds the culverts' capacities (~25 cfs), so most water will flow over the road surface.

Any improvement to the culvert under Lincoln with this project will be ineffective due to the driveway culverts downstream and the control section at Bayley. Additionally, any drainage improvements installed now would probably be removed when Greenwich is improved to an urban section.

Site Drainage Conditions

Current Runoff Characteristics

Site runoff is currently uncontrolled. The curve number 81.0 was used for the hydrologic soil group "D" existing on the site. The site's watershed can be identified in Appendix A. Pre-development runoff from the 2-, 5-, 10-year and 100-year storms is calculated by TR-20 method in Appendix B. Table 1 shows the Pre-Developed TR-20 runoff results for the respective storms.

TABLE 1

Runoff	2 yr	5 yr	10 yr	100 yr
Pre-Developed (Appendix B)	76	120	149	260
Post-Developed (North Detained) (Appendix C)	42	112	156	265
Post-Developed (North Undetained) (Appendix D)	56	82	98	238

Proposed Site Runoff Characteristics

Runoff patterns will differ from pre-developed conditions. The watersheds for pre- and post-developed conditions can be seen on the drainage maps included in Appendix A.

We propose to capture the watershed north of the Kansas Turnpike Authority with a 42-inch storm sewer in the northwest corner and discharge flow into the Greenwich Road ditch. Table 1 displays the post-developed off-site flows in the respective events for two different options. The first option is to detain the runoff coming from the north (One Kellogg Place and Turnpike). This option has a significant reduction in the two-year event, but less frequent events have little reduction, if not an increase in runoff. The second option is to bypass the north runoff to Greenwich by sending it through a series of culverts. This option actually allows more of the site runoff to be detained and provides a reduction in peak flow in every event. Therefore, we propose to design the site to correspond with Option 2.

The West Watershed will drain into the detention pond in Reserve "A". Detention pond discharge will combine with the runoff in Greenwich, from north of I-35 (Turnpike) and continue down Greenwich. Existing detention should be expanded when future phases are constructed on the site to account for a different use than originally planned residential development. As noted previously, downstream conditions in Greenwich Road from Lincoln south to Spring Branch are very poor. Consequently, detention facilities are planned to hold post-development storm flows at or below pre-development levels.

The East Watershed will drain to a detention pond in Reserve "F". Discharge from the detention pond in Reserve "F" will be to a storm sewer along the north side of Lincoln, which will subsequently discharge to the detention basin in Reserve "A".

School Parcel Detention. Proposed site constraints for the school parcel include at least 2.5 acre feet of detention storage and a maximum 100-year discharge from the facility of 65 cfs. The design assumes storage in a ball field approximately 210x210 ft with the (average) maximum depth at 2.5 feet. The outlet configuration is a modified City of Wichita drop inlet. The inlet's gross opening is 4.5x3 feet, with a grate of 1.5 inch bars 3 feet long at 4-inch centers, for a net orifice opening area of 9.0 sq feet and a weir perimeter of 15 feet.

Reserve "A" Detention. Discharge from the Reserve "A" detention basin is through two 24-inch RCPs. They allow the detention basin to function for 2-, 5-, and 10-year storms. All larger storms will flow over the supplemental spillway into the Greenwich Road ditch. The supplemental spillway is in two sections of reinforced turf totaling 60 feet at elevation 1337.5.

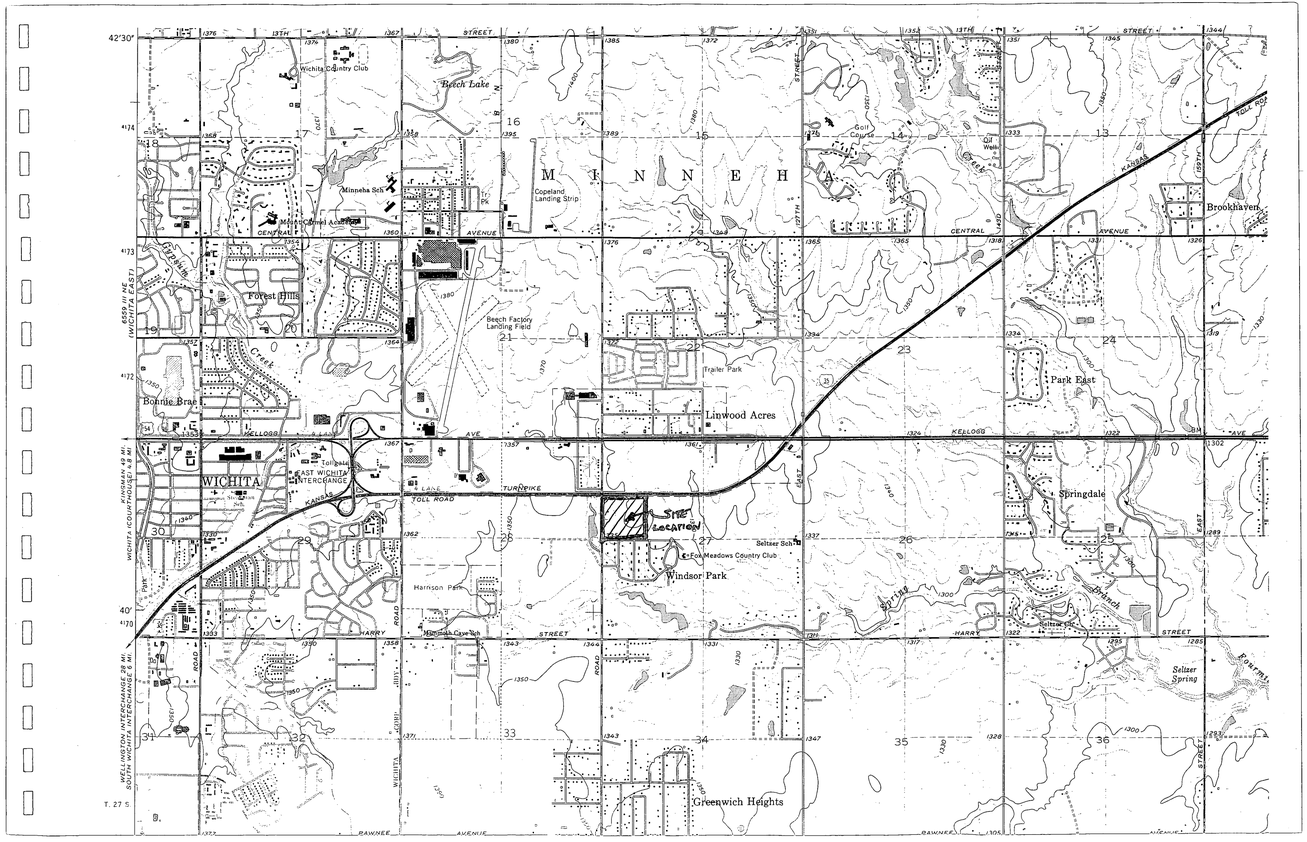
SUMMARY

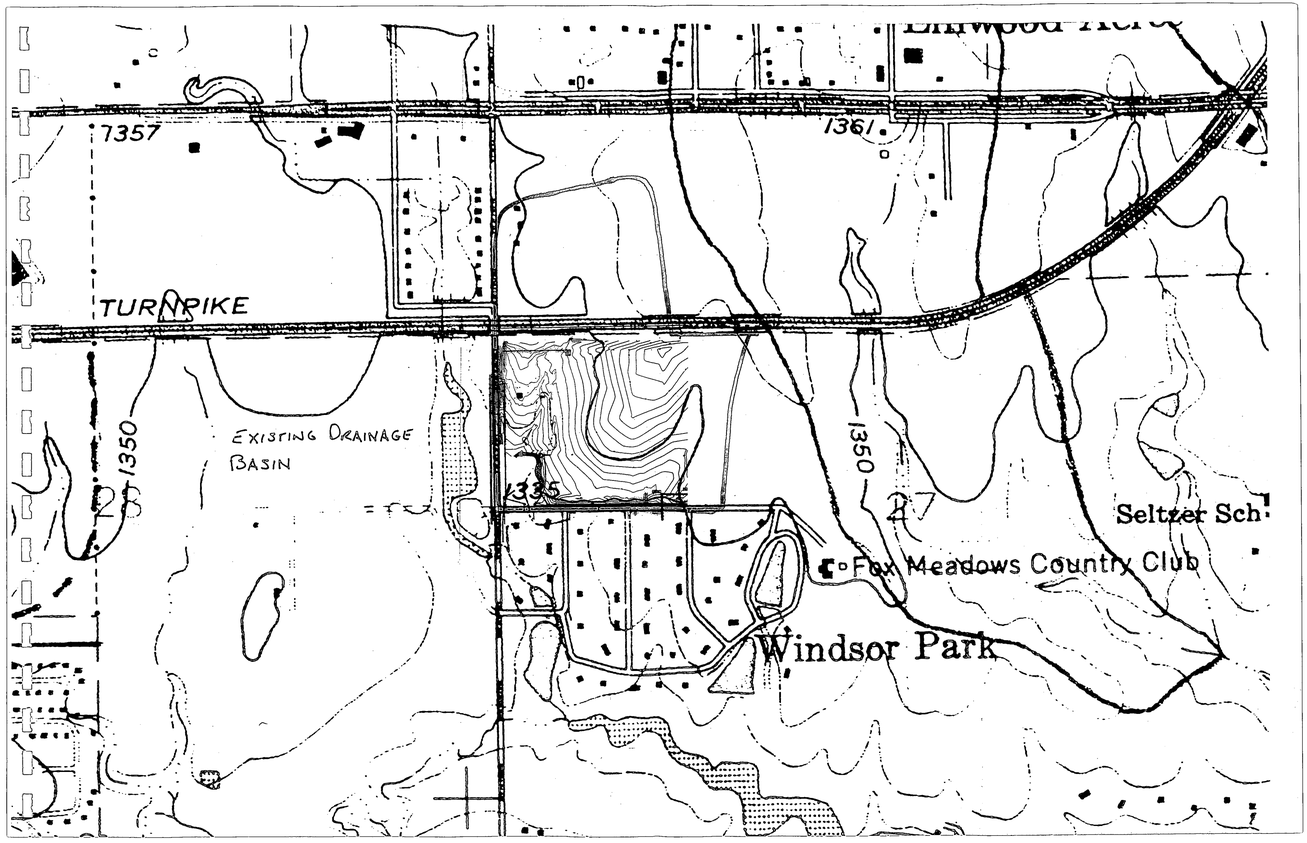
The proposed detention will benefit the area by both containing the runoff from frequent storms and maintaining pre-development peak runoff from more severe events. When Greenwich Road is converted to an urban section and new storm management facilities are installed, it may be possible to modify the detention outlet structure to work with the new facilities so that the supplemental spillways are used less frequently.

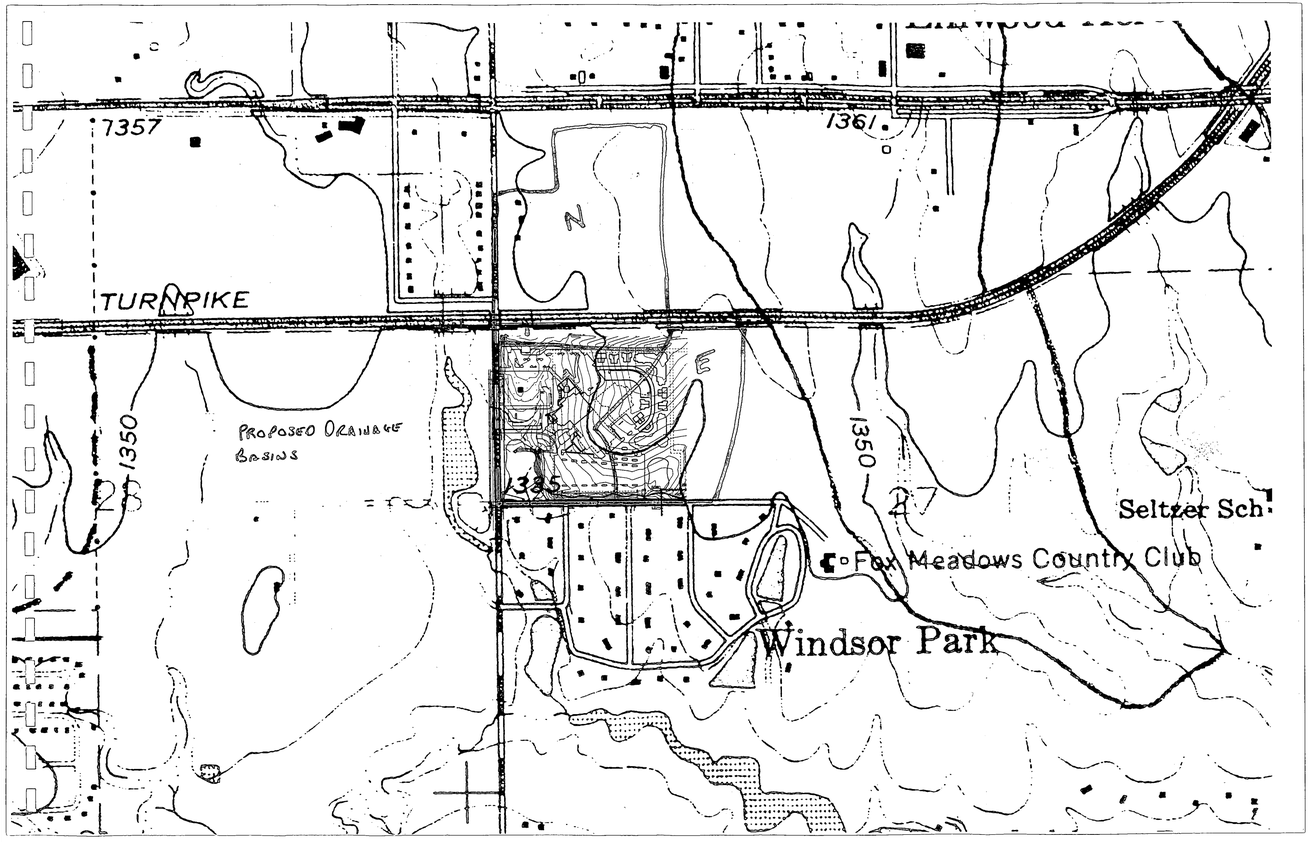
Peak 100-year pre-development flow from the watershed was calculated as 260 cfs. The combined 100-year peak post-development flow from the watershed area is 238 cfs.

A major portion of this report was taken from the Drainage Report for Cedar View Addition, dated September 1, 1998. The site drainage plans have been extensively modified to accommodate the current plat and its usage.

APPENDIX A (MAPS)


42'30"
40'
WICHITA
Wichita Country Club
Beech Lake
Minneha Sch
Minneha Comm Academy
Forest Hills
Bonnie Brae
Beech Factory Landing Field
Copeland Landing Strip
Trailer Park
Linwood Acres
Park East
Brookhaven
Springdale
Seltzer Sch
Fox Meadows Country Club
Windsor Park
Harrison Park
Seltzer Spring
Greenwich Heights
SITE LOCATION
EAST WICHITA INTERCHANGE
Toll gate
TURNPIKE
TOLL ROAD
KELLOGG
CENTRAL
HARRY
STREET
AVENUE
WICHITA
RAWNEE
T. 27 S.
WELLINGTON INTERCHANGE 28 MI.
SOUTH WICHITA INTERCHANGE 46 MI.


7357
1361
TURNPIKE
1350
EXISTING DRAINAGE
BASIN
1335
1350
Seltzer Sch.
Fox Meadows Country Club
Windsor Park


7357
1361
TURNPIKE
1350
PROPOSED DRAINAGE BASINS
1325
1350
Seltzer Sch.
Fox Meadows Country Club
Windsor Park

APPENDIX B

```
*****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY*****************

JOB TR-20                                          SUMMARY
TITLE 003 PONDS @ Woodland Lakes Comm. Church NGG 2,5,10,100-YR EVENTS
TITLE  FAA TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME WLCCEX.T20
 4 DIMHYD              0.02                                          484
 8          .000       .030       .100       .190       .310
 8          .470       .660       .820       .930       .990
 8         1.000       .990       .930       .860       .780
 8          .680       .560       .460       .390       .330
 8          .280       .241       .207       .174       .147
 8          .126       .107       .091       .077       .066
 8          .055       .047       .040       .034       .029
 8          .025       .021       .018       .015       .013
 8          .011       .009       .008       .007       .006
 8          .005       .004       .003       .002       .001
 8          .000       .000       .000       .000       .000
 9 ENDTBL
 5 RAINFL 7            0.08333                                       6-HR M&L
 8          0.0000     0.0033     0.0066     0.0099     0.0132
 8          0.0166     0.0198     0.0248     0.0296     0.0346
 8          0.0404     0.0463     0.0522     0.0590     0.0658
 8          0.0727     0.0796     0.0864     0.0933     0.1136
 8          0.1340     0.1572     0.1832     0.2124     0.2473
 8          0.2850     0.3400     0.4464     0.6034     0.6752
 8          0.7220     0.7409     0.7598     0.7758     0.7919
 8          0.8072     0.8224     0.8310     0.8396     0.8468
 8          0.8540     0.8628     0.8714     0.8773     0.8832
 8          0.8890     0.8939     0.8988     0.9038     0.9086
 8          0.9136     0.9184     0.9233     0.9282     0.9332
 8          0.9380     0.9429     0.9478     0.9527     0.9576
 8          0.9626     0.9664     0.9704     0.9742     0.9782
 8          0.9821     0.9860     0.9884     0.9906     0.9930
 8          0.9954     0.9976     1.0000     1.0000     1.0000
 9 ENDTBL
 5 RAINFL 8            0.5                                           24-HRSCS
 8          .000       .002       .005       .009       .013         ZONE 5
 8          .018       .023       .029       .035       .042
 8          .050       .059       .068       .078       .089
 8          .101       .114       .128       .144       .162
 8          .183       .208       .244       .339       .723
 8          .773       .802       .825       .844       .861
 8          .876       .890       .903       .914       .924
 8          .934       .943       .951       .959       .966
 8          .972       .977       .982       .986       .990
 8          .993       .996       .998      1.000      1.000
 9 ENDTBL
 6 RUNOFF 1 001       1 0.1344      80.0       0.9621                1 EXIST CO
```

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   ENDCMP 1
 7 COMPUT 7 001    001   0.0         3.42        1.0         7 2  12  02 5-YR 6-H
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         4.02        1.0         7 2  13  03 10-YR 6-
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         5.94        1.0         7 2  16  06 100-YR 6
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         3.48        1.0         2 2  21  01 2-YR TYP
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         4.55        1.0         2 2  22  02 5-YR TYP
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         5.25        1.0         2 2  23  03 10-YR TY
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         7.80        1.0         2 2  26  06 100-YR T
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         3.48        1.0         8 2  41  01 2-YR ZON
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         4.55        1.0         8 2  42  02 5-YR ZON
   ENDCMP 1
 7 COMPUT 7 001    001   0.0         5.25        1.0         8 2  43  03 10-YR ZO
   ENDCMP 1
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   ENDCMP 1
   ENDJOB 2

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COMPUTED PEAK RATE FACTOR = 484.00

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

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ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
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EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 1 5-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 3.42 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=12 STORM NO.= 2 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 1 10-YR 6-
STARTING TIME = .00 RAIN DEPTH = 4.02 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=13 STORM NO.= 3 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 1 100-YR 6
STARTING TIME = .00 RAIN DEPTH = 5.94 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=16 STORM NO.= 6 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

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   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=21              STORM NO.= 1             RAIN TABLE NO.= 2


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        5-YR TYP
   STARTING TIME =   .00         RAIN DEPTH =  4.55       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=22              STORM NO.= 2             RAIN TABLE NO.= 2


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        10-YR TY
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   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=23              STORM NO.= 3             RAIN TABLE NO.= 2


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        100-YR T
   STARTING TIME =   .00         RAIN DEPTH =  7.80       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=26              STORM NO.= 6             RAIN TABLE NO.= 2


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8
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```
EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        2-YR ZON
   STARTING TIME =   .00         RAIN DEPTH =  3.48       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
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EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        5-YR ZON
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EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        10-YR ZO
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   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=43              STORM NO.= 3             RAIN TABLE NO.= 8


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS  11


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION   1        100-YR Z
   STARTING TIME =   .00         RAIN DEPTH =  7.80       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=46              STORM NO.= 6             RAIN TABLE NO.= 8


EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS  12
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SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.52 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 7, AMC 2							
MAIN TIME INCREMENT .08 HOURS							
ALTERNATE 11 STORM 1							
XSECTION 1	RUNOFF	.13	.90	---	2.98	50	384.6
RAINFALL OF 3.42 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 12 STORM 2							
XSECTION 1	RUNOFF	.13	1.57	---	2.95	92	707.7
RAINFALL OF 4.02 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 13 STORM 3							
XSECTION 1	RUNOFF	.13	2.06	---	2.93	122	938.5
RAINFALL OF 5.94 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 1	RUNOFF	.13	3.73	---	2.90	225	1730.8
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, AMC 2							
ALTERNATE 21 STORM 1							
XSECTION 1	RUNOFF	.13	1.62	---	12.48	76	584.6

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 22 STORM 2							
XSECTION 1	RUNOFF	.13	2.50	---	12.47	120	923.1
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 23 STORM 3							
XSECTION 1	RUNOFF	.13	3.11	---	12.47	149	1146.2
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 26 STORM 6							
XSECTION 1	RUNOFF	.13	5.43	---	12.45	260	2000.0
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs. RAINTABLE NUMBER 8, AMC 2							
ALTERNATE 41 STORM 1							
XSECTION 1	RUNOFF	.13	1.62	---	12.37	78	600.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 42 STORM 2							
XSECTION 1	RUNOFF	.13	2.50	---	12.37	122	938.5
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 43 STORM 3							
XSECTION 1	RUNOFF	.13	3.11	---	12.36	152	1169.2
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 46 STORM 6							
XSECTION 1	RUNOFF	.13	5.44	---	12.35	262	2015.4

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION	1	.13				
ALTERNATE	11		50	*********	*********	*********
ALTERNATE	12		*********	92	*********	*********
ALTERNATE	13		*********	*********	122	*********
ALTERNATE	16		*********	*********	*********	225
ALTERNATE	21		76	*********	*********	*********
ALTERNATE	22		*********	120	*********	*********
ALTERNATE	23		*********	*********	149	*********
ALTERNATE	26		*********	*********	*********	260
ALTERNATE	41		78	*********	*********	*********
ALTERNATE	42		*********	122	*********	*********
ALTERNATE	43		*********	*********	152	*********
ALTERNATE	46		*********	*********	*********	262

END OF 1 JOBS IN THIS RUN

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*** TR-20 RUN COMPLETED ***

APPENDIX C

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*****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                                          SUMMARY
TITLE 003 PONDS @ Woodland Lakes Comm. Church NGG 2,5,10,100-YR EVENTS
TITLE  FAA TC 28SEP99 PRELIM. EVALUATIONS K=484 FILENAME WLCC3P6.T20
 4 DIMHYD              0.02                                          484
 8          .000       .030        .100        .190        .310
 8          .470       .660        .820        .930        .990
 8         1.000       .990        .930        .860        .780
 8          .680       .560        .460        .390        .330
 8          .280       .241        .207        .174        .147
 8          .126       .107        .091        .077        .066
 8          .055       .047        .040        .034        .029
 8          .025       .021        .018        .015        .013
 8          .011       .009        .008        .007        .006
 8          .005       .004        .003        .002        .001
 8          .000       .000        .000        .000        .000
 9 ENDTBL
 5 RAINFL 7            0.08333                                       6-HR M&L
 8          0.0000     0.0033      0.0066      0.0099      0.0132
 8          0.0166     0.0198      0.0248      0.0296      0.0346
 8          0.0404     0.0463      0.0522      0.0590      0.0658
 8          0.0727     0.0796      0.0864      0.0933      0.1136
 8          0.1340     0.1572      0.1832      0.2124      0.2473
 8          0.2850     0.3400      0.4464      0.6034      0.6752
 8          0.7220     0.7409      0.7598      0.7758      0.7919
 8          0.8072     0.8224      0.8310      0.8396      0.8468
 8          0.8540     0.8628      0.8714      0.8773      0.8832
 8          0.8890     0.8939      0.8988      0.9038      0.9086
 8          0.9136     0.9184      0.9233      0.9282      0.9332
 8          0.9380     0.9429      0.9478      0.9527      0.9576
 8          0.9626     0.9664      0.9704      0.9742      0.9782
 8          0.9821     0.9860      0.9884      0.9906      0.9930
 8          0.9954     0.9976      1.0000      1.0000      1.0000
 9 ENDTBL
 5 RAINFL 8            0.5                                           24-HRSCS
 8          .000       .002        .005        .009        .013       ZONE 5
 8          .018       .023        .029        .035        .042
 8          .050       .059        .068        .078        .089
 8          .101       .114        .128        .144        .162
 8          .183       .208        .244        .339        .723
 8          .773       .802        .825        .844        .861
 8          .876       .890        .903        .914        .924
 8          .934       .943        .951        .959        .966
 8          .972       .977        .982        .986        .990
 8          .993       .996        .998       1.000       1.000
 9 ENDTBL
 3 STRUCT      15                                                    E Pond
```

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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 8                       1344.0      0.0         0.0
 8                       1344.5      17.5        0.07
 8                       1345.0      43.3        0.26
 8                       1345.5      53.1        0.60
 8                       1346.0      61.3        1.08
 8                       1346.5      68.5        1.70
 8                       1347.0      74.7        2.41
 8                       1347.5      79.9        3.16
 9 ENDTBL
 3 STRUCT      21                                                    NofI35PO
 8                       1347.25     0.0         0.0
 8                       1347.7      5.02        0.284
 8                       1347.9      7.26        0.538
 8                       1348.4      12.84       1.198
 8                       1348.9      18.42       1.925
 8                       1349.4      24.00       2.735
 8                       1349.9      34.30       3.625
 8                       1350.4      44.50       4.605
 8                       1350.9      54.39       5.668
 8                       1351.4      68.4        6.22
 9 ENDTBL
 3 STRUCT      55                                                    SW Pond
 8                       1335.0      0.0         0.00
 8                       1335.5      6.00        0.82
 8                       1336.0      12.0        1.68
 8                       1336.5      18.00       2.60
 8                       1337.0      25.4        3.56
 8                       1337.5      33.5        4.57
 8                       1338.0      41.2        5.64
 8                       1338.30     225.0       6.30
 9 ENDTBL
 6 RUNOFF 1 001        1 0.0214      80.0        0.7247          1 E WSHED
 6 RUNOFF 1 005        2 0.0144      92.0        0.4068          1 E CH WSH
 6 ADDHYD 4 010   1 2 3                                          1 Qin E PO
 6 RESVOR 2    15 3    1 1344.0                                 1 E POND
 6 RUNOFF 1 016        7 0.0429      95.0        0.3545          1 1 KELLOG
 6 RUNOFF 1 018        6 0.0082      81.0        0.7725          1 N I35
 6 ADDHYD 4 020   7 6 2                                          1 Qi 42" 1
 6 RESVOR 2    21 2    7 1347.25                                1 Qo 42" 1
 6 RUNOFF 1 022        6 0.0100      81.0        0.7889          1 S I-35
 6 ADDHYD 4 023   7 6 5                                          1 Q I-35
 6 RUNOFF 1 024        2 0.0156      81.0        0.6591          1 W I-35
 6 RUNOFF 1 030        6 0.0109      95.0        0.2647          1 NW CH WS
 6 ADDHYD 4 032   5 6 7                                          1 Q NORTH
 6 RUNOFF 1 045        6 0.0177      95.0        0.25            1 W CH WSH
 6 ADDHYD 4 050   7 6 5                                          1 Q NW
```

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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 6 ADDHYD 4 052   1 5 7                                          1 Qi SWPON
 6 RESVOR 2    55 7   6 1335.0                                   1 SW POND
 6 ADDHYD 4 060   2 6 7                                          1 Qoff SIG
   ENDATA
 7 INCREM 6             0.0833
 7 COMPUT 7 001   060   0.0          2.52         1.0          7 2  11  01 2-YR 6-H
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          3.42         1.0          7 2  12  02 5-YR 6-H
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          4.02         1.0          7 2  13  03 10-YR 6-
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          5.94         1.0          7 2  16  06 100-YR 6
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          3.48         1.0          2 2  21  01 2-YR TYP
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          4.55         1.0          2 2  22  02 5-YR TYP
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          5.25         1.0          2 2  23  03 10-YR TY
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          7.80         1.0          2 2  26  06 100-YR T
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          3.48         1.0          8 2  41  01 2-YR ZON
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          4.55         1.0          8 2  42  02 5-YR ZON
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          5.25         1.0          8 2  43  03 10-YR ZO
   ENDCMP 1
 7 COMPUT 7 001   060   0.0          7.80         1.0          8 2  46  06 100-YR Z
   ENDCMP 1
   ENDJOB 2

**********END OF 80-80 LIST**********
```

COMPUTED PEAK RATE FACTOR = 484.00

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 60 2-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 2.52 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=11 STORM NO.= 1 RAIN TABLE NO.= 7

*** WARNING - XSECTION 18, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(13. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

*** WARNING - XSECTION 22, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(11. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 60 5-YR 6-H
STARTING TIME = .00 RAIN DEPTH = 3.42 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=12 STORM NO.= 2 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 60 10-YR 6-
STARTING TIME = .00 RAIN DEPTH = 4.02 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=13 STORM NO.= 3 RAIN TABLE NO.= 7

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

```
EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        100-YR 6
   STARTING TIME =    .00        RAIN DEPTH =  5.94       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=16              STORM NO.= 6             RAIN TABLE NO.= 7

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 21,
              VALUE EXTRAPOLATED.                                        ***

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   4

EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        2-YR TYP
   STARTING TIME =    .00        RAIN DEPTH =  3.48       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=21              STORM NO.= 1             RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   5

EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        5-YR TYP
   STARTING TIME =    .00        RAIN DEPTH =  4.55       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=22              STORM NO.= 2             RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   6

EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        10-YR TY
   STARTING TIME =    .00        RAIN DEPTH =  5.25       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2         MAIN TIME INCREMENT =   .08 HOURS
   ALTERNATE NO.=23              STORM NO.= 3             RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   7
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```
EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        100-YR T
   STARTING TIME =    .00         RAIN DEPTH =  7.80       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2          MAIN TIME INCREMENT =    .08 HOURS
   ALTERNATE NO.=26               STORM NO.= 6             RAIN TABLE NO.= 2

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 21,
              VALUE EXTRAPOLATED.                                        ***

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 55,
              VALUE EXTRAPOLATED.                                        ***

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   8


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        2-YR ZON
   STARTING TIME =    .00         RAIN DEPTH =  3.48       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2          MAIN TIME INCREMENT =    .08 HOURS
   ALTERNATE NO.=41               STORM NO.= 1             RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS   9


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        5-YR ZON
   STARTING TIME =    .00         RAIN DEPTH =  4.55       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2          MAIN TIME INCREMENT =    .08 HOURS
   ALTERNATE NO.=42               STORM NO.= 2             RAIN TABLE NO.= 8

EXECUTIVE CONTROL ENDCMP    COMPUTATIONS COMPLETED FOR PASS  10


EXECUTIVE CONTROL COMPUT    FROM XSECTION   1  TO XSECTION  60        10-YR ZO
   STARTING TIME =    .00         RAIN DEPTH =  5.25       RAIN DURATION=  1.00
   ANT. MOIST. COND. = 2          MAIN TIME INCREMENT =    .08 HOURS
   ALTERNATE NO.=43               STORM NO.= 3             RAIN TABLE NO.= 8
```

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 11

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 60 100-YR Z
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=46 STORM NO.= 6 RAIN TABLE NO.= 8

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 21,
VALUE EXTRAPOLATED. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 12

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 2.52 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 7, AMC 2							
MAIN TIME INCREMENT .08 HOURS							
ALTERNATE 11 STORM 1							
XSECTION 1	RUNOFF	.02	.90	---	2.80	10	500.0
XSECTION 5	RUNOFF	.01	1.71	---	2.55	18	1800.0
XSECTION 10	ADDHYD	.04	1.23	---	2.60	25	625.0
STRUCTURE 15	RESVOR	.04	1.23	1344.62	2.69	24	600.0
XSECTION 16	RUNOFF	.04	1.98	---	2.51	67	1675.0
XSECTION 18	RUNOFF	.01	.96	---	2.83T	4T	400.0
XSECTION 20	ADDHYD	.05	1.81	---	2.52	69	1380.0
STRUCTURE 21	RESVOR	.05	1.81	1349.10	3.00	21	420.0
XSECTION 22	RUNOFF	.01	.95	---	2.84T	5T	500.0
XSECTION 23	ADDHYD	.06	1.67	---	2.92	25	416.7
XSECTION 24	RUNOFF	.02	.95	---	2.76	8	400.0
XSECTION 30	RUNOFF	.01	1.97	---	2.45	19	1900.0
XSECTION 32	ADDHYD	.07	1.72	---	2.53	34	485.7
XSECTION 45	RUNOFF	.02	1.97	---	2.44	32	1600.0
XSECTION 50	ADDHYD	.09	1.77	---	2.47	65	722.2
XSECTION 52	ADDHYD	.13	1.61	---	2.51	83	638.5
STRUCTURE 55	RESVOR	.13	1.58	1337.27	3.62	30	230.8
XSECTION 60	ADDHYD	.14	1.51	---	3.27	33	235.7
RAINFALL OF 3.42 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 12 STORM 2							
XSECTION 1	RUNOFF	.02	1.57	---	2.78	17	850.0
XSECTION 5	RUNOFF	.01	2.55	---	2.54	27	2700.0
XSECTION 10	ADDHYD	.04	1.97	---	2.60	41	1025.0
STRUCTURE 15	RESVOR	.04	1.97	1344.90	2.70	38	950.0
XSECTION 16	RUNOFF	.04	2.86	---	2.51	96	2400.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 12 STORM 2							
XSECTION 18	RUNOFF	.01	1.64	---	2.81	7	700.0
XSECTION 20	ADDHYD	.05	2.66	---	2.51	99	1980.0
STRUCTURE 21	RESVOR	.05	2.66	1349.74	2.98	31	620.0
XSECTION 22	RUNOFF	.01	1.64	---	2.82	8	800.0
XSECTION 23	ADDHYD	.06	2.49	---	2.91	39	650.0
XSECTION 24	RUNOFF	.02	1.64	---	2.74	14	700.0
XSECTION 30	RUNOFF	.01	2.85	---	2.45	27	2700.0
XSECTION 32	ADDHYD	.07	2.55	---	2.53	49	700.0
XSECTION 45	RUNOFF	.02	2.85	---	2.44	46	2300.0
XSECTION 50	ADDHYD	.09	2.61	---	2.47	92	1022.2
XSECTION 52	ADDHYD	.13	2.43	---	2.51	120	923.1
STRUCTURE 55	RESVOR	.13	2.39	1338.05	3.19	69	530.8
XSECTION 60	ADDHYD	.14	2.31	---	3.18	76	542.9

RAINFALL OF 4.02 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 13 STORM 3							
XSECTION 1	RUNOFF	.02	2.06	---	2.77	23	1150.0
XSECTION 5	RUNOFF	.01	3.13	---	2.54	33	3300.0
XSECTION 10	ADDHYD	.04	2.49	---	2.60	51	1275.0
STRUCTURE 15	RESVOR	.04	2.49	1345.10	2.74	45	1125.0
XSECTION 16	RUNOFF	.04	3.45	---	2.51	114	2850.0
XSECTION 18	RUNOFF	.01	2.14	---	2.80	9	900.0
XSECTION 20	ADDHYD	.05	3.24	---	2.51	119	2380.0
STRUCTURE 21	RESVOR	.05	3.23	1350.12	2.96	39	780.0
XSECTION 22	RUNOFF	.01	2.14	---	2.81	11	1100.0
XSECTION 23	ADDHYD	.06	3.05	---	2.89	49	816.7
XSECTION 24	RUNOFF	.02	2.14	---	2.73	18	900.0
XSECTION 30	RUNOFF	.01	3.45	---	2.45	33	3300.0
XSECTION 32	ADDHYD	.07	3.11	---	2.57	59	842.9

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 13 STORM 3							
XSECTION 45	RUNOFF	.02	3.45	---	2.44	55	2750.0
XSECTION 50	ADDHYD	.09	3.18	---	2.47	111	1233.3
XSECTION 52	ADDHYD	.13	2.98	---	2.52	146	1123.1
STRUCTURE 55	RESVOR	.13	2.94	1338.11	2.94	112	861.5
XSECTION 60	ADDHYD	.14	2.85	---	2.93	127	907.1
RAINFALL OF 5.94 inches AND 6.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 16 STORM 6							
XSECTION 1	RUNOFF	.02	3.73	---	2.76	43	2150.0
XSECTION 5	RUNOFF	.01	5.00	---	2.54	52	5200.0
XSECTION 10	ADDHYD	.04	4.24	---	2.60	87	2175.0
STRUCTURE 15	RESVOR	.04	4.24	1346.02	2.88	62	1550.0
XSECTION 16	RUNOFF	.04	5.35	---	2.51	175	4375.0
XSECTION 18	RUNOFF	.01	3.83	---	2.78	16	1600.0
XSECTION 20	ADDHYD	.05	5.10	---	2.51	185	3700.0
STRUCTURE 21	RESVOR	.05	5.10	1351.45	2.90	70	1400.0
XSECTION 22	RUNOFF	.01	3.82	---	2.79	19	1900.0
XSECTION 23	ADDHYD	.06	4.89	---	2.87	89	1483.3
XSECTION 24	RUNOFF	.02	3.83	---	2.71	34	1700.0
XSECTION 30	RUNOFF	.01	5.35	---	2.45	50	5000.0
XSECTION 32	ADDHYD	.07	4.96	---	2.81	100	1428.6
XSECTION 45	RUNOFF	.02	5.35	---	2.44	83	4150.0
XSECTION 50	ADDHYD	.09	5.04	---	2.48	175	1944.4
XSECTION 52	ADDHYD	.13	4.81	---	2.50	223	1715.4
STRUCTURE 55	RESVOR	.13	4.77	1338.26	2.64	201	1546.2
XSECTION 60	ADDHYD	.14	4.67	---	2.65	234	1671.4

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, AMC 2							
ALTERNATE 21 STORM 1							
XSECTION 1	RUNOFF	.02	1.62	---	12.33	15	750.0
XSECTION 5	RUNOFF	.01	2.62	---	12.12	23	2300.0
XSECTION 10	ADDHYD	.04	2.02	---	12.17	34	850.0
STRUCTURE 15	RESVOR	.04	2.02	1344.78	12.26	32	800.0
XSECTION 16	RUNOFF	.04	2.92	---	12.09	78	1950.0
XSECTION 18	RUNOFF	.01	1.69	---	12.36	6	600.0
XSECTION 20	ADDHYD	.05	2.72	---	12.09	81	1620.0
STRUCTURE 21	RESVOR	.05	2.72	1349.32	12.54	23	460.0
XSECTION 22	RUNOFF	.01	1.69	---	12.37	7	700.0
XSECTION 23	ADDHYD	.06	2.55	---	12.44	30	500.0
XSECTION 24	RUNOFF	.02	1.69	---	12.29	12	600.0
XSECTION 30	RUNOFF	.01	2.92	---	12.04	22	2200.0
XSECTION 32	ADDHYD	.07	2.61	---	12.10	41	585.7
XSECTION 45	RUNOFF	.02	2.92	---	12.03	37	1850.0
XSECTION 50	ADDHYD	.09	2.67	---	12.06	77	855.6
XSECTION 52	ADDHYD	.13	2.48	---	12.08	101	776.9
STRUCTURE 55	RESVOR	.13	2.47	1337.69	13.01	36	276.9
XSECTION 60	ADDHYD	.14	2.38	---	12.53	42	300.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 22 STORM 2							
XSECTION 1	RUNOFF	.02	2.50	---	12.32	23	1150.0
XSECTION 5	RUNOFF	.01	3.65	---	12.12	31	3100.0
XSECTION 10	ADDHYD	.04	2.96	---	12.17	50	1250.0
STRUCTURE 15	RESVOR	.04	2.96	1345.06	12.29	44	1100.0
XSECTION 16	RUNOFF	.04	3.97	---	12.09	104	2600.0
XSECTION 18	RUNOFF	.01	2.59	---	12.35	9	900.0
XSECTION 20	ADDHYD	.05	3.75	---	12.09	110	2200.0
STRUCTURE 21	RESVOR	.05	3.75	1349.88	12.52	34	680.0
XSECTION 22	RUNOFF	.01	2.59	---	12.36	10	1000.0
XSECTION 23	ADDHYD	.06	3.56	---	12.44	44	733.3
XSECTION 24	RUNOFF	.02	2.59	---	12.28	18	900.0
XSECTION 30	RUNOFF	.01	3.97	---	12.04	30	3000.0
XSECTION 32	ADDHYD	.07	3.62	---	12.10	55	785.7
XSECTION 45	RUNOFF	.02	3.97	---	12.03	50	2500.0
XSECTION 50	ADDHYD	.09	3.69	---	12.06	103	1144.4
XSECTION 52	ADDHYD	.13	3.48	---	12.09	138	1061.5
STRUCTURE 55	RESVOR	.13	3.47	1338.09	12.51	98	753.8
XSECTION 60	ADDHYD	.14	3.37	---	12.50	112	800.0
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 23 STORM 3							
XSECTION 1	RUNOFF	.02	3.11	---	12.32	29	1450.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 23 STORM 3							
XSECTION 5	RUNOFF	.01	4.33	---	12.11	36	3600.0
XSECTION 10	ADDHYD	.04	3.60	---	12.18	60	1500.0
STRUCTURE 15	RESVOR	.04	3.60	1345.30	12.35	49	1225.0
XSECTION 16	RUNOFF	.04	4.66	---	12.09	121	3025.0
XSECTION 18	RUNOFF	.01	3.20	---	12.35	11	1100.0
XSECTION 20	ADDHYD	.05	4.43	---	12.09	128	2560.0
STRUCTURE 21	RESVOR	.05	4.43	1350.20	12.51	40	800.0
XSECTION 22	RUNOFF	.01	3.20	---	12.35	13	1300.0
XSECTION 23	ADDHYD	.06	4.23	---	12.43	53	883.3
XSECTION 24	RUNOFF	.02	3.20	---	12.28	23	1150.0
XSECTION 30	RUNOFF	.01	4.66	---	12.04	35	3500.0
XSECTION 32	ADDHYD	.07	4.29	---	12.12	65	928.6
XSECTION 45	RUNOFF	.02	4.66	---	12.03	58	2900.0
XSECTION 50	ADDHYD	.09	4.36	---	12.06	120	1333.3
XSECTION 52	ADDHYD	.13	4.15	---	12.08	162	1246.2
STRUCTURE 55	RESVOR	.13	4.12	1338.15	12.36	135	1038.5
XSECTION 60	ADDHYD	.14	4.02	---	12.36	156	1114.3

RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 26 STORM 6							
XSECTION 1	RUNOFF	.02	5.43	---	12.31	50	2500.0
XSECTION 5	RUNOFF	.01	6.84	---	12.11	56	5600.0
XSECTION 10	ADDHYD	.04	6.00	---	12.18	97	2425.0
STRUCTURE 15	RESVOR	.04	6.00	1346.22	12.47	65	1625.0
XSECTION 16	RUNOFF	.04	7.20	---	12.09	184	4600.0
XSECTION 18	RUNOFF	.01	5.55	---	12.34	19	1900.0
XSECTION 20	ADDHYD	.05	6.93	---	12.09	197	3940.0
STRUCTURE 21	RESVOR	.05	6.93	1351.57	12.45	73	1460.0
XSECTION 22	RUNOFF	.01	5.55	---	12.35	22	2200.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 26 STORM 6							
XSECTION 23	ADDHYD	.06	6.70	---	12.43	95	1583.3
XSECTION 24	RUNOFF	.02	5.54	---	12.27	39	1950.0
XSECTION 30	RUNOFF	.01	7.20	---	12.04	53	5300.0
XSECTION 32	ADDHYD	.07	6.78	---	12.12	106	1514.3
XSECTION 45	RUNOFF	.02	7.20	---	12.03	88	4400.0
XSECTION 50	ADDHYD	.09	6.86	---	12.06	188	2088.9
XSECTION 52	ADDHYD	.13	6.62	---	12.08	239	1838.5
STRUCTURE 55	RESVOR	.13	6.62	1338.31	12.17	228	1753.8
XSECTION 60	ADDHYD	.14	6.50	---	12.18	265	1892.9
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 8, AMC 2							
ALTERNATE 41 STORM 1							
XSECTION 1	RUNOFF	.02	1.62	---	12.23	15	750.0
XSECTION 5	RUNOFF	.01	2.61	---	12.05	20	2000.0
XSECTION 10	ADDHYD	.04	2.02	---	12.11	33	825.0
STRUCTURE 15	RESVOR	.04	2.02	1344.77	12.19	31	775.0
XSECTION 16	RUNOFF	.04	2.92	---	12.03	65	1625.0
XSECTION 18	RUNOFF	.01	1.69	---	12.26	6	600.0
XSECTION 20	ADDHYD	.05	2.72	---	12.04	70	1400.0
STRUCTURE 21	RESVOR	.05	2.72	1349.41	12.42	24	480.0
XSECTION 22	RUNOFF	.01	1.69	---	12.27	7	700.0
XSECTION 23	ADDHYD	.06	2.55	---	12.35	31	516.7
XSECTION 24	RUNOFF	.02	1.69	---	12.19	12	600.0
XSECTION 30	RUNOFF	.01	2.92	---	11.98	17	1700.0
XSECTION 32	ADDHYD	.07	2.61	---	12.09	42	600.0
XSECTION 45	RUNOFF	.02	2.92	---	11.97	28	1400.0
XSECTION 50	ADDHYD	.09	2.67	---	12.04	69	766.7
XSECTION 52	ADDHYD	.13	2.48	---	12.06	97	746.2

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 41 STORM 1							
STRUCTURE 55	RESVOR	.13	2.47	1337.80	12.84	38	292.3
XSECTION 60	ADDHYD	.14	2.39	---	12.41	44	314.3
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 42 STORM 2							
XSECTION 1	RUNOFF	.02	2.50	---	12.23	23	1150.0
XSECTION 5	RUNOFF	.01	3.65	---	12.05	27	2700.0
XSECTION 10	ADDHYD	.04	2.96	---	12.11	47	1175.0
STRUCTURE 15	RESVOR	.04	2.97	1345.04	12.21	44	1100.0
XSECTION 16	RUNOFF	.04	3.97	---	12.03	86	2150.0
XSECTION 18	RUNOFF	.01	2.59	---	12.25	9	900.0
XSECTION 20	ADDHYD	.05	3.75	---	12.04	94	1880.0
STRUCTURE 21	RESVOR	.05	3.75	1349.97	12.40	36	720.0
XSECTION 22	RUNOFF	.01	2.59	---	12.26	11	1100.0
XSECTION 23	ADDHYD	.06	3.56	---	12.35	46	766.7
XSECTION 24	RUNOFF	.02	2.59	---	12.19	18	900.0
XSECTION 30	RUNOFF	.01	3.97	---	11.98	23	2300.0
XSECTION 32	ADDHYD	.07	3.62	---	12.11	57	814.3
XSECTION 45	RUNOFF	.02	3.97	---	11.97	38	1900.0
XSECTION 50	ADDHYD	.09	3.69	---	12.05	93	1033.3
XSECTION 52	ADDHYD	.13	3.48	---	12.07	134	1030.8
STRUCTURE 55	RESVOR	.13	3.48	1338.11	12.34	107	823.1
XSECTION 60	ADDHYD	.14	3.38	---	12.34	123	878.6
RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 43 STORM 3							
XSECTION 1	RUNOFF	.02	3.11	---	12.22	28	1400.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
ALTERNATE 43 STORM 3							
XSECTION 5	RUNOFF	.01	4.33	---	12.05	32	3200.0
XSECTION 10	ADDHYD	.04	3.60	---	12.11	57	1425.0
STRUCTURE 15	RESVOR	.04	3.60	1345.27	12.27	49	1225.0
XSECTION 16	RUNOFF	.04	4.66	---	12.03	101	2525.0
XSECTION 18	RUNOFF	.01	3.20	---	12.25	11	1100.0
XSECTION 20	ADDHYD	.05	4.43	---	12.04	110	2200.0
STRUCTURE 21	RESVOR	.05	4.43	1350.30	12.40	42	840.0
XSECTION 22	RUNOFF	.01	3.21	---	12.26	13	1300.0
XSECTION 23	ADDHYD	.06	4.23	---	12.34	55	916.7
XSECTION 24	RUNOFF	.02	3.20	---	12.18	22	1100.0
XSECTION 30	RUNOFF	.01	4.66	---	11.98	27	2700.0
XSECTION 32	ADDHYD	.07	4.29	---	12.11	69	985.7
XSECTION 45	RUNOFF	.02	4.66	---	11.97	44	2200.0
XSECTION 50	ADDHYD	.09	4.37	---	12.05	110	1222.2
XSECTION 52	ADDHYD	.13	4.15	---	12.06	155	1192.3
STRUCTURE 55	RESVOR	.13	4.12	1338.19	12.20	156	1200.0
XSECTION 60	ADDHYD	.14	4.02	---	12.20	178	1271.4

RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 46 STORM 6							
XSECTION 1	RUNOFF	.02	5.43	---	12.22	49	2450.0
XSECTION 5	RUNOFF	.01	6.84	---	12.05	49	4900.0
XSECTION 10	ADDHYD	.04	6.00	---	12.11	93	2325.0
STRUCTURE 15	RESVOR	.04	5.99	1346.23	12.38	65	1625.0
XSECTION 16	RUNOFF	.04	7.20	---	12.02	152	3800.0
XSECTION 18	RUNOFF	.01	5.55	---	12.25	19	1900.0
XSECTION 20	ADDHYD	.05	6.93	---	12.04	168	3360.0
STRUCTURE 21	RESVOR	.05	6.93	1351.79	12.35	79	1580.0
XSECTION 22	RUNOFF	.01	5.55	---	12.26	22	2200.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 46 STORM 6							
XSECTION 23	ADDHYD	.06	6.71	---	12.33	101	1683.3
XSECTION 24	RUNOFF	.02	5.55	---	12.18	38	1900.0
XSECTION 30	RUNOFF	.01	7.20	---	11.98	41	4100.0
XSECTION 32	ADDHYD	.07	6.78	---	12.21	115	1642.9
XSECTION 45	RUNOFF	.02	7.20	---	11.97	66	3300.0
XSECTION 50	ADDHYD	.09	6.86	---	12.05	171	1900.0
XSECTION 52	ADDHYD	.13	6.61	---	12.07	228	1753.8
STRUCTURE 55	RESVOR	.13	6.62	1338.30	12.11	226	1738.5
XSECTION 60	ADDHYD	.14	6.50	---	12.12	262	1871.4

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
STRUCTURE 55		.13				
ALTERNATE	11		30	*********	*********	*********
ALTERNATE	12		*********	69	*********	*********
ALTERNATE	13		*********	*********	112	*********
ALTERNATE	16		*********	*********	*********	201
ALTERNATE	21		36	*********	*********	*********
ALTERNATE	22		*********	98	*********	*********
ALTERNATE	23		*********	*********	135	*********
ALTERNATE	26		*********	*********	*********	228
ALTERNATE	41		38	*********	*********	*********
ALTERNATE	42		*********	107	*********	*********
ALTERNATE	43		*********	*********	156	*********
ALTERNATE	46		*********	*********	*********	226
STRUCTURE 21		.05				
ALTERNATE	11		21	*********	*********	*********
ALTERNATE	12		*********	31	*********	*********
ALTERNATE	13		*********	*********	39	*********
ALTERNATE	16		*********	*********	*********	70
ALTERNATE	21		23	*********	*********	*********
ALTERNATE	22		*********	34	*********	*********
ALTERNATE	23		*********	*********	40	*********
ALTERNATE	26		*********	*********	*********	73
ALTERNATE	41		24	*********	*********	*********
ALTERNATE	42		*********	36	*********	*********
ALTERNATE	43		*********	*********	42	*********
ALTERNATE	46		*********	*********	*********	79
STRUCTURE 15		.04				
ALTERNATE	11		24	*********	*********	*********
ALTERNATE	12		*********	38	*********	*********
ALTERNATE	13		*********	*********	45	*********
ALTERNATE	16		*********	*********	*********	62
ALTERNATE	21		32	*********	*********	*********
ALTERNATE	22		*********	44	*********	*********
ALTERNATE	23		*********	*********	49	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
STRUCTURE	15	.04				
ALTERNATE	26		*********	*********	*********	65
ALTERNATE	41		31	*********	*********	*********
ALTERNATE	42		*********	44	*********	*********
ALTERNATE	43		*********	*********	49	*********
ALTERNATE	46		*********	*********	*********	65
XSECTION	1	.02				
ALTERNATE	11		10	*********	*********	*********
ALTERNATE	12		*********	17	*********	*********
ALTERNATE	13		*********	*********	23	*********
ALTERNATE	16		*********	*********	*********	43
ALTERNATE	21		15	*********	*********	*********
ALTERNATE	22		*********	23	*********	*********
ALTERNATE	23		*********	*********	29	*********
ALTERNATE	26		*********	*********	*********	50
ALTERNATE	41		15	*********	*********	*********
ALTERNATE	42		*********	23	*********	*********
ALTERNATE	43		*********	*********	28	*********
ALTERNATE	46		*********	*********	*********	49
XSECTION	5	.01				
ALTERNATE	11		18	*********	*********	*********
ALTERNATE	12		*********	27	*********	*********
ALTERNATE	13		*********	*********	33	*********
ALTERNATE	16		*********	*********	*********	52
ALTERNATE	21		23	*********	*********	*********
ALTERNATE	22		*********	31	*********	*********
ALTERNATE	23		*********	*********	36	*********
ALTERNATE	26		*********	*********	*********	56
ALTERNATE	41		20	*********	*********	*********
ALTERNATE	42		*********	27	*********	*********
ALTERNATE	43		*********	*********	32	*********
ALTERNATE	46		*********	*********	*********	49
XSECTION	10	.04				
ALTERNATE	11		25	*********	*********	*********
ALTERNATE	12		*********	41	*********	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION 10		.04				
ALTERNATE	13		*********	*********	51	*********
ALTERNATE	16		*********	*********	*********	87
ALTERNATE	21		34	*********	*********	*********
ALTERNATE	22		*********	50	*********	*********
ALTERNATE	23		*********	*********	60	*********
ALTERNATE	26		*********	*********	*********	97
ALTERNATE	41		33	*********	*********	*********
ALTERNATE	42		*********	47	*********	*********
ALTERNATE	43		*********	*********	57	*********
ALTERNATE	46		*********	*********	*********	93
XSECTION 16		.04				
ALTERNATE	11		67	*********	*********	*********
ALTERNATE	12		*********	96	*********	*********
ALTERNATE	13		*********	*********	114	*********
ALTERNATE	16		*********	*********	*********	175
ALTERNATE	21		78	*********	*********	*********
ALTERNATE	22		*********	104	*********	*********
ALTERNATE	23		*********	*********	121	*********
ALTERNATE	26		*********	*********	*********	184
ALTERNATE	41		65	*********	*********	*********
ALTERNATE	42		*********	86	*********	*********
ALTERNATE	43		*********	*********	101	*********
ALTERNATE	46		*********	*********	*********	152
XSECTION 18		.01				
ALTERNATE	11		4	*********	*********	*********
ALTERNATE	12		*********	7	*********	*********
ALTERNATE	13		*********	*********	9	*********
ALTERNATE	16		*********	*********	*********	16
ALTERNATE	21		6	*********	*********	*********
ALTERNATE	22		*********	9	*********	*********
ALTERNATE	23		*********	*********	11	*********
ALTERNATE	26		*********	*********	*********	19
ALTERNATE	41		6	*********	*********	*********
ALTERNATE	42		*********	9	*********	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION 18		.01				
ALTERNATE	43		*********	*********	11	*********
ALTERNATE	46		*********	*********	*********	19
XSECTION 20		.05				
ALTERNATE	11		69	*********	*********	*********
ALTERNATE	12		*********	99	*********	*********
ALTERNATE	13		*********	*********	119	*********
ALTERNATE	16		*********	*********	*********	185
ALTERNATE	21		81	*********	*********	*********
ALTERNATE	22		*********	110	*********	*********
ALTERNATE	23		*********	*********	128	*********
ALTERNATE	26		*********	*********	*********	197
ALTERNATE	41		70	*********	*********	*********
ALTERNATE	42		*********	94	*********	*********
ALTERNATE	43		*********	*********	110	*********
ALTERNATE	46		*********	*********	*********	168
XSECTION 22		.01				
ALTERNATE	11		5	*********	*********	*********
ALTERNATE	12		*********	8	*********	*********
ALTERNATE	13		*********	*********	11	*********
ALTERNATE	16		*********	*********	*********	19
ALTERNATE	21		7	*********	*********	*********
ALTERNATE	22		*********	10	*********	*********
ALTERNATE	23		*********	*********	13	*********
ALTERNATE	26		*********	*********	*********	22
ALTERNATE	41		7	*********	*********	*********
ALTERNATE	42		*********	11	*********	*********
ALTERNATE	43		*********	*********	13	*********
ALTERNATE	46		*********	*********	*********	22
XSECTION 23		.06				
ALTERNATE	11		25	*********	*********	*********
ALTERNATE	12		*********	39	*********	*********
ALTERNATE	13		*********	*********	49	*********
ALTERNATE	16		*********	*********	*********	89
ALTERNATE	21		30	*********	*********	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION	23	.06				
ALTERNATE	22		*********	44	*********	*********
ALTERNATE	23		*********	*********	53	*********
ALTERNATE	26		*********	*********	*********	95
ALTERNATE	41		31	*********	*********	*********
ALTERNATE	42		*********	46	*********	*********
ALTERNATE	43		*********	*********	55	*********
ALTERNATE	46		*********	*********	*********	101
XSECTION	24	.02				
ALTERNATE	11		8	*********	*********	*********
ALTERNATE	12		*********	14	*********	*********
ALTERNATE	13		*********	*********	18	*********
ALTERNATE	16		*********	*********	*********	34
ALTERNATE	21		12	*********	*********	*********
ALTERNATE	22		*********	18	*********	*********
ALTERNATE	23		*********	*********	23	*********
ALTERNATE	26		*********	*********	*********	39
ALTERNATE	41		12	*********	*********	*********
ALTERNATE	42		*********	18	*********	*********
ALTERNATE	43		*********	*********	22	*********
ALTERNATE	46		*********	*********	*********	38
XSECTION	30	.01				
ALTERNATE	11		19	*********	*********	*********
ALTERNATE	12		*********	27	*********	*********
ALTERNATE	13		*********	*********	33	*********
ALTERNATE	16		*********	*********	*********	50
ALTERNATE	21		22	*********	*********	*********
ALTERNATE	22		*********	30	*********	*********
ALTERNATE	23		*********	*********	35	*********
ALTERNATE	26		*********	*********	*********	53
ALTERNATE	41		17	*********	*********	*********
ALTERNATE	42		*********	23	*********	*********
ALTERNATE	43		*********	*********	27	*********
ALTERNATE	46		*********	*********	*********	41

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION	32	.07				
ALTERNATE	11		34	*********	*********	*********
ALTERNATE	12		*********	49	*********	*********
ALTERNATE	13		*********	*********	59	*********
ALTERNATE	16		*********	*********	*********	100
ALTERNATE	21		41	*********	*********	*********
ALTERNATE	22		*********	55	*********	*********
ALTERNATE	23		*********	*********	65	*********
ALTERNATE	26		*********	*********	*********	106
ALTERNATE	41		42	*********	*********	*********
ALTERNATE	42		*********	57	*********	*********
ALTERNATE	43		*********	*********	69	*********
ALTERNATE	46		*********	*********	*********	115
XSECTION	45	.02				
ALTERNATE	11		32	*********	*********	*********
ALTERNATE	12		*********	46	*********	*********
ALTERNATE	13		*********	*********	55	*********
ALTERNATE	16		*********	*********	*********	83
ALTERNATE	21		37	*********	*********	*********
ALTERNATE	22		*********	50	*********	*********
ALTERNATE	23		*********	*********	58	*********
ALTERNATE	26		*********	*********	*********	88
ALTERNATE	41		28	*********	*********	*********
ALTERNATE	42		*********	38	*********	*********
ALTERNATE	43		*********	*********	44	*********
ALTERNATE	46		*********	*********	*********	66
XSECTION	50	.09				
ALTERNATE	11		65	*********	*********	*********
ALTERNATE	12		*********	92	*********	*********
ALTERNATE	13		*********	*********	111	*********
ALTERNATE	16		*********	*********	*********	175
ALTERNATE	21		77	*********	*********	*********
ALTERNATE	22		*********	103	*********	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION	50	.09				
ALTERNATE	23		*********	*********	120	*********
ALTERNATE	26		*********	*********	*********	188
ALTERNATE	41		69	*********	*********	*********
ALTERNATE	42		*********	93	*********	*********
ALTERNATE	43		*********	*********	110	*********
ALTERNATE	46		*********	*********	*********	171
XSECTION	52	.13				
ALTERNATE	11		83	*********	*********	*********
ALTERNATE	12		*********	120	*********	*********
ALTERNATE	13		*********	*********	146	*********
ALTERNATE	16		*********	*********	*********	223
ALTERNATE	21		101	*********	*********	*********
ALTERNATE	22		*********	138	*********	*********
ALTERNATE	23		*********	*********	162	*********
ALTERNATE	26		*********	*********	*********	239
ALTERNATE	41		97	*********	*********	*********
ALTERNATE	42		*********	134	*********	*********
ALTERNATE	43		*********	*********	155	*********
ALTERNATE	46		*********	*********	*********	228
XSECTION	60	.14				
ALTERNATE	11		33	*********	*********	*********
ALTERNATE	12		*********	76	*********	*********
ALTERNATE	13		*********	*********	127	*********
ALTERNATE	16		*********	*********	*********	234
ALTERNATE	21		42	*********	*********	*********
ALTERNATE	22		*********	112	*********	*********
ALTERNATE	23		*********	*********	156	*********
ALTERNATE	26		*********	*********	*********	265
ALTERNATE	41		44	*********	*********	*********
ALTERNATE	42		*********	123	*********	*********
ALTERNATE	43		*********	*********	178	*********
ALTERNATE	46		*********	*********	*********	262

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 10/01/90
FILES

INPUT = WLCC2P6.T20
OUTPUT = WLCC2P6.OUT , DATED 12/13/**,16:09:05

FILES GENERATED - DATED 12/13/**,16:09:05

NONE!

*** TR-20 RUN COMPLETED ***

Combining Rating Curve between Kansas One Place and Turnpike

One Ke[illegible]

Estimated Future Conditions (Combining Rating curves between K

Contour Elevation

USGS ft	Area ac	Inc. Vol ac ft	Cum. Vol ac ft
1347.25	0.00		
1347.7	1.26	0.2835	0.284
1347.9	1.28	0.2540	0.538
1348.4	1.36	0.6600	1.198
1348.9	1.55	0.7275	1.925
1349.4	1.69	0.8100	2.735
1349.9	1.87	0.8900	3.625
1350.4	2.05	0.9800	4.605
1350.9	2.20	1.0625	5.668
1351.4		0.5500	6.218
1351.9		0.0000	6.218
1352.4		0.0000	6.218

12-12-01

		Radius
1.05646	46019.3	85.5815
1.10641	48195.3	87.5815
1.15752	50421.6	89.5815
1.20978	52698.2	91.5815
1.2632	55025	93.5815
1.27402	55496.4	93.9815
1.32882	57883.5	95.9815
1.38478	60320.9	97.9815
1.44189	62808.6	99.9815
1.50015	65346.6	101.98
1.55957	67934.8	103.98
1.62014	70573.2	105.98
1.68186	73262	107.98
1.74474	76001	109.98
1.80878	78790.3	111.98

Woodland Lakes Community Church SW Detention Are
Estimated Proposed Conditions - used in wlcc2p6.t20
Contour Elevation

USGS	Area	Inc. Vol	Cum. Vol
ft	ac	ac ft	ac ft
1335	1.59		
1335.5	1.68	0.8180	0.82
1336	1.78	0.8648	1.68
1336.5	1.87	0.9128	2.60
1337	1.97	0.9621	3.56
1337.5	2.08	1.0128	4.57
1338	2.18	1.0647	5.64
1338.3	2.22	0.6610	6.30
		######	-1482.37
		0.0000	-1482.37
		0.0000	-1482.37
		0.0000	-1482.37

Acre	*Sq Ft*	*Radius*
1.30154	56695.1	94.9911
1.35693	59107.7	96.9911
1.41346	61570.5	98.9911
1.47115	64083.5	100.991
1.53	66646.8	102.991
1.59	69260.4	104.991
1.68216	73275	107.991
1.77693	77402.7	110.991
[illegible]	81643.6	113.991
1.97423	85997.5	116.991
[illegible]	90464.5	119.991
[illegible]	95044.6	122.991
2.22471	96908.3	124.191
2.33349	101647	127.191
2.44486	106498	130.191
2.55884	111463	133.191
2.67541	116541	136.191

Modication to Existing Pond

1

CURRENT DATE: 10-08-2001 FILE DATE: 10-08-2001
CURRENT TIME: 15:21:58 FILE NAME: WLI35PD

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
CULV	INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE & MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1347.70	1347.60	2.00	3 RCP	1.50	1.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLI35PD DATE: 10-08-2001

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1347.70	0	0	0	0	0	0	0	0	1
1349.49	24	24	0	0	0	0	0	0	1
1349.87	48	29	0	0	0	0	0	19	5
1350.09	72	32	0	0	0	0	0	40	4
1350.28	96	34	0	0	0	0	0	62	4
1350.44	120	35	0	0	0	0	0	84	4
1350.58	144	37	0	0	0	0	0	107	5
1350.71	168	38	0	0	0	0	0	129	5
1350.83	192	39	0	0	0	0	0	151	5
1350.94	216	40	0	0	0	0	0	174	5
1351.03	240	41	0	0	0	0	0	197	5
1349.50	24	24	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLI35PD DATE: 10-08-2001

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1347.70	0.00	0	0	0.00
1349.49	0.00	24	0	0.00
1349.87	-0.01	48	0	0.75
1350.09	-0.00	72	1	0.89
1350.28	-0.00	96	1	0.66
1350.44	-0.00	120	1	0.76
1350.58	-0.01	144	1	0.38
1350.71	-0.01	168	1	0.53
1350.83	-0.01	192	1	0.72
1350.94	-0.01	216	2	0.78
1351.03	-0.01	240	2	0.73

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 10-08-2001 FILE DATE: 10-08-2001
CURRENT TIME: 15:21:58 FILE NAME: WLI35PD

PERFORMANCE CURVE FOR CULVERT # 1 - 3 (1.5 BY 1.5) RCP

DISCHARGE FLOW (cfs)	HEADWATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1347.70	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.10
24	1349.49	1.79	1.79	5-S2n	0.58	1.09	7.10	0.91	0.00	0.10
29	1349.86	2.16	2.16	5-S2n	0.64	1.20	7.61	1.02	0.00	0.10
32	1350.08	2.38	2.38	5-S2n	0.67	1.24	7.86	1.07	0.00	0.10
34	1350.27	2.57	2.57	5-S2n	0.70	1.27	8.14	1.10	0.00	0.10
35	1350.43	2.73	2.73	5-S2n	0.72	1.30	8.32	1.13	0.00	0.10
37	1350.58	2.88	2.88	5-S2n	0.73	1.32	8.47	1.15	0.00	0.10
38	1350.71	3.01	3.01	5-S2n	0.75	1.34	8.61	1.17	0.00	0.10
39	1350.83	3.13	3.13	5-S2n	0.76	1.35	8.72	1.19	0.00	0.10
40	1350.94	3.24	3.24	5-S2n	0.77	1.37	8.83	1.20	0.00	0.10
41	1351.03	3.33	3.33	5-S2n	0.78	1.38	8.91	1.21	0.00	0.10

El. inlet face invert 1347.70 ft El. outlet invert 1347.60 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1347.70
OUTLET STATION (FT)	2.00
OUTLET ELEVATION (FT)	1347.60
NUMBER OF BARRELS	3
SLOPE (V-FT/H-FT)	0.0500
CULVERT LENGTH ALONG SLOPE (FT)	2.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

3

CURRENT DATE: 10-08-2001 FILE DATE: 10-08-2001
CURRENT TIME: 15:21:58 FILE NAME: WLI35PD

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1347.70

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE PAVED
EMBANKMENT TOP WIDTH (FT) 1.00
***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1351.70
2	120.00	1350.87
3	130.00	1349.50
4	155.00	1349.50
5	165.00	1350.87
6	205.00	1352.40

1

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

C U L V	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1347.25	1345.90	150.01	1 RCP	3.50	3.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLCCI135 DATE: 11-14-2000

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1347.25	0	0	0	0	0	0	0	0	1
1349.40	24	24	0	0	0	0	0	0	1
1350.57	48	48	0	0	0	0	0	0	1
1351.81	72	72	0	0	0	0	0	0	1
1353.50	96	96	0	0	0	0	0	0	1
1354.84	111	111	0	0	0	0	0	0	1
1358.49	144	144	0	0	0	0	0	0	1
1361.69	168	168	0	0	0	0	0	0	1
1365.43	192	192	0	0	0	0	0	0	1
1370.05	216	216	0	0	0	0	0	0	1
1373.04	240	229	0	0	0	0	0	11	7
1373.00	228	228	0	0	0	0	0	0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLCCI135 DATE: 11-14-2000

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1347.25	0.00	0	0	0.00
1349.40	0.00	24	0	0.00
1350.57	0.00	48	0	0.00
1351.81	0.00	72	0	0.00
1353.50	0.00	96	0	0.00
1354.84	0.00	111	0	0.00
1358.49	0.00	144	0	0.00
1361.69	0.00	168	0	0.00
1365.43	0.00	192	0	0.00
1370.05	0.00	216	0	0.00
1373.04	-0.01	240	0	0.10

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

BOUCHARD'S RUNOFF NUMBER
HIGHEST ELEVATION WEST OF 42" RCP IS 1350.8 !!

2

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (3.5 BY 3.5) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1347.25	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	1.10
24	1349.40	2.15	2.15	1-S2n	1.14	1.50	8.63	1.16	0.00	1.10
48	1350.57	3.32	3.32	1-S2n	1.67	2.16	10.29	1.71	0.00	1.10
72	1351.81	4.56	4.56	5-S2n	2.15	2.65	11.32	2.20	0.00	1.10
96	1353.50	6.25	6.25	5-S2n	2.67	3.00	12.10	2.69	0.00	1.10
111	1354.84	7.59	6.80	6-FFn	3.50	3.19	11.54	3.50	0.00	1.10
144	1358.49	11.24	9.97	6-FFn	3.50	3.50	14.97	3.50	0.00	1.10
168	1361.69	14.44	12.80	6-FFn	3.50	3.50	17.46	3.50	0.00	1.10
192	1365.43	18.18	16.05	6-FFn	3.50	3.50	19.96	3.50	0.00	1.10
216	1370.05	22.80	19.75	6-FFn	3.50	3.50	22.45	3.50	0.00	1.10
229	1373.04	25.79	21.85	6-FFn	3.50	3.50	23.75	3.50	0.00	1.10

El. inlet face invert 1347.25 ft El. outlet invert 1345.90 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1347.25
OUTLET STATION (FT)	150.00
OUTLET ELEVATION (FT)	1345.90
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0090
CULVERT LENGTH ALONG SLOPE (FT)	150.01

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1347.00

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	1373.00

FL = 1335.0

1

CURRENT DATE: 11-15-2000 FILE DATE: 11-14-2000
CURRENT TIME: 11:39:14 FILE NAME: WLCCSWPD

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

C U L V E R T	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS / SHAPE / MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1335.00	1331.87	78.06	2 RCP	2.00	2.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLCCSWPD DATE: 11-14-2000

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1335.00	0	0	0	0	0	0	0	0	1
1336.67	20	20	0	0	0	0	0	0	1
1337.90	40	40	0	0	0	0	0	0	1
1338.07	60	42	0	0	0	0	0	18	18
1338.11	80	42	0	0	0	0	0	37	9
1338.14	100	43	0	0	0	0	0	56	7
1338.17	120	43	0	0	0	0	0	76	6
1338.18	125	43	0	0	0	0	0	81	4
1338.22	160	44	0	0	0	0	0	115	6
1338.25	180	44	0	0	0	0	0	135	5
1338.27	200	44	0	0	0	0	0	154	5
1338.00	41	41	0	0	0	0	0	OVERTOPPING	

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLCCSWPD DATE: 11-14-2000

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1335.00	0.00	0	0	0.00
1336.67	0.00	20	0	0.00
1337.90	0.00	40	0	0.00
1338.07	-0.00	60	0	0.70
1338.11	-0.00	80	1	0.76
1338.14	-0.00	100	1	0.88
1338.17	-0.00	120	1	0.96
1338.18	-0.00	125	1	0.93
1338.22	-0.00	160	1	0.82
1338.25	-0.00	180	1	0.73
1338.27	-0.00	200	1	0.61

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

1335.0 = 0.0
.5 = 6.00
6.0 = 12.00
.5 = 18.00
7.0 = 25.4
.5 = 33.5
8.0 = 41.2

2

CURRENT DATE: 11-15-2000 FILE DATE: 11-14-2000
CURRENT TIME: 11:39:14 FILE NAME: WLCCSWPD

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (2 BY 2) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1335.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	1.13
20	1336.67	1.67	1.67	1-S2n	0.61	1.13	12.33	0.61	0.00	1.13
40	1337.90	2.90	2.90	5-S2n	0.89	1.60	13.61	0.95	0.00	1.13
42	1338.06	3.06	3.06	5-S2n	0.91	1.63	13.75	0.98	0.00	1.13
42	1338.10	3.10	3.10	5-S2n	0.92	1.64	13.78	0.98	0.00	1.13
43	1338.13	3.13	3.13	5-S2n	0.92	1.65	13.81	0.99	0.00	1.13
43	1338.16	3.16	3.16	5-S2n	0.92	1.65	13.84	0.99	0.00	1.13
43	1338.17	3.17	3.17	5-S2n	0.93	1.65	13.84	1.00	0.00	1.13
44	1338.22	3.22	3.22	5-S2n	0.93	1.66	13.88	1.00	0.00	1.13
44	1338.24	3.24	3.24	5-S2n	0.94	1.67	13.90	1.01	0.00	1.13
44	1338.27	3.27	3.27	5-S2n	0.94	1.67	13.92	1.01	0.00	1.13

El. inlet face invert 1335.00 ft El. outlet invert 1331.87 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1335.00
OUTLET STATION (FT)	78.00
OUTLET ELEVATION (FT)	1331.87
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0401
CULVERT LENGTH ALONG SLOPE (FT)	78.06

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	2.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 11-15-2000 FILE DATE: 11-14-2000
CURRENT TIME: 11:39:14 FILE NAME: WLCCSWPD

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1333.00

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	5.00
CREST LENGTH (FT)	420.00
OVERTOPPING CREST ELEVATION (FT)	1338.00

Total Q Rating Curve for One Kellog Place Pond Discharge Structures (TR-20 Structure 10)

Horizontal Weirs

10-08-01

Weir to West Discharge						Pipe Dia.	Weir Elev	Weir L	Weir C		
						48	1349.50	25	2.65		
							47.70	0.00		0.00	
		3-23x14					49.40	22.79		0.00	
Pond El.		Pipe out	Weir out	Overflow ou	Q to out		49.49	24.00	49.50	0.00	
ft		cfs	cfs	cfs	cfs			-627.18		-2541.89	
1347.7		0.0	0.0	0.0	0.00		49.87	29.00	49.87	19.00	
1347.9		2.68	0.0		2.68		49.90	29.41	49.90	21.86	
1348.4		9.39	0.0	0.0	9.39		50.09	32.00	50.09	40.00	
1348.9		16.09	0.0	0.0	16.09			-495.26		-5759.89	
1349.4		22.8	0.0	0.0	22.79		50.28	34.00	50.28	62.00	
1349.9		29.4	16.8	21.9	51.27		50.40	34.75	50.40	78.50	
1350.4		34.8	56.6	78.5	113.25		50.44	35.00	50.44	84.00	
1350.9		39.6	109.7	165.6	205.28			-482.33		-8581.33	
1351.4		41.0	173.5	240.0	281.00		50.83	39.00	50.83	151.00	
1351.9		0.0	246.3	0.0	0.00		50.90	39.64	50.90	165.64	
1352.4		0.0	327.2	0.0	0.00		50.94	40.00	50.94	174.00	
1352.9		0	415.3	0.0	0.00		9.50	36.00		36.00	
1353.4		0	510.2	0.0	0.00		9.51	36.00		36.00	
1347.5		0	#NUM!	0.0	0.00		9.50	#DIV/0!		#DIV/0!	
1348		0	#NUM!	0.0	0.00		9.51	36.00		36.00	

1347.25	0.0
1347.70	5.0
1347.90	7.3
1348.40	12.8
1348.90	18.4
1349.40	24.0
1349.90	34.3
1350.40	44.5
1350.90	54.4

Total Q Rating Curve for I-35 Discharge Structures (TR-20 Structure 15)

Horizontal Weirs

10-10-01

Weir to West Discharge						Pipe Dia.	Weir Elev	Weir L	Weir C		
						48	1349.87	25	2.65		
							47.25	0.00	47.70	0.00	
		3-23x14					47.90	7.26	49.00	0.00	
Pond El.	Overflow ou	Pipe out	Weir out	42" Pipe	Q to out		49.40	24.00	49.49	0.00	
ft	cfs	cfs	cfs	cfs	cfs		50.40	44.51	49.50	0.50	
1347.25	0.0	0.0	#NUM!		#NUM!		50.57	48.00	49.87	19.00	
1347.9	0.0	7.26	#NUM!		#NUM!		50.90	54.39	50.00	31.41	
1348.4	0.0	12.84	#NUM!		#NUM!		51.81	72.00	50.09	40.00	
1348.9	0.0	18.42	#NUM!		#NUM!			-1327.25		-6257.03	
1349.4	0.0	24.0	#NUM!		#NUM!		50.44	35.00	50.44	84.00	
1349.9	0.0	34.3	0.3		0.34		50.50	35.86	50.50	93.86	
1350.4	0.0	44.5	25.6		25.56		50.58	37.00	50.58	107.00	
1350.9	0.0	54.39	69.3		54.39			-384.50	4.50	-8469.00	
1351.4	0.0	0.0	125.4		0.00		50.94	40.00	50.94	174.00	
1351.9	0.0	0	191.6		0.00		51.00	40.67	51.00	189.33	
1352.4	0.0	0.0	266.6		0.00		51.03	41.00	51.03	197.00	
1352.9	0.0	0	349.4		0.00		9.50	36.00	9.50	35.96	
1353.4	0.0	0	439.4		0.00		9.51	36.00	9.51	36.00	
1347.5	0.0	0	#NUM!		#NUM!		9.50	#DIV/0!	9.50	#DIV/0!	
1348	0.0	0	#NUM!		#NUM!		9.51	36.00	9.51	36.00	

APPENDIX D

```
*****************80-80 LIST OF INPUT DATA FOR TR-20 HYDROLOGY******************

JOB TR-20                                          SUMMARY
TITLE 003 Proposed runoff @ Woodland Lakes Comm. Church 2,5,10,100-YR EVENTS
TITLE  FAA TC PRELIM. EVALUATIONS K=484 FILENAME wlcc2p9.t20
 4 DIMHYD              0.02                                              484
 8          .000       .030       .100       .190       .310
 8          .470       .660       .820       .930       .990
 8         1.000       .990       .930       .860       .780
 8          .680       .560       .460       .390       .330
 8          .280       .241       .207       .174       .147
 8          .126       .107       .091       .077       .066
 8          .055       .047       .040       .034       .029
 8          .025       .021       .018       .015       .013
 8          .011       .009       .008       .007       .006
 8          .005       .004       .003       .002       .001
 8          .000       .000       .000       .000       .000
 9 ENDTBL
 5 RAINFL 7            0.08333                                           6-HR M&L
 8          0.0000     0.0033     0.0066     0.0099     0.0132
 8          0.0166     0.0198     0.0248     0.0296     0.0346
 8          0.0404     0.0463     0.0522     0.0590     0.0658
 8          0.0727     0.0796     0.0864     0.0933     0.1136
 8          0.1340     0.1572     0.1832     0.2124     0.2473
 8          0.2850     0.3400     0.4464     0.6034     0.6752
 8          0.7220     0.7409     0.7598     0.7758     0.7919
 8          0.8072     0.8224     0.8310     0.8396     0.8468
 8          0.8540     0.8628     0.8714     0.8773     0.8832
 8          0.8890     0.8939     0.8988     0.9038     0.9086
 8          0.9136     0.9184     0.9233     0.9282     0.9332
 8          0.9380     0.9429     0.9478     0.9527     0.9576
 8          0.9626     0.9664     0.9704     0.9742     0.9782
 8          0.9821     0.9860     0.9884     0.9906     0.9930
 8          0.9954     0.9976     1.0000     1.0000     1.0000
 9 ENDTBL
 5 RAINFL 8            0.5                                               24-HRSCS
 8          .000       .002       .005       .009       .013             ZONE 5
 8          .018       .023       .029       .035       .042
 8          .050       .059       .068       .078       .089
 8          .101       .114       .128       .144       .162
 8          .183       .208       .244       .339       .723
 8          .773       .802       .825       .844       .861
 8          .876       .890       .903       .914       .924
 8          .934       .943       .951       .959       .966
 8          .972       .977       .982       .986       .990
 8          .993       .996       .998      1.000      1.000
 9 ENDTBL
 3 STRUCT      65                                                         E POND
```

```
**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 8                       1344.0      0.0         0.0
 8                       1344.5      17.5        0.07
 8                       1345.0      43.3        0.26
 8                       1345.5      53.1        0.60
 8                       1346.0      61.3        1.08
 8                       1346.5      68.5        1.70
 8                       1347.0      74.7        2.41
 8                       1347.5      79.9        3.16
 9 ENDTBL
 3 STRUCT      10                                                    Nof135PO
 8                       1347.25     0.0         0.0
 8                       1347.7      5.02        0.284
 8                       1347.9      7.26        0.538
 8                       1348.4      12.84       1.198
 8                       1348.9      18.42       1.925
 8                       1349.4      24.00       2.735
 8                       1349.9      34.30       3.625
 8                       1350.4      44.50       4.605
 8                       1350.9      54.39       5.668
 9 ENDTBL
 3 STRUCT      90                                                    SW POND
 8                       1335.0      0.0         0.00
 8                       1335.5      6.00        0.82
 8                       1336.0      12.0        1.68
 8                       1336.5      18.0        2.60
 8                       1337.0      25.4        3.56
 8                       1337.5      33.5        4.57
 8                       1338.0      41.2        5.64
 8                       1338.3      225.0       6.30
 9 ENDTBL
 6 RUNOFF 1 001        7 0.0429      95.0        0.3545          1 1 Kellog
 6 RUNOFF 1 005        6 0.0082      81.0        0.7725          1 N I-35
 6 ADDHYD 4 008   7 6 2                                          1 Qi 42"I3
 6 RESVOR 2    10 2   1 1347.25                                 1 Qo 42"I3
 6 RUNOFF 1 025        6 0.0100      81.0        0.7889          1 S I-35
 6 ADDHYD 4 030   1 6 2                                          1 Qi 42" P
 6 RUNOFF 1 035        6 0.0053      81.0        0.4290          1 NW I-35
 6 ADDHYD 4 040   2 6 4                                          1 NW COR O
 6 RUNOFF 1 045        6 0.0036      81.0        0.6238          1 SW I-35
 6 ADDHYD 4 048   4 6 7                                          1 OFFSITE
 6 RUNOFF 1 050        1 0.0214      80.0        0.7247          1 E WSHD
 6 RUNOFF 1 055        2 0.0144      92.0        0.4068          1 E CH WSH
 6 ADDHYD 4 060   1 2 3                                          1 Qin E PO
 6 RESVOR 2    65 3   1 1344.0                                  1 Qo E PON
 6 RUNOFF 1 070        2 0.0109      95.0        0.2647          1 NW CH WS
 6 RUNOFF 1 075        3 0.0177      95.0        0.25            1 W CH WSH
```

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**********80-80 LIST OF INPUT DATA (CONTINUED)**********

 6 ADDHYD 4 080   2 3 6                                                1 NWW CH W
 6 ADDHYD 4 085   6 1 2                                                1 Qi SW PO
 6 RESVOR 2    90 2   3 1335.0                                         1 Qo SW PO
 6 ADDHYD 4 095   3 7 1                                                1 Q@ SW LO
   ENDATA
 7 INCREM 6             0.0833
 7 COMPUT 7 001   095   0.0          3.48         1.0         2 2  21  01 2-YR TYP
   ENDCMP 1
 7 COMPUT 7 001   095   0.0          4.55         1.0         2 2  22  02 5-YR TYP
   ENDCMP 1
 7 COMPUT 7 001   095   0.0          5.25         1.0         2 2  23  03 10-YR TY
   ENDCMP 1
 7 COMPUT 7 001   095   0.0          7.80         1.0         2 2  26  06 100-YR T
   ENDCMP 1
   ENDJOB 2


**********END OF 80-80 LIST**********
```

COMPUTED PEAK RATE FACTOR = 484.00

EXECUTIVE CONTROL INCREM MAIN TIME INCREMENT = .08 HOURS

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 95 2-YR TYP
STARTING TIME = .00 RAIN DEPTH = 3.48 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=21 STORM NO.= 1 RAIN TABLE NO.= 2

*** WARNING - XSECTION 45, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(17. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 1

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 95 5-YR TYP
STARTING TIME = .00 RAIN DEPTH = 4.55 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=22 STORM NO.= 2 RAIN TABLE NO.= 2

*** WARNING - XSECTION 45, HYDROGRAPH VOLUME TRUNCATED AT 0 CFS
(11. % OF MAX. HYDROGRAPH COORDINATE)
MAIN TIME INCREMENT TOO SMALL. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 2

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 95 10-YR TY
STARTING TIME = .00 RAIN DEPTH = 5.25 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=23 STORM NO.= 3 RAIN TABLE NO.= 2

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 3

EXECUTIVE CONTROL COMPUT FROM XSECTION 1 TO XSECTION 95 100-YR T
STARTING TIME = .00 RAIN DEPTH = 7.80 RAIN DURATION= 1.00
ANT. MOIST. COND. = 2 MAIN TIME INCREMENT = .08 HOURS
ALTERNATE NO.=26 STORM NO.= 6 RAIN TABLE NO.= 2

*** WARNING - DISCHARGE EXCEEDS HIGHEST RATING POINT FOR STRUCTURE 10,
VALUE EXTRAPOLATED. ***

EXECUTIVE CONTROL ENDCMP COMPUTATIONS COMPLETED FOR PASS 4

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	TIME (HR)	RATE (CFS)	RATE (CSM)
RAINFALL OF 3.48 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
RAINTABLE NUMBER 2, AMC 2							
MAIN TIME INCREMENT .08 HOURS							
ALTERNATE 21 STORM 1							
XSECTION 1	RUNOFF	.04	2.92	---	12.09	78	1950.0
XSECTION 5	RUNOFF	.01	1.69	---	12.36	6	600.0
XSECTION 8	ADDHYD	.05	2.72	---	12.09	81	1620.0
STRUCTURE 10	RESVOR	.05	2.72	1349.32	12.54	23	460.0
XSECTION 25	RUNOFF	.01	1.69	---	12.37	7	700.0
XSECTION 30	ADDHYD	.06	2.55	---	12.44	30	500.0
XSECTION 35	RUNOFF	.01	1.69	---	12.15	5	500.0
XSECTION 40	ADDHYD	.07	2.48	---	12.36	33	471.4
XSECTION 45	RUNOFF	.00	1.69	---	12.26T	3T********	
XSECTION 48	ADDHYD	.07	2.44	---	12.34	35	500.0
XSECTION 50	RUNOFF	.02	1.62	---	12.33	15	750.0
XSECTION 55	RUNOFF	.01	2.62	---	12.12	23	2300.0
XSECTION 60	ADDHYD	.04	2.02	---	12.17	34	850.0
STRUCTURE 65	RESVOR	.04	2.02	1344.78	12.26	32	800.0
XSECTION 70	RUNOFF	.01	2.92	---	12.04	22	2200.0
XSECTION 75	RUNOFF	.02	2.92	---	12.03	37	1850.0
XSECTION 80	ADDHYD	.03	2.92	---	12.03	60	2000.0
XSECTION 85	ADDHYD	.06	2.42	---	12.06	82	1366.7
STRUCTURE 90	RESVOR	.06	2.40	1336.83	12.68	23	383.3
XSECTION 95	ADDHYD	.13	2.42	---	12.43	56	430.8
RAINFALL OF 4.55 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 22 STORM 2							
XSECTION 1	RUNOFF	.04	3.97	---	12.09	104	2600.0
XSECTION 5	RUNOFF	.01	2.59	---	12.35	9	900.0
XSECTION 8	ADDHYD	.05	3.75	---	12.09	110	2200.0
STRUCTURE 10	RESVOR	.05	3.75	1349.88	12.52	34	680.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 22 STORM 2							
XSECTION 25	RUNOFF	.01	2.59	---	12.36	10	1000.0
XSECTION 30	ADDHYD	.06	3.56	---	12.44	44	733.3
XSECTION 35	RUNOFF	.01	2.59	---	12.14	8	800.0
XSECTION 40	ADDHYD	.07	3.48	---	12.37	48	685.7
XSECTION 45	RUNOFF	.00	2.59	---	12.26T	4T	********
XSECTION 48	ADDHYD	.07	3.44	---	12.36	52	742.9
XSECTION 50	RUNOFF	.02	2.50	---	12.32	23	1150.0
XSECTION 55	RUNOFF	.01	3.65	---	12.12	31	3100.0
XSECTION 60	ADDHYD	.04	2.96	---	12.17	50	1250.0
STRUCTURE 65	RESVOR	.04	2.96	1345.06	12.29	44	1100.0
XSECTION 70	RUNOFF	.01	3.97	---	12.04	30	3000.0
XSECTION 75	RUNOFF	.02	3.97	---	12.03	50	2500.0
XSECTION 80	ADDHYD	.03	3.97	---	12.03	80	2666.7
XSECTION 85	ADDHYD	.06	3.41	---	12.07	111	1850.0
STRUCTURE 90	RESVOR	.06	3.38	1337.47	12.69	33	550.0
XSECTION 95	ADDHYD	.13	3.41	---	12.43	82	630.8

RAINFALL OF 5.25 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.

ALTERNATE 23 STORM 3							
XSECTION 1	RUNOFF	.04	4.66	---	12.09	121	3025.0
XSECTION 5	RUNOFF	.01	3.20	---	12.35	11	1100.0
XSECTION 8	ADDHYD	.05	4.43	---	12.09	128	2560.0
STRUCTURE 10	RESVOR	.05	4.43	1350.20	12.51	40	800.0
XSECTION 25	RUNOFF	.01	3.20	---	12.35	13	1300.0
XSECTION 30	ADDHYD	.06	4.23	---	12.43	53	883.3
XSECTION 35	RUNOFF	.01	3.20	---	12.14	10	1000.0
XSECTION 40	ADDHYD	.07	4.14	---	12.36	58	828.6
XSECTION 45	RUNOFF	.00	3.20	---	12.25	5	********
XSECTION 48	ADDHYD	.07	4.10	---	12.34	63	900.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 23 STORM 3							
XSECTION 50	RUNOFF	.02	3.11	---	12.32	29	1450.0
XSECTION 55	RUNOFF	.01	4.33	---	12.11	36	3600.0
XSECTION 60	ADDHYD	.04	3.60	---	12.18	60	1500.0
STRUCTURE 65	RESVOR	.04	3.60	1345.30	12.35	49	1225.0
XSECTION 70	RUNOFF	.01	4.66	---	12.04	35	3500.0
XSECTION 75	RUNOFF	.02	4.66	---	12.03	58	2900.0
XSECTION 80	ADDHYD	.03	4.66	---	12.03	93	3100.0
XSECTION 85	ADDHYD	.06	4.07	---	12.06	132	2200.0
STRUCTURE 90	RESVOR	.06	4.04	1337.87	12.74	39	650.0
XSECTION 95	ADDHYD	.13	4.07	---	12.41	98	753.8
RAINFALL OF 7.80 inches AND 24.00 hr DURATION, BEGINS AT .0 hrs.							
ALTERNATE 26 STORM 6							
XSECTION 1	RUNOFF	.04	7.20	---	12.09	184	4600.0
XSECTION 5	RUNOFF	.01	5.55	---	12.34	19	1900.0
XSECTION 8	ADDHYD	.05	6.93	---	12.09	197	3940.0
STRUCTURE 10	RESVOR	.05	6.93	1351.32	12.51	63	1260.0
XSECTION 25	RUNOFF	.01	5.55	---	12.35	22	2200.0
XSECTION 30	ADDHYD	.06	6.71	---	12.42	84	1400.0
XSECTION 35	RUNOFF	.01	5.55	---	12.13	17	1700.0
XSECTION 40	ADDHYD	.07	6.61	---	12.34	94	1342.9
XSECTION 45	RUNOFF	.00	5.55	---	12.25	9	********
XSECTION 48	ADDHYD	.07	6.56	---	12.32	103	1471.4
XSECTION 50	RUNOFF	.02	5.43	---	12.31	50	2500.0
XSECTION 55	RUNOFF	.01	6.84	---	12.11	56	5600.0
XSECTION 60	ADDHYD	.04	6.00	---	12.18	97	2425.0
STRUCTURE 65	RESVOR	.04	6.00	1346.22	12.47	65	1625.0
XSECTION 70	RUNOFF	.01	7.20	---	12.04	53	5300.0
XSECTION 75	RUNOFF	.02	7.20	---	12.03	88	4400.0

SUMMARY TABLE 1

SELECTED RESULTS OF STANDARD AND EXECUTIVE CONTROL IN ORDER PERFORMED.
A CHARACTER FOLLOWING THE PEAK DISCHARGE TIME AND RATE (CFS) INDICATES:
F-FLAT TOP HYDROGRAPH T-TRUNCATED HYDROGRAPH R-RISING TRUNCATED HYDROGRAPH

XSECTION/ STRUCTURE ID	STANDARD CONTROL OPERATION	DRAINAGE AREA (SQ MI)	RUNOFF AMOUNT (IN)	PEAK DISCHARGE ELEVATION (FT)	PEAK DISCHARGE TIME (HR)	PEAK DISCHARGE RATE (CFS)	PEAK DISCHARGE RATE (CSM)
ALTERNATE 26 STORM 6							
XSECTION 80	ADDHYD	.03	7.20	---	12.03	141	4700.0
XSECTION 85	ADDHYD	.06	6.53	---	12.04	189	3150.0
STRUCTURE 90	RESVOR	.06	6.49	1338.15	12.26	136	2266.7
XSECTION 95	ADDHYD	.13	6.53	---	12.27	238	1830.8

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
STRUCTURE 90		.06				
	ALTERNATE	21	23	*********	*********	*********
	ALTERNATE	22	*********	33	*********	*********
	ALTERNATE	23	*********	*********	39	*********
	ALTERNATE	26	*********	*********	*********	136
STRUCTURE 65		.04				
	ALTERNATE	21	32	*********	*********	*********
	ALTERNATE	22	*********	44	*********	*********
	ALTERNATE	23	*********	*********	49	*********
	ALTERNATE	26	*********	*********	*********	65
STRUCTURE 10		.05				
	ALTERNATE	21	23	*********	*********	*********
	ALTERNATE	22	*********	34	*********	*********
	ALTERNATE	23	*********	*********	40	*********
	ALTERNATE	26	*********	*********	*********	63
XSECTION 1		.04				
	ALTERNATE	21	78	*********	*********	*********
	ALTERNATE	22	*********	104	*********	*********
	ALTERNATE	23	*********	*********	121	*********
	ALTERNATE	26	*********	*********	*********	184
XSECTION 5		.01				
	ALTERNATE	21	6	*********	*********	*********
	ALTERNATE	22	*********	9	*********	*********
	ALTERNATE	23	*********	*********	11	*********
	ALTERNATE	26	*********	*********	*********	19
XSECTION 8		.05				
	ALTERNATE	21	81	*********	*********	*********
	ALTERNATE	22	*********	110	*********	*********
	ALTERNATE	23	*********	*********	128	*********
	ALTERNATE	26	*********	*********	*********	197
XSECTION 25		.01				
	ALTERNATE	21	7	*********	*********	*********
	ALTERNATE	22	*********	10	*********	*********
	ALTERNATE	23	*********	*********	13	*********
	ALTERNATE	26	*********	*********	*********	22

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION 30		.06				
ALTERNATE	21		30	*********	*********	*********
ALTERNATE	22		*********	44	*********	*********
ALTERNATE	23		*********	*********	53	*********
ALTERNATE	26		*********	*********	*********	84
XSECTION 35		.01				
ALTERNATE	21		5	*********	*********	*********
ALTERNATE	22		*********	8	*********	*********
ALTERNATE	23		*********	*********	10	*********
ALTERNATE	26		*********	*********	*********	17
XSECTION 40		.07				
ALTERNATE	21		33	*********	*********	*********
ALTERNATE	22		*********	48	*********	*********
ALTERNATE	23		*********	*********	58	*********
ALTERNATE	26		*********	*********	*********	94
XSECTION 45		.00				
ALTERNATE	21		3	*********	*********	*********
ALTERNATE	22		*********	4	*********	*********
ALTERNATE	23		*********	*********	5	*********
ALTERNATE	26		*********	*********	*********	9
XSECTION 48		.07				
ALTERNATE	21		35	*********	*********	*********
ALTERNATE	22		*********	52	*********	*********
ALTERNATE	23		*********	*********	63	*********
ALTERNATE	26		*********	*********	*********	103
XSECTION 50		.02				
ALTERNATE	21		15	*********	*********	*********
ALTERNATE	22		*********	23	*********	*********
ALTERNATE	23		*********	*********	29	*********
ALTERNATE	26		*********	*********	*********	50
XSECTION 55		.01				
ALTERNATE	21		23	*********	*********	*********
ALTERNATE	22		*********	31	*********	*********
ALTERNATE	23		*********	*********	36	*********

SUMMARY TABLE 3

STORM DISCHARGES (CFS) AT XSECTIONS AND STRUCTURES FOR ALL ALTERNATES

XSECTION/ STRUCTURE ID		DRAINAGE AREA (SQ MI)	STORM NUMBERS..... 1	2	3	6
XSECTION 55		.01				
	ALTERNATE 26		*********	*********	*********	56
XSECTION 60		.04				
	ALTERNATE 21		34	*********	*********	*********
	ALTERNATE 22		*********	50	*********	*********
	ALTERNATE 23		*********	*********	60	*********
	ALTERNATE 26		*********	*********	*********	97
XSECTION 70		.01				
	ALTERNATE 21		22	*********	*********	*********
	ALTERNATE 22		*********	30	*********	*********
	ALTERNATE 23		*********	*********	35	*********
	ALTERNATE 26		*********	*********	*********	53
XSECTION 75		.02				
	ALTERNATE 21		37	*********	*********	*********
	ALTERNATE 22		*********	50	*********	*********
	ALTERNATE 23		*********	*********	58	*********
	ALTERNATE 26		*********	*********	*********	88
XSECTION 80		.03				
	ALTERNATE 21		60	*********	*********	*********
	ALTERNATE 22		*********	80	*********	*********
	ALTERNATE 23		*********	*********	93	*********
	ALTERNATE 26		*********	*********	*********	141
XSECTION 85		.06				
	ALTERNATE 21		82	*********	*********	*********
	ALTERNATE 22		*********	111	*********	*********
	ALTERNATE 23		*********	*********	132	*********
	ALTERNATE 26		*********	*********	*********	189
XSECTION 95		.13				
	ALTERNATE 21		56	*********	*********	*********
	ALTERNATE 22		*********	82	*********	*********
	ALTERNATE 23		*********	*********	98	*********
	ALTERNATE 26		*********	*********	*********	238

*** WARNING - UNEXPECTED RECORD(S) ENCOUNTERED WHEN LOOKING FOR "JOB" RECORD.
IMAGES OF FIRST 10 RECORDS IGNORED FOLLOWS: ***

END OF 1 JOBS IN THIS RUN

SCS TR-20, VERSION 10/01/90
FILES

INPUT = wlcc2p9.t20
OUTPUT = wlcc2p9.out , DATED 12/13/**,15:10:28

FILES GENERATED - DATED 12/13/**,15:10:28

NONE!

*** TR-20 RUN COMPLETED ***

Combining Rating Curve between Kansas One Place and Turnpike

12-12-01

One Ka... [illegible] Estimated Future Conditions (Combining Rating curves between K

Contour Elevation

USGS ft	Area ac	Inc. Vol ac ft	Cum. Vol ac ft	Ft	Radius
1347.25	0.00			1.2632	55025	93.5815
1347.7	1.26	0.2835	0.284	1.27402	55496.4	93.9815
1347.9	1.28	0.2540	0.538	1.32882	57883.5	95.9815
1348.4	1.36	0.6600	1.198	1.38478	60320.9	97.9815
1348.9	1.55	0.7275	1.925	1.44189	62808.6	99.9815
1349.4	1.69	0.8100	2.735	1.50015	65346.6	101.98
1349.9	1.87	0.8900	3.625	1.55957	67934.8	103.98
1350.4	2.05	0.9800	4.605	1.62014	70573.2	105.98
1350.9	2.20	1.0625	5.668	1.68186	73262	107.98
1351.4		0.5500	6.218	1.74474	76001	109.98
1351.9		0.0000	6.218	1.80878	78790.3	111.98
1352.4		0.0000	6.218			
				1.05646	46019.3	85.5815
				1.10641	48195.3	87.5815
				1.15752	50421.6	89.5815
				1.20978	52698.2	91.5815

Woodland Lakes Community Church SW Detention Are
Estimated Proposed Conditions - used in wlcc2p6.t20
Contour Elevation

USGS	Area	Inc. Vol	Cum. Vol
ft	ac	ac ft	ac ft
1335	1.59		
1335.5	1.68	0.8180	0.82
1336	1.78	0.8648	1.68
1336.5	1.87	0.9128	2.60
1337	1.97	0.9621	3.56
1337.5	2.08	1.0128	4.57
1338	2.18	1.0647	5.64
1338.3	2.22	0.6610	6.30
		######	-1482.37
		0.0000	-1482.37
		0.0000	-1482.37
		0.0000	-1482.37

Acre	*Sq Ft*	*Radius*
1.30154	56695.1	94.9911
1.35693	59107.7	96.9911
1.41346	61570.5	98.9911
1.47115	64083.5	100.991
1.53	66646.8	102.991
1.59	69260.4	104.991
1.68216	73275	107.991
1.77692	77402.7	110.991
1.87	81643.6	113.991
1.97423	85997.5	116.991
2.08	90464.5	119.991
2.18	95044.6	122.991
2.22471	96908.3	124.191
2.33349	101647	127.191
2.44486	106498	130.191
2.55884	111463	133.191
2.67541	116541	136.191

Modication to Existing Pond

1

CURRENT DATE: 10-08-2001
CURRENT TIME: 15:21:58

FILE DATE: 10-08-2001
FILE NAME: WLI35PD

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

C U L V	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS / SHAPE / MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1347.70	1347.60	2.00	3 RCP	1.50	1.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLI35PD DATE: 10-08-2001

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1347.70	0	0	0	0	0	0	0	0	1
1349.49	24	24	0	0	0	0	0	0	1
1349.87	48	29	0	0	0	0	0	19	5
1350.09	72	32	0	0	0	0	0	40	4
1350.28	96	34	0	0	0	0	0	62	4
1350.44	120	35	0	0	0	0	0	84	4
1350.58	144	37	0	0	0	0	0	107	5
1350.71	168	38	0	0	0	0	0	129	5
1350.83	192	39	0	0	0	0	0	151	5
1350.94	216	40	0	0	0	0	0	174	5
1351.03	240	41	0	0	0	0	0	197	5
1349.50	24	24	0	0	0	0	0	0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLI35PD DATE: 10-08-2001

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1347.70	0.00	0	0	0.00
1349.49	0.00	24	0	0.00
1349.87	-0.01	48	0	0.75
1350.09	-0.00	72	1	0.89
1350.28	-0.00	96	1	0.66
1350.44	-0.00	120	1	0.76
1350.58	-0.01	144	1	0.38
1350.71	-0.01	168	1	0.53
1350.83	-0.01	192	1	0.72
1350.94	-0.01	216	2	0.78
1351.03	-0.01	240	2	0.73

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

2

CURRENT DATE: 10-08-2001
CURRENT TIME: 15:21:58

FILE DATE: 10-08-2001
FILE NAME: WLI35PD

PERFORMANCE CURVE FOR CULVERT # 1 - 3 (1.5 BY 1.5) RCP

DISCHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1347.70	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	0.10
24	1349.49	1.79	1.79	5-S2n	0.58	1.09	7.10	0.91	0.00	0.10
29	1349.86	2.16	2.16	5-S2n	0.64	1.20	7.61	1.02	0.00	0.10
32	1350.08	2.38	2.38	5-S2n	0.67	1.24	7.86	1.07	0.00	0.10
34	1350.27	2.57	2.57	5-S2n	0.70	1.27	8.14	1.10	0.00	0.10
35	1350.43	2.73	2.73	5-S2n	0.72	1.30	8.32	1.13	0.00	0.10
37	1350.58	2.88	2.88	5-S2n	0.73	1.32	8.47	1.15	0.00	0.10
38	1350.71	3.01	3.01	5-S2n	0.75	1.34	8.61	1.17	0.00	0.10
39	1350.83	3.13	3.13	5-S2n	0.76	1.35	8.72	1.19	0.00	0.10
40	1350.94	3.24	3.24	5-S2n	0.77	1.37	8.83	1.20	0.00	0.10
41	1351.03	3.33	3.33	5-S2n	0.78	1.38	8.91	1.21	0.00	0.10

El. inlet face invert 1347.70 ft El. outlet invert 1347.60 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1347.70
OUTLET STATION (FT)	2.00
OUTLET ELEVATION (FT)	1347.60
NUMBER OF BARRELS	3
SLOPE (V-FT/H-FT)	0.0500
CULVERT LENGTH ALONG SLOPE (FT)	2.00

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	1.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

CURRENT DATE: 10-08-2001 FILE DATE: 10-08-2001
CURRENT TIME: 15:21:58 FILE NAME: WLI35PD

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1347.70

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE PAVED
EMBANKMENT TOP WIDTH (FT) 1.00
***** USER DEFINED ROADWAY PROFILE

CROSS-SECTION COORD. NO.	X (FT)	Y (FT)
1	0.00	1351.70
2	120.00	1350.87
3	130.00	1349.50
4	155.00	1349.50
5	165.00	1350.87
6	205.00	1352.40

1

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

C U L V	SITE DATA: INLET ELEV. (FT)	OUTLET ELEV. (FT)	CULVERT LENGTH (FT)	CULVERT SHAPE, MATERIAL, INLET: BARRELS SHAPE MATERIAL	SPAN (FT)	RISE (FT)	MANNING n	INLET TYPE
1	1347.25	1345.90	150.01	1 RCP	3.50	3.50	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLCCI135 DATE: 11-14-2000

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1347.25	0	0	0	0	0	0	0	0	1
1349.40	24	24	0	0	0	0	0	0	1
1350.57	48	48	0	0	0	0	0	0	1
1351.81	72	72	0	0	0	0	0	0	1
1353.50	96	96	0	0	0	0	0	0	1
1354.84	111	111	0	0	0	0	0	0	1
1358.49	144	144	0	0	0	0	0	0	1
1361.69	168	168	0	0	0	0	0	0	1
1365.43	192	192	0	0	0	0	0	0	1
1370.05	216	216	0	0	0	0	0	0	1
1373.04	240	229	0	0	0	0	0	11	7
1373.00	228	228	0	0	0	0	0	0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLCCI135 DATE: 11-14-2000

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1347.25	0.00	0	0	0.00
1349.40	0.00	24	0	0.00
1350.57	0.00	48	0	0.00
1351.81	0.00	72	0	0.00
1353.50	0.00	96	0	0.00
1354.84	0.00	111	0	0.00
1358.49	0.00	144	0	0.00
1361.69	0.00	168	0	0.00
1365.43	0.00	192	0	0.00
1370.05	0.00	216	0	0.00
1373.04	-0.01	240	0	0.10

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

BOUGHMAN'S RUNOFF NUMBER
HIGHEST ELEVATION WEST OF 42" RCP IS 1350.8 !!

2

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

PERFORMANCE CURVE FOR CULVERT # 1 - 1 (3.5 BY 3.5) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1347.25	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	1.10
24	1349.40	2.15	2.15	1-S2n	1.14	1.50	8.63	1.16	0.00	1.10
48	1350.57	3.32	3.32	1-S2n	1.67	2.16	10.29	1.71	0.00	1.10
72	1351.81	4.56	4.56	5-S2n	2.15	2.65	11.32	2.20	0.00	1.10
96	1353.50	6.25	6.25	5-S2n	2.67	3.00	12.10	2.69	0.00	1.10
111	1354.84	7.59	6.80	6-FFn	3.50	3.19	11.54	3.50	0.00	1.10
144	1358.49	11.24	9.97	6-FFn	3.50	3.50	14.97	3.50	0.00	1.10
168	1361.69	14.44	12.80	6-FFn	3.50	3.50	17.46	3.50	0.00	1.10
192	1365.43	18.18	16.05	6-FFn	3.50	3.50	19.96	3.50	0.00	1.10
216	1370.05	22.80	19.75	6-FFn	3.50	3.50	22.45	3.50	0.00	1.10
229	1373.04	25.79	21.85	6-FFn	3.50	3.50	23.75	3.50	0.00	1.10

El. inlet face invert 1347.25 ft El. outlet invert 1345.90 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1347.25
OUTLET STATION (FT)	150.00
OUTLET ELEVATION (FT)	1345.90
NUMBER OF BARRELS	1
SLOPE (V-FT/H-FT)	0.0090
CULVERT LENGTH ALONG SLOPE (FT)	150.01

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	3.50 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

3

CURRENT DATE: 10-08-2001 FILE DATE: 11-14-2000
CURRENT TIME: 16:56:37 FILE NAME: WLCCI135

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1347.00

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	PAVED
EMBANKMENT TOP WIDTH (FT)	30.00
CREST LENGTH (FT)	500.00
OVERTOPPING CREST ELEVATION (FT)	1373.00

FL = 1335.0

1

CURRENT DATE: 11-15-2000
CURRENT TIME: 11:39:14
FILE DATE: 11-14-2000
FILE NAME: WLCCSWPD

FHWA CULVERT ANALYSIS
HY-8, VERSION 4.1

C	SITE DATA			CULVERT SHAPE, MATERIAL, INLET				
U	INLET	OUTLET	CULVERT	BARRELS				
L	ELEV.	ELEV.	LENGTH	SHAPE	SPAN	RISE	MANNING	INLET
V	(FT)	(FT)	(FT)	MATERIAL	(FT)	(FT)	n	TYPE
1	1335.00	1331.87	78.06	2 RCP	2.00	2.00	.012	CONVENTIONAL
2								
3								
4								
5								
6								

SUMMARY OF CULVERT FLOWS (CFS) FILE: WLCCSWPD DATE: 11-14-2000

ELEV (FT)	TOTAL	1	2	3	4	5	6	ROADWAY	ITR
1335.00	0	0	0	0	0	0	0	0	1
1336.67	20	20	0	0	0	0	0	0	1
1337.90	40	40	0	0	0	0	0	0	1
1338.07	60	42	0	0	0	0	0	18	18
1338.11	80	42	0	0	0	0	0	37	9
1338.14	100	43	0	0	0	0	0	56	7
1338.17	120	43	0	0	0	0	0	76	6
1338.18	125	43	0	0	0	0	0	81	4
1338.22	160	44	0	0	0	0	0	115	6
1338.25	180	44	0	0	0	0	0	135	5
1338.27	200	44	0	0	0	0	0	154	5
1338.00	41	41	0	0	0	0	0	0	OVERTOPPING

SUMMARY OF ITERATIVE SOLUTION ERRORS FILE: WLCCSWPD DATE: 11-14-2000

HEAD ELEV(FT)	HEAD ERROR(FT)	TOTAL FLOW(CFS)	FLOW ERROR(CFS)	% FLOW ERROR
1335.00	0.00	0	0	0.00
1336.67	0.00	20	0	0.00
1337.90	0.00	40	0	0.00
1338.07	-0.00	60	0	0.70
1338.11	-0.00	80	1	0.76
1338.14	-0.00	100	1	0.88
1338.17	-0.00	120	1	0.96
1338.18	-0.00	125	1	0.93
1338.22	-0.00	160	1	0.82
1338.25	-0.00	180	1	0.73
1338.27	-0.00	200	1	0.61

<1> TOLERANCE (FT) = 0.010 <2> TOLERANCE (%) = 1.000

1335.0 = 0.0
.5 = 6.00
6.0 = 12.00
.5 = 18.00
7.0 = 25.4
.5 = 33.5
8.0 = 41.2

2

CURRENT DATE: 11-15-2000
CURRENT TIME: 11:39:14
FILE DATE: 11-14-2000
FILE NAME: WLCCSWPD

PERFORMANCE CURVE FOR CULVERT # 1 - 2 (2 BY 2) RCP

DIS-CHARGE FLOW (cfs)	HEAD-WATER ELEV. (ft)	INLET CONTROL DEPTH (ft)	OUTLET CONTROL DEPTH (ft)	FLOW TYPE <F4>	NORMAL DEPTH (ft)	CRITICAL DEPTH (ft)	OUTLET VEL. (fps)	OUTLET DEPTH (ft)	TAILWATER VEL. (fps)	TAILWATER DEPTH (ft)
0	1335.00	0.00	0.00	0-NF	0.00	0.00	0.00	0.00	0.00	1.13
20	1336.67	1.67	1.67	1-S2n	0.61	1.13	12.33	0.61	0.00	1.13
40	1337.90	2.90	2.90	5-S2n	0.89	1.60	13.61	0.95	0.00	1.13
42	1338.06	3.06	3.06	5-S2n	0.91	1.63	13.75	0.98	0.00	1.13
42	1338.10	3.10	3.10	5-S2n	0.92	1.64	13.78	0.98	0.00	1.13
43	1338.13	3.13	3.13	5-S2n	0.92	1.65	13.81	0.99	0.00	1.13
43	1338.16	3.16	3.16	5-S2n	0.92	1.65	13.84	0.99	0.00	1.13
43	1338.17	3.17	3.17	5-S2n	0.93	1.65	13.84	1.00	0.00	1.13
44	1338.22	3.22	3.22	5-S2n	0.93	1.66	13.88	1.00	0.00	1.13
44	1338.24	3.24	3.24	5-S2n	0.94	1.67	13.90	1.01	0.00	1.13
44	1338.27	3.27	3.27	5-S2n	0.94	1.67	13.92	1.01	0.00	1.13

El. inlet face invert 1335.00 ft El. outlet invert 1331.87 ft
El. inlet throat invert 0.00 ft El. inlet crest 0.00 ft

***** SITE DATA ***** CULVERT INVERT **********

INLET STATION (FT)	0.00
INLET ELEVATION (FT)	1335.00
OUTLET STATION (FT)	78.00
OUTLET ELEVATION (FT)	1331.87
NUMBER OF BARRELS	2
SLOPE (V-FT/H-FT)	0.0401
CULVERT LENGTH ALONG SLOPE (FT)	78.06

***** CULVERT DATA SUMMARY **********

BARREL SHAPE	CIRCULAR
BARREL DIAMETER	2.00 FT
BARREL MATERIAL	CONCRETE
BARREL MANNING'S N	0.012
INLET TYPE	CONVENTIONAL
INLET EDGE AND WALL	SQUARE EDGE WITH HEADWALL
INLET DEPRESSION	NONE

3

CURRENT DATE: 11-15-2000 FILE DATE: 11-14-2000
CURRENT TIME: 11:39:14 FILE NAME: WLCCSWPD

TAILWATER

CONSTANT WATER SURFACE ELEVATION
1333.00

ROADWAY OVERTOPPING DATA

ROADWAY SURFACE	GRAVEL
EMBANKMENT TOP WIDTH (FT)	5.00
CREST LENGTH (FT)	420.00
OVERTOPPING CREST ELEVATION (FT)	1338.00

Total Q Rating Curve for One Kellog Place Pond Discharge Structures (TR-20 Structure 10)

Horizontal Weirs

10-08-01

Weir to West Discharge						Pipe Dia.	Weir Elev	Weir L	Weir C			
						48	1349.50	25	2.65			
							47.70	0.00		0.00		
		3-23x14					49.40	22.79		0.00		
Pond El.		Pipe out	Weir out	Overflow ou	Q to out		49.49	24.00	49.50	0.00		
ft		cfs	cfs	cfs	cfs			-627.18		-2541.89		
1347.7		0.0	0.0	0.0	0.00		49.87	29.00	49.87	19.00		
1347.9		2.68	0.0		2.68		49.90	29.41	49.90	21.86		
1348.4		9.39	0.0	0.0	9.39		50.09	32.00	50.09	40.00		
1348.9		16.09	0.0	0.0	16.09			-495.26		-5759.89		
1349.4		22.8	0.0	0.0	22.79		50.28	34.00	50.28	62.00		
1349.9		29.4	16.8	21.9	51.27		50.40	34.75	50.40	78.50		
1350.4		34.8	56.6	78.5	113.25		50.44	35.00	50.44	84.00		
1350.9		39.6	109.7	165.6	205.28			-482.33		-8581.33		
1351.4		41.0	173.5	240.0	281.00		50.83	39.00	50.83	151.00		
1351.9		0.0	246.3	0.0	0.00		50.90	39.64	50.90	165.64		
1352.4		0.0	327.2	0.0	0.00		50.94	40.00	50.94	174.00		
1352.9		0	415.3	0.0	0.00		9.50	36.00		36.00		
1353.4		0	510.2	0.0	0.00		9.51	36.00		36.00		
1347.5		0	#NUM!	0.0	0.00		9.50	#DIV/0!		#DIV/0!		
1348		0	#NUM!	0.0	0.00		9.51	36.00		36.00		

1347.25	0.0
1347.70	5.0
1347.90	7.3
1348.40	12.8
1348.90	18.4
1349.40	24.0
1349.90	34.3
1350.40	44.5
1350.90	54.4

Total Q Rating Curve for I-35 Discharge Structures (TR-20 Structure 15)

Horizontal Weirs

10-10-01

Weir to West Discharge						Pipe Dia.	Weir Elev	Weir L	Weir C			
						48	1349.87	25	2.65			
							47.25	0.00	47.70	0.00		
		3-23x14					47.90	7.26	49.00	0.00		
Pond El.	Overflow ou	Pipe out	Weir out	42" Pipe	Q to out		49.40	24.00	49.49	0.00		
ft	cfs	cfs	cfs	cfs	cfs		50.40	44.51	49.50	0.50		
1347.25	0.0	0.0	#NUM!		#NUM!		50.57	48.00	49.87	19.00		
1347.9	0.0	7.26	#NUM!		#NUM!		50.90	54.39	50.00	31.41		
1348.4	0.0	12.84	#NUM!		#NUM!		51.81	72.00	50.09	40.00		
1348.9	0.0	18.42	#NUM!		#NUM!			-1327.25		-6257.03		
1349.4	0.0	24.0	#NUM!		#NUM!		50.44	35.00	50.44	84.00		
1349.9	0.0	34.3	0.3		0.34		50.50	35.86	50.50	93.86		
1350.4	0.0	44.5	25.6		25.56		50.58	37.00	50.58	107.00		
1350.9	0.0	54.39	69.3		54.39			-384.50	4.50	-8469.00		
1351.4	0.0	0.0	125.4		0.00		50.94	40.00	50.94	174.00		
1351.9	0.0	0	191.6		0.00		51.00	40.67	51.00	189.33		
1352.4	0.0	0.0	266.6		0.00		51.03	41.00	51.03	197.00		
1352.9	0.0	0	349.4		0.00		9.50	36.00	9.50	35.96		
1353.4	0.0	0	439.4		0.00		9.51	36.00	9.51	36.00		
1347.5	0.0	0	#NUM!		#NUM!		9.50	#DIV/0!	9.50	#DIV/0!		
1348	0.0	0	#NUM!		#NUM!		9.51	36.00	9.51	36.00		

Carrier, Christopher

From: Carrier, Christopher
Sent: Wednesday, January 02, 2002 9:54 AM
To: Huang, Vicky
Subject: Woodland Lakes Community Church

Sensitivity: Private

I have discussed the drainage plan with Steve. Although we are both uncomfortable with it, they have met our detention requirements and Steve said to let it go. We will have to put a storm sewer in along Greenwich when we do the street project (2006 to 2008 time frame). Nothing else can be done.

My only concern is the size of pipe they plan to put in to drain the water from the Walmart site north of the Turnpike. Baughman indicated a 100 year outflow of 141cfs from their detention pond. A 42 inch pipe will not carry that - so where will the overflow go and how will that impact the detention structure at Lincoln and Greenwich??

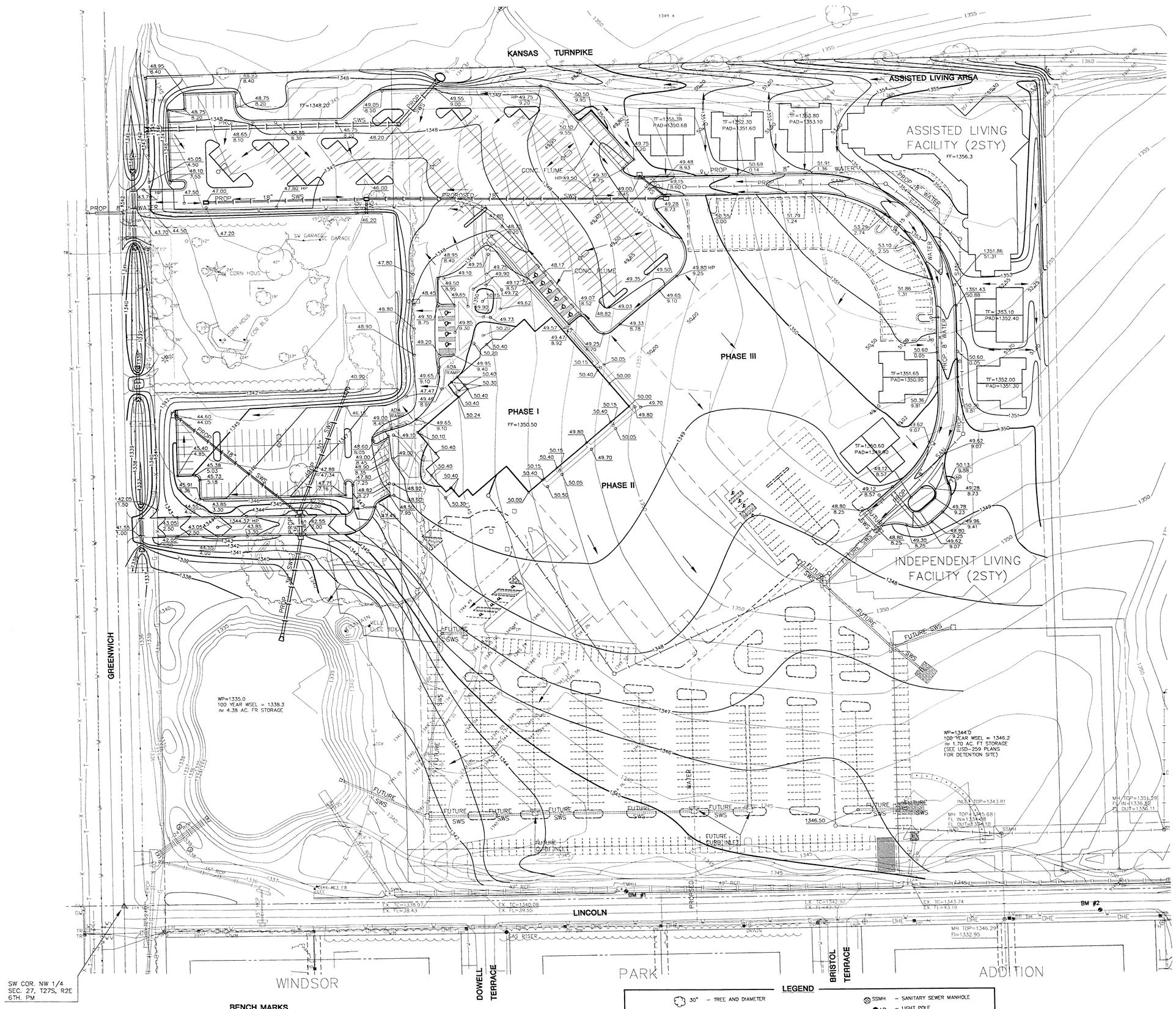
Carrier, Christopher

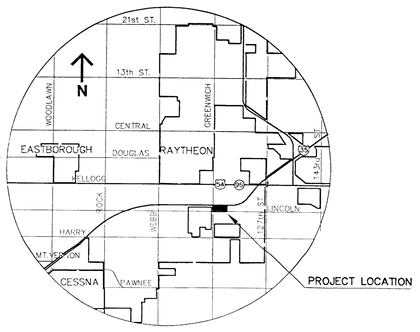
From: Carrier, Christopher
Sent: Wednesday, December 26, 2001 4:26 PM
To: Huang, Vicky
Cc: Lackey, Stephen
Subject: Woodland Lakes Community Church - Drainage Plan

Sensitivity: Private

Thanks for letting me look at this. I agree with you - this could be a big problem. This is one of those cases where it looks okay on paper, but doubt that it will work. All of that water can not go down the Greenwich Road ditch. I want to discuss this with Steve when he gets back next week. My thought now is that someone needs to put a large drainage structure down Greenwich all the way to Spring Branch. The only question is who and when. That section of Greenwich is in the CIP in the 2006 or so timeframe.

Can you get it postponed for one meeting to give us time to get our heads together? Thanks.





LOCATION MAP

GENERAL NOTES

1. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PRESERVING PROPERTY IRONS. THE CONTRACTOR SHALL BE REQUIRED TO RE-ESTABLISH ANY PROPERTY IRONS WHICH ARE DAMAGED OR DESTROYED BY HIS CONSTRUCTION OPERATIONS. SUCH IRONS SHALL BE RE-ESTABLISHED BY A LICENSED LAND SURVEYOR IN ACCORDANCE WITH STATE LAWS.

2. EXISTING UTILITIES AND THEIR LOCATIONS AS SHOWN ON THE PLANS REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. LOCATION INFORMATION HAS BEEN OBTAINED FROM THE VARIOUS UTILITY COMPANIES AND IS EITHER FROM COMPANY RECORD DRAWINGS OR COMPANY PROVIDED FIELD LOCATIONS. THE PLAN LOCATIONS SHOWN ARE NOT GUARANTEED. ADDITIONAL EXISTING UTILITIES MAY BE ENCOUNTERED.

3. CONTRACTOR SHALL PROVIDE A MINIMUM ADVANCE NOTICE OF FORTY-EIGHT (48) HOURS TO UTILITY COMPANIES PRIOR TO STARTING ANY EXCAVATION AS FOLLOWS:

   KANSAS ONE-CALL 1-800-344-7233 OR 687-2470 (LOCAL WICHITA)

   THE CONTRACTOR MUST NOTIFY THE FOLLOWING IN CASE OF AN EMERGENCY:

SOUTHWESTERN BELL TELEPHONE COMPANY	1-800-286-8313
COX CABLEVISION	1-316-262-0661
KG&E (GAS & ELECTRIC)	1-316-383-8600
CITY OF WICHITA WATER & SEWER MAINTENANCE	1-316-262-6000

4. UNDERGROUND UTILITY SERVICE LINES AND OVERHEAD UTILITY POLE LINES ARE TO BE ADJUSTED AS NECESSARY BY OTHERS PRIOR TO CONSTRUCTION UNLESS THE PLANS SPECIFICALLY CALL FOR THEIR ADJUSTMENT BY THE CONTRACTOR OR UNLESS THE PLANS SPECIFICALLY IDENTIFY A UTILITY TO BE ADJUSTED BY ITS OWNER DURING CONSTRUCTION. EXISTING UTILITIES AND THEIR LOCATIONS, AS SHOWN ON THE PLANS, REPRESENT THE BEST INFORMATION OBTAINABLE FOR DESIGN. THE CONTRACTOR WILL BE REQUIRED TO WORK AROUND EXISTING UTILITIES WITHIN THE RIGHT-OF-WAY WHICH DO NOT CONFLICT WITH PROPOSED CONSTRUCTION.

5. A SAW-CUT OF AT LEAST ONE-HALF THE DEPTH OF EXISTING SURFACE COURSES OR ONE-FOURTH THE DEPTH OF THE EXISTING TOTAL PAVEMENT THICKNESS SHALL BE PROVIDED AT LOCATIONS WHERE PROPOSED CONSTRUCTION ABUTS AN EXISTING SURFACE COURSE OR PAVEMENT FOR WHICH PARTIAL REMOVAL OF THAT SURFACE OR PAVEMENT IS REQUIRED. SAWED JOINT TO FACILITATE REMOVAL WITHIN 3 FEET (3') OF EXISTING JOINTS WILL NOT BE PERMITTED AND FOR SUCH INSTANCES THE LIMITS OF REMOVAL SHALL EXTEND TO THE EXISTING JOINT. SUCH SAW CUTS WILL NOT BE PAID FOR DIRECTLY AND THIS COST SHALL BE CONSIDERED AS SUBSIDIARY TO THE REMOVAL OF THE SURFACE OR PAVEMENT.

6. RUBBLE FROM THE REMOVAL OF MISCELLANEOUS STRUCTURES AND EXCESS EXCAVATION WHICH IS TO BE WASTED SHALL BE DISPOSED OF ON SITES TO BE PROVIDED BY THE CONTRACTOR. THESE SITES SHALL BE APPROVED BY THE ENGINEER AS TO SUITABILITY, APPEARANCE AND SITE LOCATION. LOCATIONS THAT, IN THE OPINION OF THE ENGINEER, WILL LEAVE AN UNSIGHTLY APPEARANCE WILL NOT BE APPROVED. ALL DISPOSAL SITES MUST BE APPROVED BY THE KANSAS DEPARTMENT OF HEALTH AND ENVIRONMENT. MATERIAL EITHER STOCKPILED OR DISPOSED OF IN A FLOOD PLAIN WILL

7. THE CONTRACTOR SHALL GIVE ALL PROPERTY OWNERS AND/OR TENANTS OF DEVELOPED PROPERTY ABUTTING THE CONSTRUCTION OF THIS PROJECT A MINIMUM OF TEN (10) DAYS ADVANCE NOTICE PRIOR TO START OF CONSTRUCTION.

8. ALL CONSTRUCTION AND MATERIALS SHALL COMPLY WITH CITY OF WICHITA STANDARD SPECIFICATIONS.

9. COST OF EXCAVATION HAULING, AND DUMPING OF EXCESS EXCAVATION SHALL BE SUBSIDIARY TO THE PROJECT.

BENCH MARKS

BM #1 "□" SOUTH EAST CORNER INLET NORTH SIDE LINCOLN HALF WAY BETWEEN DOWEL AND BRITOL. ELEV.=1340.96

BM #2 "□" TOP OF CURB SOUTH EAST CORNER RESERVE 6 100' ± WEST OF CENTER LINE ROMNEY. ELEV.=1349.27

BM #3 C.O.W. BENCH MARK NORTHWEST CORNER OF DOUBLE 4'x6' (1.219m X 1.829m) RCBC, ON HUBGUARD. IN FRONT OF 930 S. GREENWICH. 250' (76.2m) SOUTH OF LINCOLN ELEV.=1334.02

LEGEND

- 30" – TREE AND DIAMETER
- SN – SIGN AND POSTS
- 214 ×49 – SPOT ELEVATION AND LOCATION
- PP – POWER POLE AND DEADMAN
- KGE – ELECTRIC BOX
- 110 – CONTOUR LINE
- E – EDGE OF TREES
- E – UNDERGROUND ELECTRIC LINE
- X – FENCE
- BM – BENCHMARK
- SWMH – STORM WATER MANHOLE
- SSMH – SANITARY SEWER MANHOLE
- LP – LIGHT POLE
- FH – FIRE HYDRANT
- WV – WATER VALVE
- WM – WATER METER
- TR – TELEPHONE RISER
- STORM SEWER PIPE
- W – WATER LINE
- SANITARY SEWER LINE
- G – GAS LINE
- T – TELEPHONE LINE

SCALE: 1"=50'
0 50 100 150

MKEC ENGINEERING CONSULTANTS
411 N. WEBB ROAD
WICHITA, KS. 67206
316-684-9600

WOODLAND LAKES COMMUNITY CHURCH
PROJECT NAME

SITE GRADING
SHEET TITLE

ASH	DM/KKL	ASH
DESIGN BY:	DRAWN BY:	CHECKED BY:
DECEMBER 2001	SITEGRAD	2 / 5
DATE	DRAWING NAME	SHEET / OF

G:\CIVIL\00031\DWG\GRAD\SITEGRAD.DWG

\\CIVIL\00031\DWG\GRAD\SITEGRAD.DWG