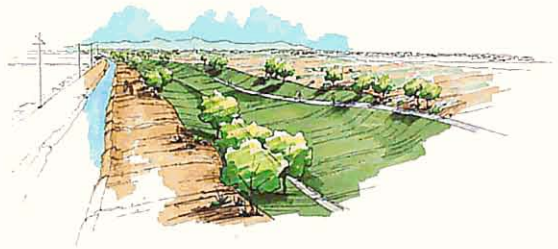
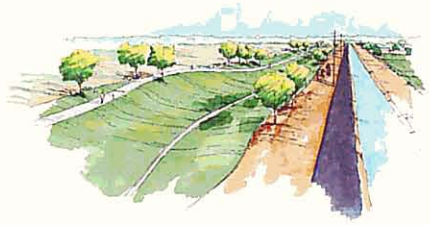
Bethany Home Outfall Channel

FCD CONTRACT NO. 98-46



Technical Data Notebook Conditional Letter of Map Revision (CLOMR)



Volume II

Prepared for:

Flood Control District of Maricopa County

Prepared by:

DMJM HARRIS

JANUARY 2003

Property of
Flood Control District of MC Library
Please Return to
2801 W. Durango
Phoenix, AZ 85009

BETHANY HOME OUTFALL CHANNEL

(Bethany Home/Grand Canal Flood Control Project)

Glendale, Phoenix and Unincorporated Maricopa County, Arizona

Conditional Letter of Map Revision Technical Data Notebook

(Volume II)

Prepared for:

Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009-6399

FCD CONTRACT NO. 98-46

Phone (602) 506-1501
Fax (602) 506-4601

Prepared by:

DMJM HARRIS

2777 East Camelback Road, Suite 200
Phoenix, Arizona 85016-4302
Project No. 6888

Phone (602) 337-2777
Fax (602) 337-2620

Registered Professional Engineer (Civil)
CERTIFICATE NO. 24999
JEFFREY R. MINCH
DATE SIGNED 1-24-03
ARIZONA, U.S.A.

January 2003

TABLE OF CONTENTS

1.0 INTRODUCTION 1

1.1 PURPOSE OF STUDY 1
1.1.1 Project Background 1
1.1.2 Project Purpose and Need 2
1.2 AUTHORITY FOR STUDY 5
1.3 LOCATION OF STUDY 5
1.4 METHODOLOGY 8
1.5 ACKNOWLEDGEMENTS 8
1.6 SUMMARY OF RESULTS 8

2.0 ADWR/FEMA FORMS AND LOCAL GOVERNMENT/ADWR ABSTRACTS 9

2.1 GENERAL INFORMATION 9

3.0 MAPPING AND SURVEY INFORMATION 34

3.1 FIELD SURVEY INFORMATION 34
3.2 MAPPING 34

4.0 HYDROLOGY 36

4.1 METHOD DESCRIPTION 36
4.2 PARAMETER ESTIMATION 36
4.2.1 Drainage Area Boundaries 36
4.2.2 Watershed Work Maps 36
4.2.3 Gage Data 36
4.2.4 Statistical Parameters 36
4.2.5 Precipitation 37
4.2.6 Physical Parameters 38
4.3 PROBLEMS ENCOUNTERED DURING THE STUDY 38
4.4 CALIBRATION 39
4.5 FINAL RESULTS 39
4.5.1 Hydrologic Analysis Results 39
4.5.2 Verification of Results 39

5.0 HYDRAULICS 41

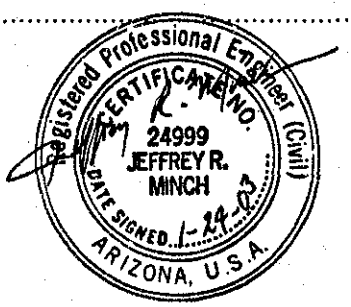
5.1 METHOD DESCRIPTION 41
5.2 WORK STUDY MAPS 41
5.3 PARAMETER ESTIMATION 42
5.3.1 Roughness Coefficients 42
5.3.2 Expansion and Contraction Coefficients 42
5.4 CROSS-SECTION DESCRIPTION 49

Registered Professional Engineer (Civil)
CERTIFICATE NO. 24999
JEFFREY R. MINCH
DATE SIGNED 1-24-03
ARIZONA, U.S.A.

5.5 MODELING CONSIDERATIONS 49
5.5.1 Hydraulic Jump and Drop Analysis 49
5.5.2 Bridges and Culverts 50
5.5.3 Levees and Dikes 51
5.5.4 Islands and Flow Splits 51
5.5.5 Ineffective Flow Areas 51
5.5.6 Supercritical Flow 51
5.6 FLOODWAY MODELING 51
5.7 PROBLEMS ENCOUNTERED DURING THE STUDY 51
5.7.1 Special Problems and Solutions 51
5.7.2 Model Warning and Error Messages 51
5.8 CALIBRATION 52
5.9 FINAL RESULTS 53
5.9.1 Hydraulic Analysis Results 53
5.9.2 Verification of Results 53
6.0 EROSION AND SEDIMENT TRANSPORT 58
6.1 METHOD DESCRIPTION 58
6.2 PARAMETER ESTIMATION 58
6.3 MODELING CONSIDERATIONS 59
6.4 PROBLEMS ENCOUNTERED DURING THE STUDY 59
6.5 CALIBRATION 59
6.6 FINAL RESULTS 59
6.7 VERIFICATION OF RESULTS 59
7.0 DRAFT FIS REPORT DATA 60
7.1 SUMMARY OF DISCHARGES 60
7.2 FLOODWAY DATA 60
7.3 ANNOTATED FLOOD INSURANCE RATE MAPS 60
7.4 FLOOD PROFILES 60

LIST OF FIGURES

FIGURE 1. LOCATION MAP 6
FIGURE 2. VICINITY MAP 7
FIGURE 3. MARYVALE ADMS STUDY AREA 37



LIST OF TABLES

TABLE 1. RETURN PERIOD POINT PRECIPITATION VALUES 38
TABLE 2. HISTORICAL STORM EVENT PRECIPITATION AND DURATIONS 38
TABLE 3. SUMMARY OF 100-YEAR DESIGN PEAK DISCHARGES AT SELECTED LOCATIONS 39
TABLE 4. SUMMARY OF ASSUMED STORM DRAIN 10-YEAR DESIGN PEAK DISCHARGES 40
TABLE 5. SUMMARY OF HYDRAULIC ANALYSIS RESULTS (BHOCBRW.PRJ) 54
TABLE 6. SUMMARY OF HYDRAULIC ANALYSIS RESULTS (BHOC100.PRJ) 55
TABLE 7. LOCATION OF EROSION CONTROL MEASURES 59

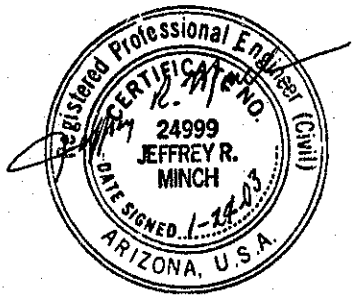
APPENDICES

VOLUME I

APPENDIX A – REFERENCES
APPENDIX B – GENERAL DOCUMENTATION AND CORRESPONDENCE
B.1 – MEETING MINUTES
B.2 – CONTRACT DOCUMENTS
APPENDIX C – FIELD SURVEY NOTES
C.1 – SURVEY FIELD NOTES FOR AERIAL MAPPING CONTROL
C.2 – RESULTS OF SURVEY

VOLUME II

C.3 – SUPPLEMENTAL FIELD SURVEYS
APPENDIX D – HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION
APPENDIX E – HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION
E.1 – CONSTRUCTION DRAWINGS AND CONCEPT DRAWINGS
E.2 – ROUGHNESS COEFFICIENT ESTIMATION
E.3 – CROSS SECTION PLOTS
E.4 – HYDRAULIC CALCULATIONS
APPENDIX F – EROSION AND SEDIMENT TRANSPORT ANALYSES SUPPORTING DOCUMENTATION



C.3 – SUPPLEMENTAL FIELD SURVEYS

Supplemental Survey Report

August 2001

Bethany Home/Grand Canal Flood Control Project

Bethany Home Outfall Channel, Phase II

Project No. 98-46, PCN No. 620 03 32

Prepared for:
Flood Control District of Maricopa County
2801 West Durango Street
Phoenix, Arizona 85009
Project No. 98-46

Prepared by:
AZTEC Engineering
3747 East Grove Street
Phoenix, Arizona 85040-3982

Prepared in Cooperation with:
The City of Glendale
5850 West Glendale Avenue
Glendale, Arizona 85301

Prepared in Cooperation with:
The City of Phoenix
200 West Washington
Phoenix, Arizona 85003

AZTEC ENGINEERING

Bridge Design

Civil Engineering

Construction Administration

Drainage

Graphic Design

Roadway Design

Survey

Traffic Engineering

Urban Freeway Design

Phoenix, AZ

Irvine, CA

Pasadena, CA

SURVEY REPORT

DMJM – HARRIS
Bethany Home Outfall Channel – Phase II
FCD 98-46

Aztec Engineering was requested to provide supplemental survey for the design of the Reach A of the Bethany Home Outfall Channel – Phase II (BHOC). The survey notes and control established for the original portion of this project was supplied by DMJM – Harris.

The supplemental surveys included topographic survey of the proposed channel crossing the Grand Canal at Bethany Home Road east of 83rd Avenue, topographic survey around the SRP Welborn Substation located at 87th Avenue and the Grand Canal and As-Built topography of the BHOC at L101 Freeway. The survey also included ties to corners in Sections 10 & 15, Township 2 North, Range 1 East.

Aztec Engineering identified control points used or set during the previous mapping surveys. The coordinates and elevations were verified by using GPS through the various points prior to any additional topographic surveys to verify our mapping was on the same basis as the original mapping.

Three maps were prepared one of each individual area of topography. These maps together with ASCII data files were submitted on CD's for use by DMJM – Harris. The Section Corner ties were submitted as coordinate data only and no drawings were prepared.

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
21790
NORMAN L.
SMITH
Date Signed 8/10/01
ARIZONA, U.S.A.

Norman L. Smith, R. L. S.
AZ Reg. No. 21790

3747 East Grove Street
Phoenix, Arizona
85040-3982

Tel: 602-454-0402

Fax: 602-454-0403

E-mail:
aztec@azteceng.com

Web Site:
www.azteceng.com

AZTEC ENGINEERING

Letter of Transmittal

To: Mr. Jeff Minch, P.E.
DMJM - Harris
2777 E. Camelback Rd., Suite 200
Phoenix, AZ 85016

From: Norman L. Smith

Date/Time: August 17, 2001
Subject: BHOC Report
Project: Bethany Home Outfall Channel
Project Number: FCD 98-46

Method of Delivery: U.S. Mail x Courier To Be Picked Up Hand Carry

We Are Sending You: x Attached ____ Under Separate Cover

____ Shop Drawings ____ Prints ____ Plans ____ Specifications ____ Submittal
____ Change Order ____ Reports ____ Letter ____ Review Comments ____ Other (CD)

Quantity	Doc Date	Doc No.	Description
1			Three Mylar drawings of topographic survey
1			Survey Report

The above transmitted as follows:

____ For approval
____ For your use
x As requested
____ Other

____ Approved as submitted
____ Approved as noted
____ Returned for corrections
____ For review and comment

____ Resubmit ___ copies for approval
____ Submit ___ copies for distribution
____ Return for ___ corrected prints
____ Please sign and return one copy

Remarks:

c:

File Name and Path: F:\Az01031\Corr\062901t1cwh.doc

3747 East Grove Street • Phoenix, Arizona 85040 • 602/454-0402 • FAX 602/454-0403

rev 2/00

Letter of Transmittal

AZTEC ENGINEERING

To: Mr. Jeff Minch, P.E.
DMJM - Harris
2777 E. Camelback Rd., Suite 200
Phoenix, AZ 85016

From: Chad Huber

Date/Time: June 29, 2001
Subject: L101 & Grand Canal
Project: Bethany Home Outfall Channel
Project Number: FCD 98-46

Method of Delivery: U.S. Mail x Courier To Be Picked Up Hand Carry

We Are Sending You: x Attached ____ Under Separate Cover

____ Shop Drawings ____ Prints ____ Plans ____ Specifications ____ Submittal
____ Change Order ____ Reports ____ Letter ____ Review Comments ____ Other (CD)

Quantity	Doc Date	Doc No.	Description
1			Disk with drawing and ascii file of topo survey Copy of field notes

The above transmitted as follows:

____ For approval ____ Approved as submitted ____ Resubmit ___ copies for approval
____ For your use ____ Approved as noted ____ Submit ___ copies for distribution
x As requested ____ Returned for corrections ____ Return for ___ corrected prints
____ Other ____ For review and comment ____ Please sign and return one copy

Remarks:

c:

File Name and Path: F:\Az01031\Corr\062901t1cwh.doc

3747 East Grove Street • Phoenix, Arizona 85040 • 602/454-0402 • FAX 602/454-0403

rev 2/00

Point Id	Ground Northing	Ground Easting	Orth. Height	Code
1200	920845.9433	596974.3094	1072.44	MON
1201	918250.5823	596975.6540	1068.37	MON
1202	915609.2505	596956.1072	1059.77	MON
1203	912967.1476	596937.0092	1056.48	MON
1204	915589.9545	602256.0208	1080.74	MON
1205	920850.0367	602277.6398	1088.83	MON
1206	923439.0802	596973.5596	1078.75	MON
1207	918547.8550	592990.8760	1059.18	F ST
1208	918548.0126	593004.3610	1059.02	ERD ST
1209	918547.9413	593007.2717	1060.11	TOP ST
1210	918548.0652	593010.4640	1060.18	NG
1211	918522.6806	593009.7902	1060.03	NG
1212	918522.8333	593007.0827	1059.98	TOP
1213	918522.7301	593004.5912	1059.00	ERD
1214	918522.4542	592990.6989	1059.06	F
1216	918497.5085	592990.6031	1059.08	F
1217	918497.5266	593003.3651	1058.99	ERD
1218	918497.2293	593006.4741	1059.84	TOP
1219	918497.0094	593009.5667	1059.85	NG
1220	918470.9478	593009.7301	1060.10	NG
1221	918470.9516	593006.0011	1060.02	TOP
1222	918470.7648	593002.4808	1059.05	ERD
1223	918471.2737	592990.3936	1059.12	F
1224	918445.9726	592990.2544	1058.99	F
1225	918445.5224	593002.8125	1058.95	ERD
1226	918445.2414	593005.8458	1059.90	TOP
1227	918445.7164	593009.0843	1059.91	NG
1228	918418.8585	593009.1631	1059.94	NG
1229	918419.3079	593005.6853	1059.95	ERD
1230	918418.7208	592990.0398	1058.91	F
1231	918393.0674	592989.8549	1058.94	F
1232	918392.7264	593002.6258	1059.22	ERD
1233	918392.6399	593005.8154	1060.19	TOP
1234	918392.7310	593007.9736	1060.26	NG
1235	918367.0723	593007.1702	1060.41	NG
1236	918367.3038	593005.3077	1060.29	TOP
1237	918367.0367	593003.0474	1059.54	ERD
1238	918366.5264	592989.7649	1058.95	F
1239	918342.1667	592989.6352	1058.85	F
1240	918342.0890	593003.2009	1059.69	ERD
1241	918341.9191	593005.6721	1060.33	TOP
1242	918342.0275	593007.2646	1060.23	NG
1243	918547.6780	592995.1530	1059.18	ERD1 ST
1244	918548.0537	593014.0337	1059.22	NG
1245	918522.6115	593014.0084	1058.91	NG
1246	918522.2963	592994.5274	1059.20	ERD1
1247	918497.1733	592994.5825	1059.23	ERD1
1248	918497.1875	593013.6418	1058.89	NG
1249	918470.8539	593013.9184	1058.82	NG
1250	918470.9854	592994.2540	1059.22	ERD1
1251	918445.3964	592994.2706	1059.11	ERD1

1252	918445.5311	593013.5673	1058.78	NG
1253	918417.9521	593013.4569	1058.72	NG
1254	918418.6283	592994.6413	1059.07	ERD1
1255	918393.0014	592994.0081	1059.12	ERD1
1256	918392.6511	593013.7398	1058.63	NG
1257	918366.7584	593013.2868	1058.58	NG
1258	918366.2900	592994.2999	1059.35	ERD1
1259	918342.0756	592994.4449	1059.36	ERD1
1260	918341.8616	593012.6082	1058.65	NG
1261	918317.2562	593010.3162	1059.28	NG
1262	918317.4374	593006.4719	1060.43	TOP
1263	918317.5028	593003.9734	1059.77	ERD
1265	918317.2297	592994.8668	1059.49	ERD1
1266	918317.2563	592989.5739	1058.64	F
1267	918292.7396	592989.4669	1058.57	F
1268	918292.4839	592995.3677	1059.82	ERD1
1269	918292.6166	593004.9829	1059.94	ERD
1270	918292.3938	593007.0536	1060.23	
1271	918292.3484	593007.0822	1060.11	
1272	918292.3731	593007.1094	1060.20	TOP
1273	918292.3905	593010.4739	1059.34	NG
1274	918267.0474	593012.0412	1059.33	NG
1275	918267.2487	593007.3317	1060.47	ERD TOP
1276	918266.8559	592995.0063	1060.38	ERD1 PC
1277	918266.9427	592988.9479	1058.72	F
1278	918263.4079	592988.9568	1058.82	F
1279	918251.6137	592991.1023	1061.02	ERD1
1280	918241.0651	592984.4813	1061.49	ERD1
1281	918233.0524	592972.0559	1061.50	ERD1
1282	918229.2499	592955.1178	1061.49	ERD1 PT
1283	918262.5823	592989.7253	1058.96	TOE ST
1284	918262.3096	592989.6794	1058.94	TOE PC
1285	918255.6919	592984.7254	1058.79	TOE
1286	918249.8150	592979.0777	1058.80	TOE
1287	918246.4493	592969.5460	1058.78	TOE
1288	918244.7154	592955.3141	1058.88	TOE PT
1289	918262.8942	592980.2197	1058.57	F
1290	918261.7331	592954.8926	1058.44	F
1291	918260.2288	592928.1115	1058.38	F
1292	918241.7418	592927.5521	1058.76	TOE
1293	918227.8103	592928.1057	1061.25	ERD1
1294	918226.4171	592901.6390	1061.39	ERD1
1295	918239.3181	592902.1509	1058.88	TOE
1296	918258.8851	592901.9389	1058.44	F
1297	918257.5083	592876.1175	1058.33	F
1298	918238.3372	592876.4152	1058.84	TOE
1299	918226.2672	592876.7962	1061.49	ERD1
1300	918225.7713	592850.9882	1061.51	ERD1
1301	918236.5660	592850.4874	1058.61	TOE
1302	918256.0293	592849.6376	1058.27	F
1303	918254.6548	592823.9301	1058.32	F
1304	918235.1717	592824.6727	1058.45	TOE

1305	918224.6302	592825.0546	1061.47	ERD1
1306	918224.3813	592798.4745	1061.29	ERD1
1307	918232.7595	592798.2104	1058.68	TOE
1308	918253.1551	592797.8787	1058.31	F
1309	918228.8590	592989.5776	1062.10	MON
1310	918228.9548	592991.5207	1061.96	MPT
1311	918229.9585	593007.7986	1061.18	MON
1312	918229.7440	593005.6249	1061.06	MPT
1313	918225.8107	593007.5455	1061.67	EC ST
1314	918226.0167	593015.8114	1061.56	EC
1316	918229.8879	593015.6714	1061.58	EC
1317	918229.5848	593007.5385	1061.62	EC CL
1318	918549.4736	592916.8696	1059.04	TOP1 ST
1319	918549.4944	592915.4271	1059.23	EC1 ST
1320	918549.5771	592892.1843	1059.86	NG
1321	918549.2232	592872.6457	1060.18	TOE1 ST
1322	918547.8607	592851.4479	1064.96	NG
1323	918551.5928	592818.0245	1073.43	NG
1324	918551.2418	592798.7030	1078.33	NG
1325	918529.9851	592797.3790	1078.67	NG
1326	918528.4001	592816.3888	1073.78	NG
1327	918524.8008	592850.8220	1065.28	NG
1328	918526.4757	592832.5238	1069.75	NG
1329	918524.3911	592871.9627	1060.36	TOE1
1331	918523.6532	592892.8799	1059.60	NG
1332	918522.9750	592915.5945	1059.13	EC1
1333	918522.9083	592917.3737	1059.07	TOP1
1334	918497.9949	592917.4921	1058.89	TOP1
1335	918497.9681	592917.5307	1058.94	TOP1
1336	918498.0142	592915.7411	1058.96	EC1
1337	918498.4858	592893.6920	1059.64	NG
1338	918499.6322	592872.6803	1059.99	TOE1
1339	918500.4683	592850.4262	1065.20	NG
1340	918501.2614	592831.7074	1069.86	NG
1341	918499.2511	592815.3174	1073.82	NG
1342	918499.2288	592796.2864	1079.16	NG
1343	918473.0669	592795.6799	1079.72	NG
1344	918473.6041	592814.6470	1074.09	NG
1345	918473.2672	592831.4227	1069.74	NG
1346	918472.4313	592850.0601	1065.15	NG
1347	918472.8006	592872.3513	1060.18	TOE1
1349	918472.5264	592894.2491	1059.60	NG
1350	918472.6264	592916.5499	1058.88	EC1
1351	918472.7906	592918.2589	1058.67	TOP1
1352	918448.0932	592918.2250	1058.85	TOP1 PC
1353	918448.2189	592916.6354	1058.97	EC1 PC
1354	918449.3036	592894.5146	1059.52	NG
1355	918448.3383	592873.0732	1060.02	TOE1
1356	918448.5211	592849.3503	1065.46	NG
1357	918449.8006	592830.9963	1070.13	NG
1358	918449.8270	592814.6667	1074.38	NG
1359	918444.1058	592804.1212	1076.88	EBX

1360	918450.2976	592795.6962	1079.52	NG
1361	918425.1540	592794.9406	1079.48	NG
1362	918423.6469	592813.4934	1074.43	NG
1363	918404.5404	592808.6135	1074.74	LPS
1364	918413.7130	592792.3261	1078.46	EC3 ST
1365	918402.7162	592792.5449	1076.21	EC4 ST
1366	918421.9376	592830.0408	1070.00	NG
1367	918420.2868	592848.1591	1064.93	NG
1368	918424.1060	592873.6764	1059.84	TOE1
1369	918423.8354	592895.3020	1059.51	NG
1370	918425.0987	592914.5387	1059.10	EC1
1371	918425.0007	592915.7162	1059.02	TOP1
1372	918406.6727	592912.3484	1059.06	TOP1
1373	918406.9649	592910.8147	1059.25	EC1
1374	918404.4597	592895.0259	1059.37	NG
1375	918402.3233	592870.8478	1059.73	TOE1 PC
1376	918398.5745	592848.3049	1063.02	NG
1377	918394.1314	592830.1311	1065.32	NG
1378	918389.7740	592817.8907	1066.20	EC3
1379	918383.9278	592801.8727	1066.18	EC4
1380	918374.5712	592834.1894	1058.58	EC3
1382	918373.0575	592832.3004	1058.47	EC3
1383	918370.9089	592816.1598	1058.69	EC3
1384	918369.8983	592808.9489	1058.73	EC3 EC4
1385	918367.3976	592791.6449	1058.93	EC3
1386	918366.8029	592791.4738	1058.86	F ST
1388	918373.7780	592842.0559	1058.73	F
1389	918377.4381	592867.3665	1058.95	F
1390	918380.4179	592888.7955	1059.22	F GATE
1391	918382.6408	592903.3483	1058.79	F GATE
1392	918381.2631	592903.0095	1058.79	EC1 PT
1394	918380.3566	592904.8308	1058.60	TOP1 PT
1395	918366.7384	592900.0928	1058.43	TOP1
1396	918361.6847	592895.6081	1058.48	EC1
1397	918359.6235	592896.4078	1058.32	TOP1
1398	918358.3483	592873.8216	1058.25	TOP1
1399	918360.3125	592873.5822	1058.35	EC1
1400	918358.4639	592846.3965	1058.21	EC1
1402	918356.7682	592846.5692	1058.08	TOP1
1403	918355.3492	592822.6553	1057.95	TOP1
1404	918356.9718	592822.5798	1058.12	EC1
1405	918355.1812	592792.9192	1058.04	EC1
1406	918353.2963	592793.2093	1057.87	TOP1
1407	918335.2848	592794.2038	1049.40	TOE1 ST
1408	918336.9380	592822.6954	1049.56	TOE1
1409	918338.2721	592847.8044	1049.62	TOE1
1410	918338.6142	592874.3329	1049.60	TOE1
1411	918340.5182	592893.6952	1049.68	TOE1
1412	918342.2191	592900.3833	1049.80	TOE1
1413	918344.7054	592906.8513	1049.63	TOE1
1414	918351.9189	592911.7818	1049.68	TOE1
1415	918360.0024	592916.6083	1049.62	TOE1

1416	918374.0543	592922.4366	1049.54	TOE1
1417	918402.7151	592930.4946	1049.69	TOE1
1418	918448.2998	592935.5550	1049.60	TOE1
1419	918498.1010	592935.2688	1049.42	TOE1
1420	918497.9431	592935.3263	1049.76	TOE1
1421	918523.6576	592935.8813	1049.71	TOE1
1422	918549.2016	592935.9656	1049.72	TOE1
1423	918548.2808	592959.7012	1050.17	TOE ST
1424	918523.0900	592958.5386	1049.83	TOE
1425	918444.6402	592959.7358	1050.10	TOE
1426	918368.2774	592943.9961	1049.89	TOE ST
1427	918367.9763	592943.9613	1049.85	TOE PC
1428	918359.2536	592943.5693	1049.87	TOE
1429	918348.4203	592948.3676	1049.75	TOE
1430	918345.9988	592955.7573	1049.81	TOE PT
1431	918319.2779	592955.5098	1049.18	TOE
1432	918284.9079	592955.2695	1048.87	TOE
1433	918282.8708	592925.3899	1048.73	TOE
1434	918282.4712	592901.0011	1048.64	TOE
1435	918281.0329	592873.6215	1048.55	TOE
1436	918279.2768	592847.7934	1048.68	TOE
1437	918277.9243	592822.6366	1048.76	TOE
1438	918277.9087	592822.5693	1048.74	TOE
1439	918276.4426	592797.9752	1048.77	TOE
1440	918256.2114	592797.2303	1058.05	TOP ST
1442	918257.8648	592823.8521	1058.10	TOP
1443	918259.1185	592849.5209	1058.07	TOP
1444	918261.3288	592875.9777	1058.11	TOP
1445	918262.4615	592901.8593	1058.10	TOP
1446	918263.3132	592927.8519	1058.15	TOP
1447	918264.5714	592954.2377	1058.18	TOP
1448	918266.0084	592961.4122	1057.94	TOP PC
1449	918273.3653	592970.1307	1058.07	TOP
1450	918284.7176	592973.7856	1058.19	TOP PT
1451	918361.2564	592974.5176	1058.48	TOP PC
1452	918362.4762	592974.0491	1058.53	TOP
1454	918362.9331	592973.0415	1058.46	TOP PT
1455	918363.1620	592959.8595	1058.84	TOP
1456	918364.1839	592958.9498	1058.80	TOP
1457	918365.3759	592959.0346	1058.86	TOP
1458	918391.7691	592970.1906	1059.09	TOP PC
1459	918420.4622	592975.5013	1058.76	TOP
1461	918447.6523	592977.2322	1058.73	TOP PT
1462	918498.4977	592977.0798	1058.77	TOP
1463	918549.2399	592977.5316	1058.81	TOP
1464	918182.1342	592800.0220	1061.75	TOP ST
1465	918199.9765	592798.5961	1061.58	NG
1466	918201.8387	592824.1302	1061.75	NG
1467	918183.3615	592824.1498	1061.77	TOP
1468	918184.6300	592848.0301	1062.17	TOP
1469	918203.2956	592848.8494	1061.87	NG
1470	918204.3784	592874.6773	1061.94	NG

1471	918186.2721	592875.2665	1062.17	TOP
1473	918187.5249	592901.1152	1062.05	TOP
1474	918205.9565	592901.0526	1061.97	NG
1475	918207.1110	592927.4021	1061.84	NG
1476	918188.6761	592928.4268	1062.02	TOP
1477	918190.0322	592954.8576	1061.73	TOP
1478	918205.8032	592955.1913	1062.08	NG
1479	918208.8202	592981.0861	1061.95	NG
1480	918191.7049	592982.6515	1061.93	TOP
1481	918193.1968	593008.0676	1061.98	TOP
1482	918209.5246	593008.9331	1061.58	NG
1483	918210.8130	593032.8895	1060.92	NG
1484	918193.5114	593033.0046	1061.39	TOP
1485	918194.4259	593059.1438	1060.97	TOP
1486	918211.4629	593059.0676	1060.21	NG
1487	918212.7324	593086.8513	1060.21	NG
1488	918195.7895	593087.1115	1060.87	TOP
1489	918197.3655	593112.5361	1061.20	TOP
1490	918213.5665	593112.5059	1059.97	NG
1491	918213.1205	593140.3489	1060.16	NG
1492	918199.4114	593141.1540	1061.06	TOP
1493	918193.2553	593005.8127	1061.96	INV DEL
1494	918192.7658	593000.1273	1062.18	DEL
1495	918192.7061	592993.5068	1062.19	DEL
1496	918192.5647	592987.9916	1062.06	DEL
1497	918193.5130	593017.7153	1061.41	MPT
1498	918189.5301	592997.5419	1060.12	INV
1499	918156.6887	593009.8114	1060.28	INV

06/27/01

AZ01031-03

FCD MC
BETHANY HOME OUT-FALL CHANNEL
PHASE II

TOPO, CROSS-SECTION
+
SECTION CORNERS

GPS RTK (NEW GPS)

S. NYE
M. GREGG

		GPS	RTK		
BASE @		313			
ANT HT		1.294 M	~ 4.245	ft.	
START	1342		STOP	1604	
GDOP	2.6			5.2	
SATS	10 10/10			5 5/5	
✓ @ 311		—	311 CK		

PT #	CODE	REMARKS
1200	MON	FND BC/HH @ W1/4 SEC 10
1201	MON	FND BC FLUSH & TOE OF S. BANK "MARICOPA" BARELY SW COR SEC 10

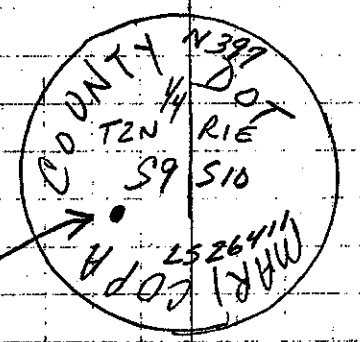
S. NYE
M. GREGG
06/27/01
SUNNY 105°
14/252

REMARKS
BASE FILE - AZ01031-062701B
ROVER FILE - AZ01031-062701R
(1200 - 1206)

dN -0.008 dE -0.006 dH -0.023

℄℄ 91ST AVE + MARYLAND AVE

N



SHOT PUNCH

91ST AVE + IN-LINE BETWEEN TOP OF GRAND CANAL W. OF 91ST AVE. LEGIBLE ON CAP.

RTK

06/27/01

15/252

PT #	CODE		REMARKS	
1202	MON		FND BC/HH +/- 18' S. OF W¼ SEC 15	+/- 17' W OF 91ST AVE ℄ + MISSOURI AVE ℄
1203	MON		FND BC/HH +/- + +/- 7.00' N. OF "MARICOPA SW COR SEC 15	3.00' E. OF W. BOC OF 91ST AVE ℄ CAMELBACK RD INSCRIBED COUNTY HWY DEPT" SHOT PUNCH.
1204	MON		FND BC/HH ℄ MISSOURI AVE HWY DEPT" E¼ SEC 15	91ST AVE + +/- 24' N. OF ℄ INSCRIBED "MARICOPA COUNTY SHOT PUNCH

N

MARICOPA COUNTY
1/4
T2N R1E
S16 S15
LS 26411
695 1.00

RTK

06/27/01

16/252

PT #	CODE	REMARKS	
			E1/4 SEC 10
1205	MON	FND BC/HA @ SHOT PUNCH.	℄℄ N. 83RD AVE + MARYLAND. MARKINGS TOO WORN TO READ.
1206	MON	FND PK NAIL W/ SHINER STRADDLERS 91ST AVE + NW COR SEC 10	IN PANEL POINT W/ 4 LINE (PK NAILS W/ SHINERS) @ ℄℄ GLENDALE AVE

GPS RTK - TOPO

S. NYE
M. GREGG
06/28/01
SUNNY 100°
17/252

BASE @ 313
ANT HT 1.266 M ~ 4.154 ft.
START 0918 STOP 1412
GDOP 2.3 2.5
SATS 9 9/9 10 10/10

√@ 311 — 311 CK

dN -0.005 dE -0.012 dH +0.028

PT #	CODE	REMARKS
1207	F ST	6' CHAIN-LINK
1309	MON	FOUND 0.25' DIAM STRUCTURE +/-45' N OF E. FACE OF
1310	MPT	SHOT IN APEX 1309 +/- 2.00' E

REMARKS
BASE FILE - AZ01031-062801B
ROVER FILE - AZ01031-062801R
(1207 - 1499)

(GOOD CONDITION)
ALUM CAP IN CONCRETE SLAB +/-18' W. OF W. EDGE OF IRRIGATION OF GRAND CANAL + +/- 250' E. WALL OF L101

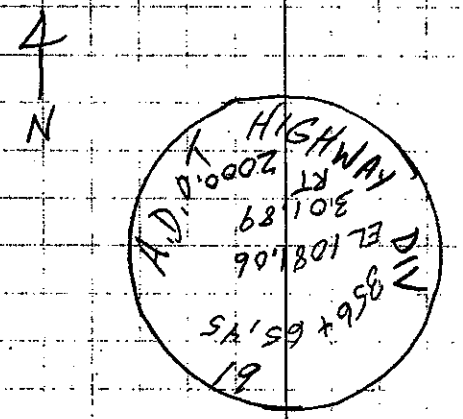
N

HIGHWAY
R.P. 356+14.19 ℄
EL 1081.90
283.59
P.T.
19 2000

OF ✗ IRON WITNESSING PT# OF MONUMENT + +/- 2.20' HIGH

RTK

PT#	CODE	REMARKS	
1310	MPT	(CONT) INSCRIBED	"P.O.T. 356+64.19" "HWY R. OF W."
1311	MON	FOUND 0.25 DIAM 0.30 N + 0.40 E. STRUCTURE +/- CANAL + +/- 270' L101	ALUM CAP IN CONCRETE SLAB OF NW EDGE OF IRRIGATION 44' N. OF N. EDGE OF GRAND E. OF E. FACE OF WALL OF
1312	MPT	SHOT IN APEX OF W. OF MONUMENT	4 IRON WITNESSING PT# 1311 +/- 2.00' + 2.10 HIGH
1313	EC ST	SHOWS IRRIGATION	STRUCTURE
1369	EBX	2.90 N-S X 1.80 E-W	



RTK

06/28/01

1363	LPS	SHOT TOP OF	3.00' DIAM CONCRETE BASE X
		2.00 HIGH, LIGHT	TO W.
1481	TOP	MEASURE DOWN	TO NORTH TOE OF GRAND
		CANAL @ +/-	25° SLOPE IS +/- 11.90'
1497	MPT	MEASURE DOWN	TO TOP OF IRRIGATION
		DRAINAGE	OUTLET IS +/- 7.80 (UNKNOWN SIZE)
1498	INV	SHOT TOP OF	15" CONCRETE PIPE
1493	INV DEL	MEASURE DOWN TO	INVERT IS 11.40'
1499	INV	MEASURE DOWN	TO SOUTH TOE OF GRAND
		CANAL @ +/- 25°	SLOPE IS 9.40'

AZTEC ENGINEERING

Letter of Transmittal

To: Mr. Jeff Minch, P.E.
DMJM - Harris
2777 E. Camelback Rd., Suite 200
Phoenix, AZ 85016

From: Chad Huber

Date/Time: May 4, 2001
Subject: Welborn Substation
Project: Bethany Home Outfall Channel
Project Number: FCD 98-46

Method of Delivery: U.S. Mail x Courier To Be Picked Up Hand Carry

We Are Sending You: x Attached ____ Under Separate Cover

____ Shop Drawings ____ Prints ____ Plans ____ Specifications ____ Submittal
____ Change Order ____ Reports ____ Letter ____ Review Comments ____ Other (CD)

Quantity	Doc Date	Doc No.	Description
1			Disk with drawing and ascii file of topo survey Copy of field notes

The above transmitted as follows:

____ For approval ____ Approved as submitted ____ Resubmit ___ copies for approval
____ For your use ____ Approved as noted ____ Submit ___ copies for distribution
x As requested ____ Returned for corrections ____ Return for ___ corrected prints
____ Other ____ For review and comment ____ Please sign and return one copy

Remarks:

c:

File Name and Path: F:\Az01031\Corr\050401cwht1.doc

Point	Northing	Easting	Elevation	Code
308	917827.5988	599618.3633	1072.0278	CPT
309	918203.1802	600347.2916	1076.0340	CPT
311	918624.2703	599194.0546	1071.7458	CPT
313	918309.8687	599558.3468	1071.8852	CPT
315	918230.5904	602274.0724	1083.8266	CPT
320	918297.1790	602764.7709	1086.0895	CPT
365	918239.1338	603346.6050	1087.1470	CPT
383	918220.8158	602848.2093	1089.0140	CPT
384	918312.5795	602274.1934	1083.8700	CPT
500	918235.9976	599534.9109	1071.6570	EC ST
501	918233.7023	599534.3147	1073.2072	TOP ST
502	918231.5070	599534.4969	1073.5488	EP ST
503	918219.6491	599534.2397	1073.1147	EP1 ST
504	918211.7526	599534.3058	1072.4454	TOP1 ST
505	918209.5664	599534.1837	1070.3616	TOE1 ST
506	918208.5737	599534.2099	1070.3107	TOE2 ST
507	918206.3447	599533.6464	1072.2747	TOP2 ST
508	918201.0601	599532.8979	1071.3255	NG
509	918200.8569	599560.7943	1071.7464	NG
510	918206.1143	599558.4269	1072.4835	TOP2
511	918208.7420	599557.8596	1070.2182	TOE2
512	918209.7407	599558.2785	1070.1371	TOE1
513	918212.0973	599557.2372	1072.6488	TOP1
514	918216.4754	599552.8151	1073.0004	GATE
515	918232.4819	599552.9102	1073.4108	GATE
516	918218.9028	599535.3032	1072.9730	OH ST
517	918235.7983	599584.8400	1071.9790	EC
518	918233.1961	599584.8813	1073.2572	TOP
519	918230.4433	599584.9561	1073.6503	EP
520	918218.5820	599584.5172	1073.4476	EP1
521	918216.1159	599588.0781	1072.7415	TOP1
522	918212.9843	599587.9366	1069.3313	TOE1
523	918211.4778	599587.9436	1069.2665	TOE2
524	918212.2740	599587.9163	1069.0336	INV
525	918208.1921	599588.1552	1072.5988	TOP2
526	918208.2221	599588.5434	1074.3880	HDWL ST
527	918200.9174	599587.7108	1072.0534	NG
528	918217.6471	599589.7831	1073.3532	ERD ST PC
529	918210.6826	599593.3586	1073.1411	ERD
530	918200.0350	599594.2308	1072.6111	ERD PT
531	918216.7058	599628.6856	1073.6506	ERD1 ST PC
532	918209.5061	599612.3741	1073.2313	ERD1
533	918195.8452	599605.7844	1072.8875	ERD1 PT
534	918237.7932	599593.9980	1067.7875	INV
535	918235.2896	599629.3843	1072.0176	EC
536	918233.1145	599629.5210	1073.3849	TOP
537	918230.2953	599629.7190	1074.0344	EP
538	918217.8778	599630.0646	1073.8219	EP1
539	918205.3505	599626.3387	1073.2037	ML ST
540	918205.1435	599626.7185	1075.6994	CONC

Point	Northing	Easting	Elevation	Code
541	918193.2282	599626.3000	1072.9955	ML
542	918193.1815	599632.2927	1073.5769	ML
543	918205.2295	599632.4151	1073.5738	ML CL
544	918196.8056	599615.7154	1074.3873	HDWL ST
545	918196.7976	599614.2916	1074.4214	HDWL
546	918200.6724	599614.2302	1074.3831	HDWL
547	918200.6932	599610.3125	1074.4401	HDWL
548	918196.8642	599610.0262	1074.4769	HDWL
549	918196.9027	599608.4033	1074.4343	HDWL
550	918196.4080	599608.7628	1073.0571	TOP1 ST
551	918198.5688	599613.7575	1069.4794	INV
552	918200.2370	599613.8874	1069.4039	TOE1 ST
553	918200.4006	599610.6486	1069.3907	TOE1
554	918197.7768	599610.4840	1069.5128	TOE1
555	918195.0911	599611.1469	1070.7159	TOE1
556	918191.1544	599611.5741	1070.8022	TOE1
557	918197.7920	599613.8496	1069.3808	TOE2 ST
558	918195.4982	599613.2847	1070.5912	TOE2
559	918191.1015	599612.9250	1070.8244	TOE2
560	918196.2539	599615.4644	1072.9715	TOP2 ST
561	918190.4618	599614.9909	1072.8442	TOP2
562	918199.6156	599621.0127	1073.2841	NG
563	918201.8424	599612.3115	1073.3960	NG
564	918191.1541	599609.3303	1072.9567	TOP1
565	918179.3291	599626.1802	1072.8938	TOP3 ST
566	918179.8128	599626.4012	1073.9803	HDWL ST
567	918181.3660	599626.4200	1072.7518	NG
568	918184.5151	599629.7379	1073.1400	NG
569	918179.8531	599627.7891	1073.9859	HDWL
570	918182.4520	599627.8802	1073.9422	HDWL
571	918182.6012	599632.6300	1073.9246	HDWL
572	918180.1541	599632.8944	1073.9324	HDWL
573	918180.1279	599634.4114	1073.9177	HDWL
574	918181.8140	599634.3585	1073.1818	NG
575	918179.7280	599634.5551	1072.8844	TOP4 ST
576	918182.1927	599632.1904	1068.1124	TOE4 ST
577	918179.1513	599632.2548	1068.8083	TOE4
578	918170.7973	599631.6495	1070.8039	TOE4
579	918171.0440	599633.6208	1072.7866	TOP4
580	918182.0389	599630.3729	1067.9693	INV
581	918182.0260	599628.1537	1068.2176	TOE3 ST
582	918179.5592	599628.5098	1068.5809	TOE3
583	918170.0037	599630.3213	1070.7854	TOE3
584	918169.9623	599628.2644	1072.6940	TOP3
585	918151.9505	599639.4189	1073.6091	WL ST
586	918151.8011	599638.9184	1073.5981	F ST
587	918137.7417	599639.3602	1073.7712	WL
588	918137.8786	599633.2257	1072.7061	TOP4
589	918138.1462	599631.1240	1070.7335	TOE4
590	918138.0305	599630.0416	1070.7475	TOE3
591	918137.5716	599627.9975	1072.8261	TOP3

Point	Northing	Easting	Elevation	Code
592	918146.2564	599631.8592	1071.4037	INV
593	918137.4556	599623.8196	1072.1717	NG
594	918137.5603	599615.3576	1072.1904	NG
595	918137.7030	599614.3184	1072.8828	TOP2
596	918137.9767	599612.2861	1070.7130	TOE2
597	918137.8791	599611.2817	1070.7164	TOE1
598	918137.8862	599609.1083	1072.6323	TOP1
599	918138.0493	599607.7074	1072.7217	NG
600	918138.2783	599606.0542	1072.1324	ERD1
601	918138.6241	599592.8958	1072.0901	ERD
602	918137.4952	599534.4086	1071.2575	NG
603	918087.4283	599534.3351	1071.1101	NG
604	918087.4748	599591.3658	1071.7798	ERD
605	918086.5931	599605.2551	1071.9051	ERD1
606	918086.0542	599607.6355	1072.6307	NG
607	918086.0741	599608.9741	1072.5523	TOP1
608	918085.9741	599611.0386	1070.5271	TOE1
609	918085.9702	599612.0648	1070.5243	TOE2
610	918085.0941	599614.1073	1072.5371	TOP2
611	918085.0987	599617.3016	1072.1295	NG
612	918083.4103	599623.5267	1072.2849	NG
613	918083.0757	599627.4371	1072.6662	TOP3
614	918083.1405	599629.6615	1070.6407	TOE3
615	918083.0362	599630.7022	1070.5919	TOE4
616	918082.6227	599632.7701	1072.6384	TOP4
617	918082.3319	599639.0599	1073.6522	NG WL
618	918033.1204	599638.7995	1073.3903	NG WL
619	918033.3898	599632.3504	1072.5851	TOP4
620	918033.5037	599630.3034	1070.6111	TOE4
621	918033.4775	599629.2024	1070.6111	TOE3
622	918033.7969	599627.1711	1072.7079	TOP3
623	918034.1487	599623.5768	1072.1588	NG
624	918033.9210	599614.7694	1072.0030	NG
625	918034.0661	599613.7375	1072.4546	TOP2
626	918034.1812	599611.7564	1070.3615	TOE2
627	918034.1750	599610.7114	1070.3940	TOE1
628	918034.1565	599608.7633	1072.4616	TOP1
629	918034.1857	599607.0085	1072.4653	NG
630	918034.0699	599605.0060	1071.8642	ERD1
631	918033.4507	599590.9954	1071.5835	ERD
632	918032.7829	599534.6020	1070.9112	NG
633	917978.4852	599534.1767	1070.9132	NG
634	917976.8673	599590.5974	1071.5374	ERD
635	917976.6875	599604.6820	1071.6532	ERD1
636	917976.1859	599607.1502	1072.4367	NG
637	917976.0934	599608.3626	1072.4370	TOP1
638	917976.2499	599610.4745	1070.4366	TOE1
639	917976.2201	599611.4921	1070.4324	TOE2
640	917976.2599	599613.4977	1072.5261	TOP2
641	917976.0485	599614.3244	1072.1786	NG
642	917975.9475	599623.3692	1072.3009	NG

Point	Northing	Easting	Elevation	Code
643	917975.3819	599627.0345	1072.6359	TOP3
644	917975.5373	599628.9746	1070.4925	TOE3
645	917975.6639	599630.0013	1070.4805	TOE4
646	917975.6869	599632.0546	1072.4512	TOP4
647	917975.5002	599638.4591	1073.0661	WL NG
648	917963.7091	599638.5385	1073.0250	WL NG
649	917963.6059	599651.2487	1073.0936	WL GATE
650	917942.5824	599651.1486	1073.1733	;ATE WL ST
651	917942.5433	599643.0779	1072.8929	WL NG
652	917928.3552	599642.9675	1072.8204	WL NG
653	917928.9264	599631.8661	1072.4675	TOP4
654	917929.0609	599629.8390	1070.4984	TOE4
655	917928.8771	599628.8032	1070.4984	TOE3
656	917928.7748	599626.8272	1072.5400	TOP3
657	917928.8675	599624.6999	1072.4064	NG
658	917928.6722	599614.5808	1071.9944	NG
659	917928.6532	599613.2435	1072.4333	TOP2
660	917928.8267	599611.2344	1070.3422	TOE2
661	917928.6579	599610.2711	1070.3420	TOE1
662	917928.5132	599608.2358	1072.3639	TOP1
663	917928.7229	599607.1525	1072.3674	NG
664	917928.8290	599604.8893	1071.6060	ERD1
665	917928.9661	599590.7975	1071.4728	ERD
666	917927.7804	599534.1725	1070.6923	NG
667	917876.6103	599533.9706	1070.6937	NG
668	917825.5790	599533.8779	1070.5720	NG
669	917876.8934	599590.1726	1071.3940	ERD
670	917876.4137	599604.2665	1071.5136	ERD1
671	917876.2329	599607.0385	1072.3062	NG
672	917876.1885	599607.7227	1072.3930	TOP1
673	917876.2587	599609.9968	1070.3375	TOE1
674	917876.1905	599610.9626	1070.3389	TOE2
675	917875.8699	599613.0031	1072.4445	TOP2
676	917875.8241	599613.8193	1072.0203	NG
677	917875.5058	599623.6207	1072.1988	NG
678	917876.0343	599626.1310	1072.4563	TOP3
679	917876.1084	599628.1588	1070.6077	TOE3
680	917876.2519	599629.3915	1070.6075	TOE4
681	917893.1906	599631.6564	1072.3953	TOP4
682	917886.3035	599631.8841	1072.8560	TOP4
683	917886.2518	599631.3008	1070.2613	INV
684	917881.3412	599631.5199	1072.3456	TOP4
685	917876.0749	599631.2185	1072.2970	TOP4
686	917826.1017	599631.2272	1072.0144	TOP4
687	917826.1011	599629.2928	1070.4666	TOE4
688	917826.1289	599628.0506	1070.4104	TOE3
689	917826.1816	599626.2271	1072.2987	TOP3
690	917826.0609	599623.8802	1072.1803	NG
691	917825.7687	599614.2836	1071.8849	NG
692	917825.7571	599612.7419	1072.2771	TOP2
693	917825.6208	599610.8087	1070.2604	TOE2

Point	Northing	Easting	Elevation	Code
694	917825.6996	599609.7720	1070.2611	TOE1
695	917825.8076	599607.6944	1072.2344	TOP1
696	917825.8447	599606.4864	1072.1047	NG
697	917825.9934	599604.3214	1071.4331	ERD1
698	917825.4961	599592.1024	1071.3303	ERD
699	918201.9096	599639.2782	1073.6775	F NG
700	918234.5395	599675.0996	1072.2286	EC
701	918230.1674	599675.0158	1074.2045	EP
702	918231.7161	599674.8406	1073.9250	TOP
703	918217.9217	599674.7663	1074.0151	EP1
704	918210.4621	599674.5831	1073.6810	NG
705	918201.7783	599673.9348	1073.8828	F NG
706	918238.0340	599648.0497	1069.3378	MPT
707	918234.9197	599723.3779	1071.9267	EC
708	918231.1783	599723.5271	1074.3351	TOP
709	918230.5364	599723.5626	1074.4641	EP
710	918218.3456	599724.1296	1074.5305	EP1
711	918201.7290	599696.7735	1073.6747	F GATE
712	918201.7557	599716.0340	1074.1096	GATE F ST
713	918201.6530	599719.4364	1074.2888	F NG
714	918190.5518	599719.2013	1073.9459	F WL1 ST
715	918201.2996	599726.6755	1074.2084	NG
716	918234.6313	599770.8835	1072.4980	EC
717	918231.4550	599770.4822	1074.4729	TOP
718	918229.9704	599770.5980	1074.8830	EP
719	918217.5004	599770.0667	1074.6931	EP1
720	918216.9418	599769.8597	1075.4507	MPT
721	918217.0216	599763.1861	1074.6136	OH OH1 ST
722	918190.3976	599758.7111	1074.3757	OH1
723	918190.3721	599771.3048	1074.3799	WL1 NG
724	918190.2915	599781.5736	1074.5110	OH1 ST
725	918214.4522	599770.4169	1074.5119	UP OH
726	918214.4432	599778.1753	1074.4450	OH OH1
727	918234.3852	599819.4912	1072.4741	EC
728	918231.1116	599819.5656	1074.3312	TOP
729	918229.4329	599819.7274	1074.8867	EP
730	918216.6420	599819.5376	1074.8353	EP1
731	918201.9429	599819.5769	1074.6596	NG
732	918190.2205	599814.8884	1074.3684	WL1 NG
733	918189.9194	599869.3475	1074.2044	WL1 NG
734	918216.1579	599845.6555	1074.9077	EP1 PC
735	918204.0717	599866.6386	1074.6895	EP1
736	918189.4040	599871.6471	1074.3328	EP1 PT
737	918177.9347	599869.4080	1074.1983	WL1 GATE
738	918178.3427	599872.2193	1074.2058	EP1
739	918178.1843	599889.1814	1074.2847	EP1 ST
740	918177.7881	599890.3456	1074.1623	ATE WL1 ST
741	918181.9800	599890.4694	1074.3209	WL1
742	918185.2870	599889.2029	1074.4504	EP1 PC
743	918205.7208	599905.6014	1074.8671	EP1
744	918217.2395	599933.8325	1075.3570	EP1 PT

Point	Northing	Easting	Elevation	Code
745	918181.8551	599904.6201	1074.2531	WL1
746	918229.1650	599868.5320	1075.3523	EP
747	918231.3075	599868.3387	1074.6784	TOP
748	918234.2793	599868.5266	1072.7874	EC
749	918234.4988	599904.9627	1072.6279	EC
750	918230.8809	599904.4611	1074.9347	TOP
751	918228.7886	599904.6242	1075.3828	EP
752	918229.3809	599953.4298	1075.3385	EP
753	918230.9891	599953.4323	1074.8594	TOP
754	918234.1435	599953.5967	1072.7063	EC
755	918217.3948	599953.2939	1075.2969	EP1
756	918218.1140	600011.4634	1074.9682	EP1
757	918229.8238	600011.5493	1075.0022	EP
758	918230.7691	600011.5576	1074.7180	TOP
759	918233.4401	600011.5590	1072.8949	EC
760	918216.9497	600000.8336	1075.0351	UP OH
761	918216.5884	600014.6737	1074.6281	OH
762	918156.2178	599639.0004	1073.4920	ML ST
763	918161.7868	599639.0318	1073.6017	ML
764	918165.1758	599639.0843	1073.6348	ML ST
765	918168.7183	599639.1010	1073.6195	ML
766	918173.9893	599639.1270	1073.7283	MPT
767	918182.9698	599639.1828	1073.6245	ML ST
768	918195.5170	599639.2718	1073.8194	ML
769	918201.8630	599648.2967	1073.6525	ML ST
770	918201.7767	599658.5514	1073.7078	ML
771	918201.7161	599713.0397	1073.7699	MPT
772	917821.4234	599649.4865	1071.4405	ERD ST
773	917845.5072	599651.1617	1071.4610	ERD PC
774	917858.6902	599659.9239	1071.5851	ERD
775	917864.7615	599679.0157	1071.7627	ERD PT
776	917876.7147	599658.9841	1071.9318	ERD1 ST
777	917877.8336	599678.4384	1071.6705	ERD1
778	917888.6049	599658.4697	1074.4168	HDWL ST
779	917885.2057	599659.0916	1069.9941	INV
780	917883.3930	599658.6612	1070.2214	TOE ST
781	917886.6494	599658.9745	1070.1904	TOE1 ST
782	917886.0702	599662.0231	1071.3015	TOE1
783	917884.9587	599662.2348	1071.3430	TOE
784	917881.5772	599658.7645	1073.4132	TOP ST
785	917882.3361	599662.2107	1073.2708	TOP
786	917882.0124	599658.5377	1074.4078	HDWL
787	917885.4106	599656.8929	1073.5873	NG
788	917880.6047	599659.8521	1073.5322	GB ST
789	917888.8495	599658.7701	1073.3470	TOP1 ST
790	917888.4983	599662.4474	1073.3182	TOP1
791	917891.9998	599661.1767	1072.9003	ERD2 ST
792	917891.7494	599634.3884	1072.6674	ERD3 ST PC
793	917905.8851	599649.5535	1072.7118	ERD3
794	917909.3443	599668.0630	1072.6866	ERD3 PT
795	917920.0157	599641.3443	1072.8426	31 ST GB4 ST

Point	Northing	Easting	Elevation	Code
796	917919.7768	599648.2276	1071.2078	32 ST GB3 ST
797	917917.8903	599650.3931	1071.1446	GB2
798	917921.6113	599650.0378	1071.1819	GB3
799	917925.6365	599644.6210	1072.6923	GB4
800	917914.0153	599644.1469	1072.7038	GB1
801	917925.2007	599705.0603	1072.3706	GB4
802	917921.2352	599705.3135	1071.0868	GB3
803	917917.5170	599708.2123	1071.0030	GB2
804	917912.8667	599708.4987	1072.5861	GB1
805	917908.4380	599708.6030	1072.8749	ERD3
806	917920.5945	599710.2213	1070.9980	GB3 ST
807	917925.9901	599710.1964	1072.4511	GB4 ST
808	917891.5356	599707.0968	1072.9684	ERD2
809	917889.7095	599707.1349	1073.4489	NG
810	917888.3142	599707.1915	1073.5420	TOP1
811	917885.8544	599707.2136	1071.5358	TOE1
812	917884.8622	599707.3414	1071.4895	TOE
813	917882.2452	599707.5484	1073.4449	TOP
814	917880.7345	599707.4134	1073.3730	GB
815	917878.0365	599706.9082	1071.7553	ERD1
816	917865.7568	599706.5078	1071.9306	ERD
817	917820.1243	599704.9499	1071.7795	NG
818	917815.8649	599771.4359	1071.9597	NG
819	917865.6270	599772.7841	1071.8211	ERD
820	917877.8491	599773.0421	1071.8786	ERD1
821	917880.4068	599773.3764	1073.5233	GB
822	917882.0891	599773.0695	1073.4362	TOP
823	917884.6037	599772.7219	1071.5293	TOE
824	917885.7246	599773.3707	1071.5303	TOE1
825	917888.1118	599773.4924	1073.4562	TOP1
826	917889.7621	599773.4196	1073.4163	NG
827	917890.7251	599773.4094	1073.0251	ERD2
828	917907.7094	599773.7513	1073.0735	ERD3
829	917912.5767	599773.2674	1072.8729	GB1
830	917916.6189	599773.0622	1071.1483	GB2
831	917920.6597	599770.6530	1071.1761	GB3
832	917920.3867	599775.5051	1071.1513	GB3 ST
833	917925.1431	599770.6198	1072.4345	GB4
834	917924.8926	599775.5518	1072.4443	GB4 ST
835	917928.1536	599710.5241	1072.5539	WL NG
836	917927.9266	599775.5612	1072.6917	WL NG
837	917924.7116	599835.2996	1072.3734	GB4
838	917924.6225	599840.3525	1072.1968	GB4 ST
839	917920.9741	599835.2956	1071.2690	GB3
840	917921.1424	599840.3479	1071.3132	GB3 ST
841	917916.2993	599837.4933	1071.2119	GB2
842	917912.2828	599837.9302	1072.6246	GB1
843	917907.5373	599837.7065	1073.0237	ERD3
844	917891.2757	599837.6301	1073.0072	ERD2
845	917889.8095	599837.6412	1073.4502	NG
846	917887.9902	599837.5985	1073.4618	TOP1

Point	Northing	Easting	Elevation	Code
847	917885.5734	599837.8899	1071.5611	TOE1
848	917884.2957	599838.0489	1071.5617	TOE
849	917881.8724	599838.1824	1073.4205	TOP
850	917879.9759	599837.8822	1073.2286	GB
851	917877.9238	599838.2190	1072.0317	ERD1
852	917864.1018	599840.0510	1072.1002	ERD
853	917815.9171	599840.9429	1072.1027	NG
854	917818.0133	599897.4517	1072.2171	NG
855	917863.7495	599900.1791	1072.3414	ERD
856	917879.8817	599913.1903	1073.3931	GB
857	917881.4566	599913.2327	1073.4684	TOP PC
858	917883.9739	599914.1611	1071.5088	TOE PC
859	917885.1304	599914.5182	1071.5937	TOE1 PC
860	917887.4424	599915.7019	1073.3766	TOP1 PC
861	917891.0778	599914.2535	1074.0462	NG
862	917893.6601	599901.6385	1073.3146	ERD2 PC
918	918216.9418	599769.8597	1075.4507	MPT
919	917824.3068	599953.9471	1072.1410	NG
920	917866.9820	599944.5256	1072.3674	ERD
921	917884.6264	599949.5258	1072.6303	ERD PT
922	917879.2502	599931.7471	1072.1770	ERD1
923	917882.0769	599930.8199	1072.3021	NG
924	917880.6528	599924.0719	1073.7230	GB
925	917885.6590	599931.9166	1073.5115	GB
926	917892.2949	599936.0707	1073.3453	GB
927	917900.2861	599937.2104	1073.2689	GB
928	917895.3191	599939.6191	1072.4182	ERD1 PT
929	917885.7212	599930.0055	1073.6841	TOP
930	917887.9744	599928.1592	1071.5605	TOE
931	917888.9380	599926.9131	1071.5567	TOE1
932	917890.3404	599925.6388	1073.2300	TOP1
933	917890.2191	599880.3110	1073.5896	GB1 ST
934	917891.9815	599880.4440	1073.0426	NG
935	917894.9414	599913.5402	1073.4933	NG
936	917889.8450	599914.8207	1074.1124	GB1
937	917891.8722	599922.4452	1074.3771	GB1
938	917893.7395	599920.5357	1073.9129	NG
939	917899.7106	599924.2904	1073.6747	NG
940	917896.1935	599926.5697	1074.3680	GB1
941	917901.6850	599928.2490	1074.1471	GB1
942	917898.4525	599930.1882	1073.4044	TOP1 PT
943	917898.5344	599932.2974	1071.6195	TOE1 PT
944	917898.2121	599933.7275	1071.6307	TOE PT
945	917898.1202	599936.2746	1073.6093	TOP PT
946	917897.6069	599937.9723	1073.0254	GB
947	917897.5172	599939.8212	1072.3874	NG
948	917902.2478	599919.6290	1073.5414	ERD2
949	917917.1709	599901.3496	1072.6836	ERD3
950	917935.3144	599908.7732	1073.1429	ERD3 PT
951	917921.4962	599923.3416	1073.7081	ERD2 PT
952	917920.9852	599925.4934	1073.7329	NG

Point	Northing	Easting	Elevation	Code
953	917920.8432	599928.6008	1074.0833	GB1
954	917920.8279	599930.0330	1073.4412	TOP1
955	917921.1236	599932.3105	1071.5941	TOE1
956	917920.9709	599933.8342	1071.6633	TOE
957	917920.8883	599936.1366	1073.3803	TOP
958	917920.3994	599937.9515	1073.4814	GB
959	917920.5652	599940.7003	1072.7456	ERD1
960	917920.6639	599949.6674	1072.5690	ERD
961	917974.3065	599949.1435	1072.4520	ERD
962	917973.9609	599941.0830	1072.6998	ERD1
963	917973.4922	599938.2904	1073.4935	GB
964	917973.0966	599936.6819	1073.3768	TOP
965	917973.3245	599934.0779	1071.6738	TOE
966	917973.1980	599932.6731	1071.5142	TOE1
967	917972.9550	599930.2353	1073.4779	TOP1
968	917972.9893	599928.4659	1074.1153	GB1
969	917972.6862	599926.1361	1073.6073	ERD2
970	917972.0016	599909.3842	1073.5066	ERD3
971	917971.0514	599903.3704	1073.2703	WL NG
972	918020.9550	599903.6187	1073.6890	WL NG
973	918020.9941	599907.9021	1073.8188	ERD3
974	918021.2250	599926.0624	1073.9814	ERD2
975	918020.8640	599927.8992	1074.4725	GB1
976	918021.1764	599930.4597	1073.4679	TOP1
977	918021.4786	599932.8787	1071.6197	TOE1
978	918021.4755	599934.2936	1071.7030	TOE
979	918021.3195	599936.7231	1073.4732	TOP
980	918021.1079	599937.8332	1073.6637	GB
981	918021.3610	599939.2445	1073.0221	ERD1
982	918021.3023	599949.5883	1072.6051	ERD
983	918072.3513	599950.4379	1072.5599	ERD
984	918071.8525	599940.4446	1072.7932	ERD1
985	918071.4196	599938.3099	1073.7088	GB
986	918071.3730	599936.8432	1073.4746	TOP
987	918071.6592	599934.6440	1071.7397	TOE
988	918071.1725	599932.9157	1071.7757	TOE1
989	918071.2128	599930.7462	1073.5022	TOP1
990	918070.6740	599928.4883	1074.7589	GB1
991	918070.6474	599925.9767	1074.0953	ERD2
992	918070.5876	599907.7860	1074.0938	ERD3
993	918070.4995	599903.8186	1074.0824	WL NG
994	918097.1654	599903.9770	1074.2729	WL EC ST
995	918096.6096	599904.3214	1074.0087	NG
996	918097.0153	599905.7820	1074.2320	EC
997	918101.6684	599905.8104	1074.2369	EC
998	918099.4743	599906.7070	1074.0236	NG
999	918102.2781	599904.4924	1073.9785	NG
1000	918101.6149	599904.0230	1074.2577	EC WL ST
1001	918099.4359	599903.6225	1073.7656	MPT
1002	918099.3702	599903.8262	1074.3098	EC CL
1003	918118.9196	599904.0897	1074.0594	WL NG

Point	Northing	Easting	Elevation	Code
1004	918118.2028	599908.7829	1074.0836	ERD3
1005	918118.2965	599925.2080	1074.2694	ERD2
1006	918118.2036	599928.0907	1074.9938	GB1
1007	918118.4232	599931.1843	1073.4692	TOP1
1008	918118.8421	599933.2616	1071.8279	TOE1
1009	918118.3936	599935.0467	1071.7536	TOE
1010	918118.3872	599937.3126	1073.5008	TOP
1011	918118.1113	599938.2686	1073.6504	GB
1012	918118.1599	599940.5501	1072.5585	ERD1
1013	918117.6242	599951.5155	1072.2491	ERD
1014	918142.2203	599952.3384	1072.0906	ERD PC
1015	918149.4320	599942.1470	1072.2650	ERD1 PC
1016	918174.8317	599954.3248	1072.2147	ERD1
1017	918158.5427	599957.4815	1072.1783	ERD
1018	918170.2499	599974.9327	1072.5299	ERD PT
1019	918185.2473	599974.1431	1072.8401	ERD1 PT
1020	918185.8130	600010.2825	1072.7327	ERD1
1021	918170.9811	600009.5294	1072.9322	ERD
1022	918141.1161	600010.7864	1072.5619	NG
1023	918112.8865	600010.4817	1072.4606	NG
1024	918067.3976	600009.6596	1072.4157	NG
1025	918018.3521	600008.9065	1072.2754	NG
1026	917969.8031	600008.4130	1072.2358	NG
1027	917917.5496	600008.0146	1072.2478	NG
1028	917867.2266	600007.2911	1072.1638	NG
1029	917826.1697	600006.9787	1072.1919	NG
1030	918156.0746	599941.4813	1072.5677	GB2 ST
1031	918156.6298	599938.8669	1073.7126	GB
1032	918178.5404	599940.4902	1073.7148	GB PC
1033	918183.3969	599941.1425	1074.1997	GB
1034	918186.2851	599947.6206	1074.2684	GB PT
1035	918186.9124	599954.4249	1074.8365	GB
1036	918187.3719	599963.1789	1074.2909	GB
1037	918186.4709	599940.1818	1073.9841	NG
1038	918179.3656	599951.2831	1072.3865	NG
1039	918172.0172	599943.4987	1072.4192	GB2
1040	918183.1464	599945.6181	1072.6743	GB2
1041	918183.6058	599952.7927	1072.4285	GB2
1042	918184.4226	599963.1966	1072.4370	GB2
1043	918174.5455	599937.6281	1073.5598	TOP
1044	918174.7766	599935.3649	1071.8073	TOE
1045	918174.8265	599933.7808	1071.7922	TOE1
1046	918174.5517	599931.4868	1073.5637	TOP1
1047	918174.4227	599928.4286	1074.9788	GB1
1048	918174.3668	599926.1496	1074.3291	ERD2
1049	918173.7420	599909.9187	1074.0819	ERD3
1050	918186.2510	599906.7315	1074.2360	ERD3
1051	918196.6251	599897.2502	1074.4181	ERD3
1052	918177.7930	599904.4989	1074.1528	WL WL1
1053	918185.4276	599924.1737	1074.4645	ERD2 PC
1054	918186.8769	599927.8406	1074.8997	GB1

Point	Northing	Easting	Elevation	Code
1055	918196.0139	599929.5560	1074.7036	GB1 ERD2
1056	918197.5014	599940.1982	1075.0202	GB1
1057	918198.8428	599940.1176	1074.7416	ERD2 PT
1058	918188.7522	599931.3007	1073.5451	TOP1 PC
1059	918188.7407	599933.9782	1071.5153	TOE1 PC
1060	918188.7513	599934.7411	1071.5381	TOE PC
1061	918190.0637	599937.5178	1073.5107	TOP
1062	918191.1114	599934.9285	1071.6212	TOE
1063	918192.0414	599933.9493	1071.5824	TOE1
1064	918191.8464	599937.8474	1072.1330	TOE PT
1065	918193.1550	599937.9099	1072.0764	TOE1 PT
1066	918194.7072	599932.0387	1073.9316	TOP1
1067	918195.3032	599937.5844	1074.0524	TOP1 PT
1068	918189.3314	599942.6200	1073.9906	TOP
1069	918189.5371	599980.9061	1074.0897	TOP
1070	918191.7515	599980.9172	1072.4108	TOE
1071	918193.2032	599980.7585	1072.3420	TOE1
1072	918195.4548	599980.7025	1074.2655	TOP1
1073	918197.3996	599980.2383	1074.7473	GB1
1074	918198.5702	599980.1956	1074.5549	ERD2
1075	918215.0315	599980.9755	1074.7302	NG
1076	918215.2932	600012.2437	1074.5991	NG
1077	918199.2074	600012.3075	1074.7823	ERD2
1078	918197.2843	600012.4092	1074.9239	GB1
1079	918194.9596	600012.3952	1074.1652	TOP1
1080	918193.0568	600012.1777	1072.3364	TOE1
1081	918191.5678	600011.8718	1072.3289	TOE
1082	918189.5092	600011.8262	1074.0888	TOP
1083	918188.3074	600011.8042	1074.0998	GB
1084	918186.1370	600011.6637	1072.7409	ERD1
1085	918170.1300	600011.2957	1072.9406	ERD
863	917909.0953	599898.0284	1072.8091	ERD3 PC
864	917912.1037	599888.4570	1072.6417	GB1
865	917920.0463	599897.9786	1072.6579	GB1
866	917924.2670	599896.4494	1072.4680	GB1 GB4
867	917915.6292	599885.4745	1071.6018	GB2
868	917922.1948	599890.3352	1071.6331	GB2 GB3
869	917927.6485	599903.3053	1072.8141	WL
870	917927.6862	599839.9193	1072.8848	ML ST
871	917927.6877	599839.7997	1072.4793	CONC
872	917927.6942	599835.9544	1072.4961	CONC
873	917924.4780	599835.9109	1072.3505	CONC
874	917924.4970	599839.7318	1072.3505	CONC
875	917921.0443	599839.6534	1071.3124	CONC
876	917921.1410	599835.8663	1071.3147	CONC
877	917924.5799	599839.9623	1072.8196	ML
878	917921.1723	599839.8755	1071.7730	ML
879	917920.2258	599839.8632	1071.7331	ML
880	917920.1890	599839.6667	1071.2823	EC ST
881	917920.2336	599835.7661	1071.2684	EC
882	917920.2436	599835.5851	1071.7076	ML ST

Point	Northing	Easting	Elevation	Code
883	917921.0801	599835.5999	1071.7114	ML
884	917924.4387	599835.6695	1072.7899	ML
885	917927.7258	599835.7067	1072.9426	ML
886	917927.9085	599775.3952	1072.9407	ML ST
887	917927.9134	599775.0644	1072.5365	CONC
888	917927.9185	599771.2430	1072.5028	CONC
889	917924.8252	599771.1622	1072.3285	CONC
890	917924.7190	599775.0795	1072.3303	CONC
891	917921.1777	599775.0091	1071.2266	CONC
892	917921.3322	599771.2301	1071.2257	CONC
893	917920.4531	599771.1527	1071.2166	EC ST
894	917920.4930	599775.0719	1071.1948	EC
895	917924.6867	599775.3245	1072.7867	ML
896	917921.2498	599775.2491	1071.6690	ML
897	917920.4495	599775.2395	1071.6112	ML
898	917920.4612	599770.9594	1071.6376	ML ST
899	917921.3718	599770.9724	1071.6966	ML
900	917924.7389	599770.9710	1072.7582	ML
901	917927.9367	599771.0156	1072.9516	ML
902	917928.1211	599709.9961	1072.9152	ML ST
903	917928.1428	599709.7396	1072.4791	CONC
904	917928.1301	599705.8048	1072.5152	CONC
905	917925.1966	599705.8804	1072.3760	CONC
906	917925.0390	599709.6309	1072.3539	CONC
907	917921.4326	599709.7089	1071.1836	CONC
908	917921.5841	599705.9163	1071.2039	CONC
909	917920.6549	599705.8920	1071.2103	EC ST
910	917920.6713	599709.7523	1071.1898	EC
911	917924.9097	599709.8798	1072.7963	ML
912	917921.6037	599709.8958	1071.6338	ML
913	917920.6714	599709.8934	1071.6238	ML
914	917920.6404	599705.6882	1071.6403	ML ST
915	917921.6044	599705.7021	1071.6535	ML
916	917924.9244	599705.6584	1072.7833	ML
917	917928.1249	599705.6745	1072.9340	ML
1086	918242.5458	602782.3887	1088.3053	EC5
1087	918244.6035	602782.9254	1089.3450	TOP5
1088	918257.1344	602787.8509	1089.3561	GB5
1089	918261.5113	602789.2046	1087.0534	GB6
1090	918212.2296	602888.6406	1086.2936	GB6
1091	918206.7389	602882.1476	1088.0865	GB5
1092	918195.4189	602870.5692	1088.5891	TOP5
1093	918194.2420	602869.5759	1087.8429	EC5
1094	918135.5592	602931.9133	1089.5315	MPT
1095	918137.1874	602933.4751	1087.5857	TOP5
1096	918128.6155	602942.9278	1087.4639	TOP5
1097	918128.2032	602942.5254	1087.3081	EC5
1098	918137.6302	602952.8083	1087.5633	GB5
1099	918141.4022	602957.3921	1086.0186	GB6
1100	918061.2919	603008.3836	1087.6715	EC5

Point	Northing	Easting	Elevation	Code
1101	918061.9608	603009.1194	1087.8651	TOP5
1102	918070.5401	603019.4262	1087.8083	GB5
1103	918074.4378	603023.9403	1085.3882	GB6
1104	917988.4302	603074.5402	1087.7064	EC5
1105	917989.4111	603075.6424	1088.2660	TOP5
1106	917997.9054	603085.9278	1087.9349	GB5
1107	918002.4967	603093.0507	1085.2935	GB6
1108	917983.9683	603070.5497	1082.3934	TOE5
1109	918057.0982	603004.2163	1081.8855	TOE5
1110	918124.8050	602938.5006	1082.2755	TOE5
1111	918189.9526	602866.0545	1082.2791	TOE5
1112	918235.4275	602779.7137	1081.1616	TOE5
1113	918211.5337	602772.7081	1081.8734	TOE5
1114	918167.7080	602848.2038	1082.2822	TOE5
1115	918103.1773	602918.3990	1081.8846	TOE5
1116	918035.8893	602982.1676	1082.0174	TOE5
1117	917964.3304	603048.7511	1081.7225	TOE5
1118	917961.0777	603043.4875	1087.8528	EC5
1119	917960.4557	603043.0045	1088.0173	TOP5
1120	917948.3288	603026.1175	1087.0710	GB5
1121	917938.0032	603015.9710	1085.7138	NG
1122	918032.0399	602977.7206	1087.6688	EC5
1123	918031.0940	602976.8775	1088.2920	TOP5
1124	918019.3623	602963.7757	1087.8679	GB5
1125	918007.2923	602950.2501	1085.9002	NG
1126	918073.3326	602885.8142	1085.3055	NG
1127	918084.2020	602898.9904	1087.5673	GB5
1128	918098.8321	602913.7327	1088.2437	TOP5
1129	918099.3900	602914.3850	1087.7666	EC5
1130	918122.0527	602889.3961	1088.2418	TOP5
1131	918123.0725	602890.1609	1087.7530	MPT
1132	918162.9958	602845.2459	1087.5905	EC5
1133	918162.0421	602844.7420	1088.0493	TOP5
1134	918148.7031	602833.7494	1087.4901	GB5
1135	918140.0289	602827.2694	1085.9540	NG
1136	918132.6649	602820.3025	1085.2642	NG
1137	918207.0168	602771.2709	1087.7806	EC5
1138	918205.9875	602770.7653	1088.3429	TOP5
1139	918191.5800	602764.7259	1087.7911	GB5
1140	918184.7349	602762.1563	1085.0177	GB4

04/25/01

AZ01031-02

BETHANY HOME OUTFALL CHANNEL

TOPO
&
CROSS SECTIONS

NE1/4 SECTION 15
T2N R1E

LEICA "TC 307" TOTAL STATION
GPS 530 - LEICA (AZTEC "NEW")

SARAH HELWIG
CHRIS COLE

CONTROL SKETCH PG. 12
FB# 252

BETHANY HOME OUTFALL CHANNEL AZ01031-02

TOPO

CTL FILE: 013102CT
DC FILE: 013102T1

TP313 HI 5.13
BSC311 H: -0.009 V: +0.046 HT 5.06
CKP 309 H: COME 0.127 V: FIL 0.024 HT 5.07
L: +15 sec

DC #500 → 771

500	EC ST	S EDGE OF GRAND
504	TOP1ST	CONC. LINE IRRIGATION
524	INV	INV TO 1.5' DIA RCP
526	HDWLST	CTR. LINE TO 8" CONC.
534	INV	2' DIA RCP
539	WL ST	OUTLINE OF SRP IRR.
544	HDWLST	CTR. LINE TO 8" CONC
550	TOP1ST	CONC. LINE IRR. DITCH
551	INV	15" RCP HEADING
565	TOP3ST	CONC LINE IRR. DITCH
566	HDWLST	CTR LINE TO 8" CONC.
580	INV	2.5' DIA RCP - N
585	WL ST	10.5' CONC. BLOCK WL
586	F. ST	FENCE ST. 2.5' CONC.

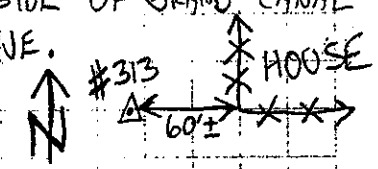
SAH Ø
CJCT

04/25/01 2/252
CLEAR, 70°-90°F

#309 FND-1/2" REBAR ON S. SIDE OF GRAND CANAL, 0.3 MI. W. OF 83RD AVE. BETWEEN POWER POLE #3 & #4. 12' S. OF POWERLINE, SLIGHTLY DISTURBED
SEE SKETCH P6.12

#311 FND-CITY OF GLENDALE BC/FL @ ROVEY & 87TH AVE. SEE SKETCH P6.12

#313 FND-1/2" REBAR ON N. SIDE OF GRAND CANAL 0.5 MI. W. OF 83RD AVE.
SEE SKETCH P6.12.



CANAL	
DITCH	
HDWL	
STRUCTURE	
HDWL	
EAST	
HDWL	
W/ STRIP OF RAZORS ON TOP	
WALL BOTTOM W/ 6' METAL BLACK FENCE	
W/ STRIP OF RAZOR BLADES ON TOP/OUTSIDE FACE	

SHOT ON

* CONTROL SUPPLIED BY "COLLINS/PIÑA"

BETHANY HOME OUTFALL CHANNEL AZ01031-02 SAH Ø 3/252

CONT. TOPO CJCT 04/25/01

013102T1. CONT.

592	INV	1' DIA RCP - E	
683	INV	2' DIA RCP - E	
	MPT	SHOT ON TOP 1.5 DIA	RCP - COMES FROM SOUTH. HEAVY WATER FLOW
714	TWIST	W.1 SAME AS WL	
720	MPT	SCRIBED CROSS FOR	USE A CHECK SHOT ((ON POWER POLE BASE))
725	UPOH	LGE. METAL UP ON	5' DIA CONC. BASE W/3.5'(E-W)×2'(N-S)
			METAL BOX ON EAST SIDE. BOX 8' HIGH
767	ML ST		
768	ML		
769	ML ST	FOR LOCATION	PURPOSES. ELEV'S NO GOOD
770	ML		SEE SKETCH P.6. 4.
771	MPT		

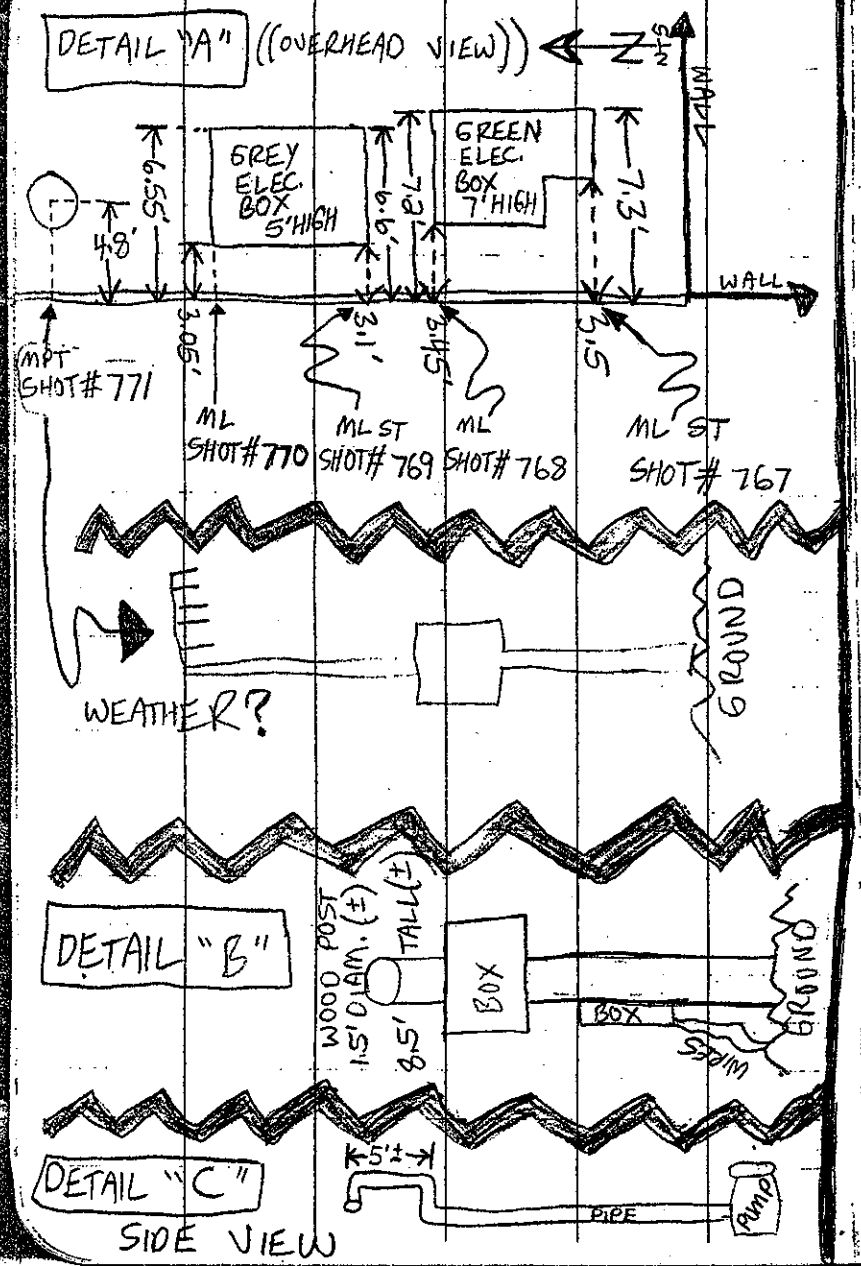
BETHANY HOME OUTFALL CHANNEL-AZ01031-02

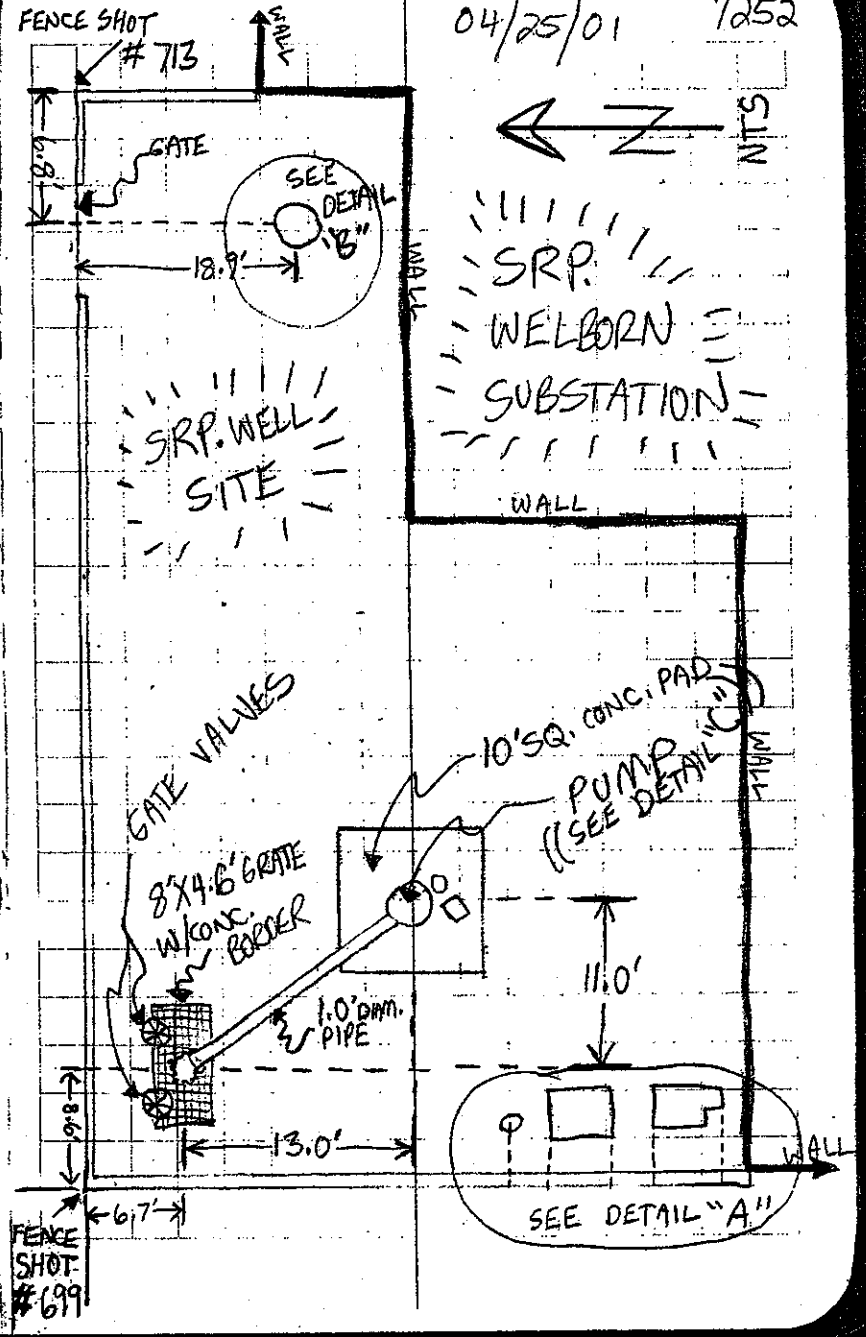
SKETCH OF SRP. WELL SITE

SAH

04/25/01

4/252





BETHANY HOME OUTFALL CHANNEL AZ01031-02

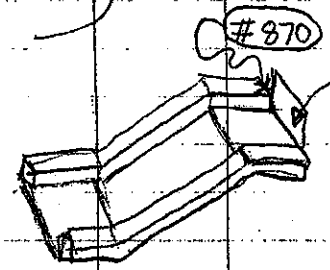
CONT. TOPO

013102T1. CONT

T@308		HI	5.13
BS@311	H:-0.016 V:-0.008	HT	5.06
CK@313	H: 0.008 V: 0.008	HT	4.81
	L: +2 SEC.		

DC# 772 → 917

778	HDWLST	8" CONC. WALL
870	MLST	℄ OF 0.3' WIDE CONC.
886	MLST	
902	MLST	



8" HIGH OPENING IN WALL. COVERED WITH A GRATE.

CONCRETE DRAINAGE STRUCTURE

SAH Ø
CJC T

04/25/01

FND - 1/2" REBAR, SEE BELOW
FND - CITY OF GLENDALE BC/FL, SEE PG. 2
FND - 1/2" REBAR, SEE PG. #2

#308 FND - 1/2" REBAR @ ℄ OF DIRT STRIP BETWEEN 2 CONC. LINED IRRIGATION DITCHES. 103'±S. & 22'± W. OF SW. COR. OF "WELBORN SUBSTATION WHICH IS ON S. SIDE OF GRAND CANAL, 0.5 MI. W. OF 83RD AVE. SEE SKETCH PAGE 12.

RAILS ON DRAINAGE STRUCTURES ON S. SIDE OF WELBORN SUBSTATION

BETHANY HOME OUTFALL CHANNEL AZ01031-02

CONT. TOPO

CTL FILE: 013102CT

DC FILE: 013102T2

SAH Ø
JC T

04/27/01 6/252

OVERCAST, 70°-90°F
CLEARING → SUNNY

T@309		HI 5.13	FND - 1/2" REBAR, SEE PG. 2
BSR313	H: +0.128 V: +0.019	HT 4.66	FND - 1/2" REBAR, SEE PG. 2
CKR720 (918)	H: +0.188 V: +0.011 L: +20SEC	HT 4.88	FND - SCRIBED CROSS, SEE PG. 3

DC # 918 → 1085

918	MPT	# 720 (SEE PG. 2)	N 918216.9418 E 599769.8597 EL 1075.4507
1001	MPT	5' WIDE x 7' HIGH DOOR	WALL CONTINUES OVER DOOR

BETHANY HOME OUTFALL CHANNEL AZ01031-02

SET ADDITIONAL CONTROL

* CTL FILE: 013102CT. *

T@383 (HI = 5.23)

BS@ ~~320~~ 365 (HT = 4.95)

		ZX	HD
D	00-00-00	90-14-58	498.71
R	180-00-09	269-45-06	.71
		90-14-56	.71

FS@ ~~315~~ 5319 (384) (HT = 4.88)

D	191-11-07	903221	581.34
R	11-11-12	2692735	.34
M	191-11-05	90-32-23	.34

BS@ ~~320~~ 365

D	00-00-00
R	179-59-58

FS@ ~~315~~ 5319 (384)

D	191-11-08	903224
R	11-11-03	2692737
M	191-11-06.5	90-32-24

191-11-06

GAH

SCT

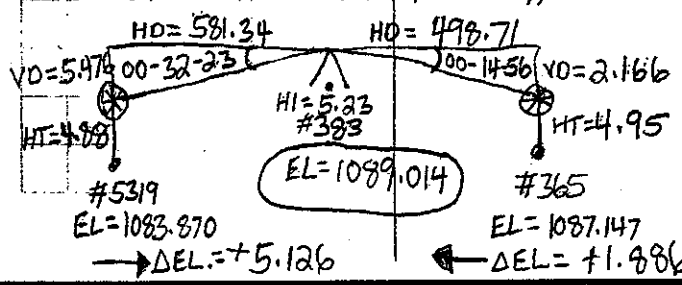
04/27/01 7/252

SET - 1/2" REBAR, SEE PG. 10

FND - CITY OF GLENDALE BC/FL
SEE PG. 9

FND - CITY OF GLENDALE BC/FL
SEE PG. 9 SHOT "SM1"

ON 04/27/01 THERE WAS CONFUSION ABOUT WHAT POINTS WERE BEING USED SO CONTROL WOULD NOT WORK. USED GPS ON 04/28/01. VALUES ON CONTROL WEST OF 83RD AVE. CHECKED FINE, NOT SO TO THE EAST. USED MEASURED VALUES ON THOSE POINTS ((#315, 320, 365 & 5319 SEE PG. 12)) USED ZENITH ∡'S TO PUT AN ELEV. ON THE SET POINT # 383.



BETHANY HOME OUTFALL CHANNEL AZ01031-02 SAH CJC

GPS CONTROL
RTK SURVEY
AZTEC "NEW" UNIT
JOB: AZ01031-02 BASE
AZ01031-02 ROV
COORD. SYS: AZCENTRAL

04/28/01 8/252
CLEAR, 70°-90°F

GAF = 1.00016

BASE @ 313
ANT HT = 1.147m. / 3.763F; (3.77 meas.)

	START	STOP
GDOP	6.3	2.8
SATS	5 5/5	6 6/6
TIME	08:15	09:53

END - 1/2" REBAR, SEE PG. #2
N 918162.9626
E 599462.4328
OHT 1071.8852
LAT 33°31'24.6222"N
LONG 112°14'47.6396"W
EHT 973.012

USER ENTERED BASED ON GROUND COORD.'S PROVIDED BY "COLLINS/PIÑA"

ROVER @ 311

311CK
N 918477.309 <-0.049>
E 599098.177 <-0.0219>
OHT 1071.787 <+0.042>

END - CITY OF GLENDALE BC/FL
SEE PG. 2

COLLINS/PIÑA
N 918477.3139
E 599098.1989
OHT 1071.7458

BETHANY HOME OUTFALL CHANNEL AZ01031-02 AH
CONT. GPS CONTROL JC
AZ01031-02 RON CONT.

04/28/01 9/252

ROVER @ 315

315CK
N 918083.697 <-0.2718>
E 602177.724 <+0.0889>
OHT 1083.818 <-0.0086>

FND - CITY OF GLENDALE BC/FL ON BRIDGE DECK OF GRAND CANAL @ E. SIDE OF 2-WAY LEFT LANE, ON 83RD AVE. (S. OF BETHANY HOME)
WINS/PINA
N 918083.9688
E 602177.6351
OHT 1083.8266
SEE SKETCH, PG. 12
SHOT ON PUNCH ((NW. COR. SEC. 14))

ROVER @ #5319 (384)

5M1
N 918165.673 <-0.2109>
E 602177.845 <+0.2288>
OHT 1083.991 <+0.1211>

FND - CITY OF GLENDALE BC/FL ON E. SIDE OF 2WAY LEFT LANE ON 83RD AVE. @ ℄ OF BETHANY HOME RD. SHOT @ CENTER
WINS/PINA
N 918165.8839
E 602177.6162
OHT 1083.8699
SEE SKETCH, PG. 12

ROVER @ 365

365CK
N 918092.239 <-0.3659>
E 603250.085 <+0.1044>
OHT 1087.163 <+0.0159>

FND - CITY OF GLENDALE BC/FL 1' S. OF ℄ OF BETHANY HOME, 1075'± E. OF 83RD AVE. SHOT ON PUNCH
WINS/PINA
N 918092.6049
E 603249.9806
OHT 1087.1471
SEE SKETCH, PG. 12

ROVER @ 320

320CK
N 918150.275 <-0.2694>
E 602668.344 <+0.0658>
OHT 1086.103 <+0.0135>

FND - CITY OF GLENDALE BC/FL @ ℄ OF BETHANY HOME, 490'± E. OF 83RD AVE. SHOT ON PUNCH.
WINS/PINA
N 918150.5444
E 602668.2782
OHT 1086.0895
SEE SKETCH PG. 12

BETHANY HOME OUTFALL CHANNEL AZ01031-02 AH

CONT. GPS CONTROL

AZ01031-02 ROV. CONT

ROVER @

(383)

N 918073.924
E 602751.769
OHT 1089.058

ROVER @ 308

(308CK)

N 917681.416
E 599521.834
OHT 1072.010

(INCORRECT POINT WAS SHOT)

(308CK1)

N 917680.733
E 599522.432
OHT 1071.97

N <-0.0369>
E <-0.0077>
OHT <-0.0578>

JC 04/28/01 10/252

SET- 1/2" REBAR @ ℄ OF DIRT RD. ON NORTH SIDE OF GRAND CANAL 575'± E. OF BETHANY HOME ℄. SEE SKETCH PG. 12

FND- 1/2" REBAR. SEE PG. 5

N 917680.7699
E 599522.4397
OHT 1072.0278

BASED ON GROUND COORD.'S PROVIDED BY "COLLINS/PIÑA"

BETHANY HOME OUTFALL CHANNEL AZ01031-0[illegible] Ø

CROSS SECTIONS OF EXISTING GRAND CANAL [illegible]CT

04/28/01 11/252

CT4 FILE: 013102CT

OC FILE: 013102T3

T@383		HI	5.415	SET - 1/2" REBAR, SEE PG. 10
BS@365	H: -0.036 V: -0.041	HT	4.63	END - CITY OF GLENDALE BC/FL, SEE PG. 7
CK@384	H: 0.041 V: 0.012	HT	4.88	END - CITY OF GLENDALE BC/FL, SEE PG. 7
(5319)	L: GOOD ✓			

OC #1086 → 1140

1094	MPT	TOP CENTER OF 2' DIA	PIPE RISING FROM CANAL W/ LID - WATER LEVEL?
1131	MPT	CENTER OF 3' WIDE	LADDER OUT OF CANAL

BETHANY HOME OUTFALL CHANNEL AZ01031-02 PH

CONTROL SKETCH

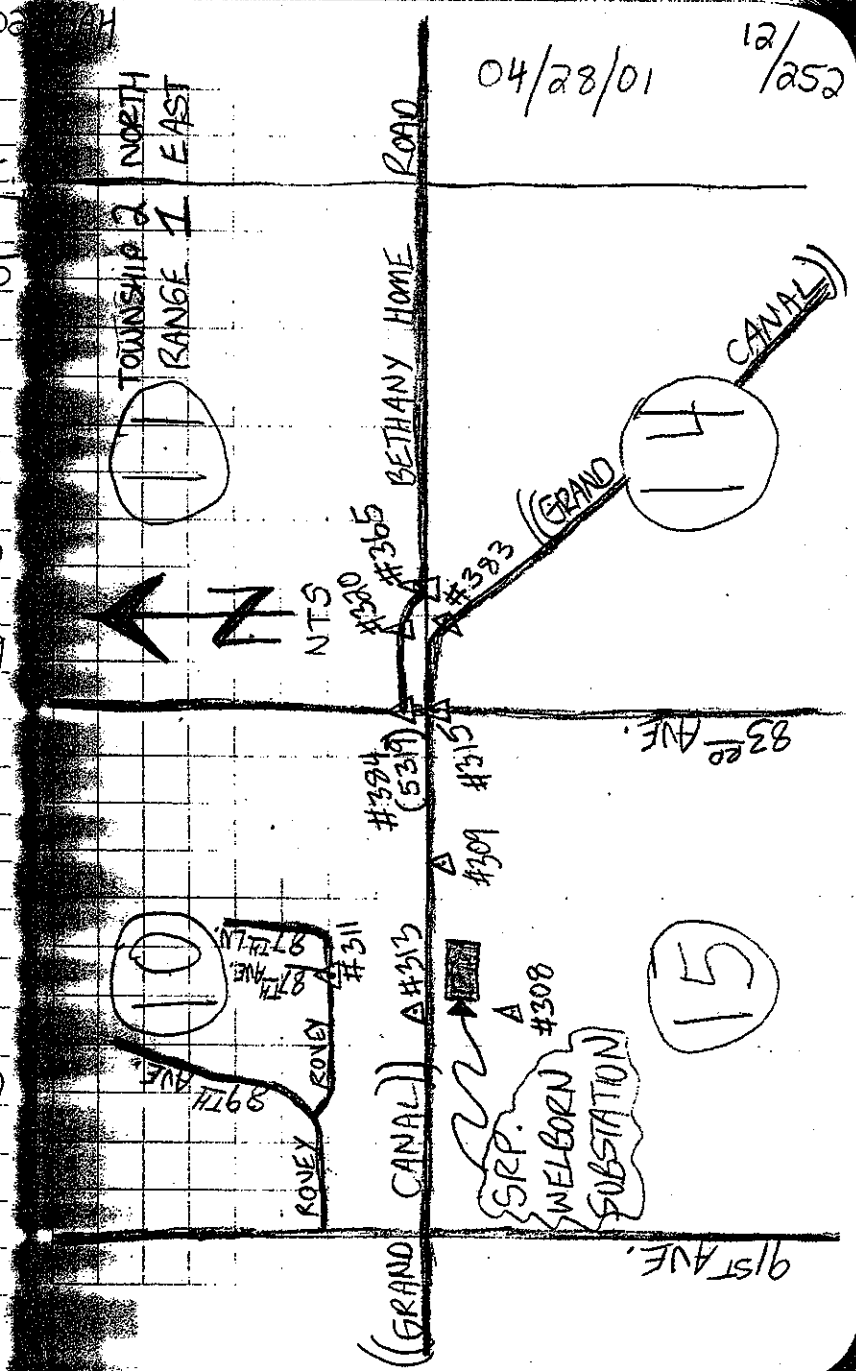
04/28/01

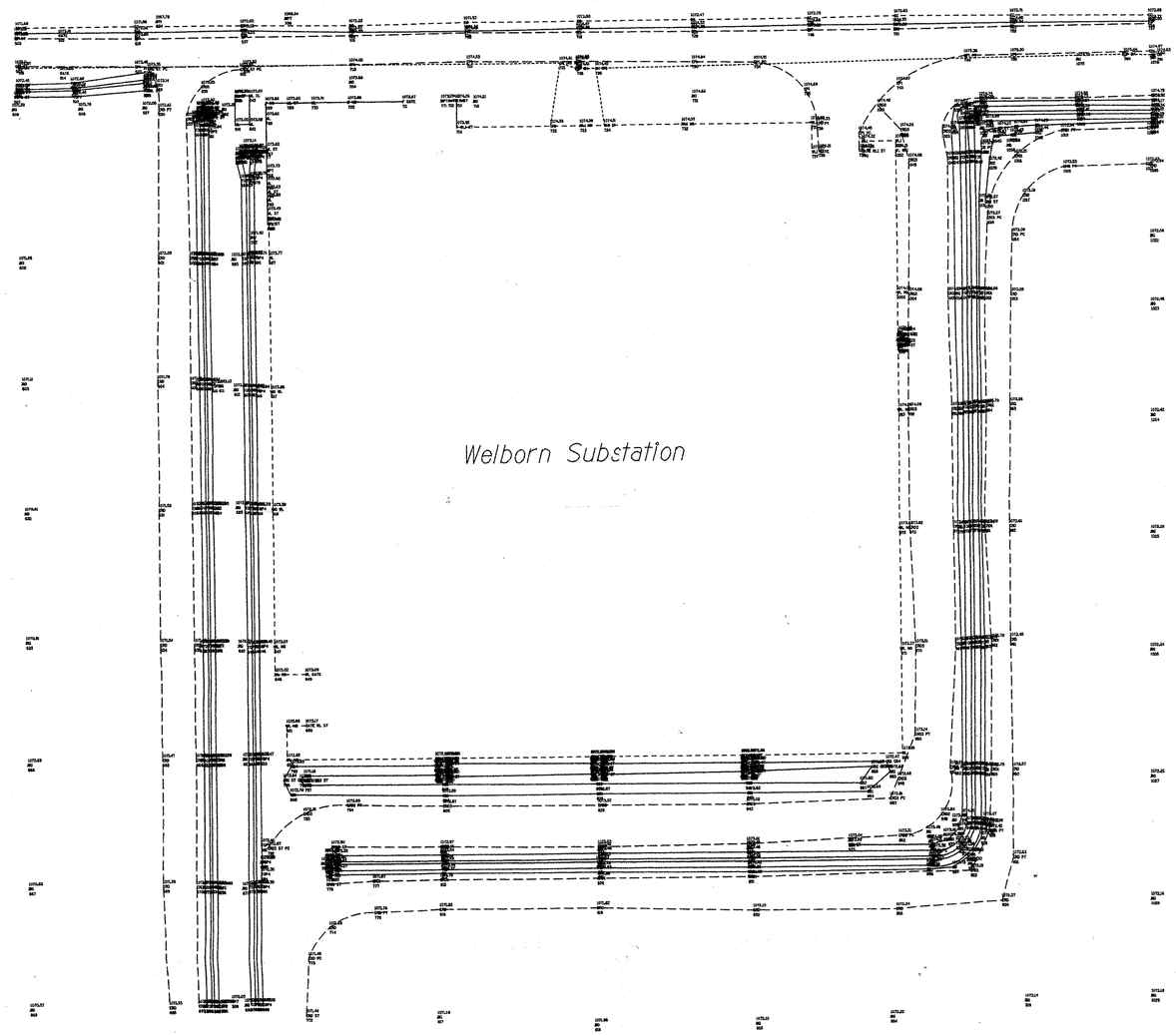
12/252

GROUND COORD'S

PT#	N	E	ELEV.	DESC.
308	917827.5988	599618.3633	1072.0278	P6.5
309	918203.1802	600347.2916	1076.0340	P6.2
311	918624.2703	599194.0546	1071.7458	P6.2
313	918309.2687	599558.3468	1071.8852	P6.2
315 MEAS.	*918230.5904	*602274.0724		P6.9
COLLINS/PIÑA	918230.8623	602273.9835	1083.8266	
320 MEAS.	*918297.1790	*602764.7709		P6.9
COLLINS/PIÑA	918297.4485	602764.7051	1086.0895	
365 MEAS.	*918239.1332	*603346.6050		P6.9
COLLINS/PIÑA	918239.4998	603346.5006	1087.1470	
383	918220.8158	602848.2093	1089.0140 SEE P6.7	P6.10
384/5319				P6.9
MEAS	*918312.5795	*602274.1934		
COLLINS/PIÑA	918312.7905	602273.9646	1083.8700	

((*-VALUE USED IN CONTROL FILE))





N

SCALE: 1" = 30'

AZTEC ENGINEERING
3747 E. GROVE ST.
Tel (602) 454-0402
Phoenix AZ 85040-3982
Fax (602) 454-0403
Email: aztecestecoeng.com

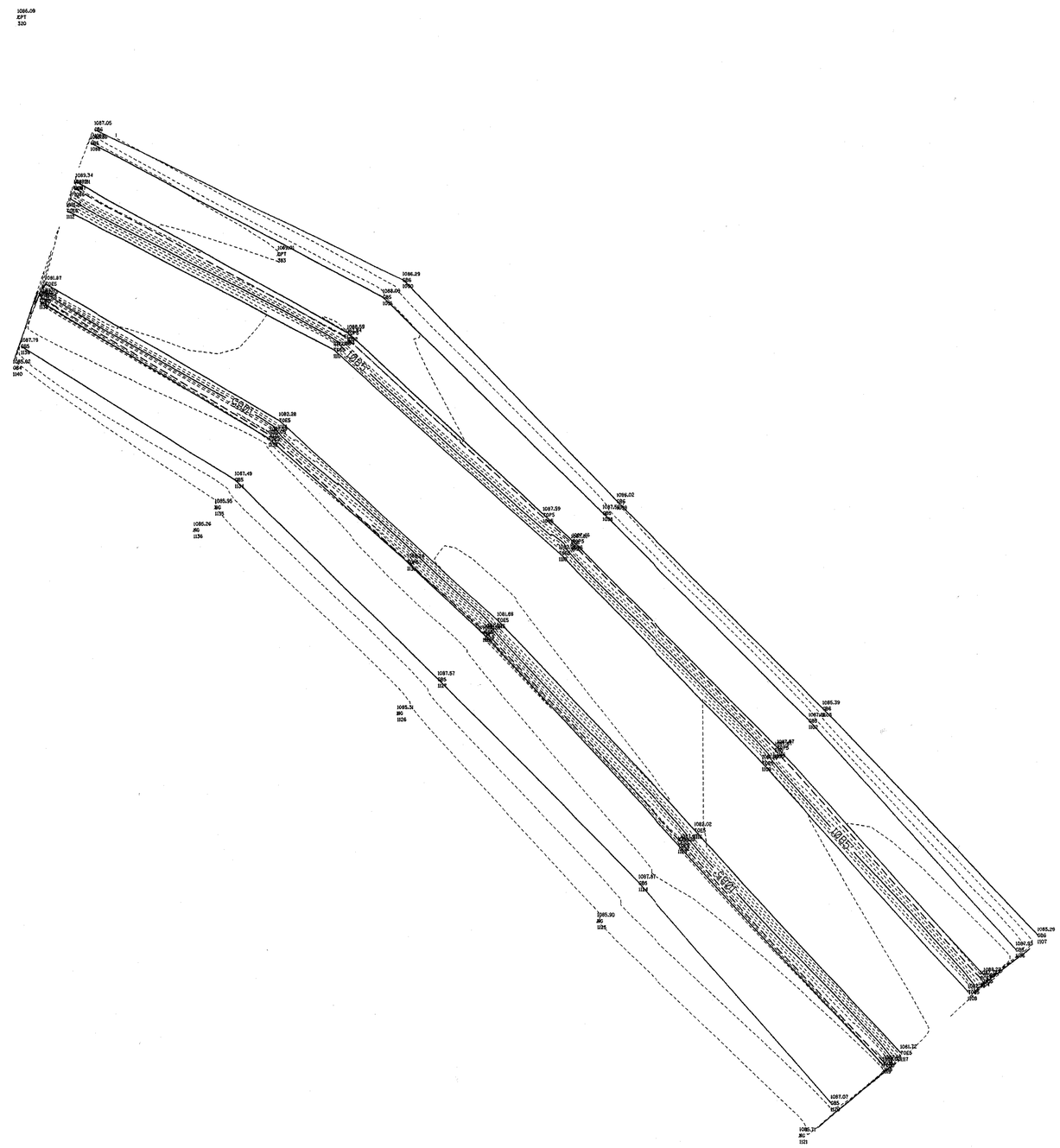
FCDMC
Bethany Home Outfall
Supplemental Survey

	BY	DATE
DESIGNED	J. Davis	8/01
DRAWN	K. Pletz	8/01
CHECKED	N. Smith	8/17

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
31780
NORMAN L. SMITH
ARIZONA U.S.A.
8/17/01

DRAWING NO. DMJM - HARRIS

SHEET 1 OF 1



N

SCALE: 1" = 20'

AZTEC ENGINEERING
3747 E. GROVE ST.
Tel (602) 454-0402
Email: aztec@aztecengineering.com
Phoenix AZ 85040-3982
Fax (602) 454-0403

FCDMC
Bethany Home Outfall
Supplemental Survey

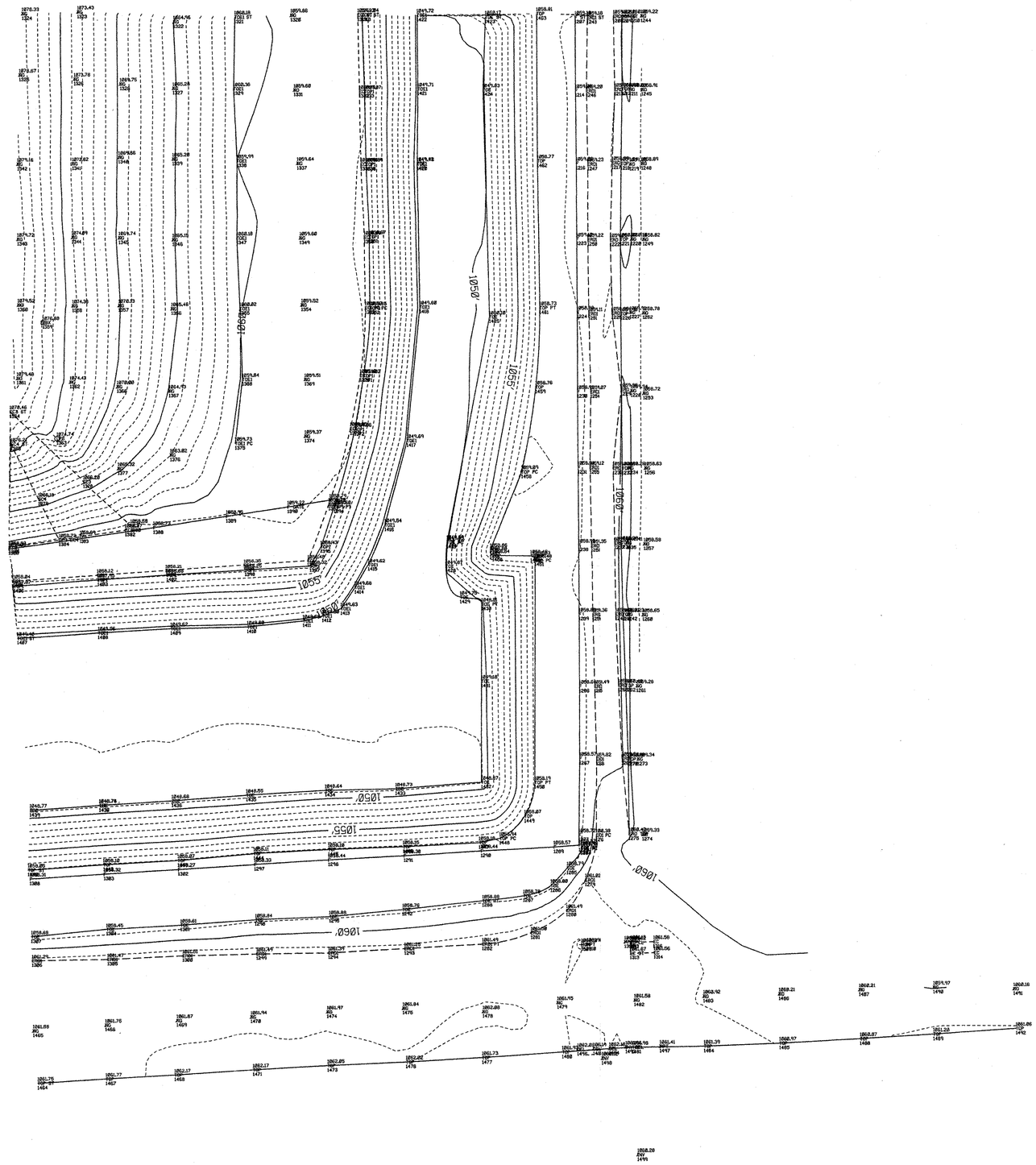
	BY	DATE
DESIGNED	J. Davis	8/01
DRAWN	K. Pletz	8/01
CHECKED	N. Smith	8/17

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
21790
NORMAN L. SMITH
DATE SIGNED 8/17/01
ARIZONA, U.S.A.

DRAWING NO.

DMJM - HARRIS

SHEET 1 OF 1



N

SCALE:1" = 20'

AZTEC ENGINEERING
3747 E. GROVE ST.
Tel (602) 454-0402
Email: aztecazteceng.com
Phoenix AZ 85040-3982
Fax (602) 454-0403

FCDMC
Bethany Home Outfall
Supplemental Survey

REGISTERED LAND SURVEYOR
CERTIFICATE NO.
21790
NORMAN L. SMITH
8-17-01
ARIZONA, U.S.A.

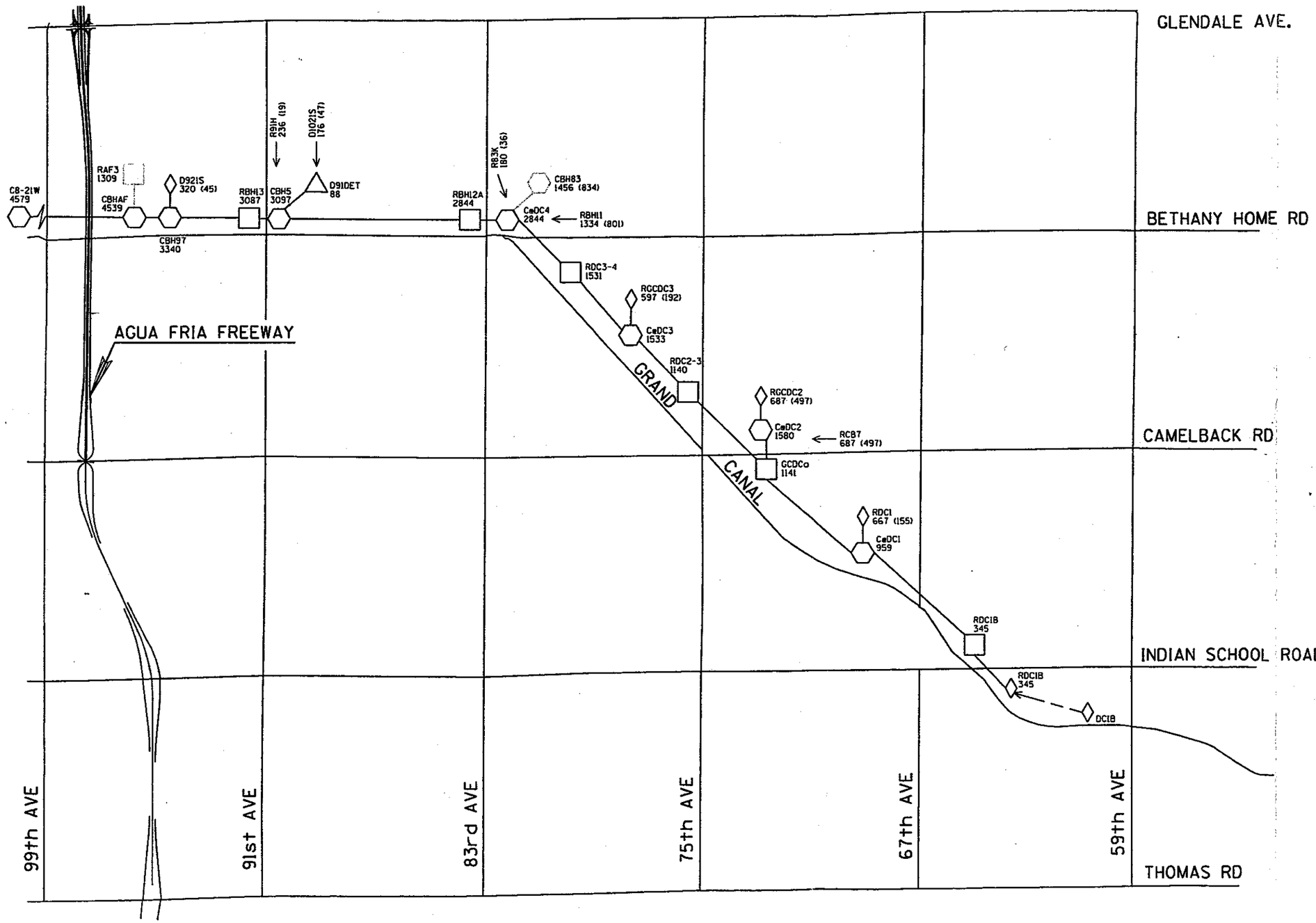
	BY	DATE
DESIGNED	J. Davis	8/01
DRAWN	K. Pletz	8/01
CHECKED	N. Smith	8/17

DRAWING NO. DMJM - HARRIS

SHEET 1 OF 1

APPENDIX D

HYDROLOGIC ANALYSIS SUPPORTING DOCUMENTATION

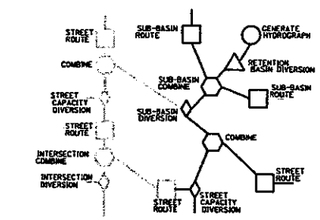


FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL FLOOD CONTROL PROJECT

FCD CONTRACT *

LEGEND

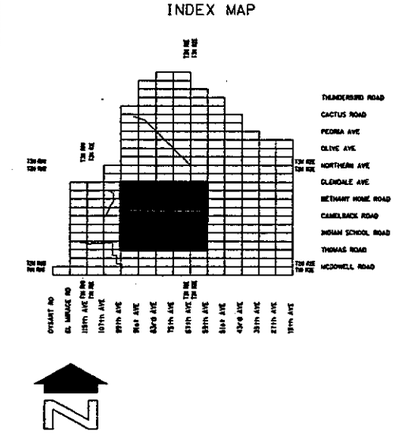


NOTE: BOLD is Rerun Portion.
GRAY SCALE is from Original Model.

PROPOSED AGUA FREEWAY ALIGNMENT

D1021S 176 (47) — ELEMENT DESCRIPTOR
- 10 YEAR PEAK FLOW (cfs)
- 100 YEAR PEAK FLOW (cfs)

INDEX MAP



DESIGN FLOW DIAGRAM

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

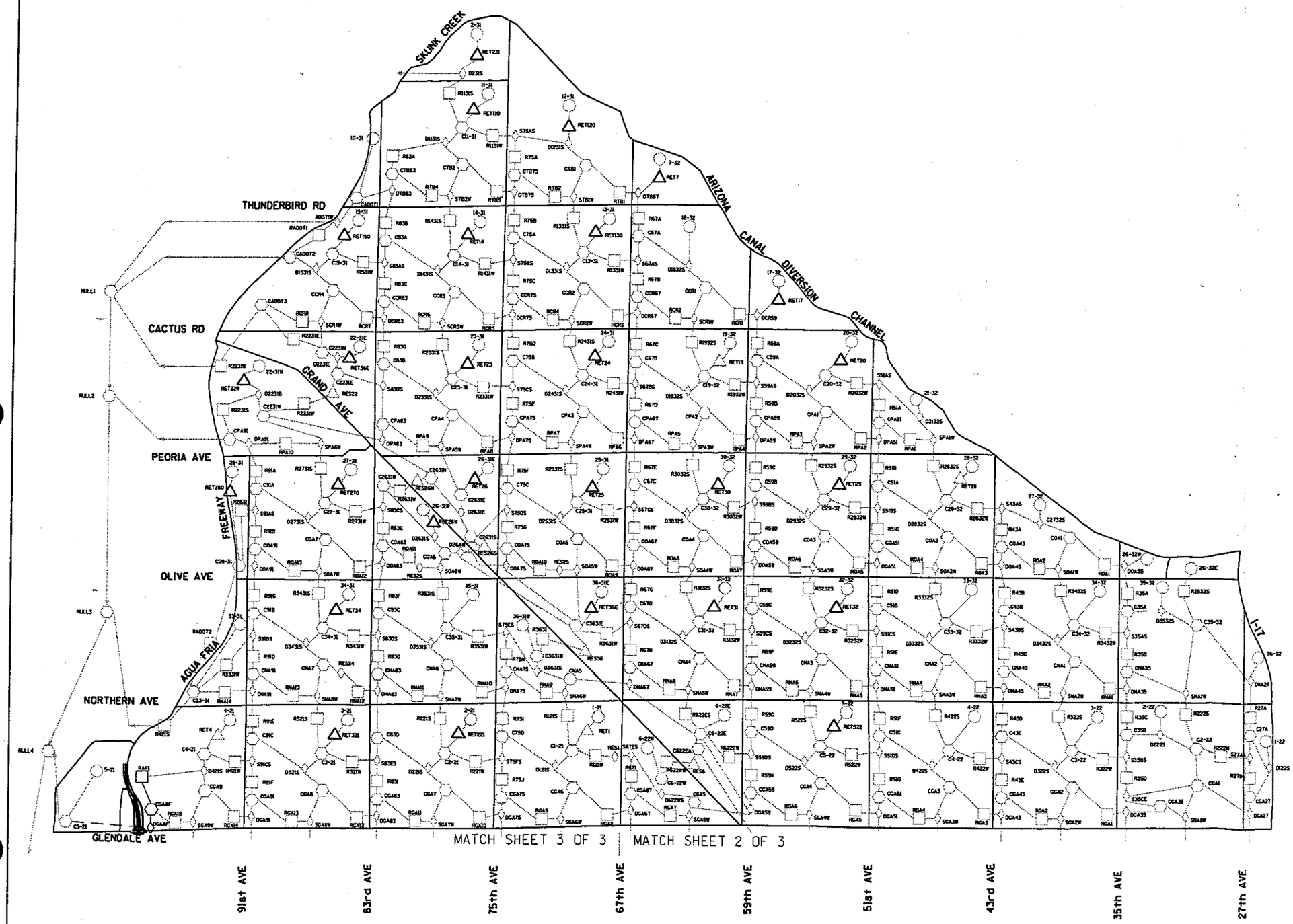
PRELIMINARY
100%
Review
NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	07-02
DRAWN	CPG	07-02
CHECKED	JRM	07-02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. | DESIGN FLOW DIAGRAM | SHEET OF 1 of 1

n:\6888\Prod\Exhibit\88dex01.dgn 07/01/2002



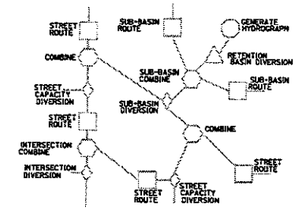
ORIGINAL EXHIBIT DEVELOPED BY CH2M HILL AND WOOD/PATEL (10/96)

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL FLOOD CONTROL PROJECT

FCD CONTRACT # 98-46

LEGEND

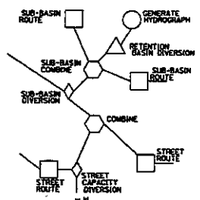


DRAINAGE SUB-BASIN BOUNDARY

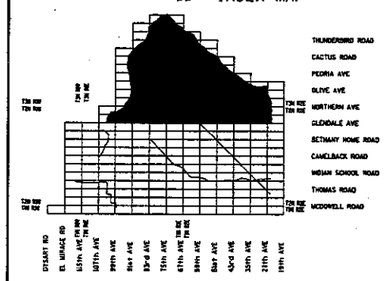
REVISED OR NEW RETENTION ELEMENT

CONNECTION MAINTAINING East-West COMPUTATION STRUCTURE (Diversion to West Coded in HEC-1 = 013)

PROPOSED AGUA FREEWAY ALIGNMENT



INDEX MAP



0 2000' 4000' 6000'

SCALE: 1" = 2000'

EXHIBIT 1
HEC-1 SCHEMATIC

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, ARIZONA 85016
(602)337-2777

	BY	DATE
DESIGN	ABM	10/99
DESIGN CHK.	JRM	10/99
PLANS	ABM	10/99
PLANS CHK.	JRM	10/99
SUBMITTED BY:		DATE: 10/99

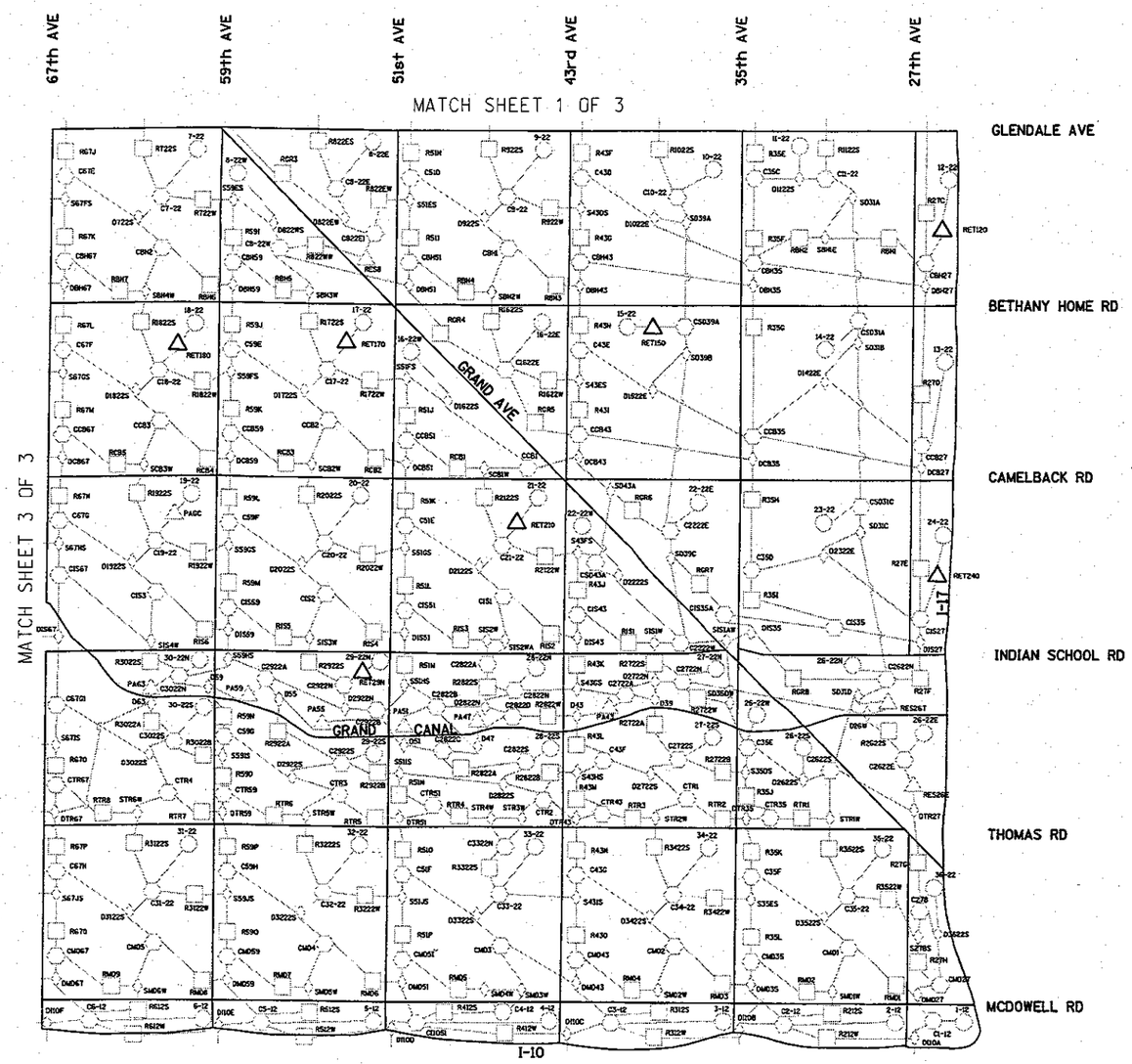
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

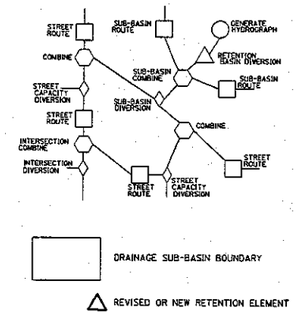
SHEET 1 OF 3



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

MARYVALE AREA DRAINAGE MASTER STUDY
FCD CONTRACT # 98-46

LEGEND



INDEX MAP

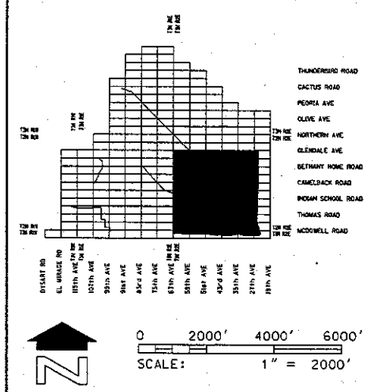


EXHIBIT 1
HEC-1 SCHEMATIC

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, ARIZONA 85016
(602)337-2777

	BY	DATE
DESIGN	ABM	8/99
DESIGN CHK.	JRM	8/99
PLANS	ABM	8/99
PLANS CHK.	JRM	8/99
SUBMITTED BY:		DATE: 8/99

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

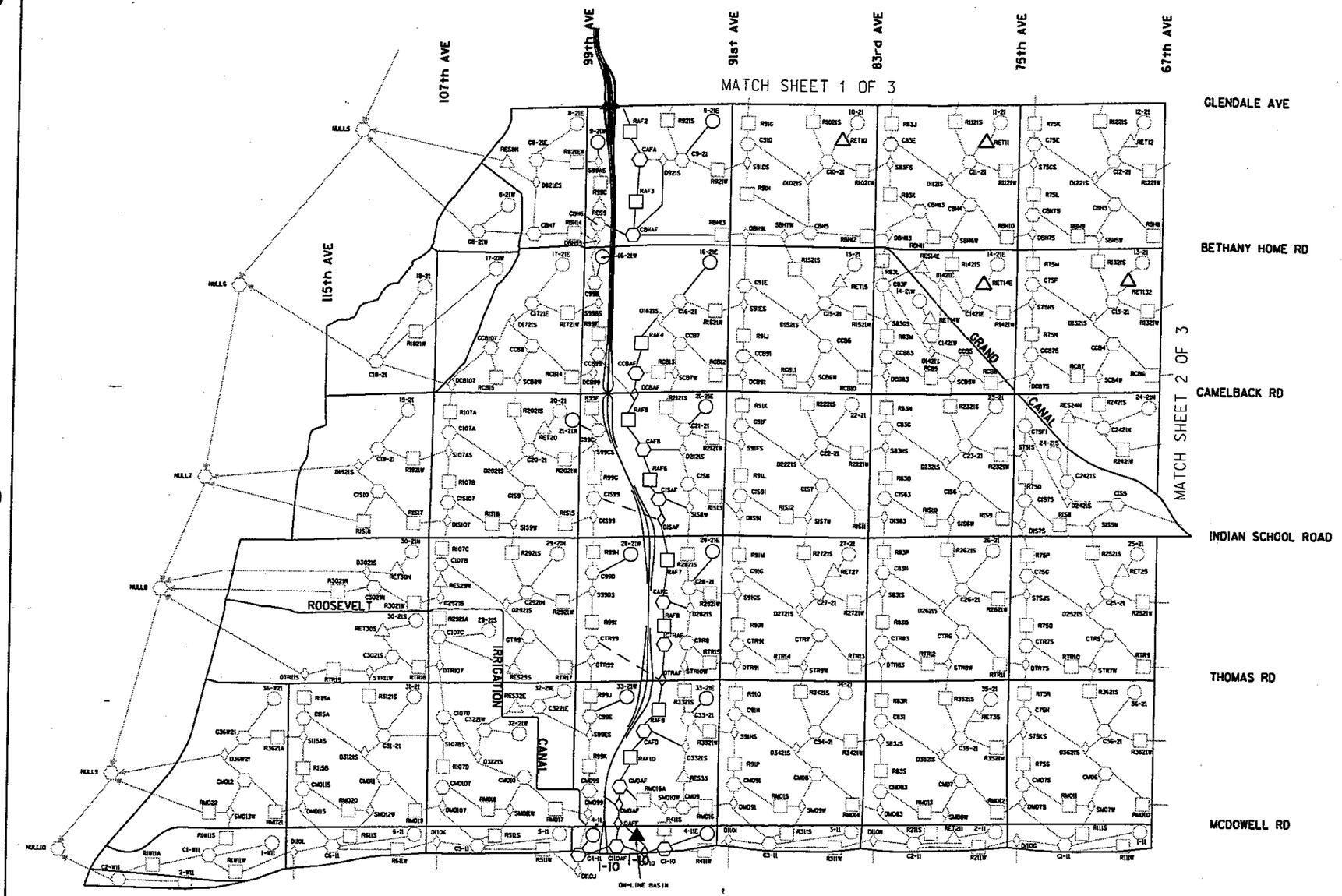
RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 2 OF 3

ORIGINAL EXHIBIT DEVELOPED BY CH2M HILL AND WOOD/PATEL (10/96)



ORIGINAL EXHIBIT DEVELOPED BY CH2M HILL AND WOOD/PATEL (10/96)

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL FLOOD CONTROL PROJECT

FCD CONTRACT # 98-46

LEGEND

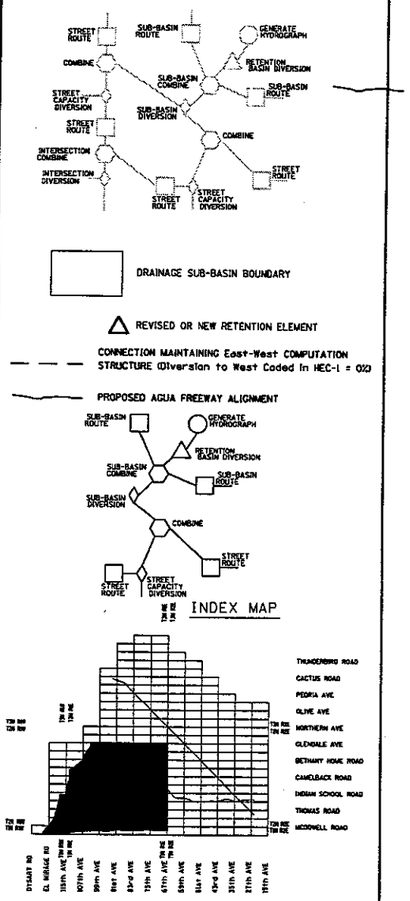


EXHIBIT 1
HEC-1 SCHEMATIC

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, ARIZONA 85016
(602)337-2777

	BY	DATE
DESIGN	ABM	10/99
DESIGN CHK.	JRM	10/99
PLANS	ABM	10/99
PLANS CHK.	JRM	10/99

SUBMITTED BY: DATE: 10/99

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

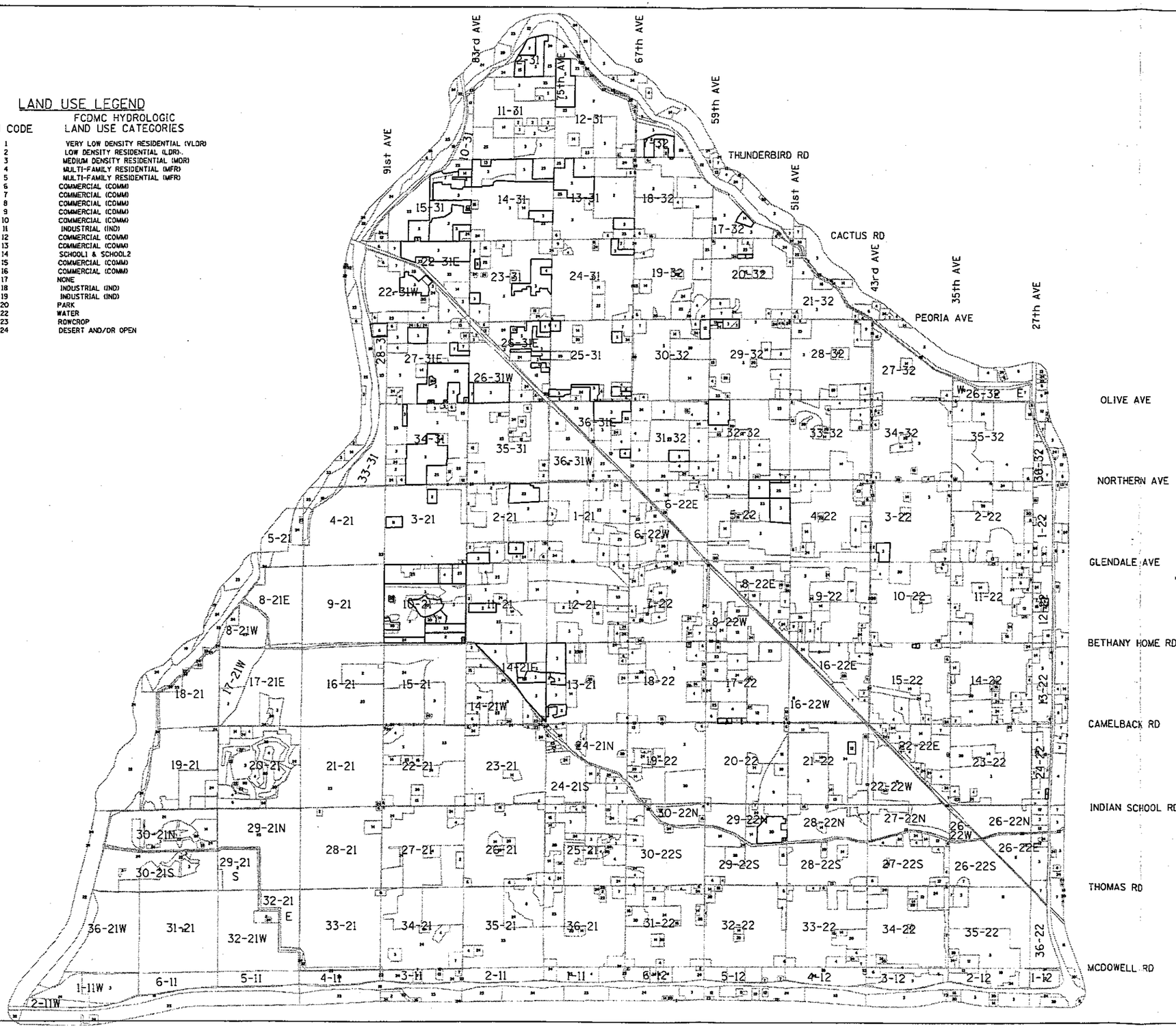
CHIEF ENGINEER AND GENERAL MANAGER

SHEET 3 OF 3

LAND USE LEGEND

FCDMC HYDROLOGIC LAND USE CATEGORIES

LU CODE	
1	VERY LOW DENSITY RESIDENTIAL (VLDR)
2	LOW DENSITY RESIDENTIAL (LDR)
3	MEDIUM DENSITY RESIDENTIAL (MDR)
4	MULTI-FAMILY RESIDENTIAL (MFR)
5	MULTI-FAMILY RESIDENTIAL (MFR)
6	COMMERCIAL (COMM)
7	COMMERCIAL (COMM)
8	COMMERCIAL (COMM)
9	COMMERCIAL (COMM)
10	COMMERCIAL (COMM)
11	INDUSTRIAL (IND)
12	COMMERCIAL (COMM)
13	COMMERCIAL (COMM)
14	SCHOOL1 & SCHOOL2
15	COMMERCIAL (COMM)
16	COMMERCIAL (COMM)
17	NONE
18	INDUSTRIAL (IND)
19	INDUSTRIAL (IND)
20	PARK
22	WATER
23	ROWCROP
24	DESERT AND/OR OPEN



FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL FLOOD CONTROL PROJECT

FCD CONTRACT # 98-46

LEGEND

16-22E — DRAINAGE SUB-BASIN BOUNDARY

LAND USE AREA

REVISED OR NEW LAND USE AREA

0 3000' 6000' 9000'

SCALE: 1" = 3000'

EXHIBIT 4

LAND USE MAP

DMJM ARIZONA, INC.
2777 E. CAMELBACK RD.
SUITE 200
PHOENIX, AZ. 85016-4320
(602) 337-2777

	BY	DATE
DESIGN	ABM	10/99
DESIGN CHK.	JRM	10/99
PLANS	ABM	10/99
PLANS CHK.	JRM	10/99

SUBMITTED BY: DATE: 10/99

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

RECOMMENDED BY: DATE

APPROVED BY: DATE

CHIEF ENGINEER AND GENERAL MANAGER

SHEET 1 OF 1

N:/2788/.../ex-4a.dgn

ORIGINAL EXHIBIT DEVELOPED BY CH2M HILL AND WOOD/PATEL (10/96)

```
****************************************
*                                      *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)  *
*             JUN   1998               *
*           VERSION 4.1                *
*                                      *
*  RUN DATE   16JAN03  TIME  13:54:36  *
*                                      *
****************************************
```

```
****************************************
*                                      *
*    U.S. ARMY CORPS OF ENGINEERS      *
*    HYDROLOGIC ENGINEERING CENTER     *
*          609 SECOND STREET           *
*       DAVIS, CALIFORNIA 95616        *
*           (916) 756-1104             *
*                                      *
****************************************
```

```
X     X  XXXXXXX   XXXXX          X
X     X  X        X     X        XX
X     X  X        X              X
XXXXXXX  XXXX     X        XXXXX  X
X     X  X        X              X
X     X  X        X     X        X
X     X  XXXXXXX   XXXXX         XXX
```

THIS PROGRAM REPLACES ALL PREVIOUS VERSIONS OF HEC-1 KNOWN AS HEC1 (JAN 73), HEC1GS, HEC1DB, AND HEC1KW.

THE DEFINITIONS OF VARIABLES -RTIMP- AND -RTIOR- HAVE CHANGED FROM THOSE USED WITH THE 1973-STYLE INPUT STRUCTURE.
THE DEFINITION OF -AMSKK- ON RM-CARD WAS CHANGED WITH REVISIONS DATED 28 SEP 81. THIS IS THE FORTRAN77 VERSION
NEW OPTIONS: DAMBREAK OUTFLOW SUBMERGENCE , SINGLE EVENT DAMAGE CALCULATION, DSS:WRITE STAGE FREQUENCY,
DSS:READ TIME SERIES AT DESIRED CALCULATION INTERVAL LOSS RATE:GREEN AND AMPT INFILTRATION
KINEMATIC WAVE: NEW FINITE DIFFERENCE ALGORITHM

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  1         ID  ==============================================================================
  2         ID ******************************************************************************
  3         ID  Model revised by DMJM for the Bethany Home-Grand Canal Flood Control Project
  4         ID  Model Updated for Land Use - Development Changes - 19 AUG 99
  5         ID  Model Split for Improved Performance - Middle Portion (Glendale - Thomas)
  6         ID  Model includes Camelback Road Storm Drain System (10 Year Interception)
  7         ID  Model revised to incorporate revised Agua Fria Freeway Alignment
  8         ID  Model revised to include connection with the Sunset Detention Basin
  9         ID  Model revised for 60% Design and 91st Ave. Detention Basin refinements
 10         ID  Model revised for 90% Design and 91st Ave. Detention Basin refinements
 11         ID  Model revised for 90% Design, CLOMR and Detention Basin refinements
 12         ID  File: BHGC_100.dat - 100 YEAR  - 24 HOUR EVENT
 13         ID  January 2003
 14         ID ******************************************************************************
 15         ID  ==============================================================================
 16         ID  MARYVALE ADMS - FCD#93-29: CH2M HILL & Wood/Patel & Associates
 17         ID  Model for Entire Study Area (Approximately 100 square miles)
 18         ID  Existing Conditions
 19         ID  100Yr-24Hr Event
 20         ID  Clark Unit Hydrograph
 21         ID  24-Hour SCS TYPE II Rainfall Pattern was used to determine TC & R
 22         ID  Green-Ampt Precipitation Losses
 23         ID  Model Prepared and Checked by David Dust and Jim Geisbush
 24         ID  MV100-24 (BASE79): SWW\132586\HEC-1
 25         ID  January 1997
 26         ID
 27         ID  ==============================================================================
 28         ID  File GC002e.ih1          Wood/Patel by David T. Phelps          25-SEP-97
 29         ID  OPTIONS MODELED         100-yr 24-hr storm
 30         ID  GRAND CANAL DIVERSIONS
 31         ID  === GCDC flows (100%) diverted West from 67th AVE to New River
 32         ID      - Flow arriving at Grand Canal west of 67th Avenue diverted northwest
 33         ID        along the Grand Canal.
 34         ID          -  Splits at SBH7W, DBH91, and DBH99 revised
 35         ID          -  RES9 & RES10 Removed
 36         ID      - USE SECOND SET OF RESULTS for GCDC Flows.
 37         ID      - Splits along GCDC provide influance of GCDC on D/S areas
 38         ID      - On-Line Detention Basin (67th - 73rd Ave) modeled at GCDC1
 39         ID          Using 2-6'x3' Box Culverts and 4:1 sides unlined basin (LEVEL II)
 40         ID  PROPOSED AGUA FRIA FREEWAY INTERCEPTOR DIVERSIONS
 41         ID  === Proposed Agua Fria Freeway Alingment modeled (Along 99th AVE)
 42         ID  === Proposed Agua Fria Channel modeled - 1st cut Routing Geometry (RX & RY)
 43         ID  === Proposed Bethany Home Outfall Channel Modeled  (RES9 & RES8S Removed)
 44         ID      - operation S99AS revised (All flow to South)
 45         ID  ADOT DETENTION BASIN MODELING  -- NONE
 46         ID  ADMS multiple use of Diversion ID D2631N fixed
 47         ID ******************************************************************************
 48         ID
 49         ID  Revisions made by DMJM for BH-GC Flood Control Project:
 50         ID
 51         ID      - Inclusion of Bethany Home Road Storm Drain System (from BHSD002b.ih1)
 52         ID      - Revision of Sub-Basins for Updated Land Use Information
 53         ID      - Revision and Addition of Retention for Updated Development Information
 54         ID      - Revision to detention facilities at SDB, MDB, and 91st Avenue
 55         ID      - Revision to include channel routings for "Recommended Alternative"
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  56          ID
  57          ID  ******************************************************************************
  58          ID
  59          ID  ==============================================================================
  60          ID
  61          ID  Revisions made by DMJM for BH-GC Flood Control Project (Phase 1 - 30% Design)
  62          ID
  63          ID      - Revision to detention facilities at MDB and 91st Avenue
  64          ID      - Revision to include channel routings for preliminary design refinements
  65          ID
  66          ID  ==============================================================================
  67          ID
  68          ID ******************************************************************************
  69          ID  HEC-1 ELEMENT NOMENCLATURE
  70          ID  SUB-BASIN HYDROGRAPH:
  71          ID     Example: "17-32N": the sub-basin is Section 17, T3N, R2E
  72          ID
  73          ID  SUB-BASIN DIVERSION:
  74          ID     Example: "D1732S": is the southerly component of divert in Section 17
  75          ID
  76          ID  SUB-BASIN ROUTE:
  77          ID     Example: "R1732S": is the southerly flow route through Sec. 17, T3N, R2E
  78          ID
  79          ID  SUB-BASIN RESERVOIR ROUTE OR SURGE BASIN DIVERT:
  80          ID     Example: "RES17": corresponds to a reservoir route or surge basin divert
  81          ID                       in Sub-basin 17-##
  82          ID
  83          ID  RETENTION BASIN DIVERT:
  84          ID     Example: "RET17": corresponds to retention basin divert in
  85          ID                       Sub-Basin 17-##
  86          ID
  87          ID  SUB-BASIN COMBINE:
  88          ID     Example: "C17-32": corresponds to sub-basin combine in Sec. 17, T3N, R2E
  89          ID
  90          ID  STREET ROUTE:
  91          ID     Example: "RPA1": first route for Peoria Avenue
  92          ID     Example" "R67C": third route for 67th Avenue
  93          ID
  94          ID  STREET CAPACITY DIVERSION:
  95          ID     Example: "SPA1S": first diversion from Peoria Avenue to the south
  96          ID
  97          ID  STREET INTERSECTION DIVERSION:
  98          ID     Example: "RPA67": flow component along Peoria Avenue from diversion at
  99          ID                       Peoria Avenue and 67th Avenue
 100          ID     Example: "R67PA": flow component along 67th Avenue from diversion at
 101          ID                       Peoria Avenue and 67th Avenue
 102          ID
 103          ID  STREET INTERSECTION COMBINE:
 104          ID     Example: "CPA67": hydrograph combine at the intersection of Peoria Avenue
 105          ID                       and 67th Avenue
 106          ID
 107          ID  STREET COMBINE:
 108          ID     Example: "CPA2": second hydrograph combine along Peoria Avenue
 109          ID
 110          ID  "NULL" COMBINE:
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 111        ID      Example: "NULL2": dummy hydrograph combine used to free up a HEC-1
 112        ID                        computational path.  Hence, hydrograph is meaningless.
 113        ID
 114        ID   ****************************************************************************
 115        ID   STREET NAME CODES
 116        ID     Thunderbird Road  = TB
 117        ID     Cactus Road       = CR
 118        ID     Peoria Avenue     = PA
 119        ID     Olive Avenue      = OA
 120        ID     Northern Avenue   = NA
 121        ID     Glendale Avenue   = GA
 122        ID     Bethany Home Road = BH
 123        ID     Camelback Road    = CB
 124        ID     Indian School Road= IS
 125        ID     Thomas Road       = TR
 126        ID     McDowell Road     = MD
 127        ID   ****************************************************************************
 128        ID
 129        ID   DDM MCUHP1 Bethany Home/Grand Canal Flood Control Project - 100-Year, 24-Hour
            *DIAGRAM
 130        IT       5                    1000
 131        IO       5
 132        IN      15
            *       The following is the FCDMC 100-yr 24-hr Storm
 133        JD    3.69    0.01
 134        PC    .000    .002    .005    .008    .011    .014    .017    .020    .023    .026
 135        PC    .029    .032    .035    .038    .041    .044    .048    .052    .056    .060
 136        PC    .064    .068    .072    .076    .080    .085    .090    .095    .100    .105
 137        PC    .110    .115    .120    .126    .133    .140    .147    .155    .163    .172
 138        PC    .181    .191    .203    .218    .236    .257    .283    .387    .663    .707
 139        PC    .735    .758    .776    .791    .804    .815    .825    .834    .842    .849
 140        PC    .856    .863    .869    .875    .881    .887    .893    .898    .903    .908
 141        PC    .913    .918    .922    .926    .930    .934    .938    .942    .946    .950
 142        PC    .953    .956    .959    .962    .965    .968    .971    .974    .977    .980
 143        PC    .983    .986    .989    .992    .995    .998   1.000
 144        JD    3.47   10.00
 145        JD    3.32   30.00
 146        JD    3.17   60.00
 147        JD    3.12   90.00
 148        JD    3.08  120.00
 149        JD    3.04  150.00
 150        JD    2.95  300.00
 151        JD    2.88  500.00
            *
            *
            * DDM   ***** Preserved *****

 152        KK   NULL4
 153        BI             22
            *
            *
            * BETHANY HOME ROAD COMPUTATION PATH
            *
            *
            * DDM   ***** Updated *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

154         KK   11-22
155         KM   SUB-BASIN 11-22
156         KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
157         KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
158         KM     L = 1.48  Kb = .064  Adj. Slope =   14.0
159         BA   1.006
160         LG    .220    .260   5.200    .290  38.000
161         UC   1.429    .750
162         UA       0       5      16      30      65      77      84      90      94      97
163         UA     100
            * DDM   ***** Preserved *****

164         KK  D1122S
165         KM   SUB-BASIN DIVERSION
166         KM   SUB-BASIN 11-22
167         KM   21% West & 79% South
168         DT  D1122W
169         DI       0  10000.
170         DQ       0   2100.
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

171         KK   SGA1S
            *       KM RETRIEVAL OF STREET CAPACITY DIVERSION
            *       KM GLENDALE
            *       DR SGA1S
172         BI   SGA1S      22
            * DDM   ***** Preserved *****

173         KK  R1122S
174         KM   SUB-BASIN STREET ROUTE
175         KM   SOUTH
176         KM   RW= 120'
177         KM   PAV= 78'
178         RS       5    FLOW     -1.
179         RC    0.02   0.016    0.02   5250.  0.0036
180         RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
181         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

182         KK  C11-22
183         KM   SUB-BASIN COMBINE
184         HC       2     3.5
            * DDM   ***** Preserved *****

185         KK  SD31A
186         KM   STORM DRAIN DIVERSION
187         KM   STORM DRAIN ALONG HALF MILE STREET
188         KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
189         KM   DIVERSION SOUTH
190         KM   CAP= 147 CFS SOUTH
191         DT  SD31AS
192         DI       0    147.  10147.
193         DQ       0    147.    147.
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

194           KK   SBH1E
195           KM   STREET CAPACITY DIVERSION
196           KM   BETHANY HOME ROAD
197           KM   SPECIAL CASE
198           KM   50/50 SPLIT EAST/WEST DUE TO GRADE BREAK
199           DT   SBH1W
200           DI       0  10000.
201           DQ       0   5000.
              * DDM   ***** Preserved *****

202           KK   RBH1
203           KM   STREET ROUTE
204           KM   EAST
205           KM   BETHANY HOME ROAD
206           RS       5    FLOW     -1.
207           RC    0.02   0.016    0.02   2630.  0.0011
208           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
209           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

210           KK   D27GA
              * ********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * ********KM 27TH & GLENDALE
              * ********DR D27GA
211           BI   D27GA      22
              * DDM   ***** Preserved *****

212           KK   R27C
213           KM   STREET ROUTE
214           KM   SOUTH
215           KM   27TH Avenue
216           RS       5    FLOW     -1.
217           RC    0.02   0.016    0.02   5270.  0.0039
218           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
219           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Updated *****

220           KK   12-22
221           KM   SUB-BASIN 12-22
222           KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
223           KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
224           KM     L =  .68  Kb = .075  Adj. Slope =   15.0
225           BA    .245
226           LG    .210    .250   4.800    .360  52.000
227           UC    .850    .506
228           UA       0       5      16      30      65      77      84      90      94      97
229           UA     100
              *
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 230          KK  RET120
 231          KM   RETENTION BASIN DIVERSION
 232          KM   SUB-BASIN 12-22
 233          KM   7% OF SUB-BASIN DRAINS TO RETENTION BASIN
 234          DT  D1222R    1.66
 235          DI       0  10000.
 236          DQ       0    700.
              *
              * DDM   ***** Preserved *****

 237          KK   CBH27
 238          KM   INTERSECTION COMBINE
 239          KM   BETHANY HOME & 27TH
 240          HC       3    21.3
              * DDM   ***** Preserved *****

 241          KK   DBH27
 242          KM   STREET INTERSECTION DIVERSION
 243          KM   BETHANY HOME & 27TH
 244          KM   0% West & 100% South
 245          KM   DIVERSION SOUTH
 246          KM   EXISTING STORM DRAIN ALONG 27TH AVENUE
 247          KM   CAP= 145 CFS SOUTH
 248          DT   D27BH
 249          DI       0  10000.
 250          DQ       0  10000.
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

 251          KK   D35GA
              * *******KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * *******KM 35TH & GLENDALE
              * *******DR D35GA
 252          BI   D35GA      22
              * DDM   ***** Preserved *****

 253          KK   R35E
 254          KM   STREET ROUTE
 255          KM   SOUTH
 256          KM   35TH Avenue
 257          RS       2    FLOW     -1.
 258          RC    0.02   0.016    0.02   2620.  0.0054
 259          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 260          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

 261          KK  D1122W
 262          KM   RETRIEVAL OF SUB-BASIN DIVERSION
 263          KM   SUB-BASIN 11-22
 264          DR  D1122W
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

265         KK   C35C
266         KM   NORTH/SOUTH STREET COMBINE
267         KM   35TH AVENUE
268         HC       2     3.1
            * DDM   ***** Preserved *****

269         KK   R35F
270         KM   STREET ROUTE
271         KM   SOUTH
272         KM   35TH Avenue
273         RS       2    FLOW     -1.
274         RC    0.02   0.016    0.02   2630.  0.0042
275         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
276         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

277         KK   SBH1W
278         KM   RETRIEVAL OF STREET CAPACITY DIVERSION
279         KM   SPECIAL CASE
280         KM   50/50 SPLIT EAST/WEST DUE TO GRADE BREAK
281         KM   BETHANY HOME ROAD
282         DR   SBH1W
            * DDM   ***** Preserved *****

283         KK   RBH2
284         KM   STREET ROUTE
285         KM   WEST
286         KM   BETHANY HOME
287         RS       4    FLOW     -1.
288         RC    0.02   0.016    0.02   2650.  0.0012
289         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
290         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

291         KK   SGA2S
            * *******KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * *******KM GLENDALE
            * *******DR SGA2S
292         BI   SGA2S      22
            * DDM   ***** Preserved *****

293         KK  R1022S
294         KM   SUB-BASIN STREET ROUTE
295         KM   SOUTH
296         KM   RW= 70'
297         KM   PAV= 43'
298         RS       5    FLOW     -1.
299         RC    0.02   0.016    0.02   5260.  0.0034
300         RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
301         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

302         KK   10-22
303         KM   SUB-BASIN 10-22
304         KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
305         KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
306         KM     L = 1.35  Kb = .077  Adj. Slope =   15.0
307         BA    .991
308         LG    .240    .250   5.300    .300  33.000
309         UC   1.500    .742
310         UA       0       5      16      30      65      77      84      90      94      97
311         UA     100
            * DDM   ***** Preserved *****

312         KK  C10-22
313         KM   SUB-BASIN COMBINE
314         HC       2     5.7
            * DDM   ***** Preserved *****

315         KK  SD39A
316         KM   STORM DRAIN DIVERSION
317         KM   STORM DRAIN ALONG HALF MILE STREET
318         KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
319         KM   DIVERSION SOUTH
320         KM   CAP= 164 CFS SOUTH
321         DT  SD39AS
322         DI       0    164.  10164.
323         DQ       0    164.    164.
            * DDM   ***** Preserved *****

324         KK  D1022E
325         KM   SUB-BASIN DIVERSION
326         KM   SUB-BASIN 10-22
327         KM   59% WEST & 41% EAST
328         DT  D1022W
329         DI       0  10000.
330         DQ       0   5900.
            * DDM   ***** Preserved *****

331         KK   CBH35
332         KM   INTERSECTION COMBINE
333         KM   BETHANY HOME & 35TH
334         HC       4     7.1
            * DDM   ***** Preserved *****

335         KK   DBH35
336         KM   STREET INTERSECTION DIVERSION
337         KM   BETHANY HOME & 35TH
338         KM   0% West & 100% South
339         KM   DIVERSION SOUTH
340         KM   EXISTING STORM DRAIN ALONG 35TH AVENUE
341         KM   CAP=  55 CFS SOUTH
342         DT   D35BH
343         DI       0  10000.
344         DQ       0  10000.
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 345          KK   D43GA
              * ********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * ********KM 43RD & GLENDALE
              * ********DR D43GA
 346          BI   D43GA      22
              * DDM   ***** Preserved *****

 347          KK   R43F
 348          KM   STREET ROUTE
 349          KM   SOUTH
 350          KM   43TH Avenue
 351          RS       3    FLOW     -1.
 352          RC    0.02   0.016    0.02   2610.  0.0025
 353          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 354          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

 355          KK  D1022W
 356          KM   RETRIEVAL OF SUB-BASIN DIVERSION
 357          KM   SUB-BASIN 10-22
 358          DR  D1022W
              * DDM   ***** Preserved *****

 359          KK   C43D
 360          KM   NORTH/SOUTH STREET COMBINE
 361          KM   43TH AVENUE
 362          HC       2     5.7
              * DDM   ***** Preserved *****

 363          KK   S43DS
 364          KM   STREET CAPACITY DIVERSION
 365          KM   43RD AVENUE
 366          KM   DIVERSION TO WEST
 367          KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
 368          KM   CAP= 100 CFS SOUTH
 369          DT   S43DW
 370          DI       0    132.    172.   1379.   2296.
 371          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

 372          KK   R43G
 373          KM   STREET ROUTE
 374          KM   SOUTH
 375          KM   43TH Avenue
 376          RS       3    FLOW     -1.
 377          RC    0.02   0.016    0.02   2620.  0.0031
 378          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 379          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 380        KK   CBH43
 381        KM   INTERSECTION COMBINE
 382        KM   BETHANY HOME & 43TH
 383        HC       2     5.7
            * DDM   ***** Preserved *****

 384        KK   DBH43
 385        KM   STREET INTERSECTION DIVERSION
 386        KM   BETHANY HOME & 43RD
 387        KM   51% West & 49% South
 388        KM   DIVERSION SOUTH
 389        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
 390        KM   CAP= 100 CFS SOUTH
 391        DT   D43BH
 392        DI       0    100.  10100.
 393        DQ       0    100.   5000.
            * DDM   ***** Preserved *****

 394        KK   RBH3
 395        KM   STREET ROUTE
 396        KM   WEST
 397        KM   BETHANY HOME ROAD
 398        RS       4    FLOW     -1.
 399        RC    0.02   0.016    0.02   2610.  0.0015
 400        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 401        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

 402        KK   SGA3S
            * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * ********KM GLENDALE
            * ********DR SGA3S
 403        BI   SGA3S      22
            * DDM   ***** Preserved *****

 404        KK   R922S
 405        KM   SUB-BASIN STREET ROUTE
 406        KM   SOUTH
 407        KM   RW= 170'
 408        KM   PAV= 113'
 409        RS       6    FLOW     -1.
 410        RC    0.02   0.016    0.02   5230.  0.0028
 411        RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
 412        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

 413        KK    9-22
 414        KM   SUB-BASIN 9-22
 415        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 416        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
 417        KM     L = 1.36  Kb = .069  Adj. Slope =   13.0
 418        BA    .990
 419        LG    .220    .230   6.200    .210  42.000
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 420          UC   1.421    .703
 421          UA       0       5      16      30      65      77      84      90      94      97
 422          UA     100
              * DDM   ***** Preserved *****

 423          KK   S43DW
 424          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
 425          KM   43RD
 426          DR   S43DW
              * DDM   ***** Preserved *****

 427          KK   R922W
 428          KM   SUB-BASIN STREET ROUTE
 429          KM   WEST
 430          KM   RW= 270'
 431          KM   PAV= 183'
 432          RS       7    FLOW     -1.
 433          RC    0.02   0.016    0.02   5240.  0.0020
 434          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
 435          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

 436          KK   C9-22
 437          KM   SUB-BASIN COMBINE
 438          HC       3    10.1
              * DDM   ***** Preserved *****

 439          KK   D922S
 440          KM   SUB-BASIN DIVERSION
 441          KM   SUB-BASIN 9-22
 442          KM   34% West & 66% South
 443          DT   D922W
 444          DI       0  10000.
 445          DQ       0   3400.
              * DDM   ***** Preserved *****

 446          KK   CBH1
 447          KM   EAST/WEST STREET COMBINE
 448          KM   BETHANY HOME
 449          HC       2    10.1
              * DDM   ***** Preserved *****

 450          KK   SBH2W
 451          KM   CASE 2
 452          KM   STREET CAPACITY DIVERSION
 453          KM   BETHANY HOME ROAD
 454          KM   DIVERSION TO SOUTH
 455          DT   SBH2S
 456          DI       0     93.    160.   1761.   2958.
 457          DQ       0     62.    115.   1270.   2114.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

458           KK   RBH4
459           KM   STREET ROUTE
460           KM   WEST
461           KM   BETHANY HOME ROAD
462           RS       4    FLOW     -1.
463           RC    0.02   0.016    0.02   2590.  0.0015
464           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
465           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

466           KK   D51GA
              * ********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * ********KM 51ST & GLENDALE
              * ********DR D51GA
467           BI   D51GA      22
              * DDM   ***** Preserved *****

468           KK   R51H
469           KM   STREET ROUTE
470           KM   SOUTH
471           KM   51ST Avenue
472           RS       2    FLOW     -1.
473           RC    0.02   0.016    0.02   2600.  0.0042
474           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
475           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

476           KK   D922W
477           KM   RETRIEVAL OF SUB-BASIN DIVERSION
478           KM   SUB-BASIN 9-22
479           DR   D922W
              * DDM   ***** Preserved *****

480           KK   C51D
481           KM   NORTH/SOUTH STREET COMBINE
482           KM   51ST AVENUE
483           HC       2    10.1
              *
              * DDM   ***** Preserved *****

484           KK   S51ES
485           KM   STREET CAPACITY DIVERSION
486           KM   51ST
487           KM   DIVERSION TO WEST
488           KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to South (10 Year Flow)
489           KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
490           KM   ==========================================================================
491           KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
492           KM           Original Flow Split (63% South) and with Stormdrain Capacity = 284cfs
493           KM   ==========================================================================
494           DT   S51EW
495           DI       0     44.     134    284.    1894    3229
496           DQ       0     0.1      .2    0.25    1014    1855
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 497          KK    R51I
 498          KM   STREET ROUTE
 499          KM   SOUTH
 500          KM   51ST Avenue
 501          RS       3    FLOW     -1.
 502          RC    0.02   0.016    0.02   2630.  0.0021
 503          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 504          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
              * DDM   ***** Preserved *****

 505          KK   CBH51
 506          KM   INTERSECTION COMBINE
 507          KM   BETHANY HOME & 51ST
              *  KO     3
 508          HC       2    10.1
              *
              * DDM   ***** Preserved *****

 509          KK   DBH51
 510          KM   STREET INTERSECTION DIVERSION
 511          KM   BETHANY HOME & 51ST
 512          KM   0% West & 100% South
 513          KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
 514          KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
 515          KM   ==========================================================================
 516          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
 517          KM                Original Flow Split and with Stormdrain Capacity = 339cfs.
 518          KM   ==========================================================================
 519          DT   D51BH
 520          DI       0     393  10000.
 521          DQ       0     0.1   9607.
              *
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

 522          KK  D822ES
              * ******** KM RETRIEVAL OFSUB-BASIN DIVERSION
              * ******** KM SUB-BASIN 8-22E     (Flow split from C8-22E, 100% to  South)
              * ******** DR D822ES
 523          BI  D822ES      22
              *
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

 524          KK  D822E1
              * **********KM      Recal D822S - 25% of Sub-Basin 8-22E
              * **********KM      Added by Wood/Patel 18 SEP 97    dtp
              * **********DR D822S
 525          BI   D822S      22
              *
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

526           KK   S51EW
527           KM   RETRIEVAL OF STREET CAPACITY DIVERSION
528           KM   51ST AVENUE
529           DR   S51EW
              *
              * DDM   ***** Preserved *****

530           KK  R822EW
531           KM   SUB-BASIN STREET ROUTE
532           KM   WEST
533           KM   RW= 170'
534           KM   PAV= 113'
535           RS       5    FLOW     -1.
536           RC    0.02   0.016    0.02   2630.  0.0008
537           RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
538           RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *
              * DDM   ***** Preserved *****

539           KK  C822E1
540           KM   SUB-BASIN COMBINE
              *  KO     3
541           HC       3    14.6
              *
              * DDM   ***** Preserved *****

542           KK  CBH51b
543           KM    Combine CBH51 + C822E1 at Intersection of 51st and Bethany Home Rd
544           KM    Model Proposed BH rd stormdrain (Collection system, option 6)
              *  KO     3
545           HC       2
              *
              * DDM   ***** Preserved *****

546           KK   SBH51
547           KM    Surge Basin at 51st and Betany Home Road (BH)
548           KM    By-pass 120 cfs to proposed BH SD, Surge 80 ac-ft into basin
549           KM    Wood/Patel 15-SEP-97   dtp
              *  KO     3
550           DT   SBH51
551           DI       0     120    1000    5000
552           DQ       0       0     880    4880
              *
              *  ==========   REVISED BY WOOD/PATEL ---> RES8 Removed
              *               15-SEP-97    DTP           Proposed BH Rd Stormdrain
              *       KK  RES8
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM PONDING AREA NORTHEAST OF GRAND AVENUE/RR EMBANKMENT
              *       KM SUB-BASIN 8-22E
              *       RS     1    ELEV   1148.
              *       SV     0   14.95   50.65   78.30  116.78  220.43
              *       SE 1148.   1149.   1150.  1150.5   1151.   1152.
              *       SQ     0     0.1     0.2    310.   1070.   4090.
              *
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

553         KK  R822WW
554         KM   SUB-BASIN STREET ROUTE
555         KM   WEST
556         KM   RW= 110'
557         KM   PAV= 68'
558         RS       4    FLOW     -1.
559         RC    0.02   0.016    0.02   3090.  0.0022
560         RX       0     0.1    21.0    31.0    79.0    89.0    110.   110.1
561         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *
            * DDM   ***** Updated *****

562         KK   8-22W
563         KM   SUB-BASIN 8-22W
564         KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
565         KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
566         KM     L =  .51  Kb = .039  Adj. Slope =   13.0
567         BA    .494
568         LG    .170    .260   5.100    .340  57.000
569         UC    .450    .133
570         UA       0       5      16      30      65      77      84      90      94      97
571         UA     100
            * DDM   ***** Preserved *****

572         KK  D822WS
573         KM   SUB-BASIN DIVERSION
574         KM   SUB-BASIN 8-22W
575         KM   21% West & 79% South
576         DT  D822WW
577         DI       0  10000.
578         DQ       0   2100.
            *
            * DDM   ***** Preserved *****

579         KK  C8-22W
580         KM   SUB-BASIN COMBINE
581         KM   ==========   REVISED BY WOOD/PATEL ---> Orignal HC = 3
582         KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
583         HC       2    15.1
            *
            * DDM   ***** Preserved *****

584         KK   SBH3W
585         KM   STREET CAPACITY DIVERSION
586         KM   BETHANY HOME ROAD
587         KM   DIVERSION TO SOUTH
588         KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
589         KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
590         KM   ==========================================================================
591         KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
592         KM          Original Flow Split (42% South) and with Stormdrain Capacity = 340cfs
593         KM   ==========================================================================
594         DT   SBH3S
595         DI       0     39.     83.    340.   1068.   1825.    5000
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

596           DQ       0     0.1     0.2    0.25     306     624    1957
              *
              * DDM   ***** Preserved *****

597           KK   RBH5
598           KM   STREET ROUTE
599           KM   WEST
600           KM   BETHANY HOME
601           RS       3    FLOW     -1.
602           RC    0.02   0.016    0.02   2740.  0.0021
603           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
604           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

605           KK  D822WW
606           KM   RETRIEVAL OF SUB-BASIN DIVERSION
607           KM   SUB-BASIN 8-22W
608           DR  D822WW
              * DDM   ***** Preserved *****

609           KK   S59ES
610           KM   STREET CAPACITY DIVERSION
611           KM   59TH AVENUE
612           KM   DIVERSION TO WEST
613           DT   S59EW
614           DI       0     38.     92.   1238.   2113.
615           DQ       0     0.1     38.    632.   1074.
              * DDM   ***** Preserved *****

616           KK   R59I
617           KM   STREET ROUTE
618           KM   SOUTH
619           KM   59TH Avenue
620           RS       3    FLOW     -1.
621           RC    0.02   0.016    0.02   2690.  0.0021
622           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
623           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

624           KK   CBH59
625           KM   INTERSECTION COMBINE
626           KM   BETHANY HOME & 59TH
627           HC       2    15.1
              *
              * DDM   ***** Preserved *****

628           KK   DBH59
629           KM   STREET INTERSECTION DIVERSION
630           KM   BETHANY HOME & 59TH
631           KM   44% West & 56% South
632           KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
633           KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
634           KM   ==========================================================================
635           KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
636           KM                Original Flow Split and with Stormdrain Capacity = 372cfs.
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

637         KM   ==========================================================================
638         DT   D59BH
639         DI       0    372.  10000.
640         DQ       0    0.05    5392
            *
            * DDM   ***** Preserved *****

641         KK   RBH6
642         KM   STREET ROUTE
643         KM   WEST
644         KM   BETHANY HOME
645         RS       3    FLOW     -1.
646         RC    0.02   0.016    0.02   2690.  0.0032
647         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
648         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

649         KK   SGA5S
            * *******KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * *******KM GLENDALE
            * *******DR SGA5S
650         BI   SGA5S      22
            * DDM   ***** Preserved *****

651         KK   R722S
652         KM   SUB-BASIN STREET ROUTE
653         KM   SOUTH
654         KM   RW= 320'
655         KM   PAV= 218'
656         RS       7    FLOW     -1.
657         RC    0.02   0.016    0.02   5240.  0.0022
658         RX       0     0.1    51.0    61.0   259.0   269.0    320.   320.1
659         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

660         KK    7-22
661         KM   SUB-BASIN 7-22
662         KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
663         KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
664         KM     L = 1.47  Kb = .067  Adj. Slope =   14.0
665         BA    .970
666         LG    .220    .260   5.600    .260  39.000
667         UC   1.458    .779
668         UA       0       5      16      30      65      77      84      90      94      97
669         UA     100
            * DDM   ***** Preserved *****

670         KK   S59EW
671         KM   RETRIEVAL OF STREET CAPACITY DIVERSION
672         KM   59TH
673         DR   S59EW
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

674           KK   R722W
675           KM   SUB-BASIN STREET ROUTE
676           KM   WEST
677           KM   RW= 220'
678           KM   PAV= 148'
679           RS       5    FLOW     -1.
680           RC    0.02   0.016    0.02   5200.  0.0040
681           RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
682           RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

683           KK   C7-22
684           KM   SUB-BASIN COMBINE
685           HC       3    19.3
              * DDM   ***** Preserved *****

686           KK   D722S
687           KM   SUB-BASIN DIVERSION
688           KM   SUB-BASIN 7-22
689           KM   36% West & 64% South
690           DT   D722W
691           DI       0  10000.
692           DQ       0   3600.
              * DDM   ***** Preserved *****

693           KK   CBH2
694           KM   EAST/WEST STREET COMBINE
695           KM   BETHANY HOME
696           HC       2    25.8
              *
              * DDM   ***** Preserved *****

697           KK   SBH4W
698           KM   STREET CAPACITY DIVERSION
699           KM   BETHANY HOME
700           KM   DIVERSION TO SOUTH
701           KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
702           KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
703           KM   ==========================================================================
704           KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
705           KM         Original Flow Split (69.3% South) and with Stormdrain Capacity = 464cfs
706           KM   ==========================================================================
707           DT   SBH4S
708           DI       0     43.    155.    464.   2245.   3826.   5000.
709           DQ       0     0.1     0.2    0.25    1234    2330    3143
              *
              * DDM   ***** Preserved *****

710           KK   RBH7
711           KM   STREET ROUTE
712           KM   WEST
713           KM   BETHANY HOME
714           RS       3    FLOW     -1.
715           RC    0.02   0.016    0.02   2510.  0.0026
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 716          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 717          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

 718          KK   D67GA
              * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * *********KM 67TH & GLENDALE
              * *********DR D67GA
 719          BI   D67GA      22
              * DDM   ***** Preserved *****

 720          KK   R67J
 721          KM   STREET ROUTE
 722          KM   SOUTH
 723          KM   67TH Avenue
 724          RS       2    FLOW     -1.
 725          RC    0.02   0.016    0.02   2660.  0.0064
 726          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 727          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

 728          KK   D722W
 729          KM   RETRIEVAL OF SUB-BASIN DIVERSION
 730          KM   SUB-BASIN 7-22
 731          DR   D722W
              * DDM   ***** Preserved *****

 732          KK   C67E
 733          KM   NORTH/SOUTH STREET COMBINE
 734          KM   67TH AVENUE
 735          HC       2    19.3
              * DDM   ***** Preserved *****

 736          KK   S67FS
 737          KM   STREET CAPACITY DIVERSION
 738          KM   67TH
 739          KM   DIVERSION TO WEST
 740          DT   S67FW
 741          DI       0     30.     69.    918.   1567.
 742          DQ       0     0.1     27.    446.    758.
              * DDM   ***** Preserved *****

 743          KK   R67K
 744          KM   STREET ROUTE
 745          KM   SOUTH
 746          KM   67TH Avenue
 747          RS       4    FLOW     -1.
 748          RC    0.02   0.016    0.02   2640.  0.0016
 749          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 750          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

  751         KK   CBH67
  752         KM   INTERSECTION COMBINE
  753         KM   BETHANY HOME & 67TH
  754         HC       2    21.3
              *
              * DDM   ***** Preserved *****

  755         KK   DBH67
  756         KM   STREET INTERSECTION DIVERSION
  757         KM   BETHANY HOME & 67TH
  758         KM   35% West & 65% South
  759         KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
  760         KM                15-SEP-97    DTP          Proposed BH Rd Stormdrain
  761         KM   ==================================================================
  762         KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
  763         KM                Original Flow Split and with Stormdrain Capacity = 515cfs.
  764         KM   ==================================================================
  765         DT   D67BH
  766         DI       0    515.  10000.
  767         DQ       0    0.05    6165
              *
              * DDM   ***** Preserved *****

  768         KK    RBH8
  769         KM   STREET ROUTE
  770         KM   WEST
  771         KM   BETHANY HOME
  772         RS       3    FLOW     -1.
  773         RC    0.02   0.016    0.02   2650.  0.0037
  774         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
  775         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

  776         KK   SGA6S
              * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * ********KM GLENDALE AVENUE
              * ********DR SGA6S
  777         BI   SGA6S      22
              * DDM   ***** Preserved *****

  778         KK  R1221S
  779         KM   SUB-BASIN STREET ROUTE
  780         KM   SOUTH
  781         KM   RW= 70'
  782         KM   PAV= 43'
  783         RS       8    FLOW     -1.
  784         RC    0.02   0.016    0.02   5220.  0.0015
  785         RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
  786         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 787          KK   12-21
 788          KM   SUB-BASIN 12-21
 789          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
 790          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
 791          KM     L = 1.29  Kb = .074  Adj. Slope =   16.0
 792          BA   1.004
 793          LG    .370    .150   9.700    .070  17.000
 794          UC   1.263    .586
 795          UA       0       5      16      30      65      77      84      90      94      97
 796          UA     100
              * DDM   ***** Preserved *****

 797          KK   RET12
 798          KM   RETENTION BASIN DIVERSION
 799          KM   SUB-BASIN 12-21
 800          KM    6% OF SUB-BASIN DRAINS TO RETENTION BASIN
 801          DT  D1221R    4.18
 802          DI       0  10000.
 803          DQ       0    600.
              * DDM   ***** Preserved *****

 804          KK   S67FW
 805          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
 806          KM   67TH
 807          DR   S67FW
              * DDM   ***** Preserved *****

 808          KK  R1221W
 809          KM   SUB-BASIN STREET ROUTE
 810          KM   WEST
 811          KM   RW= 120'
 812          KM   PAV= 78'
 813          RS       3    FLOW     -1.
 814          RC    0.02   0.016    0.02   5330.  0.0036
 815          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
 816          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

 817          KK  C12-21
 818          KM   SUB-BASIN COMBINE
 819          HC       3  31.347
              * DDM   ***** Preserved *****

 820          KK  D1221S
 821          KM   SUB-BASIN DIVERSION
 822          KM   SUB-BASIN 12-21
 823          KM   38% West & 62% South
 824          DT  D1221W
 825          DI       0  10000.
 826          DQ       0   3800.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

827           KK    CBH3
828           KM   EAST/WEST STREET COMBINE
829           KM   BETHANY HOME
830           HC       2  31.347
              *
              * DDM   ***** Preserved *****

831           KK   SBH5W
832           KM   STREET CAPACITY DIVERSION
833           KM   BETHANY HOME
834           KM   DIVERSION TO SOUTH
835           KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
836           KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
837           KM   ==========================================================================
838           KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
839           KM        Original Flow Split (36.5% South) and with Stormdrain Capacity = 643cfs.
840           KM   ==========================================================================
841           DT   SBH5S
842           DI       0     37.     73.    643.   1221.   2087.   5000.
843           DQ       0     0.1     0.2    0.25     211     527    1590
              *
              * DDM   ***** Preserved *****

844           KK    RBH9
845           KM   STREET ROUTE
846           KM   WEST
847           KM   BETHANY HOME
848           RS       3    FLOW     -1.
849           RC    0.02   0.016    0.02   2680.  0.0039
850           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
851           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

852           KK   D75GA
              * *******KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * *******KM 75TH & GLENDALE
              * *******DR D75GA
853           BI   D75GA      22
              * DDM   ***** Preserved *****

854           KK    R75K
855           KM   STREET ROUTE
856           KM   SOUTH
857           KM   75TH Avenue
858           RS       3    FLOW     -1.
859           RC    0.02   0.016    0.02   2620.  0.0021
860           RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
861           RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

862         KK  D1221W
863         KM   RETRIEVAL OF SUB-BASIN DIVERSION
864         KM   SUB-BASIN 12-21
865         DR  D1221W
            * DDM   ***** Preserved *****

866         KK    C75E
867         KM   NORTH/SOUTH STREET COMBINE
868         KM   75TH AVENUE
869         HC       2  31.347
            * DDM   ***** Preserved *****

870         KK   S75GS
871         KM   STREET CAPACITY DIVERSION
872         KM   75TH
873         KM   DIVERSION TO WEST
874         DT   S75GW
875         DI       0     35.     66.    821.   1404.
876         DQ       0     0.1     16.    260.    442.
            * DDM   ***** Preserved *****

877         KK    R75L
878         KM   STREET ROUTE
879         KM   SOUTH
880         KM   75TH Avenue
881         RS       4    FLOW     -1.
882         RC    0.02   0.016    0.02   2640.  0.0019
883         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
884         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

885         KK   CBH75
886         KM   INTERSECTION COMBINE
887         KM   BETHANY HOME & 75TH
888         HC       2  31.347
            *
            * DDM   ***** Preserved *****

889         KK   DBH75
890         KM   STREET INTERSECTION DIVERSION
891         KM   BETHANY HOME & 75TH
892         KM   69% West & 31% South
893         KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
894         KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
895         KM   ==========================================================================
896         KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
897         KM                Original Flow Split and with Stormdrain Capacity = 714cfs.
898         KM   ==========================================================================
899         DT   D75BH
900         DI       0    714.  10000.
901         DQ       0    0.05    2879
            *
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

902         KK   RBH10
903         KM   STREET ROUTE
904         KM   WEST
905         KM   BETHANY HOME
906         RS       3    FLOW     -1.
907         RC    0.02   0.016    0.02   2590.  0.0035
908         RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
909         RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

910         KK   SGA7S
            * *******KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * *******KM GLENDALE
            * *******DR SGA7S
911         BI   SGA7S      22
            * DDM   ***** Preserved *****

912         KK  R1121S
913         KM   SUB-BASIN STREET ROUTE
914         KM   SOUTH
915         KM   RW= 70'
916         KM   PAV= 43'
917         RS       7    FLOW     -1.
918         RC    0.02   0.016    0.02   5960.  0.0024
919         RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
920         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

921         KK   11-21
922         KM   SUB-BASIN 11-21
923         KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
924         KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
925         KM     L = 1.25  Kb = .079  Adj. Slope =   17.0
926         BA    .985
927         LG    .390    .150   7.600    .140  13.000
928         UC   1.329    .612
929         UA       0       5      16      30      65      77      84      90      94      97
930         UA     100
            *
            * DDM   ***** Preserved *****

931         KK   RET11
932         KM   RETENTION BASIN DIVERSION
933         KM   SUB-BASIN 11-21
934         KM   28% OF SUB-BASIN DRAINS TO RETENTION BASIN
935         DT  D1121R   14.61
936         DI       0  10000.
937         DQ       0   2800.
            *
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

938         KK   S75GW
939         KM   RETRIEVAL OF STREET CAPACITY DIVERSION
940         KM   75TH
941         DR   S75GW
            * DDM   ***** Preserved *****

942         KK  R1121W
943         KM   SUB-BASIN STREET ROUTE
944         KM   WEST
945         KM   RW= 50'
946         KM   PAV= 35'
947         RS       5    FLOW     -1.
948         RC    0.02   0.016    0.02   5240.  0.0035
949         RX       0     0.1     7.5    27.5    32.5    42.5     50.    50.1
950         RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

951         KK  C11-21
952         KM   SUB-BASIN COMBINE
953         HC       3  34.871
            * DDM   ***** Preserved *****

954         KK  D1121S
955         KM   SUB-BASIN DIVERSION
956         KM   SUB-BASIN 11-21
957         KM   30% West & 70% South
958         DT  D1121W
959         DI       0  10000.
960         DQ       0   3000.
            * DDM   ***** Preserved *****

961         KK    CBH4
962         KM   EAST/WEST STREET COMBINE
963         KM   BETHANY HOME
964         HC       2  34.871
            *
            * DDM   ***** Preserved *****

965         KK   SBH6W
966         KM   STREET CAPACITY DIVERSION
967         KM   BETHANY HOME
968         KM   DIVERSION TO SOUTH
969         KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
970         KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
971         KM   ==========================================================================
972         KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
973         KM          Original Flow Split (20% South) and with Stormdrain Capacity = 802cfs.
974         KM   ==========================================================================
975         DT   SBH6S
976         DI       0     36.     56.    802.    927.   1588.    5000
977         DQ       0     0.1     0.2    0.25      25     157     840
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

 978          KK   RBH11
 979          KM   STREET ROUTE
 980          KM   WEST
 981          KM   BETHANY HOME
 982          RS       3    FLOW     -1.
 983          RC    0.02   0.016    0.02   2620.  0.0034
 984          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 985          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

 986          KK   D83GA
              * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * *********KM 83RD & GLENDALE
              * *********DR D83GA
 987          BI   D83GA      22
              * DDM   ***** Preserved *****

 988          KK    R83J
 989          KM   STREET ROUTE
 990          KM   SOUTH
 991          KM   83RD Avenue
 992          RS       3    FLOW     -1.
 993          RC    0.02   0.016    0.02   2590.  0.0025
 994          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
 995          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

 996          KK  D1121W
 997          KM   RETRIEVAL OF SUB-BASIN DIVERSION
 998          KM   SUB-BASIN 11-21
 999          DR  D1121W
              * DDM   ***** Preserved *****

1000          KK    C83E
1001          KM   NORTH/SOUTH STREET COMBINE
1002          KM   83RD AVENUE
1003          HC       2  34.871
              * DDM   ***** Preserved *****

1004          KK   S83FS
1005          KM   STREET CAPACITY DIVERSION
1006          KM   83RD
1007          KM   DIVERSION TO WEST
1008          DT   S83FW
1009          DI       0     28.     50.    834.   1426.
1010          DQ       0     0.1     16.    260.    442.
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1011        KK    R83K
1012        KM   STREET ROUTE
1013        KM   SOUTH
1014        KM   83RD Avenue
1015        RS       4    FLOW     -1.
1016        RC    0.02   0.016    0.02   2580.  0.0018
1017        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1018        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1019        KK   CBH83
1020        KM   INTERSECTION COMBINE
1021        KM   BETHANY HOME & 83RD
            *   HC      2  34.871
1022        HC       2  34.340
            *
            * DDM   ***** Preserved *****

1023        KK   DBH83
1024        KM   BETHANY HOME RD. TERMINATES AT 83RD AVENUE
1025        KM   FLOW DIVERSION BASED ON TOPO AND COMPUTED RATING DATA
1026        KM   SEE APPENDIX G FOR COMPUTATIONS
1027        KM   STREET INTERSECTION DIVERSION - SPECIAL CASE
1028        KM   BETHANY HOME & 83RD
1029        KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
1030        KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
1031        KM   ==========================================================================
1032        KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
1033        KM                Original Flow Split and with Stormdrain Capacity = 834cfs.
1034        KM   ==========================================================================
1035        DT   D83BH
1036        DI       0    243.    781.    834.   1844.    5000
1037        DQ       0     0.1    0.15     0.2     0.3     0.5
            *
            *
            * DDM   ***** Preserved *****

1038        KK   RBH12
1039        KM   STREET ROUTE
1040        KM   WEST
1041        KM   BETHANY HOME
            *  ***** Revised by DMJM ---> Extended Cross-Section, H=5' (to avoid warning)
1042        RS       5    FLOW     -1.
1043        RC    0.02   0.016    0.02   5222.  0.0031
1044        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1045        RY     5.0     0.3     0.3     0.0     0.0     0.3     0.3     5.0
            *
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1046          KK   SGA8S
              * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * ********KM GLENDALE
              * ********DR SGA8S
1047          BI   SGA8S      22
              * DDM   ***** Preserved *****

1048          KK  R1021S
1049          KM   SUB-BASIN STREET ROUTE
1050          KM   SOUTH
1051          KM   RW= 50'
1052          KM   PAV= 35'
1053          RS       5    FLOW     -1.
1054          RC    0.02   0.016    0.02   5140.  0.0035
1055          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
1056          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

1057          KK   10-21
1058          KM   SUB-BASIN 10-21
1059          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1060          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1061          KM     L = 1.42  Kb = .078  Adj. Slope =   17.0
1062          BA    .979
1063          LG    .310    .160   7.600    .130  19.000
1064          UC   1.408    .725
1065          UA       0       5      16      30      65      77      84      90      94      97
1066          UA     100
              *
              * DDM   ***** Preserved *****

1067          KK   RET10
1068          KM   RETENTION BASIN DIVERSION
1069          KM   SUB-BASIN 10-21
1070          KM   70% OF SUB-BASIN DRAINS TO RETENTION BASIN
1071          DT  D1021R   42.04
1072          DI       0  10000.
1073          DQ       0   7000.
              *
              * DDM   ***** Preserved *****

1074          KK   S83FW
1075          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1076          KM   83RD AVENUE
1077          DR   S83FW
              * DDM   ***** Preserved *****

1078          KK  R1021W
1079          KM   SUB-BASIN STREET ROUTE
1080          KM   WEST
1081          KM   RW= 120'
1082          KM   PAV=  78'
1083          RS       5    FLOW     -1.
1084          RC    0.02   0.016    0.02   5260.  0.0032
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1085        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1086        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

1087        KK  C10-21
1088        KM   SUB-BASIN COMBINE
1089        HC       3  43.317
            * DDM   ***** Preserved *****

1090        KK  D1021S
1091        KM   SUB-BASIN DIVERSION
1092        KM   SUB-BASIN 10-21
1093        KM   43% West & 57% South
1094        DT  D1021W
1095        DI       0  10000.
1096        DQ       0   4300.
            * ********************Retrieve hydrograph from tape*****************************
            * DDM   ***** Preserved *****

1097        KK   D91GA
            * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
            * *********KM 91ST & GLENDALE
            * *********DR D91GA
1098        BI   D91GA      22
            * DDM   ***** Preserved *****

1099        KK    R91G
1100        KM   STREET ROUTE
1101        KM   SOUTH
1102        KM   91ST Avenue
1103        RS       3    FLOW     -1.
1104        RC    0.02   0.016    0.02   2600.  0.0024
1105        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1106        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1107        KK  D1021W
1108        KM   RETRIEVAL OF SUB-BASIN DIVERSION
1109        KM   SUB-BASIN 10-21
1110        DR  D1021W
            * DDM   ***** Preserved *****

1111        KK    C91D
1112        KM   NORTH/SOUTH STREET COMBINE
1113        KM   91ST AVENUE
1114        HC       2  43.317
            * DDM   ***** Preserved *****

1115        KK   S91DS
1116        KM   STREET CAPACITY DIVERSION
1117        KM   91ST AVENUE
1118        KM   DIVERSION TO WEST
1119        DT   S91DW
1120        DI       0     12.     26.    435.    743.
1121        DQ       0     0.1     11.    186.    316.
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1122          KK    R91H
1123          KM   STREET ROUTE
1124          KM   SOUTH
1125          KM   91ST Avenue
1126          RS       4    FLOW     -1.
1127          RC    0.02   0.016    0.02   2580.  0.0015
1128          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1129          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
              * DDM   ***** Preserved *****

1130          KK    CBH5
1131          KM   EAST/WEST STREET COMBINE
1132          KM   BETHANY HOME
1133          HC       3  43.317
              *
              *       Removed RES10 for GCDC Modeling        dtp   15-July-97
              *       KK RES10
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM RETENTION BASIN NORTH OF GRAND CANAL EMBANKMENT
              *       KM SQ DATA INCLUDES FLOW SOUTH OVER CANAL AND FLOW WEST OVER 91ST AVE
              *       KM SUB-BASIN 10-21
              *       RS     1    ELEV   1064.
              *       SV     0    16.7    40.1    55.3    71.6
              *       SE 1064.   1066.   1068.   1069.   1070.
              *       SQ     0     0.1     0.2   1377.   5008.
              *
              *
              * DDM   ***** Preserved *****

1134          KK   SBH7W
1135          KM   DIVERSION
1136          KM   BETHANY HOME ALIGNMENT/GRAND CANAL
1137          KM   RETENTION BASIN NORTH OF GRAND CANAL EMBANKMENT
1138          KM   FLOW SOUTH OVER CANAL AND FLOW WEST OVER 91ST AVE
1139          KM   DIVERSION TO SOUTH
1140          KM   *** WOOD/PATEL 3/13/97 ***          Revised 2-SEP-97   dtp
1141          KM   *** NO DIVERSION TO SOUTH ***       Diversion expanded to 10000
1142          DT   SBH7S
1143          DI       0   1377.   5008.   10000
1144          DQ       0     0.1     0.2       1
              *
              * DDM   ***** Preserved *****

1145          KK   DBH91
1146          KM   STREET INTERSECTION DIVERSION
1147          KM   BETHANY HOME & 91ST
1148          KM   100% West & 00% South
1149          DT   D91BH
1150          DI       0  10000.
1151          DQ       0     0.0
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1152          KK   RBH13
1153          KM   STREET ROUTE
1154          KM   WEST
1155          KM   BETHANY HOME
1156          RS       6    FLOW     -1.
1157          RC    0.02   0.016    0.02   5290.  0.0023
1158          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1159          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

1160          KK   SGA9S
              * *********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * *********KM GLENDALE
              * *********DR SGA9S
1161          BI   SGA9S      22
              * DDM   ***** Preserved *****

1162          KK   R921S
1163          KM   SUB-BASIN STREET ROUTE
1164          KM   SOUTH
1165          KM   RW= 50'
1166          KM   PAV= 35'
1167          RS       8    FLOW     -1.
1168          RC    0.02   0.016    0.02   5160.  0.0014
1169          RX       0     0.1     7.5    17.5    31.5    42.5     50.    50.1
1170          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****
              *
              * ****************************************************************
              *     Revised by DMJM to include Agua Fria Freeway Revisions
              * ****************************************************************
              *

1171          KK   9-21E
1172          KM   SUB-BASIN 9-21E      (East of proposed AFF)
1173          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1174          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
1175          KM     L = 1.72  Kb = .080  Adj. Slope =   16.0
1176          KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
1177          KM    =====   15-OCT-97, dtp            Model proposed AFF alignment
1178          BA    .856
1179          LG    .500    .150   7.000    .180       0
1180          UC   1.500    .980
1181          UA       0       5      16      30      65      77      84      90      94      97
1182          UA     100
              *

1183          KK   S91DW
1184          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1185          KM   91ST
1186          DR   S91DW
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1187          KK   R921W
1188          KM   SUB-BASIN STREET ROUTE
1189          KM   WEST
1190          KM   RW= 70'
1191          KM   PAV= 43'
1192          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
1193          KM                15-OCT-97, dtp            Revised L for Composite Route
1194          RS       6    FLOW     -1.
1195          RC    0.02   0.016    0.02   4200.  0.0024
1196          RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
1197          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *

1198          KK   C9-21
1199          KM   SUB-BASIN COMBINE
1200          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
1201          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
1202          HC       3  44.973
              *

1203          KK   D921S
1204          KM   SUB-BASIN DIVERSION
1205          KM   SUB-BASIN 9-21
1206          KM   39% West & 61% South
1207          DT   D921W
1208          DI       0  10000.
1209          DQ       0   3900.
              *

1210          KK  DGAAFS
1211          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1212          KM   AFF & GLENDALE
              *  ****** Retrieve Hydrograph from Tape 22 ******
              *  ****** DRDGAAFS
1213          BI  DGAAFS      22
              *

1214          KK    RAF2
1215          KM   STREET ROUTE
1216          KM   SOUTH  ==>  from Glendale Ave S 2580 ft
1217          KM   Agua Fria Freeway
1218          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
1219          KM                15-OCT-97, dtp            TRAP Section:  B = 12' ,  H = 8'
1220          RS       3    FLOW     -1.
1221          RC   0.015   0.015   0.015   2580.  0.0008
1222          RX     100     116     117     118     119     120     128     144
1223          RY       8       0       0       0       0       0       0       8
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1224          KK    CAFA
1225          KM   Hydrograph Combine along AFF Interceptor
1226          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
1227          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
1228          HC       2  44.973
              *

1229          KK    RAF3
1230          KM   STREET ROUTE
1231          KM   SOUTH ==> from 1/2 mi. S of Glendale Ave to Bethany Home Road
1232          KM   AFF Alignment
1233          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
1234          KM                15-OCT-97, dtp             TRAP Section:  B = 20' ,  H = 8'
1235          RS       3    FLOW     -1.
1236          RC   0.015   0.015   0.015   2520.  0.0008
1237          RX     100     116     117     118     120     122     136     152
1238          RY       8       0       0       0       0       0       0       8
              *

1239          KK   D921W
1240          KM   RETRIEVAL OF SUB-BASIN DIVERSION
1241          KM   SUB-BASIN 9-21
1242          DR   D921W
              *

1243          KK   CBHAF
1244          KM   Hydrograph Combine at Intersection of Bethany Home Road and
1245          KM   Proposed AFF
1246          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
1247          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
1248          HC       3  44.973
              *

1249          KK   9-21W
1250          KM   SUB-BASIN 9-21W   (West of proposed AFF)
1251          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1252          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
1253          KM     L = 1.08  Kb = .080  Adj. Slope =   15.0
1254          KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
1255          KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
1256          BA    .111
1257          LG    .500    .150   7.000    .180       0
1258          UC   1.354   1.929
1259          UA       0       5      16      30      65      77      84      90      94      97
1260          UA     100
              *

1261          KK   S99AS
1262          KM   STREET CAPACITY DIVERSION
1263          KM   99TH AVENUE
1264          KM   DIVERSION TO WEST
1265          KM   SPECIAL CASE 100% FLOW WEST
1266          DT   S99AW
1267          DI       0  10000.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1268          DQ       0   9999.
              *

1269          KK    R99C
1270          KM   STREET ROUTE
1271          KM   SOUTH
1272          KM   99TH Avenue
1273          RS       3    FLOW     -1.
1274          RC    0.02   0.016    0.02   2220.  0.0014
1275          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1276          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
1277          KM   ==========   REVISED BY WOOD/PATEL ---> Operation RES9 removed
1278          KM                20-OCT-97    DTP           Model Proposed BHROC
              *       KK  RES9
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM PONDING AREA NORTH OF GRAND CANAL
              *       KM SQ DATA INCLUDES FLOW SOUTH OVER CANAL AND FLOW WEST OVER 99TH AVE
              *       KM SUB-BASIN 9-21
              *       RS     1    ELEV   1056.
              *       SV     0    16.5    38.3    75.5   140.4
              *       SE 1056.   1058.   1059.   1060.   1061.
              *       SQ    0.     0.1   1755.   6437.  16856.
              *

1279          KK    CBH6
1280          KM   Hydrograph Combine at Intersection of Bethany Home Road and
1281          KM   99th Avenue
1282          HC       2  45.158
              *
              *   WOOD/PATEL 3/27/97
              *   ALL FLOW DIVERTED WEST ALONG GRAND CANAL (NO CHANGE)
              *

1283          KK   DBH99
1284          KM   STREET INTERSECTION DIVERSION
1285          KM   BETHANY HOME & 99TH
1286          KM   100% West & 00% South
1287          DT   D99BH
1288          DI       0  10000.
1289          DQ       0     0.0
              *

1290          KK   RBH14
1291          KM   STREET ROUTE
1292          KM   WEST  ==>  from 99 Ave @ Agua Fria HWY to New River Outfall along BH Rd
1293          KM   BETHANY HOME
1294          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
1295          KM                15-OCT-97, dtp            TRAP Section:  B = 26' ,  H = 8'
1296          KM   ******* REVISED BY DMJM ---> Extended Cross-Section , H = 12'
1297          RS       4    FLOW     -1.
1298          RC   0.015   0.015   0.015   2406.  0.0010
1299          RX      92     100     116     125     130     142     158     164
1300          RY      12       8       0       0       0       0       8      12
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1301          KK   8-21E
1302          KM   SUB-BASIN 8-21E
1303          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1304          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
1305          KM     L =  .96  Kb = .085  Adj. Slope =   14.0
1306          BA    .508
1307          LG    .480    .230   6.200    .250   2.000
1308          UC   1.454    .798
1309          UA       0       5      16      30      65      77      84      90      94      97
1310          UA     100
              *

1311          KK   S99AW
1312          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1313          KM   99TH AVENUE
1314          DR   S99AW

1315          KK  R821EW
1316          KM   SUB-BASIN STREET ROUTE
1317          KM   WEST
1318          KM   RW= 70'
1319          KM   PAV= 43'
1320          RS       4    FLOW     -1.
1321          RC    0.02   0.016    0.02   3300.  0.0024
1322          RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
1323          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *

1324          KK  C8-21E
1325          KM   SUB-BASIN COMBINE
1326          HC       2  46.012
              * DDM   ***** Preserved *****

1327          KK  D821ES
1328          KM   SUB-BASIN DIVERSION
1329          KM   SUB-BASIN 8-21E
1330          KM   56% West & 44% South
1331          DT  D821EW
1332          DI       0  10000.
1333          DQ       0   5600.
              *
              * DDM   ***** Preserved *****

1334          KK    CBH7
1335          KM   EAST/WEST STREET COMBINE
              *  KO     3                              21
1336          HC       2  46.012
              *
1337          KM   ==========   REVISED BY WOOD/PATEL ----> RES8S operation removed
1338          KM                19-Jun-97    DTP
              *
              *       KK RES8S
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM PONDING AREA EAST OF GRAND CANAL
              *       KM SUB-BASIN 8-21E
```

```
*       RS     1    ELEV   1052.
*       SV     0    18.0    44.7    89.0
*       SE 1052.   1054.   1055.   1056.
*       SQ    0.     0.1     0.2   2160.
*
*
* DDM   ***** Updated *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1339        KK   8-21W
1340        KM   SUB-BASIN 8-21W
1341        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1342        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
1343        KM     L =  .70  Kb = .081  Adj. Slope =   16.0
1344        BA    .274
1345        LG    .430    .230   6.200    .240   8.000
1346        UC    .979    .568
1347        UA       0       5      16      30      65      77      84      90      94      97
1348        UA     100
            *
            * DDM   ***** Preserved *****

1349        KK  C8-21W
1350        KM   SUB-BASIN COMBINE
1351        HC       2  46.290
            *
            * DDM   ***** Preserved *****

1352        KK  D821EW
1353        KM   RETRIEVAL OF SUB-BASIN DIVERSION
1354        KM   SUB-BASIN 8-21E
            *  KO     3
1355        DR  D821EW
            *
            * DDM   ***** Preserved *****

1356        KK   RES8N
1357        KM   PONDING AREA RESERVOIR ROUTE
1358        KM   PONDING AREA NORTHEAST OF GRAND CANAL
1359        KM   SUB-BASIN 8-21E
            *  KO     3
1360        RS       1    ELEV   1050.
1361        SV       0    15.0    34.7    63.8   107.6
1362        SE   1050.   1052.   1053.   1054.   1055.
1363        SQ      0.     0.1     0.2   4536.  13441.
            *
            * DDM   ***** Preserved *****

1364        KK   NULL5
1365        KM   NULL COMBINE @ BETHANY HOME C.P.
1366        HC       3     1.
            *
            * CAMELBACK COMPUTATION PATH
            *
            * DDM   ***** Preserved *****

1367        KK   D27BH
1368        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1369        KM   27TH & BETHANY HOME
1370        DR   D27BH
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1371          KK   R27D
1372          KM   STREET ROUTE
1373          KM   SOUTH
1374          KM   27TH Avenue
1375          RS       5    FLOW     -1.
1376          RC    0.02   0.016    0.02   5280.  0.0035
1377          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1378          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Updated *****

1379          KK   13-22
1380          KM   SUB-BASIN 13-22
1381          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1382          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
1383          KM     L = 1.00  Kb = .061  Adj. Slope =   18.0
1384          BA    .246
1385          LG    .180    .250   5.100    .340  56.000
1386          UC    .879    .713
1387          UA       0       5      16      30      65      77      84      90      94      97
1388          UA     100
              * DDM   ***** Updated *****

1389          KK   14-22
1390          KM   SUB-BASIN 14-22
1391          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1392          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1393          KM     L = 1.32  Kb = .073  Adj. Slope =   13.0
1394          BA   1.000
1395          LG    .240    .250   5.000    .350  36.000
1396          UC   1.500    .725
1397          UA       0       5      16      30      65      77      84      90      94      97
1398          UA     100
              * DDM   ***** Preserved *****

1399          KK  SD31AS
1400          KM   RETRIEVAL OF STORM DRAIN DIVERSION
1401          KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
1402          KM   CAP= 147 CFS SOUTH
1403          DR  SD31AS
              * DDM   ***** Preserved *****

1404          KK  CSD31B
1405          KM   SUB-BASIN COMBINE FOR STORM DRAIN DIVERSION
1406          HC       2
              * DDM   ***** Preserved *****

1407          KK  SD31B
1408          KM   STORM DRAIN DIVERSION
1409          KM   STORM DRAIN ALONG HALF MILE STREET
1410          KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
1411          KM   DIVERSION SOUTH
1412          KM   CAP= 150 CFS SOUTH
1413          DT  SD31BS
1414          DI       0    150.  10150.
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1415        DQ       0    150.    150.
            * DDM   ***** Preserved *****

1416        KK  D1422E
1417        KM   SUB-BASIN DIVERSION
1418        KM   SUB-BASIN 14-22
1419        KM   48% WEST & 52% EAST
1420        DT  D1422W
1421        DI       0  10000.
1422        DQ       0   4800.
            * DDM   ***** Preserved *****

1423        KK   CCB27
1424        KM   INTERSECTION COMBINE
1425        KM   CAMELBACK & 27TH
1426        HC       3   5.038
            * DDM   ***** Preserved *****

1427        KK   DCB27
1428        KM   STREET INTERSECTION DIVERSION
1429        KM   CAMELBACK & 27TH
1430        KM   0% West & 100% South
1431        KM   DIVERSION SOUTH
1432        KM   EXISTING STORM DRAIN ALONG 27TH AVENUE
1433        KM   CAP= 152 CFS SOUTH
1434        DT   D27CB
1435        DI       0  10000.
1436        DQ       0  10000.
            * DDM   ***** Preserved *****

1437        KK   D35BH
1438        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1439        KM   35TH & BETHANY HOME
1440        DR   D35BH
            * DDM   ***** Preserved *****

1441        KK   R35G
1442        KM   STREET ROUTE
1443        KM   SOUTH
1444        KM   35TH Avenue
1445        RS       5    FLOW     -1.
1446        RC    0.02   0.016    0.02   5260.  0.0042
1447        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1448        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1449        KK  D1422W
1450        KM   RETRIEVAL OF SUB-BASIN DIVERSION
1451        KM   SUB-BASIN 14-22
1452        DR  D1422W
            * DDM   ***** Updated *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1453          KK   15-22
1454          KM   SUB-BASIN 15-22
1455          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1456          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1457          KM     L = 1.54  Kb = .071  Adj. Slope =   15.0
1458          BA    .998
1459          LG    .240    .260   4.800    .350  34.000
1460          UC   1.500    .821
1461          UA       0       5      16      30      65      77      84      90      94      97
1462          UA     100
              *
              * DDM   ***** Preserved *****

1463          KK  RET150
1464          KM   RETENTION BASIN DIVERSION
1465          KM   SUB-BASIN 15-22
1466          KM   1% OF SUB-BASIN DRAINS TO RETENTION BASIN
1467          DT  D1522R    0.35
1468          DI       0  10000.
1469          DQ       0    100.
              *
              * DDM   ***** Preserved *****

1470          KK  SD39AS
1471          KM   RETRIEVAL OF STORM DRAIN DIVERSION
1472          KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
1473          KM   CAP= 164 CFS SOUTH
1474          DR  SD39AS
              * DDM   ***** Preserved *****

1475          KK  CSD39B
1476          KM   SUB-BASIN COMBINE FOR STORM DRAIN DIVERSION
1477          HC       2
              * DDM   ***** Preserved *****

1478          KK  SD39B
1479          KM   STORM DRAIN DIVERSION
1480          KM   STORM DRAIN ALONG HALF MILE STREET
1481          KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
1482          KM   DIVERSION SOUTH
1483          KM   CAP= 268 CFS SOUTH
1484          DT  SD39BS
1485          DI       0    268.  10268.
1486          DQ       0    268.    268.
              * DDM   ***** Preserved *****

1487          KK  D1522E
1488          KM   SUB-BASIN DIVERSION
1489          KM   SUB-BASIN 15-22
1490          KM   49% WEST & 51% EAST
1491          DT  D1522W
1492          DI       0  10000.
1493          DQ       0   4900.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1494          KK   CCB35
1495          KM   INTERSECTION COMBINE
1496          KM   CAMELBACK & 35TH
1497          HC       4   9.140
              * DDM   ***** Preserved *****

1498          KK   DCB35
1499          KM   STREET INTERSECTION DIVERSION
1500          KM   CAMELBACK & 35TH
1501          KM   0% West & 100% South
1502          KM   DIVERSION SOUTH
1503          KM   EXISTING STORM DRAIN ALONG 35TH AVENUE
1504          KM   CAP=  86 CFS SOUTH
1505          DT   D35CB
1506          DI       0  10000.
1507          DQ       0  10000.
              * DDM   ***** Preserved *****

1508          KK   D43BH
1509          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1510          KM   43RD & BETHANY HOME
1511          DR   D43BH
              * DDM   ***** Preserved *****

1512          KK   R43H
1513          KM   STREET ROUTE
1514          KM   SOUTH
1515          KM   43RD Avenue
1516          RS       3    FLOW     -1.
1517          RC    0.02   0.016    0.02   2620.  0.0037
1518          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1519          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1520          KK  D1522W
1521          KM   RETRIEVAL OF SUB-BASIN DIVERSION
1522          KM   SUB-BASIN 15-22
1523          DR  D1522W
              * DDM   ***** Preserved *****

1524          KK   C43E
1525          KM   NORTH/SOUTH STREET COMBINE
1526          KM   43RD AVENUE
1527          HC       2   6.671
              * DDM   ***** Preserved *****

1528          KK   S43ES
1529          KM   STREET CAPACITY DIVERSION
1530          KM   43RD AVENUE
1531          KM   DIVERSION TO WEST
1532          KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
1533          KM   CAP= 165 CFS SOUTH
1534          DT   S43EW
1535          DI       0    200.    233.   1311.   2131.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1536          DQ       0     0.1     24.    565.    975.
              * DDM   ***** Preserved *****

1537          KK   R43I
1538          KM   STREET ROUTE
1539          KM   SOUTH
1540          KM   43RD Avenue
1541          RS       3    FLOW     -1.
1542          RC    0.02   0.016    0.02   2600.  0.0028
1543          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1544          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1545          KK   D51BH
1546          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1547          KM   51ST & BETHANY HOME
1548          DR   D51BH
              * DDM   ***** Preserved *****

1549          KK   RGR4
1550          KM   STREET ROUTE
1551          KM   SOUTHEAST
1552          KM   GRAND AVENUE
1553          KM   RW=  93'
1554          KM   PAV=  88'
1555          RS       7    FLOW     -1.
1556          RC    0.02   0.016    0.02   3690.  0.0010
1557          RX       0     0.1     2.5    12.5    80.5    90.5     93.    93.1
1558          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

1559          KK   SBH2S
1560          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1561          KM   BETHANY HOME
1562          DR   SBH2S
              * DDM   ***** Preserved *****

1563          KK  R1622S
1564          KM   SUB-BASIN STREET ROUTE
1565          KM   SOUTH
1566          KM   RW= 120'
1567          KM   PAV= 78'
1568          RS       3    FLOW     -1.
1569          RC    0.02   0.016    0.02   2650.  0.0031
1570          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1571          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

1572          KK  16-22E
1573          KM   SUB-BASIN 16-22E
1574          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1575          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
1576          KM     L = 1.14  Kb = .065  Adj. Slope =   12.0
1577          BA    .513
1578          LG    .210    .260   4.900    .340  42.000
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1579          UC   1.275    .787
1580          UA       0       5      16      30      65      77      84      90      94      97
1581          UA     100
              * DDM   ***** Preserved *****

1582          KK   S43EW
1583          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1584          KM   43RD AVENUE
1585          DR   S43EW
              * DDM   ***** Preserved *****

1586          KK  R1622W
1587          KM   SUB-BASIN STREET ROUTE
1588          KM   WEST
1589          KM   RW= 120'
1590          KM   PAV= 78'
1591          RS       4    FLOW     -1.
1592          RC    0.02   0.016    0.02   2550.  0.0012
1593          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1594          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

1595          KK  C1622E
1596          KM   SUB-BASIN COMBINE
1597          HC       4    11.6
              * DDM   ***** Preserved *****

1598          KK   RGR5
1599          KM   STREET ROUTE
1600          KM   SOUTHEAST
1601          KM   GRAND AVENUE
1602          KM   RW=  93'
1603          KM   PAV=  88'
1604          RS       5    FLOW     -1.
1605          RC    0.02   0.016    0.02   3620.  0.0016
1606          RX       0     0.1     2.5    12.5    80.5    90.5     93.    93.1
1607          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

1608          KK   CCB43
1609          KM   INTERSECTION COMBINE
1610          KM   CAMELBACK & 43RD
1611          HC       3    11.6
              * DDM   ***** Preserved *****

1612          KK   DCB43
1613          KM   STREET INTERSECTION DIVERSION
1614          KM   CAMELBACK & 43RD
1615          KM   0% West & 100% South
1616          KM   DIVERSION SOUTH
1617          KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
1618          KM   CAP= 100 CFS SOUTH
1619          DT   D43CB
1620          DI       0  10000.
1621          DQ       0  10000.
              * DDM   ***** Updated *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


1622          KK  16-22W
1623          KM   SUB-BASIN 16-22W
1624          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1625          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
1626          KM     L =  .83  Kb = .024  Adj. Slope =   14.0
1627          BA    .479
1628          LG    .150    .250   5.000    .360  55.000
1629          UC    .433    .192
1630          UA       0       5      16      30      65      77      84      90      94      97
1631          UA     100
              * DDM   ***** Preserved *****

1632          KK  D1622S
1633          KM   SUB-BASIN DIVERSION
1634          KM   SUB-BASIN 16-22W
1635          KM   71% West & 29% South
1636          DT  D1622W
1637          DI       0  10000.
1638          DQ       0   7100.
              * DDM   ***** Preserved *****

1639          KK   CCB1
1640          KM   EAST/WEST STREET COMBINE
1641          KM   CAMELBACK
1642          HC       2    12.0
              * DDM   ***** Preserved *****

1643          KK   SCB1W
1644          KM   STREET CAPACITY DIVERSION
1645          KM   CAMELBACK
1646          KM   DIVERSION TO SOUTH
1647          DT   SCB1S
1648          DI       0     20.     43.    759.   1303.
1649          DQ       0     0.1     18.    424.    731.
              * DDM   ***** Preserved *****

1650          KK   RCB1
1651          KM   STREET ROUTE
1652          KM   WEST
1653          KM   CAMELBACK
1654          RS       7   FLOW     -1.
1655          RC    0.02   0.016    0.02   3540.  0.0010
1656          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1657          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1658          KK  D1622W
1659          KM   RETRIEVAL OF SUB-BASIN DIVERSION
1660          KM   SUB-BASIN 16-22W
1661          DR  D1622W
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1662          KK   S51FS
1663          KM   STREET CAPACITY DIVERSION
1664          KM   51ST AVENUE
1665          KM   DIVERSION TO WEST
1666          DT   S51FW
1667          DI       0     44.    100.   1329.   2268.
1668          DQ       0     0.1     38.    632.   1074.
              * DDM   ***** Preserved *****

1669          KK   R51J
1670          KM   STREET ROUTE
1671          KM   SOUTH
1672          KM   51ST Avenue
1673          RS       3    FLOW     -1.
1674          RC    0.02   0.016    0.02   2680.  0.0025
1675          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1676          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1677          KK   CCB51
1678          KM   INTERSECTION COMBINE
1679          KM   CAMELBACK & 51ST
1680          HC       2    12.0
              * DDM   ***** Preserved *****

1681          KK   DCB51
1682          KM   STREET INTERSECTION DIVERSION
1683          KM   CAMELBACK & 51ST
1684          KM   51% West & 49% South
1685          DT   D51CB
1686          DI       0  10000.
1687          DQ       0   4900.
              * DDM   ***** Preserved *****

1688          KK   RCB2
1689          KM   STREET ROUTE
1690          KM   WEST
1691          KM   CAMELBACK
1692          RS       3    FLOW     -1.
1693          RC    0.02   0.016    0.02   2430.  0.0026
1694          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1695          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1696          KK   SBH3S
1697          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1698          KM   BETHANY HOME
1699          DR   SBH3S
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1700        KK  R1722S
1701        KM   SUB-BASIN STREET ROUTE
1702        KM   SOUTH
1703        KM   RW= 120'
1704        KM   PAV= 78'
1705        RS       6    FLOW     -1.
1706        RC    0.02   0.016    0.02   5370.  0.0031
1707        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1708        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

1709        KK   17-22
1710        KM   SUB-BASIN 17-22
1711        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1712        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1713        KM     L = 1.32  Kb = .039  Adj. Slope =   19.0
1714        BA   1.016
1715        LG    .200    .260   5.100    .330  46.000
1716        UC    .762    .339
1717        UA       0       5      16      30      65      77      84      90      94      97
1718        UA     100
            *
            * DDM   ***** Preserved *****

1719        KK  RET170
1720        KM   RETENTION BASIN DIVERSION
1721        KM   SUB-BASIN 17-22
1722        KM   1% OF SUB-BASIN DRAINS TO RETENTION BASIN
1723        DT  D1722R    0.74
1724        DI       0  10000.
1725        DQ       0    100.
            *
            * DDM   ***** Preserved *****

1726        KK   S51FW
1727        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1728        KM   51ST
1729        DR   S51FW
            * DDM   ***** Preserved *****

1730        KK  R1722W
1731        KM   SUB-BASIN STREET ROUTE
1732        KM   WEST
1733        KM   RW= 120'
1734        KM   PAV= 78'
1735        RS       7    FLOW     -1.
1736        RC    0.02   0.016    0.02   5300.  0.0022
1737        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1738        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1739          KK  C17-22
1740          KM   SUB-BASIN COMBINE
1741          HC       3    16.1
              * DDM   ***** Preserved *****

1742          KK  D1722S
1743          KM   SUB-BASIN DIVERSION
1744          KM   SUB-BASIN 17-22
1745          KM   29% West & 71% South
1746          DT  D1722W
1747          DI       0  10000.
1748          DQ       0   2900.
              * DDM   ***** Preserved *****

1749          KK   CCB2
1750          KM   EAST/WEST STREET COMBINE
1751          KM   CAMELBACK
1752          HC       2    18.1
              * DDM   ***** Preserved *****

1753          KK   SCB2W
1754          KM   STREET CAPACITY DIVERSION
1755          KM   CAMELBACK
1756          KM   DIVERSION TO SOUTH
1757          DT   SCB2S
1758          DI       0     28.     74.   1361.   2339.
1759          DQ       0     0.1     38.    883.   1523.
              * DDM   ***** Preserved *****

1760          KK   RCB3
1761          KM   STREET ROUTE
1762          KM   WEST
1763          KM   CAMELBACK
1764          RS       4    FLOW     -1.
1765          RC    0.02   0.016    0.02   2980.  0.0019
1766          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1767          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1768          KK   D59BH
1769          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1770          KM   59TH & BETHANY HOME
1771          DR   D59BH
              * DDM   ***** Preserved *****

1772          KK   R59J
1773          KM   STREET ROUTE
1774          KM   SOUTH
1775          KM   59TH Avenue
1776          RS       3    FLOW     -1.
1777          RC    0.02   0.016    0.02   2660.  0.0034
1778          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1779          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1780          KK  D1722W
1781          KM   RETRIEVAL OF SUB-BASIN DIVERSION
1782          KM   SUB-BASIN 17-22
1783          DR  D1722W
              * DDM   ***** Preserved *****

1784          KK   C59E
1785          KM   NORTH/SOUTH STREET COMBINE
1786          KM   59TH AVENUE
1787          HC       2    16.1
              * DDM   ***** Preserved *****

1788          KK   S59FS
1789          KM   STREET CAPACITY DIVERSION
1790          KM   59TH
1791          KM   DIVERSION TO WEST
1792          DT   S59FW
1793          DI       0     44.    122.   1699.   2898.
1794          DQ       0     0.1     60.   1004.   1705.
              * DDM   ***** Preserved *****

1795          KK   R59K
1796          KM   STREET ROUTE
1797          KM   SOUTH
1798          KM   59TH Avenue
1799          RS       3    FLOW     -1.
1800          RC    0.02   0.016    0.02   2670.  0.0026
1801          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1802          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1803          KK   CCB59
1804          KM   INTERSECTION COMBINE
1805          KM   CAMELBACK & 59TH
1806          HC       2    18.1
              * DDM   ***** Preserved *****

1807          KK   DCB59
1808          KM   STREET INTERSECTION DIVERSION
1809          KM   CAMELBACK & 59TH
1810          KM   48% West & 52% South
1811          KM   DIVERSION SOUTH
1812          KM   STORM DRAIN ALONG 59TH AVE
1813          KM   CAP=  14.0 CFS SOUTH
1814          KM   ==========================================================================
1815          KM   REVISED BY DMJM ---> Provide 100 year split with Existing Stormdrain to South
1816          KM                    and Proposed Camelback Storm Drain (10 year flow = 173cfs
1817          KM                    with the Remaining Flow Split per Original Model.
1818          KM   ==========================================================================
              *
1819          DT   D59CB
1820          DI       0     14.     173   10000
1821          DQ       0     14.      14    5124
              *
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1822        KK   RCB4
1823        KM   STREET ROUTE
1824        KM   WEST
1825        KM   CAMELBACK
1826        RS       3    FLOW     -1.
1827        RC    0.02   0.016    0.02   2640.  0.0029
1828        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1829        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1830        KK   SBH4S
1831        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1832        KM   BETHANY HOME
1833        DR   SBH4S
            * DDM   ***** Preserved *****

1834        KK  R1822S
1835        KM   SUB-BASIN STREET ROUTE
1836        KM   SOUTH
1837        KM   RW= 120'
1838        KM   PAV= 78'
1839        RS       6    FLOW     -1.
1840        RC    0.02   0.016    0.02   5440.  0.0027
1841        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1842        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

1843        KK   18-22
1844        KM   SUB-BASIN 18-22
1845        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1846        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1847        KM     L = 1.40  Kb = .075  Adj. Slope =   15.0
1848        BA    .969
1849        LG    .240    .150   7.600    .120  34.000
1850        UC   1.396    .714
1851        UA       0       5      16      30      65      77      84      90      94      97
1852        UA     100
            *
            * DDM   ***** Preserved *****

1853        KK  RET180
1854        KM   RETENTION BASIN DIVERSION
1855        KM   SUB-BASIN 18-22
1856        KM   0.4% OF SUB-BASIN DRAINS TO RETENTION BASIN
1857        DT  D1822R    0.31
1858        DI       0  10000.
1859        DQ       0     40.
            *
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1860        KK   S59FW
1861        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1862        KM   59TH
1863        DR   S59FW
            * DDM   ***** Preserved *****

1864        KK  R1822W
1865        KM   SUB-BASIN STREET ROUTE
1866        KM   WEST
1867        KM   RW= 120'
1868        KM   PAV= 78'
1869        RS       6    FLOW     -1.
1870        RC    0.02   0.016    0.02   5200.  0.0024
1871        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
1872        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

1873        KK  C18-22
1874        KM   SUB-BASIN COMBINE
1875        HC       3    23.8
            * DDM   ***** Preserved *****

1876        KK  D1822S
1877        KM   SUB-BASIN DIVERSION
1878        KM   SUB-BASIN 18-22
1879        KM   44% West & 56% South
1880        DT  D1822W
1881        DI       0  10000.
1882        DQ       0   4400.
            * DDM   ***** Preserved *****

1883        KK   CCB3
1884        KM   EAST/WEST STREET COMBINE
1885        KM   CAMELBACK
1886        HC       2    25.3
            * DDM   ***** Preserved *****

1887        KK   SCB3W
1888        KM   STREET CAPACITY DIVERSION
1889        KM   CAMELBACK
1890        KM   DIVERSION TO SOUTH
1891        KM   ==========================================================================
1892        KM   REVISED BY DMJM --->Provide 100 year split with Proposed Camelback Road Storm
1893        KM                       Drain (10 year flow = 313 cfs)with the Remaining Flow
1894        KM                       Split per the Original Model.
1895        KM   ==========================================================================
            *
1896        DT   SCB3S
1897        DI       0     31.    313.   1451.   2475.
1898        DQ       0     0.1      .2    637.   1211.
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1899          KK   RCB5
1900          KM   STREET ROUTE
1901          KM   WEST
1902          KM   CAMELBACK
1903          RS       3    FLOW     -1.
1904          RC    0.02   0.016    0.02   2520.  0.0021
1905          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1906          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1907          KK   D67BH
1908          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
1909          KM   67TH & BETHANY HOME
1910          DR   D67BH
              * DDM   ***** Preserved *****

1911          KK   R67L
1912          KM   STREET ROUTE
1913          KM   SOUTH
1914          KM   67TH Avenue
1915          RS       3    FLOW     -1.
1916          RC    0.02   0.016    0.02   2650.  0.0025
1917          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1918          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

1919          KK  D1822W
1920          KM   RETRIEVAL OF SUB-BASIN DIVERSION
1921          KM   SUB-BASIN 18-22
1922          DR  D1822W
              * DDM   ***** Preserved *****

1923          KK   C67F
1924          KM   NORTH/SOUTH STREET COMBINE
1925          KM   67TH AVENUE
1926          HC       2  37.078
              * DDM   ***** Preserved *****

1927          KK   S67GS
1928          KM   STREET CAPACITY DIVERSION
1929          KM   67TH
1930          KM   DIVERSION TO WEST
1931          DT   S67GW
1932          DI       0     41.    118.   1650.   2814.
1933          DQ       0     0.1     60.   1004.   1705.
              * DDM   ***** Preserved *****

1934          KK   R67M
1935          KM   STREET ROUTE
1936          KM   SOUTH
1937          KM   67TH Avenue
1938          RS       3    FLOW     -1.
1939          RC    0.02   0.016    0.02   2660.  0.0027
1940          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1941        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1942        KK   CCB67
1943        KM   INTERSECTION COMBINE
1944        KM   CAMELBACK & 67TH
1945        HC       2    25.3
            * DDM   ***** Preserved *****

1946        KK   DCB67
1947        KM   STREET INTERSECTION DIVERSION
1948        KM   CAMELBACK & 67TH
1949        KM   54% West & 46% South
1950        KM   ==========================================================================
1951        KM   REVISED BY DMJM --->Provide 100 year split with Proposed Camelback Road Storm
1952        KM                       Drain (10 year flow = 375cfs)with the Remaining Flow
1953        KM                       Split per the Original Model.
1954        KM   ==========================================================================
            *
1955        DT   D67CB
1956        DI       0    375.   10000
1957        DQ       0      .1    4428
            *
            * DDM   ***** Preserved *****

1958        KK    RCB6
1959        KM   STREET ROUTE
1960        KM   WEST
1961        KM   CAMEL BACK
1962        RS       3    FLOW     -1.
1963        RC    0.02   0.016    0.02   2470.  0.0029
1964        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
1965        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

1966        KK   SBH5S
1967        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1968        KM   BETHANY HOME
1969        DR   SBH5S
            * DDM   ***** Preserved *****

1970        KK  R1321S
1971        KM   SUB-BASIN STREET ROUTE
1972        KM   SOUTH
1973        KM   RW= 220'
1974        KM   PAV= 148'
1975        RS       7    FLOW     -1.
1976        RC    0.02   0.016    0.02   5630.  0.0020
1977        RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
1978        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

1979        KK   13-21
1980        KM   SUB-BASIN 13-21
1981        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
1982        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
1983        KM     L = 1.32  Kb = .076  Adj. Slope =   17.0
1984        BA   1.003
1985        LG    .260    .160   7.300    .130  30.000
1986        UC   1.292    .613
1987        UA       0       5      16      30      65      77      84      90      94      97
1988        UA     100
            *
            * DDM   ***** Preserved *****

1989        KK  RET132
1990        KM   RETENTION BASIN DIVERSION
1991        KM   SUB-BASIN 13-21
1992        KM   13% OF SUB-BASIN DRAINS TO RETENTION BASIN
1993        DT  D1321R    9.47
1994        DI       0  10000.
1995        DQ       0   1300.
            *
            * DDM   ***** Preserved *****

1996        KK   S67GW
1997        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
1998        KM   67TH
1999        DR   S67GW
            * DDM   ***** Preserved *****

2000        KK  R1321W
2001        KM   SUB-BASIN STREET ROUTE
2002        KM   WEST
2003        KM   RW= 270'
2004        KM   PAV= 183'
2005        RS       5    FLOW     -1.
2006        RC    0.02   0.016    0.02   5320.  0.0032
2007        RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
2008        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

2009        KK  C13-21
2010        KM   SUB-BASIN COMBINE
2011        HC       3  37.078
            * DDM   ***** Preserved *****

2012        KK  D1321S
2013        KM   SUB-BASIN DIVERSION
2014        KM   SUB-BASIN 13-21
2015        KM   35% West & 65% South
2016        DT  D1321W
2017        DI       0  10000.
2018        DQ       0   3500.
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2019        KK    CCB4
2020        KM   EAST/WEST STREET COMBINE
2021        HC       2  37.078
            * DDM   ***** Preserved *****

2022        KK   SCB4W
2023        KM   STREET CAPACITY DIVERSION
2024        KM   CAMELBACK
2025        KM   DIVERSION TO SOUTH
2026        KM   ==========================================================================
2027        KM   REVISED BY DMJM ---> Provide 100 year split with Proposed Camelback Road Stor
2028        KM                          Drain (10 year flow = 499cfs)with the Remaining Flow
2029        KM                          Split per the Original Model.
2030        KM   ==========================================================================
            *
2031        DT   SCB4S
2032        DI       0     501    1446    2467
2033        DQ       0     0.1     530    1102
            *
            * DDM   ***** Preserved *****

2034        KK    RCB7
2035        KM   STREET ROUTE
2036        KM   WEST
2037        KM   CAMELBACK
2038        RS       4    FLOW     -1.
2039        RC    0.02   0.016    0.02   2810.  0.0021
2040        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2041        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2042        KK   D75BH
2043        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2044        KM   75TH & BETHANY HOME
2045        DR   D75BH
            * DDM   ***** Preserved *****

2046        KK    R75M
2047        KM   STREET ROUTE
2048        KM   SOUTH
2049        KM   75TH Avenue
2050        RS       4    FLOW     -1.
2051        RC    0.02   0.016    0.02   2620.  0.0013
2052        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2053        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2054        KK  D1321W
2055        KM   RETRIEVAL OF SUB-BASIN DIVERSION
2056        KM   SUB-BASIN 13-21
2057        DR  D1321W
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2058          KK    C75F
2059          KM   NORTH/SOUTH STREET COMBINE
2060          KM   75TH AVENUE
2061          HC       2  40.904
              * DDM   ***** Preserved *****

2062          KK   S75HS
2063          KM   STREET CAPACITY DIVERSION
2064          KM   75TH
2065          KM   DIVERSION TO WEST
2066          DT   S75HW
2067          DI       0  10000.
2068          DQ       0  10000.
              * DDM   ***** Preserved *****

2069          KK    R75N
2070          KM   STREET ROUTE
2071          KM   SOUTH
2072          KM   75TH Avenue
2073          RS       4    FLOW     -1.
2074          RC    0.02   0.016    0.02   2650.  0.0014
2075          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2076          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2077          KK   CCB75
2078          KM   INTERSECTION COMBINE
2079          KM   CAMELBACK & 75TH
2080          HC       2  37.078
              *
              * DDM   ***** Preserved *****

2081          KK     DC2
2082          KM   DIVERT ALL OF CCB75 FOR FUTURE RETRIEVAL
2083          KM        NOTE:  Previous FCDMC 100yr, 6hr flow = 1600cfs
              *  KO     3                              21
2084          DT   GCDC2
2085          DI       0    1600    5001
2086          DQ       0    1600    5000
              *
              * DDM   ***** Preserved *****

2087          KK   DCB75
2088          KM   STREET INTERSECTION DIVERSION
2089          KM   CAMELBACK & 75TH
2090          KM   35% West & 65% South
2091          DT   D75CB
2092          DI       0  10000.
2093          DQ       0   6500.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2094          KK    RCB8
2095          KM   STREET ROUTE
2096          KM   WEST
2097          KM   CAMELBACK
2098          RS       2    FLOW     -1.
2099          RC    0.02   0.016    0.02   2510.  0.0042
2100          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2101          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2102          KK   SBH6S
2103          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2104          KM   BETHANY HOME
2105          DR   SBH6S
              * DDM   ***** Preserved *****

2106          KK  R1421S
2107          KM   SUB-BASIN STREET ROUTE
2108          KM   SOUTH
2109          KM   RW= 50'
2110          KM   PAV= 35'
2111          RS       4    FLOW     -1.
2112          RC    0.02   0.016    0.02   3400.  0.0025
2113          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
2114          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

2115          KK   S75HW
2116          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2117          KM   75TH
2118          DR   S75HW
              * DDM   ***** Preserved *****

2119          KK  R1421W
2120          KM   SUB-BASIN STREET ROUTE
2121          KM   WEST
2122          KM   RW= 50'
2123          KM   PAV= 35'
2124          RS       6    FLOW     -1.
2125          RC    0.02   0.016    0.02   5360.  0.0026
2126          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
2127          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

2128          KK  14-21E
2129          KM   SUB-BASIN 14-21E
2130          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2131          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
2132          KM     L =  .99  Kb = .087  Adj. Slope =   18.0
2133          BA    .432
2134          LG    .280    .150   8.800    .080  28.000
2135          UC   1.100    .658
2136          UA       0       5      16      30      65      77      84      90      94      97
2137          UA     100
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2138        KK  RET14E
2139        KM   RETENTION BASIN DIVERSION
2140        KM   SUB-BASIN 14-21E
2141        KM   100% OF SUB-BASIN DRAINS TO RETENTION BASIN
2142        DT  D1421R    3.02
2143        DI       0  10000.
2144        DQ       0  10000.
            *
            * DDM   ***** Preserved *****

2145        KK  C1421E
2146        KM   SUB-BASIN COMBINE
2147        HC       3  41.033
            *
            * DDM   ***** Preserved *****

2148        KK     DC3
2149        KM   DIVERT ALL OF C1421E FOR FUTURE RETRIEVAL
2150        KM        NOTE:  Previous FCDMC 100yr, 6hr flow = 2300cfs
            *  KO     3                                21
2151        DT   GCDC3
2152        DI       0    2300    5001
2153        DQ       0    2300    5000
            *
            * DDM   ***** Preserved *****

2154        KK  D1421E
2155        KM    SPECIAL CASE
2156        KM    DIVERT FLOW WEST OVER THE GRAND CANAL
2157        DT  D1421X
2158        DI      0.     37.    996.   5440.
2159        DQ      0.     0.1    216.   1890.
            * DDM   ***** Updated *****

2160        KK  14-21W
2161        KM   SUB-BASIN 14-21W
2162        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2163        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
2164        KM     L =  .53  Kb = .073  Adj. Slope =    7.0
2165        BA    .562
2166        LG    .310    .170   8.400    .090  17.000
2167        UC    .946    .291
2168        UA       0       5      16      30      65      77      84      90      94      97
2169        UA     100
            * DDM   ***** Preserved *****

2170        KK  RET14W
2171        KM   RETENTION BASIN DIVERSION
2172        KM   SUB-BASIN 14-21W
2173        KM   40% OF SUB-BASIN DRAINS TO RETENTION BASIN
2174        DT  D1421P    3.70
2175        DI       0  10000.
2176        DQ       0   4000.
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2177          KK  C1421W
2178          KM   SUB-BASIN COMBINE
2179          HC       2   41.59
              * DDM   ***** Preserved *****

2180          KK  D1421S
2181          KM   SUB-BASIN DIVERSION
2182          KM   SUB-BASIN 14-21W
2183          KM   50% West & 50% South
2184          DT  D1421W
2185          DI       0  10000.
2186          DQ       0   5000.
              * DDM   ***** Preserved *****

2187          KK    CCB5
2188          KM   EAST/WEST STREET COMBINE
2189          KM   CAMELBACK
2190          HC       2  41.594
              * DDM   ***** Preserved *****

2191          KK   SCB5W
2192          KM   STREET CAPACITY DIVERSION
2193          KM   CAMELBACK
2194          KM   DIVERSION TO SOUTH
2195          DT   SCB5S
2196          DI       0     37.     79.   1367.   2346.
2197          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

2198          KK    RCB9
2199          KM   STREET ROUTE
2200          KM   WEST
2201          KM   CAMELBACK
2202          RS       3    FLOW     -1.
2203          RC    0.02   0.016    0.02   2770.  0.0033
2204          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2205          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2206          KK  D1421X
2207          KM   RETRIEVAL OF SUB-BASIN DIVERSION
2208          KM   SUB-BASIN 14-21E
2209          DR  D1421X
              * DDM   ***** Preserved *****

2210          KK  RES14E
2211          KM   PONDING AREA RESERVOIR ROUTE
2212          KM   PONDING AREA NORTHEAST OF GRAND CANAL EMBANKMENT
2213          KM   SUB-BASIN 14-21E
2214          RS       1    ELEV   1086.
2215          SV       0   11.05   19.61   30.20    58.2
2216          SE   1086.   1087.  1087.5   1088.   1089.
2217          SQ      0.     0.1     0.2    553.   6234.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2218          KK   D83BH
2219          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2220          KM   83RD & BETHANY HOME
2221          DR   D83BH
              * DDM   ***** Preserved *****

2222          KK    R83L
2223          KM   STREET ROUTE
2224          KM   SOUTH
2225          KM   83RD Avenue
2226          RS       4    FLOW     -1.
2227          RC    0.02   0.016    0.02   2730.  0.0015
2228          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2229          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2230          KK  D1421W
2231          KM   RETRIEVAL OF SUB-BASIN DIVERSION
2232          KM   SUB-BASIN 14-21W
2233          DR  D1421W
              * DDM   ***** Preserved *****

2234          KK    C83F
2235          KM   NORTH/SOUTH STREET COMBINE
2236          KM   83RD AVENUE
2237          HC       3  41.594
              * DDM   ***** Preserved *****

2238          KK   S83GS
2239          KM   STREET CAPACITY DIVERSION
2240          KM   83RD AVENUE
2241          KM   DIVERSION TO WEST
2242          DT   S83GW
2243          DI       0     25.     46.    769.   1314.
2244          DQ       0     0.1     16.    260.    442.
              * DDM   ***** Preserved *****

2245          KK    R83M
2246          KM   STREET ROUTE
2247          KM   SOUTH
2248          KM   83RD Avenue
2249          RS       4    FLOW     -1.
2250          RC    0.02   0.016    0.02   2630.  0.0017
2251          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2252          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2253          KK   CCB83
2254          KM   INTERSECTION COMBINE
2255          KM   CAMELBACK & 83RD
2256          HC       2  41.594
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2257          KK   DCB83
2258          KM   STREET INTERSECTION DIVERSION
2259          KM   CAMELBACK & 83RD
2260          KM   64% West & 36% South
2261          DT   D83CB
2262          DI       0  10000.
2263          DQ       0   3600.
              * DDM   ***** Preserved *****

2264          KK   RCB10
2265          KM   STREET ROUTE
2266          KM   WEST
2267          KM   CAMELBACK
2268          RS       2    FLOW     -1.
2269          RC    0.02   0.016    0.02   2650.  0.0045
2270          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2271          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

2272          KK   SBH7S
2273          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2274          KM   BETHANY HOME
2275          DR   SBH7S
              * DDM   ***** Preserved *****

2276          KK  R1521S
2277          KM   SUB-BASIN STREET ROUTE
2278          KM   SOUTH
2279          KM   RW= 50'
2280          KM   PAV= 35'
2281          RS       7    FLOW     -1.
2282          RC    0.02   0.016    0.02   5220.  0.0020
2283          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
2284          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *

2285          KK   15-21
2286          KM   SUB-BASIN 15-21
2287          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2288          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
2289          KM     L = 1.48  Kb = .071  Adj. Slope =   15.0
2290          BA   1.011
2291          LG    .410    .160   9.700    .070   6.000
2292          UC   1.417    .741
2293          UA       0       5      16      30      65      77      84      90      94      97
2294          UA     100

2295          KK   RET15
2296          KM   RETENTION BASIN DIVERSION
2297          KM   SUB-BASIN 15-21
2298          KM   12% OF SUB-BASIN DRAINS TO RETENTION BASIN
2299          DT     D15    5.90
2300          DI       0  10000.
2301          DQ       0   1200.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2302          KK   S83GW
2303          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2304          KM   83RD
2305          DR   S83GW

2306          KK  R1521W
2307          KM   SUB-BASIN STREET ROUTE
2308          KM   WEST
2309          KM   RW= 70'
2310          KM   PAV= 43'
2311          RS       5    FLOW     -1.
2312          RC    0.02   0.016    0.02   5280.  0.0040
2313          RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
2314          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

2315          KK  C15-21
2316          KM   SUB-BASIN COMBINE
2317          HC       3  48.800

2318          KK  D1521S
2319          KM   SUB-BASIN DIVERSION
2320          KM   SUB-BASIN 15-21
2321          KM   35% West & 65% South
2322          DT  D1521W
2323          DI       0  10000.
2324          DQ       0   3500.

2325          KK    CCB6
2326          KM   EAST/WEST STREET COMBINE
2327          HC       2  48.800

2328          KK   SCB6W
2329          KM   STREET CAPACITY DIVERSION
2330          KM   CAMELBACK
2331          KM   DIVERSION TO SOUTH
2332          DT   SCB6S
2333          DI       0     37.     62.   1002.   1716.
2334          DQ       0     0.1     17.    388.    670.

2335          KK   RCB11
2336          KM   STREET ROUTE
2337          KM   WEST
2338          KM   CAMELBACK
2339          RS       3    FLOW     -1.
2340          RC    0.02   0.016    0.02   2650.  0.0028
2341          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2342          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

2343          KK   D91BH
2344          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2345          KM   91ST & BETHANY HOME
2346          DR   D91BH
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2347          KK  D1521W
2348          KM   RETRIEVAL OF SUB-BASIN DIVERSION
2349          KM   SUB-BASIN 15-21
2350          DR  D1521W

2351          KK    C91E
2352          KM   NORTH/SOUTH STREET COMBINE
2353          KM   91ST AVENUE
2354          HC       2  48.800

2355          KK   S91ES
2356          KM   STREET CAPACITY DIVERSION
2357          KM   91ST
2358          KM   DIVERSION TO WEST
2359          DT   S91EW
2360          DI       0     47.     84.   1359.   2329.
2361          DQ       0     0.1     24.    565.    975.

2362          KK    R91J
2363          KM   STREET ROUTE
2364          KM   SOUTH
2365          KM   91ST Avenue
2366          RS       5    FLOW     -1.
2367          RC    0.02   0.016    0.02   2640.  0.0010
2368          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2369          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

2370          KK   CCB91
2371          KM   INTERSECTION COMBINE
2372          KM   CAMLEBACK & 91ST
2373          HC       2  48.800

2374          KK   DCB91
2375          KM   STREET INTERSECTION DIVERSION
2376          KM   CAMELBACK & 91ST
2377          KM   43% West & 57% South
2378          DT   D91CB
2379          DI       0  10000.
2380          DQ       0   5700.
              *

2381          KK   RCB12
2382          KM   STREET ROUTE
2383          KM   WEST
2384          KM   CAMELBACK
2385          RS       3    FLOW     -1.
2386          RC    0.02   0.016    0.02   2730.  0.0031
2387          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2388          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2389        KK  16-21E
2390        KM   SUB-BASIN 16-21E     (East of proposed AFF)
2391        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2392        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
2393        KM     L = 1.53  Kb = .078  Adj. Slope =   16.0
2394        KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
2395        KM    =====   15-OCT-97, dtp            Model proposed AFF alignment
2396        BA    .838
2397        LG    .460    .150   8.800    .090       4
2398        UC   1.500    .902
2399        UA       0       5      16      30      65      77      84      90      94      97
2400        UA     100
            *

2401        KK   S91EW
2402        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2403        KM   91ST
2404        DR   S91EW
            *

2405        KK  R1621W
2406        KM   SUB-BASIN STREET ROUTE
2407        KM   WEST
2408        KM   RW= 170'
2409        KM   PAV= 113'
2410        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
2411        KM                15-OCT-97, dtp            Revised L for composite route
2412        RS       7    FLOW     -1.
2413        RC    0.02   0.016    0.02   4200.  0.0022
2414        RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
2415        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *

2416        KK  C16-21
2417        KM   SUB-BASIN COMBINE
2418        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
2419        KM    =====   16-OCT-97, dtp            Model proposed AFF alignment
2420        HC       2  50.272
            *

2421        KK  D1621S
2422        KM   SUB-BASIN DIVERSION
2423        KM   SUB-BASIN 16-21
2424        KM   40% West & 60% South
2425        DT  D1621W
2426        DI       0  10000.
2427        DQ       0   4000.
            *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2428          KK    CCB7
2429          KM   EAST/WEST STREET COMBINE
2430          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
2431          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
2432          HC       2  50.272
              *

2433          KK   SCB7W
2434          KM   STREET CAPACITY DIVERSION
2435          KM   CAMELBACK
2436          KM   DIVERSION TO SOUTH
2437          DT   SCB7S
2438          DI       0     32.     47.    709.   1213.
2439          DQ       0     0.1      8.    177.    305.
              *

2440          KK   RCB13
2441          KM   STREET ROUTE
2442          KM   WEST
2443          KM   CAMELBACK
2444          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
2445          KM                15-OCT-97, dtp           Revised L and Slope
2446          RS       3    FLOW     -1.
2447          RC    0.02   0.016    0.02   1400.  0.0050
2448          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2449          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

2450          KK  D1621W
2451          KM   RETRIEVAL OF SUB-BASIN DIVERSION
2452          KM   SUB-BASIN 16-21
2453          DR  D1621W
              *

2454          KK    RAF4
2455          KM   STREET ROUTE
2456          KM   SOUTH  ==>  from 1/2 mi. N of Camelback Rd.
2457          KM   Proposed AFF Alignment
2458          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
2459          KM                15-OCT-97, dtp            TRAP Section:  B = 15' ,  H = 5'
2460          RS       3    FLOW     -1.
2461          RC   0.015   0.015   0.015   2620.  0.0018
2462          RX     100     110     115     120     122     124     125     135
2463          RY       5       0       0       0       0       0       0       5
              *

2464          KK   CCBAF
2465          KM   Hydrograph Combine at Intersection of Camelback Road and
2466          KM   Proposed AFF
2467          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
2468          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
2469          HC       2  50.272
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2470          KK   DCBAF
2471          KM   Street Intersection Diversion
2472          KM   CAMELBACK & AFF
2473          KM   100% South
2474          DT  DCBAFS
2475          DI       0  10000.
2476          DQ       0   9999.
              *

2477          KK  16-21W
2478          KM   SUB-BASIN 16-21W       (West of proposed AFF)
2479          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2480          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
2481          KM     L = 1.14  Kb = .078  Adj. Slope =   24.0
2482          KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
2483          KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
2484          BA    .184
2485          LG    .460    .150   8.800    .090       4
2486          UC   1.017   1.098
2487          UA       0       5      16      30      65      77      84      90      94      97
2488          UA     100
              *

2489          KK   D99BH
2490          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2491          KM   99TH & BETHANY HOME
2492          DR   D99BH
              *

2493          KK    C99B
2494          KM   NORTH/SOUTH STREET COMBINE
2495          KM   99TH AVENUE
2496          HC       2  50.641
              *

2497          KK   S99BS
2498          KM   STREET CAPACITY DIVERSION
2499          KM   99TH
2500          KM   DIVERSION TO WEST
2501          DT   S99BW
2502          DI       0     36.     60.   1002.   1714.
2503          DQ       0      0.     16.    260.    442.
              *

2504          KK    R99E
2505          KM   STREET ROUTE
2506          KM   SOUTH
2507          KM   99TH Avenue
2508          RS       3    FLOW     -1.
2509          RC    0.02   0.016    0.02   2620.  0.0026
2510          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2511          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2512          KK   CCB99
2513          KM   INTERSECTION COMBINE  (East of AFF)
2514          KM   CAMELBACK & 99TH
2515          HC       2  50.641
              *

2516          KK   DCB99
2517          KM   STREET INTERSECTION DIVERSION
2518          KM   CAMELBACK & 99TH
2519          KM   DIVERSION to SOUTH
2520          KM   66% West & 34% South
2521          DT   D99CB
2522          DI       0  10000.
2523          DQ       0   3400.
              *

2524          KK   RCB14
2525          KM   STREET ROUTE
2526          KM   WEST
2527          KM   CAMELBACK
2528          RS       4    FLOW     -1.
2529          RC    0.02   0.016    0.02   2640.  0.0016
2530          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2531          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

2532          KK  17-21E
2533          KM   SUB-BASIN 17-21E
2534          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2535          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
2536          KM     L = 1.68  Kb = .079  Adj. Slope =   12.0
2537          BA    .699
2538          LG    .450    .160   7.300    .160   3.000
2539          UC   1.500   1.078
2540          UA       0       5      16      30      65      77      84      90      94      97
2541          UA     100

2542          KK   S99BW
2543          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2544          KM   99TH
2545          DR   S99BW

2546          KK  R1721W
2547          KM   SUB-BASIN STREET ROUTE
2548          KM   WEST
2549          KM   RW= 50'
2550          KM   PAV= 35'
2551          RS       8    FLOW     -1.
2552          RC    0.02   0.016    0.02   6515.  0.0024
2553          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
2554          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2555          KK  C1721E
2556          KM   SUB-BASIN COMBINE
2557          HC       2  51.340

2558          KK  D1721S
2559          KM   SUB-BASIN DIVERSION
2560          KM   SUB-BASIN 17-21E
2561          KM   21% West & 79% South
2562          DT  D1721W
2563          DI       0  10000.
2564          DQ       0   2100.

2565          KK    CCB8
2566          KM   EAST/WEST STREET COMBINE
2567          HC       2  51.340

2568          KK   SCB8W
2569          KM   STREET CAPACITY DIVERSION
2570          KM   CAMELBACK
2571          KM   DIVERSION TO SOUTH
2572          DT   SCB8S
2573          DI       0     23.     44.    730.   1247.
2574          DQ       0     0.1     16.    260.    442.

2575          KK   RCB15
2576          KM   STREET ROUTE
2577          KM   WEST
2578          KM   CAMELBACK
2579          RS       5    FLOW     -1.
2580          RC    0.02   0.016    0.02   2630.  0.0011
2581          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2582          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

2583          KK  D1721W
2584          KM   RETRIEVAL OF SUB-BASIN DIVERSION
2585          KM   SUB-BASIN 17-21E
2586          DR  D1721W

2587          KK  CCB107
2588          KM   INTERSECTION COMBINE
2589          KM   CAMELBACK & 107TH
2590          HC       2  51.646

2591          KK  DCB107
2592          KM   STREET INTERSECTION DIVERSION
2593          KM   CAMELBACK & 107TH
2594          KM   55% West & 45% South
2595          DT  D107CB
2596          DI       0  10000.
2597          DQ       0   4500.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2598          KK  17-21W
2599          KM   SUB-BASIN 17-21W
2600          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2601          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
2602          KM     L = 1.11  Kb = .093  Adj. Slope =   15.0
2603          BA    .306
2604          LG    .440    .250   5.800    .280   4.000
2605          UC   1.500   1.239
2606          UA       0       5      16      30      65      77      84      90      94      97
2607          UA     100

2608          KK  R1821W
2609          KM   SUB-BASIN STREET ROUTE
2610          KM   WEST
2611          KM   RW= 100'
2612          KM   PAV= 70'
2613          RS      10    FLOW     -1.
2614          RC    0.02   0.016    0.02   8950.  0.0027
2615          RX       0     0.1    15.0    25.0    75.0    85.0    100.   100.1
2616          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

2617          KK   18-21
2618          KM   SUB-BASIN 18-21
2619          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2620          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
2621          KM     L = 1.22  Kb = .083  Adj. Slope =   10.0
2622          BA    .542
2623          LG    .480    .250   5.600    .320   1.000
2624          UC   1.500    .965
2625          UA       0       5      16      30      65      77      84      90      94      97
2626          UA     100

2627          KK  C18-21
2628          KM   SUB-BASIN COMBINE
2629          HC       3  52.189

2630          KK   NULL6
2631          KM   NULL COMBINE AT END OF CAMELBACK ROAD COMPUTATIONAL PATH
2632          HC       2     1.
              *
              * ***************************************************************************
              * INDIAN SCHOOL COMPUTATION PATH      1st time
              * ***************************************************************************
              *
              * DDM   ***** Updated *****

2633          KK   23-22
2634          KM   SUB-BASIN 23-22
2635          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2636          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
2637          KM     L = 1.41  Kb = .076  Adj. Slope =   13.0
2638          BA    .989
2639          LG    .240    .150   7.600    .120  32.000
2640          UC   1.500    .769
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2641        UA       0       5      16      30      65      77      84      90      94      97
2642        UA     100
            * DDM   ***** Preserved *****

2643        KK  SD31BS
2644        KM   RETRIEVAL OF STORM DRAIN DIVERSION
2645        KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
2646        KM   CAP= 150 CFS SOUTH
2647        DR  SD31BS
            * DDM   ***** Preserved *****

2648        KK  CSD31C
2649        KM   SUB-BASIN COMBINE FOR STORM DRAIN DIVERSION
2650        HC       2
            * DDM   ***** Preserved *****

2651        KK  SD31C
2652        KM   STORM DRAIN DIVERSION
2653        KM   STORM DRAIN ALONG HALF MILE STREET
2654        KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
2655        KM   DIVERSION SOUTH
2656        KM   CAP= 251 CFS SOUTH
2657        DT  SD31CS
2658        DI       0    251.  10251.
2659        DQ       0    251.    251.
            * DDM   ***** Preserved *****

2660        KK  D2322E
2661        KM   SUB-BASIN DIVERSION
2662        KM   SUB-BASIN 23-22
2663        KM   59% WEST & 41% EAST
2664        DT  D2322W
2665        DI       0  10000.
2666        DQ       0   5900.
            * DDM   ***** Preserved *****

2667        KK   D27CB
2668        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2669        KM   27TH & CAMELBACK
2670        DR   D27CB
            * DDM   ***** Preserved *****

2671        KK   R27E
2672        KM   STREET ROUTE
2673        KM   SOUTH
2674        KM   27TH Avenue
2675        RS       5    FLOW     -1.
2676        RC    0.02   0.016    0.02   5250.  0.0040
2677        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2678        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Updated *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2679          KK   24-22
2680          KM   SUB-BASIN 24-22
2681          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2682          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
2683          KM     L = 1.00  Kb = .047  Adj. Slope =   18.0
2684          BA    .225
2685          LG    .150    .160   7.600    .120  67.000
2686          UC    .679    .564
2687          UA       0       5      16      30      65      77      84      90      94      97
2688          UA     100
              *
              * DDM   ***** Preserved *****

2689          KK  RET240
2690          KM   RETENTION BASIN DIVERSION
2691          KM   SUB-BASIN 24-22
2692          KM   3% OF SUB-BASIN DRAINS TO RETENTION BASIN
2693          DT  D2422R    0.74
2694          DI       0  10000.
2695          DQ       0    300.
              *
              * DDM   ***** Preserved *****

2696          KK   CIS27
2697          KM   INTERSECTION COMBINE
2698          KM   INDIAN SCHOOL & 27TH
2699          HC       3   6.253
              * DDM   ***** Preserved *****

2700          KK   DIS27
2701          KM   STREET INTERSECTION DIVERSION
2702          KM   INDIAN SCHOOL & 27TH
2703          KM   0% West & 100% South
2704          KM   DIVERSION SOUTH
2705          KM   EXISTING STORM DRAIN ALONG 27TH AVENUE
2706          KM   CAP= 160 CFS SOUTH
2707          DT   D27IS
2708          DI       0  10000.
2709          DQ       0  10000.
              * DDM   ***** Preserved *****

2710          KK   D35CB
2711          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2712          KM   35TH & CAMELBACK
2713          DR   D35CB
              * DDM   ***** Preserved *****

2714          KK   R35H
2715          KM   STREET ROUTE
2716          KM   SOUTH
2717          KM   35TH Avenue
2718          RS       2    FLOW     -1.
2719          RC    0.02   0.016    0.02   2580.  0.0047
2720          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2721        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2722        KK  D2322W
2723        KM   RETRIEVAL OF SUB-BASIN DIVERSION
2724        KM   SUB-BASIN 23-22
2725        DR  D2322W
            * DDM   ***** Preserved *****

2726        KK   C35D
2727        KM   NORTH/SOUTH STREET COMBINE
2728        KM   35TH AVENUE
2729        HC       2  10.130
            * DDM   ***** Preserved *****

2730        KK   R35I
2731        KM   STREET ROUTE
2732        KM   SOUTH
2733        KM   35TH Avenue
2734        RS       3    FLOW     -1.
2735        RC    0.02   0.016    0.02   2690.  0.0028
2736        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2737        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2738        KK   CIS35
2739        KM   INTERSECTION COMBINE
2740        KM   INDIAN SCHOOL & 35TH
2741        HC       2    10.1
            * DDM   ***** Preserved *****

2742        KK   D43CB
2743        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
2744        KM   43RD & CAMELBACK
2745        DR   D43CB
            * DDM   ***** Preserved *****

2746        KK  SD43A
2747        KM   STORM DRAIN DIVERSION
2748        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
2749        KM   CAP= 165 CFS SOUTH
2750        DT  SD43AS
2751        DI       0    165.  10000.
2752        DQ       0    165.    165.
            * DDM   ***** Preserved *****

2753        KK   RGR6
2754        KM   STREET ROUTE
2755        KM   SOUTHEAST
2756        KM   GRAND AVENUE
2757        KM   RW=  93'
2758        KM   PAV=  88'
2759        RS       4    FLOW     -1.
2760        RC    0.02   0.016    0.02   3760.  0.0030
2761        RX       0     0.1     2.5    12.5    80.5    90.5     93.    93.1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2762          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

2763          KK  22-22E
2764          KM   SUB-BASIN 22-22E
2765          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2766          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
2767          KM     L = 1.05  Kb = .065  Adj. Slope =   20.0
2768          BA    .532
2769          LG    .220    .260   4.800    .360  43.000
2770          UC    .946    .518
2771          UA       0       5      16      30      65      77      84      90      94      97
2772          UA     100
              * DDM   ***** Preserved *****

2773          KK  SD39BS
2774          KM   RETRIEVAL OF STORM DRAIN DIVERSION
2775          KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
2776          KM   CAP= 268 CFS SOUTH
2777          DR  SD39BS
              * DDM   ***** Preserved *****

2778          KK  C2222E
2779          KM   SUB-BASIN COMBINE
2780          HC       3  12.095
              * DDM   ***** Preserved *****

2781          KK  SD39C
2782          KM   STORM DRAIN DIVERSION
2783          KM   STORM DRAIN ALONG HALF MILE STREET
2784          KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
2785          KM   DIVERSION SOUTH
2786          KM   CAP= 268 CFS SOUTH
2787          DT  SD39CS
2788          DI       0    268.  10268.
2789          DQ       0    268.    268.
              * DDM   ***** Preserved *****

2790          KK   RGR7
2791          KM   STREET ROUTE
2792          KM   SOUTHEAST
2793          KM   GRAND AVENUE
2794          KM   RW=  93'
2795          KM   PAV=  88'
2796          RS       4    FLOW     -1.
2797          RC    0.02   0.016    0.02   3690.  0.0031
2798          RX       0     0.1     2.5    12.5    80.5    90.5     93.    93.1
2799          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2800          KK  CIS35A
2801          KM   INTERSECTION COMBINE
2802          KM   INDIAN SCHOOL & 35TH
2803          HC       2    15.6
              * DDM   ***** Preserved *****

2804          KK   DIS35
2805          KM   STREET INTERSECTION DIVERSION
2806          KM   INDIAN SCHOOL & 35TH
2807          KM   DIVERSION TO SOUTH (FLOW IN GRAND AVE)
2808          KM   SPECIAL CASE
2809          KM   EXISTING STORM DRAIN ALONG 35TH AVENUE
2810          KM   CAP=  75 CFS SOUTH
2811          DT   D35IS
2812          DI       0     75.     79.    291.    340.    480.   1337.   2975.
2813          DQ       0     0.1      4.    216.    265.    389.    813.   1460.
              * DDM   ***** Preserved *****

2814          KK  SIS1AW
2815          KM   STREET CAPACITY DIVERSION
2816          KM   INDIAN SCHOOL
2817          KM   DIVERSION TO SOUTH
2818          DT  SIS1AS
2819          DI       0  10000.
2820          DQ       0  10000.
              * DDM   ***** Updated *****

2821          KK  22-22W
2822          KM   SUB-BASIN 22-22W
2823          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2824          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
2825          KM     L =  .96  Kb = .025  Adj. Slope =   26.0
2826          BA    .467
2827          LG    .140    .250   4.800    .380  57.000
2828          UC    .383    .191
2829          UA       0       5      16      30      65      77      84      90      94      97
2830          UA     100
              * DDM   ***** Preserved *****

2831          KK  D2222S
2832          KM   SUB-BASIN DIVERSION
2833          KM   SUB-BASIN 22-22W
2834          KM   14% West & 86% South
2835          DT  D2222W
2836          DI       0  10000.
2837          DQ       0   1400.
              * DDM   ***** Preserved *****

2838          KK  SD39CS
2839          KM   RETRIEVAL OF STORM DRAIN DIVERSION
2840          KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
2841          KM   CAP= 268 CFS SOUTH
2842          DR  SD39CS
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2843        KK  C2222W
2844        KM   SUB-BASIN COMBINE
2845        HC       3    16.0
            * DDM   ***** Preserved *****

2846        KK   SIS1W
2847        KM   STREET CAPACITY DIVERSION
2848        KM   INDIAN SCHOOL
2849        KM   43% WEST 57% SOUTH
2850        KM   DIVERSION TO SOUTH -- SPECIAL CASE
2851        KM   FLOW DIVERSION BASED ON GRADE BREAK LOCATIONS & STREET PATTERNS
2852        KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
2853        KM   CAP= 332 CFS SOUTH
2854        DT   SIS1S
2855        DI       0    332.   1332.   2332.   3332.
2856        DQ       0    332.    902.   1472.   2042.
            * DDM   ***** Preserved *****

2857        KK   RIS1
2858        KM   STREET ROUTE
2859        KM   WEST
2860        KM   INDIAN SCHOOL
2861        RS       3    FLOW     -1.
2862        RC    0.02   0.016    0.02   1400.  0.0007
2863        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2864        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2865        KK  D2222W
2866        KM   RETRIEVAL OF SUB-BASIN DIVERSION
2867        KM   SUB-BASIN 22-22W
2868        DR  D2222W
            * DDM   ***** Preserved *****

2869        KK  SD43AS
2870        KM   RETRIEVAL OF STORM DRAIN DIVERSION
2871        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
2872        KM   CAP= 165 CFS SOUTH
2873        DR  SD43AS
            * DDM   ***** Preserved *****

2874        KK  CSD43A
2875        KM   COMBINE FOR STORM DRAIN DIVERSION
2876        KM   ALONG 43RD AVENUE JUST SOUTH OF GRAND AVENUE
2877        HC       2     16.
            * DDM   ***** Preserved *****

2878        KK   S43FS
2879        KM   STREET CAPACITY DIVERSION
2880        KM   43RD
2881        KM   DIVERSION TO WEST
2882        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
2883        KM   CAP=  89 CFS SOUTH
2884        DT   S43FW
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2885        DI       0    131.    149.    972.   1598.
2886        DQ       0     0.1      8.    177.    305.
            * DDM   ***** Preserved *****

2887        KK   R43J
2888        KM   STREET ROUTE
2889        KM   SOUTH
2890        KM   43RD Avenue
2891        RS       3    FLOW     -1.
2892        RC    0.02   0.016    0.02   3750.  0.0040
2893        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2894        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2895        KK   CIS43
2896        KM   INTERSECTION COMBINE
2897        KM   INDIAN SCHOOL & 43RD
2898        HC       2    16.0
            * DDM   ***** Preserved *****

2899        KK   DIS43
2900        KM   STREET INTERSECTION DIVERSION
2901        KM   INDIAN SCHOOL & 43RD
2902        KM   37% West & 63% South
2903        KM   DIVERSION SOUTH
2904        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
2905        KM   CAP=  89 CFS SOUTH
2906        DT   D43IS
2907        DI       0     89.  10089.
2908        DQ       0     89.   6389.
            * DDM   ***** Preserved *****

2909        KK   RIS2
2910        KM   STREET ROUTE
2911        KM   WEST
2912        KM   INDIAN SCHOOL
2913        RS       6    FLOW     -1.
2914        RC    0.02   0.016    0.02   2650.  0.0007
2915        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2916        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2917        KK   SCB1S
2918        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2919        KM   CAMELBACK
2920        DR   SCB1S
            * DDM   ***** Preserved *****

2921        KK  R2122S
2922        KM   SUB-BASIN STREET ROUTE
2923        KM   SOUTH
2924        KM   RW= 140'
2925        KM   PAV= 86'
2926        RS       5    FLOW     -1.
2927        RC    0.02   0.016    0.02   5330.  0.0040
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2928          RX       0     0.1    27.0    37.0   103.0   113.0    140.   140.1
2929          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

2930          KK   21-22
2931          KM   SUB-BASIN 21-22
2932          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
2933          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
2934          KM     L = 1.45  Kb = .047  Adj. Slope =   17.0
2935          BA    .995
2936          LG    .200    .290   5.000    .290  32.000
2937          UC   1.025    .513
2938          UA       0       5      16      30      65      77      84      90      94      97
2939          UA     100
              *
              * DDM   ***** Preserved *****

2940          KK  RET210
2941          KM   RETENTION BASIN DIVERSION
2942          KM   SUB-BASIN 21-22
2943          KM   2% OF SUB-BASIN DRAINS TO RETENTION BASIN
2944          DT  D2122R    1.69
2945          DI       0  10000.
2946          DQ       0    200.
              *
              * DDM   ***** Preserved *****

2947          KK   S43FW
2948          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
2949          KM   43RD
2950          DR   S43FW
              * DDM   ***** Preserved *****

2951          KK  R2122W
2952          KM   SUB-BASIN STREET ROUTE
2953          KM   WEST
2954          KM   RW= 50'
2955          KM   PAV= 35'
2956          RS       5    FLOW     -1.
2957          RC    0.02   0.016    0.02   4980.  0.0035
2958          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
2959          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

2960          KK  C21-22
2961          KM   SUB-BASIN COMBINE
2962          HC       3    13.5
              * DDM   ***** Preserved *****

2963          KK  D2122S
2964          KM   SUB-BASIN DIVERSION
2965          KM   SUB-BASIN 21-22
2966          KM   28% West & 72% South
2967          DT  D2122W
2968          DI       0  10000.
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

2969        DQ       0   2800.
            * DDM   ***** Preserved *****

2970        KK   CIS1
2971        KM   EAST/WEST STREET COMBINE
2972        KM   INDIAN SCHOOL
2973        HC       2    17.5
            * DDM   ***** Preserved *****

2974        KK  SIS2WA
2975        KM   STREET CAPACITY DIVERSION
2976        KM   INDIAN SCHOOL
2977        KM   SPECIAL CASE -- DUE TO GRADE BREAK
2978        KM   DIVERSION TO SOUTH
2979        DT  SIS2SA
2980        DI       0  10000.
2981        DQ       0   5000.
            * DDM   ***** Preserved *****

2982        KK   SIS2W
2983        KM   STREET CAPACITY DIVERSION
2984        KM   INDIAN SCHOOL
2985        KM   DIVERSION TO SOUTH
2986        KM   STORM DRAIN ALONG INDIAN SCHOOL ROAD
2987        KM   CAP=  45.0 CFS WEST
2988        DT   SIS2S
2989        DI       0     59.     95.   1029.   1734.
2990        DQ       0     0.1     32.    741.   1279.
            * DDM   ***** Preserved *****

2991        KK   RIS3
2992        KM   STREET ROUTE
2993        KM   WEST
2994        KM   INDIAN SCHOOL
2995        RS       4    FLOW     -1.
2996        RC    0.02   0.016    0.02   2710.  0.0014
2997        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
2998        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

2999        KK   D51CB
3000        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3001        KM   51ST & CAMELBACK
3002        DR   D51CB
            * DDM   ***** Preserved *****

3003        KK   R51K
3004        KM   STREET ROUTE
3005        KM   SOUTH
3006        KM   51ST Avenue
3007        RS       2    FLOW     -1.
3008        RC    0.02   0.016    0.02   2650.  0.0042
3009        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3010        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3011        KK  D2122W
3012        KM   RETRIEVAL OF SUB-BASIN DIVERSION
3013        KM   SUB-BASIN 21-22
3014        DR  D2122W
            * DDM   ***** Preserved *****

3015        KK   C51E
3016        KM   NORTH/SOUTH STREET COMBINE
3017        KM   51ST AVENUE
3018        HC       2    13.5
            * DDM   ***** Preserved *****

3019        KK   S51GS
3020        KM   STREET CAPACITY DIVERSION
3021        KM   51ST
3022        KM   DIVERSION TO WEST
3023        KM   STORM DRAIN ALONG 51ST AVE
3024        KM   CAP=  38.0 CFS SOUTH
3025        DT   S51GW
3026        DI       0     75.    110.   1259.   2132.
3027        DQ       0     0.1     26.    600.   1035.
            * DDM   ***** Preserved *****

3028        KK   R51L
3029        KM   STREET ROUTE
3030        KM   SOUTH
3031        KM   51ST Avenue
3032        RS       3    FLOW     -1.
3033        RC    0.02   0.016    0.02   2650.  0.0032
3034        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3035        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

3036        KK   CIS51
3037        KM   INTERSECTION COMBINE
3038        KM   INDIAN SCHOOL & 51ST
3039        HC       2    17.5
            * DDM   ***** Preserved *****

3040        KK   DIS51
3041        KM   STREET INTERSECTION DIVERSION
3042        KM   INDIAN SCHOOL & 51ST
3043        KM   22% West & 78% South
3044        KM   DIVERSION SOUTH
3045        KM   EXISTING STORM DRAIN ALONG 51ST AVENUE
3046        KM   CAP= 207 CFS SOUTH
3047        DT   D51IS
3048        DI       0    207.  10207.
3049        DQ       0    207.   8007.
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3050          KK   RIS4
3051          KM   STREET ROUTE
3052          KM   WEST
3053          KM   INDIAN SCHOOL
3054          RS       4    FLOW     -1.
3055          RC    0.02   0.016    0.02   2710.  0.0016
3056          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3057          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3058          KK   SCB2S
3059          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3060          KM   CAMELBACK
3061          DR   SCB2S
              * DDM   ***** Preserved *****

3062          KK  R2022S
3063          KM   SUB-BASIN STREET ROUTE
3064          KM   SOUTH
3065          KM   RW= 220'
3066          KM   PAV= 148'
3067          RS       6    FLOW     -1.
3068          RC    0.02   0.016    0.02   5340.  0.0031
3069          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
3070          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

3071          KK   20-22
3072          KM   SUB-BASIN 20-22
3073          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3074          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3075          KM     L = 1.42  Kb = .069  Adj. Slope =   12.0
3076          BA   1.014
3077          LG    .220    .250   5.300    .300  40.000
3078          UC   1.500    .762
3079          UA       0       5      16      30      65      77      84      90      94      97
3080          UA     100
              * DDM   ***** Preserved *****

3081          KK   S51GW
3082          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3083          KM   51ST
3084          DR   S51GW
              * DDM   ***** Preserved *****

3085          KK  R2022W
3086          KM   SUB-BASIN STREET ROUTE
3087          KM   WEST
3088          KM   RW= 120'
3089          KM   PAV= 78'
3090          RS       8    FLOW     -1.
3091          RC    0.02   0.016    0.02   5400.  0.0017
3092          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
3093          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3094          KK  C20-22
3095          KM   SUB-BASIN COMBINE
3096          HC       3    20.5
              * DDM   ***** Preserved *****

3097          KK  D2022S
3098          KM   SUB-BASIN DIVERSION
3099          KM   SUB-BASIN 20-22
3100          KM   39% West & 61% South
3101          DT  D2022W
3102          DI       0  10000.
3103          DQ       0   3900.
              * DDM   ***** Preserved *****

3104          KK   CIS2
3105          KM   EAST/WEST STREET COMBINE
3106          KM   INDIAN SCHOOL
3107          HC       2    24.5
              * DDM   ***** Preserved *****

3108          KK   SIS3W
3109          KM   CASE 2
3110          KM   STREET CAPACITY DIVERSION
3111          KM   INDIAN SCHOOL
3112          KM   DIVERSION TO SOUTH
3113          KM   STORM DRAIN ALONG INDIAN SCHOOL
3114          KM   CAP=  61.0 CFS WEST
3115          DT   SIS3S
3116          DI       0    134.    221.   2044.   3408.
3117          DQ       0     42.    116.   1492.   2506.
              * DDM   ***** Preserved *****

3118          KK   RIS5
3119          KM   STREET ROUTE
3120          KM   WEST
3121          KM   INDIAN SCHOOL
3122          RS       4    FLOW     -1.
3123          RC    0.02   0.016    0.02   2680.  0.0019
3124          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3125          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3126          KK   D59CB
3127          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3128          KM   59TH & CAMELBACK
3129          DR   D59CB
              * DDM   ***** Preserved *****

3130          KK   R59L
3131          KM   STREET ROUTE
3132          KM   SOUTH
3133          KM   59TH Avenue
3134          RS       3    FLOW     -1.
3135          RC    0.02   0.016    0.02   2660.  0.0032
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3136          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3137          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3138          KK  D2022W
3139          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3140          KM   SUB-BASIN 20-22
3141          DR  D2022W
              * DDM   ***** Preserved *****

3142          KK   C59F
3143          KM   NORTH/SOUTH STREET COMBINE
3144          KM   59TH AVENUE
3145          HC       2    20.5
              * DDM   ***** Preserved *****

3146          KK   S59GS
3147          KM   STREET CAPACITY DIVERSION
3148          KM   59TH
3149          KM   DIVERSION TO WEST
3150          KM   STORM DRAIN ALONG 59TH AVE
3151          KM   CAP=  60.0 CFS SOUTH
3152          DT   S59GW
3153          DI       0     93.    141.   1540.   2602.
3154          DQ       0     0.1     40.    918.   1584.
              * DDM   ***** Preserved *****

3155          KK   R59M
3156          KM   STREET ROUTE
3157          KM   SOUTH
3158          KM   59TH Avenue
3159          RS       3    FLOW     -1.
3160          RC    0.02   0.016    0.02   2630.  0.0028
3161          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3162          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3163          KK   CIS59
3164          KM   INTERSECTION COMBINE
3165          KM   INDIAN SCHOOL & 59TH
3166          HC       2    24.5
              * DDM   ***** Preserved *****

3167          KK   DIS59
3168          KM   STREET INTERSECTION DIVERSION
3169          KM   INDIAN SCHOOL & 59TH
3170          KM   39% West & 61% South
3171          KM   DIVERSION SOUTH
3172          KM   EXISTING STORM DRAIN ALONG 59TH AVENUE
3173          KM   CAP= 359 CFS SOUTH
3174          DT   D59IS
3175          DI       0    359.  10359.
3176          DQ       0    359.   6459.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3177          KK   RIS6
3178          KM   STREET ROUTE
3179          KM   WEST
3180          KM   INDIAN SCHOOL
3181          RS       1    FLOW     -1.
3182          RC    0.02   0.016    0.02   1420.  0.0059
3183          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3184          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3185          KK   SCB3S
3186          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3187          KM   CAMELBACK
3188          DR   SCB3S
              * DDM   ***** Preserved *****

3189          KK  R1922S
3190          KM   SUB-BASIN STREET ROUTE
3191          KM   SOUTH
3192          KM   RW= 270'
3193          KM   PAV= 183'
3194          RS       6    FLOW     -1.
3195          RC    0.02   0.016    0.02   5320.  0.0025
3196          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
3197          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

3198          KK   19-22
3199          KM   SUB-BASIN 19-22
3200          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3201          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3202          KM     L = 1.31  Kb = .076  Adj. Slope =   17.0
3203          BA    .939
3204          LG    .230    .160   7.300    .140  27.000
3205          UC   1.296    .635
3206          UA       0       5      16      30      65      77      84      90      94      97
3207          UA     100
              * DDM   ***** Preserved *****

3208          KK    PAGC        STORAGE ROUTING IN GOLF COURSE
3209          KM    PONDING AREA IN THE GOLF COURSE AT 59TH AVE & INDIAN SCHOOL
3210          KM    DATA BASED ON HEC-1 BY CVL(4/96) FOR FCD 93-34
3211          KM    SEE CVL COMPUTATION SHEETS IN APPENDIX E
3212          RS       1    FLOW      -1
3213          SV       0    1.93    5.25    9.27   14.63   20.86   28.00      32
3214          SE    1100    1101    1102    1103    1104    1105    1106  1106.5
3215          SQ       0       0       0       0       0     477    2326    3000
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3216          KK   S59GW
3217          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3218          KM   59TH
3219          DR   S59GW
              * DDM   ***** Preserved *****

3220          KK  R1922W
3221          KM   SUB-BASIN STREET ROUTE
3222          KM   WEST
3223          KM   RW= 220'
3224          KM   PAV= 148'
3225          RS       6    FLOW     -1.
3226          RC    0.02   0.016    0.02   5170.  0.0027
3227          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
3228          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

3229          KK  C19-22
3230          KM   SUB-BASIN COMBINE
3231          HC       3    28.7
              * DDM   ***** Preserved *****

3232          KK  D1922S
3233          KM   SUB-BASIN DIVERSION
3234          KM   SUB-BASIN 19-22
3235          KM   44% West & 56% South
3236          DT  D1922W
3237          DI       0  10000.
3238          DQ       0   4400.
              * DDM   ***** Preserved *****

3239          KK   CIS3
3240          KM   EAST/WEST STREET COMBINE
3241          KM   INDIAN SCHOOL
3242          HC       2    32.7
              * DDM   ***** Preserved *****

3243          KK   SIS4W
3244          KM   STREET CAPACITY DIVERSION
3245          KM   INDIAN SCHOOL
3246          KM   DIVERSION TO SOUTH
3247          KM   STORM DRAIN ALONG INDIAN SCHOOL
3248          KM   CAP= 26. CFS WEST
3249          DT   SIS4S
3250          DI       0     26.  10026.
3251          DQ       0     0.1  10000.
              * DDM   ***** Preserved *****

3252          KK   D67CB
3253          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3254          KM   67TH & CAMELBACK
3255          DR   D67CB
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3256          KK   R67N
3257          KM   STREET ROUTE
3258          KM   SOUTH
3259          KM   67TH Avenue
3260          RS       3    FLOW     -1.
3261          RC    0.02   0.016    0.02   2680.  0.0036
3262          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3263          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3264          KK  D1922W
3265          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3266          KM   SUB-BASIN 19-22
3267          DR  D1922W
              * DDM   ***** Preserved *****

3268          KK   C67G
3269          KM   NORTH/SOUTH STREET COMBINE
3270          KM   67TH AVENUE
3271          HC       2    28.7
              * DDM   ***** Preserved *****

3272          KK   S67HS
3273          KM   STREET CAPACITY DIVERSION
3274          KM   SPECIAL CASE
3275          KM   100% WEST & 0% SOUTH DUE TO GRAND CANAL
3276          KM   DIVERSION TO WEST
3277          DT   S67HW
3278          DI       0  10000.
3279          DQ       0  10000.
              * DDM   ***** Preserved *****

3280          KK   CIS67
3281          KM   INTERSECTION COMBINE
3282          KM   67TH & INDIAN SCHOOL
3283          HC       2    28.7
              *
              * DDM   ***** Preserved *****

3284          KK   DIS67
3285          KM   INTERSECTION DIVERSION
3286          KM   SPECIAL CASE
3287          KM   EXISTING STORM DRAIN SYSTEM ALONG 67TH AVENUE
3288          KM   THIS INTERSECTION DOES NOT HAVE A SURFACE DRAINAGE AREA
3289          KM   100% OF THE FLOW DIVERTED SOUTH
3290          KM   DIVERSION SOUTH
3291          KM   STORM DRAIN ALONG 59TH AVE
3292          KM   CAP= 174.0 CFS SOUTH
3293          DT   D67IS
3294          DI       0  10000.
3295          DQ       0  10000.
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3296        KK   S67HW
3297        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3298        KM   67TH
3299        DR   S67HW
            *
            * DDM   ***** Preserved *****

3300        KK  R2421W
3301        KM   SUB-BASIN STREET ROUTE
3302        KM   WEST
3303        KM   RW= 370'
3304        KM   PAV= 253'
3305        RS      12    FLOW     -1.
3306        RC    0.02   0.016    0.02   5790.  0.0008
3307        RX       0     0.1    58.5    68.5   301.5   311.5    370.   370.1
3308        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *
            * DDM   ***** Updated *****

3309        KK  24-21N
3310        KM   SUB-BASIN 24-21N
3311        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3312        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
3313        KM     L =  .76  Kb = .084  Adj. Slope =   20.0
3314        BA    .413
3315        LG    .240    .150   8.000    .100  32.000
3316        UC    .837    .404
3317        UA       0       5      16      30      65      77      84      90      94      97
3318        UA     100
            *
            * DDM   ***** Preserved *****

3319        KK   SCB4S
3320        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3321        KM   CAMELBACK
3322        DR   SCB4S
            *
            * DDM   ***** Preserved *****

3323        KK  R2421S
3324        KM   SUB-BASIN STREET ROUTE
3325        KM   SOUTH
3326        KM   RW= 70'
3327        KM   PAV= 43'
3328        RS       5    FLOW     -1.
3329        RC    0.02   0.016    0.02   3800.  0.0018
3330        RX       0     0.1    13.5    23.5    46.5    56.5    70.    70.1
3331        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


3332          KK  C2421N
3333          KM   SUB-BASIN COMBINE
3334          HC       3  40.904
              *
              * DDM   ***** Preserved *****

3335          KK     DC1
3336          KM   DIVERT ALL OF C2421N FOR FUTURE RETRIEVAL
3337          KM      NOTE:  Previous FCDMC 100yr, 6hr flow = 1220 cfs
              *  KO     3                              21
3338          DT   GCDC1
3339          DI       0    1220    5001
3340          DQ       0    1220    5000
              *
              * DDM   ***** Preserved *****

3341          KK  RES24N
3342          KM   PONDING AREA RESERVOIR ROUTE
3343          KM   PONDING AREA NORTHEAST OF GRAND CANAL EMBANKMENT
3344          KM   FLOW OVERTOPS THE GRAND CANAL TO THE SOUTH
3345          KM   SUB-BASIN 24-21N
3346          RS       1    ELEV   1092.
3347          SV       0   14.23   83.84  148.04  186.14  228.25
3348          SE   1092.   1094.   1096.   1097.  1097.5   1098.
3349          SQ      0.     0.1     0.2     0.3    317.   1958.
              * DDM   ***** Updated *****

3350          KK  24-21S
3351          KM   SUB-BASIN 24-21S
3352          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3353          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
3354          KM     L =  .53  Kb = .068  Adj. Slope =   12.0
3355          BA    .612
3356          LG    .220    .160   7.600    .110  39.000
3357          UC    .692    .196
3358          UA       0       5      16      30      65      77      84      90      94      97
3359          UA     100
              * DDM   ***** Preserved *****

3360          KK  C2421S
3361          KM   SUB-BASIN COMBINE
3362          HC       2   41.52
              * DDM   ***** Preserved *****

3363          KK  D2421S
3364          KM   SUB-BASIN DIVERSION
3365          KM   SUB-BASIN 24-21S
3366          KM   21% West & 79% South
3367          DT  D2421W
3368          DI       0  10000.
3369          DQ       0   2100.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3370          KK    CIS5
3371          KM   EAST/WEST STREET COMBINE
3372          HC       2  41.516
              * DDM   ***** Preserved *****

3373          KK   SIS5W
3374          KM   STREET CAPACITY DIVERSION
3375          KM   INDIAN SCHOOL
3376          KM   DIVERSION TO SOUTH
3377          DT   SIS5S
3378          DI       0     30.     62.   1071.   1837.
3379          DQ       0     0.1     24.    565.    975.
              * DDM   ***** Preserved *****

3380          KK    RIS8
3381          KM   STREET ROUTE
3382          KM   WEST
3383          KM   INDIAN SCHOOL
3384          RS       3    FLOW     -1.
3385          RC    0.02   0.016    0.02   2650.  0.0024
3386          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3387          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3388          KK   D75CB
3389          KM   RETRIEVAL OF INTERSECTION DIVERSION
3390          DR   D75CB
              * DDM   ***** Preserved *****

3391          KK  D2421W
3392          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3393          KM   SUB-BASIN 24-21S
3394          DR  D2421W
              * DDM   ***** Preserved *****

3395          KK   C75F1
3396          KM   NORTH/SOUTH STREET COMBINE
3397          KM   75TH AVENUE
3398          HC       2   41.52
              * DDM   ***** Preserved *****

3399          KK   S75IS
3400          KM   STREET CAPACITY DIVERSION
3401          KM   75TH AVENUE
3402          KM   DIVERSION TO WEST
3403          DT   S75IW
3404          DI       0     35.     83.   1498.   2573.
3405          DQ       0     0.1     40.    918.   1584.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3406          KK    R750
3407          KM   STREET ROUTE
3408          KM   SOUTH
3409          KM   75TH Avenue
3410          RS       3    FLOW     -1.
3411          RC    0.02   0.016    0.02   2610.  0.0036
3412          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3413          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3414          KK   CIS75
3415          KM   INTERSECTION COMBINE
3416          KM   INDIAN SCHOOL & 75TH
3417          HC       2  41.516
              * DDM   ***** Preserved *****

3418          KK   DIS75
3419          KM   STREET INTERSECTION DIVERSION
3420          KM   INDIAN SCHOOL & 75TH
3421          KM   27% West & 73% South
3422          KM   DIVERSION SOUTH
3423          KM   STORM DRAIN ALONG 75TH AVE
3424          KM   CAP= 161.0 CFS SOUTH
3425          KM   STORM DRAIN ALONG INDIAN SCHOOL
3426          KM   CAP=  11.0 CFS WEST
3427          DT   D75IS
3428          DI       0    172.  10172.
3429          DQ       0    161.   7461.
              * DDM   ***** Preserved *****

3430          KK    RIS9
3431          KM   STREET ROUTE
3432          KM   WEST
3433          KM   INDIAN SCHOOL
3434          RS       3    FLOW     -1.
3435          RC    0.02   0.016    0.02   2520.  0.0027
3436          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3437          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3438          KK   SCB5S
3439          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3440          KM   CAMELBACK
3441          DR   SCB5S
              * DDM   ***** Preserved *****

3442          KK  R2321S
3443          KM   SUB-BASIN STREET ROUTE
3444          KM   SOUTH
3445          KM   RW= 220'
3446          KM   PAV= 148'
3447          RS       5    FLOW     -1.
3448          RC    0.02   0.016    0.02   5010.  0.0030
3449          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3450          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

3451          KK   23-21
3452          KM   SUB-BASIN 23-21
3453          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3454          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3455          KM     L = 1.26  Kb = .073  Adj. Slope =   18.0
3456          BA    .986
3457          LG    .240    .180   6.800    .160  33.000
3458          UC   1.192    .545
3459          UA       0       5      16      30      65      77      84      90      94      97
3460          UA     100
              * DDM   ***** Preserved *****

3461          KK   S75IW
3462          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3463          KM   75TH
3464          DR   S75IW
              * DDM   ***** Preserved *****

3465          KK  R2321W
3466          KM   SUB-BASIN STREET ROUTE
3467          KM   WEST
3468          KM   RW= 470'
3469          KM   PAV= 323'
3470          RS       5    FLOW     -1.
3471          RC    0.02   0.016    0.02   5030.  0.0032
3472          RX       0     0.1    73.5    83.5   386.5   396.5    470.   470.1
3473          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

3474          KK  C23-21
3475          KM   SUB-BASIN COMBINE
3476          HC       3  47.020
              * DDM   ***** Preserved *****

3477          KK  D2321S
3478          KM   SUB-BASIN DIVERSION
3479          KM   SUB-BASIN 23-21
3480          KM   43% West & 57% South
3481          DT  D2321W
3482          DI       0  10000.
3483          DQ       0   4300.
              * DDM   ***** Preserved *****

3484          KK    CIS6
3485          KM   EAST/WEST STREET COMBINE
3486          HC       2  47.020
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3487          KK   SIS6W
3488          KM   STREET CAPACITY DIVERSION
3489          KM   INDIAN SCHOOL
3490          KM   DIVERSION TO SOUTH
3491          KM   STORM DRAIN ALONG INDIAN SCHOOL ROAD
3492          KM   CAP=  37.0 CFS WEST
3493          DT   SIS6S
3494          DI       0     70.    140.   2034.   3472.
3495          DQ       0     0.1     62.   1447.   2497.
              * DDM   ***** Preserved *****

3496          KK   RIS10
3497          KM   STREET ROUTE
3498          KM   WEST
3499          KM   INDIAN SCHOOL
3500          RS       3    FLOW     -1.
3501          RC    0.02   0.016    0.02   2760.  0.0030
3502          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3503          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3504          KK   D83CB
3505          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3506          KM   83RD & CAMELBACK
3507          DR   D83CB
              * DDM   ***** Preserved *****

3508          KK    R83N
3509          KM   STREET ROUTE
3510          KM   SOUTH
3511          KM   83RD Avenue
3512          RS       3    FLOW     -1.
3513          RC    0.02   0.016    0.02   2650.  0.0022
3514          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3515          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

3516          KK  D2321W
3517          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3518          KM   SUB-BASIN 23-21
3519          DR  D2321W
              * DDM   ***** Preserved *****

3520          KK    C83G
3521          KM   NORTH/SOUTH STREET COMBINE
3522          KM   83RD AVENUE
3523          HC       2  47.020
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3524        KK   S83HS
3525        KM   STREET CAPACITY DIVERSION
3526        KM   83RD
3527        KM   DIVERSION TO WEST
3528        DT   S83HW
3529        DI       0     29.    1 52    846.   1449.
3530        DQ       0     0.1     15.    353.    609.
            * DDM   ***** Preserved *****

3531        KK    R830
3532        KM   STREET ROUTE
3533        KM   SOUTH
3534        KM   83RD Avenue
3535        RS       3    FLOW     -1.
3536        RC    0.02   0.016    0.02   2680.  0.0025
3537        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3538        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

3539        KK   CIS83
3540        KM   INTERSECTION COMBINE
3541        KM   INDIAN SCHOOL & 83RD
3542        HC       2  47.020
            * DDM   ***** Preserved *****

3543        KK   DIS83
3544        KM   STREET INTERSECTION DIVERSION
3545        KM   INDIAN SCHOOL & 83RD
3546        KM   66% West & 34% South
3547        KM   DIVERSION SOUTH
3548        KM   STORM DRAIN ALONG 83RD AVE
3549        KM   CAP= 199.0 CFS SOUTH
3550        DT   D83IS
3551        DI       0    199.  10199.
3552        DQ       0    199.   3599.
            * DDM   ***** Preserved *****

3553        KK   RIS11
3554        KM   STREET ROUTE
3555        KM   WEST
3556        KM   INDIAN SCHOOL
3557        RS       3    FLOW     -1.
3558        RC    0.02   0.016    0.02   2670.  0.0030
3559        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3560        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

3561        KK   SCB6S
3562        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3563        KM   CAMELBACK
3564        DR   SCB6S
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3565        KK  R2221S
3566        KM   SUB-BASIN STREET ROUTE
3567        KM   SOUTH
3568        KM   RW= 120'
3569        KM   PAV= 78'
3570        RS       8    FLOW     -1.
3571        RC    0.02   0.016    0.02   5290.  0.0016
3572        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
3573        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *

3574        KK   22-21
3575        KM   SUB-BASIN 22-21
3576        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3577        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3578        KM     L = 1.42  Kb = .073  Adj. Slope =   16.0
3579        BA   1.001
3580        LG    .310    .160   9.700    .060  24.000
3581        UC   1.321    .667
3582        UA       0       5      16      30      65      77      84      90      94      97
3583        UA     100

3584        KK   S83HW
3585        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3586        KM   83RD
3587        DR   S83HW

3588        KK  R2221W
3589        KM   SUB-BASIN STREET ROUTE
3590        KM   WEST
3591        KM   RW= 70'
3592        KM   PAV= 43'
3593        RS       5    FLOW     -1.
3594        RC    0.02   0.016    0.02   5260.  0.0037
3595        RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
3596        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

3597        KK  C22-21
3598        KM   SUB-BASIN COMBINE
3599        HC       3  55.235

3600        KK  D2221S
3601        KM   SUB-BASIN DIVERSION
3602        KM   SUB-BASIN 22-21
3603        KM   57% West & 43% South
3604        DT  D2221W
3605        DI       0  10000.
3606        DQ       0   5700.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3607          KK    CIS7
3608          KM   EAST/WEST STREET COMBINE
3609          KM   INDIAN SCHOOL
3610          HC       2  55.235

3611          KK   SIS7W
3612          KM   STREET CAPACITY DIVERSION
3613          KM   INDIAN SCHOOL
3614          KM   DIVERSION TO SOUTH
3615          KM   STORM DRAIN ALONG INDIAN SCHOOL ROAD
3616          KM   CAP=  33.0 CFS WEST
3617          DT   SIS7S
3618          DI       0     66.    107.   1333.   2265.
3619          DQ       0     0.1     32.    741.   1279.

3620          KK   RIS12
3621          KM   STREET ROUTE
3622          KM   WEST
3623          KM   INDIAN SCHOOL
3624          RS       3    FLOW     -1.
3625          RC    0.02   0.016    0.02   2640.  0.0030
3626          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3627          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3628          KK   D91CB
3629          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3630          KM   91ST & CAMELBACK
3631          DR   D91CB

3632          KK    R91K
3633          KM   STREET ROUTE
3634          KM   SOUTH
3635          KM   91ST Avenue
3636          RS       3    FLOW     -1.
3637          RC    0.02   0.016    0.02   2680.  0.0022
3638          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3639          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3640          KK  D2221W
3641          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3642          KM   SUB-BASIN 22-21
3643          DR  D2221W

3644          KK    C91F
3645          KM   NORTH/SOUTH STREET COMBINE
3646          KM   91ST AVENUE
3647          HC       2  55.235

3648          KK   S91FS
3649          KM   STREET CAPACITY DIVERSION
3650          KM   91ST
3651          KM   DIVERSION TO WEST
3652          DT   S91FW
3653          DI       0     25.     54.    954.   1638.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3654          DQ       0     0.1     23.    530.    914.

3655          KK    R91L
3656          KM   STREET ROUTE
3657          KM   SOUTH
3658          KM   91ST Avenue
3659          RS       4    FLOW     -1.
3660          RC    0.02   0.016    0.02   2640.  0.0012
3661          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3662          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3663          KK   CIS91
3664          KM   INTERSECTION COMBINE
3665          KM   INDIAN SCHOOL & 91ST
3666          HC       2  55.235

3667          KK   DIS91
3668          KM   STREET INTERSECTION DIVERSION
3669          KM   INDIAN SCHOOL & 91ST
3670          KM   80% West & 20% South
3671          KM   DIVERSION SOUTH
3672          KM   STORM DRAIN ALONG 91ST AVE
3673          KM   CAP= 162.0 CFS SOUTH
3674          DT   D91IS
3675          DI       0    162.  10162.
3676          DQ       0    162.   2162.

3677          KK   RIS13
3678          KM   STREET ROUTE
3679          KM   WEST
3680          KM   INDIAN SCHOOL
3681          RS       3    FLOW     -1.
3682          RC    0.02   0.016    0.02   2670.  0.0034
3683          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3684          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

3685          KK   SCB7S
3686          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3687          KM   CAMELBACK
3688          DR   SCB7S
              *

3689          KK  R2121S
3690          KM   SUB-BASIN STREET ROUTE
3691          KM   SOUTH
3692          KM   RW= 100'
3693          KM   PAV= 70'
3694          RS       7    FLOW     -1.
3695          RC    0.02   0.016    0.02   5310.  0.0019
3696          RX       0     0.1    15.0    25.0    75.0    85.0    100.   100.1
3697          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3698        KK  21-21E
3699        KM   SUB-BASIN 21-21E   (East of AFF)
3700        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3701        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3702        KM     L = 1.80  Kb = .079  Adj. Slope =   16.0
3703        KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
3704        KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
3705        BA   0.719
3706        LG    .500    .150   9.700    .070       0
3707        UC   1.500   1.121
3708        UA       0       5      16      30      65      77      84      90      94      97
3709        UA     100
            *

3710        KK   S91FW
3711        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3712        KM   91ST
3713        DR   S91FW
            *

3714        KK  R2121W
3715        KM   SUB-BASIN STREET ROUTE
3716        KM   WEST
3717        KM   RW= 150'
3718        KM   PAV= 105'
3719        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
3720        KM                15-OCT-97, dtp             Revised L for Composite Route
3721        RS       6    FLOW     -1.
3722        RC    0.02   0.016    0.02   3660.  0.0027
3723        RX       0     0.1    22.5    32.5   117.5   127.5    150.   150.1
3724        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *

3725        KK  C21-21
3726        KM   SUB-BASIN COMBINE
3727        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
3728        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
3729        HC       3  58.448
            *

3730        KK  D2121S
3731        KM   SUB-BASIN DIVERSION
3732        KM   SUB-BASIN 21-21
3733        KM   53% West & 47% South
3734        DT  D2121W
3735        DI       0  10000.
3736        DQ       0   5300.
            *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3737        KK    CIS8
3738        KM   EAST/WEST STREET COMBINE
3739        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
3740        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
3741        HC       2  58.448
            *

3742        KK   SIS8W
3743        KM   STREET CAPACITY DIVERSION
3744        KM   INDIAN SCHOOL
3745        KM   DIVERSION TO SOUTH
3746        DT   SIS8S
3747        DI       0     33.     56.    906.   1552.
3748        DQ       0     0.1     15.    353.    609.
            *

3749        KK   RCBAF
3750        KM   Retrieval of Interseciton Diversion (Camelback & AFF)
3751        DR  DCBAFS
            *

3752        KK    RAF5
3753        KM   STREET ROUTE
3754        KM   SOUTH  ==>  from Camelback Rd. S. 1/2 mi.
3755        KM   Proposed AFF Alignment
3756        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
3757        KM                15-OCT-97, dtp            TRAP Section:  B = 15' ,  H = 9'
3758        RS       4    FLOW     -1.
3759        RC   0.015   0.015   0.015   2720.  0.0017
3760        RX     100     118     120     122     125     130     133     151
3761        RY       9       0       0       0       0       0       0       9
            *

3762        KK  D2121W
3763        KM   RETRIEVAL OF SUB-BASIN DIVERSION
3764        KM   SUB-BASIN 21-21
3765        DR  D2121W
            *

3766        KK    CAFB
3767        KM   Hydrograph Combine along proposed AFF alignment
3768        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
3769        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
3770        HC       2  58.448
            *

3771        KK    RAF6
3772        KM   STREET ROUTE
3773        KM   SOUTH ==>  from 1/2 mi. S of Camelback to Indian School Rd.
3774        KM   Proposed AFF Alignment
3775        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
3776        KM                15-OCT-97, dtp            TRAP Section:  B = 15' ,  H = 9'
3777        RS       4    FLOW     -1.
3778        RC   0.015   0.015   0.015   2880.  0.0017
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3779        RX     100     118     120     122     125     130     133     151
3780        RY       9       0       0       0       0       0       0       9
            *

3781        KK   CISAF
3782        KM   Hydrograph Combine at Intersection of Indian School Road and
3783        KM   Proposed AFF
3784        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
3785        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
3786        HC       2  58.448
            *

3787        KK   DISAF
3788        KM   Street Intersection Diversion
3789        KM   CAMELBACK & AFF
3790        KM   100% South
3791        DT  DISAFS
3792        DI       0  10000.
3793        DQ       0   9999.
            *

3794        KK   R99CB
3795        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3796        KM   99TH & CAMELBACK
3797        DR   D99CB
            *

3798        KK    R99F
3799        KM   STREET ROUTE
3800        KM   SOUTH
3801        KM   99TH Avenue
3802        RS       4    FLOW     -1.
3803        RC    0.02   0.016    0.02   2660.  0.0019
3804        RK    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3805        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            *

3806        KK  21-21W
3807        KM   SUB-BASIN 21-21W
3808        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3809        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
3810        KM     L = 1.12  Kb = .079  Adj. Slope =   12.0
3811        KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
3812        KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
3813        BA    .288
3814        LG    .500    .150   9.700    .070       0
3815        UC   1.396   1.193
3816        UA       0       5      16      30      65      77      84      90      94      97
3817        UA     100
            *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3818          KK   C99C
3819          KM   NORTH/SOUTH STREET COMBINE
3820          KM   99TH AVENUE
3821          HC      2  59.105
              *

3822          KK   S99CS
3823          KM   STREET CAPACITY DIVERSION
3824          KM   99TH
3825          KM   DIVERSION TO WEST
3826          DT   S99CW
3827          DI      0     26.     48.    797.   1367.
3828          DQ      0      0.     15.    353.    609.
              *

3829          KK   R99G
3830          KM   STREET ROUTE
3831          KM   SOUTH
3832          KM   99TH Avenue
3833          RS      4    FLOW     -1.
3834          RC   0.02   0.016    0.02   2680.  0.0019
3835          RX   44.9     45.     66.    66.1    134.   134.1    155.   155.1
3836          RY    4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

3837          KK   CIS99
3838          KM   INTERSECTION COMBINE
3839          KM   INDIAN SCHOOL & 99TH
3840          HC      2  59.105
              *

3841          KK   DIS99
3842          KM   STREET INTERSECTION DIVERSION
3843          KM   INDIAN SCHOOL & 99TH
3844          KM   78% West & 22% South
3845          DT   D99IS
3846          DI      0  10000.
3847          DQ      0   2200.
              *

3848          KK   RIS15
3849          KM   STREET ROUTE
3850          KM   WEST
3851          KM   INDIAN SCHOOL
3852          RS      3    FLOW     -1.
3853          RC   0.02   0.016    0.02   2640.  0.0024
3854          RX   44.9     45.     66.    66.1    134.   134.1    155.   155.1
3855          RY    4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3856          KK   SCB8S
3857          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3858          KM   CAMELBACK
3859          DR   SCB8S

3860          KK  R2021S
3861          KM   SUB-BASIN STREET ROUTE
3862          KM   SOUTH
3863          KM   RW= 120'
3864          KM   PAV= 78'
3865          RS       7    FLOW     -1.
3866          RC    0.02   0.016    0.02   5800.  0.0021
3867          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
3868          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

3869          KK   20-21
3870          KM   SUB-BASIN 20-21
3871          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3872          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
3873          KM     L = 1.59  Kb = .070  Adj. Slope =    9.0
3874          BA   1.022
3875          LG    .270    .170   8.000    .110  24.000
3876          UC   1.500    .831
3877          UA       0       5      16      30      65      77      84      90      94      97
3878          UA     100

3879          KK   RET20
3880          KM   RETENTION BASIN DIVERSION
3881          KM   SUB-BASIN 20-21
3882          KM   66% OF SUB-BASIN DRAINS TO RETENTION BASIN
3883          DT  D2021R   30.53
3884          DI       0  10000.
3885          DQ       0   6600.

3886          KK   S99CW
3887          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3888          KM   99TH
3889          DR   S99CW

3890          KK  R2021W
3891          KM   SUB-BASIN STREET ROUTE
3892          KM   WEST
3893          KM   RW= 120'
3894          KM   PAV= 78'
3895          RS       8    FLOW     -1.
3896          RC    0.02   0.016    0.02   6000.  0.0020
3897          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
3898          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3899          KK  C20-21
3900          KM   SUB-BASIN COMBINE
3901          HC       3  60.827

3902          KK  D2021S
3903          KM   SUB-BASIN DIVERSION
3904          KM   SUB-BASIN 20-21
3905          KM   27% West & 73% South
3906          DT  D2021W
3907          DI       0  10000.
3908          DQ       0   2700.

3909          KK    CIS9
3910          KM   EAST/WEST STREET COMBINE
3911          HC       2  60.827

3912          KK   SIS9W
3913          KM   STREET CAPACITY DIVERSION
3914          KM   INDIAN SCHOOL
3915          KM   DIVERSION TO SOUTH
3916          DT   SIS9S
3917          DI       0     28.     42.    642.   1099.
3918          DQ       0     0.1      8.    177.    305.

3919          KK   RIS16
3920          KM   STREET ROUTE
3921          KM   WEST
3922          KM   INDIAN SCHOOL
3923          RS       4    FLOW     -1.
3924          RC    0.02   0.016    0.02   2800.  0.0018
3925          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3926          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3927          KK  D107CB
3928          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
3929          KM   107TH & CAMELBACK
3930          DR  D107CB

3931          KK   R107A
3932          KM   STREET ROUTE
3933          KM   SOUTH
3934          KM   107TH Avenue
3935          RS       3    FLOW     -1.
3936          RC    0.02   0.016    0.02   2660.  0.0033
3937          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3938          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3939          KK  D2021W
3940          KM   RETRIEVAL OF SUB-BASIN DIVERSION
3941          KM   SUB-BASIN 20-21
3942          DR  D2021W
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3943          KK   C107A
3944          KM   NORTH/SOUTH STREET COMBINE
3945          KM   107TH AVENUE
3946          HC       2  60.827

3947          KK  S107AS
3948          KM   STREET CAPACITY DIVERSION
3949          KM   107TH
3950          KM   DIVERSION TO WEST
3951          DT  S107AW
3952          DI       0     31.     56.    917.   1572.
3953          DQ       0     0.1     17.    388.    670.

3954          KK   R107B
3955          KM   STREET ROUTE
3956          KM   SOUTH
3957          KM   107TH Avenue
3958          RS       3    FLOW     -1.
3959          RC    0.02   0.016    0.02   2640.  0.0020
3960          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3961          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3962          KK  CIS107
3963          KM   INTERSECTION COMBINE
3964          KM   INDIAN SCHOOL & 107TH
3965          HC       2  60.827

3966          KK  DIS107
3967          KM   STREET INTERSECTION DIVERSION
3968          KM   INDIAN SCHOOL & 107TH
3969          KM   33% West & 67% South
3970          DT  D107IS
3971          DI       0  10000.
3972          DQ       0   6700.

3973          KK   RIS17
3974          KM   STREET ROUTE
3975          KM   WEST
3976          KM   INDIAN SCHOOL
3977          RS       4    FLOW     -1.
3978          RC    0.02   0.016    0.02   2560.  0.0014
3979          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
3980          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

3981          KK   19-21
3982          KM   SUB-BASIN 19-21
3983          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
3984          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
3985          KM     L = 1.33  Kb = .070  Adj. Slope =   26.0
3986          BA    .872
3987          LG    .390    .260   5.100    .360  10.000
3988          UC   1.204    .618
3989          UA       0       5      16      30      65      77      84      90      94      97
3990          UA     100
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

3991          KK  S107AW
3992          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
3993          KM   107TH
3994          DR  S107AW

3995          KK  R1921W
3996          KM   SUB-BASIN STREET ROUTE
3997          KM   WEST
3998          KM   RW= 120'
3999          KM   PAV= 78'
4000          RS       2    FLOW     -1.
4001          RC    0.02   0.016    0.02   2640.  0.0039
4002          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
4003          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

4004          KK  C19-21
4005          KM   SUB-BASIN COMBINE
4006          HC       2  61.700

4007          KK  D1921S
4008          KM   SUB-BASIN DIVERSION
4009          KM   SUB-BASIN 19-21
4010          KM   72% West & 28% South
4011          DT  D1921W
4012          DI       0  10000.
4013          DQ       0   7200.

4014          KK   CIS10
4015          KM   EAST/WEST STREET COMBINE
4016          HC       2  61.700

4017          KK   RIS18
4018          KM   STREET ROUTE
4019          KM   WEST
4020          KM   INDIAN SCHOOL
4021          RS       4    FLOW     -1.
4022          RC    0.02   0.016    0.02   2500.  0.0011
4023          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4024          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

4025          KK  D1921W
4026          KM   RETRIEVE SUB-BASIN DIVERSION
4027          DR  D1921W

4028          KK   NULL7
4029          KM   NULL COMBINE: NULL6 + RIS18 + D1921W
4030          HC       3     1.
              *
              * THOMAS ROAD COMPUTATION PATH NORTH OF GRAND CANAL
              *
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4031          KK   D35IS
4032          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4033          KM   35TH & INDIAN SCHOOL
4034          DR   D35IS
              * DDM   ***** Preserved *****

4035          KK   RGR8
4036          KM   STREET ROUTE
4037          KM   EAST
4038          KM   GRAND AVENUE
4039          KM   RW= 93'
4040          KM   PAV= 88'
4041          RS       7    FLOW     -1.
4042          RC    0.02   0.016    0.02   4000.  0.0012
4043          RX       0     0.1     2.5    12.5    80.5    90.5     93.    93.1
4044          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

4045          KK   D27IS
4046          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4047          KM   27TH & INDIAN SCHOOL
4048          DR   D27IS
              * DDM   ***** Preserved *****

4049          KK   R27F
4050          KM   STREET ROUTE
4051          KM   SOUTH
4052          KM   27TH Avenue
4053          RS       2    FLOW     -1.
4054          RC    0.02   0.016    0.02   1740.  0.0027
4055          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4056          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Updated *****

4057          KK  26-22N
4058          KM   SUB-BASIN 26-22N
4059          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4060          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
4061          KM     L =  .57  Kb = .030  Adj. Slope =   15.0
4062          BA    .380
4063          LG    .150    .240   5.100    .340  58.000
4064          UC    .383    .141
4065          UA       0       5      16      30      65      77      84      90      94      97
4066          UA     100
              * DDM   ***** Preserved *****

4067          KK  SD31CS
4068          KM   RETRIEVAL OF STORM DRAIN DIVERSION
4069          KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
4070          KM   CAP= 251 CFS SOUTH
4071          DR  SD31CS
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4072          KK  C2622N
4073          KM   SUB-BASIN COMBINE
4074          KM   THIS COMBINE INCLUDES THE FLOW IN THE 27TH & 31ST AVENUE STORM DRAINS
4075          HC       4  16.649
              * DDM   ***** Preserved *****

4076          KK  SD31D
4077          KM   STORM DRAIN DIVERSION
4078          KM   STORM DRAIN ALONG HALF MILE STREET
4079          KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
4080          KM   DIVERT IS TO THE SOUTH
4081          KM   CAP= 251 CFS SOUTH
4082          DT  SD31DS
4083          DI       0    251.  10251.
4084          DQ       0    251.    251.
              * DDM   ***** Preserved *****

4085          KK  RES26T
4086          KM   PONDING AREA RESERVOIR ROUTE
4087          KM   PONDING AREA NORTH OF GRAND CANAL
4088          KM   FLOW IN 27TH AVENUE STORM DRAIN INCLUDED IN RATING CURVE FOR PONDING AREA
4089          KM   CAPACITY OF 31ST AVENUE STORM DRAIN HAS ALREADY BEEN DIVERTED TO SOUTH
4090          KM   SUB-BASIN 26-22N
4091          RS       1    ELEV   1011.
4092          SV     0.0     0.1    2.35    9.38    33.9
4093          SE   1011.   1012.  1012.5   1013.   1014.
4094          SQ    160.    160.    640.   1780.  10096.
              * DDM   ***** Preserved *****

4095          KK    D26W
4096          KM   FLOW DIVERSION
4097          KM   SUB-BASIN 26-22N
4098          KM   0% West & 100% South
4099          KM   THIS DIVERT PASSES ALL FLOW TO THE SOUTH VIA THE DIVERT
4100          KM   WHILE THE MAIN COMPUTATIONAL PATH REMAINS OPEN (WITH 0 FLOW)
4101          KM   TO THE WEST, TO BE COMBINED AT C2722N.
4102          DT    D26S
4103          DI       0  10000.
4104          DQ       0  10000.
              * DDM   ***** Preserved *****

4105          KK  SIS1AS
4106          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4107          KM   35TH & INDIAN SCHOOL
4108          DR  SIS1AS
              * DDM   ***** Preserved *****

4109          KK  SD35DW
4110          KM   SPECIAL STREET CAPACITY DIVERSION
4111          KM   35TH AVENUE
4112          KM   DIVERSION TO SOUTH
4113          KM   EXISTING STORM DRAIN ALONG 35TH AVENUE
4114          KM   CAP=  75 CFS SOUTH
4115          DT  SD35DS
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4116        DI       0     75.  10000.
4117        DQ       0     75.     75.
            * DDM   ***** Preserved *****

4118        KK  R2722W
4119        KM   SUB-BASIN STREET ROUTE
4120        KM   WEST
4121        KM   RW= 50'
4122        KM   PAV= 35'
4123        RS       7    FLOW     -1.
4124        RC    0.02   0.016    0.02   4660.  0.0015
4125        RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
4126        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

4127        KK   SIS1S
4128        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4129        KM   INDIAN SCHOOL
4130        DR   SIS1S
            * DDM   ***** Preserved *****

4131        KK  R2722S
4132        KM   SUB-BASIN STREET ROUTE
4133        KM   SOUTH
4134        KM   RW= 170'
4135        KM   PAV= 113'
4136        RS       3    FLOW     -1.
4137        RC    0.02   0.016    0.02   3060.  0.0029
4138        RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
4139        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

4140        KK  27-22N
4141        KM   SUB-BASIN 27-22N
4142        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4143        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
4144        KM     L = 1.15  Kb = .025  Adj. Slope =   10.0
4145        BA    .372
4146        LG    .120    .250   6.000    .240  71.000
4147        UC    .621    .428
4148        UA       0       5      16      30      65      77      84      90      94      97
4149        UA     100
            * DDM   ***** Preserved *****

4150        KK  C2722N
4151        KM   SUB-BASIN COMBINE
4152        KM   THIS COMBINES FLOWS FROM R2722S, 27-22N, R2722W, & D26W (WITH 0 FLOW)
4153        HC       4    16.4
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4154          KK  D2722N
4155          KM   SUB-BASIN DIVERSION
4156          KM   SUB-BASIN 27-22N
4157          KM   19% West & 81% South
4158          KM   DIVERSION WEST
4159          KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
4160          KM   CAP= 332 CFS SOUTH
4161          DT  D2722A
4162          DI       0    332.    532.    832.   1332.   2332.
4163          DQ       0     0.1     38.     95.    190.    380.
              * DDM   ***** Preserved *****

4164          KK     D39
4165          KM    FLOW DIVERSION AT 39TH AVE
4166          KM    FLOW DIVERSION DATA BASED ON
4167          KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4168          KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL = 600 CFS
4169          KM    DIVERSION OF FLOW SOUTH UNDER THE GRAND CANAL
4170          KM    BY AN EXISTING STORM DRAIN SYSTEM
4171          KM    ESTIMATED STORM DRAIN CAPACITY (78") =286 CFS
4172          DT    D39S
4173          DI       0    286.    886.   1286.   2286.
4174          DQ       0    286.    286.    686.   1686.
              * DDM   ***** Preserved *****

4175          KK   D43IS
4176          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4177          KM   43RD & INDIAN SCHOOL
4178          DR   D43IS
              * DDM   ***** Preserved *****

4179          KK   R43K
4180          KM   STREET ROUTE
4181          KM   SOUTH
4182          KM   43RD Avenue
4183          RS       2    FLOW     -1.
4184          RC    0.02   0.016    0.02   2120.  0.0038
4185          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4186          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4187          KK   S43GS
4188          KM   STREET CAPACITY DIVERSION
4189          KM   43RD AVENUE
4190          KM   SPECIAL CASE
4191          KM   DIVERSION TO WEST 50% OF SURFACE FLOW
4192          KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
4193          KM   CAP=  89 CFS SOUTH
4194          DT   S43GW
4195          DI       0     89.  10089.
4196          DQ       0     0.1   5000.
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4197        KK  D2722A
4198        KM   RETRIEVAL OF SUB-BASIN DIVERSION
4199        KM   SUB-BASIN 27-22N
4200        DR  D2722A
            * DDM   ***** Preserved *****

4201        KK  C2722A
4202        KM   SUB-BASIN COMBINE
4203        HC       3    16.4
            * DDM   ***** Preserved *****

4204        KK    PA43
4205        KM    STORAGE ROUTING
4206        KM    PONDING AREA IN THE VICINITY OF 43RD AVE
4207        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4208        KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL = 200 CFS
4209        KM    DIVERSION OF FLOW UNDER THE GRAND CANAL BY AN EXISTING STORM DRAIN SYSTEM
4210        KM    ESTIMATED STORM DRAIN CAPACITY(63") = 89 CFS
4211        KM    TOP OF CANAL BANK ELEVATION = 1108
4212        RS       1    ELEV      -1   1104.
4213        SV       0    0.01      .1    .645    4.77    6.79   29.76     33.
4214        SE    1104  1104.1    1105    1106  1106.8    1107    1108   1109.
4215        SQ       0      89      89      89      89     289     289   2289.
            * DDM   ***** Preserved *****

4216        KK     D43
4217        KM    FLOW DIVERSION AT 43RD AVE
4218        KM    DIVERSION TO SOUTH
4219        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4220        KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL = 200 CFS
4221        KM    DIVERSION OF FLOW SOUTH UNDER THE GRAND CANAL BY EXIST. STORM DRAIN SYSTEM
4222        KM    ESTIMATED STORM DRAIN CAPACITY(63") = 89 CFS
4223        DT    D43S
4224        DI       0     89.    289.   2289.
4225        DQ       0     89.     89.   2089.
            * DDM   ***** Preserved *****

4226        KK  R2822W
4227        KM   SUB-BASIN STREET ROUTE
4228        KM   WEST
4229        KM   RW= 150'
4230        KM   PAV= 105'
4231        RS       5    FLOW     -1.
4232        RC    0.02   0.016    0.02   2640.  0.0008
4233        RX       0     0.1    22.5    32.5   117.5   127.5    150.   150.1
4234        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

4235        KK   SIS2S
4236        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4237        KM   INDIAN SCHOOL
4238        DR   SIS2S
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4239        KK  SIS2SA
4240        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4241        KM   RETRIEVE DIVERT JUST EAST OF SIS2
4242        KM   INDIAN SCHOOL
4243        DR  SIS2SA
            * DDM   ***** Preserved *****

4244        KK  C2822A
4245        KM   COMBINE
4246        HC       2    18.3
            * DDM   ***** Preserved *****

4247        KK  R2822S
4248        KM   SUB-BASIN STREET ROUTE
4249        KM   SOUTH
4250        KM   RW= 270'
4251        KM   PAV= 183'
4252        RS       2    FLOW     -1.
4253        RC    0.02   0.016    0.02   2250.  0.0046
4254        RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
4255        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

4256        KK  28-22N
4257        KM   SUB-BASIN 28-22N
4258        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4259        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
4260        KM     L =  .71  Kb = .077  Adj. Slope =   14.0
4261        BA    .452
4262        LG    .220    .240   5.100    .320  41.000
4263        UC    .946    .416
4264        UA       0       5      16      30      65      77      84      90      94      97
4265        UA     100
            * DDM   ***** Preserved *****

4266        KK   S43GW
4267        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4268        KM   43RD AVENUE
4269        DR   S43GW
            * DDM   ***** Preserved *****

4270        KK  C2822N
4271        KM   SUB-BASIN COMBINE
4272        HC       3    18.3
            * DDM   ***** Preserved *****

4273        KK  D2822N
4274        KM   SUB-BASIN DIVERSION
4275        KM   SUB-BASIN 28-22N
4276        KM   74% WEST & 26% SOUTH
4277        KM   DIVERSION IS TO THE WEST
4278        KM   MAIN COMPUTATION PATH IS TO THE SOUTH
4279        DT  D2822A
4280        DI       0  10000.
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4281        DQ       0   7400.
            * DDM   ***** Preserved *****

4282        KK  C2822D
4283        KM   SUB-BASIN COMBINE
4284        HC       2    18.3
            * DDM   ***** Preserved *****

4285        KK    PA47        STORAGE ROUTING AT 47TH AVE
4286        KM    PONDING AREA IN THE VICINITY OF 47TH AVE
4287        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4288        KM    CAPACITY OF FLOW NORTH OF CANAL = 300 CFS+(STORM DRAIN CAP)105CFS PER CVL
4289        KM    DIVERSION OF FLOW OVER THE CANAL BANKS
4290        KM    TOP OF CANAL BANK ELEV = 1105
4291        RS       1    FLOW      -1
4292        SV       0    0.01    4.04    6.31   28.74
4293        SE    1104  1104.1  1104.8    1105    1106
4294        SQ       0     105     338     405    2405
            * DDM   ***** Preserved *****

4295        KK     D47
4296        KM    DIVERSION AT 47TH AVE
4297        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4298        KM    AN EXISTING STORM DRAIN SYSTEM CONVEYS FLOW TO THE WEST ONLY
4299        KM    CAPACITY OF FLOW NORTH OF CANAL = 300 CFS+(STORM DRAIN CAP)105CFS PER CVL
4300        KM    DIVERSION OF FLOW OVER THE CANAL BANKS
4301        DT    D47S
4302        DI       0     405   2405.
4303        DQ       0     0.1   2000.
            * DDM   ***** Preserved *****

4304        KK   D51IS
4305        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4306        KM   51ST & INDIAN SCHOOL
4307        DR   D51IS
            * DDM   ***** Preserved *****

4308        KK   R51M
4309        KM   STREET ROUTE
4310        KM   SOUTH
4311        KM   51ST Avenue
4312        RS       2    FLOW     -1.
4313        RC    0.02   0.016    0.02   2500.  0.0038
4314        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4315        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

4316        KK   S51HS
4317        KM   STREET CAPACITY DIVERSION
4318        KM   50/50 SPLIT
4319        KM   51ST
4320        KM   DIVERSION TO WEST
4321        KM   STORM DRAIN ALONG 51ST AVE
4322        KM   CAP= 207.0 CFS SOUTH
4323        DT   S51HW
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4324        DI       0    207.  10207.
4325        DQ       0     0.1   5000.
            * DDM   ***** Preserved *****

4326        KK  D2822A
4327        KM   RETRIEVAL OF SUB-BASIN DIVERSION
4328        KM   SUB-BASIN 28-22N
4329        DR  D2822A
            * DDM   ***** Preserved *****

4330        KK  C2822B
4331        KM   SUB-BASIN COMBINE
4332        HC       3    18.3
            * DDM   ***** Preserved *****

4333        KK    PA51        STORAGE ROUTING
4334        KM    PONDING AREA IN THE VICINITY OF 51ST AVE
4335        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4336        KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL =  50 CFS
4337        KM    DIVERSION OF FLOW UNDER THE GRAND CANAL BY AN EXISTING STORM DRAIN SYSTEM
4338        KM    ESTIMATED STORM DRAIN CAPACITY(72") =281 CFS
4339        KM    TOP OF CANAL BANK ELEV = 1105.5
4340        RS       1    FLOW      -1
4341        SV       0    0.01    4.81   23.30    40.5   57.73
4342        SE    1103  1103.1    1104    1105  1105.5    1106
4343        SQ       0     281     306     331    331.   2231.
            * DDM   ***** Preserved *****

4344        KK     D51
4345        KM    D51S-51ST AVE. STORM DRAIN DIVERSION TO THE SOUTH
4346        KM    PONDING AREA IN THE VICINITY OF 51ST AVE
4347        KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4348        KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL =  50 CFS
4349        KM    DIVERSION OF FLOW UNDER THE GRAND CANAL BY AN EXISTING STORM DRAIN SYSTEM
4350        KM    ESTIMATED STORM DRAIN CAPACITY(72") =281 CFS
4351        KM    TOP OF CANAL BANK ELEV = 1105.5
4352        DT    D51S
4353        DI       0     281    2231
4354        DQ       0     281    2181
            * DDM   ***** Preserved *****

4355        KK   SIS3S
4356        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4357        KM   INDIAN SCHOOL
4358        DR   SIS3S
            * DDM   ***** Preserved *****

4359        KK  R2922S
4360        KM   SUB-BASIN STREET ROUTE
4361        KM   SOUTH
4362        KM   RW= 270'
4363        KM   PAV= 183'
4364        RS       2    FLOW     -1.
4365        RC    0.02   0.016    0.02   2040.  0.0043
4366        RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4367        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

4368        KK  29-22N
4369        KM   SUB-BASIN 29-22N
4370        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4371        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
4372        KM     L =  .65  Kb = .073  Adj. Slope =   17.0
4373        BA    .414
4374        LG    .210    .240   6.200    .210  34.000
4375        UC    .758    .319
4376        UA       0       5      16      30      65      77      84      90      94      97
4377        UA     100
            *
            * DDM   ***** Preserved *****

4378        KK  RET29N
4379        KM   RETENTION BASIN DIVERSION
4380        KM   SUB-BASIN 29-22N
4381        KM   17% OF SUB-BASIN DRAINS TO RETENTION BASIN
4382        DT  D2922R    1.73
4383        DI       0  10000.
4384        DQ       0   1700.
            *
            * DDM   ***** Preserved *****

4385        KK  C2922N
4386        KM   SUB-BASIN COMBINE
4387        HC       2    24.9
            * DDM   ***** Preserved *****

4388        KK  D2922N
4389        KM   SUB-BASIN DIVERSION
4390        KM   SUB-BASIN 29-22N
4391        KM   54% WEST & 46% SOUTH
4392        KM   DIVERSION IS TO THE WEST
4393        KM   MAIN COMPUTATION PATH IS TO THE SOUTH
4394        DT  D2922A
4395        DI       0  10000.
4396        DQ       0   5400.
            * DDM   ***** Preserved *****

4397        KK   S51HW
4398        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4399        KM   51ST AVENUE
4400        DR   S51HW
            * DDM   ***** Preserved *****

4401        KK  C2922B
4402        KM   SUB-BASIN COMBINE
4403        HC       3    25.8
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4404          KK    PA55        STORAGE ROUTING
4405          KM    PONDING AREA IN THE VICINITY OF 55TH AVE
4406          KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4407          KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL =  50 CFS
4408          KM    AN EXISTING STORM DRAIN SYSTEM CONVEYS FLOW TO THE WEST ONLY
4409          KM    DIVERSION OF FLOW OVER THE GRAND CANAL
4410          KM    STORM DRAIN CAPACITY WEST = 74 CFS PER CVL
4411          KM    TOP OF CANAL BANK ELEV = 1103
4412          RS       1    FLOW      -1
4413          SV       0    0.01     .04     .08    5.56   12.08   20.80    22.9
4414          SE    1100  1100.1  1100.7    1101    1102  1102.5    1103   1104.
4415          SQ       0      74      87      93     114     124     124    629.
              * DDM   ***** Preserved *****

4416          KK     D55
4417          KM    FLOW DIVERSION TO SOUTH
4418          KM    PRELIMINARY COMPUTATIONS BY WPA 6/96
4419          KM    CAPACITY OF SURFACE FLOW NORTH OF CANAL =  50 CFS
4420          KM    AN EXISTING STORM DRAIN SYSTEM CONVEYS FLOW TO THE WEST ONLY
4421          KM    DIVERSION OF FLOW OVER THE GRAND CANAL
4422          KM    STORM DRAIN CAPACITY WEST = 74 CFS PER CVL
4423          KM    TOP OF CANAL BANK ELEV = 1103
4424          DT    D55S
4425          DI       0      74    124.    629.
4426          DQ       0     0.1     0.2    505.
              * DDM   ***** Preserved *****

4427          KK   D59IS
4428          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
4429          KM   59TH & INDIAN SCHOOL
4430          DR   D59IS
              * DDM   ***** Preserved *****

4431          KK   S59HS
4432          KM   STREET CAPACITY DIVERSION
4433          KM   59TH AVENUE
4434          KM   DIVERSION TO WEST
4435          KM   50/50 SPLIT
4436          KM   STORM DRAIN ALONG 59TH AVE
4437          KM   CAP= 359.0 CFS SOUTH
4438          DT   S59HW
4439          DI       0    359.  10359.
4440          DQ       0     0.1   5000.
              * DDM   ***** Preserved *****

4441          KK  D2922A
4442          KM   RETRIEVAL OF SUB-BASIN DIVERSION
4443          KM   SUB-BASIN 29-22N
4444          DR  D2922A
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4445          KK  C2922A
4446          KM   COMBINE
4447          HC       3    25.8
              * DDM   ***** Preserved *****

4448          KK    PA59        STORAGE ROUTING
4449          KM    PONDING AREA IN THE VICINITY OF 43RD AVE
4450          KM    DATA BASED ON HEC-1 BY CVL(4/96) FOR FCD 93-34
4451          KM    DIVERSION OF FLOW UNDER THE GRAND CANAL BY AN EXISTING STORM DRAIN SYSTEM
4452          KM    ESTIMATED STORM DRAIN CAPACITY(72") = 220 CFS
4453          KM    SEE CVL COMPUTATION SHEETS IN APPENDIX
4454          RS       1    FLOW      -1
4455          SV       0    0.01    2.31    9.93   15.88   46.45
4456          SE    1099  1099.1    1100  1100.8    1101    1102
4457          SQ       0     220     220     267     378    2689
              * DDM   ***** Preserved *****

4458          KK     D59        FLOW DIVERSION
4459          KM    PONDING AREA IN THE VICINITY OF 59TH AVE
4460          KM    DATA BASED ON HEC-1 BY CVL(4/96) FOR FCD 93-34
4461          KM    FLOW OVER GRAND CANAL BANKS
4462          KM    DIVERT IS TO THE SOUTH
4463          DT    D59S
4464          DI       0     272     378    2689
4465          DQ       0     272     272    1030
              * DDM   ***** Preserved *****

4466          KK   SIS4S
4467          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4468          KM   INDIAN SCHOOL
4469          DR   SIS4S
              * DDM   ***** Preserved *****

4470          KK  R3022S
4471          KM   SUB-BASIN STREET ROUTE
4472          KM   SOUTH
4473          KM   RW= 100'
4474          KM   PAV= 70'
4475          RS       2    FLOW     -1.
4476          RC    0.02   0.016    0.02   2250.  0.0037
4477          RX       0     0.1    15.0    25.0    75.0    85.0    100.   100.1
4478          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

4479          KK  30-22N
4480          KM   SUB-BASIN 30-22N
4481          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4482          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
4483          KM     L =  .82  Kb = .092  Adj. Slope =   14.0
4484          BA    .162
4485          LG    .230    .150   7.000    .150  34.000
4486          UC   1.142   1.032
4487          UA       0       5      16      30      65      77      84      90      94      97
4488          UA     100
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4489          KK   S59HW
4490          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4491          KM   59TH
4492          DR   S59HW
              * DDM   ***** Preserved *****

4493          KK  C3022N
4494          KM   SUB-BASIN COMBINE
4495          HC       4  34.800
              * DDM   ***** Preserved *****
              *
              * The following is the original input for the ponding area.
              *
              * KK  PA63        STORAGE ROUTING AT 63RD AVE
              * KM  PONDING AREA IN THE VICINITY OF 63RD AVE
              * KM  DATA BASED ON HEC-1 BY CVL(4/96) FOR FCD 93-34
              * KM  DIVERSION OF FLOW UNDER THE GRAND CANAL BY AN EXISTING STORM DRAIN SYSTEM
              * KM  AND/OR OVER THE GRAND CANAL BANKS
              * KM  ESTIMATED STORM DRAIN CAPACITY(42") = 52 CFS
              * KM  SEE CVL COMPUTATION SHEETS IN APPENDIX
              * RS     1    FLOW      -1
              * SV     0    0.30    1.27    3.89   10.16   34.71
              * SE  1096  1097.0  1097.2  1097.5    1098    1099
              * SQ     0      52    52.1    52.2     219    3220
              *

4496          KK    PA63        STORAGE ROUTING AT SUNSET BASIN
              *  KO     3
4497          KM   ==========================================================================
4498          KM   REVISED BY DMJM ---> SUNSET DETENTION BASIN @ INDIAN SCHOOL AND 67TH AVE.
4499          KM                Revised also for Tailwater Conditions and 8'x6'RCB(L=2330 ft.).
4500          KM   ==========================================================================
4501          KM    DATA BASED ON HEC-1 BY HOSKINS ENGINEERING CONSULTANTS (8-99) FOR COP
4502          KM    Detention basin sized for the 10-year event.
4503          KM    BASIN DRAIN INTO AN EXISTING STORM DRAIN SYSTEM IN INDIAN SCHOOL
4504          RS       1    STOR      -1
              *
              *  *** Revised to Avoid Error Message - Extrapolated Values Above Elevation 1098
              *
4505          SV       0    0.50    1.10    2.90   10.60    22.8    23.3    35.8    38.5    56.7
4506          SV    74.9
              *   SQ     0       6      10      20      30      40    40.4     313     371
              *
              *   **** Revised by DMJM+HARRIS for 8'x7' (L=2520 lin. ft.) RCB Outlet ****
              *
4507          SQ       0       6      10      20      30      40    40.4     289     325     495
4508          SQ     665
4509          SE    1085  1086.0  1086.5  1087.3  1089.6  1092.4  1092.5  1094.8 1095.22    1098
4510          SE  1100.8
              * DDM   ***** Preserved *****
              *
              * KK   D63
              * KM  100% FLOW DIVERTED SOUTH
              * KM  COMPUTATION PATH WEST ALONG NORTH SIDE OF GRAND CANAL IS TERMINATED
              * KM  COMPUTATION PATH TO WEST IS COLLECTED @ THOMAS & 67 INTERSECTION COMBINE
```

```
* DT  D63S
* DI    0.  10000.
* DQ    0.  10000.
*
* ** Diversion D63 modified from 60 to 55 cfs for 30" drain pipe in Sunset Basin
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4511          KK     D63
4512          KM   ==============================================================================
4513          KM   REVISED BY DMJM --> PROVIDE 55 CFS DIVERSION FOR THE SUNSET BASIN OUTLET INTO
4514          KM                       THE INDIAN SCHOOL ROAD STORM DRAIN.
4515          KM   ==============================================================================
4516          DT    D63S            55.0
4517          DI      0.  10000.
4518          DQ      0.  10000.
              *

4519          KK    DC1B
4520          KM   ==============================================================================
4521          KM   REVISED BY DMJM --> DIVERT REMAINING FLOWS FROM SUNSET BASIN FOR FUTURE
4522          KM                       RETRIEVAL.
4523          KM   ==============================================================================
4524          DT  GCDC1B
4525          DI       0     100    1000
4526          DQ       0     100    1000
              *
              *  MAIN THOMAS ROAD (SOUTH OF GRAND CANAL) COMPUTATIONAL PATH
              *
              * DDM   ***** Preserved *****

4527          KK    D26S
4528          KM   RETRIEVE FLOW FROM DIVERT D26W, FROM RES26T
4529          KM   SUB-BASIN 26-22E
4530          DR    D26S
              * DDM   ***** Preserved *****

4531          KK  R2622S
4532          KM   SUB-BASIN STREET ROUTE
4533          KM   SOUTH
4534          KM   RW= 150'
4535          KM   PAV= 105'
4536          RS       3    FLOW     -1.
4537          RC    0.02   0.016    0.02   3710.  0.0042
4538          RX       0     0.1    22.5    32.5   117.5   127.5    150.   150.1
4539          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

4540          KK  26-22E
4541          KM   SUB-BASIN 26-22E
4542          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4543          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
4544          KM     L =  .84  Kb = .040  Adj. Slope =   19.0
4545          BA    .384
4546          LG    .160    .150   8.400    .090  53.000
4547          UC    .521    .269
4548          UA       0       5      16      30      65      77      84      90      94      97
4549          UA     100
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9.......10

4550          KK  C2622E
4551          KM   SUB-BASIN COMBINE
4552          HC       2  12.141
              * DDM   ***** Preserved *****

4553          KK  RES26E
4554          KM   PONDING AREA RESERVOIR ROUTE
4555          KM   PONDING AREA NORTHEAST OF GRAND AVENUE/RR EMBANKMENT
4556          KM   SUB-BASIN 26-22E
4557          RS       1    FLOW      0.
4558          SV       0     0.1   13.20   45.92   91.09  149.48
4559          SE   1095.   1096.   1097.   1098.   1099.   1100.
4560          SQ      0.    160.    160     376.   1056.   6078.
              * DDM   ***** Preserved *****

4561          KK   DTR27
4562          KM   DIVERSION IN SUB-BASIN 26-22E
4563          KM   0% West & 100% South
4564          KM   THIS DIVERT IS TO MAINTAIN THE COMPUTATION PATH TO THE WEST
4565          KM   MAIN PATH CONTINUES TO THE WEST TO C2622S
4566          KM   DIVERSION SOUTH
4567          KM   STORM DRAIN ALONG 27TH AVE
4568          KM   CAP= 160.0 CFS SOUTH
4569          KM   STORM DRAIN ALONG THOMAS RD.
4570          KM   CAP=  33.0 CFS WEST
4571          DT   D27TR
4572          DI       0    193.  10193.
4573          DQ       0    160.  10160.
              * DDM   ***** Updated *****

4574          KK  26-22S
4575          KM   SUB-BASIN 26-22S
4576          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4577          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
4578          KM     L =  .48  Kb = .026  Adj. Slope =   22.0
4579          BA    .393
4580          LG    .150    .150   8.000    .110  56.000
4581          UC    .262    .079
4582          UA       0       5      16      30      65      77      84      90      94      97
4583          UA     100
              * DDM   ***** Preserved *****

4584          KK  D2622S
4585          KM   SUB-BASIN DIVERSION
4586          KM   SUB-BASIN 26-22S
4587          KM   24% West & 76% South
4588          DT  D2622W
4589          DI       0  10000.
4590          DQ       0   2400.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4591          KK  SD31DS
4592          KM   RETRIEVAL OF STORM DRAIN DIVERSION ALONG 31ST AVENUE
4593          DR  SD31DS
              * DDM   ***** Preserved *****

4594          KK  C2622S
4595          KM   SUB-BASIN COMBINE
4596          KM   COMBINES FLOW FROM D26W, SD31DS, & D2622Q
4597          HC       3   0.392
              * DDM   ***** Preserved *****

4598          KK   STR1W
4599          KM   STREET CAPACITY DIVERSION
4600          KM   THOMAS
4601          KM   DIVERSION TO SOUTH
4602          KM   STORM DRAIN ALONG THOMAS ROAD
4603          KM   CAP=   8.0 CFS WEST
4604          KM   STORM DRAIN ALONG 31ST AVE.
4605          KM   CAP= 237.0 CFS SOUTH
4606          DT   STR1S
4607          DI       0    259.    295.   1223.   1928.
4608          DQ       0    237.    269.    978.   1516.
              * DDM   ***** Preserved *****

4609          KK    RTR1
4610          KM   STREET ROUTE
4611          KM   WEST
4612          KM   THOMAS
4613          RS       6    FLOW     -1.
4614          RC    0.02   0.016    0.02   2640.  0.0006
4615          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4616          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4617          KK  SD35DS
4618          KM   RETRIEVAL OF STORM DRAIN DIVERSION ALONG 35TH AVENUE
4619          DR  SD35DS
              * DDM   ***** Updated *****

4620          KK  26-22W
4621          KM   SUB-BASIN 26-22W
4622          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4623          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF 1.000
4624          KM     L =  .43  Kb = .029  Adj. Slope =   13.0
4625          BA    .079
4626          LG    .140    .240   4.300    .530  57.000
4627          UC    .338    .240
4628          UA       0       5      16      30      65      77      84      90      94      97
4629          UA     100
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4630          KK  D2622W
4631          KM   RETRIEVAL OF SUB-BASIN DIVERSION
4632          KM   SUB-BASIN 26-22S
4633          DR  D2622W
              * DDM   ***** Preserved *****

4634          KK    C35E
4635          KM   NORTH/SOUTH STREET COMBINE
4636          KM   35TH AVENUE
4637          HC       3   0.471
              * DDM   ***** Preserved *****

4638          KK   S35DS
4639          KM   STREET CAPACITY DIVERSION
4640          KM   35TH AVENUE
4641          KM   DIVERSION TO WEST
4642          KM   STORM DRAIN ALONG 35TH AVE
4643          KM   CAP=  63.0 CFS SOUTH
4644          DT   S35DW
4645          DI       0    103.    138.   1306.   2194.
4646          DQ       0     0.1     24.    565.    975.
              * DDM   ***** Preserved *****

4647          KK    R35J
4648          KM   STREET ROUTE
4649          KM   SOUTH
4650          KM   35TH Avenue
4651          RS       2    FLOW     -1.
4652          RC    0.02   0.016    0.02   2640.  0.0049
4653          RX    44.9     45.     66.    66.1    134.  134.1    155.   155.1
4654          RY     4.3     0.3     0.3     0.0     0.0    0.3     0.3     4.3
              * DDM   ***** Preserved *****

4655          KK   CTR35
4656          KM   INTERSECTION COMBINE
4657          KM   THOMAS & 35TH
4658          HC       2   0.471
              * DDM   ***** Preserved *****

4659          KK   DTR35
4660          KM   STREET INTERSECTION DIVERSION
4661          KM   THOMAS & 35TH
4662          KM   22% West & 78% South
4663          KM   DIVERSION SOUTH
4664          KM   STORM DRAIN ALONG 35TH AVE
4665          KM   CAP=  63.0 CFS SOUTH
4666          KM   STORM DRAIN ALONG THOMAS RD.
4667          KM   CAP=  20.0 CFS WEST
4668          DT   D35TR
4669          DI       0     83.  10083.
4670          DQ       0     63.   7863.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4671          KK    RTR2
4672          KM   STREET ROUTE
4673          KM   WEST
4674          KM   THOMAS
4675          RS       6    FLOW     -1.
4676          RC    0.02   0.016    0.02   2640.  0.0006
4677          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4678          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4679          KK    D39S
4680          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4681          KM   39TH AVENUE AT GRAND CANAL
4682          DR    D39S
              * DDM   ***** Preserved *****

4683          KK  R2722A
4684          KM   SUB-BASIN STREET ROUTE
4685          KM   SOUTH
4686          KM   RW= 220'
4687          KM   PAV= 148'
4688          RS       3    FLOW     -1.
4689          RC    0.02   0.016    0.02   3550.  0.0040
4690          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
4691          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

4692          KK  27-22S
4693          KM   SUB-BASIN 27-22S
4694          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4695          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
4696          KM     L =  .94  Kb = .072  Adj. Slope =   14.0
4697          BA    .631
4698          LG    .220    .150   8.800    .070  39.000
4699          UC   1.013    .464
4700          UA       0       5      16      30      65      77      84      90      94      97
4701          UA     100
              * DDM   ***** Preserved *****

4702          KK   S35DW
4703          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4704          KM   35TH AVENUE
4705          DR   S35DW
              * DDM   ***** Preserved *****

4706          KK  R2722B
4707          KM   SUB-BASIN STREET ROUTE
4708          KM   WEST
4709          KM   RW= 120'
4710          KM   PAV= 78'
4711          RS      10    FLOW     -1.
4712          RC    0.02   0.016    0.02   5300.  0.0009
4713          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
4714          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4715          KK  C2722S
4716          KM   SUB-BASIN COMBINE
4717          HC       3  12.139
              * DDM   ***** Preserved *****

4718          KK  D2722S
4719          KM   SUB-BASIN DIVERSION
4720          KM   SUB-BASIN 27-22S
4721          KM   8% West & 92% South
4722          KM   DIVERSION WEST
4723          KM   STORM DRAIN ALONG 39TH AVE
4724          KM   CAP= 286.0 CFS SOUTH
4725          DT  D2722W
4726          DI       0    286.    486.    786.   1286.   2286.
4727          DQ       0     0.1     16.     40.     80.    160.
              * DDM   ***** Preserved *****

4728          KK    CTR1
4729          KM   EAST/WEST STREET COMBINE
4730          HC       2  12.139
              * DDM   ***** Preserved *****

4731          KK   STR2W
4732          KM   STREET CAPACITY DIVERSION
4733          KM   THOMAS
4734          KM   DIVERSION TO SOUTH
4735          KM   STORM DRAIN ALONG 39TH AVE.
4736          KM   CAP= 286.0 CFS SOUTH
4737          DT   STR2S
4738          DI       0    286.    298.    332.   1221.   1895.
4739          DQ       0    286.    286.    318.   1027.   1565.
              * DDM   ***** Preserved *****

4740          KK    RTR3
4741          KM   STREET ROUTE
4742          KM   WEST
4743          KM   THOMAS
4744          RS      16    FLOW     -1.
4745          RC    0.02   0.016    0.02   2660.  0.0001
4746          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4747          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4748          KK    D43S
4749          KM   RETRIEVAL OF DIVERSION D43
4750          KM   43RD & GRAND CANAL
4751          DR    D43S
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4752          KK  D2722W
4753          KM   RETRIEVAL OF SUB-BASIN DIVERSION
4754          KM   SUB-BASIN 27-22W
4755          DR  D2722W
              * DDM   ***** Preserved *****

4756          KK    C43F
4757          KM   NORTH/SOUTH STREET COMBINE
4758          KM   43RD AVENUE
4759          HC       2  12.139
              * DDM   ***** Preserved *****

4760          KK   S43HS
4761          KM   STREET CAPACITY DIVERSION
4762          KM   43RD AVENUE
4763          KM   DIVERSION TO WEST
4764          KM   STORM DRAIN ALONG 43RD AVE
4765          KM   CAP=  89.0 CFS SOUTH
4766          DT   S43HW
4767          DI       0    131.    212.   2426.   4108.
4768          DQ       0     0.1     70.   1624.   2802.
              * DDM   ***** Preserved *****

4769          KK    R43M
4770          KM   STREET ROUTE
4771          KM   SOUTH
4772          KM   43RD Avenue
4773          RS       2    FLOW     -1.
4774          RC    0.02   0.016    0.02   2640.  0.0039
4775          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4776          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4777          KK   CTR43
4778          KM   INTERSECTION COMBINE
4779          KM   THOMAS & 43RD
4780          HC       2  12.139
              * DDM   ***** Preserved *****

4781          KK   DTR43
4782          KM   STREET INTERSECTION DIVERSION
4783          KM   THOMAS & 43RD
4784          KM   19% West & 81% South
4785          KM   DIVERSION SOUTH
4786          KM   STORM DRAIN ALONG 43RD AVE
4787          KM   CAP= 262.0 CFS SOUTH
4788          DT   D43TR
4789          DI       0    262.  10262.
4790          DQ       0    262.   8362.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4791          KK    D51S
4792          KM   RETRIEVAL OF PONDING AREA DIVERSION
4793          KM   51ST @ GRAND CANAL
4794          DR    D51S
              * DDM   ***** Preserved *****

4795          KK    D47S
4796          KM   RETRIEVAL OF PONDING AREA DIVERSION
4797          KM   47TH @ GRAND CANAL
4798          DR    D47S
              * DDM   ***** Preserved *****

4799          KK  C2822C
4800          KM   SUB-BASIN COMBINE
4801          HC       2  18.316
              * DDM   ***** Preserved *****

4802          KK  R2822A
4803          KM   SUB-BASIN STREET ROUTE
4804          KM   EAST
4805          KM   RW= 220'
4806          KM   PAV= 148'
4807          RS       3    FLOW     -1.
4808          RC    0.02   0.016    0.02   2760.  0.0030
4809          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
4810          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

4811          KK  28-22S
4812          KM   SUB-BASIN 28-22S
4813          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4814          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
4815          KM     L =  .69  Kb = .083  Adj. Slope =   15.0
4816          BA    .543
4817          LG    .240    .190   6.600    .180  33.000
4818          UC    .917    .354
4819          UA       0       5      16      30      65      77      84      90      94      97
4820          UA     100
              * DDM   ***** Preserved *****

4821          KK  C2822S
4822          KM   SUB-BASIN COMBINE
4823          HC       2  18.859
              * DDM   ***** Preserved *****

4824          KK  D2822S
4825          KM   SUB-BASIN DIVERSION
4826          KM   SUB-BASIN 28-22S
4827          KM   2% West & 98% South
4828          DT  D2822W
4829          DI       0  10000.
4830          DQ       0    200.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


4831          KK   S43HW
4832          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4833          KM   43RD AVENUE
4834          DR   S43HW
              * DDM   ***** Preserved *****

4835          KK  R2822B
4836          KM   SUB-BASIN STREET ROUTE
4837          KM   WEST
4838          KM   RW= 220'
4839          KM   PAV= 148'
4840          RS      10    FLOW     -1.
4841          RC    0.02   0.016    0.02   7290.  0.0017
4842          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
4843          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

4844          KK    CTR2
4845          KM   EAST/WEST STREET COMBINE
4846          HC       3  19.961
              * DDM   ***** Preserved *****

4847          KK   STR3W
4848          KM   STREET CAPACITY DIVERSION 50/50 SPLIT
4849          KM   THOMAS
4850          KM   DIVERSION TO SOUTH
4851          DT   STR3S
4852          DI       0    100.   1000.  10000.
4853          DQ       0     50.    500.   5000.
              * DDM   ***** Preserved *****

4854          KK   STR4W
4855          KM   STREET CAPACITY DIVERSION
4856          KM   THOMAS
4857          KM   DIVERSION TO SOUTH
4858          DT   STR4S
4859          DI       0     12.     47.    945.   1626.
4860          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

4861          KK    RTR4
4862          KM   STREET ROUTE
4863          KM   WEST
4864          KM   THOMAS
4865          RS       5    FLOW     -1.
4866          RC    0.02   0.016    0.02   2820.  0.0009
4867          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4868          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4869          KK  D2822W
4870          KM   RETRIEVAL OF SUB-BASIN DIVERSION
4871          KM   SUB-BASIN 28-22W
4872          DR  D2822W
              * DDM   ***** Preserved *****

4873          KK   S51IS
4874          KM   STREET CAPACITY DIVERSION
4875          KM   51ST AVENUE
4876          KM   DIVERSION TO WEST
4877          KM   STORM DRAIN ALONG 51ST AVE
4878          KM   CAP= 281.0 CFS SOUTH
4879          DT   S51IW
4880          DI       0    320.    369.   1852.   2978.
4881          DQ       0     0.1     40.    918.   1584.
              * DDM   ***** Preserved *****

4882          KK    R51N
4883          KM   STREET ROUTE
4884          KM   SOUTH
4885          KM   51ST Avenue
4886          RS       2    FLOW     -1.
4887          RC    0.02   0.016    0.02   2570.  0.0040
4888          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4889          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4890          KK   CTR51
4891          KM   INTERSECTION COMBINE
4892          KM   THOMAS & 51ST
4893          HC       2  19.961
              * DDM   ***** Preserved *****

4894          KK   DTR51
4895          KM   STREET INTERSECTION DIVERSION
4896          KM   THOMAS & 51ST
4897          KM   39% West & 61% South
4898          KM   DIVERSION SOUTH
4899          KM   STORM DRAIN ALONG 51ST AVE
4900          KM   CAP= 281.0 CFS SOUTH
4901          DT   D51TR
4902          DI       0    281.  10281.
4903          DQ       0    281.   6381.
              * DDM   ***** Preserved *****

4904          KK    RTR5
4905          KM   STREET ROUTE
4906          KM   WEST
4907          KM   THOMAS
4908          RS       4    FLOW     -1.
4909          RC    0.02   0.016    0.02   2720.  0.0014
4910          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4911          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4912          KK    D55S
4913          KM   RETRIEVAL OF DIVERSION AT 55TH & GRAND CANAL
4914          DR    D55S
              * DDM   ***** Preserved *****

4915          KK  R2922A
4916          KM   SUB-BASIN STREET ROUTE
4917          KM   SOUTH
4918          KM   RW= 270'
4919          KM   PAV= 183'
4920          RS       2    FLOW     -1.
4921          RC    0.02   0.016    0.02   2890.  0.0050
4922          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
4923          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

4924          KK  29-22S
4925          KM   SUB-BASIN 29-22S
4926          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
4927          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
4928          KM     L =  .79  Kb = .079  Adj. Slope =   16.0
4929          BA    .594
4930          LG    .230    .190   6.600    .190  36.000
4931          UC    .946    .388
4932          UA       0       5      16      30      65      77      84      90      94      97
4933          UA     100
              * DDM   ***** Preserved *****

4934          KK   S51IW
4935          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
4936          KM   51ST
4937          DR   S51IW
              * DDM   ***** Preserved *****

4938          KK  R2922B
4939          KM   SUB-BASIN STREET ROUTE
4940          KM   WEST
4941          KM   RW= 270'
4942          KM   PAV= 183'
4943          RS       9    FLOW     -1.
4944          RC    0.02   0.016    0.02   5300.  0.0011
4945          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
4946          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

4947          KK  C2922S
4948          KM   SUB-BASIN COMBINE
4949          HC       3  26.898
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4950          KK  D2922S
4951          KM   SUB-BASIN DIVERSION
4952          KM   SUB-BASIN 29-22S
4953          KM   27% West & 73% South
4954          DT  D2922W
4955          DI       0  10000.
4956          DQ       0   2700.
              * DDM   ***** Preserved *****

4957          KK    CTR3
4958          KM   EAST/WEST STREET COMBINE
4959          HC       2  27.999
              * DDM   ***** Preserved *****

4960          KK   STR5W
4961          KM   STREET CAPACITY DIVERSION
4962          KM   THOMAS
4963          KM   DIVERSION TO SOUTH
4964          KM   STORM DRAIN ALONG THOMAS ROAD
4965          KM   CAP=  26.0 CFS WEST
4966          DT   STR5S
4967          DI       0     48.     78.    967.   1641.
4968          DQ       0     0.1     24.    565.    975.
              * DDM   ***** Preserved *****

4969          KK    RTR6
4970          KM   STREET ROUTE
4971          KM   WEST
4972          KM   THOMAS
4973          RS       4    FLOW     -1.
4974          RC    0.02   0.016    0.02   2600.  0.0013
4975          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4976          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

4977          KK    D59S
4978          KM   RETRIEVAL OF INTERSECTION DIVERSION FROM 59TH & GRAND CANAL
4979          DR    D59S
              * DDM   ***** Preserved *****

4980          KK    R59N
4981          KM   STREET ROUTE
4982          KM   SOUTH
4983          KM   59TH Avenue
4984          RS       1    FLOW     -1.
4985          RC    0.02   0.016    0.02   1130.  0.0053
4986          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
4987          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

4988        KK  D2922W
4989        KM   RETRIEVAL OF SUB-BASIN DIVERSION
4990        KM   SUB-BASIN 29-22W
4991        DR  D2922W
            * DDM   ***** Preserved *****

4992        KK    C59G
4993        KM   NORTH/SOUTH STREET COMBINE
4994        KM   59TH AVENUE
4995        HC       2  26.898
            * DDM   ***** Preserved *****

4996        KK   S59IS
4997        KM   STREET CAPACITY DIVERSION
4998        KM   59TH
4999        KM   DIVERSION TO WEST
5000        KM   STORM DRAIN ALONG 59TH AVE
5001        KM   CAP= 389.0 CFS SOUTH
5002        DT   S59IW
5003        DI       0    429.    501.   2501.   4020.
5004        DQ       0     0.1     62.   1447.   2497.
            * DDM   ***** Preserved *****

5005        KK    R59O
5006        KM   STREET ROUTE
5007        KM   SOUTH
5008        KM   59TH Avenue
5009        RS       2    FLOW     -1.
5010        RC    0.02   0.016    0.02   2620.  0.0038
5011        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5012        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

5013        KK   CTR59
5014        KM   INTERSECTION COMBINE
5015        KM   THOMAS & 59TH
5016        HC       2  27.999
            * DDM   ***** Preserved *****

5017        KK   DTR59
5018        KM   STREET INTERSECTION DIVERSION
5019        KM   THOMAS & 59TH
5020        KM   40% West & 60% South
5021        KM   DIVERSION SOUTH
5022        KM   STORM DRAIN ALONG 59TH AVE
5023        KM   CAP= 389.0 CFS SOUTH
5024        DT   D59TR
5025        DI       0    389.  10389.
5026        DQ       0    389.   6389.
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5027          KK    RTR7
5028          KM   STREET ROUTE
5029          KM   WEST
5030          KM   THOMAS
5031          RS       4    FLOW     -1.
5032          RC    0.02   0.016    0.02   2630.  0.0015
5033          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5034          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5035          KK    D63S
5036          KM   RETRIEVAL OF FLOW FROM PA63
5037          DR    D63S
              * DDM   ***** Preserved *****

5038          KK  R3022A
5039          KM   SUB-BASIN STREET ROUTE
5040          KM   SOUTH
5041          KM   RW= 170'
5042          KM   PAV= 113'
5043          RS       4    FLOW     -1.
5044          RC    0.02   0.016    0.02   4000.  0.0039
5045          RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
5046          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

5047          KK  30-22S
5048          KM   SUB-BASIN 30-22S
5049          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5050          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
5051          KM     L = 1.19  Kb = .074  Adj. Slope =   16.0
5052          BA    .811
5053          LG    .230    .150   8.000    .100  35.000
5054          UC   1.175    .573
5055          UA       0       5      16      30      65      77      84      90      94      97
5056          UA     100
              * DDM   ***** Preserved *****

5057          KK   S59IW
5058          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5059          KM   59TH
5060          DR   S59IW
              * DDM   ***** Preserved *****

5061          KK  R3022B
5062          KM   SUB-BASIN STREET ROUTE
5063          KM   WEST
5064          KM   RW= 370'
5065          KM   PAV= 253'
5066          RS       7    FLOW     -1.
5067          RC    0.02   0.016    0.02   5080.  0.0018
5068          RX       0     0.1    58.5    68.5   301.5   311.5    370.   370.1
5069          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5070          KK  C3022S
5071          KM   SUB-BASIN COMBINE
5072          HC       3  36.031
              * DDM   ***** Preserved *****

5073          KK  D3022S
5074          KM   SUB-BASIN DIVERSION
5075          KM   SUB-BASIN 30-22S
5076          KM   24% West & 76% South
5077          DT  D3022W
5078          DI       0  10000.
5079          DQ       0   2400.
              * DDM   ***** Preserved *****

5080          KK    CTR4
5081          KM   EAST/WEST STREET COMBINE
5082          KM   THOMAS
5083          HC       2  37.133
              * DDM   ***** Preserved *****

5084          KK   STR6W
5085          KM   STREET CAPACITY DIVERSION
5086          KM   THOMAS
5087          KM   DIVERSION TO SOUTH
5088          DT   STR6S
5089          DI       0     23.     61.   1126.   1935.
5090          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

5091          KK    RTR8
5092          KM   STREET ROUTE
5093          KM   WEST
5094          KM   THOMAS
5095          RS       4    FLOW     -1.
5096          RC    0.02   0.016    0.02   2520.  0.0013
5097          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5098          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5099          KK  D3022W
5100          KM   RETRIEVAL OF SUB-BASIN DIVERSION
5101          KM   SUB-BASIN 30-22S
5102          DR  D3022W
              * DDM   ***** Preserved *****

5103          KK   D67IS
5104          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5105          KM   67TH AVE. AND INDIAN SCHOOL
5106          DR   D67IS
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5107          KK   C67G1
5108          KM   NORTH/SOUTH STREET COMBINE
5109          KM   67TH AVE.
5110          HC       2   36.03
              * DDM   ***** Preserved *****

5111          KK   S67IS
5112          KM   STREET CAPACITY DIVERSION
5113          KM   67TH
5114          KM   DIVERSION TO WEST
5115          KM   STORM DRAIN ALONG 67TH AVE
5116          KM   CAP= 240.0 CFS SOUTH
5117          DT   S67IW
5118          DI       0    272.    312.   1519.   2437.
5119          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

5120          KK    R67O
5121          KM   STREET ROUTE
5122          KM   SOUTH
5123          KM   67TH Avenue
5124          RS       3    FLOW     -1.
5125          RC    0.02   0.016    0.02   2630.  0.0030
5126          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5127          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5128          KK   CTR67
5129          KM   INTERSECTION COMBINE
5130          KM   THIS COMBINE COLLECTS THE 0 CFS FLOW FROM D63 AND CLOSES THE
5131          KM   NORTH OF GRAND CANAL THOMAS RD. COMPUTATION PATH
5132          KM   THOMAS & 67TH
5133          HC       3  37.133
              * DDM   ***** Preserved *****

5134          KK   DTR67
5135          KM   STREET INTERSECTION DIVERSION
5136          KM   THOMAS & 67TH
5137          KM   40% West & 60% South
5138          KM   DIVERSION SOUTH
5139          KM   STORM DRAIN ALONG 67TH AVE
5140          KM   CAP= 240.0 CFS SOUTH
5141          DT   D67TR
5142          DI       0    240.  10240.
5143          DQ       0    240.   6240.
              * DDM   ***** Preserved *****

5144          KK    RTR9
5145          KM   STREET ROUTE
5146          KM   WEST
5147          KM   THOMAS
5148          RS       3    FLOW     -1.
5149          RC    0.02   0.016    0.02   2630.  0.0022
5150          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5151          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5152          KK   SIS5S
5153          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5154          KM   INDIAN SCHOOL
5155          DR   SIS5S
              * DDM   ***** Preserved *****

5156          KK  R2521S
5157          KM   SUB-BASIN STREET ROUTE
5158          KM   SOUTH
5159          KM   RW= 120'
5160          KM   PAV= 78'
5161          RS       6    FLOW     -1.
5162          RC    0.02   0.016    0.02   5300.  0.0026
5163          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
5164          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

5165          KK   25-21
5166          KM   SUB-BASIN 25-21
5167          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5168          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
5169          KM     L = 1.38  Kb = .065  Adj. Slope =   14.0
              *  KO     1
5170          BA   1.001
5171          LG    .220    .170   9.700    .060  32.000
5172          UC   1.246    .611
5173          UA       0       5      16      30      65      77      84      90      94      97
5174          UA     100
              * DDM   ***** Preserved *****

5175          KK   RET25
5176          KM   RETENTION BASIN DIVERSION
5177          KM   SUB-BASIN 25-21
5178          KM    2% OF SUB-BASIN DRAINS TO RETENTION BASIN
5179          DT  D2521R   15.49
5180          DI       0  10000.
5181          DQ       0    200.
              * DDM   ***** Preserved *****

5182          KK   S67IW
5183          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5184          KM   67TH
5185          DR   S67IW
              * DDM   ***** Preserved *****

5186          KK  R2521W
5187          KM   SUB-BASIN STREET ROUTE
5188          KM   WEST
5189          KM   RW= 220'
5190          KM   PAV= 148
5191          RS       6    FLOW     -1.
5192          RC    0.02   0.016    0.02   5390.  0.0027
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5193          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
5194          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

5195          KK  C25-21
5196          KM   SUB-BASIN COMBINE
5197          HC       3  37.644
              * DDM   ***** Preserved *****

5198          KK  D2521S
5199          KM   SUB-BASIN DIVERSION
5200          KM   SUB-BASIN 25-21
5201          KM   24% West & 76% South
5202          DT  D2521W
5203          DI       0  10000.
5204          DQ       0   2400.
              * DDM   ***** Preserved *****

5205          KK    CTR5
5206          KM   EAST/WEST STREET COMBINE
5207          HC       2  38.746
              * DDM   ***** Preserved *****

5208          KK   STR7W
5209          KM   STREET CAPACITY DIVERSION
5210          KM   THOMAS
5211          KM   DIVERSION TO SOUTH
5212          KM   STORM DRAIN ALONG THOMAS ROAD
5213          KM   CAP=  91.0 CFS WEST
5214          DT   STR7S
5215          DI       0    120.    152.   1150.   1908.
5216          DQ       0     0.1     24.    565.    975.
              * DDM   ***** Preserved *****

5217          KK   RTR10
5218          KM   STREET ROUTE
5219          KM   WEST
5220          KM   THOMAS
5221          RS       3    FLOW     -1.
5222          RC    0.02   0.016    0.02   2670.  0.0025
5223          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5224          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5225          KK   D75IS
5226          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5227          KM   75TH & INDIAN SCHOOL
5228          DR   D75IS
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5229          KK    R75P
5230          KM   STREET ROUTE
5231          KM   SOUTH
5232          KM   75TH Avenue
5233          RS       3    FLOW     -1.
5234          RC    0.02   0.016    0.02   2670.  0.0030
5235          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5236          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5237          KK  D2521W
5238          KM   RETRIEVAL OF SUB-BASIN DIVERSION
5239          KM   SUB-BASIN 25-21
5240          DR  D2521W
              * DDM   ***** Preserved *****

5241          KK    C75G
5242          KM   NORTH/SOUTH STREET COMBINE
5243          KM   75TH AVENUE
5244          HC       2  37.644
              * DDM   ***** Preserved *****

5245          KK   S75JS
5246          KM   STREET CAPACITY DIVERSION
5247          KM   75TH
5248          KM   DIVERSION TO WEST
5249          KM   STORM DRAIN ALONG 75TH AVE
5250          KM   CAP= 328.0 CFS SOUTH
5251          DT   S75JW
5252          DI       0    359.    399.   1593.   2500.
5253          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

5254          KK    R75Q
5255          KM   STREET ROUTE
5256          KM   SOUTH
5257          KM   75TH Avenue
5258          RS       3    FLOW     -1.
5259          RC    0.02   0.016    0.02   2660.  0.0022
5260          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5261          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5262          KK   CTR75
5263          KM   INTERSECTION COMBINE
5264          KM   THOMAS & 75TH
5265          HC       2  38.746
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5266        KK   DTR75
5267        KM   STREET INTERSECTION DIVERSION
5268        KM   THOMAS & 75TH
5269        KM   35% West & 65% South
5270        KM   DIVERSION SOUTH
5271        KM   STORM DRAIN ALONG 75TH AVE
5272        KM   CAP= 328.0 CFS SOUTH
5273        DT   D75TR
5274        DI       0    328.  10328.
5275        DQ       0    328.   6828.
            * DDM   ***** Preserved *****

5276        KK   RTR11
5277        KM   STREET ROUTE
5278        KM   WEST
5279        KM   THOMAS
5280        RS       3    FLOW     -1.
5281        RC    0.02   0.016    0.02   2600.  0.0029
5282        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5283        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

5284        KK   SIS6S
5285        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5286        KM   INDIAN SCHOOL
5287        DR   SIS6S
            * DDM   ***** Preserved *****

5288        KK  R2621S
5289        KM   SUB-BASIN STREET ROUTE
5290        KM   SOUTH
5291        KM   RW= 370'
5292        KM   PAV= 253'
5293        RS       6    FLOW     -1.
5294        RC    0.02   0.016    0.02   5700.  0.0029
5295        RX       0     0.1    58.5    68.5   301.5   311.5    370.   370.1
5296        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

5297        KK   26-21
5298        KM   SUB-BASIN 26-21
5299        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5300        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
5301        KM     L = 1.40  Kb = .074  Adj. Slope =   15.0
5302        BA    .990
5303        LG    .240    .160   7.000    .140  33.000
5304        UC   1.400    .708
5305        UA       0       5      16      30      65      77      84      90      94      97
5306        UA     100
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5307          KK   S75JW
5308          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5309          KM   75TH
5310          DR   S75JW
              * DDM   ***** Preserved *****

5311          KK  R2621W
5312          KM   SUB-BASIN STREET ROUTE
5313          KM   WEST
5314          KM   RW= 270'
5315          KM   PAV= 183'
5316          RS       6    FLOW     -1.
5317          RC    0.02   0.016    0.02   5280.  0.0024
5318          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
5319          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

5320          KK  C26-21
5321          KM   SUB-BASIN COMBINE
5322          HC       3  41.284
              * DDM   ***** Preserved *****

5323          KK  D2621S
5324          KM   SUB-BASIN DIVERSION
5325          KM   SUB-BASIN 26-21
5326          KM   26% West & 74% South
5327          DT  D2621W
5328          DI       0  10000.
5329          DQ       0   2600.
              * DDM   ***** Preserved *****

5330          KK    CTR6
5331          KM   EAST/WEST STREET COMBINE
5332          HC       2  41.284
              * DDM   ***** Preserved *****

5333          KK   STR8W
5334          KM   STREET CAPACITY DIVERSION
5335          KM   THOMAS
5336          KM   DIVERSION TO SOUTH
5337          DT   STR8S
5338          DI       0     31.     46.    690.   1180.
5339          DQ       0     0.1      7.    177.    305.
              * DDM   ***** Preserved *****

5340          KK   RTR12
5341          KM   STREET ROUTE
5342          KM   WEST
5343          KM   THOMAS
5344          RS       3    FLOW     -1.
5345          RC    0.02   0.016    0.02   2620.  0.0021
5346          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5347          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5348          KK   D83IS
5349          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5350          KM   83RD & INDIAN SCHOOL
5351          DR   D83IS
              * DDM   ***** Preserved *****

5352          KK    R83P
5353          KM   STREET ROUTE
5354          KM   SOUTH
5355          KM   83RD Avenue
5356          RS       3    FLOW     -1.
5357          RC    0.02   0.016    0.02   2630.  0.0021
5358          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5359          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

5360          KK  D2621W
5361          KM   RETRIEVAL OF SUB-BASIN DIVERSION
5362          KM   SUB-BASIN 26-21
5363          DR  D2621W
              * DDM   ***** Preserved *****

5364          KK    C83H
5365          KM   NORTH/SOUTH STREET COMBINE
5366          KM   83RD AVENUE
5367          HC       2  57.035
              * DDM   ***** Preserved *****

5368          KK   S83IS
5369          KM   STREET CAPACITY DIVERSION
5370          KM   83RD
5371          KM   DIVERSION TO WEST
5372          KM   STORM DRAIN ALONG 83RD AVE
5373          KM   CAP= 243.0 CFS SOUTH
5374          DT   S83IW
5375          DI       0    272.    311.   1470.   2350.
5376          DQ       0     0.1     32.    741.   1279.
              * DDM   ***** Preserved *****

5377          KK    R83Q
5378          KM   STREET ROUTE
5379          KM   SOUTH
5380          KM   83RD Avenue
5381          RS       3    FLOW     -1.
5382          RC    0.02   0.016    0.02   2630.  0.0024
5383          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5384          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5385        KK   CTR83
5386        KM   INTERSECTION COMBINE
5387        KM   THOMAS & 83RD
5388        HC       2  56.347
            * DDM   ***** Preserved *****

5389        KK   DTR83
5390        KM   STREET INTERSECTION DIVERSION
5391        KM   THOMAS & 83RD
5392        KM   35% West & 65% South
5393        KM   DIVERSION SOUTH
5394        KM   STORM DRAIN ALONG 83RD AVE
5395        KM   CAP= 243.0 CFS SOUTH
5396        DT   D83TR
5397        DI       0    243.  10243.
5398        DQ       0    243.   6743.
            * DDM   ***** Preserved *****

5399        KK   RTR13
5400        KM   STREET ROUTE
5401        KM   WEST
5402        KM   THOMAS
5403        RS       3    FLOW     -1.
5404        RC    0.02   0.016    0.02   2640.  0.0024
5405        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5406        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

5407        KK   SIS7S
5408        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5409        KM   INDIAN SCHOOL
5410        DR   SIS7S
            * DDM   ***** Preserved *****

5411        KK  R2721S
5412        KM   SUB-BASIN STREET ROUTE
5413        KM   SOUTH
5414        KM   RW= 220'
5415        KM   PAV= 148'
5416        RS       8    FLOW     -1.
5417        RC    0.02   0.016    0.02   5700.  0.0019
5418        RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
5419        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *

5420        KK   27-21
5421        KM   SUB-BASIN 27-21
5422        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5423        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
5424        KM     L = 1.34  Kb = .073  Adj. Slope =   13.0
5425        BA   1.005
5426        LG    .290    .170   7.600    .120  23.000
5427        UC   1.450    .704
5428        UA       0       5      16      30      65      77      84      90      94      97
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5429        UA     100

5430        KK   RET27
5431        KM   RETENTION BASIN DIVERSION
5432        KM   SUB-BASIN 27-21
5433        KM    5% OF SUB-BASIN DRAINS TO RETENTION BASIN
5434        DT  D2721R    2.36
5435        DI       0  10000.
5436        DQ       0    500.

5437        KK   S83IW
5438        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5439        KM   83RD
5440        DR   S83IW

5441        KK  R2721W
5442        KM   SUB-BASIN STREET ROUTE
5443        KM   WEST
5444        KM   RW= 220'
5445        KM   PAV= 148'
5446        RS       6    FLOW     -1.
5447        RC    0.02   0.016    0.02   5280.  0.0027
5448        RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
5449        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

5450        KK  C27-21
5451        KM   SUB-BASIN COMBINE
5452        HC       3  65.566

5453        KK  D2721S
5454        KM   SUB-BASIN DIVERSION
5455        KM   SUB-BASIN 27-21
5456        KM   30% West & 70% South
5457        DT  D2721W
5458        DI       0  10000.
5459        DQ       0   3000.

5460        KK    CTR7
5461        KM   EAST/WEST STREET COMBINE
5462        HC       2  66.668

5463        KK   STR9W
5464        KM   STREET CAPACITY DIVERSION
5465        KM   THOMAS
5466        KM   DIVERSION TO SOUTH
5467        DT   STR9S
5468        DI       0     32.     72.   1278.   2194.
5469        DQ       0     0.1     32.    741.   1279.

5470        KK   RTR14
5471        KM   STREET ROUTE
5472        KM   WEST
5473        KM   THOMAS
5474        RS       3    FLOW     -1.
5475        RC    0.02   0.016    0.02   2650.  0.0031
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5476          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5477          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5478          KK   D91IS
5479          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5480          KM   91ST & INDIAN SCHOOL
5481          DR   D91IS

5482          KK    R91M
5483          KM   STREET ROUTE
5484          KM   SOUTH
5485          KM   91ST Avenue
5486          RS       4    FLOW     -1.
5487          RC    0.02   0.016    0.02   2630.  0.0016
5488          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5489          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5490          KK  D2721W
5491          KM   RETRIEVAL OF SUB-BASIN DIVERSION
5492          KM   SUB-BASIN 27-21
5493          DR  D2721W

5494          KK    C91G
5495          KM   NORTH/SOUTH STREET COMBINE
5496          KM   91ST AVENUE
5497          HC       2  65.566

5498          KK   S91GS
5499          KM   STREET CAPACITY DIVERSION
5500          KM   91ST
5501          KM   DIVERSION TO WEST
5502          KM   STORM DRAIN ALONG 91ST AVE
5503          KM   CAP= 326.0 CFS SOUTH
5504          DT   S91GW
5505          DI       0    343.    356.    822.   1177.
5506          DQ       0     0.1      9.    212.    365.

5507          KK    R91N
5508          KM   STREET ROUTE
5509          KM   SOUTH
5510          KM   91ST Avenue
5511          RS       3    FLOW     -1.
5512          RC    0.02   0.016    0.02   2650.  0.0025
5513          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5514          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5515          KK   CTR91
5516          KM   INTERSECTION COMBINE
5517          KM   THOMAS & 91ST
5518          HC       2  66.668
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5519          KK   DTR91
5520          KM   STREET INTERSECTION DIVERSION
5521          KM   THOMAS & 91ST
5522          KM   43% West & 57% South
5523          KM   DIVERSION SOUTH
5524          KM   STORM DRAIN ALONG 91ST AVE
5525          KM   CAP= 326.0 CFS SOUTH
5526          DT   D91TR
5527          DI       0    326.  10326.
5528          DQ       0    326.   6026.
              *

5529          KK   RTR15
5530          KM   STREET ROUTE
5531          KM   WEST
5532          KM   THOMAS
5533          RS       4    FLOW     -1.
5534          RC    0.02   0.016    0.02   2650.  0.0018
5535          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5536          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

5537          KK   SIS8S
5538          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5539          KM   INDIAN SCHOOL
5540          DR   SIS8S
              *

5541          KK  R2821S
5542          KM   SUB-BASIN STREET ROUTE
5543          KM   SOUTH
5544          KM   RW= 50'
5545          KM   PAV= 35'
5546          RS      10    FLOW     -1.
5547          RC    0.02   0.016    0.02   5700.  0.0011
5548          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
5549          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *

5550          KK  28-21E
5551          KM   SUB-BASIN 28-21E         (East of AFF)
5552          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5553          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
5554          KM     L = 1.42  Kb = .080  Adj. Slope =   18.0
5555          KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
5556          KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
5557          BA    .534
5558          LG    .490    .150   8.800    .090       2
5559          UC   1.421   1.034
5560          UA       0       5      16      30      65      77      84      90      94      97
5561          UA     100
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


5562          KK   S91GW
5563          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5564          KM   91ST
5565          DR   S91GW
              *

5566          KK  R2821W
5567          KM   SUB-BASIN STREET ROUTE
5568          KM   WEST
5569          KM   RW= 50'
5570          KM   PAV= 35'
5571          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
5572          KM                15-OCT-97, dtp             Revised L for Composite Route
5573          RS       6    FLOW     -1.
5574          RC    0.02   0.016    0.02   2600.  0.0026
5575          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
5576          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *

5577          KK  C28-21
5578          KM   SUB-BASIN COMBINE
5579          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
5580          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
5581          HC       3  69.314
              *

5582          KK  D2821S
5583          KM   SUB-BASIN DIVERSION
5584          KM   SUB-BASIN 28-21
5585          KM   63% West & 37% South
5586          DT  D2821W
5587          DI       0  10000.
5588          DQ       0   6300.
              *

5589          KK    CTR8
5590          KM   EAST/WEST STREET COMBINE
5591          HC       2  69.314
              *

5592          KK  STR10W
5593          KM   STREET CAPACITY DIVERSION
5594          KM   THOMAS
5595          KM   DIVERSION TO SOUTH
5596          DT  STR10S
5597          DI       0     26.     41.    618.   1058.
5598          DQ       0     0.1      8.    177.    305.
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5599        KK   RISAF
5600        KM   Retrieval of Interseciton Diversion (Indian School & AFF)
5601        DR  DISAFS
            *

5602        KK    RAF7
5603        KM   STREET ROUTE
5604        KM   SOUTH  ==>  from Indian School Rd S. 1/2 mi.
5605        KM   Proposed AFF
5606        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
5607        KM                15-OCT-97, dtp            TRAP Section:  B = 15' ,  H = 12'
5608        RS       5    FLOW     -1.
5609        RC   0.015   0.015   0.015   2640.  0.0010
5610        RX     100     124     126     128     130     135     139     163
5611        RY      12       0       0       0       0       0       0      12
            *

5612        KK  D2821W
5613        KM   RETRIEVAL OF SUB-BASIN DIVERSION
5614        KM   SUB-BASIN 28-21
5615        DR  D2821W
            *

5616        KK    CAFC
5617        KM   Hydrograph Combine along proposed AFF alignment
5618        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
5619        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
5620        HC       2  69.314
            *

5621        KK    RAF8
5622        KM   STREET ROUTE
5623        KM   SOUTH  ==>  from 1/2 mi. S. of Indian School Rd to Thomas Rd.
5624        KM   Proposed AFF
5625        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
5626        KM                15-OCT-97, dtp            TRAP Section:  B = 15' ,  H = 12'
5627        RS       5    FLOW     -1.
5628        RC   0.015   0.015   0.015   2640.  0.0010
5629        RX     100     124     126     128     130     135     139     163
5630        RY      12       0       0       0       0       0       0      12
            *

5631        KK   CTRAF
5632        KM   Hydrograph Combine at Intersection of Thomas Road and
5633        KM   Proposed AFF
5634        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
5635        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
5636        HC       2  69.314
            *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5637        KK   DTRAF
5638        KM   Street Intersection Diversion
5639        KM   THOMAS RD & AFF
5640        KM   100% South
5641        DT  DTRAFS
5642        DI       0  10000.
5643        DQ       0   9999.
            *

5644        KK   D99IS
5645        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5646        KM   99TH & INDIAN SCHOOL
5647        DR   D99IS
            *

5648        KK    R99H
5649        KM   STREET ROUTE
5650        KM   SOUTH
5651        KM   99TH Avenue
5652        RS       5    FLOW     -1.
5653        RC    0.02   0.016    0.02   2650.  0.0009
5654        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5655        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            *

5656        KK  28-21W
5657        KM   SUB-BASIN 28-21W          (West of Freeway)
5658        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5659        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
5660        KM     L = 1.40  Kb = .080  Adj. Slope =    7.0
5661        KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
5662        KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
5663        BA    .465
5664        LG    .490    .150   8.800    .090       2
5665        UC   1.500   1.175
5666        UA       0       5      16      30      65      77      84      90      94      97
5667        UA     100
            *

5668        KK    C99D
5669        KM   NORTH/SOUTH STREET COMBINE
5670        KM   99TH AVENUE
5671        HC       2  70.436
            *

5672        KK   S99DS
5673        KM   STREET CAPACITY DIVERSION
5674        KM   99TH
5675        KM   DIVERSION TO WEST
5676        DT   S99DW
5677        DI       0     19.     31.    490.    839.
5678        DQ       0      0.      8.    177.    305.
            *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5679          KK    R99I
5680          KM   STREET ROUTE
5681          KM   SOUTH
5682          KM   99TH Avenue
5683          RS       5    FLOW     -1.
5684          RC    0.02   0.016    0.02   2600.  0.0009
5685          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5686          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *

5687          KK   CTR99
5688          KM   INTERSECTION COMBINE
5689          KM   THOMAS & 99TH
5690          HC       2  70.436
              *

5691          KK   DTR99
5692          KM   STREET INTERSECTION DIVERSION
5693          KM   THOMAS & 99TH
5694          KM   75% WEST & 25% SOUTH
5695          DT   D99TR
5696          DI       0  10000.
5697          DQ       0   2500.
              *

5698          KK   RTR17
5699          KM   STREET ROUTE
5700          KM   WEST
5701          KM   THOMAS
5702          RS       3    FLOW     -1.
5703          RC    0.02   0.016    0.02   2530.  0.0019
5704          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5705          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5706          KK   SIS9S
5707          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5708          KM   INDIAN SCHOOL
5709          DR   SIS9S

5710          KK  R2921S
5711          KM   SUB-BASIN STREET ROUTE
5712          KM   SOUTH
5713          KM   RW= 50'
5714          KM   PAV= 35'
5715          RS       7    FLOW     -1.
5716          RC    0.02   0.016    0.02   5700.  0.0021
5717          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
5718          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5719          KK  29-21N
5720          KM   SUB-BASIN 29-21N
5721          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5722          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
5723          KM     L = 1.41  Kb = .082  Adj. Slope =    9.0
5724          BA    .761
5725          LG    .490    .150   9.700    .070   2.000
5726          UC   1.500    .893
5727          UA       0       5      16      30      65      77      84      90      94      97
5728          UA     100

5729          KK   S99DW
5730          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
5731          KM   99TH
5732          DR   S99DW

5733          KK  R2921W
5734          KM   SUB-BASIN STREET ROUTE
5735          KM   WEST
5736          KM   RW= 50'
5737          KM   PAV= 35'
5738          RS       3    FLOW     -1.
5739          RC    0.02   0.016    0.02   2640.  0.0035
5740          RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
5741          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

5742          KK  C2921N
5743          KM   SUB-BASIN COMBINE
5744          HC       3  72.919

5745          KK  D2921S
5746          KM   SUB-BASIN DIVERSION
5747          KM   SUB-BASIN 26-21N
5748          KM   33% West & 67% South
5749          DT  D2921W
5750          DI       0  10000.
5751          DQ       0   3300.
              *

5752          KK    CTR9
5753          KM   EAST/WEST STREET COMBINE
5754          HC       2  74.021
              *

5755          KK  RES29S
5756          KM   PONDING AREA RESERVOIR ROUTE
5757          KM   PONDING AREA EAST OF RID CANAL
5758          KM   SUB-BASIN 29-21N
5759          RS       1    ELEV   1019.
5760          SV       0    16.4    50.7    71.4    77.2   109.7
5761          SE   1019.   1020.   1021.  1021.4  1021.5   1022.
5762          SQ      0.     0.1     0.2     0.3     96.   1160.
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5763        KK  D107IS
5764        KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
5765        KM   107TH & INDIAN SCHOOL
5766        DR  D107IS

5767        KK   R107C
5768        KM   STREET ROUTE
5769        KM   SOUTH
5770        KM   107TH Avenue
5771        RS       5    FLOW     -1.
5772        RC    0.02   0.016    0.02   2490.  0.0009
5773        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5774        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5775        KK  D2921W
5776        KM   RETRIEVAL OF SUB-BASIN DIVERSION
5777        KM   SUB-BASIN 29-21N
5778        DR  D2921W
            *

5779        KK   C107B
5780        KM   NORTH/SOUTH STREET COMBINE
5781        KM   107TH AVENUE
5782        HC       2  72.919
            *

5783        KK  RES29W
5784        KM   PONDING AREA RESERVOIR ROUTE
5785        KM   PONDING AREA NORTH OF GRAND RID CANAL
5786        KM   SUB-BASIN 29-21N
5787        RS       1    ELEV   1016.
5788        SV       0    48.9    74.7   130.2   193.2
5789        SE   1016.   1018.  1018.5  1019.3   1020.
5790        SQ      0.     0.1    771.   3920.   9112.
            *

5791        KK  D2921B
5792        KM   DIVERSION
5793        KM   107TH & R.I.D. CANAL
5794        KM   DIVERSION TO WEST
5795        KM   SPECIAL CASE: FLOW DIVERSION DOCUMENTED AS PART OF RES29W ANALYSES
5796        DT  D2921C
5797        DI      0.    771.   3920.   9112.
5798        DQ       0    771.   3920.   8618.

5799        KK  R2921A
5800        KM   SUB-BASIN STREET ROUTE
5801        KM   SOUTH
5802        KM   RW= 150'
5803        KM   PAV= 105'
5804        RS       5    FLOW     -1.
5805        RC    0.02   0.016    0.02   2610.  0.0008
5806        RX       0     0.1    22.5    32.5   117.5   127.5    150.   150.1
5807        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5808          KK  29-21S
5809          KM   SUB-BASIN 29-21S
5810          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5811          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
5812          KM     L =  .88  Kb = .086  Adj. Slope =    9.0
5813          BA    .262
5814          LG    .280    .150   9.700    .060  19.000
5815          UC   1.362   1.010
5816          UA       0       5      16      30      65      77      84      90      94      97
5817          UA     100

5818          KK   C107C
5819          KM   NORTH/SOUTH STREET COMBINE
5820          KM   107TH AVENUE
5821          HC       3  74.284

5822          KK  DTR107
5823          KM   STREET INTERSECTION DIVERSION
5824          KM   THOMAS & 107TH
5825          KM   65% West & 35% South
5826          DT  D107TR
5827          DI       0  10000.
5828          DQ       0   3500.

5829          KK   RTR18
5830          KM   STREET ROUTE
5831          KM   WEST
5832          KM   THOMAS
5833          RS       3    FLOW     -1.
5834          RC    0.02   0.016    0.02   2390.  0.0017
5835          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5836          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5837          KK  30-21S
5838          KM   SUB-BASIN 30-21S
5839          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5840          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
5841          KM     L =  .79  Kb = .036  Adj. Slope =   12.0
5842          BA    .748
5843          LG    .210    .290   6.800    .120  12.000
5844          UC    .596    .204
5845          UA       0       5      16      30      65      77      84      90      94      97
5846          UA     100

5847          KK  RET30S
5848          KM   RETENTION BASIN DIVERSION
5849          KM   SUB-BASIN 30-21S
5850          KM   81% OF SUB-BASIN DRAINS TO RETENTION BASIN
5851          DT  D3021X   17.78
5852          DI       0  10000.
5853          DQ       0   8100.
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5854          KK  C3021S
5855          KM   SUB-BASIN COMBINE
5856          HC       2  75.033

5857          KK  STR11W
5858          KM   STREET CAPACITY DIVERSION
5859          KM   THOMAS
5860          KM   DIVERSION TO SOUTH
5861          DT  STR11S
5862          DI       0     22.     50.    899.   1543.
5863          DQ       0     0.1     23.    530.    914.

5864          KK   RTR19
5865          KM   STREET ROUTE
5866          KM   WEST
5867          KM   THOMAS
5868          RS       6    FLOW     -1.
5869          RC    0.02   0.016    0.02   2800.  0.0008
5870          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5871          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3

5872          KK  DTR115
5873          KM   STREET INTERSECTION DIVERSION
5874          KM   THOMAS & 115TH
5875          KM   57% West & 43% South
5876          DT  D115TR
5877          DI       0  10000.
5878          DQ       0   4300.

5879          KK  30-21N
5880          KM   SUB-BASIN 30-21N
5881          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5882          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .996
5883          KM     L =  .71  Kb = .047  Adj. Slope =   15.0
5884          BA    .667
5885          LG    .210    .260   6.800    .130  21.000
5886          UC    .604    .203
5887          UA       0       5      16      30      65      77      84      90      94      97
5888          UA     100

5889          KK  RET30N
5890          KM   RETENTION BASIN DIVERSION
5891          KM   SUB-BASIN 30-21N
5892          KM   82% OF SUB-BASIN DRAINS TO RETENTION BASIN
5893          DT  D3021R   29.37
5894          DI       0  10000.
5895          DQ       0   8200.

5896          KK  D3021S
5897          KM   SUB-BASIN DIVERSION
5898          KM   SUB-BASIN 30-21N
5899          KM   21% West & 79% South
5900          DT  D3021W
5901          DI       0  10000.
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5902        DQ       0   2100.

5903        KK  D2921C
5904        KM   RETRIEVAL OF DIVERSION @ 107TH & R.I.D. CANAL
5905        DR  D2921C

5906        KK  R3021W
5907        KM   SUB-BASIN STREET ROUTE
5908        KM   WEST
5909        KM   RW= 70'
5910        KM   PAV= 43'
5911        RS       4    FLOW     -1.
5912        RC    0.02   0.016    0.02   3540.  0.0023
5913        RX       0     0.1    13.5    23.5    46.5    56.5    170.   170.1
5914        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

5915        KK  C3021N
5916        KM   SUB-BASIN COMBINE
5917        HC       2  73.587

5918        KK  R3021R
5919        KM   SUB-BASIN ROUTE THROUGH CHANNEL ADJACENT TO ARTERIAL STREET
5920        KM   WEST
5921        KM   BOTTOM WIDTH = 10'
5922        KM   SIDE SLOPES = 2:1
            *  ****** Revised by DMJM ---> Extended Section, H = 4'
5923        RS       2    FLOW     -1.
5924        RC    0.02    0.02    0.02   2030.  0.0030
5925        RX       0     0.2     4.0     8.0    18.0    22.0    25.8    26.0
5926        RY     4.0     3.9     2.0     0.0     0.0     2.0     3.9     4.0
            *

5927        KK  D3021W
5928        KM   RETRIEVAL OF SUB-BASIN DIVERSION
5929        KM   SUB-BASIN 30-21N
5930        DR  D2021W

5931        KK   NULL8
5932        KM   COMBINE FLOWS FROM SUB-BASIN 30-21N & 30-21S W/ NULL7
5933        HC       4     1.
            *
            * ***************************************************************************
            * ***** WOOD/PATEL 3/13/97                                              ******
            * ***** RERUN MODEL FROM BEGINNING TO NULL5, INCLUDING RETRIEVED DIVERTS ******
            * ***** ALONG GRAND CANAL -->  MODEL GCDC from 67th AVE to New River     ******
            * ***** USE this set of computations for GCDC Flows                     ******
            * ***************************************************************************
            *
            *
            * ***************************************************************************
            * BETHANY HOME ROAD COMPUTATION PATH
            * ***************************************************************************
            *
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5934        KK   NULL4
5935        KM          Retrieve Hydrograph from Tape 22
5936        BI   NULL4      22
            *
            * DDM   ***** Updated *****

5937        KK   11-22
5938        KM   SUB-BASIN 11-22
5939        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
5940        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
5941        KM     L = 1.48  Kb = .064  Adj. Slope =   14.0
5942        BA   1.006
5943        LG    .220    .260   5.200    .290  38.000
5944        UC   1.429    .750
5945        UA       0       5      16      30      65      77      84      90      94      97
5946        UA     100
            * DDM   ***** Preserved *****

5947        KK  D1122S
5948        KM   SUB-BASIN DIVERSION
5949        KM   SUB-BASIN 11-22
5950        KM   21% West & 79% South
5951        DT  D1122W
5952        DI       0  10000.
5953        DQ       0   2100.
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

5954        KK   SGA1S
            * *******KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * *******KM GLENDALE
            * *******DR SGA1S
5955        BI   SGA1S      22
            * DDM   ***** Preserved *****

5956        KK  R1122S
5957        KM   SUB-BASIN STREET ROUTE
5958        KM   SOUTH
5959        KM   RW= 120'
5960        KM   PAV= 78'
5961        RS       5    FLOW     -1.
5962        RC    0.02   0.016    0.02   5250.  0.0036
5963        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
5964        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

5965        KK  C11-22
5966        KM   SUB-BASIN COMBINE
5967        HC       2     3.5
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

5968        KK  SD31A
5969        KM   STORM DRAIN DIVERSION
5970        KM   STORM DRAIN ALONG HALF MILE STREET
5971        KM   EXISTING STORM DRAIN ALONG 31ST AVENUE
5972        KM   DIVERSION SOUTH
5973        KM   CAP= 147 CFS SOUTH
5974        DT  SD31AS
5975        DI       0    147.  10147.
5976        DQ       0    147.    147.
            * DDM   ***** Preserved *****

5977        KK   SBH1E
5978        KM   STREET CAPACITY DIVERSION
5979        KM   BETHANY HOME ROAD
5980        KM   SPECIAL CASE
5981        KM   50/50 SPLIT EAST/WEST DUE TO GRADE BREAK
5982        DT   SBH1W
5983        DI       0  10000.
5984        DQ       0   5000.
            * DDM   ***** Preserved *****

5985        KK   RBH1
5986        KM   STREET ROUTE
5987        KM   EAST
5988        KM   BETHANY HOME ROAD
5989        RS       5    FLOW     -1.
5990        RC    0.02   0.016    0.02   2630.  0.0011
5991        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
5992        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape***************************
            * DDM   ***** Preserved *****

5993        KK   D27GA
            * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
            * *********KM 27TH & GLENDALE
            * *********DR D27GA
5994        BI   D27GA      22
            * DDM   ***** Preserved *****

5995        KK   R27C
5996        KM   STREET ROUTE
5997        KM   SOUTH
5998        KM   27TH Avenue
5999        RS       5    FLOW     -1.
6000        RC    0.02   0.016    0.02   5270.  0.0039
6001        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6002        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Updated *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6003        KK   12-22
6004        KM   SUB-BASIN 12-22
6005        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6006        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
6007        KM     L =  .68  Kb = .075  Adj. Slope =   15.0
6008        BA    .245
6009        LG    .210    .250   4.800    .360  52.000
6010        UC    .850    .506
6011        UA       0       5      16      30      65      77      84      90      94      97
6012        UA     100
            *
            * DDM   ***** Preserved *****

6013        KK  RET120
6014        KM   RETENTION BASIN DIVERSION
6015        KM   SUB-BASIN 12-22
6016        KM   7% OF SUB-BASIN DRAINS TO RETENTION BASIN
6017        DT  D1222R    1.66
6018        DI       0  10000.
6019        DQ       0    700.
            *
            * DDM   ***** Preserved *****

6020        KK   CBH27
6021        KM   INTERSECTION COMBINE
6022        KM   BETHANY HOME & 27TH
6023        HC       3    21.3
            * DDM   ***** Preserved *****

6024        KK   DBH27
6025        KM   STREET INTERSECTION DIVERSION
6026        KM   BETHANY HOME & 27TH
6027        KM   0% West & 100% South
6028        KM   DIVERSION SOUTH
6029        KM   EXISTING STORM DRAIN ALONG 27TH AVENUE
6030        KM   CAP= 145 CFS SOUTH
6031        DT   D27BH
6032        DI       0  10000.
6033        DQ       0  10000.
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6034        KK   D35GA
            * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
            * *********KM 35TH & GLENDALE
            * *********DR D35GA
6035        BI   D35GA      22
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6036        KK   R35E
6037        KM   STREET ROUTE
6038        KM   SOUTH
6039        KM   35TH Avenue
6040        RS       2    FLOW     -1.
6041        RC    0.02   0.016    0.02   2620.  0.0054
6042        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6043        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

6044        KK  D1122W
6045        KM   RETRIEVAL OF SUB-BASIN DIVERSION
6046        KM   SUB-BASIN 11-22
6047        DR  D1122W
            * DDM   ***** Preserved *****

6048        KK   C35C
6049        KM   NORTH/SOUTH STREET COMBINE
6050        KM   35TH AVENUE
6051        HC       2     3.1
            * DDM   ***** Preserved *****

6052        KK   R35F
6053        KM   STREET ROUTE
6054        KM   SOUTH
6055        KM   35TH Avenue
6056        RS       2    FLOW     -1.
6057        RC    0.02   0.016    0.02   2630.  0.0042
6058        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6059        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

6060        KK   SBH1W
6061        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6062        KM   SPECIAL CASE
6063        KM   50/50 SPLIT EAST/WEST DUE TO GRADE BREAK
6064        KM   BETHANY HOME ROAD
6065        DR   SBH1W
            * DDM   ***** Preserved *****

6066        KK   RBH2
6067        KM   STREET ROUTE
6068        KM   WEST
6069        KM   BETHANY HOME
6070        RS       4    FLOW     -1.
6071        RC    0.02   0.016    0.02   2650.  0.0012
6072        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6073        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape***************************
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6074        KK   SGA2S
            * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * *********KM GLENDALE
            * *********DR SGA2S
6075        BI   SGA2S      22
            * DDM   ***** Preserved *****

6076        KK  R1022S
6077        KM   SUB-BASIN STREET ROUTE
6078        KM   SOUTH
6079        KM   RW= 70'
6080        KM   PAV= 43'
6081        RS       5    FLOW     -1.
6082        RC    0.02   0.016    0.02   5260.  0.0034
6083        RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
6084        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

6085        KK   10-22
6086        KM   SUB-BASIN 10-22
6087        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6088        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6089        KM     L = 1.35  Kb = .077  Adj. Slope =   15.0
6090        BA    .991
6091        LG    .240    .250   5.300    .300  33.000
6092        UC   1.500    .742
6093        UA       0       5      16      30      65      77      84      90      94      97
6094        UA     100
            * DDM   ***** Preserved *****

6095        KK  C10-22
6096        KM   SUB-BASIN COMBINE
6097        HC       2     5.7
            * DDM   ***** Preserved *****

6098        KK  SD39A
6099        KM   STORM DRAIN DIVERSION
6100        KM   STORM DRAIN ALONG HALF MILE STREET
6101        KM   EXISTING STORM DRAIN ALONG 39TH AVENUE
6102        KM   DIVERSION SOUTH
6103        KM   CAP= 164 CFS SOUTH
6104        DT  SD39AS
6105        DI       0    164.  10164.
6106        DQ       0    164.    164.
            * DDM   ***** Preserved *****

6107        KK  D1022E
6108        KM   SUB-BASIN DIVERSION
6109        KM   SUB-BASIN 10-22
6110        KM   59% WEST & 41% EAST
6111        DT  D1022W
6112        DI       0  10000.
6113        DQ       0   5900.
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6114        KK   CBH35
6115        KM   INTERSECTION COMBINE
6116        KM   BETHANY HOME & 35TH
6117        HC       4     7.1
            * DDM   ***** Preserved *****

6118        KK   DBH35
6119        KM   STREET INTERSECTION DIVERSION
6120        KM   BETHANY HOME & 35TH
6121        KM   0% West & 100% South
6122        KM   DIVERSION SOUTH
6123        KM   EXISTING STORM DRAIN ALONG 35TH AVENUE
6124        KM   CAP=  55 CFS SOUTH
6125        DT   D35BH
6126        DI       0  10000.
6127        DQ       0  10000.
            * *********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6128        KK   D43GA
            * **********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
            * **********KM 43RD & GLENDALE
            * **********DR D43GA
6129        BI   D43GA      22
            * DDM   ***** Preserved *****

6130        KK   R43F
6131        KM   STREET ROUTE
6132        KM   SOUTH
6133        KM   43TH Avenue
6134        RS       3    FLOW     -1.
6135        RC    0.02   0.016    0.02   2610.  0.0025
6136        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6137        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

6138        KK  D1022W
6139        KM   RETRIEVAL OF SUB-BASIN DIVERSION
6140        KM   SUB-BASIN 10-22
6141        DR  D1022W
            * DDM   ***** Preserved *****

6142        KK   C43D
6143        KM   NORTH/SOUTH STREET COMBINE
6144        KM   43TH AVENUE
6145        HC       2     5.7
            * DDM   ***** Preserved *****

6146        KK   S43DS
6147        KM   STREET CAPACITY DIVERSION
6148        KM   43RD AVENUE
6149        KM   DIVERSION TO WEST
6150        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
6151        KM   CAP= 100 CFS SOUTH
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6152        DT   S43DW
6153        DI       0    132.    172.   1379.   2296.
6154        DQ       0     0.1     32.    741.   1279.
            * DDM   ***** Preserved *****

6155        KK   R43G
6156        KM   STREET ROUTE
6157        KM   SOUTH
6158        KM   43TH Avenue
6159        RS       3    FLOW     -1.
6160        RC    0.02   0.016    0.02   2620.  0.0031
6161        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6162        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

6163        KK   CBH43
6164        KM   INTERSECTION COMBINE
6165        KM   BETHANY HOME & 43TH
6166        HC       2     5.7
            * DDM   ***** Preserved *****

6167        KK   DBH43
6168        KM   STREET INTERSECTION DIVERSION
6169        KM   BETHANY HOME & 43RD
6170        KM   51% West & 49% South
6171        KM   DIVERSION SOUTH
6172        KM   EXISTING STORM DRAIN ALONG 43RD AVENUE
6173        KM   CAP= 100 CFS SOUTH
6174        DT   D43BH
6175        DI       0    100.  10100.
6176        DQ       0    100.   5000.
            * DDM   ***** Preserved *****

6177        KK   RBH3
6178        KM   STREET ROUTE
6179        KM   WEST
6180        KM   BETHANY HOME ROAD
6181        RS       4    FLOW     -1.
6182        RC    0.02   0.016    0.02   2610.  0.0015
6183        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6184        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6185        KK   SGA3S
            * **********KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * **********KM GLENDALE
            * **********DR SGA3S
6186        BI   SGA3S      22
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6187          KK   R922S
6188          KM   SUB-BASIN STREET ROUTE
6189          KM   SOUTH
6190          KM   RW= 170'
6191          KM   PAV= 113'
6192          RS       6    FLOW     -1.
6193          RC    0.02   0.016    0.02   5230.  0.0028
6194          RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
6195          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

6196          KK    9-22
6197          KM   SUB-BASIN 9-22
6198          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6199          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6200          KM     L = 1.36  Kb = .069  Adj. Slope =   13.0
6201          BA    .990
6202          LG    .220    .230   6.200    .210  42.000
6203          UC   1.421    .703
6204          UA       0       5      16      30      65      77      84      90      94      97
6205          UA     100
              * DDM   ***** Preserved *****

6206          KK   S43DW
6207          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6208          KM   43RD
6209          DR   S43DW
              * DDM   ***** Preserved *****

6210          KK   R922W
6211          KM   SUB-BASIN STREET ROUTE
6212          KM   WEST
6213          KM   RW= 270'
6214          KM   PAV= 183'
6215          RS       7    FLOW     -1.
6216          RC    0.02   0.016    0.02   5240.  0.0020
6217          RX       0     0.1    43.5    53.5   216.5   226.5    270.   270.1
6218          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

6219          KK   C9-22
6220          KM   SUB-BASIN COMBINE
6221          HC       3    10.1
              * DDM   ***** Preserved *****

6222          KK   D922S
6223          KM   SUB-BASIN DIVERSION
6224          KM   SUB-BASIN 9-22
6225          KM   34% West & 66% South
6226          DT   D922W
6227          DI       0  10000.
6228          DQ       0   3400.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6229          KK   CBH1
6230          KM   EAST/WEST STREET COMBINE
6231          KM   BETHANY HOME
6232          HC       2    10.1
              * DDM   ***** Preserved *****

6233          KK   SBH2W
6234          KM   CASE 2
6235          KM   STREET CAPACITY DIVERSION
6236          KM   BETHANY HOME ROAD
6237          KM   DIVERSION TO SOUTH
6238          DT   SBH2S
6239          DI       0     93.    160.   1761.   2958.
6240          DQ       0     62.    115.   1270.   2114.
              * DDM   ***** Preserved *****

6241          KK   RBH4
6242          KM   STREET ROUTE
6243          KM   WEST
6244          KM   BETHANY HOME ROAD
6245          RS       4    FLOW     -1.
6246          RC    0.02   0.016    0.02   2590.  0.0015
6247          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6248          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * *********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6249          KK   D51GA
              * **********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * **********KM 51ST & GLENDALE
              * **********DR D51GA
6250          BI   D51GA      22
              * DDM   ***** Preserved *****

6251          KK   R51H
6252          KM   STREET ROUTE
6253          KM   SOUTH
6254          KM   51ST Avenue
6255          RS       2    FLOW     -1.
6256          RC    0.02   0.016    0.02   2600.  0.0042
6257          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6258          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6259          KK   D922W
6260          KM   RETRIEVAL OF SUB-BASIN DIVERSION
6261          KM   SUB-BASIN 9-22
6262          DR   D922W
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6263          KK   C51D
6264          KM   NORTH/SOUTH STREET COMBINE
6265          KM   51ST AVENUE
6266          HC       2    10.1
              * DDM   ***** Preserved *****
6267          KM   ==========================================================================
6268          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6269          KM                Original Flow Split and with Stormdrain Capacity = 284cfs.
6270          KM   ==========================================================================

6271          KK   S51ES
6272          KM   STREET CAPACITY DIVERSION
6273          KM   51ST
6274          KM   DIVERSION TO WEST
6275          DT   S51EW
6276          DI       0     44.    134.     284   1894.   3229.
6277          DQ       0     0.1      .2     .25    1014    1855
              * DDM   ***** Preserved *****

6278          KK   R51I
6279          KM   STREET ROUTE
6280          KM   SOUTH
6281          KM   51ST Avenue
6282          RS       3    FLOW     -1.
6283          RC    0.02   0.016    0.02   2630.  0.0021
6284          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6285          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6286          KK   CBH51
6287          KM   INTERSECTION COMBINE
6288          KM   BETHANY HOME & 51ST
6289          HC       2    10.1
              * DDM   ***** Preserved *****

6290          KK   DBH51
6291          KM   STREET INTERSECTION DIVERSION
6292          KM   BETHANY HOME & 51ST
6293          KM   0% West & 100% South
6294          KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
6295          KM                15-SEP-97    DTP           Proposed BH Rd Stormdrain
6296          KM   ==========================================================================
6297          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6298          KM                Original Flow Split and with Stormdrain Capacity = 393cfs.
6299          KM   ==========================================================================
6300          DT   D51BH
6301          DI       0     393  10000.
6302          DQ       0     0.1   9607.
              *
              * ******************Retrieve hydrograph from tape***************************
              * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6303        KK  D822ES
            * ******** KM RETRIEVAL OFSUB-BASIN DIVERSION
            * ******** KM SUB-BASIN 8-22E     (Flow split from C8-22E, 100% to  South)
            * ******** DR D822ES
6304        BI  D822ES      22
            *
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6305        KK  D822E1
            * **********KM      Recal D822S - 25% of Sub-Basin 8-22E
            * **********KM      Added by Wood/Patel 18 SEP 97    dtp
            * **********DR D822S
6306        BI   D822S      22
            *
            * DDM   ***** Preserved *****

6307        KK   S51EW
6308        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6309        KM   51ST AVENUE
6310        DR   S51EW
            *
            * DDM   ***** Preserved *****

6311        KK  R822EW
6312        KM   SUB-BASIN STREET ROUTE
6313        KM   WEST
6314        KM   RW= 170'
6315        KM   PAV= 113'
6316        RS       5    FLOW     -1.
6317        RC    0.02   0.016    0.02   2630.  0.0008
6318        RX       0     0.1    28.5    38.5   131.5   141.5    170.   170.1
6319        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *
            * DDM   ***** Preserved *****

6320        KK  C822E1
6321        KM   SUB-BASIN COMBINE
            *  KO     3
6322        HC       3    14.6
            *
            * DDM   ***** Preserved *****

6323        KK  CBH51b
6324        KM    Combine CBH51 + C822E1 at Intersection of 51st and Bethany Home Rd
6325        KM    Model Proposed BH rd stormdrain (Collection system, option 6)
            *  KO     3
6326        HC       2
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6327          KK   SBH51
6328          KM    Surge Basin at 51st and Betany Home Road (BH)
6329          KM    By-pass 120 cfs to proposed BH SD, Surge 80 ac-ft into basin
6330          KM    Wood/Patel 15-SEP-97   dtp
              *  KO     3
6331          DT   SBH51
6332          DI       0     120    1000    5000
6333          DQ       0       0     880    4880
              *
              *  ==========   REVISED BY WOOD/PATEL ---> RES8 Removed
              *               15-SEP-97    DTP           Proposed BH Rd Stormdrain
              *       KK  RES8
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM PONDING AREA NORTHEAST OF GRAND AVENUE/RR EMBANKMENT
              *       KM SUB-BASIN 8-22E
              *       RS     1    ELEV   1148.
              *       SV     0   14.95   50.65   78.30  116.78  220.43
              *       SE 1148.   1149.   1150.  1150.5   1151.   1152.
              *       SQ     0     0.1     0.2    310.   1070.   4090.
              *
              * DDM   ***** Preserved *****

6334          KK  R822WW
6335          KM   SUB-BASIN STREET ROUTE
6336          KM   WEST
6337          KM   RW= 110'
6338          KM   PAV= 68'
6339          RS       4    FLOW     -1.
6340          RC    0.02   0.016    0.02   3090.  0.0022
6341          RX       0     0.1    21.0    31.0    79.0    89.0    110.   110.1
6342          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *
              * DDM   ***** Updated *****

6343          KK   8-22W
6344          KM   SUB-BASIN 8-22W
6345          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6346          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
6347          KM     L =  .51  Kb = .039  Adj. Slope =   13.0
6348          BA    .494
6349          LG    .170    .260   5.100    .340  57.000
6350          UC    .450    .133
6351          UA       0       5      16      30      65      77      84      90      94      97
6352          UA     100
              * DDM   ***** Preserved *****

6353          KK  D822WS
6354          KM   SUB-BASIN DIVERSION
6355          KM   SUB-BASIN 8-22W
6356          KM   21% West & 79% South
6357          DT  D822WW
6358          DI       0  10000.
6359          DQ       0   2100.
              *
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


6360          KK  C8-22W
6361          KM   SUB-BASIN COMBINE
6362          KM   ==========   REVISED BY WOOD/PATEL ---> Orignal HC = 3
6363          KM                15-SEP-97    DTP          Proposed BH Rd Stormdrain
6364          HC       2    15.1
              *
              * DDM   ***** Preserved *****

6365          KK   SBH3W
6366          KM   STREET CAPACITY DIVERSION
6367          KM   BETHANY HOME ROAD
6368          KM   DIVERSION TO SOUTH
6369          KM   ==========================================================================
6370          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6371          KM           Original Flow Split (42% south)and with Stormdrain Capacity = 340cfs.
6372          KM   ==========================================================================
6373          DT   SBH3S
6374          DI       0     39.     83.    340.   1068.   1825.    5000
6375          DQ       0     0.1     0.2    0.25     306     624    1957
              * DDM   ***** Preserved *****

6376          KK   RBH5
6377          KM   STREET ROUTE
6378          KM   WEST
6379          KM   BETHANY HOME
6380          RS       3    FLOW     -1.
6381          RC    0.02   0.016    0.02   2740.  0.0021
6382          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6383          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6384          KK  D822WW
6385          KM   RETRIEVAL OF SUB-BASIN DIVERSION
6386          KM   SUB-BASIN 8-22W
6387          DR  D822WW
              * DDM   ***** Preserved *****

6388          KK   S59ES
6389          KM   STREET CAPACITY DIVERSION
6390          KM   59TH AVENUE
6391          KM   DIVERSION TO WEST
6392          DT   S59EW
6393          DI       0     38.     92.   1238.   2113.
6394          DQ       0     0.1     38.    632.   1074.
              * DDM   ***** Preserved *****

6395          KK   R59I
6396          KM   STREET ROUTE
6397          KM   SOUTH
6398          KM   59TH Avenue
6399          RS       3    FLOW     -1.
6400          RC    0.02   0.016    0.02   2690.  0.0021
6401          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6402          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6403          KK   CBH59
6404          KM   INTERSECTION COMBINE
6405          KM   BETHANY HOME & 59TH
6406          HC       2    15.1
              * DDM   ***** Preserved *****

6407          KK   DBH59
6408          KM   STREET INTERSECTION DIVERSION
6409          KM   BETHANY HOME & 59TH
6410          KM   44% West & 56% South
6411          KM   ==========================================================================
6412          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6413          KM                Original Flow Split and with Stormdrain Capacity = 372cfs.
6414          KM   ==========================================================================
6415          DT   D59BH
6416          DI       0    372.  10000.
6417          DQ       0    0.05    5392
              * DDM   ***** Preserved *****

6418          KK   RBH6
6419          KM   STREET ROUTE
6420          KM   WEST
6421          KM   BETHANY HOME
6422          RS       3    FLOW     -1.
6423          RC    0.02   0.016    0.02   2690.  0.0032
6424          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6425          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * *********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6426          KK   SGA5S
              * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * ********KM GLENDALE
              * ********DR SGA5S
6427          BI   SGA5S      22
              * DDM   ***** Preserved *****

6428          KK   R722S
6429          KM   SUB-BASIN STREET ROUTE
6430          KM   SOUTH
6431          KM   RW= 320'
6432          KM   PAV= 218'
6433          RS       7    FLOW     -1.
6434          RC    0.02   0.016    0.02   5240.  0.0022
6435          RX       0     0.1    51.0    61.0   259.0   269.0    320.   320.1
6436          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

6437          KK    7-22
6438          KM   SUB-BASIN 7-22
6439          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6440          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6441          KM     L = 1.47  Kb = .067  Adj. Slope =   14.0
6442          BA    .970
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6443          LG    .220    .260   5.600    .260  39.000
6444          UC   1.458    .779
6445          UA       0       5      16      30      65      77      84      90      94      97
6446          UA     100
              * DDM   ***** Preserved *****

6447          KK   S59EW
6448          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6449          KM   59TH
6450          DR   S59EW
              * DDM   ***** Preserved *****

6451          KK   R722W
6452          KM   SUB-BASIN STREET ROUTE
6453          KM   WEST
6454          KM   RW= 220'
6455          KM   PAV= 148'
6456          RS       5    FLOW     -1.
6457          RC    0.02   0.016    0.02   5200.  0.0040
6458          RX       0     0.1    36.0    46.0   174.0   184.0    220.   220.1
6459          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

6460          KK   C7-22
6461          KM   SUB-BASIN COMBINE
6462          HC       3    19.3
              * DDM   ***** Preserved *****

6463          KK   D722S
6464          KM   SUB-BASIN DIVERSION
6465          KM   SUB-BASIN 7-22
6466          KM   36% West & 64% South
6467          DT   D722W
6468          DI       0  10000.
6469          DQ       0   3600.
              * DDM   ***** Preserved *****

6470          KK   CBH2
6471          KM   EAST/WEST STREET COMBINE
6472          KM   BETHANY HOME
6473          HC       2    25.8
              * DDM   ***** Preserved *****

6474          KK   SBH4W
6475          KM   STREET CAPACITY DIVERSION
6476          KM   BETHANY HOME
6477          KM   DIVERSION TO SOUTH
6478          KM   ==========================================================================
6479          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6480          KM          Original Flow Split (69.3%) and with Stormdrain Capacity = 464cfs.
6481          KM   ==========================================================================
6482          DT   SBH4S
6483          DI       0     43.    155.    464.   2245.   3826.   5000.
6484          DQ       0     0.1     0.2    0.25    1234    2330    3143
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6485          KK   RBH7
6486          KM   STREET ROUTE
6487          KM   WEST
6488          KM   BETHANY HOME
6489          RS       3    FLOW     -1.
6490          RC    0.02   0.016    0.02   2510.  0.0026
6491          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6492          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6493          KK   D67GA
              *       KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              *       KM 67TH & GLENDALE
              *       DR D67GA
6494          BI   D67GA      22
              * DDM   ***** Preserved *****

6495          KK   R67J
6496          KM   STREET ROUTE
6497          KM   SOUTH
6498          KM   67TH Avenue
6499          RS       2    FLOW     -1.
6500          RC    0.02   0.016    0.02   2660.  0.0064
6501          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6502          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6503          KK   D722W
6504          KM   RETRIEVAL OF SUB-BASIN DIVERSION
6505          KM   SUB-BASIN 7-22
6506          DR   D722W
              * DDM   ***** Preserved *****

6507          KK   C67E
6508          KM   NORTH/SOUTH STREET COMBINE
6509          KM   67TH AVENUE
6510          HC       2    19.3
              * DDM   ***** Preserved *****

6511          KK   S67FS
6512          KM   STREET CAPACITY DIVERSION
6513          KM   67TH
6514          KM   DIVERSION TO WEST
6515          DT   S67FW
6516          DI       0     30.     69.    918.   1567.
6517          DQ       0     0.1     27.    446.    758.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6518          KK   R67K
6519          KM   STREET ROUTE
6520          KM   SOUTH
6521          KM   67TH Avenue
6522          RS       4    FLOW     -1.
6523          RC    0.02   0.016    0.02   2640.  0.0016
6524          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6525          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6526          KK   CBH67
6527          KM   INTERSECTION COMBINE
6528          KM   BETHANY HOME & 67TH
6529          HC       2    21.3
              * DDM   ***** Preserved *****

6530          KK   DBH67
6531          KM   STREET INTERSECTION DIVERSION
6532          KM   BETHANY HOME & 67TH
6533          KM   35% West & 65% South
6534          KM   ==========================================================================
6535          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6536          KM                Original Flow Split and with Stormdrain Capacity = 515cfs.
6537          KM   ==========================================================================
6538          DT   D67BH
6539          DI       0    515.  10000.
6540          DQ       0    0.05    6165
              * DDM   ***** Preserved *****

6541          KK    RBH8
6542          KM   STREET ROUTE
6543          KM   WEST
6544          KM   BETHANY HOME
6545          RS       3    FLOW     -1.
6546          RC    0.02   0.016    0.02   2650.  0.0037
6547          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6548          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6549          KK   SGA6S
              * *********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * *********KM GLENDALE AVENUE
              * *********DR SGA6S
6550          BI   SGA6S      22
              * DDM   ***** Preserved *****

6551          KK  R1221S
6552          KM   SUB-BASIN STREET ROUTE
6553          KM   SOUTH
6554          KM   RW= 70'
6555          KM   PAV= 43'
6556          RS       8    FLOW     -1.
6557          RC    0.02   0.016    0.02   5220.  0.0015
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6558        RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
6559        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

6560        KK   12-21
6561        KM   SUB-BASIN 12-21
6562        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6563        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6564        KM     L = 1.29  Kb = .074  Adj. Slope =   16.0
            *  KO     1
6565        BA   1.004
6566        LG    .370    .150   9.700    .070  17.000
6567        UC   1.263    .586
6568        UA       0       5      16      30      65      77      84      90      94      97
6569        UA     100
            * DDM   ***** Preserved *****

6570        KK   RET12
6571        KM   RETENTION BASIN DIVERSION
6572        KM   SUB-BASIN 12-21
6573        KM    6% OF SUB-BASIN DRAINS TO RETENTION BASIN
6574        DT  D1221R    4.18
6575        DI       0  10000.
6576        DQ       0    600.
            * DDM   ***** Preserved *****

6577        KK   S67FW
6578        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6579        KM   67TH
6580        DR   S67FW
            * DDM   ***** Preserved *****

6581        KK  R1221W
6582        KM   SUB-BASIN STREET ROUTE
6583        KM   WEST
6584        KM   RW= 120'
6585        KM   PAV= 78'
6586        RS       3    FLOW     -1.
6587        RC    0.02   0.016    0.02   5330.  0.0036
6588        RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
6589        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Preserved *****

6590        KK  C12-21
6591        KM   SUB-BASIN COMBINE
6592        HC       3  31.347
            * DDM   ***** Preserved *****

6593        KK  D1221S
6594        KM   SUB-BASIN DIVERSION
6595        KM   SUB-BASIN 12-21
6596        KM   38% West & 62% South
6597        DT  D1221W
6598        DI       0  10000.
6599        DQ       0   3800.
            * DDM   ***** Preserved *****
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6600        KK    CBH3
6601        KM   EAST/WEST STREET COMBINE
6602        KM   BETHANY HOME
6603        HC       2  31.347
            * DDM   ***** Preserved *****

6604        KK   SBH5W
6605        KM   STREET CAPACITY DIVERSION
6606        KM   BETHANY HOME
6607        KM   DIVERSION TO SOUTH
6608        KM   ==========================================================================
6609        KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6610        KM           Original Flow Split (36.5%) and with Stormdrain Capacity = 643cfs.
6611        KM   ==========================================================================
6612        DT   SBH5S
6613        DI       0     37.     73.    643.   1221.   2087.   5000.
6614        DQ       0     0.1     0.2    0.25     211     527    1590
            * DDM   ***** Preserved *****

6615        KK    RBH9
6616        KM   STREET ROUTE
6617        KM   WEST
6618        KM   BETHANY HOME
6619        RS       3    FLOW     -1.
6620        RC    0.02   0.016    0.02   2680.  0.0039
6621        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6622        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6623        KK   D75GA
            * ********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
            * ********KM 75TH & GLENDALE
            * ********DR D75GA
6624        BI   D75GA      22
            * DDM   ***** Preserved *****

6625        KK    R75K
6626        KM   STREET ROUTE
6627        KM   SOUTH
6628        KM   75TH Avenue
6629        RS       3    FLOW     -1.
6630        RC    0.02   0.016    0.02   2620.  0.0021
6631        RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6632        RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
            * DDM   ***** Preserved *****

6633        KK  D1221W
6634        KM   RETRIEVAL OF SUB-BASIN DIVERSION
6635        KM   SUB-BASIN 12-21
6636        DR  D1221W
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6637          KK    C75E
6638          KM   NORTH/SOUTH STREET COMBINE
6639          KM   75TH AVENUE
6640          HC       2  31.347
              * DDM   ***** Preserved *****

6641          KK   S75GS
6642          KM   STREET CAPACITY DIVERSION
6643          KM   75TH
6644          KM   DIVERSION TO WEST
6645          DT   S75GW
6646          DI       0     35.     66.    821.   1404.
6647          DQ       0     0.1     16.    260.    442.
              * DDM   ***** Preserved *****

6648          KK    R75L
6649          KM   STREET ROUTE
6650          KM   SOUTH
6651          KM   75TH Avenue
6652          RS       4    FLOW     -1.
6653          RC    0.02   0.016    0.02   2640.  0.0019
6654          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6655          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6656          KK   CBH75
6657          KM   INTERSECTION COMBINE
6658          KM   BETHANY HOME & 75TH
6659          HC       2  31.347
              * DDM   ***** Preserved *****

6660          KK   DBH75
6661          KM   STREET INTERSECTION DIVERSION
6662          KM   BETHANY HOME & 75TH
6663          KM   69% West & 31% South
6664          KM   ==========================================================================
6665          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6666          KM                Original Flow Split and with Stormdrain Capacity = 714cfs.
6667          KM   ==========================================================================
6668          DT   D75BH
6669          DI       0    714.  10000.
6670          DQ       0    0.05    2879
              * DDM   ***** Preserved *****

6671          KK   RBH10
6672          KM   STREET ROUTE
6673          KM   WEST
6674          KM   BETHANY HOME
6675          RS       3    FLOW     -1.
6676          RC    0.02   0.016    0.02   2590.  0.0035
6677          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6678          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * *********************Retrieve hydrograph from tape*****************************
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


6679          KK   SGA7S
              * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * ********KM GLENDALE
              * ********DR SGA7S
6680          BI   SGA7S      22
              * DDM   ***** Preserved *****

6681          KK  R1121S
6682          KM   SUB-BASIN STREET ROUTE
6683          KM   SOUTH
6684          KM   RW= 70'
6685          KM   PAV= 43'
6686          RS       7    FLOW     -1.
6687          RC    0.02   0.016    0.02   5960.  0.0024
6688          RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
6689          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Updated *****

6690          KK   11-21
6691          KM   SUB-BASIN 11-21
6692          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6693          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6694          KM     L = 1.25  Kb = .079  Adj. Slope =   17.0
6695          BA    .985
6696          LG    .390    .150   7.600    .140  13.000
6697          UC   1.329    .612
6698          UA       0       5      16      30      65      77      84      90      94      97
6699          UA     100
              *
              * DDM   ***** Preserved *****

6700          KK   RET11
6701          KM   RETENTION BASIN DIVERSION
6702          KM   SUB-BASIN 11-21
6703          KM   28% OF SUB-BASIN DRAINS TO RETENTION BASIN
6704          DT  D1121R   14.61
6705          DI       0  10000.
6706          DQ       0   2800.
              *
              * DDM   ***** Preserved *****

6707          KK   S75GW
6708          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6709          KM   75TH
6710          DR   S75GW
              * DDM   ***** Preserved *****

6711          KK  R1121W
6712          KM   SUB-BASIN STREET ROUTE
6713          KM   WEST
6714          KM   RW= 50'
6715          KM   PAV= 35'
6716          RS       5    FLOW     -1.
6717          RC    0.02   0.016    0.02   5240.  0.0035
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6718          RX       0     0.1     7.5    27.5    32.5    42.5     50.    50.1
6719          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

6720          KK  C11-21
6721          KM   SUB-BASIN COMBINE
6722          HC       3  34.871
              * DDM   ***** Preserved *****

6723          KK  D1121S
6724          KM   SUB-BASIN DIVERSION
6725          KM   SUB-BASIN 11-21
6726          KM   30% West & 70% South
6727          DT  D1121W
6728          DI       0  10000.
6729          DQ       0   3000.
              * DDM   ***** Preserved *****

6730          KK    CBH4
6731          KM   EAST/WEST STREET COMBINE
6732          KM   BETHANY HOME
6733          HC       2  34.871
              * DDM   ***** Preserved *****

6734          KK   SBH6W
6735          KM   STREET CAPACITY DIVERSION
6736          KM   BETHANY HOME
6737          KM   DIVERSION TO SOUTH
6738          KM   ==========================================================================
6739          KM   REVISED BY DMJM ---> Provide 100 year split with Proposed BH Rd. Stormdrain
6740          KM         Original Flow Split (20% south) and with Stormdrain Capacity = 802cfs.
6741          KM   ==========================================================================
6742          DT   SBH6S
6743          DI       0     36.     56.    802.    927.   1588.    5000
6744          DQ       0     0.1     0.2    0.25      25     157     840
              * DDM   ***** Preserved *****

6745          KK   RBH11
6746          KM   STREET ROUTE
6747          KM   WEST
6748          KM   BETHANY HOME
6749          RS       3    FLOW     -1.
6750          RC    0.02   0.016    0.02   2620.  0.0034
6751          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6752          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6753          KK   D83GA
              * **********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * **********KM 83RD & GLENDALE
              * **********DR D83GA
6754          BI   D83GA      22
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6755          KK    R83J
6756          KM   STREET ROUTE
6757          KM   SOUTH
6758          KM   83RD Avenue
6759          RS       3    FLOW     -1.
6760          RC    0.02   0.016    0.02   2590.  0.0025
6761          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6762          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

6763          KK  D1121W
6764          KM   RETRIEVAL OF SUB-BASIN DIVERSION
6765          KM   SUB-BASIN 11-21
6766          DR  D1121W
              * DDM   ***** Preserved *****

6767          KK    C83E
6768          KM   NORTH/SOUTH STREET COMBINE
6769          KM   83RD AVENUE
6770          HC       2  34.871
              * DDM   ***** Preserved *****

6771          KK   S83FS
6772          KM   STREET CAPACITY DIVERSION
6773          KM   83RD
6774          KM   DIVERSION TO WEST
6775          DT   S83FW
6776          DI       0     28.     50.    834.   1426.
6777          DQ       0     0.1     16.    260.    442.
              * DDM   ***** Preserved *****

6778          KK    R83K
6779          KM   STREET ROUTE
6780          KM   SOUTH
6781          KM   83RD Avenue
6782          RS       4    FLOW     -1.
6783          RC    0.02   0.016    0.02   2580.  0.0018
6784          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
6785          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
              * DDM   ***** Preserved *****

6786          KK   CBH83
6787          KM   INTERSECTION COMBINE
6788          KM   BETHANY HOME & 83RD
6789          HC       2  37.340
              *
              * ******************************************************************************
              * **********************      GCDC @ 83rd AVE     ****************************
              * ******************************************************************************
              *
              * DDM   ***** Preserved *****
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6790        KK   RDC1B
6791        KM   ==========================================================================
6792        KM   REVISED BY DMJM ---> RECALL DIVERT FROM SUNSET BASIN.
6793        KM   ==========================================================================
6794        DR  GCDC1B
            *

6795        KK   RDC1B
6796        KM   ==========================================================================
6797        KM   REVISED BY DMJM ---> ROUTE FLOWS FROM SUNSET BASIN TO PROPOSED COP MARYVALE B
6798        KM                        ALONG THE GRAND CANAL FROM INDIAN SCHOOL ROAD TO 67TH AV
6799        KM   ==========================================================================
6800        KM   Normal Depth Channel Route
            *
6801        KM   Rectangular Concrete lined channel   B=8 ft ,  D= 6ft,  V~ 7.2fps
6802        RS       1    FLOW     -1.
6803        RC   0.013   0.013   0.013   2300.   0.001
6804        RX     100   100.1     102     104     106     108   108.1   108.2
6805        RY       7       0       0       0       0       0       7       7
            *

6806        KK    RDC1
6807        KM   RETRIEVE GCDC1
6808        DR   GCDC1
            *

6809        KK   C@DC1
6810        KM   ==========================================================================
6811        KM   REVISED BY DMJM ---> COMBINE ROUTED FLOWS FROM SUNSET BASIN WITH FLOWS GENERA
6812        KM                        IN SUBBASIN 24-21.
6813        KM                                            TAREA ADJUSTED FOR ADDITIONAL SUBBASINS
6814        KM                                            CONTRIBUTING TO THE SUNSET BASIN.
6815        KM   ==========================================================================
6816        HC       2  43.249
            *
            * DDM   ***** Preserved *****
            *
6817        KM   ==========================================================================
6818        KM   REVISED BY DMJM --->      Move Maryvale Detention Facility in the model to after
6819        KM              C@DC2 since the stage-discharge will be influenced by tailwater.
6820        KM   ==========================================================================
            *  KK GCDCo
            *  KM Storage ROUTE GCDC1 TO simulate On-Line Detention Basin
            *  KM      From 67th Ave to 73rd Ave
            *  KM      CULVERT:  Model 2-6'x3' Boxes
            *  KM      BASIN:    On-Line w/ 4:1 sides  (SV data from LEVEL II calcs)
            *  KO     3
            *  RS     1    STOR
            *  SV     0     2.4      12      28      47      71      97
            *  SE  1083    1085    1087    1089    1091    1093    1095
            *  *      0'      2'      4'      6'      8'     10'     12'
            *  SQ     0     102     252     366     444     516     564
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10


6821          KK  RGCDC2
6822          KM   RETREIVE GCDC2
6823          DR   GCDC2
              *

6824          KK   C@DC2
6825          KM   ==========================================================================
6826          KM   REVISED BY DMJM ---> TAREA ADJUSTED FROM 37.9 SQ.MI. TO 43.249 SQ.MI. FOR
6827          KM                                          ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
6828          KM   ==========================================================================
6829          KM   COMBINE BHDCo AND GCDC2 @ DC2 (Grand Canal & Camelback Rd)
6830          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Revised
6831          KM    =====   20-OCT-97, dtp             Model proposed BHROC
6832          HC       2  43.249
              *
              *
6833          KM   ==========================================================================
6834          KM   REVISED BY DMJM --->      Move Maryvale Detention Facility in the model to after
6835          KM                        C@DC2 since the stage-discharge will be influenced by
6836          KM                       the tailwater from Camelback Road culvert.  Use same
6837          KM                       stage-discharge      as original with CB road culvert.
6838          KM   ==========================================================================
              *

6839          KK   GCDCo
6840          KM   Storage ROUTE GCDC1 TO simulate On-Line Detention Basin
6841          KM        From 67th Ave to 75th Ave
              * ** Stage/Discharge/Storage Relationships Revised by DMJM for Maryvale Basin **
6842          KM        CULVERT:  Model 2-8'x 7' Boxes
6843          KM        BASIN:    On-Line w/ 4.5:1 sides (SV data from ADMS DTM measured by DMJM
              *                    including additional rect. channel storage to west
              * ** Volumes revised by DMJM to reflect new topographic mapping - 30% design **
              *  KO     3
6844          RS       1    ELEV
              *
              *  *** Revised to Avoid Error Message - Extrapolated Values Above Elevation 1094
              *
              *      SV     0    2.58    5.16   18.52   37.40   61.42   89.92  122.83
              *   SV     0    .018   2.223  12.177  26.811  45.503  68.262  95.014
6845          SV       0       0    .013    .650   3.058   7.615  14.398  22.498  31.523  41.475
6846          SV  52.356  64.163  76.848  89.533 102.218
              *   SE  1081    1083    1085    1087    1089    1091    1093    1095
6847          SE    1081    1082    1083    1084    1085    1086    1087    1088    1089    1090
6848          SE    1091    1092    1093    1094    1095
              *   SQ     0     136     313     564     848    1051    1194    1338
6849          SQ       0    65.9   124.7   221.0   332.8   461.9   597.7   741.1   903.3    1065
6850          SQ    1115    1164    1244    1324    1404
              *
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6851          KK  RDC2-3
6852          KM   ROUTE C@DC2 ALONG GRAND CANAL TO 79TH AVE
6853          KM   Normal Depth Channel Route
6854          KM   Rectangular Concrete lined channel   B= 24 ft ,  D = 8 ft,  V = 10.1 fps
              *  *********** Revised by DMJM ---> Extended Section, D = 12ft.
6855          RS       2    FLOW     -1.
6856          RC   0.013   0.013   0.013   3735.  0.0010
6857          RX     100   100.1     104     108     112     116   123.9     124
6858          RY      12       0       0       0       0       0       0      12
              *

6859          KK  RGCDC3
6860          KM   RETRIEVE GCDC3
6861          DR   GCDC3
              *

6862          KK   C@DC3
6863          KM   ==========================================================================
6864          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 50.694 SQ.MI. FOR
6865          KM                                          ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
6866          KM   ==========================================================================
6867          KM   COMBINE RDC2-3 AND GCDC3 @ DC3 (Grand Canal & 79th Ave)
6868          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Revised
6869          KM    =====   20-OCT-97, dtp            Model proposed BHROC
6870          HC       2  50.964
              *

6871          KK  RDC3-4
6872          KM   ROUTE C@DC3 TO 83RD AVE AND BETHANY HOME
6873          KM   Normal Depth Channel Route
              *  *********** Revised by DMJM ---> Recommended Alternative ***********
6874          KM   Rectangular Concrete lined channel   B= 24 ft ,  D = 8 ft,  V = 10.1 fps
6875          RS       3    FLOW     -1.
6876          RC   0.013   0.013   0.013   3735.  0.0010
6877          RX     100   100.1     104     108     112     116   123.9     124
6878          RY      12       0       0       0       0       0       0      12
              *  KM Rectangular Concrete lined channel   B=15 ft ,  D= 10ft,  V= 9 fps
              *  *  *********** Revised by DMJM ---> Extended Section, D = 15ft.
              *  RS     2    FLOW     -1.
              *  RC 0.015   0.015   0.015   3735.  0.0010
              *  RX   100   100.1     105     108     110     112   114.9     115
              *  RY    15       0       0       0       0       0       0      15
              *

6879          KK   C@DC4
6880          KM   ==========================================================================
6881          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 50.964 SQ.MI. FOR
6882          KM                                          ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
6883          KM   ==========================================================================
6884          KM   COMBINE RDC3-4 WITH CBH83
6885          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Revised
6886          KM    =====   20-OCT-97, dtp            Model proposed BHROC
6887          HC       2  50.964
              *
              * ***************************************************************************
```

```
* ***************      Continue Bethany Home Road Run     ********************
* ******************************************************************************
* Starting with DBH83
* Ending with NULL5
*
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6888        KK   DBH83
6889        KM   BETHANY HOME RD. TERMINATES AT 83RD AVENUE
6890        KM   FLOW DIVERSION BASED ON TOPO AND COMPUTED RATING DATA
6891        KM   SEE APPENDIX G FOR COMPUTATIONS
6892        KM   STREET INTERSECTION DIVERSION - SPECIAL CASE
6893        KM   BETHANY HOME & 83RD
6894        KM   ==========   REVISED BY WOOD/PATEL ---> Flow Split Diversion 100% to West
6895        KM                20-OCT-97    DTP           Model Proposed BHROC
6896        DT   D83BH
6897        DI       0    2610    5000
6898        DQ       0     0.1       1
            *
            *  ***** Revised by DMJM for segment variations - Recommended Alternative *****
            *  KK RBH12

6899        KK  RBH12A
6900        KM   STREET ROUTE
6901        KM   WEST
6902        KM   BETHANY HOME
6903        KM   === WOOD\PATEL   20-OCT-97    dtp
6904        KM   === Normal Depth Channel Route
            *  KM === Rectangular Concrete lined channel   B=20 ft ,  D= 10ft,  V= 8 fps
            *  *  ****** Revised by DMJM ---> Extended Section,B=25', D=15'(to avoid warning
            *  RS     2    FLOW     -1.
            *  RC 0.015   0.015   0.015   5225.  0.0010
            *  RX   100   100.1     105     110     115     120   124.9     125
            *  RY    15       0       0       0       0       0       0      15
            *
            *  ********* Revised by DMJM ---> Recommended Alternative **************
            *
6905        KM   === Rectangular Concrete lined channel   B= 32 ft ,  D= 10 ft,  V= 11.2 fps
6906        RS       1    FLOW     -1.
6907        RC   0.016   0.016   0.016    600.  0.0010
6908        RX     100   100.1     105     109     117     125   132.0   132.1
6909        RY      12       0       0       0       0       0       0      12
            *
            *

6910        KK  RBH12B
6911        KM   STREET ROUTE
6912        KM   WEST
6913        KM   BETHANY HOME
6914        KM   === Normal Depth Channel Route
            *  ********* Revised by DMJM ---> Recommended Alternative **************
6915        KM   === Trapezoidal Grass Lined Channel  B= 40 ft ,  D= 10ft, Z= 6:1, V= 4.55 fps
6916        RS       3    FLOW     -1.
6917        RC   0.030   0.030   0.030   3450.  0.0010
6918        RX     100     124     154     170     174     178     194     248
6919        RY    9.32    5.32    0.32       0       0       0    0.32    9.32
            *
            *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6920        KK  RBH12C
6921        KM   STREET ROUTE
6922        KM   WEST
6923        KM   BETHANY HOME
6924        KM   === Normal Depth Channel Route
            *  ********* Revised by DMJM ---> Recommended Alternative **************
6925        KM   === Trapezoidal Grass Lined Channel  B= 60 ft , D= 10ft, Z= 4:1, V= 4.28 fps
6926        RS       2    FLOW     -1.
6927        RC   0.030   0.030   0.030   2000.  0.0010
6928        RX     100     124     144     170     174     178     204     248
6929        RY   11.52    5.52    0.52       0       0       0    0.52   11.52
            *
            * ********************Retrieve hydrograph from tape****************************
            * DDM   ***** Preserved *****

6930        KK   SGA8S
            * ********KM RETRIEVAL OF STREET CAPACITY DIVERSION
            * ********KM GLENDALE
            * ********DR SGA8S
6931        BI   SGA8S      22
            * DDM   ***** Preserved *****

6932        KK  R1021S
6933        KM   SUB-BASIN STREET ROUTE
6934        KM   SOUTH
6935        KM   RW= 50'
6936        KM   PAV= 35'
6937        RS       5    FLOW     -1.
6938        RC    0.02   0.016    0.02   5140.  0.0035
6939        RX       0     0.1     7.5    17.5    32.5    42.5     50.    50.1
6940        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            * DDM   ***** Updated *****

6941        KK   10-21
6942        KM   SUB-BASIN 10-21
6943        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
6944        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .994
6945        KM     L = 1.42  Kb = .078  Adj. Slope =   17.0
6946        BA    .979
6947        LG    .310    .160   7.600    .130  19.000
6948        UC   1.408    .725
6949        UA       0       5      16      30      65      77      84      90      94      97
6950        UA     100
            *
            * DDM   ***** Preserved *****

6951        KK   RET10
6952        KM   RETENTION BASIN DIVERSION
6953        KM   SUB-BASIN 10-21
6954        KM   70% OF SUB-BASIN DRAINS TO RETENTION BASIN
6955        DT  D1021R   42.04
6956        DI       0  10000.
6957        DQ       0   7000.
            *
            * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6958          KK   S83FW
6959          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
6960          KM   83RD AVENUE
6961          DR   S83FW
              * DDM   ***** Preserved *****

6962          KK  R1021W
6963          KM   SUB-BASIN STREET ROUTE
6964          KM   WEST
6965          KM   RW= 120'
6966          KM   PAV=  78'
6967          RS       5    FLOW     -1.
6968          RC    0.02   0.016    0.02   5260.  0.0032
6969          RX       0     0.1    21.0    31.0    89.0    99.0    120.   120.1
6970          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              * DDM   ***** Preserved *****

6971          KK  C10-21
6972          KM   SUB-BASIN COMBINE
6973          HC       3  43.317
              * DDM   ***** Preserved *****

6974          KK  D1021S
6975          KM   SUB-BASIN DIVERSION
6976          KM   SUB-BASIN 10-21
6977          KM   43% West & 57% South
6978          DT  D1021W
6979          DI       0  10000.
6980          DQ       0   4300.
              *
              *  ==========================================================================
              *  REVISED BY DMJM --->        Reservoir Routing of the Diverted Hydrograph Portion
              *  ==========================================================================
              *
              * *** Detain Southern Component of Sub-basin 10-21 ***
              *

6981          KK  D91det
6982          KM   Storage Route Southern Component of 10-21 prior to Combining with BH/GC
6983          KM     From:       Sub-basin 1021S
6984          KM     Outlet:     36" RCP into BH/GC Outfall Channel
6985          KM     Basin Type:  Off-Line Detention Basin
              *  KO     3
6986          RS       1    STOR
              *
              *      ***** Storage with BHOC Phase II - 60% Design Storage Volume Refinements
              *   SV     0   3.152   5.799   9.280  10.823  13.138  17.377  21.998  27.004  27
              *   SE1061.8    1064    1065    1066  1066.4    1067    1068    1069    1070  10
              *   SQ     0       0       0       0       0    30.3    50.0    63.8    75.2
              *
              *  **** BHOC Phase II - 90% Design Refinements to Storage Volumes ****
              *
              *   SV     0   0.195   0.987   3.337   3.608   6.123   9.763  11.370  13.781  18
              *   SV22.939  28.101  29.892
              *   SE1062.0  1062.5    1063    1064  1064.1    1065    1066  1066.4    1067
```

```
*   SE  1069    1070    1071
*
* *** BHOC Phase II - with two grated inlets in basin in addition to 36" outlet
*
*   SV     0   0.195   0.987   3.337   3.608   5.089   6.123   9.763  11.370  13
*   SV18.174  22.939  28.101  29.892  31.683
*
* *** BHOC Phase II - adjusted storage volumes due to final design refinements *
*
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

6987          SV       0   0.190   0.964   3.274   3.541   5.161   6.292   9.893  11.485  13.872
6988          SV  18.226  22.954  28.049  29.808  31.567
              *
6989          SE  1062.0  1062.5    1063    1064  1064.1 1064.63    1065    1066  1066.4    1067
6990          SE    1068    1069    1070    1071    1072
6991          SQ       0       0       0       0       0     5.4    12.2    19.8    22.1    55.3
6992          SQ    79.4    96.9   111.6   124.7     225
              *
              *
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

6993          KK   D91GA
              * *********KM RETRIEVAL OF STREET INTERSECTION DIVERSION
              * *********KM 91ST & GLENDALE
              * *********DR D91GA
6994          BI   D91GA      22
              * DDM   ***** Preserved *****

6995          KK    R91G
6996          KM   STREET ROUTE
6997          KM   SOUTH
6998          KM   91ST Avenue
6999          RS       3    FLOW     -1.
7000          RC    0.02   0.016    0.02   2600.  0.0024
7001          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
7002          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              * DDM   ***** Preserved *****

7003          KK  D1021W
7004          KM   RETRIEVAL OF SUB-BASIN DIVERSION
7005          KM   SUB-BASIN 10-21
7006          DR  D1021W
              * DDM   ***** Preserved *****

7007          KK    C91D
7008          KM   NORTH/SOUTH STREET COMBINE
7009          KM   91ST AVENUE
7010          HC       2  43.317
              * DDM   ***** Preserved *****

7011          KK   S91DS
7012          KM   STREET CAPACITY DIVERSION
7013          KM   91ST AVENUE
7014          KM   DIVERSION TO WEST
7015          DT   S91DW
7016          DI       0     12.     26.    435.    743.
7017          DQ       0     0.1     11.    186.    316.
              * DDM   ***** Preserved *****
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7018          KK    R91H
7019          KM   STREET ROUTE
7020          KM   SOUTH
7021          KM   91ST Avenue
7022          RS       4    FLOW     -1.
7023          RC    0.02   0.016    0.02   2580.  0.0015
7024          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
7025          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
              *

7026          KK    CBH5
7027          KM   EAST/WEST STREET COMBINE
7028          KM   BETHANY HOME
7029          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Revised
7030          KM    =====   20-OCT-97, dtp            Model proposed BHROC
              *   HC     3  44.575
7031          KM   ==========================================================================
7032          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 57.166 SQ.MI. FOR
7033          KM                                        ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7034          KM   ==========================================================================
7035          HC       3  57.166
              *
7036          KM   ==========   REVISED BY WOOD/PATEL ---> Operation RES10 removed
7037          KM                20-OCT-97    DTP           Model Proposed BHROC
              *       KK RES10
              *       KM PONDING AREA RESERVOIR ROUTE
              *       KM RETENTION BASIN NORTH OF GRAND CANAL EMBANKMENT
              *       KM SQ DATA INCLUDES FLOW SOUTH OVER CANAL AND FLOW WEST OVER 91ST AVE
              *       KM SUB-BASIN 10-21
              *       RS     1    ELEV   1064.
              *       SV     0    16.7    40.1    55.3    71.6
              *       SE 1064.   1066.   1068.   1069.   1070.
              *       SQ     0     0.1     0.2   1377.   5008.
              *

7038          KK   SBH7W
7039          KM   DIVERSION
7040          KM   BETHANY HOME ALIGNMENT/GRAND CANAL
7041          KM   RETENTION BASIN NORTH OF GRAND CANAL EMBANKMENT
7042          KM   FLOW SOUTH OVER CANAL AND FLOW WEST OVER 91ST AVE
7043          KM   DIVERSION TO SOUTH
7044          KM   ==========   REVISED BY WOOD/PATEL ---> Divert 100% to West
7045          KM                20-OCT-97    DTP           Model Proposed BHROC
7046          DT   SBH7S
7047          DI       0   1377.   5008.   10000
7048          DQ       0     0.1     0.2       1
              *
              *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7049          KK   DBH91
7050          KM   STREET INTERSECTION DIVERSION
7051          KM   BETHANY HOME & 91ST
7052          KM   100% West & 00% South
7053          DT   D91BH
7054          DI       0  10000.
7055          DQ       0     0.0
              *

7056          KK   RBH13
7057          KM   STREET ROUTE
7058          KM   WEST
7059          KM   BETHANY HOME
7060          KM   === WOOD\PATEL   20-OCT-97    dtp
7061          KM   === Normal Depth Channel Route
              *  KM === Rectangular Concrete lined channel   B=40 ft ,  D= 10ft,  V= 8 fps
              *  RS     4    FLOW     -1.
              *  RC 0.015   0.015   0.015   4150.  0.0036
              *  RX   100   100.1     105     108     110     112   139.9     140
              *  RY    10       0       0       0       0       0       0      10
              *
              *  ********** Revised by DMJM - Recommended Alternative ***************
              *
7062          KM   === Trapezoidal Grass Lined Channel  B = 100 ft, D= 8 ft, Z= 6:1, V = 4.38 fp
7063          RS       4    FLOW     -1.
7064          RC   0.030   0.030   0.030   4050.  0.0010
7065          RX     100     130     160     206     214     260     290     320
7066          RY    11.0    5.32    1.00       0       0    1.00    6.00    11.0
              *
              *
              * ********************Retrieve hydrograph from tape****************************
              * DDM   ***** Preserved *****

7067          KK   SGA9S
              * *********KM RETRIEVAL OF STREET CAPACITY DIVERSION
              * *********KM GLENDALE
              * *********DR SGA9S
7068          BI   SGA9S      22
              * DDM   ***** Preserved *****

7069          KK   R921S
7070          KM   SUB-BASIN STREET ROUTE
7071          KM   SOUTH
7072          KM   RW= 50'
7073          KM   PAV= 35'
7074          RS       8    FLOW     -1.
7075          RC    0.02   0.016    0.02   5160.  0.0014
7076          RX       0     0.1     7.5    17.5    31.5    42.5     50.    50.1
7077          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7078        KK   9-21E
7079        KM   SUB-BASIN 9-21E      (East of proposed AFF)
7080        KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
7081        KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .995
7082        KM     L = 1.72  Kb = .080  Adj. Slope =   16.0
7083        KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
7084        KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
7085        BA    .856
7086        LG    .500    .150   7.000    .180       0
7087        UC   1.500    .980
7088        UA       0       5      16      30      65      77      84      90      94      97
7089        UA     100
            *

7090        KK   S91DW
7091        KM   RETRIEVAL OF STREET CAPACITY DIVERSION
7092        KM   91ST
7093        DR   S91DW
            *

7094        KK   R921W
7095        KM   SUB-BASIN STREET ROUTE
7096        KM   WEST
7097        KM   RW= 70'
7098        KM   PAV= 43'
7099        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED AFF Alignment
7100        KM                15-OCT-97, dtp             Revised L for Composite Route
7101        RS       6    FLOW     -1.
7102        RC    0.02   0.016    0.02   4200.  0.0024
7103        RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
7104        RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0
            *

7105        KK   C9-21
7106        KM   SUB-BASIN COMBINE
7107        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
7108        KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
7109        HC       3  44.973
            *

7110        KK   D921S
7111        KM   SUB-BASIN DIVERSION
7112        KM   SUB-BASIN 9-21
7113        KM   39% West & 61% South
7114        DT   D921W
7115        DI       0  10000.
7116        DQ       0   3900.
            *
            *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7117          KK   CBH97
7118          KM   Hydrograph Combine at Intersection of Bethany Home Road and
7119          KM   Future 95th Avenue
7120          KM    =====   REVISED by DMJM ---> Added BH/GC Design Point
7121          KM    =====
              *   HC     2  44.973
7122          KM   ==========================================================================
7123          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 58.896 SQ.MI. FOR
7124          KM                                          ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7125          KM   ==========================================================================
7126          HC       2  58.896
              *
              *

7127          KK  DGAAFS
7128          KM   RETRIEVAL OF STREET INTERSECTION DIVERSION
7129          KM   AFF & GLENDALE
              * ******* Retrieve Hydrograph from Tape 22 ******
7130          BI  DGAAFS      22
              *

7131          KK    RAF2
7132          KM   STREET ROUTE
7133          KM   SOUTH  ==>  from Glendale Ave S 2580 ft
7134          KM   Agua Fria Freeway
7135          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
7136          KM                15-OCT-97, dtp            TRAP Section:  B = 12' ,  H = 8'
7137          RS       3    FLOW     -1.
7138          RC   0.015   0.015   0.015   2580.  0.0008
7139          RX     100     116     117     118     119     120     128     144
7140          RY       8       0       0       0       0       0       0       8
              *
              *

7141          KK   D921W
7142          KM   RETRIEVAL OF SUB-BASIN DIVERSION
7143          KM   SUB-BASIN 9-21
7144          DR   D921W
              *
              *

7145          KK    CAFA
7146          KM   Hydrograph Combine along AFF Interceptor
7147          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Rvised
7148          KM    =====   20-OCT-97, dtp            Model proposed AFF alignment & BHROC
7149          HC       2  46.231
              *

7150          KK    RAF3
7151          KM   STREET ROUTE
7152          KM   SOUTH ==> from 1/2 mi. S of Glendale Ave to Bethany Home Road
7153          KM   AFF Alignment
7154          KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
7155          KM                15-OCT-97, dtp            TRAP Section:  B = 20' ,  H = 8'
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7156          RS       3    FLOW     -1.
7157          RC   0.015   0.015   0.015   2520.  0.0008
7158          RX     100     116     117     118     120     122     136     152
7159          RY       8       0       0       0       0       0       0       8
              *

7160          KK   CBHAF
7161          KM   Hydrograph Combine at Intersection of Bethany Home Road and
7162          KM   Proposed AFF
7163          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Reduced
7164          KM    =====   16-OCT-97, dtp             Model proposed AFF alignment
              *   *****   Revised by DMJM to Reduce Number of Hydrographs Combined Since
              *           Combination CBH97 was added above.
              *   HC      2  44.973
7165          KM   ==========================================================================
7166          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 58.896 SQ.MI. FOR
7167          KM                                        ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7168          KM   ==========================================================================
7169          HC       2  58.896
              *
              *

7170          KK   9-21W
7171          KM   SUB-BASIN 9-21W   (West of proposed AFF)
7172          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
7173          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .999
7174          KM     L = 1.08  Kb = .080  Adj. Slope =   15.0
7175          KM    =====   REVISED by WOOD/PATEL ---> Area, Tc & R
7176          KM    =====   15-OCT-97, dtp             Model proposed AFF alignment
7177          BA    .111
7178          LG    .500    .150   7.000    .180       0
7179          UC   1.354   1.929
7180          UA       0       5      16      30      65      77      84      90      94      97
7181          UA     100
              *

7182          KK   S99AS
7183          KM   STREET CAPACITY DIVERSION
7184          KM   99TH AVENUE
7185          KM   DIVERSION TO WEST
7186          KM   SPECIAL CASE 100% FLOW WEST
7187          DT   S99AW
7188          DI       0  10000.
7189          DQ       0   9999.
              *

7190          KK    R99C
7191          KM   STREET ROUTE
7192          KM   SOUTH
7193          KM   99TH Avenue
7194          RS       3    FLOW     -1.
7195          RC    0.02   0.016    0.02   2220.  0.0014
7196          RX    44.9     45.     66.    66.1    134.   134.1    155.   155.1
7197          RY     4.3     0.3     0.3     0.0     0.0     0.3     0.3     4.3
              *
```

```
LINE        ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7198        KM   ==========   REVISED BY WOOD/PATEL ---> Operation RES9 removed
7199        KM                20-OCT-97    DTP           Model Proposed BHROC
            *       KK  RES9
            *       KM PONDING AREA RESERVOIR ROUTE
            *       KM PONDING AREA NORTH OF GRAND CANAL
            *       KM SQ DATA INCLUDES FLOW SOUTH OVER CANAL AND FLOW WEST OVER 99TH AVE
            *       KM SUB-BASIN 9-21
            *       RS     1    ELEV   1056.
            *       SV     0    16.5    38.3    75.5   140.4
            *       SE 1056.   1058.   1059.   1060.   1061.
            *       SQ    0.     0.1   1755.   6437.  16856.
            *

7200        KK    CBH6
7201        KM   Hydrograph Combine at Intersection of Bethany Home Road and
7202        KM   99th Avenue
7203        KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Revised
7204        KM    =====   20-OCT-97, dtp             Model proposed BHROC
            *   HC     2  46.416
7205        KM   ==================================================================
7206        KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 59.007 SQ.MI. FOR
7207        KM                                        ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7208        KM   ==================================================================
7209        HC       2  59.007
            *
            *   WOOD/PATEL 3/27/97
            *   ALL FLOW DIVERTED WEST ALONG GRAND CANAL (NO CHANGE)
            *

7210        KK   DBH99
7211        KM   STREET INTERSECTION DIVERSION
7212        KM   BETHANY HOME & 99TH
7213        KM   100% West & 00% South
7214        DT   D99BH
7215        DI       0  10000.
7216        DQ       0     0.0
            *

7217        KK   RBH14
7218        KM   STREET ROUTE
7219        KM   WEST  ==>  from 99 Ave @ Agua Fria HWY to New River Outfall along BH Rd
7220        KM   BETHANY HOME
7221        KM   ==========   REVISED BY WOOD/PATEL ---> PROPOSED 2nd CUT GEOMETRY
7222        KM                15-OCT-97, dtp             TRAP Section:  B = 26' ,  H = 8'
7223        KM   ******* REVISED BY DMJM ---> Extended Cross-Section , H = 12'
7224        RS       4    FLOW     -1.
7225        RC   0.015   0.015   0.015   2406.  0.0010
7226        RX      92     100     116     125     130     142     158     164
7227        RY      12       8       0       0       0       0       8      12
            *
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7228          KK   8-21E
7229          KM   SUB-BASIN 8-21E
7230          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
7231          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .997
7232          KM     L =  .96  Kb = .085  Adj. Slope =   14.0
7233          BA    .508
7234          LG    .480    .230   6.200    .250   2.000
7235          UC   1.454    .798
7236          UA       0       5      16      30      65      77      84      90      94      97
7237          UA     100

7238          KK   S99AW
7239          KM   RETRIEVAL OF STREET CAPACITY DIVERSION
7240          KM   99TH AVENUE
7241          DR   S99AW

7242          KK  R821EW
7243          KM   SUB-BASIN STREET ROUTE
7244          KM   WEST
7245          KM   RW= 70'
7246          KM   PAV= 43'
7247          RS       4    FLOW     -1.
7248          RC    0.02   0.016    0.02   3300.  0.0024
7249          RX       0     0.1    13.5    23.5    46.5    56.5     70.    70.1
7250          RY     4.0     0.0     0.0     0.0     0.0     0.0     0.0     4.0

7251          KK  C8-21E
7252          KM   SUB-BASIN COMBINE
7253          HC       2  46.012

7254          KK  D821ES
7255          KM   SUB-BASIN DIVERSION
7256          KM   SUB-BASIN 8-21E
7257          KM   56% West & 44% South
7258          DT  D821EW
7259          DI       0  10000.
7260          DQ       0   5600.
              *

7261          KK    CBH7
7262          KM   EAST/WEST STREET COMBINE
7263          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Rvised
7264          KM    =====   20-OCT-97, dtp            Model proposed AFF alignment & BHROC
              *   HC     2  47.270
7265          KM   ==========================================================================
7266          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 59.515 SQ.MI. FOR
7267          KM                                        ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7268          KM   ==========================================================================
7269          HC       2  59.515
              *
7270          KM   ==========   REVISED BY WOOD/PATEL ----> RES8S operation removed
7271          KM                19-Jun-97    DTP
              *
              *       KK RES8S
              *       KM PONDING AREA RESERVOIR ROUTE
```

```
*       KM PONDING AREA EAST OF GRAND CANAL
*       KM SUB-BASIN 8-21E
*       RS      1    ELEV   1052.
*       SV      0    18.0    44.7    89.0
*       SE 1052.   1054.   1055.   1056.
*       SQ    0.     0.1     0.2   2160.
*
*
```

```
LINE          ID.......1.......2.......3.......4.......5.......6.......7.......8.......9......10

7272          KK   8-21W
7273          KM   SUB-BASIN 8-21W
7274          KM   24-HOUR SCS TYPE II RAINFALL WAS USED TO FIND TC & R FOR THIS BASIN
7275          KM   THIS BASIN USED RAINFALL REDUCTION FACTOR OF  .998
7276          KM     L =  .70  Kb = .081  Adj. Slope =   16.0
7277          BA    .274
7278          LG    .430    .230   6.200    .240   8.000
7279          UC    .979    .568
7280          UA       0       5      16      30      65      77      84      90      94      97
7281          UA     100
              *

7282          KK  C8-21W
7283          KM   SUB-BASIN COMBINE
7284          KM    =====   REVISED by WOOD/PATEL ---> ADMS HC combine Area Rvised
7285          KM    =====   20-OCT-97, dtp             Model proposed AFF alignment & BHROC
              *   HC     2  47.548
7286          KM   ==========================================================================
7287          KM   REVISED BY DMJM ---> TAREA ADJUSTED TO 59.789 SQ.MI. FOR
7288          KM                                        ADDITIONAL SUBBASINS CONTRIBUTING FROM THE SUNSET BASIN.
7289          KM   ==========================================================================
7290          HC       2  59.789
              *

7291          KK  D821EW
7292          KM   RETRIEVAL OF SUB-BASIN DIVERSION
7293          KM   SUB-BASIN 8-21E
7294          DR  D821EW
              *

7295          KK   RES8N
7296          KM   PONDING AREA RESERVOIR ROUTE
7297          KM   PONDING AREA NORTHEAST OF GRAND CANAL
7298          KM   SUB-BASIN 8-21E
7299          RS       1    ELEV   1050.
7300          SV       0    15.0    34.7    63.8   107.6
7301          SE   1050.   1052.   1053.   1054.   1055.
7302          SQ      0.     0.1     0.2   4536.  13441.
              *

7303          KK   NULL5
7304          KM   NULL COMBINE @ BETHANY HOME C.P.
7305          HC       3       1
              *
              *

7306          KK  NULL5A
7307          KM  COMBINE NULL5 AND NULL10
7308          HC       2       1
              *
              *
7309          ZZ
```

RUNOFF SUMMARY
FLOW IN CUBIC FEET PER SECOND
TIME IN HOURS, AREA IN SQUARE MILES

OPERATION	STATION	PEAK FLOW	TIME OF PEAK	AVERAGE FLOW FOR MAXIMUM PERIOD 6-HOUR	24-HOUR	72-HOUR	BASIN AREA	MAXIMUM STAGE	TIME OF MAX STAGE
HYDROGRAPH AT	NULL4	3714.	13.17	1695.	519.	176.	1.00		
HYDROGRAPH AT	11-22	558.	12.58	169.	53.	18.	1.01		
DIVERSION TO	D1122W	117.	12.58	35.	11.	4.	1.01		
HYDROGRAPH AT	D1122S	441.	12.58	133.	42.	14.	1.01		
HYDROGRAPH AT	SGA1S	1140.	12.67	307.	94.	31.	2.54		
ROUTED TO	R1122S	1136.	12.83	306.	94.	31.	2.54		
2 COMBINED AT	C11-22	1537.	12.83	436.	135.	45.	3.50		
DIVERSION TO	SD31AS	147.	12.00	126.	57.	19.	3.50		
HYDROGRAPH AT	SD31A	1390.	12.83	310.	78.	26.	3.50		
DIVERSION TO	SBH1W	695.	12.83	155.	39.	13.	3.50		
HYDROGRAPH AT	SBH1E	695.	12.83	155.	39.	13.	3.50		
ROUTED TO	RBH1	693.	12.92	155.	39.	13.	3.50		
HYDROGRAPH AT	D27GA	231.	12.58	63.	20.	7.	.36		
ROUTED TO	R27C	223.	12.83	63.	20.	7.	.36		
HYDROGRAPH AT	12-22	205.	12.33	47.	15.	5.	.25		
DIVERSION TO	D1222R	14.	12.33	3.	1.	0.	.25		
HYDROGRAPH AT	RET120	191.	12.33	44.	14.	5.	.25		
3 COMBINED AT	CBH27	963.	12.92	245.	68.	23.	21.30		
DIVERSION TO	D27BH	963.	12.92	245.	68.	23.	21.30		
HYDROGRAPH AT	DBH27	0.	.00	0.	0.	0.	21.30		
HYDROGRAPH AT	D35GA	79.	12.92	35.	12.	4.	2.10		
ROUTED TO	R35E	78.	13.17	35.	12.	4.	2.10		
HYDROGRAPH AT	D1122W	117.	12.58	35.	11.	4.	1.01		
2 COMBINED AT	C35C	178.	12.92	70.	23.	8.	3.10		
ROUTED TO	R35F	175.	13.08	70.	23.	8.	3.10		
HYDROGRAPH AT	SBH1W	695.	12.83	155.	39.	13.	3.50		

```
7190          .          .          .       R99C
              .          .          .          .
              .          .          .          .
7200          .          .       CBH6............
              .          .          .
              .          .          .
7214          .          .          .-------> D99BH
7210          .          .      DBH99
              .          .          V
              .          .          V
7217          .          .      RBH14
              .          .          .
              .          .          .
7228          .          .          .      8-21E
              .          .          .          .
              .          .          .          .
7241          .          .          .          .          .<-------   S99AW
7238          .          .          .          .      S99AW
              .          .          .          .          V
              .          .          .          .          V
7242          .          .          .          .     R821EW
              .          .          .          .          .
              .          .          .          .          .
7251          .          .          .     C8-21E............
              .          .          .          .
              .          .          .          .
7258          .          .          .          .-------> D821EW
7254          .          .          .     D821ES
              .          .          .          .
              .          .          .          .
7261          .          .       CBH7............
              .          .          .
              .          .          .
7272          .          .          .      8-21W
              .          .          .          .
              .          .          .          .
7282          .          .     C8-21W............
              .          .          .
              .          .          .
7294          .          .          .          .<------- D821EW
7291          .          .          .     D821EW
              .          .          .          V
              .          .          .          V
7295          .          .          .      RES8N
              .          .          .          .
              .          .          .          .
7303          .      NULL5........................
              .          .
              .          .
7306     NULL5A............
```

(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
          .         .         .
7053      .         .         .-------> D91BH
7049      .         .      DBH91
          .         .         V
          .         .         V
7056      .         .      RBH13
          .         .         .
          .         .         .
7067      .         .         .      SGA9S
          .         .         .         V
          .         .         .         V
7069      .         .         .      R921S
          .         .         .         .
          .         .         .         .
7078      .         .         .         .      9-21E
          .         .         .         .         .
          .         .         .         .         .
7093      .         .         .         .         .          .<-------   S91DW
7090      .         .         .         .         .      S91DW
          .         .         .         .         .         V
          .         .         .         .         .         V
7094      .         .         .         .         .      R921W
          .         .         .         .         .         .
          .         .         .         .         .         .
7105      .         .         .      C9-21.......................
          .         .         .         .
          .         .         .         .
7114      .         .         .         .-------> D921W
7110      .         .         .      D921S
          .         .         .         .
          .         .         .         .
7117      .         .      CBH97............
          .         .         .
          .         .         .
7127      .         .         .     DGAAFS
          .         .         .         V
          .         .         .         V
7131      .         .         .       RAF2
          .         .         .         .
          .         .         .         .
7144      .         .         .         .         .<-------   D921W
7141      .         .         .         .      D921W
          .         .         .         .         .
          .         .         .         .         .
7145      .         .         .       CAFA............
          .         .         .         V
          .         .         .         V
7150      .         .         .       RAF3
          .         .         .         .
          .         .         .         .
7160      .         .      CBHAF............
          .         .         .
          .         .         .
7170      .         .         .      9-21W
          .         .         .         .
          .         .         .         .
7187      .         .         .         .-------> S99AW
7182      .         .         .      S99AS
          .         .         .         V
          .         .         .         V
```

```
                 .         .         V
6920             .         .     RBH12C
                 .         .         .
                 .         .         .
6930             .         .         .      SGA8S
                 .         .         .          V
                 .         .         .          V
6932             .         .         .     R1021S
                 .         .         .          .
                 .         .         .          .
6941             .         .         .          .      10-21
                 .         .         .          .          .
                 .         .         .          .          .
6955             .         .         .          .          .-------> D1021R
6951             .         .         .          .      RET10
                 .         .         .          .          .
                 .         .         .          .          .
6961             .         .         .          .          .          .<-------   S83FW
6958             .         .         .          .          .      S83FW
                 .         .         .          .          .          V
                 .         .         .          .          .          V
6962             .         .         .          .          .     R1021W
                 .         .         .          .          .          .
                 .         .         .          .          .          .
6971             .         .         .     C10-21.......................
                 .         .         .          .
                 .         .         .          .
6978             .         .         .          .-------> D1021W
6974             .         .         .     D1021S
                 .         .         .          V
                 .         .         .          V
6981             .         .         .     D91det
                 .         .         .          .
                 .         .         .          .
6993             .         .         .          .      D91GA
                 .         .         .          .          V
                 .         .         .          .          V
6995             .         .         .          .       R91G
                 .         .         .          .          .
                 .         .         .          .          .
7006             .         .         .          .          .          .<-------  D1021W
7003             .         .         .          .          .     D1021W
                 .         .         .          .          .          .
                 .         .         .          .          .          .
7007             .         .         .          .       C91D............
                 .         .         .          .          .
                 .         .         .          .          .
7015             .         .         .          .          .------->   S91DW
7011             .         .         .          .      S91DS
                 .         .         .          .          V
                 .         .         .          .          V
7018             .         .         .          .       R91H
                 .         .         .          .          .
                 .         .         .          .          .
7026             .         .       CBH5........................
                 .         .         .
                 .         .         .
7046             .         .         .------->   SBH7S
7038             .         .       SBH7W
                 .         .         .
```

```
        .         .         .         .
6775    .         .         .         .-------->  S83FW
6771    .         .         .      S83FS
        .         .         .         V
        .         .         .         V
6778    .         .         .      R83K
        .         .         .         .
        .         .         .         .
6786    .         .      CBH83............
        .         .         .
        .         .         .
6794    .         .         .         .<-------  GCDC1B
6790    .         .         .      RDC1B
        .         .         .         V
        .         .         .         V
6795    .         .         .      RDC1B
        .         .         .         .
        .         .         .         .
6808    .         .         .         .          .<-------   GCDC1
6806    .         .         .         .       RDC1
        .         .         .         .          .
        .         .         .         .          .
6809    .         .         .      CaDC1............
        .         .         .         .
        .         .         .         .
6823    .         .         .         .          .<-------   GCDC2
6821    .         .         .         .     RGCDC2
        .         .         .         .          .
        .         .         .         .          .
6824    .         .         .      CaDC2............
        .         .         .         V
        .         .         .         V
6839    .         .         .      GCDCo
        .         .         .         V
        .         .         .         V
6851    .         .         .     RDC2-3
        .         .         .         .
        .         .         .         .
6861    .         .         .         .          .<-------   GCDC3
6859    .         .         .         .     RGCDC3
        .         .         .         .          .
        .         .         .         .          .
6862    .         .         .      CaDC3............
        .         .         .         V
        .         .         .         V
6871    .         .         .     RDC3-4
        .         .         .         .
        .         .         .         .
6879    .         .      CaDC4............
        .         .         .
        .         .         .
6896    .         .         .-------->  D83BH
6888    .         .      DBH83
        .         .         V
        .         .         V
6899    .         .     RBH12A
        .         .         V
        .         .         V
6910    .         .     RBH12B
        .         .         V
```

```
                .         .
6656            .         .     CBH75............
                .         .         .
                .         .         .
6668            .         .         .-------> D75BH
6660            .         .     DBH75
                .         .         V
                .         .         V
6671            .         .     RBH10
                .         .         .
                .         .         .
6679            .         .         .     SGA7S
                .         .         .         V
                .         .         .         V
6681            .         .         .    R1121S
                .         .         .         .
                .         .         .         .
6690            .         .         .         .      11-21
                .         .         .         .         .
                .         .         .         .         .
6704            .         .         .         .         .-------> D1121R
6700            .         .         .         .      RET11
                .         .         .         .         .
                .         .         .         .         .
6710            .         .         .         .         .         .<-------  S75GW
6707            .         .         .         .         .     S75GW
                .         .         .         .         .         V
                .         .         .         .         .         V
6711            .         .         .         .         .    R1121W
                .         .         .         .         .         .
                .         .         .         .         .         .
6720            .         .         .    C11-21.......................
                .         .         .         .
                .         .         .         .
6727            .         .         .         .-------> D1121W
6723            .         .         .    D1121S
                .         .         .         .
                .         .         .         .
6730            .         .     CBH4............
                .         .         .
                .         .         .
6742            .         .         .-------> SBH6S
6734            .         .     SBH6W
                .         .         V
                .         .         V
6745            .         .     RBH11
                .         .         .
                .         .         .
6753            .         .         .     D83GA
                .         .         .         V
                .         .         .         V
6755            .         .         .      R83J
                .         .         .         .
                .         .         .         .
6766            .         .         .         .         .<------- D1121W
6763            .         .         .         .      D1121W
                .         .         .         .         .
                .         .         .         .         .
6767            .         .         .      C83E............
                .         .         .         .
```

```
                .         .         V
6541            .         .       RBH8
                .         .         .
                .         .         .
6549            .         .         .       SGA6S
                .         .         .          V
                .         .         .          V
6551            .         .         .      R1221S
                .         .         .          .
                .         .         .          .
6560            .         .         .          .       12-21
                .         .         .          .          .
                .         .         .          .          .
6574            .         .         .          .          .-------> D1221R
6570            .         .         .          .      RET12
                .         .         .          .          .
                .         .         .          .          .
6580            .         .         .          .          .          .<-------   S67FW
6577            .         .         .          .          .      S67FW
                .         .         .          .          .          V
                .         .         .          .          .          V
6581            .         .         .          .          .     R1221W
                .         .         .          .          .          .
                .         .         .          .          .          .
6590            .         .         .      C12-21.......................
                .         .         .          .
                .         .         .          .
6597            .         .         .          .-------> D1221W
593             .         .         .      D1221S
                .         .         .          .
                .         .         .          .
6600            .         .       CBH3............
                .         .         .
                .         .         .
6612            .         .         .------->   SBH5S
6604            .         .      SBH5W
                .         .         V
                .         .         V
6615            .         .       RBH9
                .         .         .
                .         .         .
6623            .         .         .       D75GA
                .         .         .          V
                .         .         .          V
6625            .         .         .       R75K
                .         .         .          .
                .         .         .          .
6636            .         .         .          .          .<------- D1221W
6633            .         .         .          .     D1221W
                .         .         .          .          .
                .         .         .          .          .
6637            .         .         .       C75E............
                .         .         .          .
                .         .         .          .
45              .         .         .          .------->   S75GW
6641            .         .         .       S75GS
                .         .         .          V
                .         .         .          V
6648            .         .         .       R75L
                .         .         .          .
```

```
                .         .         .
6426            .         .         .      SGA5S
                .         .         .         V
                .         .         .         V
6428            .         .         .      R722S
                .         .         .         .
                .         .         .         .
6437            .         .         .         .        7-22
                .         .         .         .          .
                .         .         .         .          .
6450            .         .         .         .          .          .<-------   S59EW
6447            .         .         .         .          .      S59EW
                .         .         .         .          .          V
                .         .         .         .          .          V
6451            .         .         .         .          .      R722W
                .         .         .         .          .          .
                .         .         .         .          .          .
6460            .         .         .      C7-22.......................
                .         .         .         .
                .         .         .         .
6467            .         .         .         .-------->   D722W
6463            .         .         .      D722S
                .         .         .         .
                .         .         .         .
6470            .         .      CBH2 ............
                .         .         .
                .         .         .
6482            .         .         .-------->   SBH4S
6474            .         .      SBH4W
                .         .         V
                .         .         V
6485            .         .      RBH7
                .         .         .
                .         .         .
6493            .         .         .      D67GA
                .         .         .         V
                .         .         .         V
6495            .         .         .      R67J
                .         .         .         .
                .         .         .         .
6506            .         .         .         .          .<-------   D722W
6503            .         .         .         .      D722W
                .         .         .         .          .
                .         .         .         .          .
6507            .         .         .      C67E ............
                .         .         .         .
                .         .         .         .
6515            .         .         .         .-------->   S67FW
6511            .         .         .      S67FS
                .         .         .         V
                .         .         .         V
6518            .         .         .      R67K
                .         .         .         .
                .         .         .         .
6526            .         .      CBH67............
                .         .         .
                .         .         .
6538            .         .         .-------->   D67BH
6530            .         .      DBH67
                .         .         V
```

```
6305    .       .       .       .     D822E1
        .       .       .       .       .
        .       .       .       .       .
[illegible]10   .       .       .       .       .<-------   S51EW
6307    .       .       .       .       .     S51EW
        .       .       .       .       .       V
        .       .       .       .       .       V
6311    .       .       .       .       .     R822EW
        .       .       .       .       .       .
        .       .       .       .       .       .
6320    .       .       .     C822E1.......................
        .       .       .       .
        .       .       .       .
6323    .       .     CBH51b............
        .       .       .
        .       .       .
6331    .       .       .------->   SBH51
6327    .       .     SBH51
        .       .       V
        .       .       V
6334    .       .     R822WW
        .       .       .
        .       .       .
6343    .       .       .      8-22W
        .       .       .       .
        .       .       .       .
6357    .       .       .       .------->  D822WW
6353    .       .       .     D822WS
        .       .       .       .
        .       .       .       .
6360    .       .     C8-22W............
        .       .       .
        .       .       .
6373    .       .       .------->   SBH3S
6365    .       .     SBH3W
        .       .       V
        .       .       V
6376    .       .     RBH5
        .       .       .
        .       .       .
6387    .       .       .       .<-------  D822WW
6384    .       .       .     D822WW
        .       .       .       .
        .       .       .       .
6392    .       .       .       .------->   S59EW
6388    .       .       .      S59ES
        .       .       .       V
        .       .       .       V
6395    .       .       .      R59I
        .       .       .       .
        .       .       .       .
6403    .       .     CBH59............
        .       .       .
        .       .       .
[illegible]15   .       .       .------->   D59BH
6407    .       .     DBH59
        .       .       V
        .       .       V
6418    .       .     RBH6
        .       .       .
```

```
6187    .       .       .       R922S
        .       .       .           .
        .       .       .           .
6196    .       .       .           .       9-22
        .       .       .           .           .
        .       .       .           .           .
6209    .       .       .           .           .           .<-------   S43DW
6206    .       .       .           .           .       S43DW
        .       .       .           .           .           V
        .       .       .           .           .           V
6210    .       .       .           .           .       R922W
        .       .       .           .           .           .
        .       .       .           .           .           .
6219    .       .       .       C9-22.......................
        .       .       .           .
        .       .       .           .
6226    .       .       .           .-------->  D922W
6222    .       .       .       D922S
        .       .       .           .
        .       .       .           .
6229    .       .   CBH1 ............
        .       .       .
        .       .       .
6238    .       .       .-------->  SBH2S
6233    .       .   SBH2W
        .       .       V
        .       .       V
6241    .       .   RBH4
        .       .       .
        .       .       .
6249    .       .       .       D51GA
        .       .       .           V
        .       .       .           V
6251    .       .       .       R51H
        .       .       .           .
        .       .       .           .
6262    .       .       .           .           .<-------   D922W
6259    .       .       .           .       D922W
        .       .       .           .           .
        .       .       .           .           .
6263    .       .       .       C51D ............
        .       .       .           .
        .       .       .           .
6275    .       .       .           .-------->  S51EW
6271    .       .       .       S51ES
        .       .       .           V
        .       .       .           V
6278    .       .       .       R51I
        .       .       .           .
        .       .       .           .
6286    .       .   CBH51............
        .       .       .
        .       .       .
6300    .       .       .-------->  D51BH
6290    .       .   DBH51
        .       .       .
        .       .       .
6303    .       .       .       D822ES
        .       .       .           .
        .       .       .           .
```

```
6074    .       .       .       .       .     SGA2S
        .       .       .       .       .       V
        .       .       .       .       .       V
76      .       .       .       .       .   R1022S
        .       .       .       .       .       .
        .       .       .       .       .       .
6085    .       .       .       .       .       .      10-22
        .       .       .       .       .       .        .
        .       .       .       .       .       .        .
6095    .       .       .       .       .   C10-22............
        .       .       .       .       .       .
        .       .       .       .       .       .
6104    .       .       .       .       .       .-------> SD39AS
6098    .       .       .       .       .   SD39A
        .       .       .       .       .       .
        .       .       .       .       .       .
6111    .       .       .       .       .       .-------> D1022W
6107    .       .       .       .       .   D1022E
        .       .       .       .       .       .
        .       .       .       .       .       .
6114    .       .   CBH35.................................
        .       .       .
        .       .       .
6125    .       .       .-------> D35BH
6118    .       .   DBH35
        .       .       .
        .       .       .
6128    .       .       .   D43GA
        .       .       .       V
        .       .       .       V
6130    .       .       .   R43F
        .       .       .       .
        .       .       .       .
6141    .       .       .       .           .<------- D1022W
6138    .       .       .       .     D1022W
        .       .       .       .           .
        .       .       .       .           .
6142    .       .       .   C43D ............
        .       .       .       .
        .       .       .       .
6152    .       .       .       .-------> S43DW
6146    .       .       .   S43DS
        .       .       .       V
        .       .       .       V
6155    .       .       .   R43G
        .       .       .       .
        .       .       .       .
6163    .       .   CBH43............
        .       .       .
        .       .       .
6174    .       .       .-------> D43BH
6167    .       .   DBH43
        .       .       V
        .       .       V
77      .       .   RBH3
        .       .       .
        .       .       .
6185    .       .       .   SGA3S
        .       .       .       V
        .       .       .       V
```

```
5956    .       .       .       R1122S
        .       .       .           .
        .       .       .           .
5965    .       .   C11-22............
        .       .       .
        .       .       .
5974    .       .       .-------> SD31AS
5968    .       .   SD31A
        .       .       .
        .       .       .
5982    .       .       .------->  SBH1W
5977    .       .    SBH1E
        .       .       V
        .       .       V
5985    .       .    RBH1
        .       .       .
        .       .       .
5993    .       .       .       D27GA
        .       .       .           V
        .       .       .           V
5995    .       .       .       R27C
        .       .       .           .
        .       .       .           .
6003    .       .       .           .       12-22
        .       .       .           .           .
        .       .       .           .           .
6017    .       .       .           .           .-------> D1222R
6013    .       .       .           .       RET120
        .       .       .           .           .
        .       .       .           .           .
6020    .       .    CBH27........................
        .       .       .
        .       .       .
6031    .       .       .------->  D27BH
6024    .       .    DBH27
        .       .       .
        .       .       .
6034    .       .       .       D35GA
        .       .       .           V
        .       .       .           V
6036    .       .       .       R35E
        .       .       .           .
        .       .       .           .
6047    .       .       .           .           .<------- D1122W
6044    .       .       .           .       D1122W
        .       .       .           .           .
        .       .       .           .           .
6048    .       .       .       C35C .............
        .       .       .           V
        .       .       .           V
6052    .       .       .       R35F
        .       .       .           .
        .       .       .           .
6065    .       .       .           .           .<-------  SBH1W
6060    .       .       .           .       SBH1W
        .       .       .           .           V
        .       .       .           .           V
6066    .       .       .           .       RBH2
        .       .       .           .           .
        .       .       .           .           .
```

```
          .          .          .
          .          .          .
5854      .     C3021S............
          .          .
          .          .
5861      .          .-------> STR11S
5857      .     STR11W
          .          V
          .          V
5864      .      RTR19
          .          .
          .          .
5876      .          .-------> D115TR
5872      .     DTR115
          .          .
          .          .
5879      .          .     30-21N
          .          .          .
          .          .          .
5893      .          .          .-------> D3021R
5889      .          .     RET30N
          .          .          .
          .          .          .
5900      .          .          .-------> D3021W
5896      .          .     D3021S
          .          .          .
          .          .          .
5905      .          .          .          .<-------  D2921C
5903      .          .          .     D2921C
          .          .          .          V
          .          .          .          V
5906      .          .          .     R3021W
          .          .          .          .
          .          .          .          .
5915      .          .     C3021N............
          .          .          V
          .          .          V
5918      .          .     R3021R
          .          .          .
          .          .          .
5930      .          .          .          .<-------  D2021W
5927      .          .          .     D3021W
          .          .          .          .
          .          .          .          .
5931   NULL8.................................
          .
          .
5934      .      NULL4
          .          .
          .          .
5937      .          .      11-22
          .          .          .
          .          .          .
5951      .          .          .-------> D1122W
5947      .          .     D1122S
          .          .          .
          .          .          .
5954      .          .          .      SGA1S
          .          .          .          V
          .          .          .          V
```

```
                .         .         .         .         V
                .         .         .         .         V
5733            .         .         .         .     R2921W
                .         .         .         .         .
                .         .         .         .         .
5742            .         .     C2921N.......................
                .         .         .
                .         .         .
5749            .         .         .-------> D2921W
5745            .         .     D2921S
                .         .         .
                .         .         .
5752            .       CTR9............
                .         V
                .         V
5755            .     RES29S
                .         .
                .         .
5766            .         .         .<------- D107IS
5763            .         .     D107IS
                .         .         V
                .         .         V
5767            .         .      R107C
                .         .         .
                .         .         .
5778            .         .         .         .<------- D2921W
5775            .         .         .     D2921W
                .         .         .         .
                .         .         .         .
5779            .         .      C107B............
                .         .         V
                .         .         V
5783            .         .     RES29W
                .         .         .
                .         .         .
5796            .         .         .-------> D2921C
5791            .         .     D2921B
                .         .         V
                .         .         V
5799            .         .     R2921A
                .         .         .
                .         .         .
5808            .         .         .     29-21S
                .         .         .         .
                .         .         .         .
5818            .       C107C........................
                .         .
                .         .
5826            .         .-------> D107TR
5822            .     DTR107
                .         V
                .         V
5829            .      RTR18
                .         .
                .         .
5837            .         .     30-21S
                .         .         .
                .         .         .
5851            .         .         .-------> D3021X
5847            .         .     RET30S
```

```
          .          .          .
5615      .          .          .          .<-------  D2821W
5612      .          .          .     D2821W
          .          .          .          .
          .          .          .          .
5616      .          .       CAFC............
          .          .          V
          .          .          V
5621      .          .       RAF8
          .          .          .
          .          .          .
5631      .      CTRAF............
          .          .
          .          .
5641      .          .-------> DTRAFS
5637      .      DTRAF
          .          .
          .          .
5647      .          .          .<-------   D99IS
5644      .          .      D99IS
          .          .          V
          .          .          V
5648      .          .       R99H
          .          .          .
          .          .          .
5656      .          .          .     28-21W
          .          .          .          .
          .          .          .          .
5668      .          .       C99D............
          .          .          .
          .          .          .
5676      .          .          .------->   S99DW
5672      .          .      S99DS
          .          .          V
          .          .          V
5679      .          .       R99I
          .          .          .
          .          .          .
5687      .      CTR99............
          .          .
          .          .
5695      .          .------->   D99TR
5691      .      DTR99
          .          V
          .          V
5698      .      RTR17
          .          .
          .          .
5709      .          .          .<-------   SIS9S
5706      .          .      SIS9S
          .          .          V
          .          .          V
5710      .          .     R2921S
          .          .          .
          .          .          .
5719      .          .          .     29-21N
          .          .          .          .
          .          .          .          .
5732      .          .          .          .          .<-------   S99DW
5729      .          .          .          .      S99DW
```

```
5490    .       .       .     D2721W
        .       .       .         .
        .       .       .         .
5494    .       .     C91G............
        .       .       .
        .       .       .
5504    .       .       .-------> S91GW
5498    .       .     S91GS
        .       .       V
        .       .       V
5507    .       .     R91N
        .       .       .
        .       .       .
5515    .     CTR91............
        .       .
        .       .
5526    .       .-------> D91TR
5519    .     DTR91
        .       V
        .       V
5529    .     RTR15
        .       .
        .       .
5540    .       .       .<------- SIS8S
5537    .       .     SIS8S
        .       .       V
        .       .       V
5541    .       .     R2821S
        .       .       .
        .       .       .
5550    .       .       .     28-21E
        .       .       .         .
        .       .       .         .
5565    .       .       .         .         .<------- S91GW
5562    .       .       .         .     S91GW
        .       .       .         .         V
        .       .       .         .         V
5566    .       .       .         .     R2821W
        .       .       .         .         .
        .       .       .         .         .
5577    .       .     C28-21......................
        .       .       .
        .       .       .
5586    .       .       .-------> D2821W
5582    .       .     D2821S
        .       .       .
        .       .       .
5589    .     CTR8............
        .       .
        .       .
5596    .       .-------> STR10S
5592    .     STR10W
        .       .
        .       .
5601    .       .       .<------- DISAFS
5599    .       .     RISAF
        .       .       V
        .       .       V
5602    .       .     RAF7
        .       .       .
```

```
          .         .         V
5377      .         .       R83Q
          .         .         .
          .         .         .
5385      .      CTR83............
          .         .
          .         .
5396      .         .-------> D83TR
5389      .      DTR83
          .         V
          .         V
5399      .      RTR13
          .         .
          .         .
5410      .         .         .<-------  SIS7S
5407      .         .      SIS7S
          .         .         V
          .         .         V
5411      .         .     R2721S
          .         .         .
          .         .         .
5420      .         .         .      27-21
          .         .         .         .
          .         .         .         .
5434      .         .         .         .-------> D2721R
5430      .         .         .      RET27
          .         .         .         .
          .         .         .         .
440       .         .         .         .         .<-------  S83IW
437       .         .         .         .      S83IW
          .         .         .         .         V
          .         .         .         .         V
5441      .         .         .         .     R2721W
          .         .         .         .         .
          .         .         .         .         .
5450      .         .     C27-21......................
          .         .         .
          .         .         .
5457      .         .         .-------> D2721W
5453      .         .     D2721S
          .         .         .
          .         .         .
5460      .       CTR7............
          .         .
          .         .
5467      .         .-------> STR9S
5463      .      STR9W
          .         V
          .         V
5470      .      RTR14
          .         .
          .         .
5481      .         .         .<-------  D91IS
5478      .         .      D91IS
          .         .         V
          .         .         V
5482      .         .       R91M
          .         .         .
          .         .         .
5493      .         .         .         .<-------  D2721W
```

```
          .         .
          .         .
5273      .         .-------> D75TR
5266      .     DTR75
          .         V
          .         V
5276      .     RTR11
          .         .
          .         .
5287      .         .         .<-------  SIS6S
5284      .         .     SIS6S
          .         .         V
          .         .         V
5288      .         .     R2621S
          .         .         .
          .         .         .
5297      .         .         .      26-21
          .         .         .         .
          .         .         .         .
5310      .         .         .         .         .<-------  S75JW
5307      .         .         .         .     S75JW
          .         .         .         .         V
          .         .         .         .         V
5311      .         .         .         .    R2621W
          .         .         .         .         .
          .         .         .         .         .
5320      .         .     C26-21.......................
          .         .         .
          .         .         .
5327      .         .         .-------> D2621W
5323      .         .     D2621S
          .         .         .
          .         .         .
5330      .      CTR6............
          .         .
          .         .
5337      .         .-------> STR8S
5333      .     STR8W
          .         V
          .         V
5340      .     RTR12
          .         .
          .         .
5351      .         .         .<-------  D83IS
5348      .         .     D83IS
          .         .         V
          .         .         V
5352      .         .     R83P
          .         .         .
          .         .         .
5363      .         .         .         .<-------  D2621W
5360      .         .         .     D2621W
          .         .         .         .
          .         .         .         .
5364      .         .     C83H............
          .         .         .
          .         .         .
5374      .         .         .-------> S83IW
5368      .         .     S83IS
          .         .         V
```

```
5155    .       .       .<-------   SIS5S
5152    .       .    SIS5S
        .       .       V
        .       .       V
5156    .       .    R2521S
        .       .       .
        .       .       .
5165    .       .       .      25-21
        .       .       .          .
        .       .       .          .
5179    .       .       .          .-------> D2521R
5175    .       .       .      RET25
        .       .       .          .
        .       .       .          .
5185    .       .       .          .          .<-------   S67IW
5182    .       .       .          .      S67IW
        .       .       .          .          V
        .       .       .          .          V
5186    .       .       .          .     R2521W
        .       .       .          .          .
        .       .       .          .          .
5195    .       .    C25-21.......................
        .       .       .
        .       .       .
5202    .       .       .-------> D2521W
5198    .       .    D2521S
        .       .       .
        .       .       .
205     .     CTR5............
        .       .
        .       .
5214    .       .------->   STR7S
5208    .     STR7W
        .       V
        .       V
5217    .     RTR10
        .       .
        .       .
5228    .       .       .<-------   D75IS
5225    .       .    D75IS
        .       .       V
        .       .       V
5229    .       .     R75P
        .       .       .
        .       .       .
5240    .       .       .          .<-------  D2521W
5237    .       .       .     D2521W
        .       .       .          .
        .       .       .          .
5241    .       .     C75G............
        .       .       .
        .       .       .
5251    .       .       .------->   S75JW
5245    .       .    S75JS
        .       .       V
        .       .       V
5254    .       .     R75Q
        .       .       .
        .       .       .
5262    .     CTR75............
```

```
                 .         .         .         V
                 .         .         .         V
5038             .         .         .      R3022A
                 .         .         .         .
                 .         .         .         .
5047             .         .         .         .      30-22S
                 .         .         .         .         .
                 .         .         .         .         .
5060             .         .         .         .         .          .<-------   S59IW
5057             .         .         .         .         .      S59IW
                 .         .         .         .         .          V
                 .         .         .         .         .          V
5061             .         .         .         .         .      R3022B
                 .         .         .         .         .         .
                 .         .         .         .         .         .
5070             .         .         .      C3022S.......................
                 .         .         .         .
                 .         .         .         .
5077             .         .         .         .-------> D3022W
5073             .         .         .      D3022S
                 .         .         .         .
                 .         .         .         .
5080             .         .      CTR4............
                 .         .         .
                 .         .         .
5088             .         .         .------->   STR6S
5084             .         .      STR6W
                 .         .         V
                 .         .         V
5091             .         .      RTR8
                 .         .         .
                 .         .         .
5102             .         .         .         .<-------  D3022W
5099             .         .         .      D3022W
                 .         .         .         .
                 .         .         .         .
5106             .         .         .         .          .<-------   D67IS
5103             .         .         .         .      D67IS
                 .         .         .         .         .
                 .         .         .         .         .
5107             .         .         .      C67G1............
                 .         .         .         .
                 .         .         .         .
5117             .         .         .         .------->   S67IW
5111             .         .         .      S67IS
                 .         .         .         V
                 .         .         .         V
5120             .         .         .      R67O
                 .         .         .         .
                 .         .         .         .
5128             .      CTR67.......................
                 .         .
                 .         .
5141             .         .------->   D67TR
5134             .      DTR67
                 .         V
                 .         V
5144             .      RTR9
                 .         .
                 .         .
```

```
4924                                  29-22S
                                        .
                                        .
37                                      .<-------   S51IW
4934                                 S51IW
                                        V
                                        V
4938                                 R2922B
                                        .
                                        .
4947                          C2922S.......................
                                        .
                                        .
4954                                    .-------> D2922W
4950                          D2922S
                                        .
                                        .
4957                     CTR3............
                                        .
                                        .
4966                                    .-------> STR5S
4960                     STR5W
                                        V
                                        V
4969                     RTR6
                                        .
                                        .
4979                                    .<-------   D59S
277                           D59S
                                        V
                                        V
4980                          R59N
                                        .
                                        .
4991                                    .          .<-------  D2922W
4988                                    .      D2922W
                                        .          .
                                        .          .
4992                          C59G............
                                        .
                                        .
5002                                    .-------> S59IW
4996                          S59IS
                                        V
                                        V
5005                          R59O
                                        .
                                        .
5013                     CTR59...........
                                        .
                                        .
5024                                    .-------> D59TR
5017                     DTR59
                                        V
                                        V
5027                     RTR7
                                        .
                                        .
5037                                    .<-------   D63S
5035                          D63S
```

```
                .         .         .         .
4811            .         .         .         .     28-22S
                .         .         .         .         .
                .         .         .         .         .
4821            .         .         .     C2822S............
                .         .         .         .
                .         .         .         .
4828            .         .         .         .-------> D2822W
4824            .         .         .     D2822S
                .         .         .         .
                .         .         .         .
4834            .         .         .         .         .<-------   S43HW
4831            .         .         .         .     S43HW
                .         .         .         .         V
                .         .         .         .         V
4835            .         .         .         .     R2822B
                .         .         .         .         .
                .         .         .         .         .
4844            .         .       CTR2........................
                .         .         .
                .         .         .
4851            .         .         .-------> STR3S
4847            .         .      STR3W
                .         .         .
                .         .         .
4858            .         .         .-------> STR4S
4854            .         .      STR4W
                .         .         V
                .         .         V
4861            .         .       RTR4
                .         .         .
                .         .         .
4872            .         .         .         .<-------  D2822W
4869            .         .         .     D2822W
                .         .         .         .
                .         .         .         .
4879            .         .         .         .-------> S51IW
4873            .         .         .      S51IS
                .         .         .         V
                .         .         .         V
4882            .         .         .       R51N
                .         .         .         .
                .         .         .         .
4890            .         .      CTR51............
                .         .         .
                .         .         .
4901            .         .         .-------> D51TR
4894            .         .      DTR51
                .         .         V
                .         .         V
4904            .         .       RTR5
                .         .         .
                .         .         .
4914            .         .         .         .<-------   D55S
4912            .         .         .       D55S
                .         .         .         V
                .         .         .         V
4915            .         .         .     R2922A
                .         .         .         .
                .         .         .         .
```

```
                .         .         .         .         .         V
                .         .         .         .         .         V
4706            .         .         .         .         .     R2722B
                .         .         .         .         .         .
                .         .         .         .         .         .
4715            .         .         .     C2722S.......................
                .         .         .         .
                .         .         .         .
4725            .         .         .         .-------> D2722W
4718            .         .         .     D2722S
                .         .         .         .
                .         .         .         .
4728            .         .       CTR1............
                .         .         .
                .         .         .
4737            .         .         .-------> STR2S
4731            .         .      STR2W
                .         .         V
                .         .         V
4740            .         .       RTR3
                .         .         .
                .         .         .
4751            .         .         .         .<-------   D43S
4748            .         .         .       D43S
                .         .         .         .
                .         .         .         .
4755            .         .         .         .         .<-------  D2722W
4752            .         .         .         .     D2722W
                .         .         .         .         .
                .         .         .         .         .
4756            .         .         .       C43F............
                .         .         .         .
                .         .         .         .
4766            .         .         .         .-------> S43HW
4760            .         .         .      S43HS
                .         .         .         V
                .         .         .         V
4769            .         .         .       R43M
                .         .         .         .
                .         .         .         .
4777            .         .      CTR43............
                .         .         .
                .         .         .
4788            .         .         .-------> D43TR
4781            .         .      DTR43
                .         .         .
                .         .         .
4794            .         .         .         .<-------   D51S
4791            .         .         .       D51S
                .         .         .         .
                .         .         .         .
4798            .         .         .         .         .<-------   D47S
4795            .         .         .         .       D47S
                .         .         .         .         .
                .         .         .         .         .
4799            .         .         .     C2822C............
                .         .         .         V
                .         .         .         V
4802            .         .         .     R2822A
                .         .         .         .
```

```
4584    .       .       .     D2622S
        .       .       .        .
        .       .       .        .
4593    .       .       .        .          .<-------  SD31DS
4591    .       .       .        .     SD31DS
        .       .       .        .          .
        .       .       .        .          .
4594    .       .   C2622S.......................
        .       .       .
        .       .       .
4606    .       .       .------->  STR1S
4598    .       .    STR1W
        .       .       V
        .       .       V
4609    .       .    RTR1
        .       .       .
        .       .       .
4619    .       .       .        .<-------  SD35DS
4617    .       .       .     SD35DS
        .       .       .        .
        .       .       .        .
4620    .       .       .        .     26-22W
        .       .       .        .          .
        .       .       .        .          .
4633    .       .       .        .          .          .<-------  D2622W
4630    .       .       .        .          .     D2622W
        .       .       .        .          .          .
        .       .       .        .          .          .
4634    .       .       .     C35E........................
        .       .       .        .
        .       .       .        .
4644    .       .       .        .------->  S35DW
4638    .       .       .     S35DS
        .       .       .        V
        .       .       .        V
4647    .       .       .     R35J
        .       .       .        .
        .       .       .        .
4655    .       .    CTR35............
        .       .       .
        .       .       .
4668    .       .       .------->  D35TR
4659    .       .    DTR35
        .       .       V
        .       .       V
4671    .       .    RTR2
        .       .       .
        .       .       .
4682    .       .       .        .<-------   D39S
4679    .       .       .     D39S
        .       .       .        V
        .       .       .        V
4683    .       .       .     R2722A
        .       .       .        .
        .       .       .        .
4692    .       .       .        .     27-22S
        .       .       .        .          .
        .       .       .        .          .
4705    .       .       .        .          .          .<-------   S35DW
4702    .       .       .        .          .     S35DW
```

```
          .          V
4448      .       PA59
          .          .
          .          .
4463      .          .-------->   D59S
4458      .        D59
          .          .
          .          .
4469      .          .          .<-------   SIS4S
4466      .          .      SIS4S
          .          .          V
          .          .          V
4470      .          .     R3022S
          .          .          .
          .          .          .
4479      .          .          .     30-22N
          .          .          .          .
          .          .          .          .
4492      .          .          .          .          .<-------   S59HW
4489      .          .          .          .      S59HW
          .          .          .          .          .
          .          .          .          .          .
4493      .     C3022N.................................
          .          V
          .          V
4496      .       PA63
          .          .
          .          .
[illegible]16      .          .-------->   D63S
[illegible]11      .        D63
          .          .
          .          .
4524      .          .-------->  GCDC1B
4519      .       DC1B
          .          .
          .          .
4530      .          .          .<-------   D26S
4527      .          .       D26S
          .          .          V
          .          .          V
4531      .          .     R2622S
          .          .          .
          .          .          .
4540      .          .          .     26-22E
          .          .          .          .
          .          .          .          .
4550      .          .     C2622E............
          .          .          V
          .          .          V
4553      .          .     RES26E
          .          .          .
          .          .          .
4571      .          .          .-------->   D27TR
4561      .          .      DTR27
          .          .          .
          .          .          .
4574      .          .          .     26-22S
          .          .          .          .
          .          .          .          .
4588      .          .          .          .-------->  D2622W
```

```
                .          .          .
4330            .     C2822B.......................
                .        V
                .        V
4333            .      PA51
                .        .
                .        .
4352            .        .-------->   D51S
4344            .      D51
                .        .
                .        .
4358            .        .          .<-------   SIS3S
4355            .        .      SIS3S
                .        .          V
                .        .          V
4359            .        .     R2922S
                .        .          .
                .        .          .
4368            .        .          .     29-22N
                .        .          .          .
                .        .          .          .
4382            .        .          .          .-------->  D2922R
4378            .        .          .     RET29N
                .        .          .          .
                .        .          .          .
4385            .        .     C2922N............
                .        .          .
                .        .          .
4394            .        .          .-------->  D2922A
4388            .        .     D2922N
                .        .          .
                .        .          .
4400            .        .          .          .<-------   S51HW
4397            .        .          .      S51HW
                .        .          .          .
                .        .          .          .
4401            .     C2922B.......................
                .        V
                .        V
4404            .      PA55
                .        .
                .        .
4424            .        .-------->   D55S
4416            .      D55
                .        .
                .        .
4430            .        .          .<-------   D59IS
4427            .        .      D59IS
                .        .          .
                .        .          .
4438            .        .          .-------->   S59HW
4431            .        .      S59HS
                .        .          .
                .        .          .
4444            .        .          .          .<-------  D2922A
4441            .        .          .      D2922A
                .        .          .          .
                .        .          .          .
4445            .     C2922A.......................
                .        V
```

```
          .          .
4223      .          .-------->   D43S
4216      .       D43
          .         V
          .         V
4226      .     R2822W
          .          .
          .          .
4238      .          .          .<-------   SIS2S
4235      .          .      SIS2S
          .          .          .
          .          .          .
4243      .          .          .          .<-------  SIS2SA
4239      .          .          .     SIS2SA
          .          .          .          .
          .          .          .          .
4244      .          .     C2822A............
          .          .          V
          .          .          V
4247      .          .     R2822S
          .          .          .
          .          .          .
4256      .          .          .     28-22N
          .          .          .          .
          .          .          .          .
4269      .          .          .          .          .<-------   S43GW
4266      .          .          .          .      S43GW
          .          .          .          .          .
          .          .          .          .          .
4270      .          .     C2822N........................
          .          .          .
          .          .          .
4279      .          .          .-------> D2822A
4273      .          .     D2822N
          .          .          .
          .          .          .
4282      .     C2822D............
          .         V
          .         V
4285      .       PA47
          .          .
          .          .
4301      .          .-------->   D47S
4295      .       D47
          .          .
          .          .
4307      .          .          .<-------   D51IS
4304      .          .     D51IS
          .          .          V
          .          .          V
4308      .          .     R51M
          .          .          .
          .          .          .
4323      .          .          .-------->   S51HW
4316      .          .     S51HS
          .          .          .
          .          .          .
4329      .          .          .          .<-------  D2822A
4326      .          .          .     D2822A
          .          .          .          .
```

```
          .          V
4085      .      RES26T
          .          .
          .          .
4102      .          .-------->   D26S
4095      .        D26W
          .          .
          .          .
4108      .          .          .<-------  SIS1AS
4105      .          .      SIS1AS
          .          .          .
          .          .          .
4115      .          .          .-------->  SD35DS
4109      .          .      SD35DW
          .          .          V
          .          .          V
4118      .          .      R2722W
          .          .          .
          .          .          .
4130      .          .          .          .<-------   SIS1S
4127      .          .          .      SIS1S
          .          .          .          V
          .          .          .          V
4131      .          .          .     R2722S
          .          .          .          .
          .          .          .          .
4140      .          .          .          .     27-22N
          .          .          .          .          .
          .          .          .          .          .
4150      .      C2722N.................................
          .          .
          .          .
4161      .          .-------->  D2722A
4154      .      D2722N
          .          .
          .          .
4172      .          .-------->   D39S
4164      .        D39
          .          .
          .          .
4178      .          .          .<-------   D43IS
4175      .          .      D43IS
          .          .          V
          .          .          V
4179      .          .      R43K
          .          .          .
          .          .          .
4194      .          .          .-------->   S43GW
4187      .          .      S43GS
          .          .          .
          .          .          .
4200      .          .          .          .<-------  D2722A
4197      .          .          .     D2722A
          .          .          .          .
          .          .          .          .
4201      .      C2722A......................
          .          V
          .          V
4204      .      · PA43
          .          .
```

```
3973          .      RIS17
              .          .
              .          .
81            .          .      19-21
              .          .          .
              .          .          .
3994          .          .          .          .<-------  S107AW
3991          .          .          .     S107AW
              .          .          .          V
              .          .          .          V
3995          .          .          .     R1921W
              .          .          .          .
              .          .          .          .
4004          .          .     C19-21............
              .          .          .
              .          .          .
4011          .          .          .-------> D1921W
4007          .          .     D1921S
              .          .          .
              .          .          .
4014          .      CIS10............
              .          V
              .          V
4017          .      RIS18
              .          .
              .          .
4027          .          .          .<-------  D1921W
4025          .          .     D1921W
              .          .          .
              .          .          .
4028      NULL7........................
              .
              .
4034          .          .<-------   D35IS
4031          .      D35IS
              .          V
              .          V
4035          .      RGR8
              .          .
              .          .
4048          .          .          .<-------   D27IS
4045          .          .     D27IS
              .          .          V
              .          .          V
4049          .          .     R27F
              .          .          .
              .          .          .
4057          .          .          .     26-22N
              .          .          .          .
              .          .          .          .
4071          .          .          .          .          .<-------  SD31CS
4067          .          .          .          .     SD31CS
              .          .          .          .          .
              .          .          .          .          .
72            .     C2622N.................................
              .          .
              .          .
4082          .          .-------> SD31DS
4076          .     SD31D
              .          V
```

```
.          .          .
3869       .          .          .      20-21
           .          .          .          .
           .          .          .          .
3883       .          .          .          .-------> D2021R
3879       .          .          .      RET20
           .          .          .          .
           .          .          .          .
3889       .          .          .          .          .<-------   S99CW
3886       .          .          .          .      S99CW
           .          .          .          .          V
           .          .          .          .          V
3890       .          .          .          .     R2021W
           .          .          .          .          .
           .          .          .          .          .
3899       .          .     C20-21.......................
           .          .          .
           .          .          .
3906       .          .          .-------> D2021W
3902       .          .     D2021S
           .          .          .
           .          .          .
3909       .       CIS9............
           .          .
           .          .
3916       .          .------->   SIS9S
3912       .      SIS9W
           .          V
           .          V
3919       .      RIS16
           .          .
           .          .
3930       .          .          .<-------  D107CB
3927       .          .     D107CB
           .          .          V
           .          .          V
3931       .          .      R107A
           .          .          .
           .          .          .
3942       .          .          .          .<-------  D2021W
3939       .          .          .     D2021W
           .          .          .          .
           .          .          .          .
3943       .          .      C107A............
           .          .          .
           .          .          .
3951       .          .          .-------> S107AW
3947       .          .     S107AS
           .          .          V
           .          .          V
3954       .          .      R107B
           .          .          .
           .          .          .
3962       .      CIS107............
           .          .
           .          .
3970       .          .-------> D107IS
3966       .      DIS107
           .          V
           .          V
```

```
3751    .       .       .<-------  DCBAFS
3749    .       .    RCBAF
        .       .       V
        .       .       V
3752    .       .    RAF5
        .       .       .
        .       .       .
3765    .       .       .          .<-------  D2121W
3762    .       .       .     D2121W
        .       .       .          .
        .       .       .          .
3766    .       .    CAFB............
        .       .       V
        .       .       V
3771    .       .    RAF6
        .       .       .
        .       .       .
3781    .    CISAF............
        .       .
        .       .
3791    .       .-------> DISAFS
3787    .    DISAF
        .       .
        .       .
3797    .       .       .<-------   D99CB
3794    .       .    R99CB
        .       .       V
        .       .       V
3798    .       .    R99F
        .       .       .
        .       .       .
3806    .       .       .     21-21W
        .       .       .          .
        .       .       .          .
3818    .       .    C99C............
        .       .       .
        .       .       .
3826    .       .       .------->   S99CW
3822    .       .    S99CS
        .       .       V
        .       .       V
3829    .       .    R99G
        .       .       .
        .       .       .
3837    .    CIS99............
        .       .
        .       .
3845    .       .------->   D99IS
3841    .    DIS99
        .       V
        .       V
3848    .    RIS15
        .       .
        .       .
3859    .       .       .<-------   SCB8S
3856    .       .    SCB8S
        .       .       V
        .       .       V
3860    .       .    R2021S
        .       .       .
```

```
                .          .          V
                .          .          V
3632            .          .       R91K
                .          .          .
                .          .          .
3643            .          .          .          .<-------  D2221W
3640            .          .          .     D2221W
                .          .          .          .
                .          .          .          .
3644            .          .       C91F............
                .          .          .
                .          .          .
3652            .          .          .------->  S91FW
3648            .          .      S91FS
                .          .          V
                .          .          V
3655            .          .       R91L
                .          .          .
                .          .          .
3663            .      CIS91............
                .          .
                .          .
3674            .          .------->  D91IS
3667            .      DIS91
                .          V
                .          V
3677            .      RIS13
                .          .
                .          .
3688            .          .          .<-------  SCB7S
3685            .          .      SCB7S
                .          .          V
                .          .          V
3689            .          .     R2121S
                .          .          .
                .          .          .
3698            .          .          .     21-21E
                .          .          .          .
                .          .          .          .
3713            .          .          .          .          .<-------  S91FW
3710            .          .          .          .      S91FW
                .          .          .          .          V
                .          .          .          .          V
3714            .          .          .          .     R2121W
                .          .          .          .          .
                .          .          .          .          .
3725            .          .     C21-21......................
                .          .          .
                .          .          .
3734            .          .          .------->  D2121W
3730            .          .     D2121S
                .          .          .
                .          .          .
3737            .      CIS8............
                .          .
                .          .
3746            .          .------->  SIS8S
3742            .      SIS8W
                .          .
                .          .
```

```
3519    .       .       .       .<-------  D2321W
3516    .       .       .   D2321W
        .       .       .       .
        .       .       .       .
3520    .       .     C83G............
        .       .       .
        .       .       .
3528    .       .       .------->  S83HW
3524    .       .     S83HS
        .       .       V
        .       .       V
3531    .       .     R83O
        .       .       .
        .       .       .
3539    .     CIS83............
        .       .
        .       .
3550    .       .------->  D83IS
3543    .     DIS83
        .       V
        .       V
3553    .     RIS11
        .       .
        .       .
3564    .       .       .<-------  SCB6S
3561    .       .     SCB6S
        .       .       V
        .       .       V
3565    .       .    R2221S
        .       .       .
        .       .       .
3574    .       .       .    22-21
        .       .       .       .
        .       .       .       .
3587    .       .       .       .       .<-------  S83HW
3584    .       .       .       .    S83HW
        .       .       .       .       V
        .       .       .       .       V
3588    .       .       .       .   R2221W
        .       .       .       .       .
        .       .       .       .       .
3597    .       .    C22-21......................
        .       .       .
        .       .       .
3604    .       .       .------->  D2221W
3600    .       .    D2221S
        .       .       .
        .       .       .
3607    .      CIS7............
        .       .
        .       .
3617    .       .------->  SIS7S
3611    .     SIS7W
        .       V
        .       V
3620    .     RIS12
        .       .
        .       .
3631    .       .       .<-------  D91CB
3628    .       .    D91CB
```

```
          .         .         .
          .         .         .
3403      .         .         .-------> S751W
3399      .         .      S751S
          .         .         V
          .         .         V
3406      .         .      R750
          .         .         .
          .         .         .
3414      .      CIS75............
          .         .
          .         .
3427      .         .-------> D75IS
3418      .      DIS75
          .         V
          .         V
3430      .      RIS9
          .         .
          .         .
3441      .         .         .<------- SCB5S
3438      .         .      SCB5S
          .         .         V
          .         .         V
3442      .         .      R2321S
          .         .         .
          .         .         .
3451      .         .         .      23-21
          .         .         .         .
          .         .         .         .
3464      .         .         .         .         .<------- S751W
3461      .         .         .         .      S751W
          .         .         .         .         V
          .         .         .         .         V
3465      .         .         .         .     R2321W
          .         .         .         .         .
          .         .         .         .         .
3474      .         .      C23-21......................
          .         .         .
          .         .         .
3481      .         .         .-------> D2321W
3477      .         .      D2321S
          .         .         .
          .         .         .
3484      .      CIS6............
          .         .
          .         .
3493      .         .-------> SIS6S
3487      .      SIS6W
          .         V
          .         V
3496      .      RIS10
          .         .
          .         .
3507      .         .         .<------- D83CB
3504      .         .      D83CB
          .         .         V
          .         .         V
3508      .         .      R83N
          .         .         .
          .         .         .
```

```
3293    .          .-------->  D67IS
3284    .      DIS67
        .          .
        .          .
3299    .          .          .<-------   S67HW
3296    .          .      S67HW
        .          .          V
        .          .          V
3300    .          .     R2421W
        .          .          .
        .          .          .
3309    .          .          .     24-21N
        .          .          .          .
        .          .          .          .
3322    .          .          .          .          .<-------   SCB4S
3319    .          .          .          .      SCB4S
        .          .          .          .          V
        .          .          .          .          V
3323    .          .          .          .     R2421S
        .          .          .          .          .
        .          .          .          .          .
3332    .          .     C2421N.......................
        .          .          .
        .          .          .
3338    .          .          .-------->  GCDC1
3335    .          .        DC1
        .          .          V
        .          .          V
3341    .          .     RES24N
        .          .          .
        .          .          .
3350    .          .          .     24-21S
        .          .          .          .
        .          .          .          .
3360    .          .     C2421S............
        .          .          .
        .          .          .
3367    .          .          .-------> D2421W
3363    .          .     D2421S
        .          .          .
        .          .          .
3370    .       CIS5............
        .          .
        .          .
3377    .          .-------->  SIS5S
3373    .      SIS5W
        .          V
        .          V
3380    .       RIS8
        .          .
        .          .
3390    .          .          .<-------   D75CB
3388    .          .      D75CB
        .          .          .
        .          .          .
3394    .          .          .          .<-------  D2421W
3391    .          .          .     D2421W
        .          .          .          .
        .          .          .          .
3395    .          .      C75F1............
```

```
            .          V
            .          V
3177        .       RIS6
            .          .
            .          .
3188        .          .           .<-------   SCB3S
3185        .          .       SCB3S
            .          .           V
            .          .           V
3189        .          .      R1922S
            .          .           .
            .          .           .
3198        .          .           .      19-22
            .          .           .          V
            .          .           .          V
3208        .          .           .       PAGC
            .          .           .          .
            .          .           .          .
3219        .          .           .          .           .<-------   S59GW
3216        .          .           .          .       S59GW
            .          .           .          .           V
            .          .           .          .           V
3220        .          .           .          .      R1922W
            .          .           .          .           .
            .          .           .          .           .
3229        .          .      C19-22.......................
            .          .           .
            .          .           .
3236        .          .           .-------> D1922W
3232        .          .      D1922S
            .          .           .
            .          .           .
3239        .       CIS3 ............
            .          .
            .          .
3249        .          .------->   SIS4S
3243        .       SIS4W
            .          .
            .          .
3255        .          .           .<-------   D67CB
3252        .          .       D67CB
            .          .           V
            .          .           V
3256        .          .       R67N
            .          .           .
            .          .           .
3267        .          .           .          .<-------  D1922W
3264        .          .           .      D1922W
            .          .           .          .
            .          .           .          .
3268        .          .       C67G ............
            .          .           .
            .          .           .
3277        .          .           .------->   S67HW
3272        .          .       S67HS
            .          .           .
            .          .           .
3280        .       CIS67............
            .          .
            .          .
```

```
3061    .       .       .<-------   SCB2S
3058    .       .   SCB2S
        .       .       V
        .       .       V
3062    .       .   R2022S
        .       .       .
        .       .       .
3071    .       .       .   20-22
        .       .       .       .
        .       .       .       .
3084    .       .       .       .       .<-------   S51GW
3081    .       .       .       .   S51GW
        .       .       .       .       V
        .       .       .       .       V
3085    .       .       .       .   R2022W
        .       .       .       .       .
        .       .       .       .       .
3094    .       .   C20-22.......................
        .       .       .
        .       .       .
3101    .       .       .------->  D2022W
3097    .       .   D2022S
        .       .       .
        .       .       .
3104    .   CIS2 ............
        .       .
        .       .
3115    .       .------->   SIS3S
3108    .   SIS3W
        .       V
        .       V
3118    .   RIS5
        .       .
        .       .
3129    .       .       .<-------   D59CB
3126    .       .   D59CB
        .       .       V
        .       .       V
3130    .       .   R59L
        .       .       .
        .       .       .
3141    .       .       .       .<-------  D2022W
3138    .       .       .   D2022W
        .       .       .       .
        .       .       .       .
3142    .       .   C59F ............
        .       .       .
        .       .       .
3152    .       .       .------->   S59GW
3146    .       .   S59GS
        .       .       V
        .       .       V
3155    .       .   R59M
        .       .       .
        .       .       .
3163    .   CIS59............
        .       .
        .       .
3174    .       .------->   D59IS
3167    .   DIS59
```

```
.          .          .          .
2950       .          .          .          .<-------   S43FW
2947       .          .          .      S43FW
           .          .          .          V
           .          .          .          V
2951       .          .          .     R2122W
           .          .          .          .
           .          .          .          .
2960       .          .     C21-22.......................
           .          .          .
           .          .          .
2967       .          .          .-------> D2122W
2963       .          .     D2122S
           .          .          .
           .          .          .
2970       .      CIS1 ............
           .          .
           .          .
2979       .          .-------> SIS2SA
2974       .     SIS2WA
           .          .
           .          .
2988       .          .------->   SIS2S
2982       .      SIS2W
           .          V
           .          V
2991       .      RIS3
           .          .
           .          .
3002       .          .          .<-------   D51CB
2999       .          .     D51CB
           .          .          V
           .          .          V
3003       .          .     R51K
           .          .          .
           .          .          .
3014       .          .          .          .<-------  D2122W
3011       .          .          .     D2122W
           .          .          .          .
           .          .          .          .
3015       .          .     C51E ............
           .          .          .
           .          .          .
3025       .          .          .------->   S51GW
3019       .          .     S51GS
           .          .          V
           .          .          V
3028       .          .     R51L
           .          .          .
           .          .          .
3036       .      CIS51............
           .          .
           .          .
3047       .          .------->   D51IS
3040       .      DIS51
           .          V
           .          V
3050       .      RIS4
           .          .
           .          .
```

```
          .          .          .
2835      .          .          .-------> D2222W
2831      .          .     D2222S
          .          .          .
          .          .          .
2842      .          .          .          .<-------  SD39CS
2838      .          .          .     SD39CS
          .          .          .          .
          .          .          .          .
2843      .     C2222W.......................
          .          .
          .          .
2854      .          .------->  SIS1S
2846      .      SIS1W
          .          V
          .          V
2857      .      RIS1
          .          .
          .          .
2868      .          .          .<-------  D2222W
2865      .          .     D2222W
          .          .          .
          .          .          .
2873      .          .          .          .<-------  SD43AS
2869      .          .          .     SD43AS
          .          .          .          .
          .          .          .          .
2874      .          .     CSD43A............
          .          .          .
          .          .          .
2884      .          .          .------->  S43FW
2878      .          .      S43FS
          .          .          V
          .          .          V
2887      .          .      R43J
          .          .          .
          .          .          .
2895      .      CIS43............
          .          .
          .          .
2906      .          .------->  D43IS
2899      .      DIS43
          .          V
          .          V
2909      .      RIS2
          .          .
          .          .
2920      .          .          .<-------  SCB1S
2917      .          .      SCB1S
          .          .          V
          .          .          V
2921      .          .     R2122S
          .          .          .
          .          .          .
30        .          .          .      21-22
          .          .          .          .
          .          .          .          .
2944      .          .          .          .-------> D2122R
2940      .          .          .     RET210
          .          .          .          .
```

```
2710        .         .      D35CB
            .         .          V
            .         .          V
2714        .         .      R35H
            .         .          .
            .         .          .
2725        .         .          .          .<-------  D2322W
2722        .         .          .     D2322W
            .         .          .          .
            .         .          .          .
2726        .         .      C35D ............
            .         .          V
            .         .          V
2730        .         .      R35I
            .         .          .
            .         .          .
2738        .      CIS35............
            .         .
            .         .
2745        .         .          .<-------   D43CB
2742        .         .      D43CB
            .         .          .
            .         .          .
2750        .         .          .-------> SD43AS
2746        .         .     SD43A
            .         .          V
            .         .          V
2753        .         .      RGR6
            .         .          .
            .         .          .
2763        .         .          .     22-22E
            .         .          .          .
            .         .          .          .
2777        .         .          .          .          .<-------  SD39BS
2773        .         .          .          .     SD39BS
            .         .          .          .          .
            .         .          .          .          .
2778        .         .     C2222E........................
            .         .          .
            .         .          .
2787        .         .          .-------> SD39CS
2781        .         .     SD39C
            .         .          V
            .         .          V
2790        .         .      RGR7
            .         .          .
            .         .          .
2800        .      CIS35A............
            .         .
            .         .
2811        .         .------->  D35IS
2804        .      DIS35
            .         .
            .         .
2818        .         .-------> SIS1AS
2814        .      SIS1AW
            .         .
            .         .
2821        .         .     22-22W
            .         .          .
```

```
            .          .
2595        .          .-------> D107CB
2591        .     DCB107
            .          .
            .          .
2598        .          .     17-21W
            .          .         V
            .          .         V
2608        .          .     R1821W
            .          .         .
            .          .         .
2617        .          .         .      18-21
            .          .         .          .
            .          .         .          .
2627        .     C18-21.......................
            .          .
            .          .
2630     NULL6............
            .
            .
2633        .      23-22
            .          .
            .          .
2647        .          .         .<-------  SD31BS
2643        .          .     SD31BS
            .          .         .
            .          .         .
2648        .     CSD31C............
            .          .
            .          .
2657        .          .-------> SD31CS
2651        .     SD31C
            .          .
            .          .
2664        .          .-------> D2322W
2660        .     D2322E
            .          .
            .          .
2670        .          .         .<-------  D27CB
2667        .          .      D27CB
            .          .         V
            .          .         V
2671        .          .      R27E
            .          .         .
            .          .         .
2679        .          .         .      24-22
            .          .         .          .
            .          .         .          .
2693        .          .         .          .-------> D2422R
2689        .          .         .     RET240
            .          .         .          .
            .          .         .          .
2696        .      CIS27........................
            .          .
            .          .
2707        .          .-------> D27IS
2700        .      DIS27
            .          .
            .          .
2713        .          .         .<-------  D35CB
```

```
2477        .          .     16-21W
            .          .          .
            .          .          .
2492        .          .          .          .<-------   D99BH
2489        .          .          .      D99BH
            .          .          .          .
            .          .          .          .
2493        .          .       C99B............
            .          .          .
            .          .          .
2501        .          .          .------->   S99BW
2497        .          .      S99BS
            .          .          V
            .          .          V
2504        .          .       R99E
            .          .          .
            .          .          .
2512        .      CCB99............
            .          .
            .          .
2521        .          .------->   D99CB
2516        .      DCB99
            .          V
            .          V
2524        .      RCB14
            .          .
            .          .
2532        .          .     17-21E
            .          .          .
            .          .          .
2545        .          .          .          .<-------   S99BW
2542        .          .          .      S99BW
            .          .          .          V
            .          .          .          V
2546        .          .          .     R1721W
            .          .          .          .
            .          .          .          .
2555        .          .     C1721E............
            .          .          .
            .          .          .
2562        .          .          .------->  D1721W
2558        .          .     D1721S
            .          .          .
            .          .          .
2565        .       CCB8............
            .          .
            .          .
2572        .          .------->   SCB8S
2568        .      SCB8W
            .          V
            .          V
2575        .      RCB15
            .          .
            .          .
2586        .          .          .<-------  D1721W
2583        .          .     D1721W
            .          .          .
            .          .          .
2587        .     CCB107............
            .          .
```

```
.          .          .
.          .          .
2359       .          .-------> S91EW
2355       .          .      S91ES
.          .          .          V
.          .          .          V
2362       .          .       R91J
.          .          .          .
.          .          .          .
2370       .      CCB91............
.          .          .
.          .          .
2378       .          .-------> D91CB
2374       .      DCB91
.          .          V
.          .          V
2381       .      RCB12
.          .          .
.          .          .
2389       .          .     16-21E
.          .          .          .
.          .          .          .
2404       .          .          .          .<-------  S91EW
2401       .          .          .      S91EW
.          .          .          .          V
.          .          .          .          V
2405       .          .          .     R1621W
.          .          .          .          .
.          .          .          .          .
2416       .          .     C16-21............
.          .          .          .
.          .          .          .
2425       .          .          .-------> D1621W
2421       .          .     D1621S
.          .          .          .
.          .          .          .
2428       .       CCB7............
.          .          .
.          .          .
2437       .          .-------> SCB7S
2433       .      SCB7W
.          .          V
.          .          V
2440       .      RCB13
.          .          .
.          .          .
2453       .          .          .<-------  D1621W
2450       .          .     D1621W
.          .          .          V
.          .          .          V
2454       .          .       RAF4
.          .          .          .
.          .          .          .
2464       .      CCBAF............
.          .          .
.          .          .
2474       .          .-------> DCBAFS
2470       .      DCBAF
.          .          .
.          .          .
```

```
2245        .         .       R83M
            .         .         .
            .         .         .
2253        .     CCB83............
            .         .
            .         .
2261        .         .-------->  D83CB
2257        .     DCB83
            .         V
            .         V
2264        .     RCB10
            .         .
            .         .
2275        .         .         .<-------   SBH7S
2272        .         .      SBH7S
            .         .         V
            .         .         V
2276        .         .     R1521S
            .         .         .
            .         .         .
2285        .         .         .      15-21
            .         .         .         .
            .         .         .         .
2299        .         .         .         .-------->    D15
2295        .         .         .      RET15
            .         .         .         .
            .         .         .         .
2305        .         .         .         .          .<-------   S83GW
2302        .         .         .         .      S83GW
            .         .         .         .          V
            .         .         .         .          V
2306        .         .         .         .     R1521W
            .         .         .         .          .
            .         .         .         .          .
2315        .         .     C15-21........................
            .         .         .
            .         .         .
2322        .         .         .-------> D1521W
2318        .         .     D1521S
            .         .         .
            .         .         .
2325        .      CCB6............
            .         .
            .         .
2332        .         .-------->  SCB6S
2328        .     SCB6W
            .         V
            .         V
2335        .     RCB11
            .         .
            .         .
2346        .         .         .<-------   D91BH
2343        .         .      D91BH
            .         .         .
            .         .         .
2350        .         .         .         .<-------  D1521W
2347        .         .         .      D1521W
            .         .         .         .
            .         .         .         .
2351        .         .      C91E............
```

```
2145    .       .     C1421E.......................
        .       .         .
        .       .         .
        .       .         .-------->   GCDC3
2148    .       .       DC3
        .       .         .
        .       .         .
2157    .       .         .-------->  D1421X
2154    .       .     D1421E
        .       .         .
        .       .         .
2160    .       .         .     14-21W
        .       .         .          .
        .       .         .          .
2174    .       .         .          .-------->  D1421P
2170    .       .         .     RET14W
        .       .         .          .
        .       .         .          .
2177    .       .     C1421W............
        .       .         .
        .       .         .
2184    .       .         .-------->  D1421W
2180    .       .     D1421S
        .       .         .
        .       .         .
2187    .     CCB5............
        .       .
        .       .
        .       .-------->   SCB5S
        .     SCB5W
        .       V
        .       V
2198    .     RCB9
        .       .
        .       .
2209    .       .         .<--------  D1421X
2206    .       .     D1421X
        .       .         V
        .       .         V
2210    .       .     RES14E
        .       .         .
        .       .         .
2221    .       .         .          .<--------   D83BH
2218    .       .         .      D83BH
        .       .         .          V
        .       .         .          V
2222    .       .         .       R83L
        .       .         .          .
        .       .         .          .
2233    .       .         .          .          .<--------  D1421W
2230    .       .         .          .     D1421W
        .       .         .          .          .
        .       .         .          .          .
2234    .       .       C83F........................
        .       .         .
        .       .         .
2242    .       .         .-------->   S83GW
2238    .       .      S83GS
        .       .         V
        .       .         V
```

```
          .          V
2034      .       RCB7
          .          .
          .          .
2045      .          .          .<-------   D75BH
2042      .          .      D75BH
          .          .          V
          .          .          V
2046      .          .       R75M
          .          .          .
          .          .          .
2057      .          .          .          .<-------  D1321W
2054      .          .          .     D1321W
          .          .          .          .
          .          .          .          .
2058      .          .       C75F............
          .          .          .
          .          .          .
2066      .          .          .------->   S75HW
2062      .          .      S75HS
          .          .          V
          .          .          V
2069      .          .       R75N
          .          .          .
          .          .          .
2077      .       CCB75............
          .          .
          .          .
2084      .          .------->   GCDC2
2081      .        DC2
          .          .
          .          .
2091      .          .------->   D75CB
2087      .       DCB75
          .          V
          .          V
2094      .       RCB8
          .          .
          .          .
2105      .          .          .<-------   SBH6S
2102      .          .      SBH6S
          .          .          V
          .          .          V
2106      .          .     R1421S
          .          .          .
          .          .          .
2118      .          .          .          .<-------   S75HW
2115      .          .          .     S75HW
          .          .          .          V
          .          .          .          V
2119      .          .          .     R1421W
          .          .          .          .
          .          .          .          .
2128      .          .          .          .     14-21E
          .          .          .          .          .
          .          .          .          .          .
2142      .          .          .          .          .------->  D1421R
2138      .          .          .          .     RET14E
          .          .          .          .          .
          .          .          .          .          .
```

```
                .           .           .
                .           .           .
1922            .           .           .           .<-------  D1822W
19              .           .           .     D1822W
                .           .           .           .
                .           .           .           .
1923            .           .       C67F ............
                .           .           .
                .           .           .
1931            .           .           .------->   S67GW
1927            .           .       S67GS
                .           .           V
                .           .           V
1934            .           .       R67M
                .           .           .
                .           .           .
1942            .       CCB67............
                .           .
                .           .
1955            .           .------->   D67CB
1946            .       DCB67
                .           V
                .           V
1958            .        RCB6
                .           .
                .           .
1969            .           .           .<-------   SBH5S
1966            .           .       SBH5S
                .           .           V
                .           .           V
1970            .           .     R1321S
                .           .           .
                .           .           .
1979            .           .           .      13-21
                .           .           .           .
                .           .           .           .
1993            .           .           .           .------->  D1321R
1989            .           .           .     RET132
                .           .           .           .
                .           .           .           .
1999            .           .           .           .           .<-------   S67GW
1996            .           .           .           .      S67GW
                .           .           .           .           V
                .           .           .           .           V
2000            .           .           .           .     R1321W
                .           .           .           .           .
                .           .           .           .           .
2009            .           .     C13-21........................
                .           .           .
                .           .           .
2016            .           .           .------->  D1321W
2012            .           .     D1321S
                .           .           .
                .           .           .
19              .        CCB4............
                .           .
                .           .
2031            .           .------->   SCB4S
2022            .       SCB4W
                .           V
```

```
1792    .       .       .-------> S59FW
1788    .       .     S59FS
        .       .       V
        .       .       V
1795    .       .     R59K
        .       .       .
        .       .       .
1803    .     CCB59............
        .       .
        .       .
1819    .       .-------> D59CB
1807    .     DCB59
        .       V
        .       V
1822    .     RCB4
        .       .
        .       .
1833    .       .       .<------- SBH4S
1830    .       .     SBH4S
        .       .       V
        .       .       V
1834    .       .     R1822S
        .       .       .
        .       .       .
1843    .       .       .     18-22
        .       .       .       .
        .       .       .       .
1857    .       .       .       .-------> D1822R
1853    .       .       .    RET180
        .       .       .       .
        .       .       .       .
1863    .       .       .       .       .<------- S59FW
1860    .       .       .       .     S59FW
        .       .       .       .       V
        .       .       .       .       V
1864    .       .       .       .    R1822W
        .       .       .       .       .
        .       .       .       .       .
1873    .       .     C18-22........................
        .       .       .
        .       .       .
1880    .       .       .-------> D1822W
1876    .       .     D1822S
        .       .       .
        .       .       .
1883    .     CCB3 ............
        .       .
        .       .
1896    .       .-------> SCB3S
1887    .     SCB3W
        .       V
        .       V
1899    .     RCB5
        .       .
        .       .
1910    .       .       .<------- D67BH
1907    .       .     D67BH
        .       .       V
        .       .       V
1911    .       .     R67L
```

```
.          .
1685       .          .-------> D51CB
1681       .      DCB51
           .          V
           .          V
1688       .      RCB2
           .          .
           .          .
1699       .          .          .<-------  SBH3S
1696       .          .      SBH3S
           .          .          V
           .          .          V
1700       .          .     R1722S
           .          .          .
           .          .          .
1709       .          .          .      17-22
           .          .          .          .
           .          .          .          .
1723       .          .          .          .-------> D1722R
1719       .          .          .     RET170
           .          .          .          .
           .          .          .          .
1729       .          .          .          .          .<-------  S51FW
1726       .          .          .          .      S51FW
           .          .          .          .          V
           .          .          .          .          V
1730       .          .          .          .     R1722W
           .          .          .          .          .
           .          .          .          .          .
739        .          .     C17-22.......................
           .          .          .
           .          .          .
1746       .          .          .-------> D1722W
1742       .          .     D1722S
           .          .          .
           .          .          .
1749       .      CCB2 ............
           .          .
           .          .
1757       .          .-------> SCB2S
1753       .      SCB2W
           .          V
           .          V
1760       .      RCB3
           .          .
           .          .
1771       .          .          .<-------  D59BH
1768       .          .      D59BH
           .          .          V
           .          .          V
1772       .          .      R59J
           .          .          .
           .          .          .
1783       .          .          .          .<-------  D1722W
1780       .          .          .     D1722W
           .          .          .          .
           .          .          .          .
1784       .          .      C59E ............
           .          .          .
           .          .          .
```

```
1562   .      .      .      .      .<-------  SBH2S
1559   .      .      .      .   SBH2S
       .      .      .      .      V
       .      .      .      .      V
1563   .      .      .      .  R1622S
       .      .      .      .      .
       .      .      .      .      .
1572   .      .      .      .      .     16-22E
       .      .      .      .      .        .
       .      .      .      .      .        .
1585   .      .      .      .      .        .        .<-------  S43EW
1582   .      .      .      .      .        .     S43EW
       .      .      .      .      .        .        V
       .      .      .      .      .        .        V
1586   .      .      .      .      .        .    R1622W
       .      .      .      .      .        .        .
       .      .      .      .      .        .        .
1595   .      .      .   C1622E.................................
       .      .      .      V
       .      .      .      V
1598   .      .      .    RGR5
       .      .      .      .
       .      .      .      .
1608   .   CCB43.......................
       .      .
       .      .
1619   .      .------->  D43CB
1612   .   DCB43
       .      .
       .      .
1622   .      .     16-22W
       .      .        .
       .      .        .
1636   .      .        .------->  D1622W
1632   .      .     D1622S
       .      .        .
       .      .        .
1639   .   CCB1 ............
       .      .
       .      .
1647   .      .------->  SCB1S
1643   .   SCB1W
       .      V
       .      V
1650   .   RCB1
       .      .
       .      .
1661   .      .        .<-------  D1622W
1658   .      .     D1622W
       .      .        .
       .      .        .
1666   .      .        .------->  S51FW
1662   .      .     S51FS
       .      .        V
       .      .        V
1669   .      .     R51J
       .      .        .
       .      .        .
1677   .   CCB51............
       .      .
```

```
1449    .       .       .   D1422W
        .       .       .       .
        .       .       .       .
[illegible]53   .       .       .       .   15-22
        .       .       .       .       .
        .       .       .       .       .
1467    .       .       .       .       .-------> D1522R
1463    .       .       .       .   RET150
        .       .       .       .       .
        .       .       .       .       .
1474    .       .       .       .       .       .<-------  SD39AS
1470    .       .       .       .       .   SD39AS
        .       .       .       .       .       .
        .       .       .       .       .       .
1475    .       .       .       .   CSD39B............
        .       .       .       .       .
        .       .       .       .       .
1484    .       .       .       .       .-------> SD39BS
1478    .       .       .       .   SD39B
        .       .       .       .       .
        .       .       .       .       .
1491    .       .       .       .       .-------> D1522W
1487    .       .       .       .   D1522E
        .       .       .       .       .
        .       .       .       .       .
1494    .   CCB35.................................
        .       .
        .       .
[illegible]05   .       .-------> D35CB
[illegible]98   .   DCB35
        .       .
        .       .
1511    .       .       .<-------   D43BH
1508    .       .   D43BH
        .       .       V
        .       .       V
1512    .       .   R43H
        .       .       .
        .       .       .
1523    .       .       .       .<-------  D1522W
1520    .       .       .   D1522W
        .       .       .       .
        .       .       .       .
1524    .       .   C43E ............
        .       .       .
        .       .       .
1534    .       .       .-------> S43EW
1528    .       .   S43ES
        .       .       V
        .       .       V
1537    .       .   R43I
        .       .       .
        .       .       .
1548    .       .       .       .<-------   D51BH
[illegible]45   .       .   D51BH
        .       .       .       V
        .       .       .       V
1549    .       .       .   RGR4
        .       .       .       .
        .       .       .       .
```

```
          .          .
1339      .          .      8-21W
          .          .          .
          .          .          .
1349      .     C8-21W............
          .          .
          .          .
1355      .          .          .<-------  D821EW
1352      .          .     D821EW
          .          .          V
          .          .          V
1356      .          .      RES8N
          .          .          .
          .          .          .
1364   NULL5........................
          .
          .
1370      .          .<-------   D27BH
1367      .      D27BH
          .          V
          .          V
1371      .      R27D
          .          .
          .          .
1379      .          .      13-22
          .          .          .
          .          .          .
1389      .          .          .      14-22
          .          .          .          .
          .          .          .          .
1403      .          .          .          .          .<-------  SD31AS
1399      .          .          .          .     SD31AS
          .          .          .          .          .
          .          .          .          .          .
1404      .          .          .     CSD31B............
          .          .          .          .
          .          .          .          .
1413      .          .          .          .-------> SD31BS
1407      .          .          .     SD31B
          .          .          .          .
          .          .          .          .
1420      .          .          .          .-------> D1422W
1416      .          .          .     D1422E
          .          .          .          .
          .          .          .          .
1423      .      CCB27........................
          .          .
          .          .
1434      .          .------->   D27CB
1427      .      DCB27
          .          .
          .          .
1440      .          .          .<-------   D35BH
1437      .          .      D35BH
          .          .          V
          .          .          V
1441      .          .      R35G
          .          .          .
          .          .          .
1452      .          .          .          .<-------  D1422W
```

```
.          .          .
.          .          .
1210       .          .      DGAAFS
.          .          .          V
.          .          .          V
1214       .          .        RAF2
.          .          .          .
.          .          .          .
1224       .          .     CAFA............
.          .          .        V
.          .          .        V
1229       .          .     RAF3
.          .          .        .
.          .          .        .
1242       .          .          .<-------   D921W
1239       .          .      D921W
.          .          .          .
.          .          .          .
1243       .      CBHAF........................
.          .
.          .
1249       .          .    9-21W
.          .          .        .
.          .          .        .
1266       .          .        .------->   S99AW
1261       .          .    S99AS
.          .          .        V
.          .          .        V
1269       .          .     R99C
.          .          .        .
.          .          .        .
1279       .       CBH6............
.          .
.          .
1287       .          .------->   D99BH
1283       .      DBH99
.          .        V
.          .        V
1290       .      RBH14
.          .
.          .
1301       .          .    8-21E
.          .          .        .
.          .          .        .
1314       .          .          .<-------   S99AW
1311       .          .      S99AW
.          .          .          V
.          .          .          V
1315       .          .      R821EW
.          .          .          .
.          .          .          .
1324       .          .   C8-21E............
.          .          .        .
.          .          .        .
1331       .          .        .------->  D821EW
1327       .          .   D821ES
.          .          .        .
.          .          .        .
1334       .       CBH7............
.          .
```

```
          .         .         .
1094      .         .         .-------> D1021W
1090      .         .     D1021S
          .         .         .
          .         .         .
1097      .         .         .     D91GA
          .         .         .        V
          .         .         .        V
1099      .         .         .      R91G
          .         .         .        .
          .         .         .        .
1110      .         .         .        .          .<------- D1021W
1107      .         .         .        .     D1021W
          .         .         .        .          .
          .         .         .        .          .
1111      .         .         .      C91D............
          .         .         .        .
          .         .         .        .
1119      .         .         .        .-------> S91DW
1115      .         .         .     S91DS
          .         .         .        V
          .         .         .        V
1122      .         .         .      R91H
          .         .         .        .
          .         .         .        .
1130      .       CBH5........................
          .         .
          .         .
1142      .         .-------> SBH7S
1134      .       SBH7W
          .         .
          .         .
1149      .         .-------> D91BH
1145      .       DBH91
          .         V
          .         V
1152      .       RBH13
          .         .
          .         .
1160      .         .     SGA9S
          .         .         V
          .         .         V
1162      .         .     R921S
          .         .         .
          .         .         .
1171      .         .         .     9-21E
          .         .         .        .
          .         .         .        .
1186      .         .         .        .          .<------- S91DW
1183      .         .         .        .     S91DW
          .         .         .        .          V
          .         .         .        .          V
1187      .         .         .        .     R921W
          .         .         .        .          .
          .         .         .        .          .
1198      .         .     C9-21........................
          .         .         .
          .         .         .
1207      .         .         .-------> D921W
1203      .         .     D921S
```

```
.          .
975        .          .-------->   SBH6S
965        .      SBH6W
           .          V
           .          V
978        .      RBH11
           .          .
           .          .
986        .          .      D83GA
           .          .          V
           .          .          V
988        .          .       R83J
           .          .          .
           .          .          .
999        .          .          .          .<-------  D1121W
996        .          .          .     D1121W
           .          .          .          .
           .          .          .          .
1000       .          .       C83E............
           .          .          .
           .          .          .
1008       .          .          .-------->   S83FW
1004       .          .      S83FS
           .          .          V
           .          .          V
1011       .          .       R83K
           .          .          .
           .          .          .
019        .      CBH83............
           .          .
           .          .
1035       .          .-------->   D83BH
1023       .      DBH83
           .          V
           .          V
1038       .      RBH12
           .          .
           .          .
1046       .          .      SGA8S
           .          .          V
           .          .          V
1048       .          .     R1021S
           .          .          .
           .          .          .
1057       .          .          .      10-21
           .          .          .          .
           .          .          .          .
1071       .          .          .          .-------->  D1021R
1067       .          .          .      RET10
           .          .          .          .
           .          .          .          .
1077       .          .          .          .          .<-------   S83FW
1074       .          .          .          .      S83FW
           .          .          .          .          V
           .          .          .          .          V
1078       .          .          .          .     R1021W
           .          .          .          .          .
           .          .          .          .          .
1087       .          .     C10-21........................
           .          .          .
```

```
852          D75GA
                V
                V
854          R75K
                .
                .
865                        .<-------  D1221W
862                  D1221W
                           .
                           .
866          C75E............
                .
                .
874                        .------->   S75GW
870          S75GS
                V
                V
877          R75L
                .
                .
885       CBH75............
             .
             .
899          .------->   D75BH
889       DBH75
             V
             V
902       RBH10
             .
             .
910          SGA7S
                V
                V
912          R1121S
                .
                .
921                  11-21
                           .
                           .
935                        .------->  D1121R
931                  RET11
                           .
                           .
941                        .          .<-------   S75GW
938                        .      S75GW
                           .          V
                           .          V
942                        .     R1121W
                           .          .
                           .          .
951          C11-21........................
                .
                .
958                        .------->  D1121W
954          D1121S
                .
                .
961       CBH4............
             .
```

```
731   .     .     .     .<-------  D722W
728   .     .     .  D722W
      .     .     .     .
      .     .     .     .
732   .     .  C67E .............
      .     .     .
      .     .     .
740   .     .     .-------> S67FW
736   .     .  S67FS
      .     .     V
      .     .     V
743   .     .  R67K
      .     .     .
      .     .     .
751   .  CBH67............
      .     .
      .     .
765   .     .-------> D67BH
755   .  DBH67
      .     V
      .     V
768   .   RBH8
      .     .
      .     .
776   .     .   SGA6S
      .     .     V
      .     .     V
778   .     .  R1221S
      .     .     .
      .     .     .
787   .     .     .  12-21
      .     .     .     .
      .     .     .     .
801   .     .     .     .-------> D1221R
797   .     .     .  RET12
      .     .     .     .
      .     .     .     .
807   .     .     .     .     .<-------  S67FW
804   .     .     .     .  S67FW
      .     .     .     .     V
      .     .     .     .     V
808   .     .     .     .  R1221W
      .     .     .     .     .
      .     .     .     .     .
817   .     .  C12-21........................
      .     .     .
      .     .     .
824   .     .     .-------> D1221W
820   .     .  D1221S
      .     .     .
      .     .     .
827   .   CBH3............
      .     .
      .     .
841   .     .-------> SBH5S
831   .  SBH5W
      .     V
      .     V
844   .   RBH9
      .     .
```

```
608     .       .       .<-------  D822WW
605     .       .   D822WW
        .       .       .
        .       .       .
613     .       .       .------->  S59EW
609     .       .   S59ES
        .       .       V
        .       .       V
616     .       .   R59I
        .       .       .
        .       .       .
624     .   CBH59............
        .       .
        .       .
638     .       .------->  D59BH
628     .   DBH59
        .       V
        .       V
641     .   RBH6
        .       .
        .       .
649     .       .   SGA5S
        .       .       V
        .       .       V
651     .       .   R722S
        .       .       .
        .       .       .
660     .       .       .       7-22
        .       .       .         .
        .       .       .         .
673     .       .       .         .         .<-------  S59EW
670     .       .       .         .     S59EW
        .       .       .         .         V
        .       .       .         .         V
674     .       .       .         .     R722W
        .       .       .         .         .
        .       .       .         .         .
683     .       .   C7-22........................
        .       .       .
        .       .       .
690     .       .       .------->  D722W
686     .       .   D722S
        .       .       .
        .       .       .
693     .   CBH2 ............
        .       .
        .       .
707     .       .------->  SBH4S
697     .   SBH4W
        .       V
        .       V
710     .   RBH7
        .       .
        .       .
718     .       .   D67GA
        .       .       V
        .       .       V
720     .       .   R67J
        .       .       .
        .       .       .
```

```
480   .         .      C51D ............
      .         .         .
      .         .         .
94    .         .         .-------->  S51EW
484   .         .      S51ES
      .         .         V
      .         .         V
497   .         .       R51I
      .         .         .
      .         .         .
505   .      CBH51............
      .         .
      .         .
519   .         .-------->  D51BH
509   .      DBH51
      .         .
      .         .
522   .         .     D822ES
      .         .         .
      .         .         .
524   .         .         .     D822E1
      .         .         .          .
      .         .         .          .
529   .         .         .          .          .<-------  S51EW
526   .         .         .          .      S51EW
      .         .         .          .         V
      .         .         .          .         V
530   .         .         .          .     R822EW
      .         .         .          .          .
      .         .         .          .          .
539   .         .     C822E1......................
      .         .         .
      .         .         .
542   .      CBH51b...........
      .         .
      .         .
550   .         .-------->  SBH51
546   .      SBH51
      .         V
      .         V
553   .      R822WW
      .         .
      .         .
562   .         .      8-22W
      .         .         .
      .         .         .
576   .         .         .-------->  D822WW
572   .         .     D822WS
      .         .         .
      .         .         .
579   .      C8-22W...........
      .         .
      .         .
594   .         .-------->  SBH3S
84    .      SBH3W
      .         V
      .         V
597   .      RBH5
      .         .
      .         .
```

```
369     .       .       .-------> S43DW
363     .       .   S43DS
        .       .       V
        .       .       V
372     .       .   R43G
        .       .       .
        .       .       .
380     .   CBH43............
        .       .
        .       .
391     .       .-------> D43BH
384     .   DBH43
        .       V
        .       V
394     .   RBH3
        .       .
        .       .
402     .       .   SGA3S
        .       .       V
        .       .       V
404     .       .   R922S
        .       .       .
        .       .       .
413     .       .       .       9-22
        .       .       .         .
        .       .       .         .
426     .       .       .         .         .<-------  S43DW
423     .       .       .         .     S43DW
        .       .       .         .         V
        .       .       .         .         V
427     .       .       .         .     R922W
        .       .       .         .         .
        .       .       .         .         .
436     .       .   C9-22........................
        .       .       .
        .       .       .
443     .       .       .-------> D922W
439     .       .   D922S
        .       .       .
        .       .       .
446     .   CBH1 ............
        .       .
        .       .
455     .       .-------> SBH2S
450     .   SBH2W
        .       V
        .       V
458     .   RBH4
        .       .
        .       .
466     .       .   D51GA
        .       .       V
        .       .       V
468     .       .   R51H
        .       .       .
        .       .       .
479     .       .       .         .<-------  D922W
476     .       .       .     D922W
        .       .       .         .
        .       .       .         .
```

```
253          .          .      R35E
             .          .         .
             .          .         .
264          .          .         .          .<-------  D1122W
261          .          .         .     D1122W
             .          .         .          .
             .          .         .          .
265          .          .      C35C ............
             .          .         V
             .          .         V
269          .          .      R35F
             .          .         .
             .          .         .
282          .          .         .          .<-------   SBH1W
277          .          .         .      SBH1W
             .          .         .          V
             .          .         .          V
283          .          .         .      RBH2
             .          .         .          .
             .          .         .          .
291          .          .         .          .      SGA2S
             .          .         .          .          V
             .          .         .          .          V
293          .          .         .          .     R1022S
             .          .         .          .          .
             .          .         .          .          .
302          .          .         .          .          .       10-22
             .          .         .          .          .          .
             .          .         .          .          .          .
312          .          .         .          .     C10-22............
             .          .         .          .          .
             .          .         .          .          .
321          .          .         .          .          .-------> SD39AS
315          .          .         .          .     SD39A
             .          .         .          .          .
             .          .         .          .          .
328          .          .         .          .          .-------> D1022W
324          .          .         .          .     D1022E
             .          .         .          .          .
             .          .         .          .          .
331          .      CBH35.................................
             .          .
             .          .
342          .          .------->  D35BH
335          .      DBH35
             .          .
             .          .
345          .          .      D43GA
             .          .         V
             .          .         V
347          .          .      R43F
             .          .         .
             .          .         .
358          .          .         .          .<-------  D1022W
355          .          .         .     D1022W
             .          .         .          .
             .          .         .          .
359          .          .      C43D ............
             .          .         .
             .          .         .
```

```
                SCHEMATIC DIAGRAM OF STREAM NETWORK
INPUT
 LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

  NO.      (.) CONNECTOR        (<---) RETURN OF DIVERTED OR PUMPED FLOW

  152       NULL4
                .
                .
  154           .       11-22
                .          .
                .          .
  168           .          .-------> D1122W
  164           .      D1122S
                .          .
                .          .
  171           .          .      SGA1S
                .          .          V
                .          .          V
  173           .          .     R1122S
                .          .          .
                .          .          .
  182           .      C11-22............
                .          .
                .          .
  191           .          .-------> SD31AS
  185           .      SD31A
                .          .
                .          .
  199           .          .------->  SBH1W
  194           .       SBH1E
                .          V
                .          V
  202           .       RBH1
                .          .
                .          .
  210           .          .      D27GA
                .          .          V
                .          .          V
  212           .          .      R27C
                .          .          .
                .          .          .
  220           .          .          .      12-22
                .          .          .          .
                .          .          .          .
  234           .          .          .          .-------> D1222R
  230           .          .          .     RET120
                .          .          .          .
                .          .          .          .
  237           .       CBH27........................
                .          .
                .          .
  248           .          .------->  D27BH
  241           .       DBH27
                .          .
                .          .
  251           .          .      D35GA
                .          .          V
                .          .          V
```

ROUTED TO	RBH2	691.	12.92	155.	39.	13.	3.50
HYDROGRAPH AT	SGA2S	412.	12.67	149.	48.	16.	4.68
ROUTED TO	R1022S	408.	12.83	148.	48.	16.	4.68
HYDROGRAPH AT	10-22	526.	12.58	157.	48.	16.	.99
2 COMBINED AT	C10-22	902.	12.75	302.	95.	32.	5.70
DIVERSION TO	SD39AS	164.	12.00	127.	51.	17.	5.70
HYDROGRAPH AT	SD39A	738.	12.75	176.	44.	15.	5.70
DIVERSION TO	D1022W	436.	12.75	104.	26.	9.	5.70
HYDROGRAPH AT	D1022E	303.	12.75	72.	18.	6.	5.70
4 COMBINED AT	CBH35	1143.	12.92	294.	79.	26.	7.10
DIVERSION TO	D35BH	1143.	12.92	294.	79.	26.	7.10
HYDROGRAPH AT	DBH35	0.	.00	0.	0.	0.	7.10
HYDROGRAPH AT	D43GA	328.	12.83	139.	49.	16.	4.68
ROUTED TO	R43F	325.	13.00	139.	49.	16.	4.68
HYDROGRAPH AT	D1022W	436.	12.75	104.	26.	9.	5.70
2 COMBINED AT	C43D	736.	12.92	243.	75.	25.	5.70
DIVERSION TO	S43DW	363.	12.92	87.	22.	7.	5.70
HYDROGRAPH AT	S43DS	373.	12.92	155.	53.	18.	5.70
ROUTED TO	R43G	371.	13.00	155.	53.	18.	5.70
2 COMBINED AT	CBH43	371.	13.00	155.	53.	18.	5.70
DIVERSION TO	D43BH	233.	13.00	119.	44.	15.	5.70
HYDROGRAPH AT	DBH43	138.	13.00	36.	9.	3.	5.70
ROUTED TO	RBH3	135.	13.25	36.	9.	3.	5.70
HYDROGRAPH AT	SGA3S	545.	13.08	166.	45.	15.	8.07
ROUTED TO	R922S	533.	13.33	166.	45.	15.	8.07
HYDROGRAPH AT	9-22	609.	12.58	180.	56.	19.	.99
HYDROGRAPH AT	S43DW	363.	12.92	87.	22.	7.	5.70
ROUTED TO	R922W	351.	13.25	87.	22.	7.	5.70
3 COMBINED AT	C9-22	1278.	13.25	425.	121.	40.	10.10
DIVERSION TO	D922W	435.	13.25	144.	41.	14.	10.10

HYDROGRAPH AT	D922S	844.	13.25	280.	80.	27.	10.10
2 COMBINED AT	CBH1	978.	13.25	316.	89.	30.	10.10
DIVERSION TO	SBH2S	705.	13.25	227.	63.	21.	10.10
HYDROGRAPH AT	SBH2W	273.	13.25	90.	26.	9.	10.10
ROUTED TO	RBH4	270.	13.42	90.	26.	9.	10.10
HYDROGRAPH AT	D51GA	278.	13.33	102.	33.	11.	8.07
ROUTED TO	R51H	275.	13.42	102.	33.	11.	8.07
HYDROGRAPH AT	D922W	435.	13.25	144.	41.	14.	10.10
2 COMBINED AT	C51D	695.	13.33	246.	73.	25.	10.10
DIVERSION TO	S51EW	259.	13.33	45.	11.	4.	10.10
HYDROGRAPH AT	S51ES	436.	13.33	200.	62.	21.	10.10
ROUTED TO	R51I	433.	13.50	200.	62.	21.	10.10
2 COMBINED AT	CBH51	703.	13.42	290.	88.	29.	10.10
DIVERSION TO	D51BH	310.	13.42	53.	13.	4.	10.10
HYDROGRAPH AT	DBH51	393.	13.25	237.	75.	25.	10.10
HYDROGRAPH AT	D822ES	355.	12.67	201.	65.	22.	12.60
HYDROGRAPH AT	D822E1	108.	12.25	11.	3.	1.	.52
HYDROGRAPH AT	S51EW	259.	13.33	45.	11.	4.	10.10
ROUTED TO	R822EW	251.	13.58	45.	11.	4.	10.10
3 COMBINED AT	C822E1	579.	13.58	253.	78.	26.	14.60
2 COMBINED AT	CBH51b	946.	13.58	477.	148.	50.	24.70
DIVERSION TO	SBH51	826.	13.58	358.	90.	30.	24.70
HYDROGRAPH AT	SBH51	120.	11.67	119.	59.	20.	24.70
ROUTED TO	R822WW	120.	12.25	119.	59.	20.	24.70
HYDROGRAPH AT	8-22W	807.	12.08	98.	32.	11.	.49
DIVERSION TO	D822WW	169.	12.08	21.	7.	2.	.49
HYDROGRAPH AT	D822WS	637.	12.08	78.	26.	9.	.49
2 COMBINED AT	C8-22W	725.	12.08	188.	83.	28.	15.10
DIVERSION TO	SBH3S	162.	12.08	9.	2.	1.	15.10
HYDROGRAPH AT	SBH3W	563.	12.08	180.	81.	27.	15.10

ROUTED TO	RBH5	545.	12.25	179.	81.	27.	15.10
HYDROGRAPH AT	D822WW	169.	12.08	21.	7.	2.	.49
DIVERSION TO	S59EW	78.	12.08	5.	1.	0.	.49
HYDROGRAPH AT	S59ES	91.	12.08	15.	5.	2.	.49
ROUTED TO	R59I	74.	12.33	15.	5.	2.	.49
2 COMBINED AT	CBH59	609.	12.25	193.	86.	29.	15.10
DIVERSION TO	D59BH	133.	12.25	8.	2.	1.	15.10
HYDROGRAPH AT	DBH59	476.	12.25	186.	84.	29.	15.10
ROUTED TO	RBH6	469.	12.33	186.	84.	29.	15.10
HYDROGRAPH AT	SGA5S	440.	14.42	111.	28.	9.	17.90
ROUTED TO	R722S	420.	14.92	110.	28.	9.	17.90
HYDROGRAPH AT	7-22	532.	12.58	166.	52.	17.	.97
HYDROGRAPH AT	S59EW	78.	12.08	5.	1.	0.	.49
ROUTED TO	R722W	37.	12.75	5.	1.	0.	.49
3 COMBINED AT	C7-22	548.	12.67	266.	77.	26.	19.30
DIVERSION TO	D722W	197.	12.67	96.	28.	9.	19.30
HYDROGRAPH AT	D722S	351.	12.67	171.	50.	17.	19.30
2 COMBINED AT	CBH2	756.	12.50	349.	131.	44.	25.80
DIVERSION TO	SBH4S	202.	12.50	22.	6.	2.	25.80
HYDROGRAPH AT	SBH4W	553.	12.50	326.	125.	42.	25.80
ROUTED TO	RBH7	552.	12.58	326.	125.	42.	25.80
HYDROGRAPH AT	D67GA	180.	14.58	52.	13.	4.	17.90
ROUTED TO	R67J	175.	14.75	52.	13.	4.	17.90
HYDROGRAPH AT	D722W	197.	12.67	96.	28.	9.	19.30
2 COMBINED AT	C67E	347.	14.83	147.	41.	14.	19.30
DIVERSION TO	S67FW	164.	14.83	64.	16.	5.	19.30
HYDROGRAPH AT	S67FS	183.	14.83	82.	25.	8.	19.30
ROUTED TO	R67K	177.	15.08	82.	25.	8.	19.30
2 COMBINED AT	CBH67	654.	12.75	410.	150.	51.	21.30
DIVERSION TO	D67BH	90.	12.75	17.	4.	1.	21.30

HYDROGRAPH AT	DBH67	564.	12.75	394.	146.	49.	21.30
ROUTED TO	RBH8	563.	12.83	393.	146.	49.	21.30
HYDROGRAPH AT	SGA6S	182.	14.75	83.	21.	7.	27.66
ROUTED TO	R1221S	177.	15.08	81.	21.	7.	27.66
HYDROGRAPH AT	12-21	733.	12.50	178.	49.	16.	1.00
DIVERSION TO	D1221R	44.	12.50	8.	2.	1.	1.00
HYDROGRAPH AT	RET12	689.	12.50	170.	47.	16.	1.00
HYDROGRAPH AT	S67FW	164.	14.83	64.	16.	5.	19.30
ROUTED TO	R1221W	144.	15.25	64.	16.	5.	19.30
3 COMBINED AT	C12-21	700.	13.00	315.	86.	29.	31.35
DIVERSION TO	D1221W	246.	13.00	108.	30.	10.	31.35
HYDROGRAPH AT	D1221S	402.	13.00	176.	48.	16.	31.35
2 COMBINED AT	CBH3	959.	13.00	560.	191.	64.	31.35
DIVERSION TO	SBH5S	115.	13.00	24.	6.	2.	31.35
HYDROGRAPH AT	SBH5W	843.	13.00	536.	185.	62.	31.35
ROUTED TO	RBH9	841.	13.08	536.	185.	62.	31.35
HYDROGRAPH AT	D75GA	459.	14.83	238.	70.	24.	27.66
ROUTED TO	R75K	453.	15.00	237.	70.	24.	27.66
HYDROGRAPH AT	D1221W	246.	13.00	108.	30.	10.	31.35
2 COMBINED AT	C75E	550.	15.08	333.	97.	34.	31.35
DIVERSION TO	S75GW	173.	15.08	102.	27.	9.	31.35
HYDROGRAPH AT	S75GS	378.	15.08	231.	71.	25.	31.35
ROUTED TO	R75L	375.	15.25	230.	71.	25.	31.35
2 COMBINED AT	CBH75	1183.	13.08	763.	253.	87.	31.35
DIVERSION TO	D75BH	145.	13.08	43.	11.	4.	31.35
HYDROGRAPH AT	DBH75	1038.	13.08	720.	242.	84.	31.35
ROUTED TO	RBH10	1036.	13.17	720.	242.	84.	31.35
HYDROGRAPH AT	SGA7S	231.	14.08	140.	35.	12.	30.20
ROUTED TO	R1121S	227.	14.42	138.	35.	12.	30.20
HYDROGRAPH AT	11-21	635.	12.58	150.	41.	14.	.99

DIVERSION TO	D1121R	178.	12.58	28.	7.	2.	.99
HYDROGRAPH AT	RET11	457.	12.58	123.	34.	11.	.99
HYDROGRAPH AT	S75GW	173.	15.08	102.	27.	9.	31.35
ROUTED TO	R1121W	170.	15.33	101.	27.	9.	31.35
3 COMBINED AT	C11-21	634.	13.33	332.	90.	30.	34.87
DIVERSION TO	D1121W	190.	13.33	100.	27.	9.	34.87
HYDROGRAPH AT	D1121S	444.	13.33	233.	63.	21.	34.87
2 COMBINED AT	CBH4	1467.	13.17	943.	303.	104.	34.87
DIVERSION TO	SBH6S	133.	13.17	44.	11.	4.	34.87
HYDROGRAPH AT	SBH6W	1334.	13.17	899.	291.	100.	34.87
ROUTED TO	RBH11	1334.	13.25	898.	291.	100.	34.87
HYDROGRAPH AT	D83GA	91.	13.00	30.	8.	3.	30.20
ROUTED TO	R83J	81.	14.50	30.	8.	3.	30.20
HYDROGRAPH AT	D1121W	190.	13.33	100.	27.	9.	34.87
2 COMBINED AT	C83E	264.	13.25	128.	34.	11.	34.87
DIVERSION TO	S83FW	83.	13.25	39.	10.	3.	34.87
HYDROGRAPH AT	S83FS	181.	13.25	88.	24.	8.	34.87
ROUTED TO	R83K	180.	13.42	88.	24.	8.	34.87
2 COMBINED AT	CBH83	1511.	13.33	988.	316.	108.	34.34
DIVERSION TO	D83BH	0.	13.25	0.	0.	0.	34.34
HYDROGRAPH AT	DBH83	1510.	13.33	988.	316.	108.	34.34
ROUTED TO	RBH12	1507.	13.42	986.	316.	108.	34.34
HYDROGRAPH AT	SGA8S	126.	13.00	47.	12.	4.	34.46
ROUTED TO	R1021S	119.	13.33	47.	12.	4.	34.46
HYDROGRAPH AT	10-21	586.	12.58	160.	45.	15.	.98
DIVERSION TO	D1021R	410.	12.58	81.	21.	7.	.98
HYDROGRAPH AT	RET10	312.	13.50	84.	24.	8.	.98
HYDROGRAPH AT	S83FW	83.	13.25	39.	10.	3.	34.87
ROUTED TO	R1021W	77.	13.58	39.	10.	3.	34.87
3 COMBINED AT	C10-21	309.	13.83	144.	39.	13.	43.32

DIVERSION TO	D1021W	133.	13.83	62.	17.	6.	43.32
HYDROGRAPH AT	D1021S	176.	13.83	82.	22.	7.	43.32
HYDROGRAPH AT	D91GA	327.	13.17	145.	36.	12.	34.46
ROUTED TO	R91G	320.	13.33	145.	36.	12.	34.46
HYDROGRAPH AT	D1021W	133.	13.83	62.	17.	6.	43.32
2 COMBINED AT	C91D	421.	13.33	200.	51.	17.	43.32
DIVERSION TO	S91DW	180.	13.33	85.	21.	7.	43.32
HYDROGRAPH AT	S91DS	241.	13.33	115.	30.	10.	43.32
ROUTED TO	R91H	236.	13.50	114.	30.	10.	43.32
3 COMBINED AT	CBH5	1851.	13.42	1152.	360.	123.	43.32
DIVERSION TO	SBH7S	0.	13.42	0.	0.	0.	43.32
HYDROGRAPH AT	SBH7W	1851.	13.42	1152.	360.	123.	43.32
DIVERSION TO	D91BH	0.	.00	0.	0.	0.	43.32
HYDROGRAPH AT	DBH91	1851.	13.42	1152.	360.	123.	43.32
ROUTED TO	RBH13	1848.	13.58	1150.	360.	123.	43.32
HYDROGRAPH AT	SGA9S	170.	13.25	69.	17.	6.	35.26
ROUTED TO	R921S	165.	13.58	69.	17.	6.	35.26
HYDROGRAPH AT	9-21E	360.	12.67	106.	27.	9.	.86
HYDROGRAPH AT	S91DW	180.	13.33	85.	21.	7.	43.32
ROUTED TO	R921W	177.	13.58	85.	21.	7.	43.32
3 COMBINED AT	C9-21	525.	13.50	237.	60.	20.	44.97
DIVERSION TO	D921W	205.	13.50	93.	23.	8.	44.97
HYDROGRAPH AT	D921S	320.	13.50	145.	37.	12.	44.97
HYDROGRAPH AT	DGAAFS	1146.	13.33	755.	299.	121.	35.26
ROUTED TO	RAF2	1143.	13.42	755.	299.	121.	35.26
2 COMBINED AT	CAFA	1427.	13.42	877.	331.	132.	44.97
ROUTED TO	RAF3	1426.	13.50	877.	331.	132.	44.97
HYDROGRAPH AT	D921W	205.	13.50	93.	23.	8.	44.97
3 COMBINED AT	CBHAF	3460.	13.58	2107.	698.	262.	44.97
HYDROGRAPH AT	9-21W	31.	12.83	13.	4.	1.	.11

DIVERSION TO	S99AW	31.	12.83	13.	4.	1.	.11
HYDROGRAPH AT	S99AS	0.	12.42	0.	0.	0.	.11
ROUTED TO	R99C	0.	12.92	0.	0.	0.	.11
2 COMBINED AT	CBH6	3460.	13.58	2107.	698.	262.	45.16
DIVERSION TO	D99BH	0.	.00	0.	0.	0.	45.16
HYDROGRAPH AT	DBH99	3458.	13.58	2106.	698.	262.	45.16
ROUTED TO	RBH14	3461.	13.58	2106.	698.	262.	45.16
HYDROGRAPH AT	8-21E	216.	12.58	55.	14.	5.	.51
HYDROGRAPH AT	S99AW	31.	12.83	13.	4.	1.	.11
ROUTED TO	R821EW	30.	13.25	13.	4.	1.	.11
2 COMBINED AT	C8-21E	216.	12.58	66.	17.	6.	46.01
DIVERSION TO	D821EW	105.	12.67	32.	8.	3.	46.01
HYDROGRAPH AT	D821ES	82.	12.67	25.	6.	2.	46.01
2 COMBINED AT	CBH7	3502.	13.58	2120.	703.	264.	46.01
HYDROGRAPH AT	8-21W	173.	12.42	34.	9.	3.	.27
2 COMBINED AT	C8-21W	3530.	13.58	2135.	710.	266.	46.29
HYDROGRAPH AT	D821EW	105.	12.67	32.	8.	3.	46.01
ROUTED TO	RES8N	0.	19.08	0.	0.	0.	46.01
3 COMBINED AT	NULL5	7791.	13.50	4190.	1331.	480.	1.00
HYDROGRAPH AT	D27BH	963.	12.92	245.	68.	23.	21.30
ROUTED TO	R27D	952.	13.08	244.	68.	23.	21.30
HYDROGRAPH AT	13-22	172.	12.42	49.	16.	5.	.25
HYDROGRAPH AT	14-22	535.	12.58	161.	50.	17.	1.00
HYDROGRAPH AT	SD31AS	147.	12.00	126.	57.	19.	3.50
2 COMBINED AT	CSD31B	682.	12.58	287.	107.	36.	1.00
DIVERSION TO	SD31BS	150.	11.75	140.	71.	24.	1.00
HYDROGRAPH AT	SD31B	532.	12.58	147.	37.	12.	1.00
DIVERSION TO	D1422W	255.	12.58	71.	18.	6.	1.00
HYDROGRAPH AT	D1422E	277.	12.58	76.	19.	6.	1.00
3 COMBINED AT	CCB27	1340.	13.00	379.	106.	35.	5.04

DIVERSION TO	D27CB	1340.	13.00	379.	106.	35.	5.04
HYDROGRAPH AT	DCB27	0.	.00	0.	0.	0.	5.04
HYDROGRAPH AT	D35BH	1143.	12.92	294.	79.	26.	7.10
ROUTED TO	R35G	1134.	13.08	294.	79.	26.	7.10
HYDROGRAPH AT	D1422W	255.	12.58	71.	18.	6.	1.00
HYDROGRAPH AT	15-22	492.	12.67	157.	49.	16.	1.00
DIVERSION TO	D1522R	5.	12.58	1.	0.	0.	1.00
HYDROGRAPH AT	RET150	488.	12.67	156.	48.	16.	1.00
HYDROGRAPH AT	SD39AS	164.	12.00	127.	51.	17.	5.70
2 COMBINED AT	CSD39B	652.	12.67	284.	100.	34.	1.00
DIVERSION TO	SD39BS	268.	12.00	200.	79.	27.	1.00
HYDROGRAPH AT	SD39B	384.	12.67	83.	21.	7.	1.00
DIVERSION TO	D1522W	188.	12.67	41.	10.	3.	1.00
HYDROGRAPH AT	D1522E	196.	12.67	43.	11.	4.	1.00
4 COMBINED AT	CCB35	1500.	13.00	402.	106.	35.	9.14
DIVERSION TO	D35CB	1500.	13.00	402.	106.	35.	9.14
HYDROGRAPH AT	DCB35	0.	.00	0.	0.	0.	9.14
HYDROGRAPH AT	D43BH	233.	13.00	119.	44.	15.	5.70
ROUTED TO	R43H	231.	13.17	119.	44.	15.	5.70
HYDROGRAPH AT	D1522W	188.	12.67	41.	10.	3.	1.00
2 COMBINED AT	C43E	384.	13.00	158.	54.	18.	6.67
DIVERSION TO	S43EW	100.	13.00	18.	4.	1.	6.67
HYDROGRAPH AT	S43ES	284.	13.00	141.	49.	17.	6.67
ROUTED TO	R43I	283.	13.08	141.	49.	17.	6.67
HYDROGRAPH AT	D51BH	310.	13.42	53.	13.	4.	10.10
ROUTED TO	RGR4	305.	13.67	53.	13.	4.	10.10
HYDROGRAPH AT	SBH2S	705.	13.25	227.	63.	21.	10.10
ROUTED TO	R1622S	703.	13.33	227.	63.	21.	10.10
HYDROGRAPH AT	16-22E	287.	12.58	89.	28.	9.	.51
HYDROGRAPH AT	S43EW	100.	13.00	18.	4.	1.	6.67

ROUTED TO	R1622W	96.	13.25	18.	4.	1.	6.67
4 COMBINED AT	C1622E	1157.	13.50	378.	107.	36.	11.60
ROUTED TO	RGR5	1149.	13.67	377.	107.	36.	11.60
3 COMBINED AT	CCB43	1391.	13.67	516.	155.	52.	11.60
DIVERSION TO	D43CB	1391.	13.67	516.	155.	52.	11.60
HYDROGRAPH AT	DCB43	0.	.00	0.	0.	0.	11.60
HYDROGRAPH AT	16-22W	697.	12.17	94.	31.	10.	.48
DIVERSION TO	D1622W	495.	12.17	66.	22.	7.	.48
HYDROGRAPH AT	D1622S	202.	12.17	27.	9.	3.	.48
2 COMBINED AT	CCB1	194.	12.17	26.	9.	3.	12.00
DIVERSION TO	SCB1S	104.	12.17	10.	2.	1.	12.00
HYDROGRAPH AT	SCB1W	90.	12.17	17.	6.	2.	12.00
ROUTED TO	RCB1	73.	12.58	17.	6.	2.	12.00
HYDROGRAPH AT	D1622W	495.	12.17	66.	22.	7.	.48
DIVERSION TO	S51FW	229.	12.17	22.	5.	2.	.48
HYDROGRAPH AT	S51FS	266.	12.17	45.	16.	5.	.48
ROUTED TO	R51J	248.	12.25	45.	16.	5.	.48
2 COMBINED AT	CCB51	275.	12.33	60.	22.	7.	12.00
DIVERSION TO	D51CB	135.	12.33	29.	11.	4.	12.00
HYDROGRAPH AT	DCB51	140.	12.33	30.	11.	4.	12.00
ROUTED TO	RCB2	132.	12.50	30.	11.	4.	12.00
HYDROGRAPH AT	SBH3S	162.	12.08	9.	2.	1.	15.10
ROUTED TO	R1722S	84.	12.58	9.	2.	1.	15.10
HYDROGRAPH AT	17-22	1010.	12.25	182.	58.	19.	1.02
DIVERSION TO	D1722R	10.	12.25	1.	0.	0.	1.02
HYDROGRAPH AT	RET170	999.	12.25	181.	58.	19.	1.02
HYDROGRAPH AT	S51FW	229.	12.17	22.	5.	2.	.48
ROUTED TO	R1722W	186.	12.50	22.	5.	2.	.48
3 COMBINED AT	C17-22	1028.	12.42	201.	63.	21.	16.10
DIVERSION TO	D1722W	298.	12.42	58.	18.	6.	16.10

HYDROGRAPH AT	D1722S	730.	12.42	143.	45.	15.	16.10
2 COMBINED AT	CCB2	846.	12.50	172.	55.	18.	18.10
DIVERSION TO	SCB2S	545.	12.50	99.	25.	8.	18.10
HYDROGRAPH AT	SCB2W	301.	12.50	73.	30.	10.	18.10
ROUTED TO	RCB3	295.	12.58	73.	30.	10.	18.10
HYDROGRAPH AT	D59BH	133.	12.25	8.	2.	1.	15.10
ROUTED TO	R59J	98.	12.50	8.	2.	1.	15.10
HYDROGRAPH AT	D1722W	298.	12.42	58.	18.	6.	16.10
2 COMBINED AT	C59E	394.	12.42	66.	20.	7.	16.10
DIVERSION TO	S59FW	223.	12.42	28.	7.	2.	16.10
HYDROGRAPH AT	S59FS	171.	12.42	38.	13.	4.	16.10
ROUTED TO	R59K	162.	12.58	38.	13.	4.	16.10
2 COMBINED AT	CCB59	455.	12.58	110.	43.	15.	18.10
DIVERSION TO	D59CB	161.	12.58	29.	18.	6.	18.10
HYDROGRAPH AT	DCB59	294.	12.58	81.	26.	9.	18.10
ROUTED TO	RCB4	290.	12.75	81.	26.	9.	18.10
HYDROGRAPH AT	SBH4S	202.	12.50	22.	6.	2.	25.80
ROUTED TO	R1822S	173.	12.92	22.	6.	2.	25.80
HYDROGRAPH AT	18-22	626.	12.58	181.	54.	18.	.97
DIVERSION TO	D1822R	3.	12.58	1.	0.	0.	.97
HYDROGRAPH AT	RET180	623.	12.58	181.	54.	18.	.97
HYDROGRAPH AT	S59FW	223.	12.42	28.	7.	2.	16.10
ROUTED TO	R1822W	199.	12.75	28.	7.	2.	16.10
3 COMBINED AT	C18-22	901.	12.83	218.	63.	21.	23.80
DIVERSION TO	D1822W	397.	12.83	96.	28.	9.	23.80
HYDROGRAPH AT	D1822S	505.	12.83	122.	35.	12.	23.80
2 COMBINED AT	CCB3	781.	12.83	202.	61.	20.	25.30
DIVERSION TO	SCB3S	262.	12.83	33.	8.	3.	25.30
HYDROGRAPH AT	SCB3W	519.	12.83	169.	52.	17.	25.30
ROUTED TO	RCB5	515.	12.92	169.	52.	17.	25.30

HYDROGRAPH AT	D67BH	90.	12.75	17.	4.	1.	21.30
ROUTED TO	R67L	82.	13.00	17.	4.	1.	21.30
HYDROGRAPH AT	D1822W	397.	12.83	96.	28.	9.	23.80
2 COMBINED AT	C67F	439.	12.92	105.	30.	10.	37.08
DIVERSION TO	S67GW	258.	12.92	50.	13.	4.	37.08
HYDROGRAPH AT	S67GS	181.	12.92	54.	17.	6.	37.08
ROUTED TO	R67M	176.	13.08	54.	17.	6.	37.08
2 COMBINED AT	CCB67	687.	13.00	226.	70.	24.	25.30
DIVERSION TO	D67CB	144.	13.00	19.	5.	2.	25.30
HYDROGRAPH AT	DCB67	543.	13.00	206.	65.	22.	25.30
ROUTED TO	RCB6	542.	13.08	206.	65.	22.	25.30
HYDROGRAPH AT	SBH5S	115.	13.00	24.	6.	2.	31.35
ROUTED TO	R1321S	102.	13.50	24.	6.	2.	31.35
HYDROGRAPH AT	13-21	698.	12.50	180.	53.	18.	1.00
DIVERSION TO	D1321R	91.	12.50	18.	5.	2.	1.00
HYDROGRAPH AT	RET132	607.	12.50	163.	48.	16.	1.00
HYDROGRAPH AT	S67GW	258.	12.92	50.	13.	4.	37.08
ROUTED TO	R1321W	232.	13.33	50.	13.	4.	37.08
3 COMBINED AT	C13-21	614.	13.17	217.	62.	21.	37.08
DIVERSION TO	D1321W	215.	13.17	76.	22.	7.	37.08
HYDROGRAPH AT	D1321S	399.	13.17	141.	40.	13.	37.08
2 COMBINED AT	CCB4	926.	13.08	343.	104.	35.	37.08
DIVERSION TO	SCB4S	239.	13.08	44.	11.	4.	37.08
HYDROGRAPH AT	SCB4W	688.	13.08	299.	93.	31.	37.08
ROUTED TO	RCB7	687.	13.25	299.	93.	31.	37.08
HYDROGRAPH AT	D75BH	145.	13.08	43.	11.	4.	31.35
ROUTED TO	R75M	139.	13.33	43.	11.	4.	31.35
HYDROGRAPH AT	D1321W	215.	13.17	76.	22.	7.	37.08
2 COMBINED AT	C75F	339.	13.33	112.	31.	10.	40.90
DIVERSION TO	S75HW	339.	13.33	112.	31.	10.	40.90

HYDROGRAPH AT	S75HS	0.	.00	0.	0.	0.	40.90
ROUTED TO	R75N	0.	.00	0.	0.	0.	40.90
2 COMBINED AT	CCB75	687.	13.25	299.	93.	31.	37.08
DIVERSION TO	GCDC2	687.	13.25	299.	93.	31.	37.08
HYDROGRAPH AT	DC2	0.	.00	0.	0.	0.	37.08
DIVERSION TO	D75CB	0.	.00	0.	0.	0.	37.08
HYDROGRAPH AT	DCB75	0.	.00	0.	0.	0.	37.08
ROUTED TO	RCB8	0.	.00	0.	0.	0.	37.08
HYDROGRAPH AT	SBH6S	133.	13.17	44.	11.	4.	34.87
ROUTED TO	R1421S	131.	13.33	44.	11.	4.	34.87
HYDROGRAPH AT	S75HW	339.	13.33	112.	31.	10.	40.90
ROUTED TO	R1421W	336.	13.50	112.	31.	10.	40.90
HYDROGRAPH AT	14-21E	318.	12.50	83.	24.	8.	.43
DIVERSION TO	D1421R	7.	9.25	5.	2.	1.	.43
HYDROGRAPH AT	RET14E	318.	12.50	83.	23.	8.	.43
3 COMBINED AT	C1421E	597.	13.33	224.	61.	20.	41.03
DIVERSION TO	GCDC3	597.	13.33	224.	61.	20.	41.03
HYDROGRAPH AT	DC3	0.	.00	0.	0.	0.	41.03
DIVERSION TO	D1421X	0.	.00	0.	0.	0.	41.03
HYDROGRAPH AT	D1421E	0.	.00	0.	0.	0.	41.03
HYDROGRAPH AT	14-21W	611.	12.33	97.	27.	9.	.56
DIVERSION TO	D1421P	101.	12.00	6.	2.	1.	.56
HYDROGRAPH AT	RET14W	611.	12.33	91.	25.	8.	.56
2 COMBINED AT	C1421W	547.	12.33	79.	22.	7.	41.59
DIVERSION TO	D1421W	273.	12.33	40.	11.	4.	41.59
HYDROGRAPH AT	D1421S	273.	12.33	40.	11.	4.	41.59
2 COMBINED AT	CCB5	273.	12.33	40.	11.	4.	41.59
DIVERSION TO	SCB5S	139.	12.33	16.	4.	1.	41.59
HYDROGRAPH AT	SCB5W	134.	12.33	24.	7.	2.	41.59
ROUTED TO	RCB9	124.	12.58	24.	7.	2.	41.59

HYDROGRAPH AT	D1421X	0.	.00	0.	0.	0.	41.03
ROUTED TO	RES14E	0.	.00	0.	0.	0.	41.03
HYDROGRAPH AT	D83BH	0.	13.25	0.	0.	0.	34.34
ROUTED TO	R83L	0.	13.83	0.	0.	0.	34.34
HYDROGRAPH AT	D1421W	273.	12.33	40.	11.	4.	41.59
3 COMBINED AT	C83F	273.	12.33	40.	11.	4.	41.59
DIVERSION TO	S83GW	93.	12.33	12.	3.	1.	41.59
HYDROGRAPH AT	S83GS	181.	12.33	28.	8.	3.	41.59
ROUTED TO	R83M	168.	12.58	28.	8.	3.	41.59
2 COMBINED AT	CCB83	292.	12.58	51.	15.	5.	41.59
DIVERSION TO	D83CB	105.	12.58	19.	5.	2.	41.59
HYDROGRAPH AT	DCB83	187.	12.58	33.	9.	3.	41.59
ROUTED TO	RCB10	175.	12.75	33.	9.	3.	41.59
HYDROGRAPH AT	SBH7S	0.	13.42	0.	0.	0.	43.32
ROUTED TO	R1521S	0.	14.50	0.	0.	0.	43.32
HYDROGRAPH AT	15-21	605.	12.58	164.	43.	14.	1.01
DIVERSION TO	D15	73.	12.58	12.	3.	1.	1.01
HYDROGRAPH AT	RET15	533.	12.58	152.	40.	13.	1.01
HYDROGRAPH AT	S83GW	93.	12.33	12.	3.	1.	41.59
ROUTED TO	R1521W	77.	12.75	12.	3.	1.	41.59
3 COMBINED AT	C15-21	572.	12.67	152.	40.	13.	48.80
DIVERSION TO	D1521W	188.	12.67	49.	13.	4.	48.80
HYDROGRAPH AT	D1521S	348.	12.67	92.	24.	8.	48.80
2 COMBINED AT	CCB6	519.	12.75	124.	33.	11.	48.80
DIVERSION TO	SCB6S	197.	12.75	42.	11.	4.	48.80
HYDROGRAPH AT	SCB6W	321.	12.75	82.	23.	8.	48.80
ROUTED TO	RCB11	316.	12.83	82.	23.	8.	48.80
HYDROGRAPH AT	D91BH	0.	.00	0.	0.	0.	43.32
HYDROGRAPH AT	D1521W	188.	12.67	49.	13.	4.	48.80
2 COMBINED AT	C91E	188.	12.67	49.	13.	4.	48.80

DIVERSION TO	S91EW	68.	12.67	13.	3.	1.	48.80
HYDROGRAPH AT	S91ES	120.	12.67	36.	10.	3.	48.80
ROUTED TO	R91J	116.	13.00	36.	10.	3.	48.80
2 COMBINED AT	CCB91	428.	12.92	118.	32.	11.	48.80
DIVERSION TO	D91CB	244.	12.92	67.	18.	6.	48.80
HYDROGRAPH AT	DCB91	184.	12.92	51.	14.	5.	48.80
ROUTED TO	RCB12	180.	13.08	51.	14.	5.	48.80
HYDROGRAPH AT	16-21E	425.	12.67	127.	33.	11.	.84
HYDROGRAPH AT	S91EW	68.	12.67	13.	3.	1.	48.80
ROUTED TO	R1621W	57.	13.33	13.	3.	1.	48.80
2 COMBINED AT	C16-21	425.	12.75	140.	36.	12.	50.27
DIVERSION TO	D1621W	151.	12.75	49.	13.	4.	50.27
HYDROGRAPH AT	D1621S	226.	12.75	73.	19.	6.	50.27
2 COMBINED AT	CCB7	398.	13.00	124.	33.	11.	50.27
DIVERSION TO	SCB7S	98.	13.00	27.	7.	2.	50.27
HYDROGRAPH AT	SCB7W	300.	13.00	96.	26.	9.	50.27
ROUTED TO	RCB13	300.	13.08	96.	26.	9.	50.27
HYDROGRAPH AT	D1621W	151.	12.75	49.	13.	4.	50.27
ROUTED TO	RAF4	150.	12.83	49.	13.	4.	50.27
2 COMBINED AT	CCBAF	447.	13.08	145.	38.	13.	50.27
DIVERSION TO	DCBAFS	447.	13.08	145.	38.	13.	50.27
HYDROGRAPH AT	DCBAF	0.	13.00	0.	0.	0.	50.27
HYDROGRAPH AT	16-21W	92.	12.58	28.	7.	2.	.18
HYDROGRAPH AT	D99BH	0.	.00	0.	0.	0.	45.16
2 COMBINED AT	C99B	92.	12.58	28.	7.	2.	50.64
DIVERSION TO	S99BW	21.	12.58	4.	1.	0.	50.64
HYDROGRAPH AT	S99BS	58.	12.58	20.	5.	2.	50.64
ROUTED TO	R99E	56.	12.83	20.	5.	2.	50.64
2 COMBINED AT	CCB99	56.	12.83	20.	5.	2.	50.64
DIVERSION TO	D99CB	19.	12.83	7.	2.	1.	50.64

HYDROGRAPH AT	DCB99	37.	12.83	13.	3.	1.	50.64
ROUTED TO	RCB14	35.	13.25	13.	3.	1.	50.64
HYDROGRAPH AT	17-21E	287.	12.75	92.	24.	8.	.70
HYDROGRAPH AT	S99BW	21.	12.58	4.	1.	0.	50.64
ROUTED TO	R1721W	15.	13.75	4.	1.	0.	50.64
2 COMBINED AT	C1721E	288.	12.75	96.	25.	8.	51.34
DIVERSION TO	D1721W	52.	12.67	17.	4.	1.	51.34
HYDROGRAPH AT	D1721S	195.	12.67	65.	17.	6.	51.34
2 COMBINED AT	CCB8	214.	13.00	78.	20.	7.	51.34
DIVERSION TO	SCB8S	76.	13.00	26.	6.	2.	51.34
HYDROGRAPH AT	SCB8W	137.	13.00	52.	14.	5.	51.34
ROUTED TO	RCB15	136.	13.17	52.	14.	5.	51.34
HYDROGRAPH AT	D1721W	52.	12.67	17.	4.	1.	51.34
2 COMBINED AT	CCB107	182.	13.08	69.	18.	6.	51.65
DIVERSION TO	D107CB	82.	13.08	31.	8.	3.	51.65
HYDROGRAPH AT	DCB107	100.	13.08	38.	10.	3.	51.65
HYDROGRAPH AT	17-21W	95.	12.67	33.	9.	3.	.31
ROUTED TO	R1821W	88.	13.58	33.	9.	3.	.31
HYDROGRAPH AT	18-21	183.	12.67	53.	13.	4.	.54
3 COMBINED AT	C18-21	251.	13.50	106.	28.	9.	52.19
2 COMBINED AT	NULL6	8097.	13.50	4316.	1364.	491.	1.00
HYDROGRAPH AT	23-22	597.	12.67	182.	54.	18.	.99
HYDROGRAPH AT	SD31BS	150.	11.75	140.	71.	24.	1.00
2 COMBINED AT	CSD31C	747.	12.67	322.	125.	42.	.99
DIVERSION TO	SD31CS	251.	12.00	211.	97.	33.	.99
HYDROGRAPH AT	SD31C	496.	12.67	111.	28.	9.	.99
DIVERSION TO	D2322W	293.	12.67	65.	16.	5.	.99
HYDROGRAPH AT	D2322E	203.	12.67	45.	11.	4.	.99
HYDROGRAPH AT	D27CB	1340.	13.00	379.	106.	35.	5.04
ROUTED TO	R27E	1331.	13.17	379.	106.	35.	5.04

HYDROGRAPH AT	24-22	212.	12.33	52.	17.	6.	.22
DIVERSION TO	D2422R	6.	12.33	1.	0.	0.	.22
HYDROGRAPH AT	RET240	205.	12.33	51.	17.	6.	.22
3 COMBINED AT	CIS27	1565.	13.08	470.	133.	44.	6.25
DIVERSION TO	D27IS	1565.	13.08	470.	133.	44.	6.25
HYDROGRAPH AT	DIS27	0.	.00	0.	0.	0.	6.25
HYDROGRAPH AT	D35CB	1500.	13.00	402.	106.	35.	9.14
ROUTED TO	R35H	1497.	13.08	402.	106.	35.	9.14
HYDROGRAPH AT	D2322W	293.	12.67	65.	16.	5.	.99
2 COMBINED AT	C35D	1727.	13.08	464.	122.	41.	10.13
ROUTED TO	R35I	1719.	13.08	464.	122.	41.	10.13
2 COMBINED AT	CIS35	1720.	13.08	464.	122.	41.	10.10
HYDROGRAPH AT	D43CB	1391.	13.67	516.	155.	52.	11.60
DIVERSION TO	SD43AS	165.	12.33	150.	64.	22.	11.60
HYDROGRAPH AT	SD43A	1226.	13.67	366.	92.	31.	11.60
ROUTED TO	RGR6	1219.	13.75	366.	92.	31.	11.60
HYDROGRAPH AT	22-22E	403.	12.42	92.	29.	10.	.53
HYDROGRAPH AT	SD39BS	268.	12.00	200.	79.	27.	1.00
3 COMBINED AT	C2222E	1557.	13.75	650.	197.	66.	12.10
DIVERSION TO	SD39CS	268.	11.92	232.	93.	31.	12.10
HYDROGRAPH AT	SD39C	1289.	13.75	418.	105.	35.	12.10
ROUTED TO	RGR7	1283.	13.83	418.	105.	35.	12.10
2 COMBINED AT	CIS35A	2604.	13.17	861.	221.	74.	15.60
DIVERSION TO	D35IS	1313.	13.17	479.	120.	40.	15.60
HYDROGRAPH AT	DIS35	1290.	13.17	382.	101.	34.	15.60
DIVERSION TO	SIS1AS	1290.	13.17	382.	101.	34.	15.60
HYDROGRAPH AT	SIS1AW	0.	.00	0.	0.	0.	15.60
HYDROGRAPH AT	22-22W	710.	12.08	93.	31.	10.	.47
DIVERSION TO	D2222W	99.	12.08	13.	4.	1.	.47
HYDROGRAPH AT	D2222S	610.	12.08	80.	26.	9.	.47

HYDROGRAPH AT	SD39CS	268.	11.92	232.	93.	31.	12.10
3 COMBINED AT	C2222W	846.	12.08	305.	117.	39.	16.00
DIVERSION TO	SIS1S	625.	12.08	287.	113.	38.	16.00
HYDROGRAPH AT	SIS1W	221.	12.08	17.	4.	1.	16.00
ROUTED TO	RIS1	208.	12.25	17.	4.	1.	16.00
HYDROGRAPH AT	D2222W	99.	12.08	13.	4.	1.	.47
HYDROGRAPH AT	SD43AS	165.	12.33	150.	64.	22.	11.60
2 COMBINED AT	CSD43A	234.	12.25	161.	67.	23.	16.00
DIVERSION TO	S43FW	25.	12.25	11.	3.	1.	16.00
HYDROGRAPH AT	S43FS	209.	12.25	150.	65.	22.	16.00
ROUTED TO	R43J	193.	12.50	150.	65.	22.	16.00
2 COMBINED AT	CIS43	370.	12.25	167.	69.	23.	16.00
DIVERSION TO	D43IS	266.	12.25	138.	62.	21.	16.00
HYDROGRAPH AT	DIS43	104.	12.25	29.	7.	2.	16.00
ROUTED TO	RIS2	84.	12.67	29.	7.	2.	16.00
HYDROGRAPH AT	SCB1S	104.	12.17	10.	2.	1.	12.00
ROUTED TO	R2122S	58.	12.67	10.	2.	1.	12.00
HYDROGRAPH AT	21-22	719.	12.42	157.	48.	16.	1.00
DIVERSION TO	D2122R	14.	12.42	3.	1.	0.	1.00
HYDROGRAPH AT	RET210	704.	12.42	154.	47.	16.	1.00
HYDROGRAPH AT	S43FW	25.	12.25	11.	3.	1.	16.00
ROUTED TO	R2122W	16.	13.17	10.	3.	1.	16.00
3 COMBINED AT	C21-22	708.	12.42	165.	50.	17.	13.50
DIVERSION TO	D2122W	198.	12.42	46.	14.	5.	13.50
HYDROGRAPH AT	D2122S	510.	12.42	119.	36.	12.	13.50
2 COMBINED AT	CIS1	546.	12.58	143.	43.	14.	17.50
DIVERSION TO	SIS2SA	273.	12.58	72.	21.	7.	17.50
HYDROGRAPH AT	SIS2WA	273.	12.58	72.	21.	7.	17.50
DIVERSION TO	SIS2S	167.	12.58	27.	7.	2.	17.50
HYDROGRAPH AT	SIS2W	106.	12.58	45.	15.	5.	17.50

ROUTED TO	RIS3	104.	12.83	44.	15.	5.	17.50
HYDROGRAPH AT	D51CB	135.	12.33	29.	11.	4.	12.00
ROUTED TO	R51K	122.	12.50	29.	11.	4.	12.00
HYDROGRAPH AT	D2122W	198.	12.42	46.	14.	5.	13.50
2 COMBINED AT	C51E	316.	12.50	75.	25.	8.	13.50
DIVERSION TO	S51GW	129.	12.50	19.	5.	2.	13.50
HYDROGRAPH AT	S51GS	187.	12.50	56.	20.	7.	13.50
ROUTED TO	R51L	183.	12.67	56.	20.	7.	13.50
2 COMBINED AT	CIS51	281.	12.67	99.	34.	12.	17.50
DIVERSION TO	D51IS	265.	12.67	98.	34.	11.	17.50
HYDROGRAPH AT	DIS51	16.	12.67	1.	0.	0.	17.50
ROUTED TO	RIS4	11.	13.25	1.	0.	0.	17.50
HYDROGRAPH AT	SCB2S	545.	12.50	99.	25.	8.	18.10
ROUTED TO	R2022S	523.	12.67	99.	25.	8.	18.10
HYDROGRAPH AT	20-22	552.	12.67	173.	54.	18.	1.01
HYDROGRAPH AT	S51GW	129.	12.50	19.	5.	2.	13.50
ROUTED TO	R2022W	109.	13.08	19.	5.	2.	13.50
3 COMBINED AT	C20-22	1043.	12.67	279.	81.	27.	20.50
DIVERSION TO	D2022W	407.	12.67	109.	31.	10.	20.50
HYDROGRAPH AT	D2022S	636.	12.67	170.	49.	16.	20.50
2 COMBINED AT	CIS2	629.	12.67	170.	49.	16.	24.50
DIVERSION TO	SIS3S	424.	12.67	95.	26.	9.	24.50
HYDROGRAPH AT	SIS3W	205.	12.67	75.	23.	8.	24.50
ROUTED TO	RIS5	204.	12.92	75.	23.	8.	24.50
HYDROGRAPH AT	D59CB	161.	12.58	29.	18.	6.	18.10
ROUTED TO	R59L	152.	12.75	29.	18.	6.	18.10
HYDROGRAPH AT	D2022W	407.	12.67	109.	31.	10.	20.50
2 COMBINED AT	C59F	555.	12.75	138.	49.	16.	20.50
DIVERSION TO	S59GW	300.	12.75	50.	13.	4.	20.50
HYDROGRAPH AT	S59GS	255.	12.75	87.	36.	12.	20.50

ROUTED TO	R59M	252.	12.92	87.	36.	12.	20.50
2 COMBINED AT	CIS59	453.	12.92	161.	59.	20.	24.50
DIVERSION TO	D59IS	416.	12.92	159.	59.	20.	24.50
HYDROGRAPH AT	DIS59	37.	12.92	3.	1.	0.	24.50
ROUTED TO	RIS6	30.	13.08	3.	1.	0.	24.50
HYDROGRAPH AT	SCB3S	262.	12.83	33.	8.	3.	25.30
ROUTED TO	R1922S	212.	13.33	33.	8.	3.	25.30
HYDROGRAPH AT	19-22	631.	12.50	163.	48.	16.	.94
ROUTED TO	PAGC	626.	12.58	160.	46.	15.	.94
HYDROGRAPH AT	S59GW	300.	12.75	50.	13.	4.	20.50
ROUTED TO	R1922W	276.	13.17	50.	13.	4.	20.50
3 COMBINED AT	C19-22	879.	13.17	231.	64.	22.	28.70
DIVERSION TO	D1922W	387.	13.17	102.	28.	9.	28.70
HYDROGRAPH AT	D1922S	492.	13.17	130.	36.	12.	28.70
2 COMBINED AT	CIS3	507.	13.17	130.	36.	12.	32.70
DIVERSION TO	SIS4S	482.	13.17	109.	27.	9.	32.70
HYDROGRAPH AT	SIS4W	26.	13.17	21.	9.	3.	32.70
HYDROGRAPH AT	D67CB	144.	13.00	19.	5.	2.	25.30
ROUTED TO	R67N	138.	13.08	19.	5.	2.	25.30
HYDROGRAPH AT	D1922W	387.	13.17	102.	28.	9.	28.70
2 COMBINED AT	C67G	523.	13.17	121.	33.	11.	28.70
DIVERSION TO	S67HW	523.	13.17	121.	33.	11.	28.70
HYDROGRAPH AT	S67HS	0.	.00	0.	0.	0.	28.70
2 COMBINED AT	CIS67	26.	13.17	21.	9.	3.	28.70
DIVERSION TO	D67IS	26.	13.17	21.	9.	3.	28.70
HYDROGRAPH AT	DIS67	0.	.00	0.	0.	0.	28.70
HYDROGRAPH AT	S67HW	523.	13.17	121.	33.	11.	28.70
ROUTED TO	R2421W	481.	13.75	121.	33.	11.	28.70
HYDROGRAPH AT	24-21N	421.	12.33	79.	23.	8.	.41
HYDROGRAPH AT	SCB4S	239.	13.08	44.	11.	4.	37.08

ROUTED TO	R2421S	234.	13.33	44.	11.	4.	37.08
3 COMBINED AT	C2421N	667.	13.67	226.	63.	21.	40.90
DIVERSION TO	GCDC1	667.	13.67	226.	63.	21.	40.90
HYDROGRAPH AT	DC1	0.	.00	0.	0.	0.	40.90
ROUTED TO	RES24N	0.	.00	0.	0.	0.	40.90
HYDROGRAPH AT	24-21S	855.	12.25	120.	37.	12.	.61
2 COMBINED AT	C2421S	772.	12.25	108.	33.	11.	41.52
DIVERSION TO	D2421W	162.	12.25	23.	7.	2.	41.52
HYDROGRAPH AT	D2421S	610.	12.25	85.	26.	9.	41.52
2 COMBINED AT	CIS5	610.	12.25	85.	26.	9.	41.52
DIVERSION TO	SIS5S	318.	12.25	36.	9.	3.	41.52
HYDROGRAPH AT	SIS5W	292.	12.25	49.	17.	6.	41.52
ROUTED TO	RIS8	275.	12.33	49.	17.	6.	41.52
HYDROGRAPH AT	D75CB	0.	.00	0.	0.	0.	37.08
HYDROGRAPH AT	D2421W	162.	12.25	23.	7.	2.	41.52
2 COMBINED AT	C75F1	162.	12.25	23.	7.	2.	41.52
DIVERSION TO	S75IW	89.	12.25	8.	2.	1.	41.52
HYDROGRAPH AT	S75IS	73.	12.25	14.	5.	2.	41.52
ROUTED TO	R75O	67.	12.42	14.	5.	2.	41.52
2 COMBINED AT	CIS75	338.	12.33	63.	22.	7.	41.52
DIVERSION TO	D75IS	282.	12.33	57.	20.	7.	41.52
HYDROGRAPH AT	DIS75	56.	12.33	6.	2.	1.	41.52
ROUTED TO	RIS9	44.	12.67	6.	2.	1.	41.52
HYDROGRAPH AT	SCB5S	139.	12.33	16.	4.	1.	41.59
ROUTED TO	R2321S	89.	13.00	16.	4.	1.	41.59
HYDROGRAPH AT	23-21	737.	12.50	175.	53.	18.	.99
HYDROGRAPH AT	S75IW	89.	12.25	8.	2.	1.	41.52
ROUTED TO	R2321W	49.	13.00	8.	2.	1.	41.52
3 COMBINED AT	C23-21	737.	12.58	191.	56.	19.	47.02
DIVERSION TO	D2321W	297.	12.50	77.	23.	8.	47.02

HYDROGRAPH AT	D2321S	394.	12.50	102.	30.	10.	47.02
2 COMBINED AT	CIS6	434.	12.58	108.	32.	11.	47.02
DIVERSION TO	SIS6S	277.	12.58	53.	13.	4.	47.02
HYDROGRAPH AT	SIS6W	157.	12.58	56.	19.	6.	47.02
ROUTED TO	RIS10	155.	12.75	56.	19.	6.	47.02
HYDROGRAPH AT	D83CB	105.	12.58	19.	5.	2.	41.59
ROUTED TO	R83N	94.	12.83	19.	5.	2.	41.59
HYDROGRAPH AT	D2321W	297.	12.50	77.	23.	8.	47.02
2 COMBINED AT	C83G	374.	12.75	95.	28.	9.	47.02
DIVERSION TO	S83HW	5.	12.75	1.	0.	0.	47.02
HYDROGRAPH AT	S83HS	369.	12.75	94.	28.	9.	47.02
ROUTED TO	R83O	365.	12.92	94.	28.	9.	47.02
2 COMBINED AT	CIS83	519.	12.83	149.	47.	16.	47.02
DIVERSION TO	D83IS	308.	12.83	117.	38.	13.	47.02
HYDROGRAPH AT	DIS83	211.	12.83	33.	8.	3.	47.02
ROUTED TO	RIS11	206.	13.00	33.	8.	3.	47.02
HYDROGRAPH AT	SCB6S	197.	12.75	42.	11.	4.	48.80
ROUTED TO	R2221S	185.	13.17	42.	11.	4.	48.80
HYDROGRAPH AT	22-21	696.	12.58	191.	54.	18.	1.00
HYDROGRAPH AT	S83HW	5.	12.75	1.	0.	0.	47.02
ROUTED TO	R2221W	4.	13.50	1.	0.	0.	47.02
3 COMBINED AT	C22-21	696.	13.00	216.	60.	20.	55.24
DIVERSION TO	D2221W	380.	13.00	118.	33.	11.	55.24
HYDROGRAPH AT	D2221S	287.	13.00	89.	25.	8.	55.24
2 COMBINED AT	CIS7	487.	13.00	121.	33.	11.	55.24
DIVERSION TO	SIS7S	252.	13.00	50.	13.	4.	55.24
HYDROGRAPH AT	SIS7W	235.	13.00	71.	20.	7.	55.24
ROUTED TO	RIS12	232.	13.17	71.	20.	7.	55.24
HYDROGRAPH AT	D91CB	244.	12.92	67.	18.	6.	48.80
ROUTED TO	R91K	239.	13.08	67.	18.	6.	48.80

HYDROGRAPH AT	D2221W	380.	13.00	118.	33.	11.	55.24
2 COMBINED AT	C91F	615.	13.00	184.	51.	17.	55.24
DIVERSION TO	S91FW	339.	13.00	95.	24.	8.	55.24
HYDROGRAPH AT	S91FS	276.	13.00	89.	27.	9.	55.24
ROUTED TO	R91L	270.	13.17	89.	27.	9.	55.24
2 COMBINED AT	CIS91	502.	13.17	160.	48.	16.	55.24
DIVERSION TO	D91IS	230.	13.17	111.	35.	12.	55.24
HYDROGRAPH AT	DIS91	272.	13.17	49.	12.	4.	55.24
ROUTED TO	RIS13	267.	13.33	49.	12.	4.	55.24
HYDROGRAPH AT	SCB7S	98.	13.00	27.	7.	2.	50.27
ROUTED TO	R2121S	93.	13.50	27.	7.	2.	50.27
HYDROGRAPH AT	21-21E	322.	12.75	110.	28.	9.	.72
HYDROGRAPH AT	S91FW	339.	13.00	95.	24.	8.	55.24
ROUTED TO	R2121W	334.	13.25	95.	24.	8.	55.24
3 COMBINED AT	C21-21	643.	13.25	213.	53.	18.	58.45
DIVERSION TO	D2121W	341.	13.25	113.	28.	9.	58.45
HYDROGRAPH AT	D2121S	302.	13.25	100.	25.	8.	58.45
2 COMBINED AT	CIS8	563.	13.25	148.	37.	12.	58.45
DIVERSION TO	SIS8S	217.	13.25	52.	13.	4.	58.45
HYDROGRAPH AT	SIS8W	347.	13.25	96.	24.	8.	58.45
HYDROGRAPH AT	RCBAF	447.	13.08	145.	38.	13.	50.27
ROUTED TO	RAF5	447.	13.17	145.	38.	13.	50.27
HYDROGRAPH AT	D2121W	341.	13.25	113.	28.	9.	58.45
2 COMBINED AT	CAFB	776.	13.17	256.	66.	22.	58.45
ROUTED TO	RAF6	775.	13.25	255.	66.	22.	58.45
2 COMBINED AT	CISAF	1122.	13.25	351.	90.	30.	58.45
DIVERSION TO	DISAFS	1121.	13.25	351.	90.	30.	58.45
HYDROGRAPH AT	DISAF	0.	13.25	0.	0.	0.	58.45
HYDROGRAPH AT	R99CB	19.	12.83	7.	2.	1.	50.64
ROUTED TO	R99F	17.	13.42	7.	2.	1.	50.64

HYDROGRAPH AT	21-21W	128.	12.75	45.	11.	4.	.29
2 COMBINED AT	C99C	116.	12.92	43.	11.	4.	59.10
DIVERSION TO	S99CW	46.	12.92	13.	3.	1.	59.10
HYDROGRAPH AT	S99CS	70.	12.92	30.	8.	3.	59.10
ROUTED TO	R99G	69.	13.25	30.	8.	3.	59.10
2 COMBINED AT	CIS99	69.	13.25	30.	8.	3.	59.10
DIVERSION TO	D99IS	15.	13.25	7.	2.	1.	59.10
HYDROGRAPH AT	DIS99	54.	13.25	23.	6.	2.	59.10
ROUTED TO	RIS15	53.	13.50	23.	6.	2.	59.10
HYDROGRAPH AT	SCB8S	76.	13.00	26.	6.	2.	51.34
ROUTED TO	R2021S	74.	13.58	26.	6.	2.	51.34
HYDROGRAPH AT	20-21	574.	12.67	177.	51.	17.	1.02
DIVERSION TO	D2021R	379.	12.67	57.	15.	5.	1.02
HYDROGRAPH AT	RET20	501.	13.08	127.	36.	12.	1.02
HYDROGRAPH AT	S99CW	46.	12.92	13.	3.	1.	59.10
ROUTED TO	R2021W	40.	13.83	13.	3.	1.	59.10
3 COMBINED AT	C20-21	729.	13.17	155.	43.	14.	60.83
DIVERSION TO	D2021W	124.	13.25	38.	10.	3.	60.83
HYDROGRAPH AT	D2021S	336.	13.25	102.	28.	9.	60.83
2 COMBINED AT	CIS9	387.	13.25	125.	34.	11.	60.83
DIVERSION TO	SIS9S	105.	13.25	31.	8.	3.	60.83
HYDROGRAPH AT	SIS9W	282.	13.25	94.	26.	9.	60.83
ROUTED TO	RIS16	273.	13.50	94.	26.	9.	60.83
HYDROGRAPH AT	D107CB	82.	13.08	31.	8.	3.	51.65
ROUTED TO	R107A	81.	13.33	31.	8.	3.	51.65
HYDROGRAPH AT	D2021W	124.	13.25	38.	10.	3.	60.83
2 COMBINED AT	C107A	203.	13.25	68.	18.	6.	60.83
DIVERSION TO	S107AW	80.	13.25	22.	5.	2.	60.83
HYDROGRAPH AT	S107AS	123.	13.25	46.	13.	4.	60.83
ROUTED TO	R107B	117.	13.58	46.	13.	4.	60.83

2 COMBINED AT	CIS107	389.	13.50	140.	39.	13.	60.83
DIVERSION TO	D107IS	261.	13.50	94.	26.	9.	60.83
HYDROGRAPH AT	DIS107	129.	13.50	46.	13.	4.	60.83
ROUTED TO	RIS17	123.	13.83	46.	13.	4.	60.83
HYDROGRAPH AT	19-21	443.	12.50	98.	27.	9.	.87
HYDROGRAPH AT	S107AW	80.	13.25	22.	5.	2.	60.83
ROUTED TO	R1921W	74.	13.58	22.	5.	2.	60.83
2 COMBINED AT	C19-21	443.	12.50	124.	33.	11.	61.70
DIVERSION TO	D1921W	262.	12.50	73.	20.	7.	61.70
HYDROGRAPH AT	D1921S	102.	12.50	28.	8.	3.	61.70
2 COMBINED AT	CIS10	167.	13.75	73.	21.	7.	61.70
ROUTED TO	RIS18	163.	13.92	72.	21.	7.	61.70
HYDROGRAPH AT	D1921W	262.	12.50	73.	20.	7.	61.70
3 COMBINED AT	NULL7	8447.	13.50	4489.	1413.	508.	1.00
HYDROGRAPH AT	D35IS	1313.	13.17	479.	120.	40.	15.60
ROUTED TO	RGR8	1313.	13.33	479.	120.	40.	15.60
HYDROGRAPH AT	D27IS	1565.	13.08	470.	133.	44.	6.25
ROUTED TO	R27F	1570.	13.17	470.	133.	44.	6.25
HYDROGRAPH AT	26-22N	652.	12.08	77.	25.	8.	.38
HYDROGRAPH AT	SD31CS	251.	12.00	211.	97.	33.	.99
4 COMBINED AT	C2622N	3080.	13.17	1207.	366.	123.	16.65
DIVERSION TO	SD31DS	251.	11.58	245.	125.	42.	16.65
HYDROGRAPH AT	SD31D	2829.	13.17	962.	240.	80.	16.65
ROUTED TO	RES26T	2832.	13.25	996.	369.	230.	16.65
DIVERSION TO	D26S	2832.	13.25	996.	369.	230.	16.65
HYDROGRAPH AT	D26W	0.	.00	0.	0.	0.	16.65
HYDROGRAPH AT	SIS1AS	1290.	13.17	382.	101.	34.	15.60
DIVERSION TO	SD35DS	75.	12.25	64.	21.	7.	15.60
HYDROGRAPH AT	SD35DW	1215.	13.17	318.	80.	27.	15.60
ROUTED TO	R2722W	1216.	13.33	318.	80.	27.	15.60

HYDROGRAPH AT	SIS1S	625.	12.08	287.	113.	38.	16.00
ROUTED TO	R2722S	603.	12.25	287.	113.	38.	16.00
HYDROGRAPH AT	27-22N	399.	12.25	84.	28.	9.	.37
4 COMBINED AT	C2722N	1615.	13.25	682.	218.	73.	16.40
DIVERSION TO	D2722A	244.	13.25	74.	18.	6.	16.40
HYDROGRAPH AT	D2722N	1371.	13.25	608.	200.	67.	16.40
DIVERSION TO	D39S	771.	13.25	338.	133.	45.	16.40
HYDROGRAPH AT	D39	600.	12.92	270.	68.	23.	16.40
HYDROGRAPH AT	D43IS	266.	12.25	138.	62.	21.	16.00
ROUTED TO	R43K	258.	12.42	138.	62.	21.	16.00
DIVERSION TO	S43GW	84.	12.42	25.	6.	2.	16.00
HYDROGRAPH AT	S43GS	173.	12.42	113.	55.	19.	16.00
HYDROGRAPH AT	D2722A	244.	13.25	74.	18.	6.	16.40
3 COMBINED AT	C2722A	959.	13.25	456.	141.	48.	16.40
ROUTED TO	PA43	960.	13.25	457.	142.	48.	16.40
DIVERSION TO	D43S	760.	13.25	328.	109.	37.	16.40
HYDROGRAPH AT	D43	200.	12.00	129.	32.	11.	16.40
ROUTED TO	R2822W	200.	12.67	128.	32.	11.	16.40
HYDROGRAPH AT	SIS2S	167.	12.58	27.	7.	2.	17.50
HYDROGRAPH AT	SIS2SA	273.	12.58	72.	21.	7.	17.50
2 COMBINED AT	C2822A	439.	12.58	99.	28.	9.	18.30
ROUTED TO	R2822S	432.	12.67	98.	28.	9.	18.30
HYDROGRAPH AT	28-22N	386.	12.33	79.	25.	8.	.45
HYDROGRAPH AT	S43GW	84.	12.42	25.	6.	2.	16.00
3 COMBINED AT	C2822N	798.	12.58	194.	58.	19.	18.30
DIVERSION TO	D2822A	590.	12.58	144.	43.	14.	18.30
HYDROGRAPH AT	D2822N	207.	12.58	50.	15.	5.	18.30
2 COMBINED AT	C2822D	407.	12.58	177.	47.	16.	18.30
ROUTED TO	PA47	364.	12.92	177.	47.	16.	18.30
DIVERSION TO	D47S	0.	12.83	0.	0.	0.	18.30

HYDROGRAPH AT	D47	364.	12.92	177.	47.	16.	18.30
HYDROGRAPH AT	D51IS	265.	12.67	98.	34.	11.	17.50
ROUTED TO	R51M	263.	12.83	98.	34.	11.	17.50
DIVERSION TO	S51HW	28.	12.83	2.	1.	0.	17.50
HYDROGRAPH AT	S51HS	235.	12.83	96.	34.	11.	17.50
HYDROGRAPH AT	D2822A	590.	12.58	144.	43.	14.	18.30
3 COMBINED AT	C2822B	1148.	12.67	416.	123.	41.	18.30
ROUTED TO	PA51	886.	13.17	408.	123.	41.	18.30
DIVERSION TO	D51S	871.	13.17	405.	122.	41.	18.30
HYDROGRAPH AT	D51	16.	13.17	3.	1.	0.	18.30
HYDROGRAPH AT	SIS3S	424.	12.67	95.	26.	9.	24.50
ROUTED TO	R2922S	421.	12.83	95.	26.	9.	24.50
HYDROGRAPH AT	29-22N	435.	12.25	71.	22.	7.	.41
DIVERSION TO	D2922R	33.	12.00	3.	1.	0.	.41
HYDROGRAPH AT	RET29N	435.	12.25	69.	21.	7.	.41
2 COMBINED AT	C2922N	604.	12.75	158.	45.	15.	24.90
DIVERSION TO	D2922A	326.	12.75	85.	24.	8.	24.90
HYDROGRAPH AT	D2922N	278.	12.75	73.	21.	7.	24.90
HYDROGRAPH AT	S51HW	28.	12.83	2.	1.	0.	17.50
3 COMBINED AT	C2922B	303.	12.75	78.	22.	7.	25.80
ROUTED TO	PA55	124.	13.25	78.	22.	7.	25.80
DIVERSION TO	D55S	124.	13.25	73.	18.	6.	25.80
HYDROGRAPH AT	D55	54.	11.92	7.	4.	1.	25.80
HYDROGRAPH AT	D59IS	416.	12.92	159.	59.	20.	24.50
DIVERSION TO	S59HW	29.	12.92	2.	1.	0.	24.50
HYDROGRAPH AT	S59HS	388.	12.92	156.	58.	19.	24.50
HYDROGRAPH AT	D2922A	326.	12.75	85.	24.	8.	24.90
3 COMBINED AT	C2922A	704.	12.75	246.	86.	29.	25.80
ROUTED TO	PA59	606.	13.17	246.	86.	29.	25.80
DIVERSION TO	D59S	347.	13.17	201.	74.	25.	25.80

HYDROGRAPH AT	D59	259.	13.17	45.	11.	4.	25.80
HYDROGRAPH AT	SIS4S	482.	13.17	109.	27.	9.	32.70
ROUTED TO	R3022S	474.	13.25	109.	27.	9.	32.70
HYDROGRAPH AT	30-22N	88.	12.58	30.	9.	3.	.16
HYDROGRAPH AT	S59HW	29.	12.92	2.	1.	0.	24.50
4 COMBINED AT	C3022N	782.	13.25	180.	46.	15.	34.80
ROUTED TO	PA63	399.	13.83	146.	46.	15.	34.80
DIVERSION TO	D63S	55.	13.17	47.	22.	7.	34.80
HYDROGRAPH AT	D63	344.	13.83	99.	25.	8.	34.80
DIVERSION TO	GCDC1B	344.	13.83	99.	25.	8.	34.80
HYDROGRAPH AT	DC1B	0.	.00	0.	0.	0.	34.80
HYDROGRAPH AT	D26S	2832.	13.25	996.	369.	230.	16.65
ROUTED TO	R2622S	2824.	13.33	996.	369.	230.	16.65
HYDROGRAPH AT	26-22E	533.	12.17	84.	27.	9.	.38
2 COMBINED AT	C2622E	2926.	13.33	1093.	399.	240.	12.14
ROUTED TO	RES26E	2402.	13.83	1087.	399.	240.	12.14
DIVERSION TO	D27TR	2369.	13.83	1054.	369.	212.	12.14
HYDROGRAPH AT	DTR27	33.	.08	33.	30.	28.	12.14
HYDROGRAPH AT	26-22S	833.	12.00	86.	28.	9.	.39
DIVERSION TO	D2622W	200.	12.00	21.	7.	2.	.39
HYDROGRAPH AT	D2622S	633.	12.00	66.	21.	7.	.39
HYDROGRAPH AT	SD31DS	251.	11.58	245.	125.	42.	16.65
3 COMBINED AT	C2622S	917.	12.00	343.	180.	79.	.39
DIVERSION TO	STR1S	745.	12.00	306.	162.	72.	.39
HYDROGRAPH AT	STR1W	173.	12.00	38.	17.	7.	.39
ROUTED TO	RTR1	146.	12.33	38.	17.	7.	.39
HYDROGRAPH AT	SD35DS	75.	12.25	64.	21.	7.	15.60
HYDROGRAPH AT	26-22W	111.	12.08	16.	5.	2.	.08
HYDROGRAPH AT	D2622W	200.	12.00	21.	7.	2.	.39
3 COMBINED AT	C35E	332.	12.08	97.	33.	11.	.47

DIVERSION TO	S35DW	114.	12.08	9.	2.	1.	.47
HYDROGRAPH AT	S35DS	218.	12.08	88.	31.	11.	.47
ROUTED TO	R35J	201.	12.25	88.	31.	11.	.47
2 COMBINED AT	CTR35	342.	12.25	126.	48.	18.	.47
DIVERSION TO	D35TR	265.	12.25	96.	37.	14.	.47
HYDROGRAPH AT	DTR35	77.	12.25	29.	11.	4.	.47
ROUTED TO	RTR2	66.	12.67	29.	11.	4.	.47
HYDROGRAPH AT	D39S	771.	13.25	338.	133.	45.	16.40
ROUTED TO	R2722A	763.	13.42	338.	132.	45.	16.40
HYDROGRAPH AT	27-22S	585.	12.42	131.	40.	13.	.63
HYDROGRAPH AT	S35DW	114.	12.08	9.	2.	1.	.47
ROUTED TO	R2722B	54.	12.92	9.	2.	1.	.47
3 COMBINED AT	C2722S	1006.	13.33	478.	175.	59.	12.14
DIVERSION TO	D2722W	58.	13.33	17.	4.	1.	12.14
HYDROGRAPH AT	D2722S	948.	13.33	461.	171.	57.	12.14
2 COMBINED AT	CTR1	986.	13.33	488.	182.	62.	12.14
DIVERSION TO	STR2S	840.	13.33	441.	170.	58.	12.14
HYDROGRAPH AT	STR2W	146.	13.33	47.	12.	4.	12.14
ROUTED TO	RTR3	141.	13.83	47.	12.	4.	12.14
HYDROGRAPH AT	D43S	760.	13.25	328.	109.	37.	16.40
HYDROGRAPH AT	D2722W	58.	13.33	17.	4.	1.	12.14
2 COMBINED AT	C43F	822.	13.25	350.	115.	39.	12.14
DIVERSION TO	S43HW	498.	13.25	174.	43.	14.	12.14
HYDROGRAPH AT	S43HS	324.	13.25	176.	72.	24.	12.14
ROUTED TO	R43M	323.	13.42	176.	72.	24.	12.14
2 COMBINED AT	CTR43	452.	13.83	222.	83.	28.	12.14
DIVERSION TO	D43TR	416.	13.83	214.	81.	28.	12.14
HYDROGRAPH AT	DTR43	36.	13.83	8.	2.	1.	12.14
HYDROGRAPH AT	D51S	871.	13.17	405.	122.	41.	18.30
HYDROGRAPH AT	D47S	0.	12.83	0.	0.	0.	18.30

2 COMBINED AT	C2822C	871.	13.17	405.	122.	41.	18.32
ROUTED TO	R2822A	857.	13.33	404.	122.	41.	18.32
HYDROGRAPH AT	28-22S	533.	12.33	95.	29.	10.	.54
2 COMBINED AT	C2822S	955.	13.25	480.	149.	50.	18.86
DIVERSION TO	D2822W	19.	13.25	10.	3.	1.	18.86
HYDROGRAPH AT	D2822S	936.	13.25	471.	146.	49.	18.86
HYDROGRAPH AT	S43HW	498.	13.25	174.	43.	14.	12.14
ROUTED TO	R2822B	493.	13.75	174.	43.	14.	12.14
3 COMBINED AT	CTR2	1294.	13.50	644.	190.	63.	19.96
DIVERSION TO	STR3S	647.	13.50	322.	95.	32.	19.96
HYDROGRAPH AT	STR3W	647.	13.50	322.	95.	32.	19.96
DIVERSION TO	STR4S	506.	13.50	249.	68.	23.	19.96
HYDROGRAPH AT	STR4W	141.	13.50	73.	27.	9.	19.96
ROUTED TO	RTR4	139.	13.75	73.	27.	9.	19.96
HYDROGRAPH AT	D2822W	19.	13.25	10.	3.	1.	18.86
DIVERSION TO	S51IW	0.	13.17	0.	0.	0.	18.86
HYDROGRAPH AT	S51IS	19.	13.25	10.	3.	1.	18.86
ROUTED TO	R51N	17.	13.58	10.	3.	1.	18.86
2 COMBINED AT	CTR51	156.	13.75	82.	30.	10.	19.96
DIVERSION TO	D51TR	156.	13.75	82.	30.	10.	19.96
HYDROGRAPH AT	DTR51	0.	.00	0.	0.	0.	19.96
ROUTED TO	RTR5	0.	.00	0.	0.	0.	19.96
HYDROGRAPH AT	D55S	124.	13.25	73.	18.	6.	25.80
ROUTED TO	R2922A	124.	14.08	73.	18.	6.	25.80
HYDROGRAPH AT	29-22S	553.	12.33	106.	32.	11.	.59
HYDROGRAPH AT	S51IW	0.	13.17	0.	0.	0.	18.86
ROUTED TO	R2922B	0.	14.33	0.	0.	0.	18.86
3 COMBINED AT	C2922S	571.	12.42	170.	48.	16.	26.90
DIVERSION TO	D2922W	154.	12.42	46.	13.	4.	26.90
HYDROGRAPH AT	D2922S	417.	12.42	124.	35.	12.	26.90

2 COMBINED AT	CTR3	416.	12.42	124.	35.	12.	28.00
DIVERSION TO	STR5S	230.	12.42	54.	14.	5.	28.00
HYDROGRAPH AT	STR5W	186.	12.42	69.	21.	7.	28.00
ROUTED TO	RTR6	181.	12.58	69.	21.	7.	28.00
HYDROGRAPH AT	D59S	347.	13.17	201.	74.	25.	25.80
ROUTED TO	R59N	346.	13.25	201.	74.	25.	25.80
HYDROGRAPH AT	D2922W	154.	12.42	46.	13.	4.	26.90
2 COMBINED AT	C59G	418.	13.17	246.	87.	29.	26.90
DIVERSION TO	S59IW	1.	13.08	0.	0.	0.	26.90
HYDROGRAPH AT	S59IS	418.	13.17	246.	87.	29.	26.90
ROUTED TO	R59O	416.	13.25	246.	87.	29.	26.90
2 COMBINED AT	CTR59	562.	12.67	315.	109.	36.	28.00
DIVERSION TO	D59TR	493.	12.67	302.	105.	35.	28.00
HYDROGRAPH AT	DTR59	69.	12.67	13.	3.	1.	28.00
ROUTED TO	RTR7	63.	13.08	13.	3.	1.	28.00
HYDROGRAPH AT	D63S	55.	13.17	47.	22.	7.	34.80
ROUTED TO	R3022A	55.	15.50	46.	22.	7.	34.80
HYDROGRAPH AT	30-22S	630.	12.50	157.	47.	16.	.81
HYDROGRAPH AT	S59IW	1.	13.08	0.	0.	0.	26.90
ROUTED TO	R3022B	0.	14.00	0.	0.	0.	26.90
3 COMBINED AT	C3022S	630.	12.50	192.	68.	23.	36.03
DIVERSION TO	D3022W	139.	12.50	43.	15.	5.	36.03
HYDROGRAPH AT	D3022S	442.	12.50	136.	48.	16.	36.03
2 COMBINED AT	CTR4	443.	12.50	148.	51.	17.	37.13
DIVERSION TO	STR6S	286.	12.50	89.	24.	8.	37.13
HYDROGRAPH AT	STR6W	157.	12.50	59.	27.	9.	37.13
ROUTED TO	RTR8	155.	12.75	59.	27.	9.	37.13
HYDROGRAPH AT	D3022W	139.	12.50	43.	15.	5.	36.03
HYDROGRAPH AT	D67IS	26.	13.17	21.	9.	3.	28.70
2 COMBINED AT	C67G1	165.	12.50	63.	24.	8.	36.03

DIVERSION TO	S67IW	0.	12.50	0.	0.	0.	36.03
HYDROGRAPH AT	S67IS	165.	12.50	63.	24.	8.	36.03
ROUTED TO	R67O	162.	12.67	63.	24.	8.	36.03
3 COMBINED AT	CTR67	315.	12.75	122.	51.	17.	37.13
DIVERSION TO	D67TR	285.	12.75	119.	50.	17.	37.13
HYDROGRAPH AT	DTR67	30.	12.75	3.	1.	0.	37.13
ROUTED TO	RTR9	21.	13.17	3.	1.	0.	37.13
HYDROGRAPH AT	SIS5S	318.	12.25	36.	9.	3.	41.52
ROUTED TO	R2521S	284.	12.50	36.	9.	3.	41.52
HYDROGRAPH AT	25-21	754.	12.50	200.	59.	20.	1.00
DIVERSION TO	D2521R	15.	12.50	4.	1.	0.	1.00
HYDROGRAPH AT	RET25	739.	12.50	196.	58.	19.	1.00
HYDROGRAPH AT	S67IW	0.	12.50	0.	0.	0.	36.03
ROUTED TO	R2521W	0.	13.42	0.	0.	0.	36.03
3 COMBINED AT	C25-21	960.	12.50	213.	61.	20.	37.64
DIVERSION TO	D2521W	230.	12.50	51.	15.	5.	37.64
HYDROGRAPH AT	D2521S	730.	12.50	162.	47.	16.	37.64
2 COMBINED AT	CTR5	728.	12.50	164.	47.	16.	38.75
DIVERSION TO	STR7S	336.	12.50	55.	14.	5.	38.75
HYDROGRAPH AT	STR7W	392.	12.50	109.	33.	11.	38.75
ROUTED TO	RTR10	385.	12.67	109.	33.	11.	38.75
HYDROGRAPH AT	D75IS	282.	12.33	57.	20.	7.	41.52
ROUTED TO	R75P	276.	12.50	57.	20.	7.	41.52
HYDROGRAPH AT	D2521W	230.	12.50	51.	15.	5.	37.64
2 COMBINED AT	C75G	508.	12.50	109.	35.	12.	37.64
DIVERSION TO	S75JW	97.	12.50	6.	1.	0.	37.64
HYDROGRAPH AT	S75JS	411.	12.50	103.	33.	11.	37.64
ROUTED TO	R75Q	405.	12.67	103.	33.	11.	37.64
2 COMBINED AT	CTR75	790.	12.67	212.	67.	22.	38.75
DIVERSION TO	D75TR	628.	12.67	191.	61.	21.	38.75

HYDROGRAPH AT	DTR75	162.	12.67	21.	5.	2.	38.75
ROUTED TO	RTR11	151.	12.83	21.	5.	2.	38.75
HYDROGRAPH AT	SIS6S	277.	12.58	53.	13.	4.	47.02
ROUTED TO	R2621S	250.	13.17	53.	13.	4.	47.02
HYDROGRAPH AT	26-21	629.	12.58	180.	54.	18.	.99
HYDROGRAPH AT	S75JW	97.	12.50	6.	1.	0.	37.64
ROUTED TO	R2621W	34.	13.42	6.	1.	0.	37.64
3 COMBINED AT	C26-21	719.	13.08	220.	63.	21.	41.28
DIVERSION TO	D2621W	187.	13.08	57.	16.	6.	41.28
HYDROGRAPH AT	D2621S	532.	13.08	163.	47.	16.	41.28
2 COMBINED AT	CTR6	670.	13.00	183.	52.	17.	41.28
DIVERSION TO	STR8S	172.	13.00	43.	11.	4.	41.28
HYDROGRAPH AT	STR8W	498.	13.00	140.	41.	14.	41.28
ROUTED TO	RTR12	491.	13.17	140.	41.	14.	41.28
HYDROGRAPH AT	D83IS	308.	12.83	117.	38.	13.	47.02
ROUTED TO	R83P	306.	13.00	116.	38.	13.	47.02
HYDROGRAPH AT	D2621W	187.	13.08	57.	16.	6.	41.28
2 COMBINED AT	C83H	481.	13.08	171.	54.	18.	57.03
DIVERSION TO	S83IW	136.	13.08	23.	6.	2.	57.03
HYDROGRAPH AT	S83IS	345.	13.08	148.	48.	16.	57.03
ROUTED TO	R83Q	344.	13.17	148.	48.	16.	57.03
2 COMBINED AT	CTR83	818.	13.17	284.	88.	29.	56.35
DIVERSION TO	D83TR	617.	13.17	239.	77.	26.	56.35
HYDROGRAPH AT	DTR83	201.	13.17	45.	11.	4.	56.35
ROUTED TO	RTR13	197.	13.33	45.	11.	4.	56.35
HYDROGRAPH AT	SIS7S	252.	13.00	50.	13.	4.	55.24
ROUTED TO	R2721S	236.	13.42	50.	13.	4.	55.24
HYDROGRAPH AT	27-21	618.	12.58	171.	49.	16.	1.00
DIVERSION TO	D2721R	31.	12.58	4.	1.	0.	1.00
HYDROGRAPH AT	RET27	587.	12.58	167.	48.	16.	1.00

HYDROGRAPH AT	S83IW	136.	13.08	23.	6.	2.	57.03
ROUTED TO	R2721W	120.	13.58	23.	6.	2.	57.03
3 COMBINED AT	C27-21	645.	13.42	214.	59.	20.	65.57
DIVERSION TO	D2721W	193.	13.42	64.	18.	6.	65.57
HYDROGRAPH AT	D2721S	451.	13.42	150.	41.	14.	65.57
2 COMBINED AT	CTR7	641.	13.42	194.	52.	17.	66.67
DIVERSION TO	STR9S	366.	13.42	103.	26.	9.	66.67
HYDROGRAPH AT	STR9W	274.	13.42	90.	26.	9.	66.67
ROUTED TO	RTR14	271.	13.50	90.	26.	9.	66.67
HYDROGRAPH AT	D91IS	230.	13.17	111.	35.	12.	55.24
ROUTED TO	R91M	228.	13.33	111.	35.	12.	55.24
HYDROGRAPH AT	D2721W	193.	13.42	64.	18.	6.	65.57
2 COMBINED AT	C91G	420.	13.42	174.	53.	18.	65.57
DIVERSION TO	S91GW	37.	13.42	3.	1.	0.	65.57
HYDROGRAPH AT	S91GS	383.	13.42	171.	52.	17.	65.57
ROUTED TO	R91N	381.	13.50	171.	52.	17.	65.57
2 COMBINED AT	CTR91	651.	13.50	260.	78.	26.	66.67
DIVERSION TO	D91TR	511.	13.50	232.	71.	24.	66.67
HYDROGRAPH AT	DTR91	140.	13.50	28.	7.	2.	66.67
ROUTED TO	RTR15	136.	13.75	28.	7.	2.	66.67
HYDROGRAPH AT	SIS8S	217.	13.25	52.	13.	4.	58.45
ROUTED TO	R2821S	211.	13.58	52.	13.	4.	58.45
HYDROGRAPH AT	28-21E	250.	12.75	80.	20.	7.	.53
HYDROGRAPH AT	S91GW	37.	13.42	3.	1.	0.	65.57
ROUTED TO	R2821W	34.	13.67	3.	1.	0.	65.57
3 COMBINED AT	C28-21	369.	13.58	120.	30.	10.	69.31
DIVERSION TO	D2821W	233.	13.58	76.	19.	6.	69.31
HYDROGRAPH AT	D2821S	137.	13.58	44.	11.	4.	69.31
2 COMBINED AT	CTR8	268.	13.67	72.	18.	6.	69.31
DIVERSION TO	STR10S	74.	13.67	18.	4.	1.	69.31

HYDROGRAPH AT	STR10W	194.	13.67	55.	14.	5.	69.31
HYDROGRAPH AT	RISAF	1121.	13.25	351.	90.	30.	58.45
ROUTED TO	RAF7	1121.	13.33	351.	90.	30.	58.45
HYDROGRAPH AT	D2821W	233.	13.58	76.	19.	6.	69.31
2 COMBINED AT	CAFC	1317.	13.42	422.	108.	36.	69.31
ROUTED TO	RAF8	1313.	13.50	421.	108.	36.	69.31
2 COMBINED AT	CTRAF	1497.	13.50	476.	122.	41.	69.31
DIVERSION TO	DTRAFS	1497.	13.50	476.	122.	41.	69.31
HYDROGRAPH AT	DTRAF	0.	13.50	0.	0.	0.	69.31
HYDROGRAPH AT	D99IS	15.	13.25	7.	2.	1.	59.10
ROUTED TO	R99H	14.	14.00	7.	2.	1.	59.10
HYDROGRAPH AT	28-21W	198.	12.75	69.	18.	6.	.47
2 COMBINED AT	C99D	168.	12.75	63.	16.	5.	70.44
DIVERSION TO	S99DW	58.	12.75	19.	5.	2.	70.44
HYDROGRAPH AT	S99DS	109.	12.75	44.	11.	4.	70.44
ROUTED TO	R99I	108.	13.08	43.	11.	4.	70.44
2 COMBINED AT	CTR99	108.	13.08	43.	11.	4.	70.44
DIVERSION TO	D99TR	27.	13.08	11.	3.	1.	70.44
HYDROGRAPH AT	DTR99	81.	13.08	33.	9.	3.	70.44
ROUTED TO	RTR17	79.	13.42	32.	9.	3.	70.44
HYDROGRAPH AT	SIS9S	105.	13.25	31.	8.	3.	60.83
ROUTED TO	R2921S	97.	13.75	31.	8.	3.	60.83
HYDROGRAPH AT	29-21N	396.	12.67	119.	30.	10.	.76
HYDROGRAPH AT	S99DW	58.	12.75	19.	5.	2.	70.44
ROUTED TO	R2921W	58.	13.00	19.	5.	2.	70.44
3 COMBINED AT	C2921N	396.	12.75	151.	38.	13.	72.92
DIVERSION TO	D2921W	128.	12.75	49.	12.	4.	72.92
HYDROGRAPH AT	D2921S	259.	12.75	99.	25.	8.	72.92
2 COMBINED AT	CTR9	315.	13.17	130.	33.	11.	74.02
ROUTED TO	RES29S	0.	22.42	0.	0.	0.	74.02

HYDROGRAPH AT	D107IS	261.	13.50	94.	26.	9.	60.83
ROUTED TO	R107C	256.	13.75	93.	26.	9.	60.83
HYDROGRAPH AT	D2921W	128.	12.75	49.	12.	4.	72.92
2 COMBINED AT	C107B	355.	13.75	139.	38.	13.	72.92
ROUTED TO	RES29W	117.	15.50	50.	14.	5.	72.92
DIVERSION TO	D2921C	117.	15.50	50.	14.	5.	72.92
HYDROGRAPH AT	D2921B	0.	.00	0.	0.	0.	72.92
ROUTED TO	R2921A	0.	.00	0.	0.	0.	72.92
HYDROGRAPH AT	29-21S	144.	12.67	50.	14.	5.	.26
3 COMBINED AT	C107C	123.	12.67	42.	12.	4.	74.28
DIVERSION TO	D107TR	43.	12.67	15.	4.	1.	74.28
HYDROGRAPH AT	DTR107	80.	12.67	27.	8.	3.	74.28
ROUTED TO	RTR18	78.	13.00	27.	8.	3.	74.28
HYDROGRAPH AT	30-21S	1003.	12.17	112.	30.	10.	.75
DIVERSION TO	D3021X	701.	12.08	34.	9.	3.	.75
HYDROGRAPH AT	RET30S	968.	12.25	81.	22.	7.	.75
2 COMBINED AT	C3021S	840.	12.25	90.	24.	8.	75.03
DIVERSION TO	STR11S	495.	12.25	46.	11.	4.	75.03
HYDROGRAPH AT	STR11W	345.	12.25	44.	13.	4.	75.03
ROUTED TO	RTR19	268.	12.58	44.	13.	4.	75.03
DIVERSION TO	D115TR	115.	12.58	19.	6.	2.	75.03
HYDROGRAPH AT	DTR115	153.	12.58	25.	7.	3.	75.03
HYDROGRAPH AT	30-21N	907.	12.17	108.	31.	10.	.67
DIVERSION TO	D3021R	744.	12.17	56.	15.	5.	.67
HYDROGRAPH AT	RET30N	606.	12.42	57.	16.	5.	.67
DIVERSION TO	D3021W	127.	12.42	12.	3.	1.	.67
HYDROGRAPH AT	D3021S	479.	12.42	45.	13.	4.	.67
HYDROGRAPH AT	D2921C	117.	15.50	50.	14.	5.	72.92
ROUTED TO	R3021W	114.	15.92	49.	14.	5.	72.92
2 COMBINED AT	C3021N	1856.	12.42	193.	57.	19.	73.59

ROUTED TO	R3021R	279.	12.58	66.	23.	8.	73.59
HYDROGRAPH AT	D3021W	124.	13.25	38.	10.	3.	60.83
4 COMBINED AT	NULL8	8638.	13.50	4679.	1470.	527.	1.00
HYDROGRAPH AT	NULL4	3714.	13.17	1695.	519.	176.	1.00
HYDROGRAPH AT	11-22	558.	12.58	169.	53.	18.	1.01
DIVERSION TO	D1122W	117.	12.58	35.	11.	4.	1.01
HYDROGRAPH AT	D1122S	441.	12.58	133.	42.	14.	1.01
HYDROGRAPH AT	SGA1S	1140.	12.67	307.	94.	31.	2.54
ROUTED TO	R1122S	1136.	12.83	306.	94.	31.	2.54
2 COMBINED AT	C11-22	1537.	12.83	436.	135.	45.	3.50
DIVERSION TO	SD31AS	147.	12.00	126.	57.	19.	3.50
HYDROGRAPH AT	SD31A	1390.	12.83	310.	78.	26.	3.50
DIVERSION TO	SBH1W	695.	12.83	155.	39.	13.	3.50
HYDROGRAPH AT	SBH1E	695.	12.83	155.	39.	13.	3.50
ROUTED TO	RBH1	693.	12.92	155.	39.	13.	3.50
HYDROGRAPH AT	D27GA	231.	12.58	63.	20.	7.	.36
ROUTED TO	R27C	223.	12.83	63.	20.	7.	.36
HYDROGRAPH AT	12-22	205.	12.33	47.	15.	5.	.25
DIVERSION TO	D1222R	14.	12.33	3.	1.	0.	.25
HYDROGRAPH AT	RET120	191.	12.33	44.	14.	5.	.25
3 COMBINED AT	CBH27	963.	12.92	245.	68.	23.	21.30
DIVERSION TO	D27BH	963.	12.92	245.	68.	23.	21.30
HYDROGRAPH AT	DBH27	0.	.00	0.	0.	0.	21.30
HYDROGRAPH AT	D35GA	79.	12.92	35.	12.	4.	2.10
ROUTED TO	R35E	78.	13.17	35.	12.	4.	2.10
HYDROGRAPH AT	D1122W	117.	12.58	35.	11.	4.	1.01
2 COMBINED AT	C35C	178.	12.92	70.	23.	8.	3.10
ROUTED TO	R35F	175.	13.08	70.	23.	8.	3.10
HYDROGRAPH AT	SBH1W	695.	12.83	155.	39.	13.	3.50
ROUTED TO	RBH2	691.	12.92	155.	39.	13.	3.50

HYDROGRAPH AT	SGA2S	412.	12.67	149.	48.	16.	4.68
ROUTED TO	R1022S	408.	12.83	148.	48.	16.	4.68
HYDROGRAPH AT	10-22	526.	12.58	157.	48.	16.	.99
2 COMBINED AT	C10-22	902.	12.75	302.	95.	32.	5.70
DIVERSION TO	SD39AS	164.	12.00	127.	51.	17.	5.70
HYDROGRAPH AT	SD39A	738.	12.75	176.	44.	15.	5.70
DIVERSION TO	D1022W	436.	12.75	104.	26.	9.	5.70
HYDROGRAPH AT	D1022E	303.	12.75	72.	18.	6.	5.70
4 COMBINED AT	CBH35	1143.	12.92	294.	79.	26.	7.10
DIVERSION TO	D35BH	1143.	12.92	294.	79.	26.	7.10
HYDROGRAPH AT	DBH35	0.	.00	0.	0.	0.	7.10
HYDROGRAPH AT	D43GA	328.	12.83	139.	49.	16.	4.68
ROUTED TO	R43F	325.	13.00	139.	49.	16.	4.68
HYDROGRAPH AT	D1022W	436.	12.75	104.	26.	9.	5.70
2 COMBINED AT	C43D	736.	12.92	243.	75.	25.	5.70
DIVERSION TO	S43DW	363.	12.92	87.	22.	7.	5.70
HYDROGRAPH AT	S43DS	373.	12.92	155.	53.	18.	5.70
ROUTED TO	R43G	371.	13.00	155.	53.	18.	5.70
2 COMBINED AT	CBH43	371.	13.00	155.	53.	18.	5.70
DIVERSION TO	D43BH	233.	13.00	119.	44.	15.	5.70
HYDROGRAPH AT	DBH43	138.	13.00	36.	9.	3.	5.70
ROUTED TO	RBH3	135.	13.25	36.	9.	3.	5.70
HYDROGRAPH AT	SGA3S	545.	13.08	166.	45.	15.	8.07
ROUTED TO	R922S	533.	13.33	166.	45.	15.	8.07
HYDROGRAPH AT	9-22	609.	12.58	180.	56.	19.	.99
HYDROGRAPH AT	S43DW	363.	12.92	87.	22.	7.	5.70
ROUTED TO	R922W	351.	13.25	87.	22.	7.	5.70
3 COMBINED AT	C9-22	1278.	13.25	425.	121.	40.	10.10
DIVERSION TO	D922W	435.	13.25	144.	41.	14.	10.10
HYDROGRAPH AT	D922S	844.	13.25	280.	80.	27.	10.10

2 COMBINED AT	CBH1	978.	13.25	316.	89.	30.	10.10
DIVERSION TO	SBH2S	705.	13.25	227.	63.	21.	10.10
HYDROGRAPH AT	SBH2W	273.	13.25	90.	26.	9.	10.10
ROUTED TO	RBH4	270.	13.42	90.	26.	9.	10.10
HYDROGRAPH AT	D51GA	278.	13.33	102.	33.	11.	8.07
ROUTED TO	R51H	275.	13.42	102.	33.	11.	8.07
HYDROGRAPH AT	D922W	435.	13.25	144.	41.	14.	10.10
2 COMBINED AT	C51D	695.	13.33	246.	73.	25.	10.10
DIVERSION TO	S51EW	259.	13.33	45.	11.	4.	10.10
HYDROGRAPH AT	S51ES	436.	13.33	200.	62.	21.	10.10
ROUTED TO	R51I	433.	13.50	200.	62.	21.	10.10
2 COMBINED AT	CBH51	703.	13.42	290.	88.	29.	10.10
DIVERSION TO	D51BH	310.	13.42	53.	13.	4.	10.10
HYDROGRAPH AT	DBH51	393.	13.25	237.	75.	25.	10.10
HYDROGRAPH AT	D822ES	355.	12.67	201.	65.	22.	12.60
HYDROGRAPH AT	D822E1	108.	12.25	11.	3.	1.	.52
HYDROGRAPH AT	S51EW	259.	13.33	45.	11.	4.	10.10
ROUTED TO	R822EW	251.	13.58	45.	11.	4.	10.10
3 COMBINED AT	C822E1	579.	13.58	253.	78.	26.	14.60
2 COMBINED AT	CBH51b	946.	13.58	477.	148.	50.	24.70
DIVERSION TO	SBH51	826.	13.58	358.	90.	30.	24.70
HYDROGRAPH AT	SBH51	120.	11.67	119.	59.	20.	24.70
ROUTED TO	R822WW	120.	12.25	119.	59.	20.	24.70
HYDROGRAPH AT	8-22W	807.	12.08	98.	32.	11.	.49
DIVERSION TO	D822WW	169.	12.08	21.	7.	2.	.49
HYDROGRAPH AT	D822WS	637.	12.08	78.	26.	9.	.49
2 COMBINED AT	C8-22W	725.	12.08	188.	83.	28.	15.10
DIVERSION TO	SBH3S	162.	12.08	9.	2.	1.	15.10
HYDROGRAPH AT	SBH3W	563.	12.08	180.	81.	27.	15.10
ROUTED TO	RBH5	545.	12.25	179.	81.	27.	15.10

HYDROGRAPH AT	D822WW	169.	12.08	21.	7.	2.	.49
DIVERSION TO	S59EW	78.	12.08	5.	1.	0.	.49
HYDROGRAPH AT	S59ES	91.	12.08	15.	5.	2.	.49
ROUTED TO	R59I	74.	12.33	15.	5.	2.	.49
2 COMBINED AT	CBH59	609.	12.25	193.	86.	29.	15.10
DIVERSION TO	D59BH	133.	12.25	8.	2.	1.	15.10
HYDROGRAPH AT	DBH59	476.	12.25	186.	84.	29.	15.10
ROUTED TO	RBH6	469.	12.33	186.	84.	29.	15.10
HYDROGRAPH AT	SGA5S	440.	14.42	111.	28.	9.	17.90
ROUTED TO	R722S	420.	14.92	110.	28.	9.	17.90
HYDROGRAPH AT	7-22	532.	12.58	166.	52.	17.	.97
HYDROGRAPH AT	S59EW	78.	12.08	5.	1.	0.	.49
ROUTED TO	R722W	37.	12.75	5.	1.	0.	.49
3 COMBINED AT	C7-22	548.	12.67	266.	77.	26.	19.30
DIVERSION TO	D722W	197.	12.67	96.	28.	9.	19.30
HYDROGRAPH AT	D722S	351.	12.67	171.	50.	17.	19.30
2 COMBINED AT	CBH2	756.	12.50	349.	131.	44.	25.80
DIVERSION TO	SBH4S	202.	12.50	22.	6.	2.	25.80
HYDROGRAPH AT	SBH4W	553.	12.50	326.	125.	42.	25.80
ROUTED TO	RBH7	552.	12.58	326.	125.	42.	25.80
HYDROGRAPH AT	D67GA	180.	14.58	52.	13.	4.	17.90
ROUTED TO	R67J	175.	14.75	52.	13.	4.	17.90
HYDROGRAPH AT	D722W	197.	12.67	96.	28.	9.	19.30
2 COMBINED AT	C67E	347.	14.83	147.	41.	14.	19.30
DIVERSION TO	S67FW	164.	14.83	64.	16.	5.	19.30
HYDROGRAPH AT	S67FS	183.	14.83	82.	25.	8.	19.30
ROUTED TO	R67K	177.	15.08	82.	25.	8.	19.30
2 COMBINED AT	CBH67	654.	12.75	410.	150.	51.	21.30
DIVERSION TO	D67BH	90.	12.75	17.	4.	1.	21.30
HYDROGRAPH AT	DBH67	564.	12.75	394.	146.	49.	21.30

ROUTED TO	RBH8	563.	12.83	393.	146.	49.	21.30
HYDROGRAPH AT	SGA6S	182.	14.75	83.	21.	7.	27.66
ROUTED TO	R1221S	177.	15.08	81.	21.	7.	27.66
HYDROGRAPH AT	12-21	733.	12.50	178.	49.	16.	1.00
DIVERSION TO	D1221R	44.	12.50	8.	2.	1.	1.00
HYDROGRAPH AT	RET12	689.	12.50	170.	47.	16.	1.00
HYDROGRAPH AT	S67FW	164.	14.83	64.	16.	5.	19.30
ROUTED TO	R1221W	144.	15.25	64.	16.	5.	19.30
3 COMBINED AT	C12-21	700.	13.00	315.	86.	29.	31.35
DIVERSION TO	D1221W	246.	13.00	108.	30.	10.	31.35
HYDROGRAPH AT	D1221S	402.	13.00	176.	48.	16.	31.35
2 COMBINED AT	CBH3	959.	13.00	560.	191.	64.	31.35
DIVERSION TO	SBH5S	115.	13.00	24.	6.	2.	31.35
HYDROGRAPH AT	SBH5W	843.	13.00	536.	185.	62.	31.35
ROUTED TO	RBH9	841.	13.08	536.	185.	62.	31.35
HYDROGRAPH AT	D75GA	459.	14.83	238.	70.	24.	27.66
ROUTED TO	R75K	453.	15.00	237.	70.	24.	27.66
HYDROGRAPH AT	D1221W	246.	13.00	108.	30.	10.	31.35
2 COMBINED AT	C75E	550.	15.08	333.	97.	34.	31.35
DIVERSION TO	S75GW	173.	15.08	102.	27.	9.	31.35
HYDROGRAPH AT	S75GS	378.	15.08	231.	71.	25.	31.35
ROUTED TO	R75L	375.	15.25	230.	71.	25.	31.35
2 COMBINED AT	CBH75	1183.	13.08	763.	253.	87.	31.35
DIVERSION TO	D75BH	145.	13.08	43.	11.	4.	31.35
HYDROGRAPH AT	DBH75	1038.	13.08	720.	242.	84.	31.35
ROUTED TO	RBH10	1036.	13.17	720.	242.	84.	31.35
HYDROGRAPH AT	SGA7S	231.	14.08	140.	35.	12.	30.20
ROUTED TO	R1121S	227.	14.42	138.	35.	12.	30.20
HYDROGRAPH AT	11-21	635.	12.58	150.	41.	14.	.99
DIVERSION TO	D1121R	178.	12.58	28.	7.	2.	.99

HYDROGRAPH AT	RET11	457.	12.58	123.	34.	11.	.99
HYDROGRAPH AT	S75GW	173.	15.08	102.	27.	9.	31.35
ROUTED TO	R1121W	170.	15.33	101.	27.	9.	31.35
3 COMBINED AT	C11-21	634.	13.33	332.	90.	30.	34.87
DIVERSION TO	D1121W	190.	13.33	100.	27.	9.	34.87
HYDROGRAPH AT	D1121S	444.	13.33	233.	63.	21.	34.87
2 COMBINED AT	CBH4	1467.	13.17	943.	303.	104.	34.87
DIVERSION TO	SBH6S	133.	13.17	44.	11.	4.	34.87
HYDROGRAPH AT	SBH6W	1334.	13.17	899.	291.	100.	34.87
ROUTED TO	RBH11	1334.	13.25	898.	291.	100.	34.87
HYDROGRAPH AT	D83GA	91.	13.00	30.	8.	3.	30.20
ROUTED TO	R83J	81.	14.50	30.	8.	3.	30.20
HYDROGRAPH AT	D1121W	190.	13.33	100.	27.	9.	34.87
2 COMBINED AT	C83E	264.	13.25	128.	34.	11.	34.87
DIVERSION TO	S83FW	83.	13.25	39.	10.	3.	34.87
HYDROGRAPH AT	S83FS	181.	13.25	88.	24.	8.	34.87
ROUTED TO	R83K	180.	13.42	88.	24.	8.	34.87
2 COMBINED AT	CBH83	1498.	13.33	978.	313.	107.	37.34
HYDROGRAPH AT	RDC1B	344.	13.83	99.	25.	8.	34.80
ROUTED TO	RDC1B	343.	13.92	99.	25.	8.	34.80
HYDROGRAPH AT	RDC1	667.	13.67	226.	63.	21.	40.90
2 COMBINED AT	C@DC1	974.	13.67	318.	86.	29.	43.25
HYDROGRAPH AT	RGCDC2	687.	13.25	299.	93.	31.	37.08
2 COMBINED AT	C@DC2	1598.	13.67	613.	178.	59.	43.25
ROUTED TO	GCDCo	1145.	14.25	613.	178.	60.	43.25
ROUTED TO	RDC2-3	1145.	14.33	613.	178.	60.	43.25
HYDROGRAPH AT	RGCDC3	597.	13.33	224.	61.	20.	41.03
2 COMBINED AT	C@DC3	1532.	13.75	811.	231.	77.	50.96
ROUTED TO	RDC3-4	1529.	13.75	811.	231.	77.	50.96
2 COMBINED AT	C@DC4	2841.	13.50	1745.	533.	181.	50.96

DIVERSION TO	D83BH	0.	13.50	0.	0.	0.	50.96
HYDROGRAPH AT	DBH83	2841.	13.50	1745.	533.	181.	50.96
ROUTED TO	RBH12A	2841.	13.50	1745.	533.	181.	50.96
ROUTED TO	RBH12B	2832.	13.67	1743.	533.	181.	50.96
ROUTED TO	RBH12C	2828.	13.75	1741.	533.	181.	50.96
HYDROGRAPH AT	SGA8S	126.	13.00	47.	12.	4.	34.46
ROUTED TO	R1021S	119.	13.33	47.	12.	4.	34.46
HYDROGRAPH AT	10-21	586.	12.58	160.	45.	15.	.98
DIVERSION TO	D1021R	410.	12.58	81.	21.	7.	.98
HYDROGRAPH AT	RET10	312.	13.50	84.	24.	8.	.98
HYDROGRAPH AT	S83FW	83.	13.25	39.	10.	3.	34.87
ROUTED TO	R1021W	77.	13.58	39.	10.	3.	34.87
3 COMBINED AT	C10-21	309.	13.83	144.	39.	13.	43.32
DIVERSION TO	D1021W	133.	13.83	62.	17.	6.	43.32
HYDROGRAPH AT	D1021S	176.	13.83	82.	22.	7.	43.32
ROUTED TO	D91det	88.	15.25	63.	20.	7.	43.32
HYDROGRAPH AT	D91GA	327.	13.17	145.	36.	12.	34.46
ROUTED TO	R91G	320.	13.33	145.	36.	12.	34.46
HYDROGRAPH AT	D1021W	133.	13.83	62.	17.	6.	43.32
2 COMBINED AT	C91D	421.	13.33	200.	51.	17.	43.32
DIVERSION TO	S91DW	180.	13.33	85.	21.	7.	43.32
HYDROGRAPH AT	S91DS	241.	13.33	115.	30.	10.	43.32
ROUTED TO	R91H	236.	13.50	114.	30.	10.	43.32
3 COMBINED AT	CBH5	3047.	13.67	1875.	572.	194.	57.17
DIVERSION TO	SBH7S	0.	13.58	0.	0.	0.	57.17
HYDROGRAPH AT	SBH7W	3047.	13.67	1875.	572.	194.	57.17
DIVERSION TO	D91BH	0.	.00	0.	0.	0.	57.17
HYDROGRAPH AT	DBH91	3047.	13.67	1875.	572.	194.	57.17
ROUTED TO	RBH13	3038.	13.92	1871.	572.	194.	57.17
HYDROGRAPH AT	SGA9S	170.	13.25	69.	17.	6.	35.26

ROUTED TO	R921S	165.	13.58	69.	17.	6.	35.26
HYDROGRAPH AT	9-21E	360.	12.67	106.	27.	9.	.86
HYDROGRAPH AT	S91DW	180.	13.33	85.	21.	7.	43.32
ROUTED TO	R921W	177.	13.58	85.	21.	7.	43.32
3 COMBINED AT	C9-21	525.	13.50	237.	60.	20.	44.97
DIVERSION TO	D921W	205.	13.50	93.	23.	8.	44.97
HYDROGRAPH AT	D921S	320.	13.50	145.	37.	12.	44.97
2 COMBINED AT	CBH97	3275.	13.83	1987.	604.	205.	58.90
HYDROGRAPH AT	DGAAFS	1146.	13.33	755.	299.	121.	35.26
ROUTED TO	RAF2	1143.	13.42	755.	299.	121.	35.26
HYDROGRAPH AT	D921W	205.	13.50	93.	23.	8.	44.97
2 COMBINED AT	CAFA	1310.	13.42	825.	317.	127.	46.23
ROUTED TO	RAF3	1309.	13.50	824.	317.	127.	46.23
2 COMBINED AT	CBHAF	4461.	13.67	2793.	898.	330.	58.90
HYDROGRAPH AT	9-21W	31.	12.83	13.	4.	1.	.11
DIVERSION TO	S99AW	31.	12.83	13.	4.	1.	.11
HYDROGRAPH AT	S99AS	0.	12.42	0.	0.	0.	.11
ROUTED TO	R99C	0.	12.92	0.	0.	0.	.11
2 COMBINED AT	CBH6	4461.	13.67	2793.	898.	330.	59.01
DIVERSION TO	D99BH	0.	.00	0.	0.	0.	59.01
HYDROGRAPH AT	DBH99	4460.	13.67	2792.	898.	330.	59.01
ROUTED TO	RBH14	4462.	13.75	2792.	898.	330.	59.01
HYDROGRAPH AT	8-21E	216.	12.58	55.	14.	5.	.51
HYDROGRAPH AT	S99AW	31.	12.83	13.	4.	1.	.11
ROUTED TO	R821EW	30.	13.25	13.	4.	1.	.11
2 COMBINED AT	C8-21E	216.	12.58	66.	17.	6.	46.01
DIVERSION TO	D821EW	105.	12.67	32.	8.	3.	46.01
HYDROGRAPH AT	D821ES	82.	12.67	25.	6.	2.	46.01
2 COMBINED AT	CBH7	4497.	13.75	2807.	903.	332.	59.51
HYDROGRAPH AT	8-21W	173.	12.42	34.	9.	3.	.27

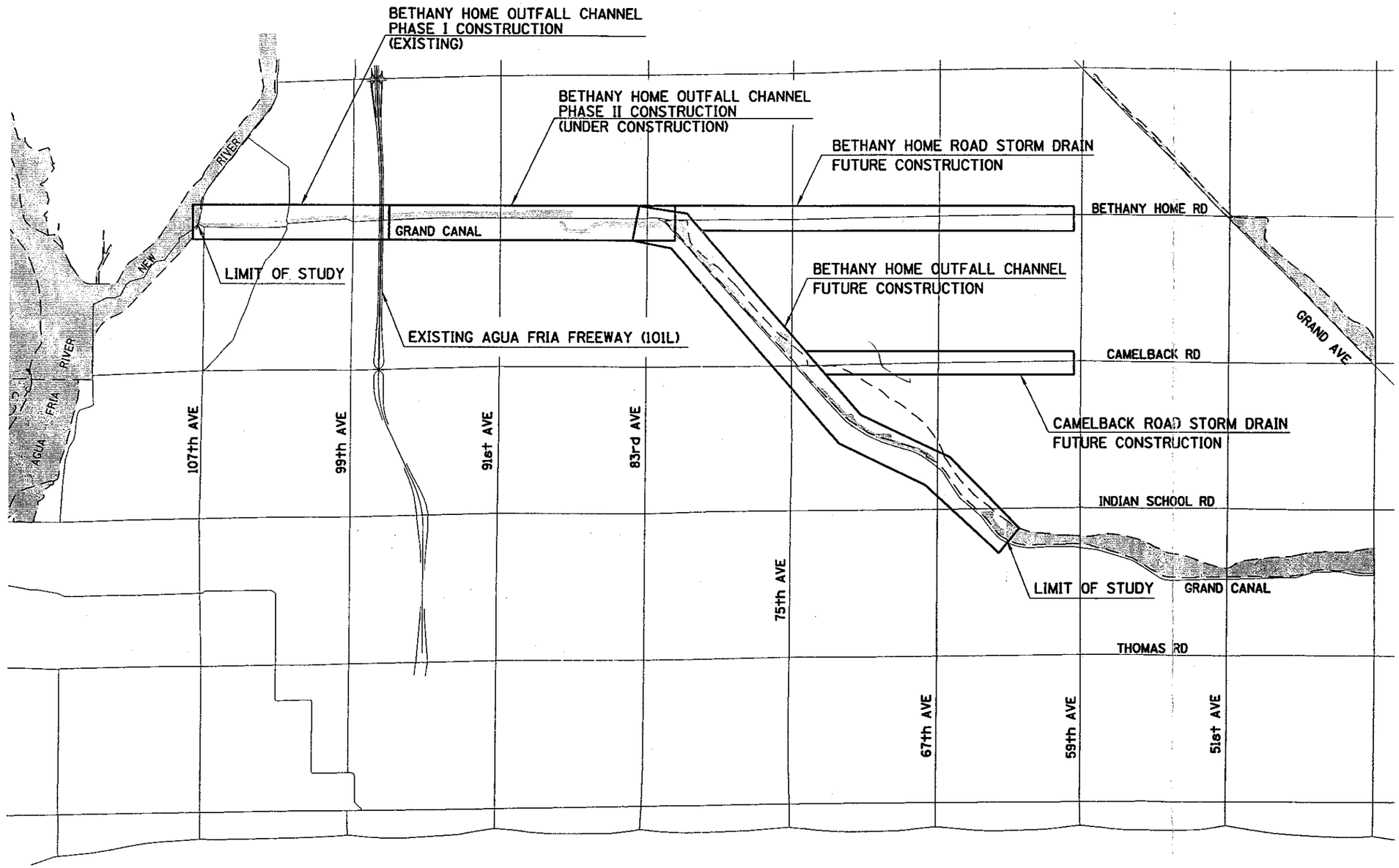
2 COMBINED AT	C8-21W	4517.	13.75	2819.	910.	334.	59.79
HYDROGRAPH AT	D821EW	105.	12.67	32.	8.	3.	46.01
ROUTED TO	RES8N	0.	19.08	0.	0.	0.	46.01
3 COMBINED AT	NULL5	8909.	13.58	5183.	1622.	578.	1.00
2 COMBINED AT	NULL5A	17484.	13.58	9859.	3092.	1105.	1.00

*** NORMAL END OF HEC-1 ***

APPENDIX E

HYDRAULIC ANALYSIS SUPPORTING DOCUMENTATION

E.1 – CONSTRUCTION DRAWINGS AND CONCEPT DRAWINGS



LEGEND

EXISTING FLOODPLAIN

PROPOSED FLOODPLAIN

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL

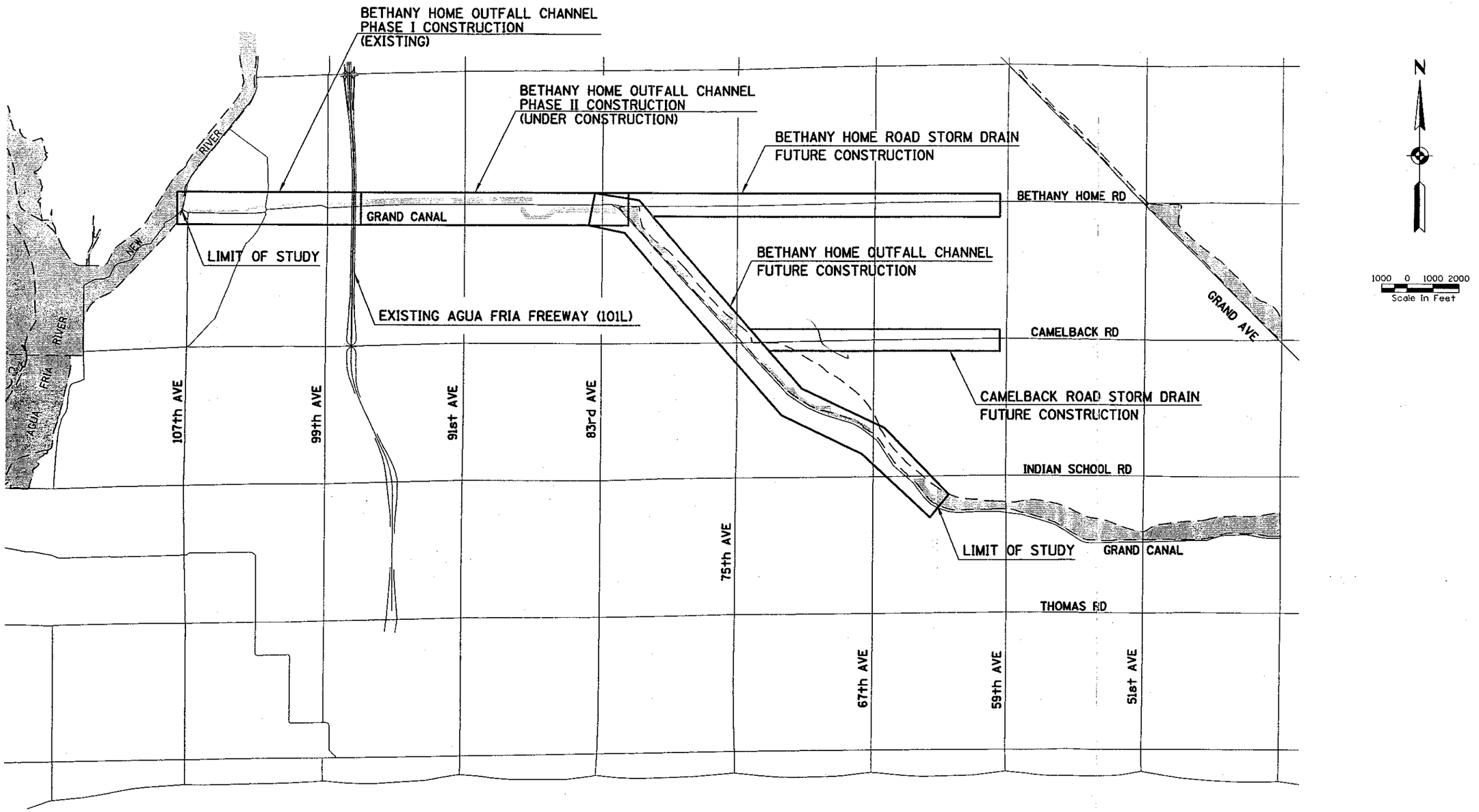
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	12-02
DRAWN	CPG/JAE	12-02
CHECKED	JRM	12-02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. | CONSTRUCTION PLANS | SHEET OF

n:\6888\Prod\Exhibit\drn\c8dkey02.dgn 01/03/03



LEGEND

EXISTING FLOODPLAIN

PROPOSED FLOODPLAIN

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL

PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	12-02
DRAWN	CPG/JAE	12-02
CHECKED	JRM	12-02

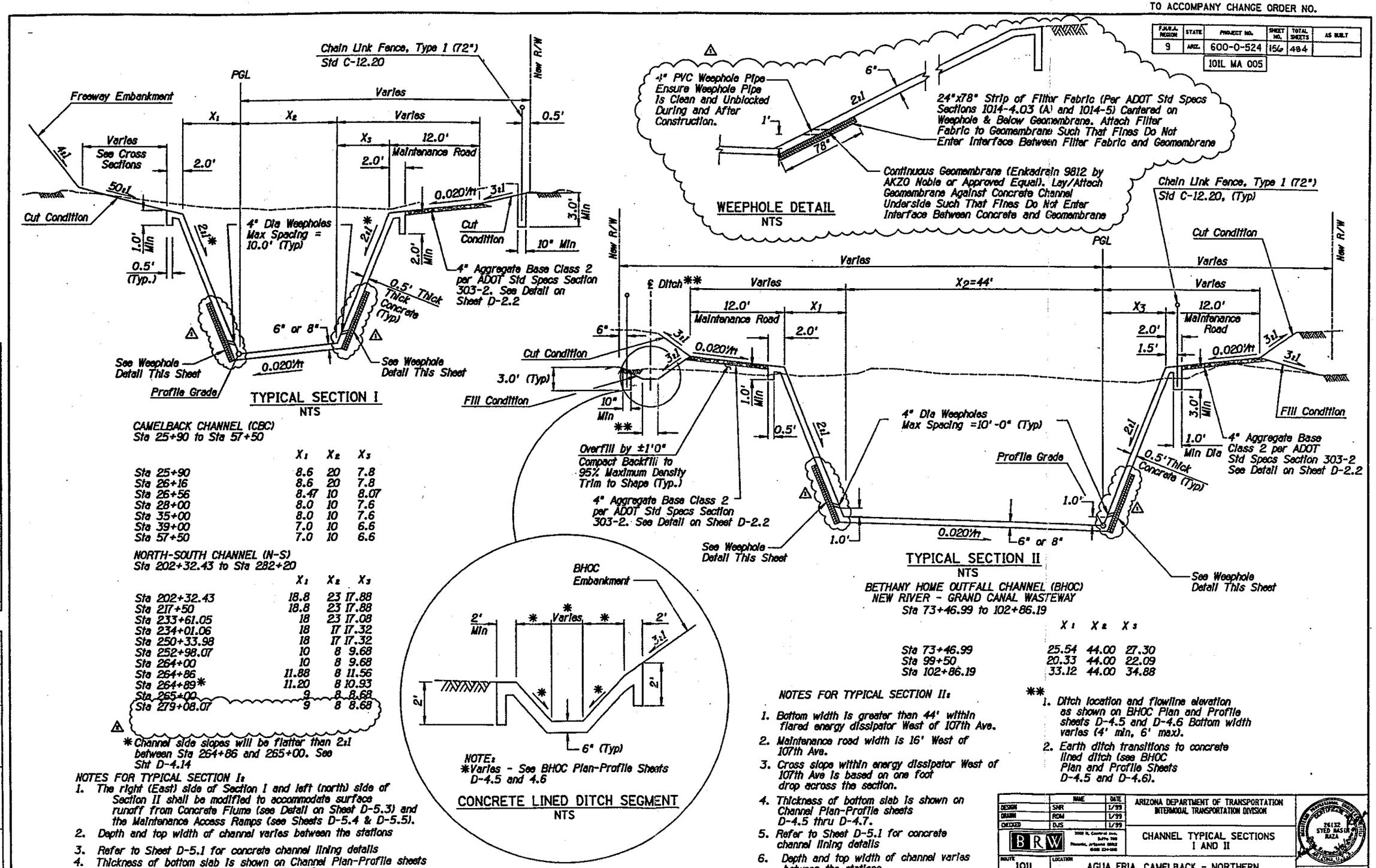
DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. | CONSTRUCTION PLANS | SHEET OF

n:\6888\Prod\Exhibit\drn\c8dkey02.dgn 01/03/03

TO ACCOMPANY CHANGE ORDER NO.

F.A.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	156	484	
		101L MA 005			



CAMELBACK CHANNEL (CBC)
Sta 25+90 to Sta 57+50

	X_1	X_2	X_3
Sta 25+90	8.6	20	7.8
Sta 26+16	8.6	20	7.8
Sta 26+56	8.47	10	8.07
Sta 28+00	8.0	10	7.6
Sta 35+00	8.0	10	7.6
Sta 39+00	7.0	10	6.6
Sta 57+50	7.0	10	6.6

NORTH-SOUTH CHANNEL (N-S)
Sta 202+32.43 to Sta 282+20

	X_1	X_2	X_3
Sta 202+32.43	18.8	23	17.88
Sta 217+50	18.8	23	17.88
Sta 233+61.05	18	23	17.08
Sta 234+01.06	18	17	17.32
Sta 250+33.98	18	17	17.32
Sta 252+98.07	10	8	9.68
Sta 264+00	10	8	9.68
Sta 264+86	11.88	8	11.56
Sta 264+89*	11.20	8	10.93
Sta 265+00	9	8	8.68
Sta 279+08.07	9	8	8.68

*Channel side slopes will be flatter than 2:1 between Sta 264+86 and 265+00. See Sht D-4.14

NOTES FOR TYPICAL SECTION I:

1. The right (East) side of Section I and left (north) side of Section II shall be modified to accommodate surface runoff from Concrete Flume (see Detail on Sheet D-5.3) and the Maintenance Access Ramps (see Sheets D-5.4 & D-5.5).
2. Depth and top width of channel varies between the stations
3. Refer to Sheet D-5.1 for concrete channel lining details
4. Thickness of bottom slab is shown on Channel Plan-Profile sheets D-4.1 thru D-4.4 and D-4.10 thru D-4.15

BETHANY HOME OUTFALL CHANNEL (BHOC)
NEW RIVER - GRAND CANAL WASTEWAY
Sta 73+46.99 to 102+86.19

	X_1	X_2	X_3
Sta 73+46.99	25.54	44.00	27.30
Sta 99+50	20.33	44.00	22.09
Sta 102+86.19	33.12	44.00	34.88

NOTES FOR TYPICAL SECTION II:

1. Bottom width is greater than 44' within flared energy dissipator West of 107th Ave.
2. Maintenance road width is 16' West of 107th Ave.
3. Cross slope within energy dissipator West of 107th Ave is based on one foot drop across the section.
4. Thickness of bottom slab is shown on Channel Plan-Profile sheets D-4.5 thru D-4.7.
5. Refer to Sheet D-5.1 for concrete channel lining details
6. Depth and top width of channel varies between the stations

**
1. Ditch location and flowline elevation as shown on BHOC Plan and Profile sheets D-4.5 and D-4.6 Bottom width varies (4' min, 6' max).
2. Earth ditch transitions to concrete lined ditch (see BHOC Plan and Profile Sheets D-4.5 and D-4.6).

	NAME	DATE
DESIGN	SNR	1/99
DRAWN	RDM	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

CHANNEL TYPICAL SECTIONS I AND II

ROUTE 101L LOCATION AGUA FRIA, CAMELBACK - NORTHERN

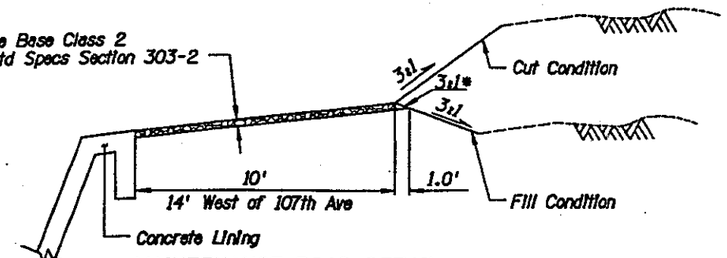
DWG. NO. D-2.1

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

\\PHOENIX\VOL1\PROJECTS\1134170\MIC\DRN\9801TY04.DGN DJG600.PLT JFREI 3-08-2000 14:36:02

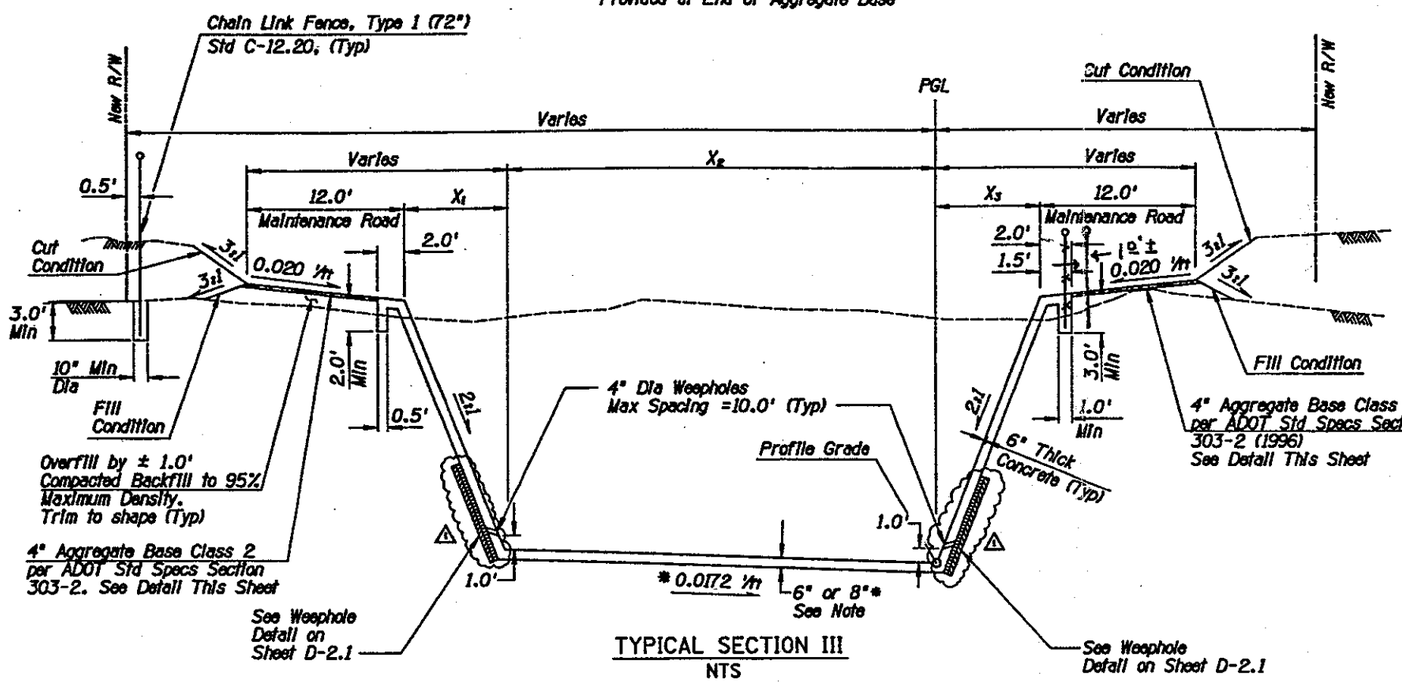
TO ACCOMPANY CHANGE ORDER NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	157	484	
		101L MA 005			



MAINTENANCE ROAD DETAIL
NTS

* In Case of Fill/Cut a 3:1 Taper Will be Provided at End of Aggregate Base



TYPICAL SECTION III
NTS

BETHANY HOME OUTFALL CHANNEL (BHOC)
GRAND CANAL WASTEWAY - AGUA FRIA FREEWAY
Sta 105+05.61 to Sta 140+77.86

	X_1	X_2	X_3
Sta 105+05.61	15.41	62.00	16.50
Sta 105+86.54	14.99	58.00	16.99
Sta 126+00	14.99	58.00	16.99
Sta 127+31.66	17.28	58.00	21.28
Sta 128+55.84	17.07	58.00	21.07
Sta 129+50	16.94	58.00	18.94
Sta 140+58	18.37	58.00	20.37
Sta 140+77.86	18.37	58.00	20.37

*Varies - See Channel Plan-Profile Sheet D-4.7

NOTES FOR TYPICAL SECTION III:

1. The left (North) side of Section shall be modified to accommodate surface runoff over Conc Flume, (See Sheet D-5.3) and Maintenance Access Ramp (See Sheets D-5.4 & D-5.5).
2. Depth and top width of channel varies between the stations.
3. Refer to sheet D-5.1 for concrete channel lining details.
4. Thickness of bottom slab is shown on Channel Plan-Profile sheets D-4.7 thru D-4.9.

SECTION ELIMINATED

	NAME	DATE
DESIGN	SNR	1/99
DRAWN	FOM	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

CHANNEL TYPICAL SECTIONS III AND IV

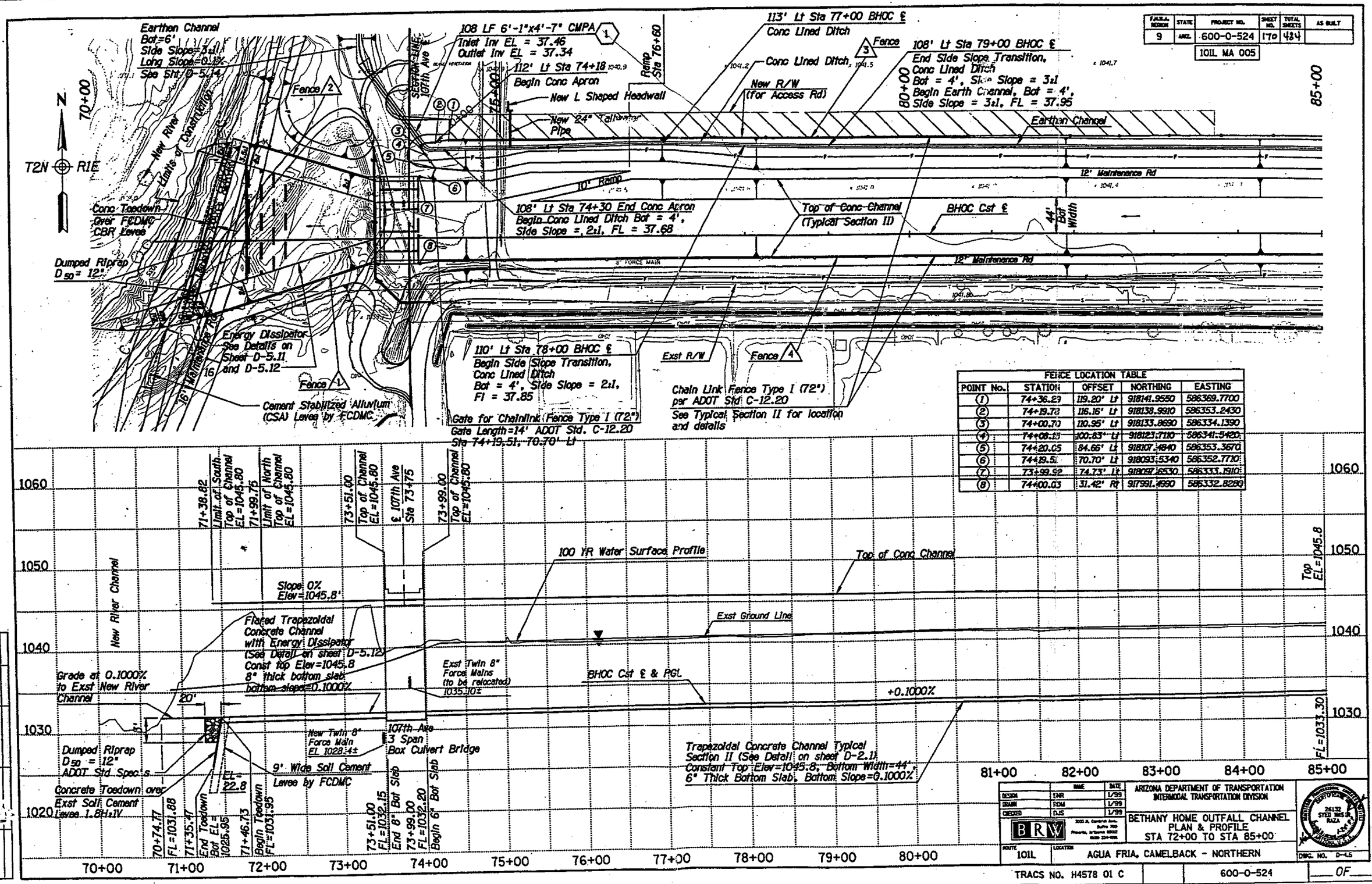
ROUTE 101L | LOCATION AGUA FRIA, CAMELBACK - NORTHERN | DWG. NO. D-2.2

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

\\PHOENIX\VOL1\PROJECTS\1134417Ø\MIC\DRN\98Ø1TY05.DGN
DJG00.PLT
JFREI 3-08-2000 14:35:32

CONSTRUCTION DISPLAY ON

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	170	434	
		101L MA 005			



POINT No.	STATION	OFFSET	NORTHING	EASTING
1	74+36.23	119.20' Lt	918141.9550	586369.7700
2	74+19.73	116.16' Lt	918138.9910	586353.2430
3	74+00.70	110.95' Lt	918133.8690	586334.1390
4	74+08.13	100.83' Lt	918123.7110	586341.5420
5	74+20.05	84.66' Lt	918107.4840	586353.3670
6	74+19.51	70.70' Lt	918093.5340	586352.7710
7	73+99.52	74.73' Lt	918097.6530	586333.1910
8	74+00.03	31.42' Rt	917991.4990	586332.8280

FENCE LOCATION TABLE

	NAME	DATE
DESIGN	SNR	1/99
DRAWN	RDM	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BETHANY HOME OUTFALL CHANNEL
PLAN & PROFILE
STA 72+00 TO STA 85+00

ROUTE 101L LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.5

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

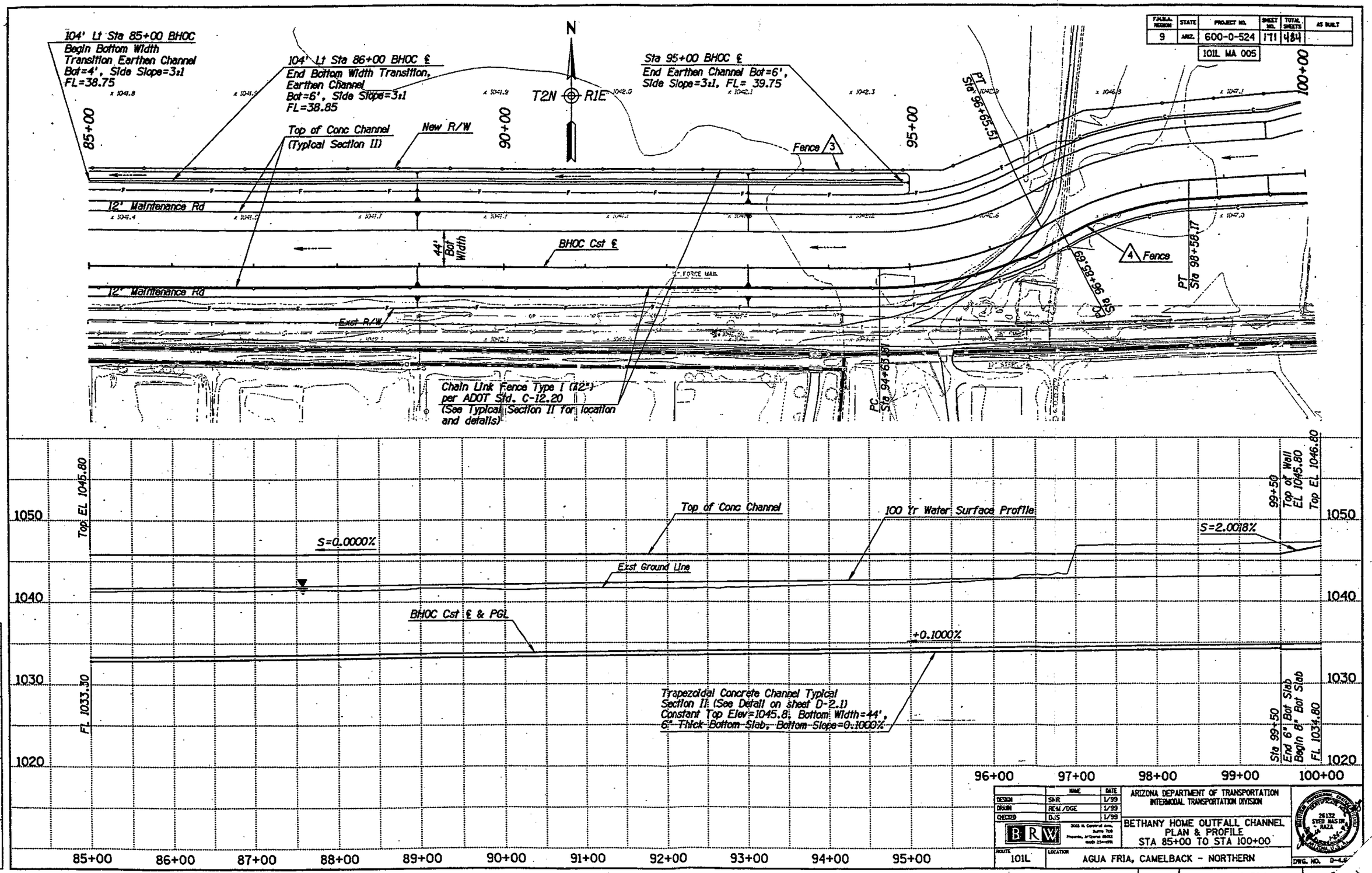
R:\1134170\MIC\DRN\980CHIA.DGN
DJG00.PLT
BMALO 1-26-1999 15:19:28

REDUCED SIZE - DO NOT SCALE

REDUCED SIZE - DO NOT SCALE

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	171	484	

101L MA 005



	NAME	DATE
DESIGN	SNR	1/99
DRAWN	REM/DGE	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BETHANY HOME OUTFALL CHANNEL
PLAN & PROFILE
STA 85+00 TO STA 100+00

ROUTE 101L | LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.0

TRACS NO. H4578 01 C | 600-0-524

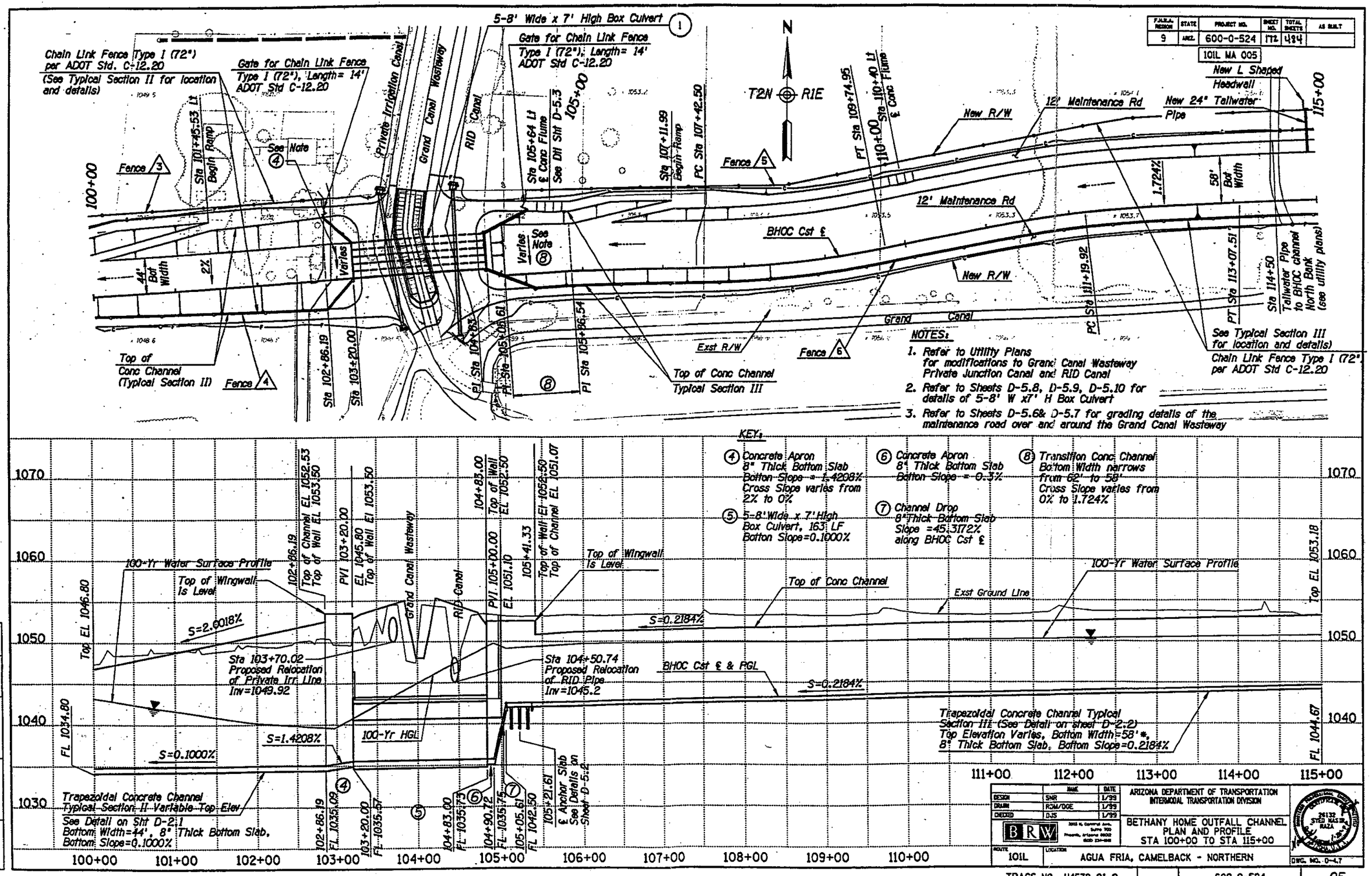
REDUCED SIZE DO NOT SCALE

L:\PROJECTS\1134417B\MIC\DRN\980CHIB.DGN
DJG00.PLT
WWELC 1-26-1999 12:29:38

REDUCED SIZE DO NOT SCALE

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	172	484	

101L MA 005



	NAME	DATE
DESIGN	SNR	1/99
DRAWN	RCM/DGE	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BETHANY HOME OUTFALL CHANNEL
PLAN AND PROFILE
STA 100+00 TO STA 115+00

ROUTE 101L | LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.7

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

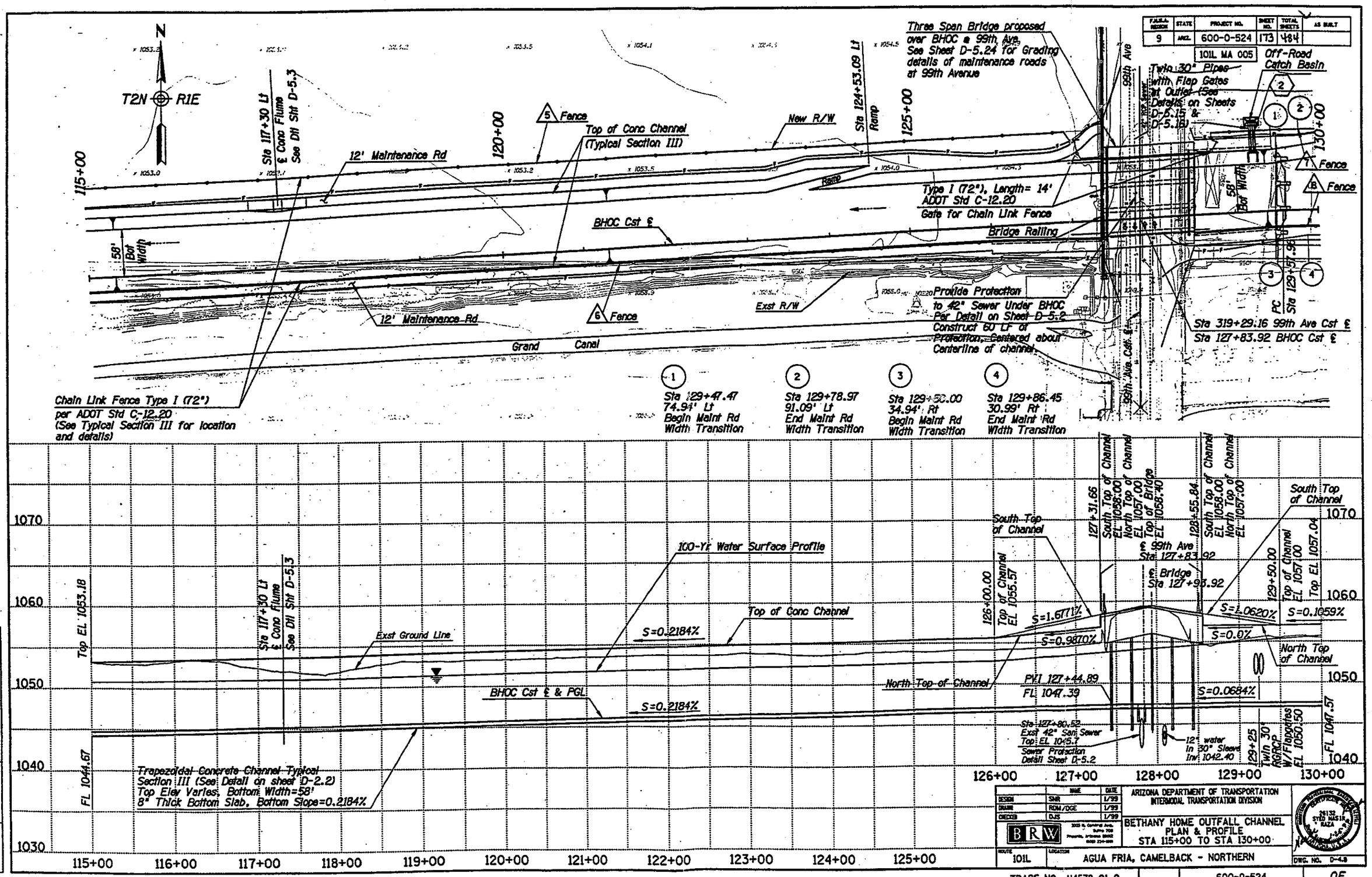
REDUCED SIZE - DO NOT SCALE

R:\1344170\MICDRN\9801CHIC.DGN 15:20:56
DJ6DB.PLT 1-25-1999
BMALO

REDUCED SIZE - DO NOT SCALE

F.A.R.S.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	173	484	

101L MA 005



	NAME	DATE
DESIGN	SMR	1/99
DRAWN	RDM/DGE	1/99
CHECKED	DJS	1/99

BRW 3003 N. Central Ave. Suite 700 Phoenix, Arizona 85012 (602) 234-8000

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BETHANY HOME OUTFALL CHANNEL
PLAN & PROFILE
STA 115+00 TO STA 130+00

ROUTE 101L LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.8

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

REDUCED SIZE DO NOT SCALE

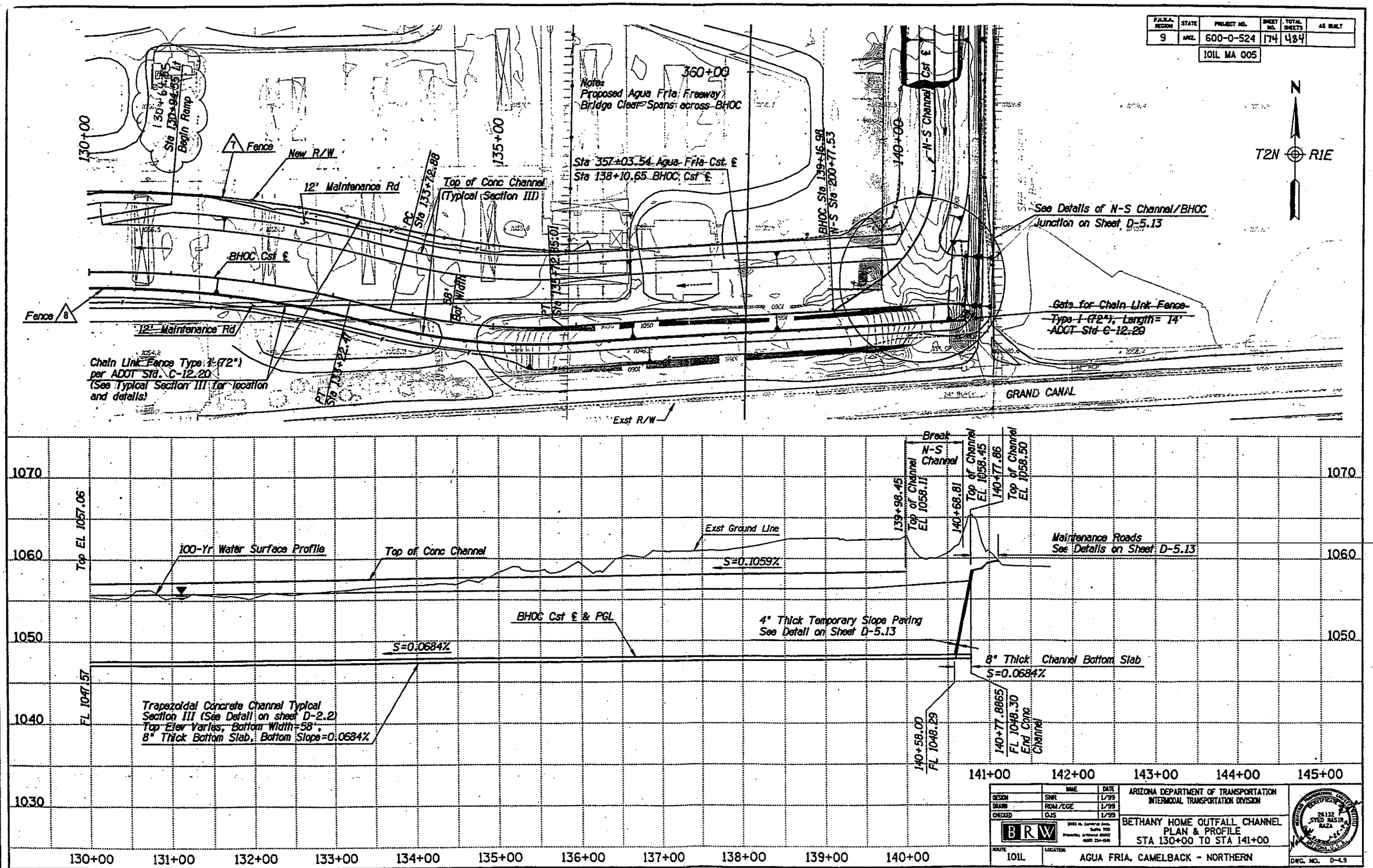
R:\1344170\MIC\DRN\9801CHID.DGN
DJ6000.PLT
BMALO 1-26-1999 15:21:39

REDUCED SIZE DO NOT SCALE

CONSTRUCTION DISPLAY ON

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	174	484	

101L MA 005



	NAME	DATE
DESIGN	SNR	1/99
DRAWN	RDM/CGE	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BETHANY HOME OUTFALL CHANNEL
PLAN & PROFILE
STA 130+00 TO STA 141+00

ROUTE 101L LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.3

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

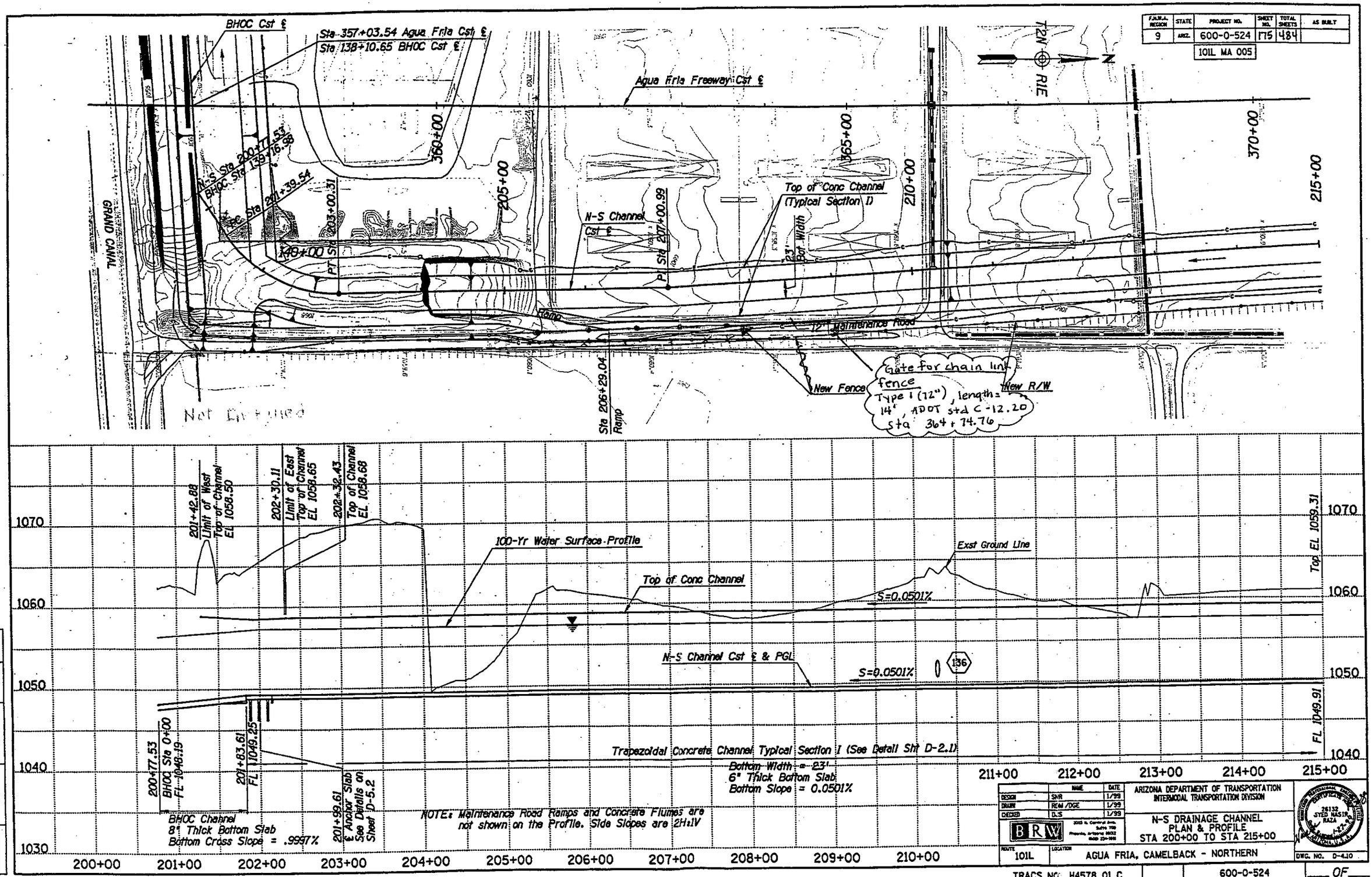
REDUCED SIZE - DO NOT SCALE

R:\1134417\MIC\DRN\9801CHIE.DGN
DJG00.PLT
BMALO 1-26-1999 15:22:40

REDUCED SIZE - DO NOT SCALE

CONSTRUCTION DISPLAY ON

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524	175	484	
		101L MA 005			



	NAME	DATE
DESIGN	SMR	1/99
DRAWN	REM/DGE	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

N-S DRAINAGE CHANNEL
PLAN & PROFILE
STA 200+00 TO STA 215+00

ROUTE 101L | LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-4.10

TRACS NO. H4578 01 C | 600-0-524 | ___ OF ___

REDUCED SIZE DO NOT SCALE

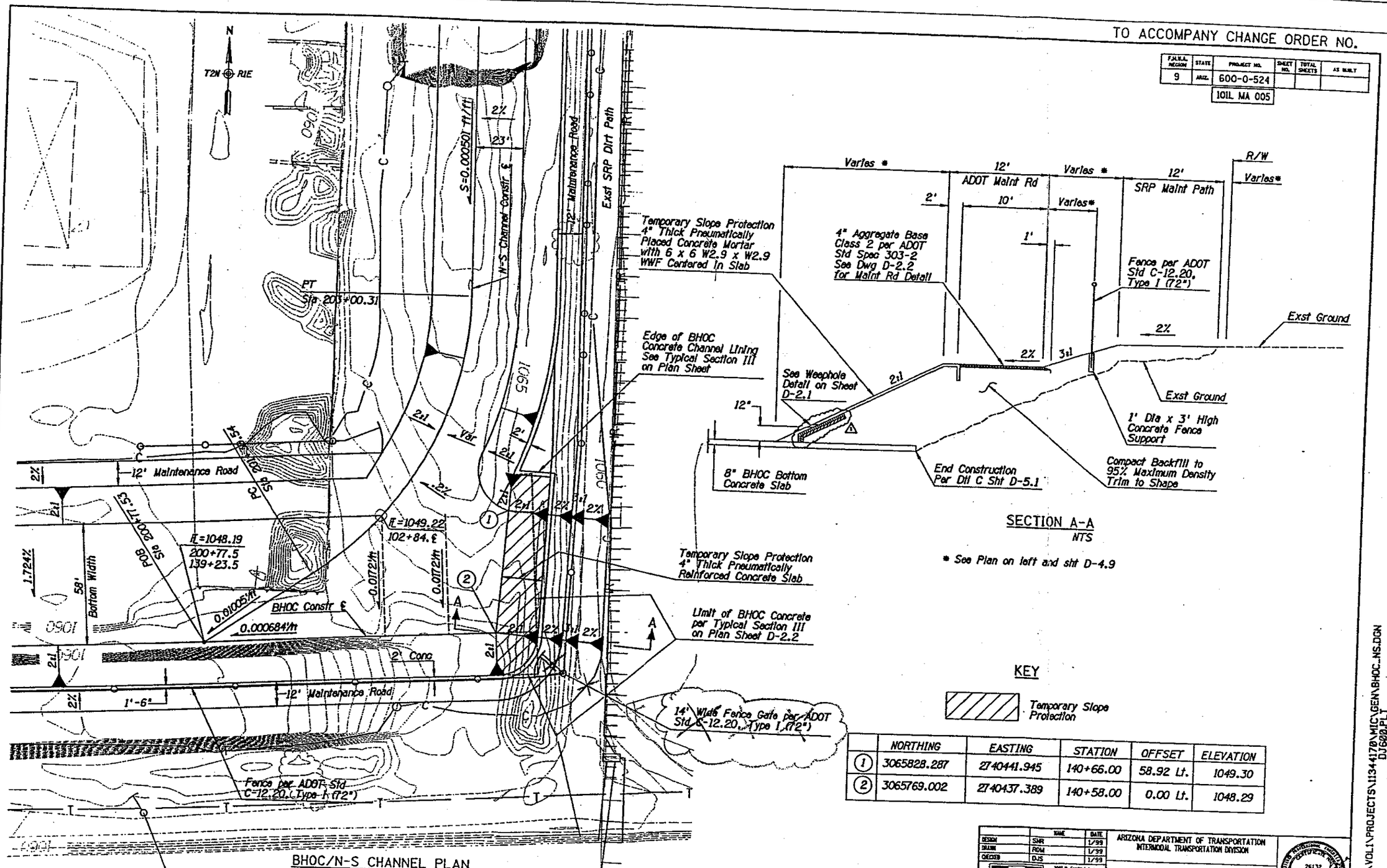
DO NOT SCALE REDUCED SIZE

\\PHOENIX\DL1\PROJECTS\1134417\0\MIC\DRW\98\CH2A.DGN DJ6688.PLT 14:38:23
BMALO 1-27-1999

TO ACCOMPANY CHANGE ORDER NO.

F.H.W.A. REGION	STATE	PROJECT NO.	SHEET NO.	TOTAL SHEETS	AS BUILT
9	ARIZ.	600-0-524			

101L MA 005



	NORTHING	EASTING	STATION	OFFSET	ELEVATION
1	3065828.287	2740441.945	140+66.00	58.92 Lt.	1049.30
2	3065769.002	2740437.389	140+58.00	0.00 Lt.	1048.29

	NAME	DATE
DESIGN	SNR	1/99
DRAWN	RDM	1/99
CHECKED	DJS	1/99

BRW

ARIZONA DEPARTMENT OF TRANSPORTATION
INTERMODAL TRANSPORTATION DIVISION

BHOC/N-S CHANNEL JUNCTION DETAILS

ROUTE 101L

LOCATION AGUA FRIA, CAMELBACK - NORTHERN

DWG. NO. D-5.13

TRACS NO. H4578 01 C

600-0-524

___ OF ___

\\PHOENIX\VOL1\PROJECTS\H344178\MIC\GEN\BHOC_NS.DGN
DJG60.PLT 10:39:43
KPEND 7-22-1999

CONSTRUCTION DISPLAY ON

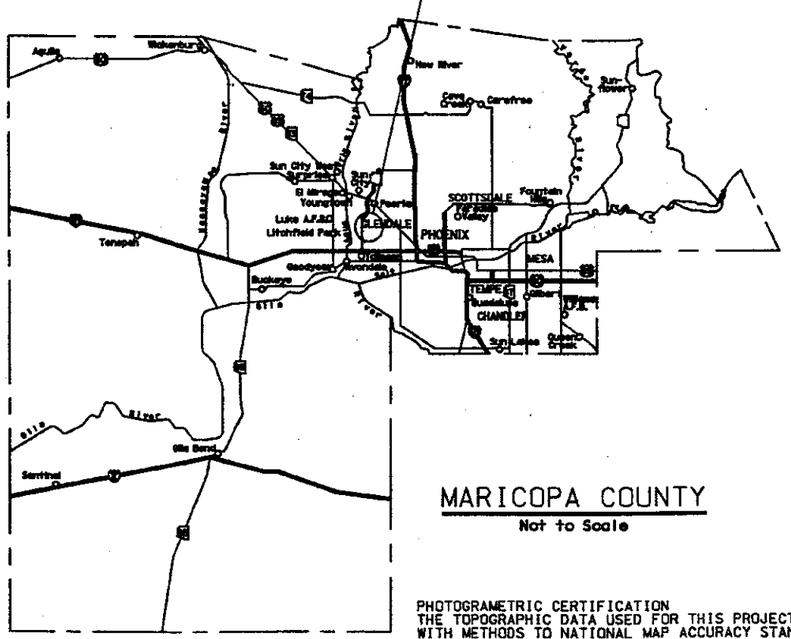
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

IN COOPERATION WITH THE CITIES OF GLENDALE AND PHOENIX

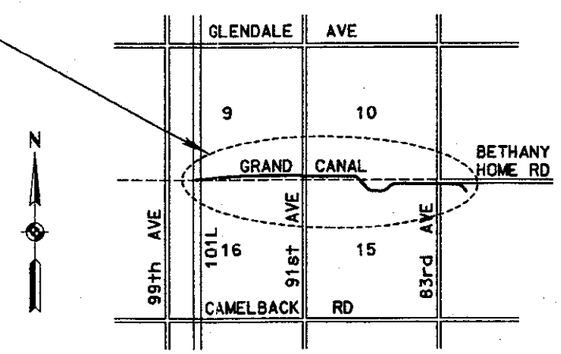
PLANS FOR THE CONSTRUCTION OF:
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

FCD CONTRACT NO. 2001C053

PROJECT LOCATION



MARICOPA COUNTY
Not to Scale



VICINITY MAP
Not to Scale

APPROVED BY:

CITY OF GLENDALE — DATE

CITY OF PHOENIX — DATE

MARICOPA COUNTY DEPT. OF TRANSPORTATION — DATE

MARICOPA COUNTY DEPT. OF ENVIRONMENTAL SERVICES — DATE

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

ISSUED FOR PUBLIC BIDDING BY:

CHIEF ENGINEER AND GENERAL MANAGER — DATE

BOARD OF DIRECTORS OF THE FLOOD CONTROL DISTRICT

DON STAPLEY - CHAIRMAN

DISTRICT 1	FULTON BROCK
DISTRICT 2	DON STAPLEY
DISTRICT 3	ANDY KUNASEK
DISTRICT 4	MAX W. WILSON
DISTRICT 5	MARY ROSE WILCOX

PHOTOGRAMETRIC CERTIFICATION
THE TOPOGRAPHIC DATA USED FOR THIS PROJECT WAS PREPARED BY KENNEY AERIAL MAPPING WITH METHODS TO NATIONAL MAP ACCURACY STANDARDS. ONE FOOT CONTOUR INTERVALS ARE BASED ON GROUND CONTROL SURVEY DATA PROVIDED BY TETRA TECH. INC.

TWO WORKING DAYS BEFORE YOU DIG, CALL 263-1100 BLUE STAKE

LEGEND

- BENCH MARK
- EXIST. SURVEY MONUMENT (BRASS CAP FLUSH)
- EXIST. SURVEY MONUMENT (BRASS CAP IN HAND HOLE)
- EXIST. COMBINED CURB & GUTTER - MAG DET. 220 TYPE "A"
- EXIST. CONCRETE SIDEWALK
- EXISTING DITCH
- EXISTING IRRIGATION STRUCTURE
- EXISTING IRRIGATION STANDPIPE
- 12"W — EXISTING WATER LINE / SIZE
- EXISTING FIRE HYDRANT
- NEW R/W
- EXISTING WATER VALVE OPERATING NUT ELEVATION
- 24"S — EXISTING SEWER LINE / SIZE
- EXISTING MANHOLE
- NEW MANHOLE
- 78"SD — EXISTING STORM DRAIN / SIZE
- 18"IR — EXISTING IRRIGATION / SIZE
- NEW PIPE FOR STORM DRAIN OR IRRIGATION LINE
- CATV — EXISTING UNDERGROUND CABLE TELEVISION
- P — EXISTING UNDERGROUND ELECTRIC
- 2"G — EXISTING GAS LINE / SIZE
- T — EXISTING UNDERGROUND TELEPHONE CABLE
- EXISTING STREET SIGN
- EXISTING TRAFFIC SIGN
- EXISTING UTILITY POLE
- EXISTING WIRE FENCE
- EXISTING WOOD FENCE
- EXISTING CHAIN LINK FENCE
- DOWN ANCHOR
- STREET LIGHT
- EASEMENT LINE
- EXISTING OR NEW R/W LINE
- PAVEMENT CENTER LINE AND OR MONUMENT LINE (℄ AND / OR M)
- 2 — BORING HOLE / NUMBER (SEE SOIL BORING LOGS)
- TELEPHONE RISER
- WM — WATER SERVICE BOX
- MST — MID SPIN TAP (ON UTILITIES)
- WV — WATER VAULT
- T — TRAFFIC SIGNAL BOX
- GATE W/POSTS
- SM — SAWCUT & MATCH
- SECTION LETTER OR DETAIL NUMBER
- SHEET/DRAWING NUMBER TO LOCATE

BASIS OF DESIGN

CHANNEL DESIGN FLOW RATES (100-YEAR, 24-HOUR STORM)

LOCATION	FLOW RATE
NEW RIVER CONFLUENCE	4579 CFS
AGUA FRIA FREEWAY CONFLUENCE	4539 CFS
97th AVE TO 91st AVE	3340 CFS
91st AVE TO 87th AVE	3097 CFS
87th AVE TO 83rd AVE	2844 CFS
91st AVE DETENTION BASIN	176 CFS (INFLOW)
	88 CFS (OUTFLOW)

DESIGN VOLUME = 20.6 AC-FT

DESIGN WATER SURFACE ELEV = 1068.5 FT

FREEBOARD VARIES FROM 0.5 FT TO 1.5 FT MINIMUM

UTILITY NOTIFICATION

PHONE NO.	COMPANY	CONTACT
602-236-4887	SALT RIVER PROJECT (IRRIGATION)	STEVE TANIS
602-236-8643	SALT RIVER PROJECT (POWER DISTRIBUTION)	GREG WILSON
602-236-8066	SALT RIVER PROJECT (POWER DISTRIBUTION)	ROBERT MALDONADO
602-236-8073	SALT RIVER PROJECT (POWER TRANSMISSION)	BRENT BORNMANN
623-322-7288	COX COMMUNICATIONS	WALTER COOMBS
623-694-1783	COX COMMUNICATIONS (FIBER OPTICS)	RANDY SIMS
623-930-4762	CITY OF GLENDALE SEWER	TRINI LEIJA
623-930-2713	CITY OF GLENDALE WATER	JEFF WALKER
623-930-3630	CITY OF GLENDALE ENGINEERING	DAN SHERWOOD
602-484-5342	SOUTHWEST GAS	SUE MOSLEY
602-371-7989	ARIZONA PUBLIC SERVICE	BOBBY GARZA
602-630-4510	QWEST	LINDA COCKRELL

ABBREVIATIONS

CSTR	CONSTRUCTION
DESC	DESCRIPTION
EQ	EQUAL
FOC	FIBER OPTIC CABLE
FND	FOUND
OHE	OVERHEAD ELECTRIC
PG	PAGE
P/L	PROPERTY LINE
P	PAVEMENT
G	GUTTER
T	TOP OF CURB
PRV	PRIVATE
SPG	SPACING
UGT	UNDERGROUND TELEPHONE CABLE
IE	INVERT ELEVATION
TL	TOP OF LINING
TYP	TYPICAL
C	CONSTRUCTION CENTERLINE
M	MONUMENT LINE
CY	CUBIC YARDS
SY	SQUARE YARDS
SF	SQUARE FEET
LF	LINEAR FEET
EA	EACH
LS	LUMP SUM
DWG	DRAWING
NPI	NON PAY ITEM
R/W	RIGHT-OF-WAY

DRAWING NO.	TITLE	SHEET NO.
	COVER DRAWINGS / VICINITY MAP	1
G-1.01	INDEX OF DRAWINGS & LEGEND	2
G-1.02	GENERAL NOTES	3
G-1.03	KEY MAP	4
Q-1.01 - Q-1.03	QUANTITY SUMMARY DRAWINGS	5-7
G-2.01	BENCHMARK AND CONTROL POINT PLAN	8
G-2.02 - G2-06	GEOMETRIC LAYOUT DRAWINGS	9-13
C-1.01 - C-1.03	TYPICAL CHANNEL SECTIONS	14-16
C-2.01 - C-2.12	CHANNEL/BOX CULVERT PLAN AND PROFILE	17-28
C-3.01 - C-3.06	STORM DRAIN PIPE PROFILES	29-34
C-4.01 - C-4.28	CHANNEL GRADING DRAWINGS	35-62
C-5.01 - C-5.04	ROADWAY SECTIONS AND DRAWINGS	63-66
D-1.01 - D-1.10	DRAINAGE DETAILS	67-76
S-1.01 - S-1.13	91ST AVENUE BRIDGE STRUCTURAL DRAWINGS	77-89
S-2.01 - S-2.13	83RD AVENUE BRIDGE STRUCTURAL DRAWINGS	90-102
S-3.01 - S-3.07	87TH AVENUE RCBC	103-109
S-4.01 - S-4.05	83RD AVENUE RCBC	110-114
S-5.01 - S-5.06	87TH AVENUE/GRAND CANAL PEDESTRIAN BRIDGE	115-120
S-6.01 - S-6.06	83RD AVENUE/GRAND CANAL PEDESTRIAN BRIDGE	121-126
S-7.01 - S-7.06	STRUCTURE AESTHETICS	127-132
L-1.01 - L-4.06	LANDSCAPE DRAWINGS	133-173
L-5.01 - L-6.08	IRRIGATION DRAWINGS	174-207
E-1.01 - E-3.02	LIGHTING DRAWINGS	208-223
U-1.01 - U-2.04	UTILITY RELOCATION DRAWINGS	224-235
	SRP IRRIGATION RELOCATION	236-269
SB-1.01 - SB-1.02	SOIL BORING LOGS	270-271
X-1.01 - X-1.26	CHANNEL CROSS SECTIONS	272-297

ESTIMATED EARTH WORK QUANTITIES

NET CHANNEL EXCAVATION	428,628 CY
91st AVE DETENTION BASIN EXCAVATION	11,813 CY
EMBANKMENT	34,726 CY

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

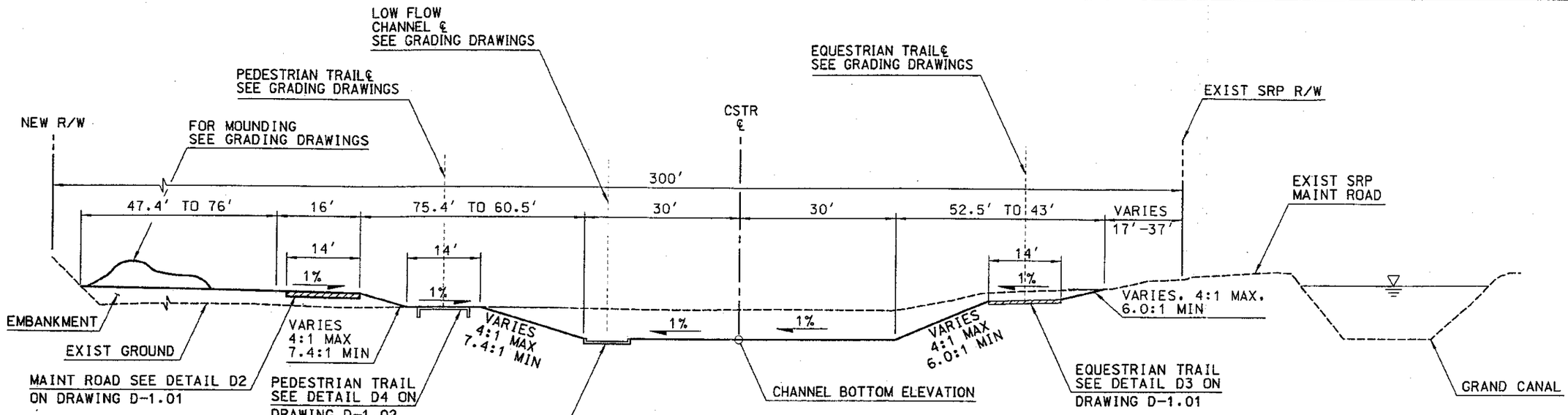
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/GML	09-02
CHECKED	JRM	09-02

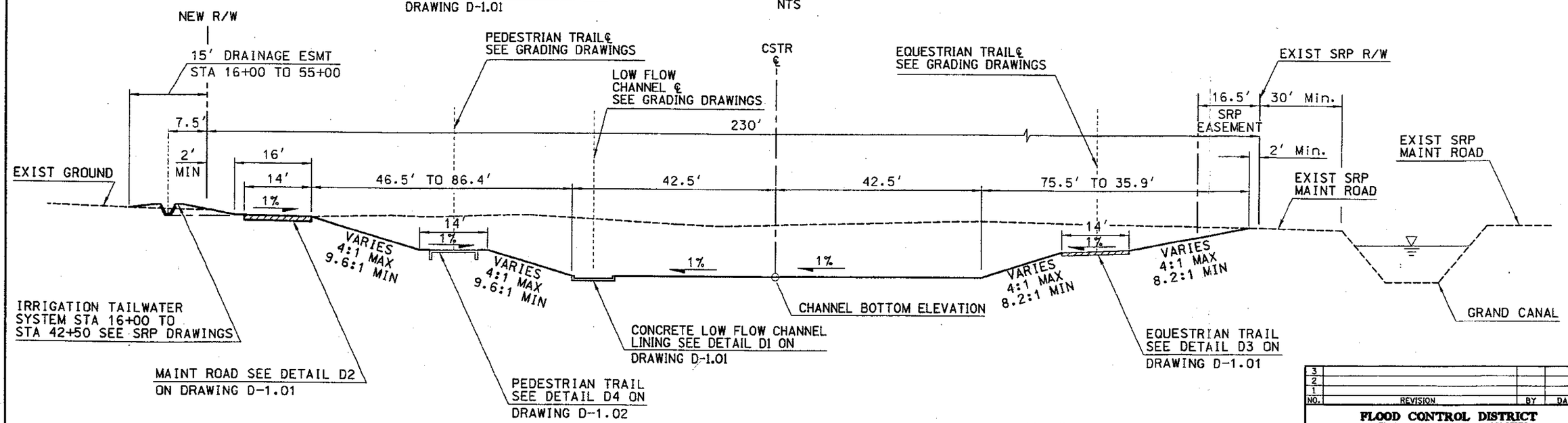
REGISTERED PROFESSIONAL ENGINEER (CIVIL) 24999 JEFFREY R. MINCH ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. G-1.01 | INDEX OF SHEETS/LEGEND | SHEET 2 OF 297



TYPICAL SECTION
STA 56+38.35 TO STA 64+50.00
NTS



TYPICAL SECTION
STA 17+41.06 TO STA 53+30.00
NTS

NOTES

1. SEE GRADING DRAWINGS FOR VARIABLE DIMENSIONS AND GAPS IN CHANNEL STATIONING.
2. SEE DRAWINGS D-1.03 AND D-1.04 FOR CONCRETE CHANNEL SECTIONS.

NO.	REVISION	BY	DATE
3			
2			
1			

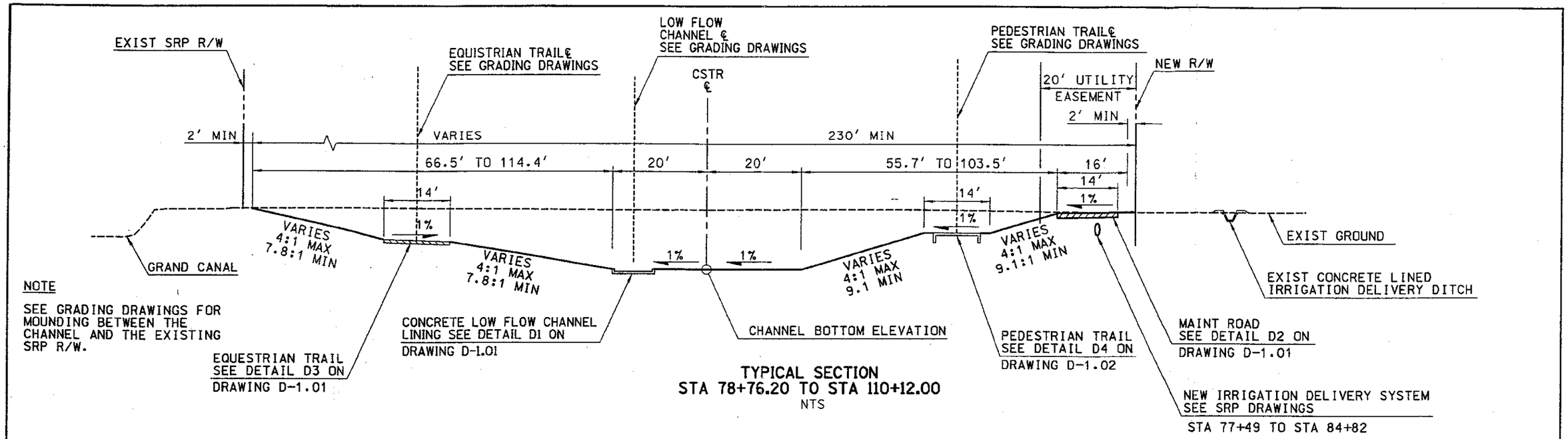
FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	CPG	09-02
CHECKED	JRM	09-02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

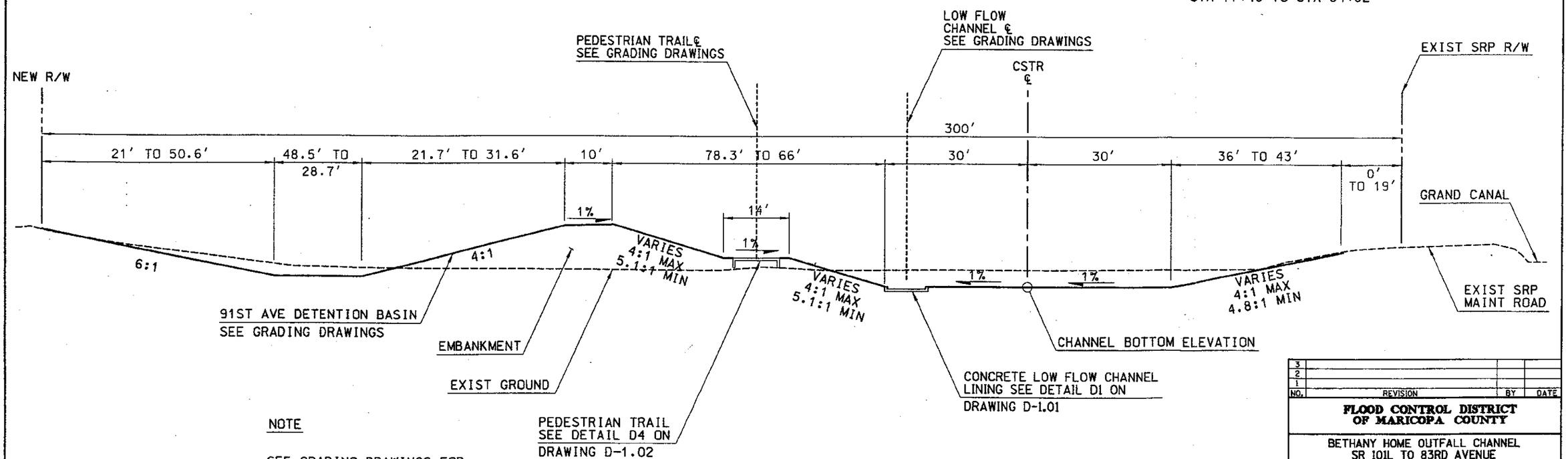
DRAWING NO. C-1.01 | TYPICAL SECTIONS | SHEET OF 14 297



NOTE

SEE GRADING DRAWINGS FOR MOUNDING BETWEEN THE CHANNEL AND THE EXISTING SRP R/W.

TYPICAL SECTION
STA 78+76.20 TO STA 110+12.00
NTS



NOTE

SEE GRADING DRAWINGS FOR VARIABLE DIMENSIONS AND GAPS IN CHANNEL STATIONING.

TYPICAL SECTION
STA 64+50.00 TO STA 76+76.40
NTS

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

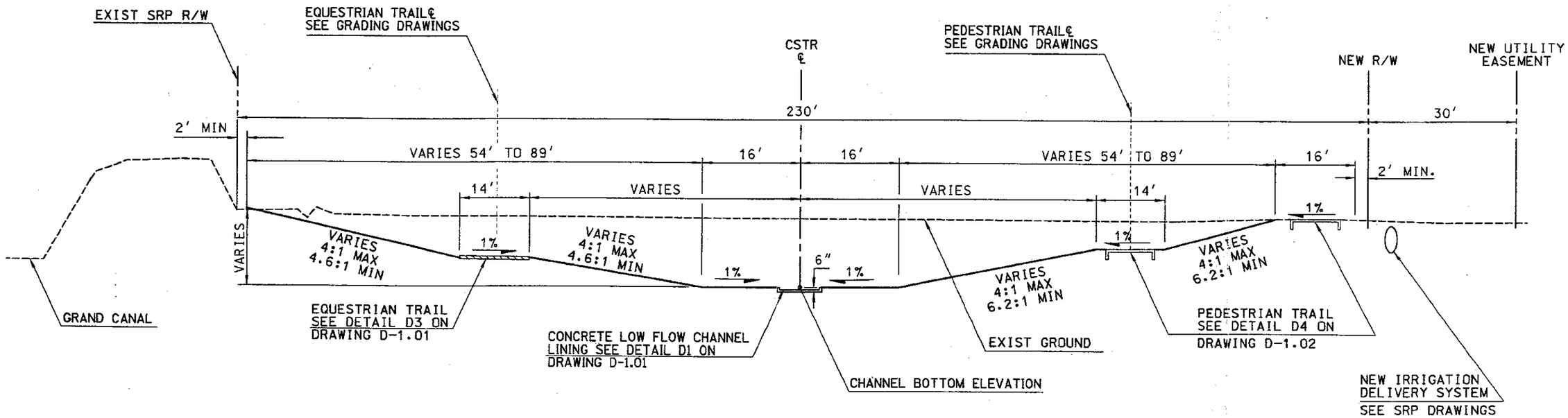
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	CPG	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-1.02 | TYPICAL SECTIONS | SHEET OF 15 297

n:\6888\Prod\gen\88dgty03.dgn 09/09/2002



TYPICAL SECTION
STA 113+40.00 TO STA 117+05.00
NTS

NOTES

1. SEE GRADING DRAWINGS FOR VARIABLE DIMENSIONS AND GAPS IN CHANNEL STATIONING.
2. SEE DRAWING D-1.05 FOR CONCRETE CHANNEL SECTION FROM STA 111+35 TO 112+81.

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

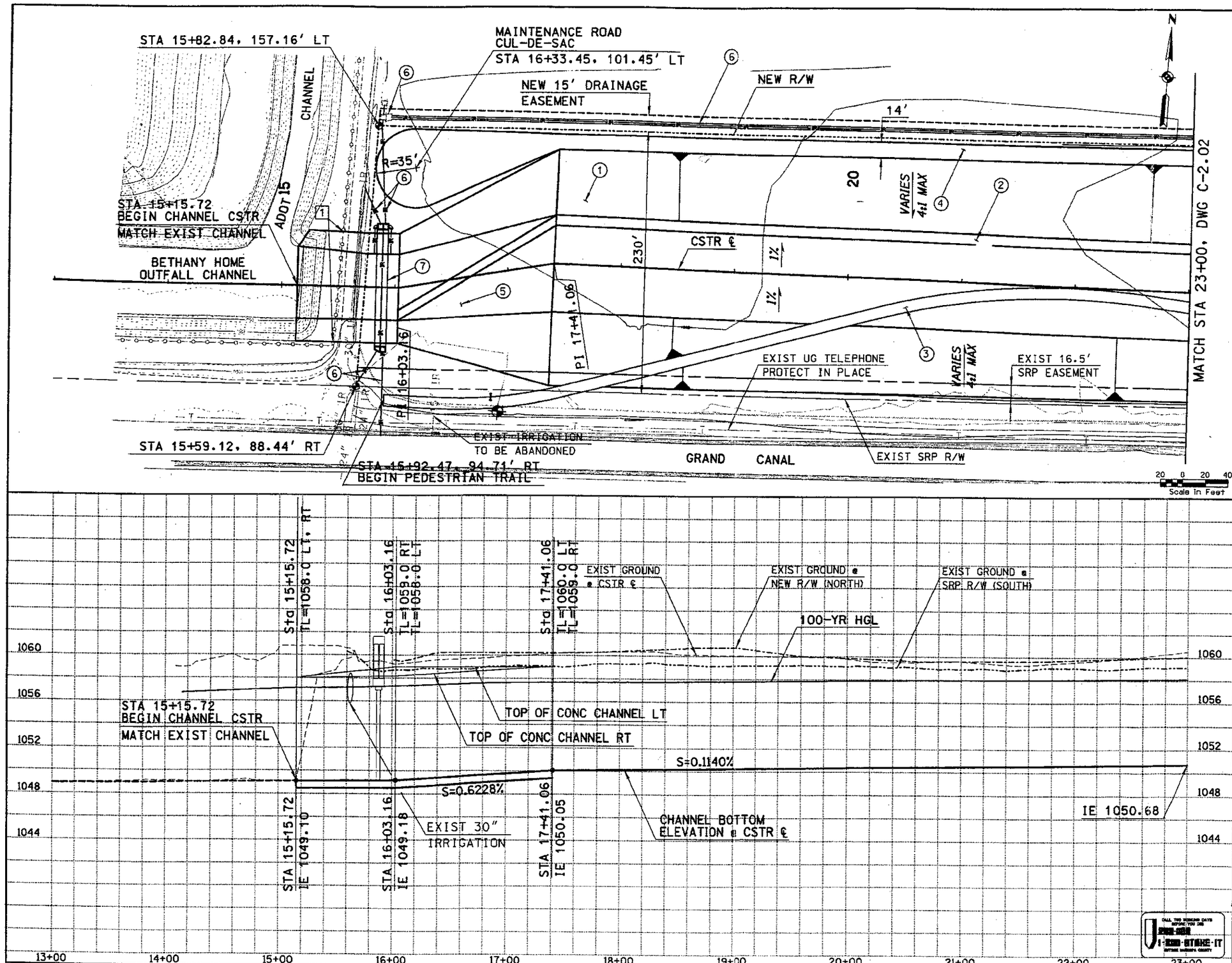
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	CPG	09-02
CHECKED	JRM	09-02

24899 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-1.03 | TYPICAL SECTIONS | SHEET OF 16 247

n:\6888\Prod\gen\88dgty06.dgn 09/09/2002



n:\6888\Prod\drn\88dpp01.dgn 09/09/2002 11:17:56 AM

REMOVE

1 REMOVE CHAIN LINK FENCE. SEE DRAWING D-1.03 (102 LF) STA 15+53.20, 48.5' LT TO STA 15+46.25, 53' RT

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 (39507 CY)
2. CONSTRUCT LOW FLOW CHANNEL SEE DETAIL D1 ON DRAWING D-1.01(560 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02(7186 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1704 SY)
5. CONSTRUCT CONCRETE CHANNEL TRANSITION. SEE DETAIL D5 ON DRAWING D-1.03 (2823 SY)
6. CONSTRUCT 97TH AVE IRRIGATION TAILWATER SYSTEM. SEE SRP PLAN SHEETS 245 TO 250 (LS)
7. CONSTRUCT 97TH AVE IRRIGATION FLUME. SEE SRP PLAN SHEETS 266 TO 269. EXTEND 16" DIP DRAIN PIPES TO CHANNEL LINING WITH ADOT STD C-13.80 PIPE COLLAR (LS)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

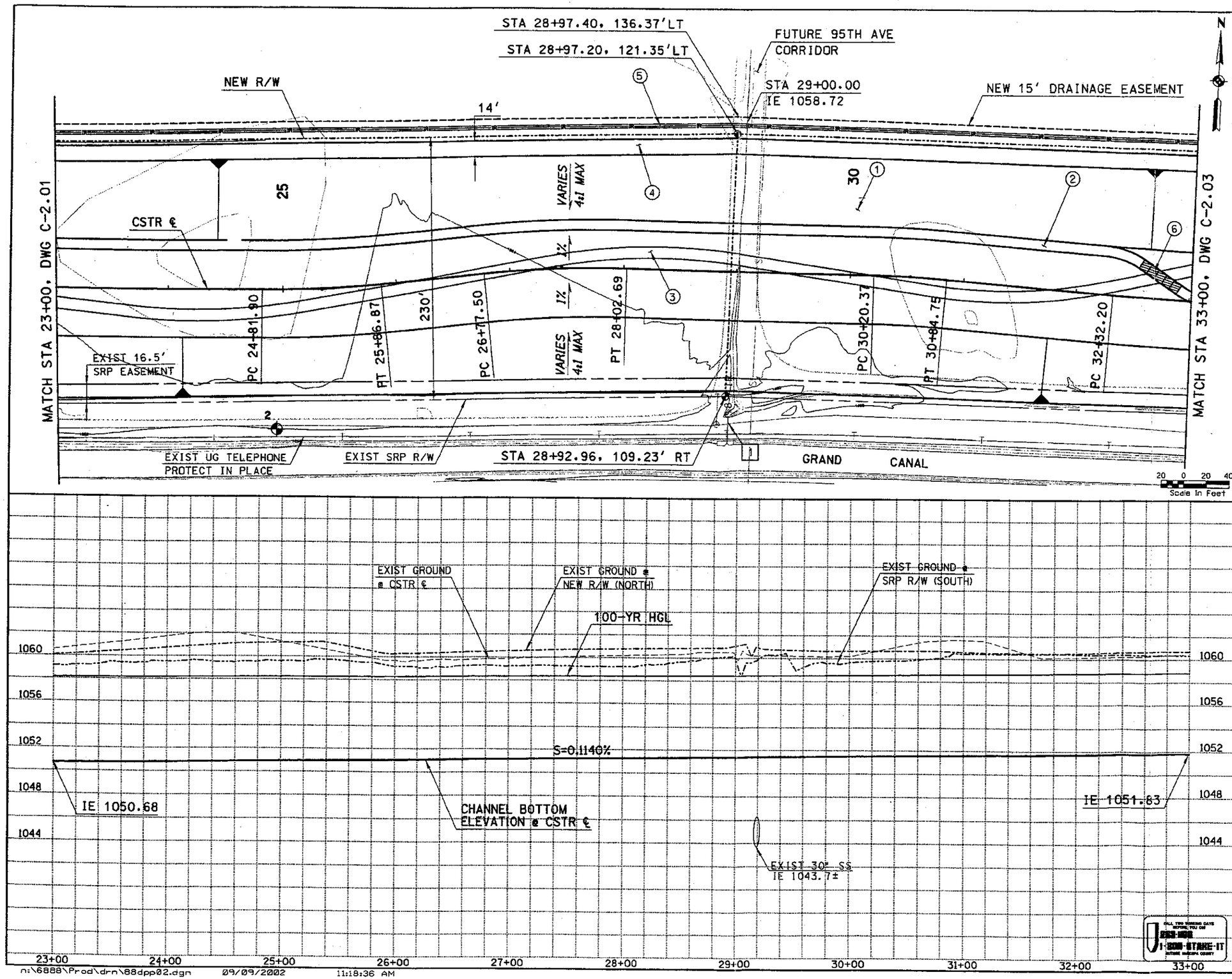
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

CALL TWO WORKING DAYS BEFORE YOU DIG 1-800-STAKE-IT BETTER MARICOPA COUNTY

DRAWING NO.	CHANNEL PLAN/PROFILE	SHEET OF
C-2.01	STA 15+00 TO STA 23+00	17 247



n:\6888\Prod\drn\88dpp02.dgn 09/09/2002 11:18:36 AM

☐ REMOVE ☐

1. REMOVE HEADWALL AND BACKFILL TO PREVENT FLOW THROUGH PIPE (LS)

○ CONSTRUCT ○

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 (50669 CY)
2. CONSTRUCT LOW FLOW CHANNEL SEE DETAIL D1 ON DRAWING D-1.01 (1023 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (10095 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1563 SY)
5. CONSTRUCT 97TH AVE IRRIGATION TAILWATER SYSTEM. SEE SRP PLAN SHEETS 245 TO 250 (LS)
6. CONSTRUCT LOW FLOW CHANNEL CROSSING. SEE DETAIL D12 ON DRAWING D-1.08 (1EA)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

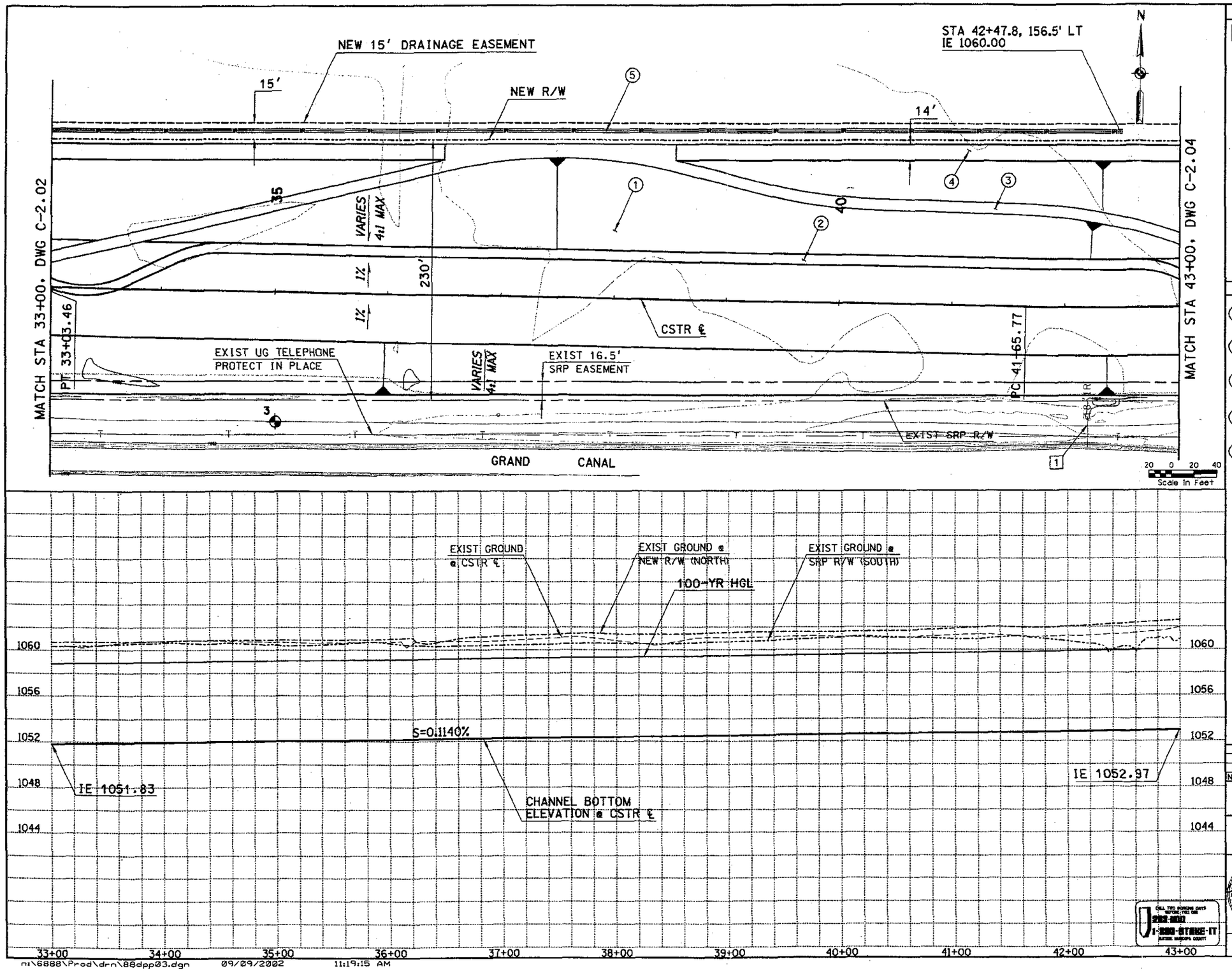
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

CALL TWO WORKING DAYS BEFORE YOU DIG
1-800-STAKE-IT

DRAWING NO.	CHANNEL PLAN/PROFILE	SHEET OF
C-2.02	STA 23+00 TO STA 33+00	18 297



☐ REMOVE ☐

1 REMOVE HEADWALL AND BACKFILL TO PREVENT FLOW THROUGH PIPE (LS)

○ CONSTRUCT ○

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 (47312 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (1010 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (10057 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1370 SY)
5. CONSTRUCT 97TH AVE IRRIGATION TAILWATER SYSTEM. SEE SRP PLAN SHEET 245 TO 250 (LS)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH

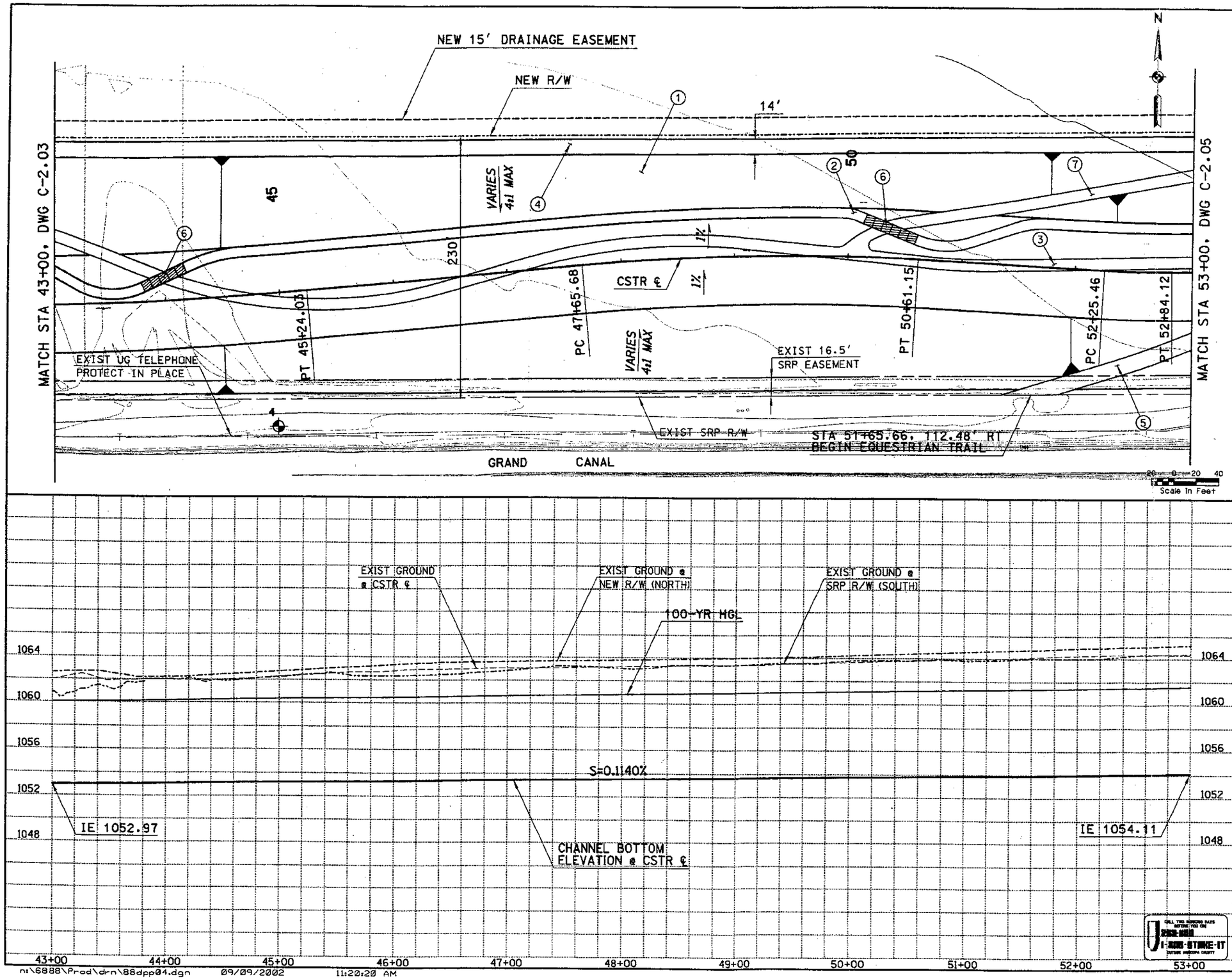
DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.03

CHANNEL PLAN/PROFILE STA 33+00 TO STA 43+00

SHEET OF 19 297

n:\6888\Prod\drn\88dpp03.dgn 09/09/2002 11:19:15 AM



CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 (52702 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (1021 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (10162 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1558 SY)
5. CONSTRUCT EQUESTRIAN TRAIL. SEE DETAIL D3 ON DRAWING D-1.01 (229 SY)
6. CONSTRUCT LOW FLOW CHANNEL CROSSING. SEE DETAIL D12 ON DRAWING D-1.08 (2EA)
7. CONSTRUCT SECONDARY PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (3117 SF)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

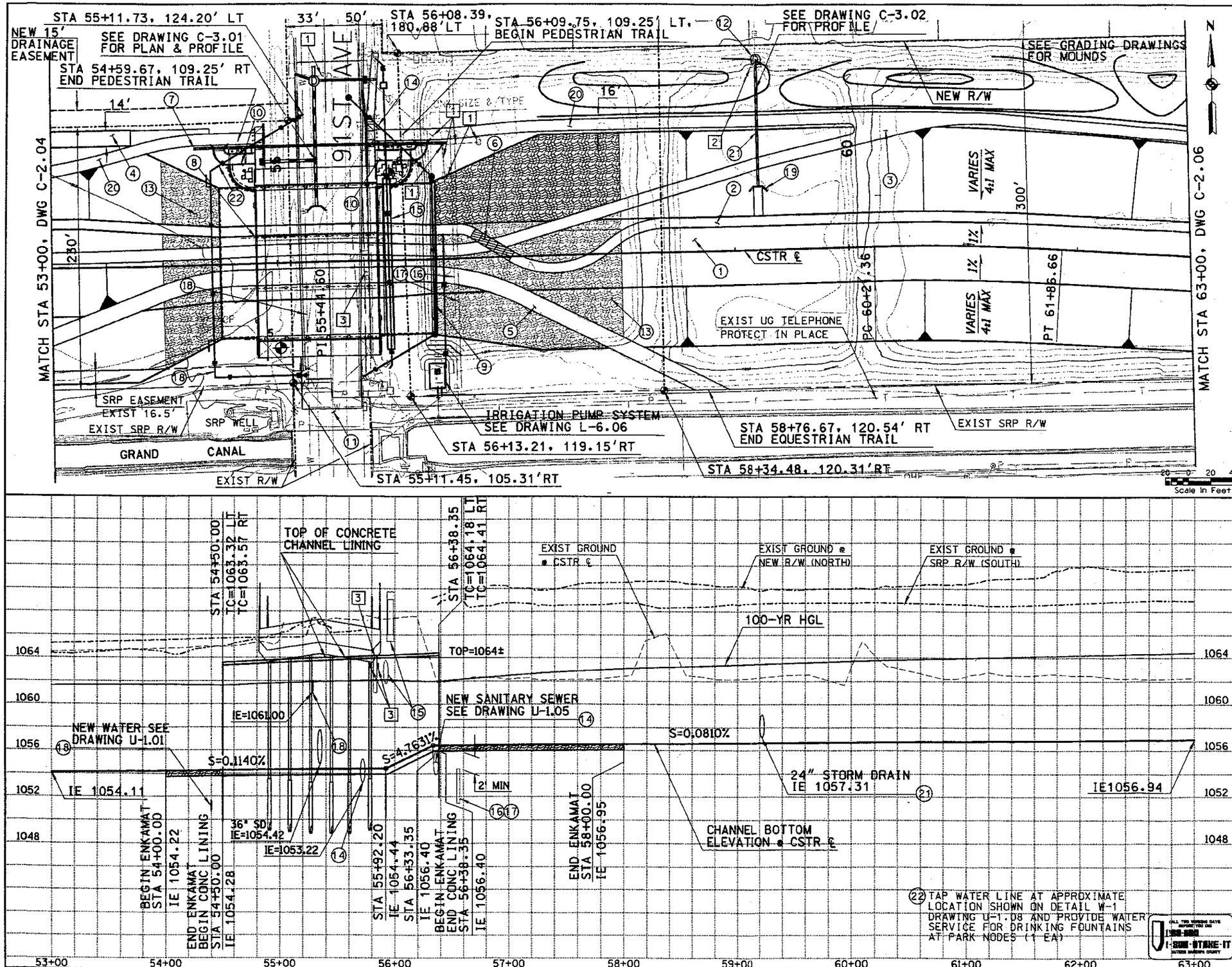
14999 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

CALL TWO WORKING DAYS BEFORE YOU DIG 263-1100 1-800-STAKE-IT OUTSIDE MARICOPA COUNTY

DRAWING NO.	CHANNEL PLAN/PROFILE STA 43+00 TO STA 53+00	SHEET OF
C-2.04		20 247

n:\6888\Prod\drn\88dpp04.dgn 09/09/2002 11:20:20 AM



REMOVE

1. REMOVE STORM DRAIN & CLOSED DRYWELL (LS)
2. REMOVE HEADWALL (LS)
3. REMOVE ABANDONED UTILITIES (LS)

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 (15670 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (833 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (8344 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (378 SY)
5. CONSTRUCT EQUESTRIAN TRAIL. SEE DETAIL D3 DRAWING D-1.01 (656 SY)
6. CONSTRUCT LOW FLOW CHANNEL CROSSING. SEE DETAIL D12 ON DRAWING D-1.08 (1 EA)
7. INSTALL IRRIGATION SLEEVE. SEE DRAWING U-1.01
8. CONSTRUCT BRIDGE. SEE DRAWING S-1.01 (1 LS)
9. CONSTRUCT CONCRETE CHANNEL LINING. SEE DETAIL D6 ON DRAWING D-1.04 (2744 SY)
10. CONSTRUCT COMMUNITY NODE TYPE A. SEE DRAWING L-3.02
11. RECONSTRUCT 91ST AVENUE. SEE DRAWING C-5.01
12. CONSTRUCT MANHOLE #2 PER MAG STD DETAIL 520 AND 522 (1 EA)
13. INSTALL ENKAMAT. SEE DETAIL D14 ON DRAWING D-1.10 (3200 SY)
14. RELOCATE EXIST 21" SANITARY SEWER. SEE DRAWING U-1.01
15. CONSTRUCT 91ST AVE FLUME SEE SRP PLAN SHEETS 255 TO 258 (LS)
16. RELOCATED POWER (BY OTHERS)
17. RELOCATED TELEPHONE (BY OTHERS)
18. RELOCATE EXIST 12" WATER. SEE DRAWING U-1.01
19. CONSTRUCT 24" HEADWALL #2. SEE DETAIL D13 ON DRAWING D-1.09 (1 EA)
20. CONSTRUCT SECONDARY PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (6215 SF)

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
21	59+22.02, 166.47' LT TO 59+22.02, 56.26' LT	24	110

22. TAP WATER LINE AT APPROXIMATE LOCATION SHOWN ON DETAIL W-1 DRAWING U-1.08 AND PROVIDE WATER SERVICE FOR DRINKING FOUNTAINS AT PARK NODES (1 EA)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

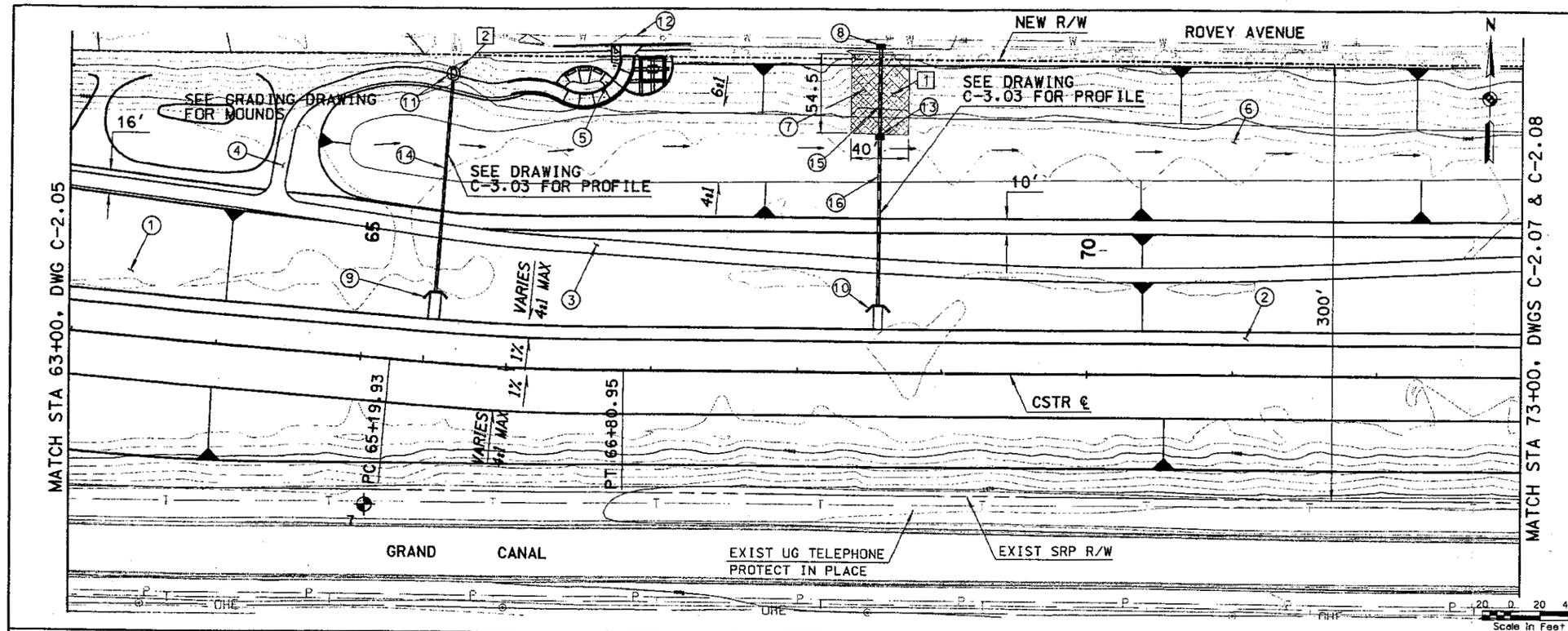
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

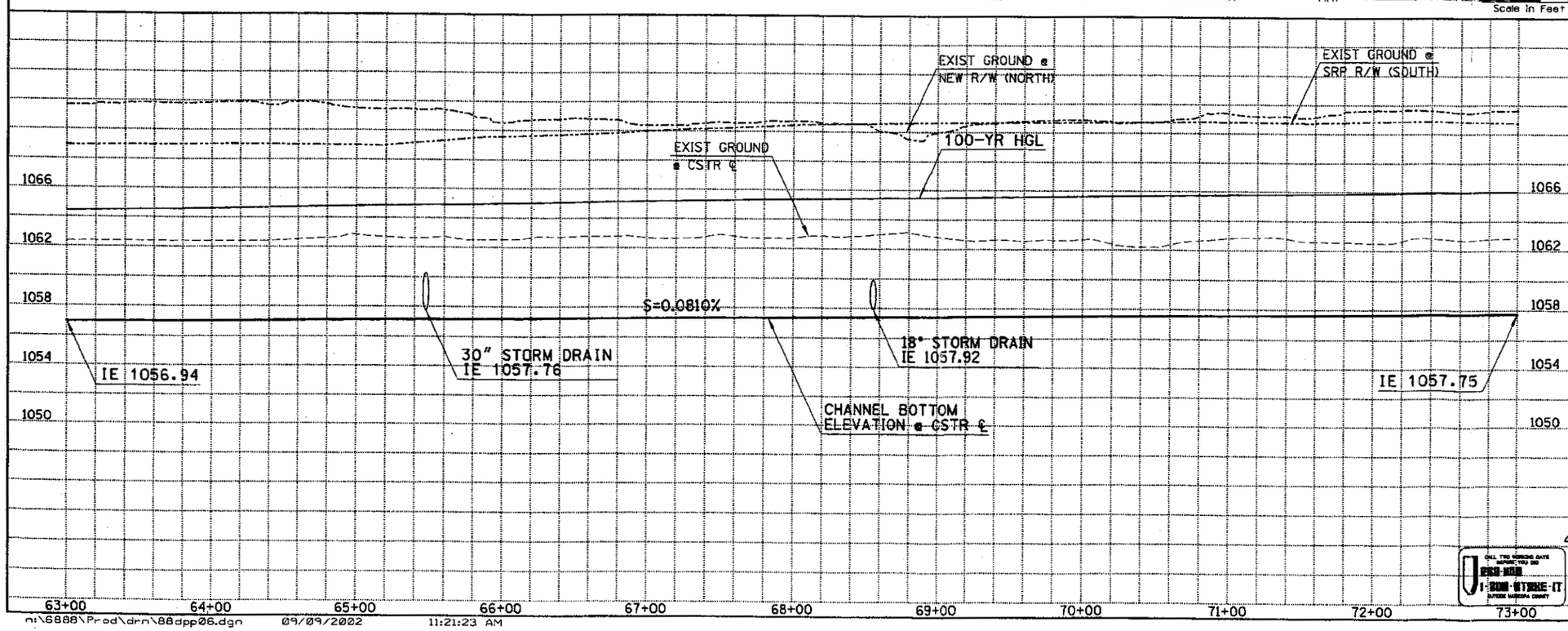
24999 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.05 | CHANNEL PLAN/PROFILE STA 53+00 TO STA 63+00 | SHEET OF 21 297

n:\6888\Prod\drn\88app05.dgn 09/09/2002 1:20:51 AM





☐ REMOVE ☐

1. REMOVE SPILLWAY (LS)
2. REMOVE HEADWALL (LS)

FOR TREE REMOVALS SEE LANDSCAPE PLANS.

○ CONSTRUCT ○

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.01 & C-1.02 (3519 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (1009 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (9941 SF)
4. CONSTRUCT SECONDARY PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (2300 SF)
5. CONSTRUCT NEIGHBORHOOD NODE TYPE C. SEE DRAWING L-3.05
6. CONSTRUCT DETENTION BASIN. SEE DRAWING C-2.07.
7. CONSTRUCT CONLOCK SPILLWAY. (244 SY)
8. CONSTRUCT CATCH BASIN #1 PER MAG STD DETAIL 535 (1 EA)
9. CONSTRUCT 30" HEADWALL #3. SEE DETAIL D13 ON DRAWING D-1.09 (1 EA)
10. CONSTRUCT 18" HEADWALL #4 SEE DETAIL D13 ON DRAWING D-1.09 (1 EA)
11. CONSTRUCT MANHOLE #3 PER MAG STD DETAIL 520 AND 522 (1EA)
12. TAP WATERLINE AT APPROXIMATE LOCATION SHOWN ON DETAIL W-1 DRAWING U-1.08 AND PROVIDE WATER SERVICE FOR DRINKING FOUNTAINS AT PARK NODE (1 EA)
13. CONSTRUCT CATCH BASIN PER MAG STD DETAIL 538 (1 EA)

○ INSTALL NEW STORM DRAIN PIPE ○

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
14	65+48.64, 199.85' LT TO 65+47.61, 48.90' LT	30	151
15	68+55.21, 223.38' LT TO 68+55.21, 162.72' LT	18	161
16	68+55.39, 162.82' LT TO 68+55.39, 46.69' LT	18	116

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

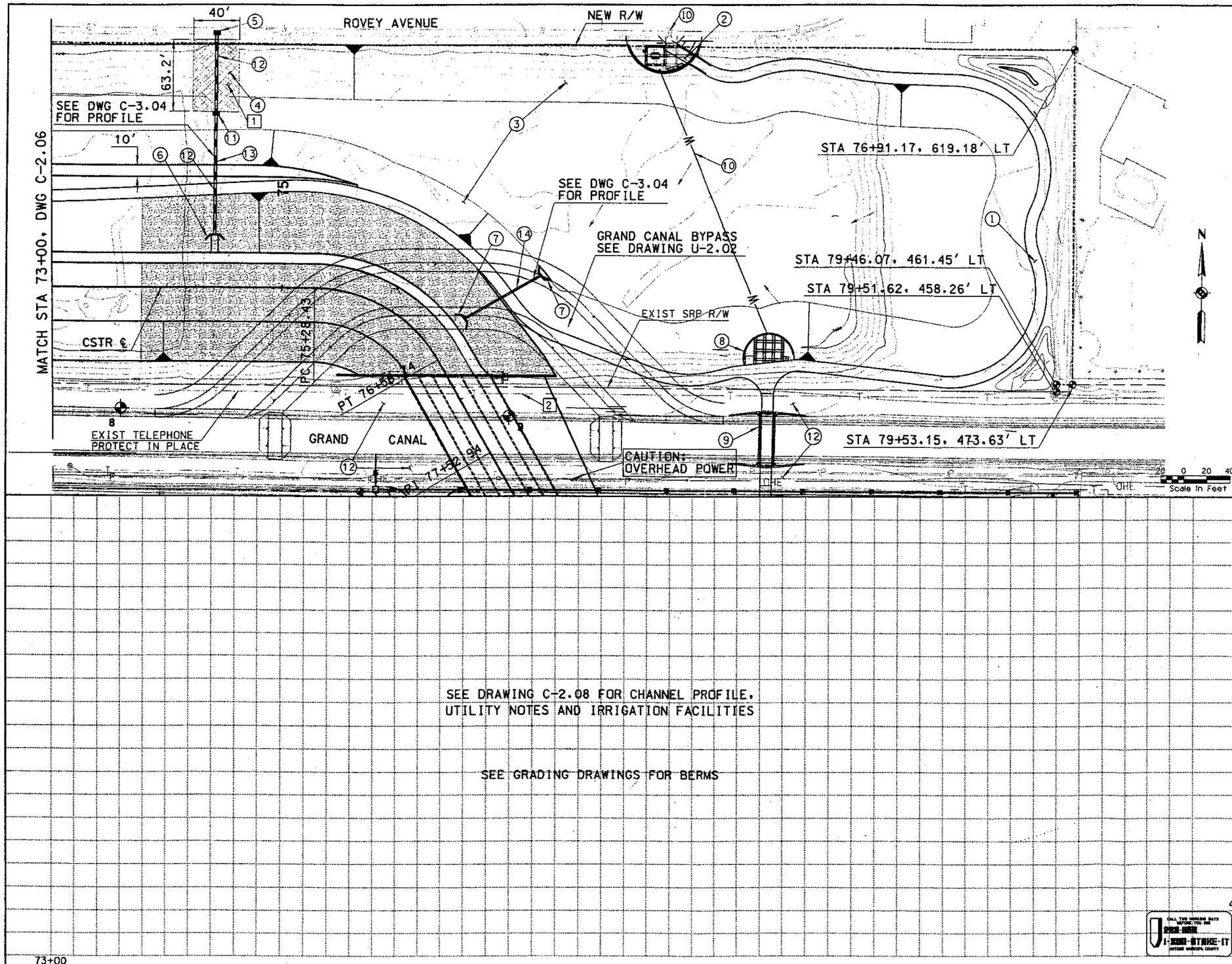
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

CALL TWO WORKING DAYS BEFORE YOU DIG 1-800-STAKE-IT (OUTSIDE MARICOPA COUNTY)

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.06 | CHANNEL PLAN/PROFILE STA 63+00 TO STA 73+00 | SHEET OF 22 297



SEE DRAWING C-2.08 FOR CHANNEL PROFILE, UTILITY NOTES AND IRRIGATION FACILITIES

SEE GRADING DRAWINGS FOR BERMS

REMOVE

1. REMOVE SPILLWAY (LS)
2. REMOVE ABANDONED TELEPHONE (NPI)

FOR TREE REMOVALS SEE LANDSCAPE PLANS.

CONSTRUCT

1. CONSTRUCT SECONDARY PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (8572 SF)
2. CONSTRUCT NEIGHBORHOOD NODE TYPE D. SEE DRAWING L-3.04
3. CONSTRUCT DETENTION BASIN. SEE GRADING PLAN (11813 CY)
4. CONSTRUCT CONLOCK SPILLWAY. (284 SY)
5. CONSTRUCT CATCH BASIN #2 PER MAG STD DETAIL 535 (1EA)
6. CONSTRUCT 18" HEADWALL #5 SEE DETAIL D13 ON DRAWING D-1.09 (1 EA)
7. CONSTRUCT 36" HEADWALL #6 SEE DETAIL D13 ON DRAWING D-1.09 (2 EA)
8. CONSTRUCT OVERLOOK NODE TYPE E. SEE DRAWING L-3.04
9. CONSTRUCT PEDESTRIAN BRIDGE SEE DRAWING S-5.01 (LS)
10. TAP WATERLINE AT APPROXIMATE LOCATION SHOWN ON DETAIL W-1 DRAWING U-1.08 AND PROVIDE WATER SERVICE FOR DRINKING FOUNTAINS AT PARK NODES (1 EA)
11. CONSTRUCT CATCH BASIN. PER MAG STD DETAIL 538 (1 EA)
12. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1530 SY)

INSTALL NEW STORM DRAIN PIPE

NO.	STATION TO STATION	DIAMETER INCHES	LENGTH FEET
12	74+41.26, 221.47' LT TO 74+41.26, 152.13' LT	18	69
13	74+41.44, 152.13' LT TO 74+41.44, 46.10' LT	18	106
14	76+49.10, 114.63' LT TO 76+44.28, 40.18' LT	36	75

NO.	REVISION	BY	DATE
3			
2			
1	REVISED OVERLOOK NODE LOCATION	DBL	10-02

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH 10-18-02 ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

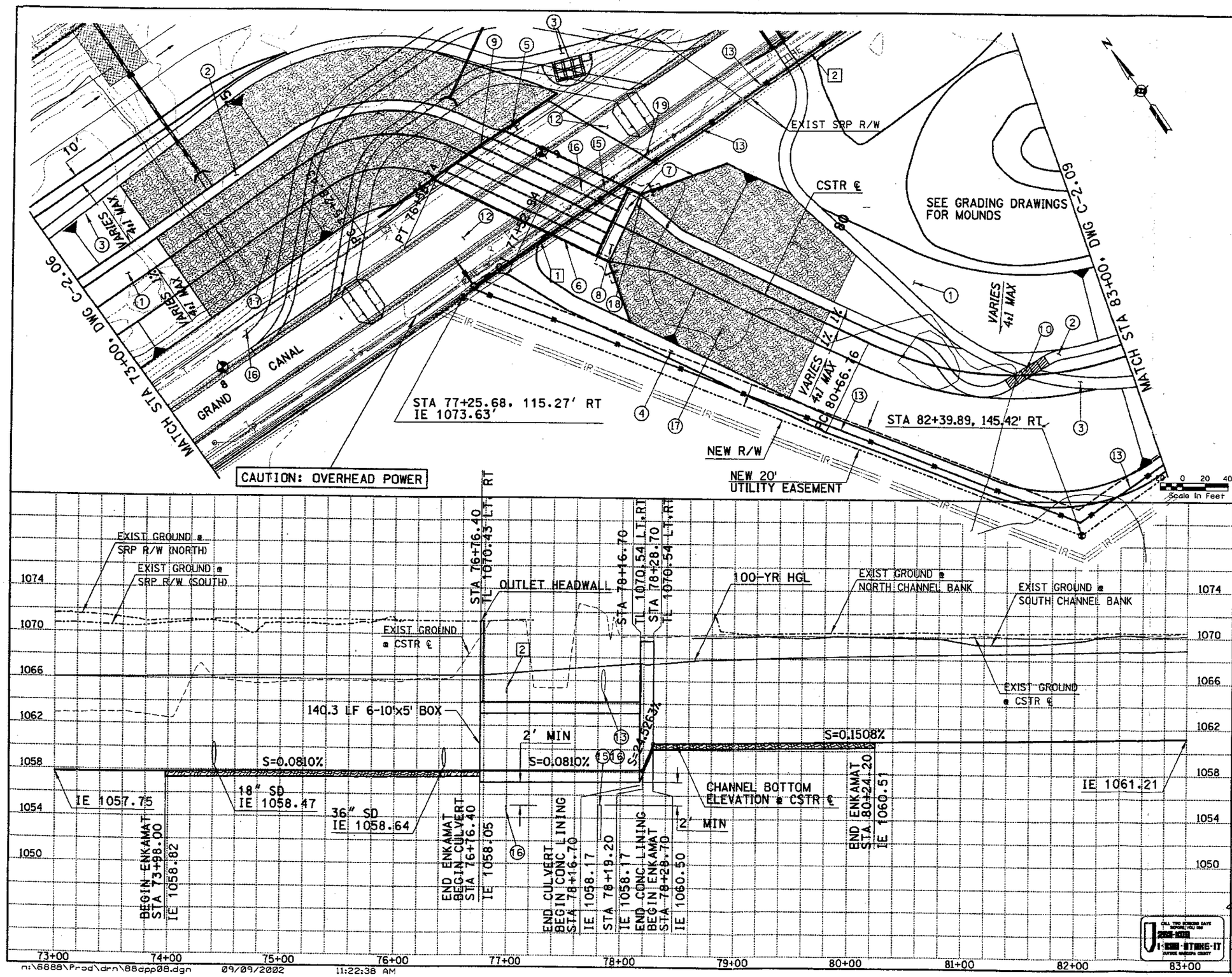
CALL TWO WORKING DAYS BEFORE YOU DIG 263-8782 1-800-STAKE-IT (STATEWIDE MARICOPA COUNTY)

DRAWING NO. C-2.07

CHANNEL PLAN

SHEET OF 23 297

73+00



n:\6888\Prod\drn\88dpp08.dgn 09/09/2002 11:22:38 AM

REMOVE

1. REMOVE CONCRETE IRRIGATION DELIVERY DITCH (600 LF)
2. REMOVE ABANDONED UTILITIES (LS)

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL DRAWING C-1.02 (17132 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (913 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (11042 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (880 SY)
5. CONSTRUCT OUTLET HEADWALL. SEE DETAIL DRAWING S-3.03
6. CONSTRUCT 6 CELL 10'x 5' CONCRETE BOX CULVERT. PER ADOT STD DETAIL B-02.60 TABLE I (140 LF)
7. CONSTRUCTINLET HEADWALL AND CHANNEL TRANSITION. SEE DETAIL DRAWING S-3.02
8. CONSTRUCT BOX CULVERT INLET ACCESS BARRIER. SEE DETAIL DRAWING S-3.04
9. CONSTRUCT BOX CULVERT OUTLET ACCESS BARRIER SEE DETAIL DRAWING S-3.05
10. CONSTRUCT LOW FLOW CHANNEL CROSSING. SEE DETAIL D12 ON DRAWING D-1.08 (1EA)
12. RECONSTRUCTED GRAND CANAL. SEE DRAWING U-2.03 (NPI)
13. CONSTRUCT 87TH AVE IRRIGATION DELIVERY SYSTEM. SEE SRP PLAN SHEETS 241 TO 243 (LS)
15. RELOCATED UNDERGROUND POWER (BY OTHERS)
16. RELOCATED UNDERGROUND TELEPHONE (BY OTHERS)
17. INSTALL ENKAMAT. SEE DETAIL D14 ON DRAWING D-1.10 (7670 SY)
18. TRANSITION LOW FLOW CHANNEL. SEE DETAIL A DRAWING D-1.03
19. INSTALL PVC SLEEVE. SEE DRAWING L-5.15.

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

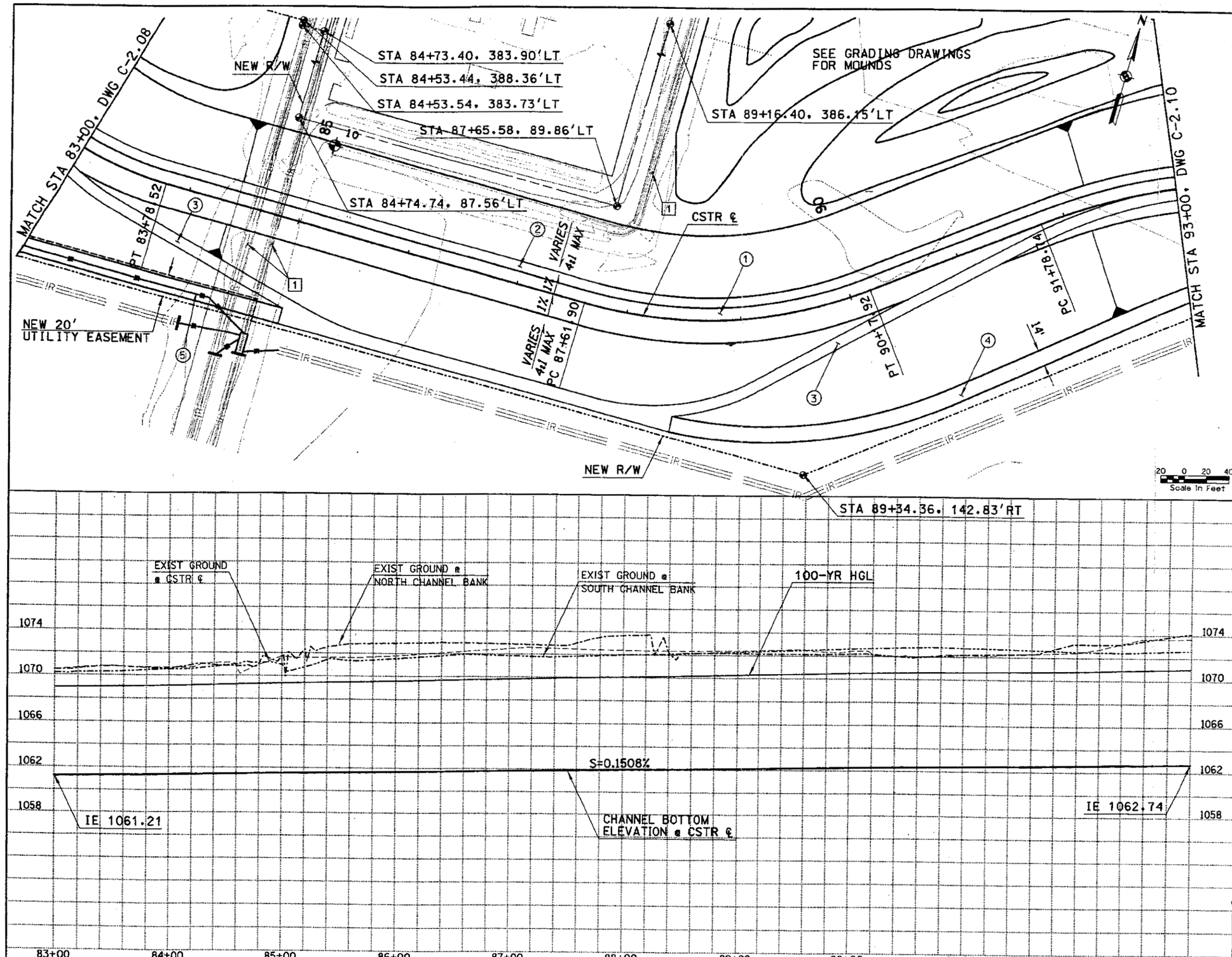
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

JEFFREY R. MINCH 24999 ARIZONA U.S.A.

CALL TWO WORKING DAYS BEFORE YOU DIG 1-STOP-BLUE STAKES-IT

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.08 | CHANNEL PLAN/PROFILE STA 73+00 TO STA 83+00 | SHEET OF 24 247



☐ REMOVE ☐

1 REMOVE CONCRETE IRRIGATION DITCH (1045 LF)

○ CONSTRUCT ○

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.02 (34183 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (1011 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (10629 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1263 SY)
5. CONSTRUCT 87TH AVE IRRIGATION DELIVERY SYSTEM SEE SRP PLAN SHEETS 241 TO 243(LS)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

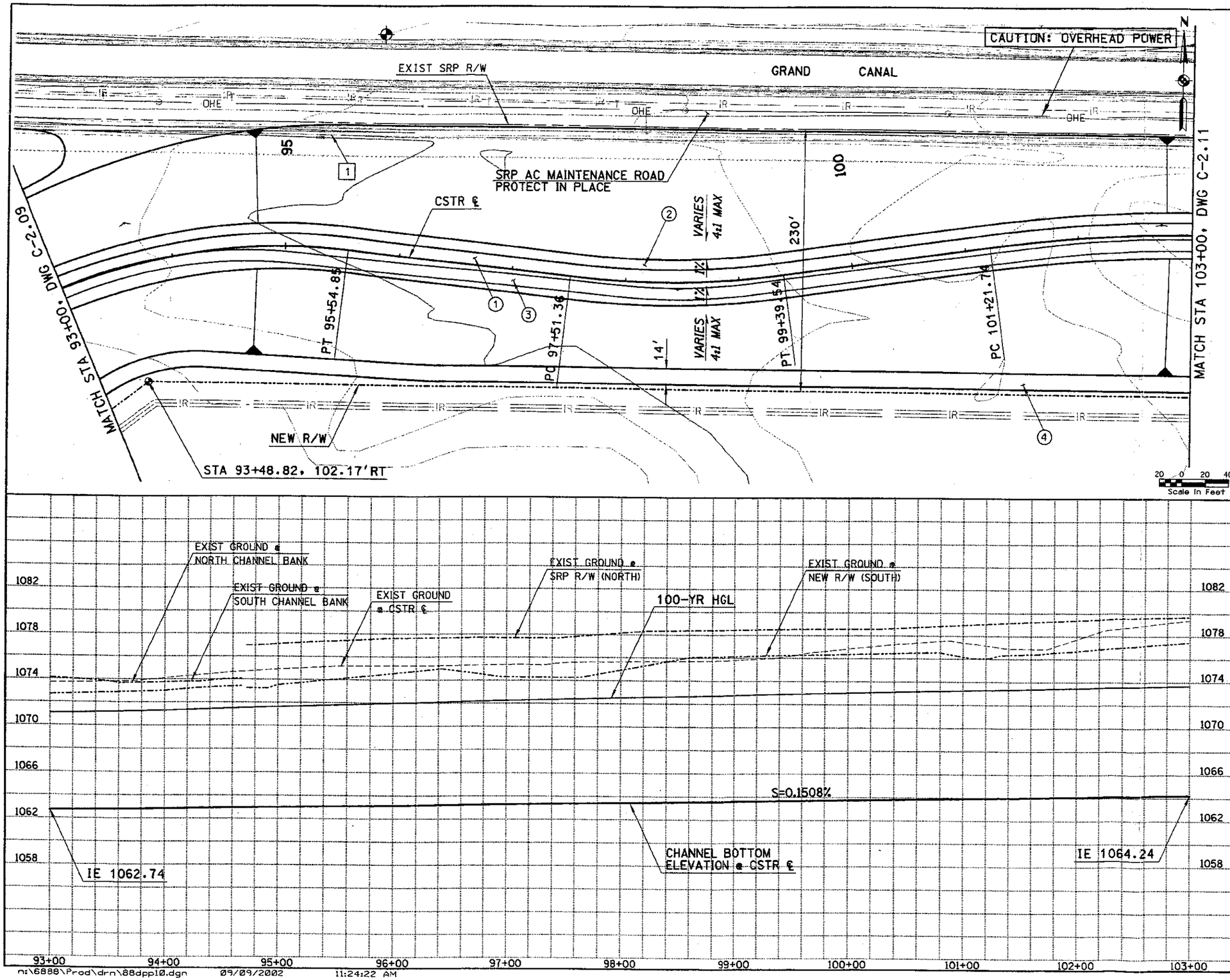
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.09 | CHANNEL PLAN/PROFILE STA 83+00 TO STA 93+00 | SHEET OF 25 247

n:\6888\Prod\drn\88dpp09.dgn 09/09/2002 11:23:36 AM



n:\6888\Prod\drn\88dpp10.dgn 09/09/2002 11:24:22 AM

REMOVE

1 REMOVE CONCRETE IRRIGATION DELIVERY DITCH (1000LF)

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.02 (54429 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01 (985 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02(9980 SF)
4. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1487 SY)

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

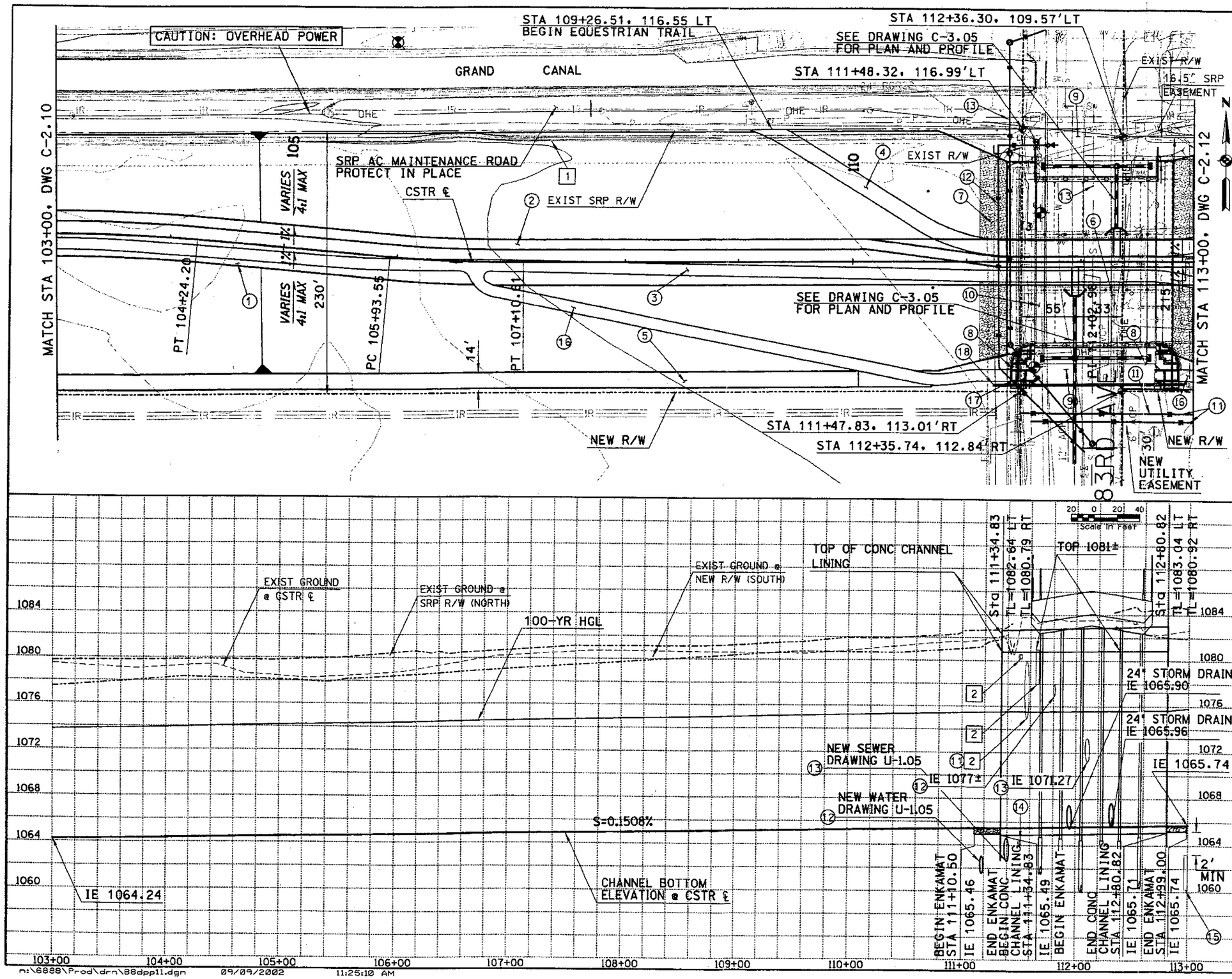
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24959 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO.	CHANNEL PLAN/PROFILE	SHEET OF
C-2.10	STA 93+00 TO STA 103+00	26 297



n:\6888\Prod\drn\88dpp11.dgn 09/09/2002 11:25:10 AM

REMOVE

1. REMOVE CONCRETE IRRIGATION DELIVERY DITCH (846 LF)
2. REMOVE ABANDON UTILITIES (NPI)

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.02 AND C-1.03 (69410 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01(855 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (8540 SF)
4. CONSTRUCT EQUESTRIAN TRAIL. SEE DETAIL D3 ON DRAWING D-1.01(398 SY)
5. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.04(1178SY)
6. CONSTRUCT CONCRETE CHANNEL LINING. SEE DETAIL D7 ON DRAWING D-1.05 (2740 SY)
7. INSTALL ENKAMAT. SEE DETAIL D14 ON DRAWING D-1.10 (630 SY)
8. CONSTRUCT COMMUNITY NODE TYPE B SEE DRAWING L-3.03
9. RECONSTRUCT 83RD AVENUE. SEE DRAWING C-5.03
10. CONSTRUCT BRIDGE SEE DRAWING S-2.01 (1 LS)
11. CONSTRUCT 83RD AVE IRRIGATION DELIVERY SYSTEM SEE SRP PLAN SHEETS 237 TO 240 (LS)
12. RELOCATE EXIST 12" WATER SEE DRAWING U-1.04
13. RELOCATE EXIST 24" SANITARY SEWER SEE DRAWING U-1.04
14. RELOCATED FIBER OPTIC TV CABLE (BY OTHERS)
15. RELOCATED POWER (BY OTHERS)
16. CONSTRUCT PEDESTRIAN TRIAL (SECONDARY). SEE DETAIL D4 ON DRAWING D-1.02 (5051 SF)
17. TAP WATERLINE AT APPROXIMATE LOCATION SHOWN ON DETAIL W-1 DRAWING U-1.08 AND PROVIDE WATER SERVICE FOR DRINKING FOUNTAINS AT PARK NODES (1 EA)
18. INSTALL IRRIGATION SLEEVE. SEE DRAWING U-1.04

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

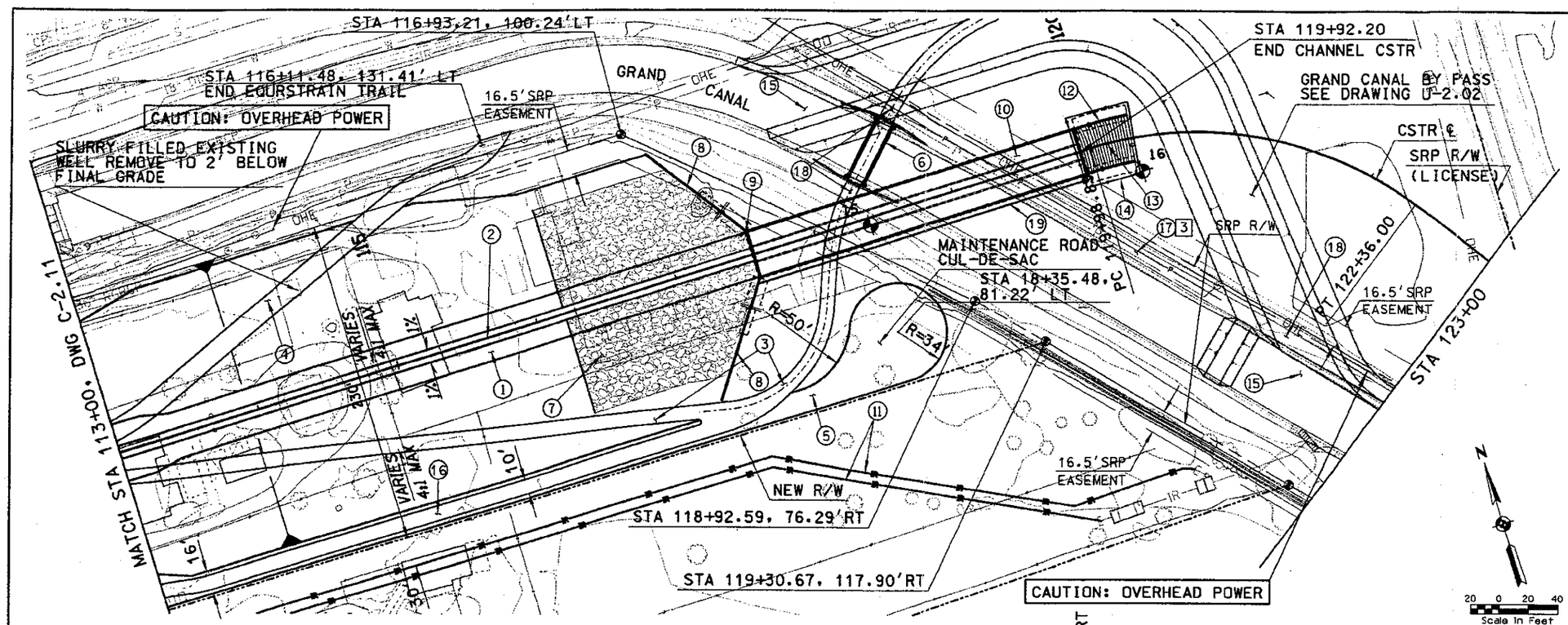
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

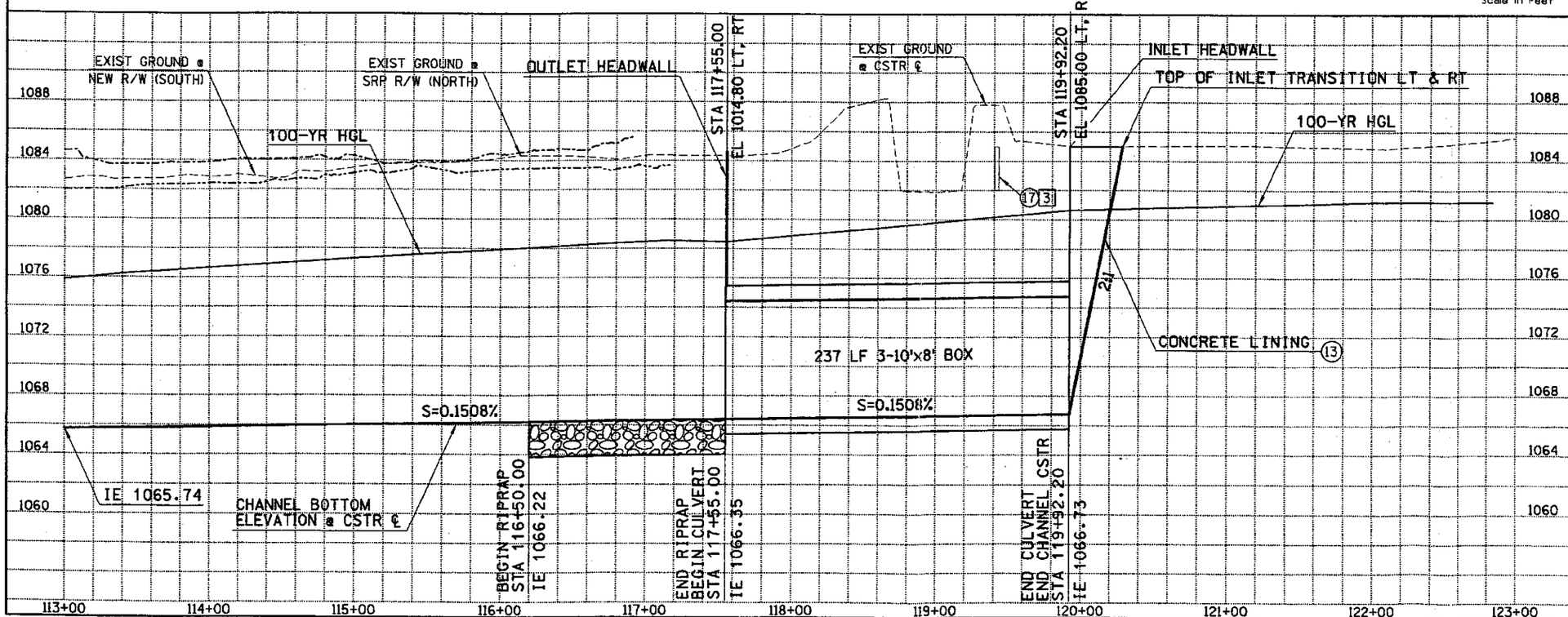
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24999 JEFFREY R. MINCH

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.11 | CHANNEL PLAN/PROFILE STA 103+00 TO STA 113+00 | SHEET OF 27 297





n:\6888\Prod\drn\88dpp12.dgn 09/09/2002 11:25:46 AM

REMOVE

1 REMOVE ABANDONED UTILITY (NPI)

NOTE: REMOVE ABANDONED UNDERGROUND UTILITIES AND SEPTIC TANKS (4) FOR DEMOLISHED STRUCTURES (LS)

CONSTRUCT

1. CONSTRUCT EARTHEN CHANNEL. SEE TYPICAL SECTION DETAIL ON DRAWING C-1.03 (32282 CY)
2. CONSTRUCT LOW FLOW CHANNEL. SEE DETAIL D1 ON DRAWING D-1.01(456 SY)
3. CONSTRUCT PEDESTRIAN TRAIL. SEE DETAIL D4 ON DRAWING D-1.02 (10281 SF)
4. CONSTRUCT EQUESTRIAN TRAIL. SEE DETAIL D3 ON SHEET D-1.01 (630 SY)
5. CONSTRUCT MAINTENANCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01(258 SY)
6. CONSTRUCT PEDESTRIAN BRIDGE. SEE DRAWING S-6.01 (LS)
7. CONSTRUCT RIPRAP. SEE DETAIL D10 ON DRAWING D-1.07 (1468 CY)
8. CONSTRUCT OUTLET WING WALLS SEE DETAILS ON DRAWING S-4.03
9. CONSTRUCT OUTLET ACCESS BARRIER 3-10' X 8' BOX CULVERT. SEE DETAILS ON DRAWING S-4.04
10. CONSTRUCT 3 CELL 10' X 8' CONCRETE BOX CULVERT PER ADOT STD DETAIL B-02.30 TABLE II (237 LF)
11. CONSTRUCT 83RD AVE IRRIGATION DELIVERY SYSTEM SEE SRP PLAN SHEETS 237 TO 240 (LS)
12. CONSTRUCT INLET TRANSITION AND HEADWALL PER DRAWING S-4.02
13. CONSTRUCT CONCRETE CHANNEL LINING (287 SY)
14. INSTALL CHAIN LINK FENCE & GATE PER ADOT STANDARD C-12.20 (200 LF)
15. RECONSTRUCT GRAND CANAL. SEE DRAWING U-2.04
16. CONSTRUCT PEDESTRIAN TRAIL (SECONDARY) SEE DETAIL D4 ON DRAWING D-1.02 (4302 SF)
17. EXIST UGP RELOCATED BY OTHERS.
18. CONSTRUCT MAINTENCE ROAD. SEE DETAIL D2 ON DRAWING D-1.01 (1126 SY)
19. INSTALL PVC SLEEVE. SEE DRAWING L-5.26.

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

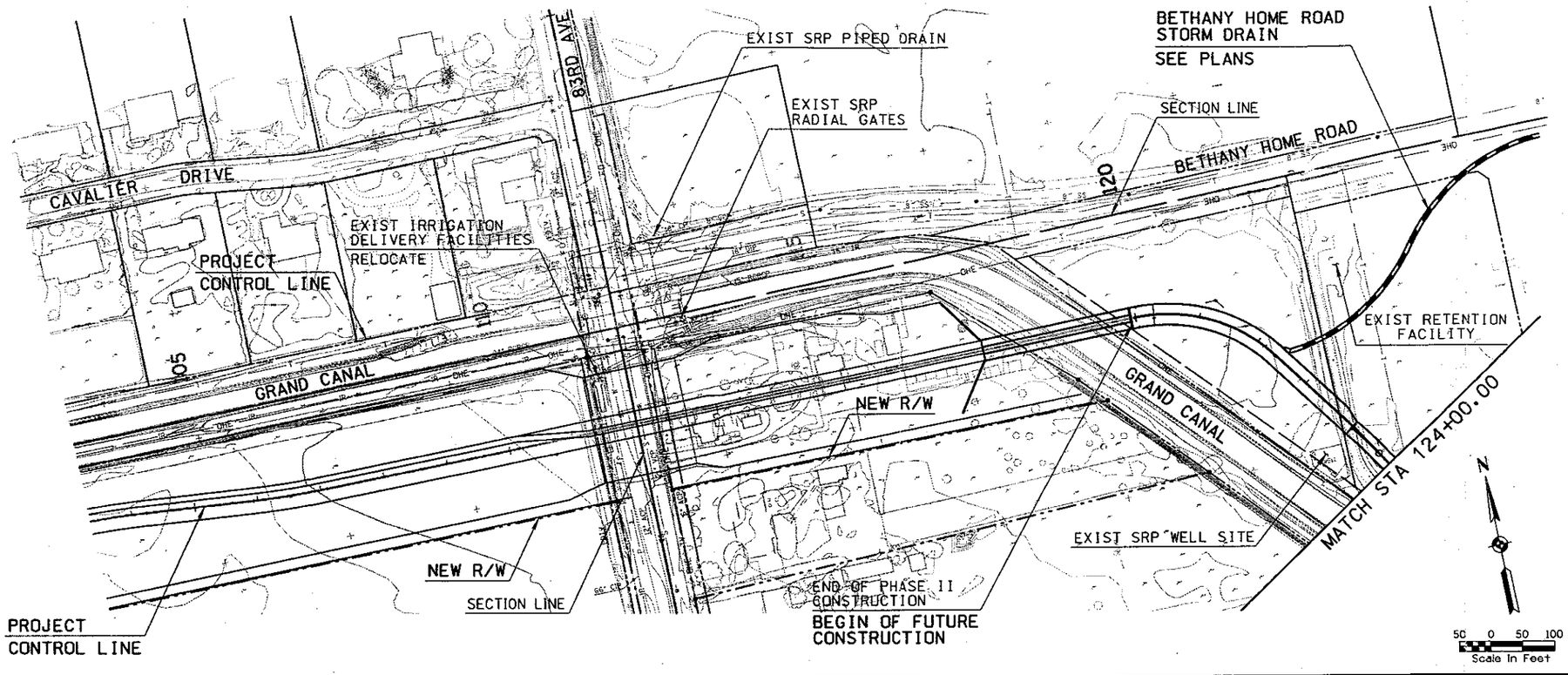
BETHANY HOME OUTFALL CHANNEL
SR 101L TO 83RD AVENUE
PCN NO. 620 03 32

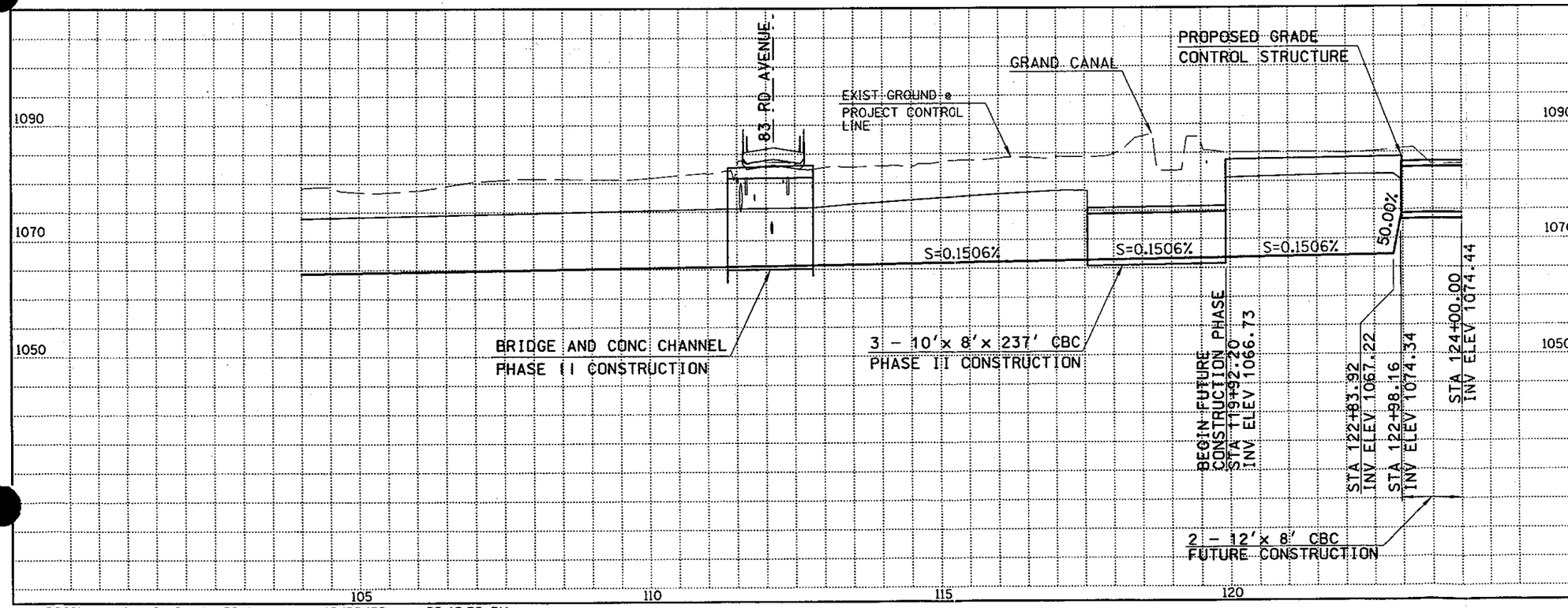
	BY	DATE
DESIGNED	DBL	09-02
DRAWN	JAE/TDN	09-02
CHECKED	JRM	09-02

24995 JEFFREY R. MINCH ARIZONA U.S.A.

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. C-2.12 | CHANNEL PLAN/PROFILE STA 113+00 TO STA 123+00 | SHEET OF 28 297





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

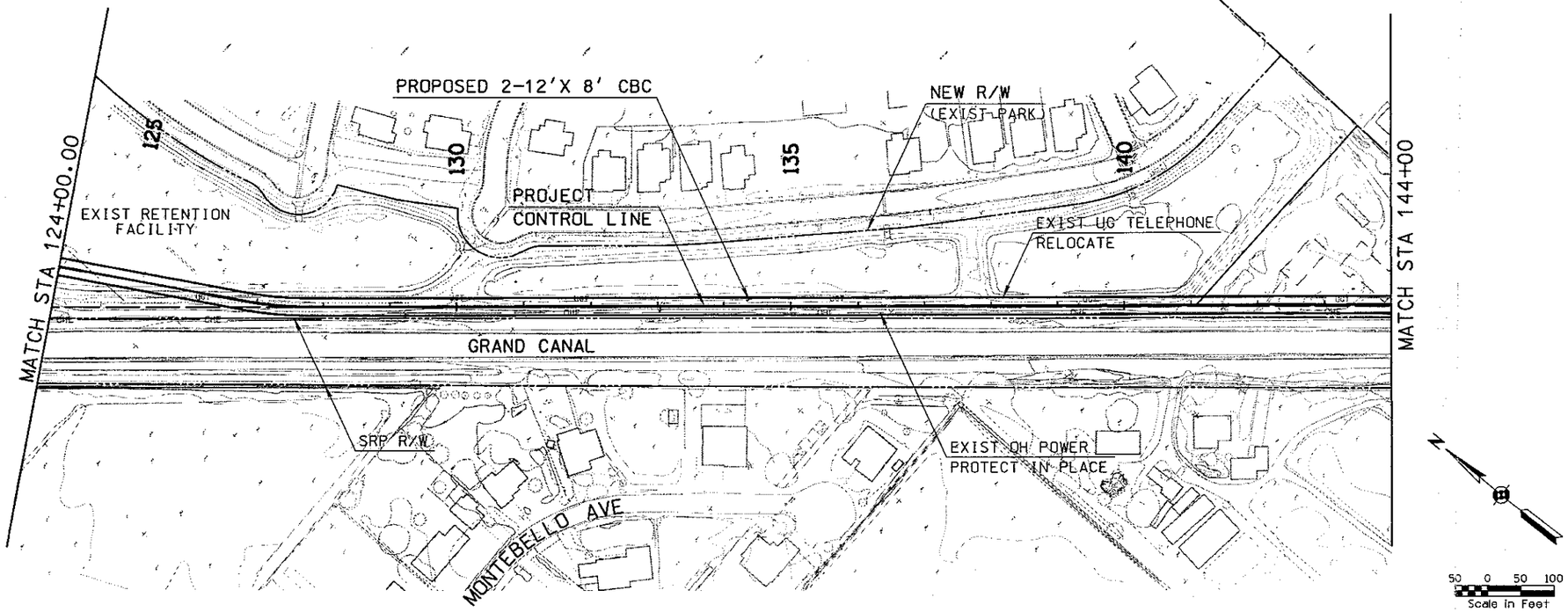
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

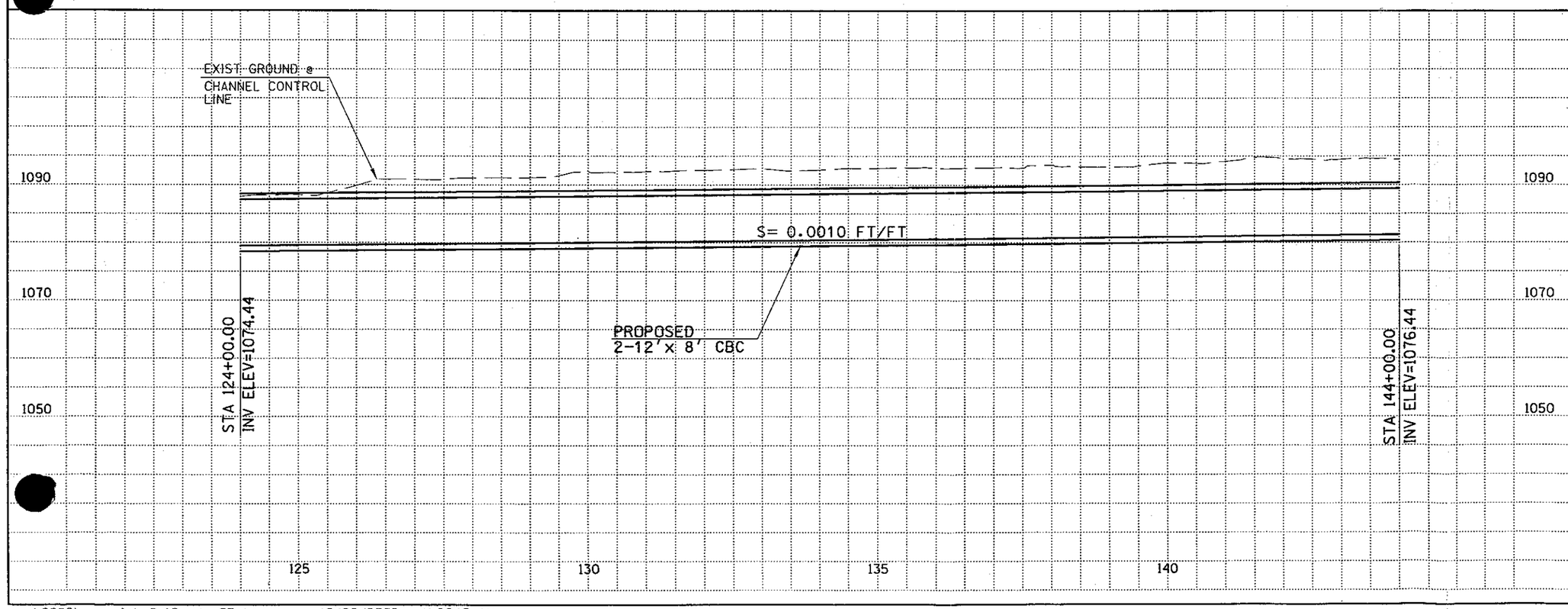
	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJMHARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 119+92.20 124+00.00 SHEET OF

n:\6888\rec_alt\s2a16radpp06.dgn 12/23/02 02:43:02 PM





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

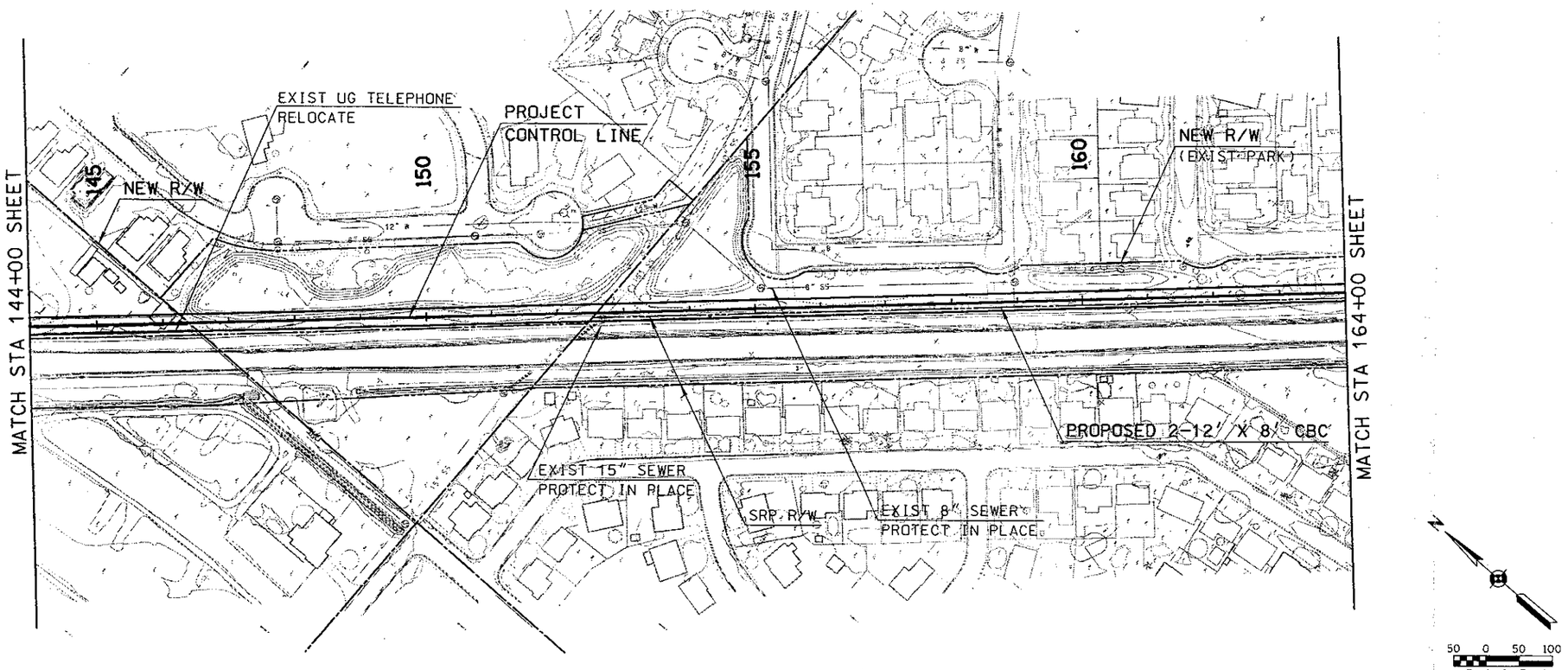
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

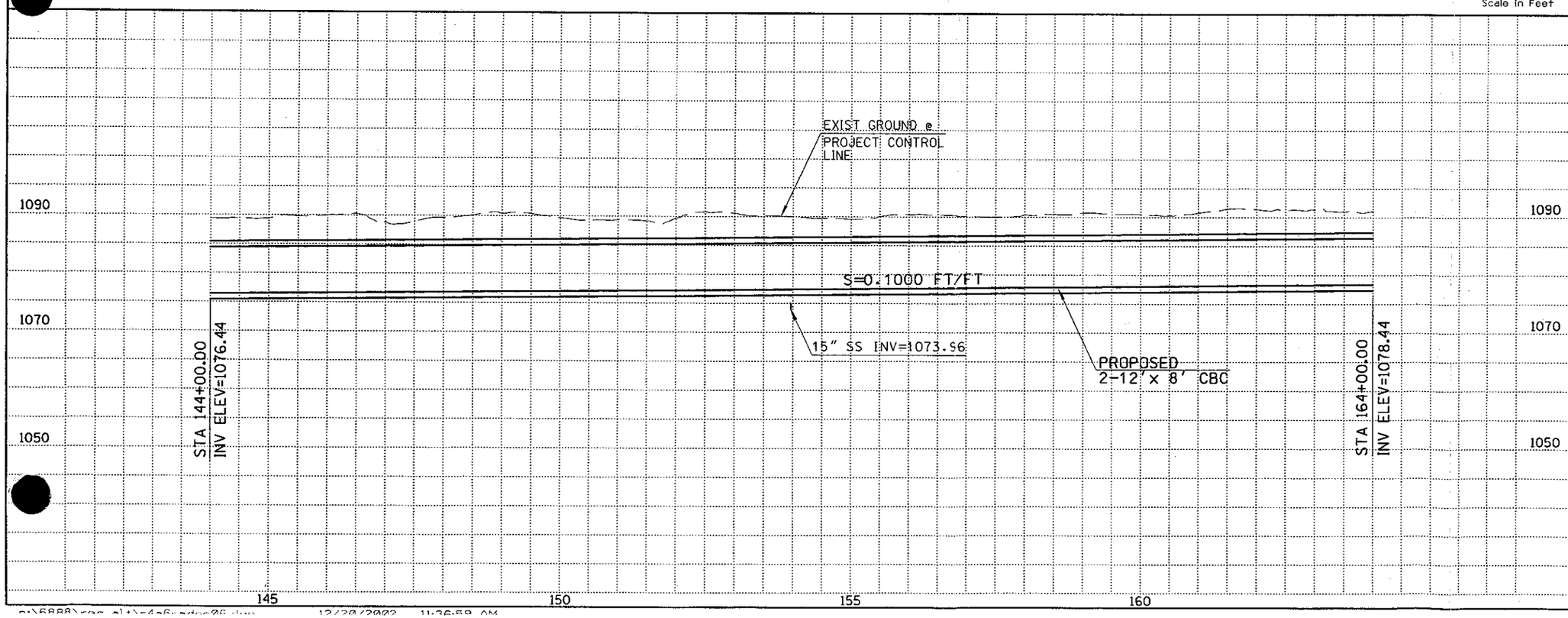
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 124+00 to 144+00 SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

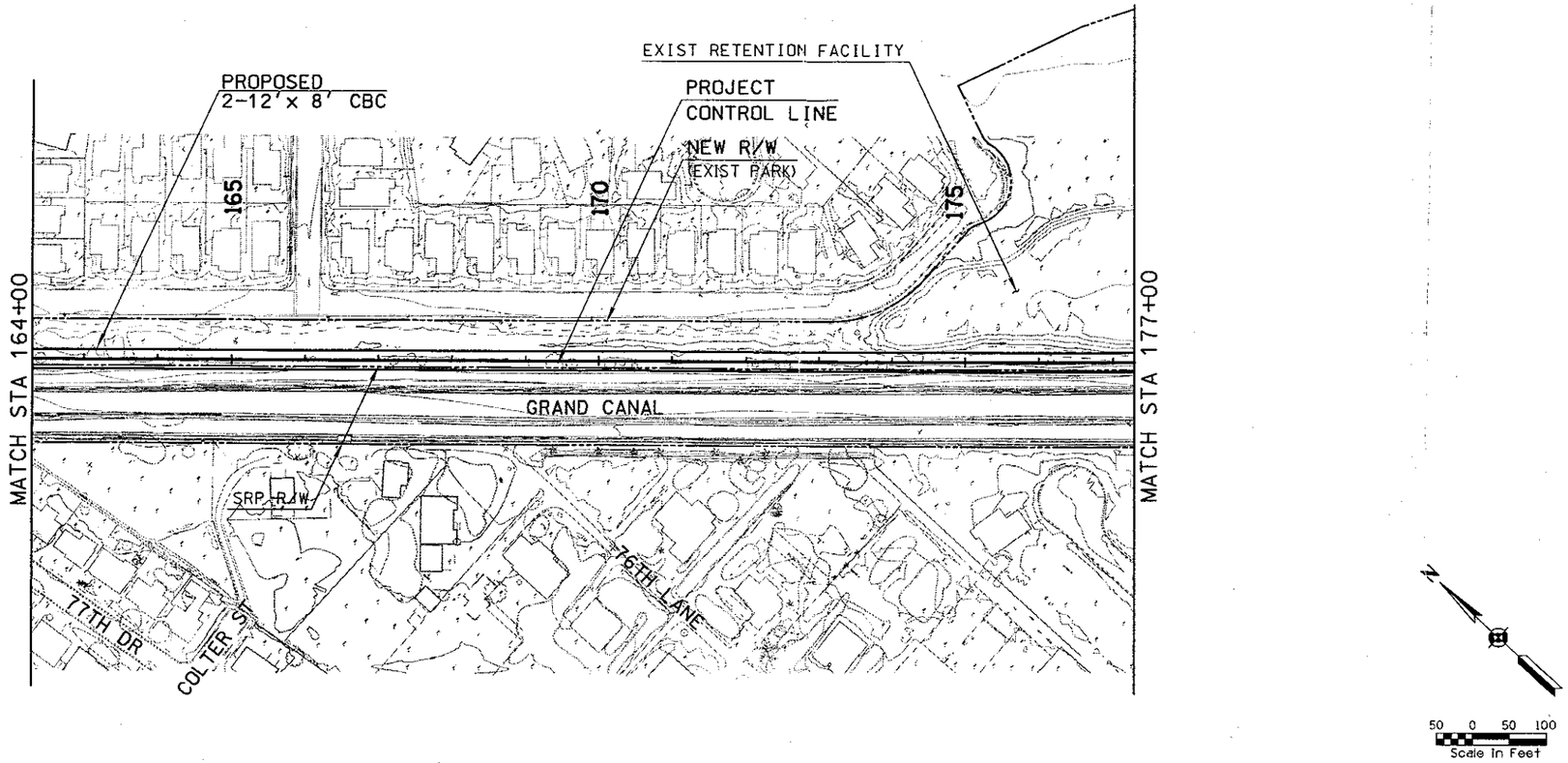
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

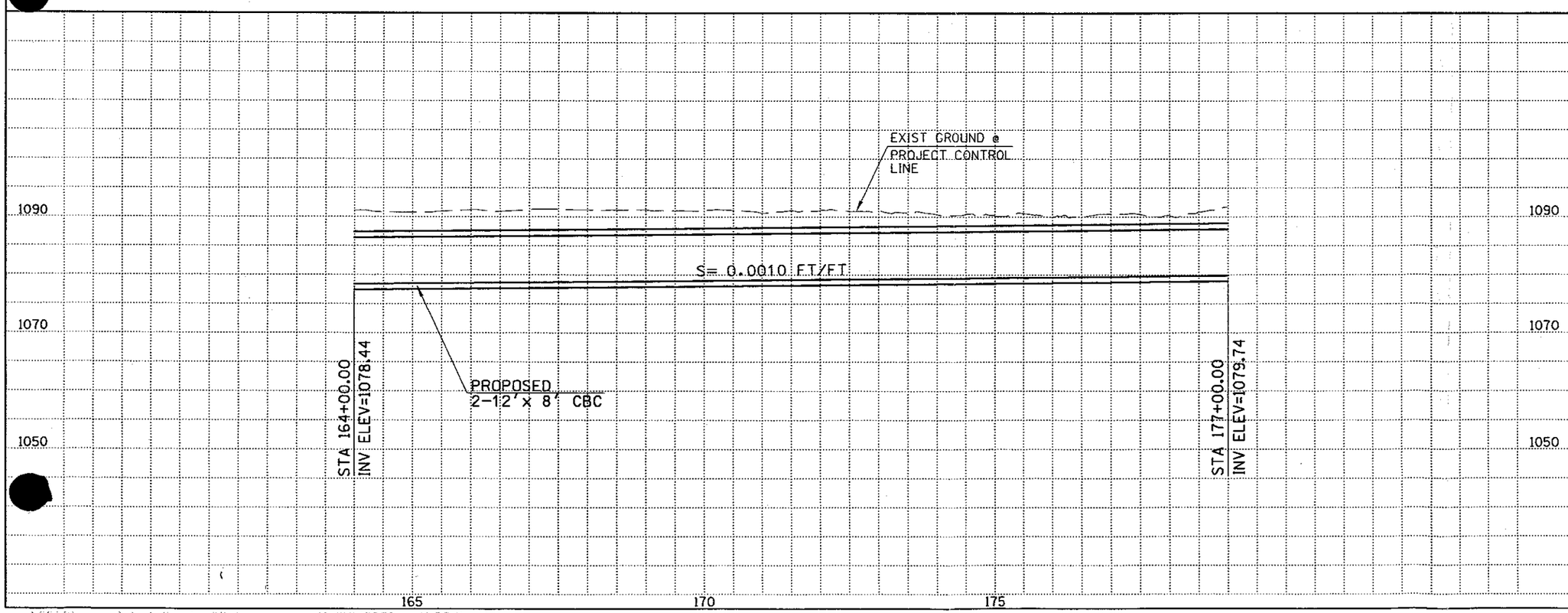
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJMHARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. | 144+00.00 to 164+00.00 | SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

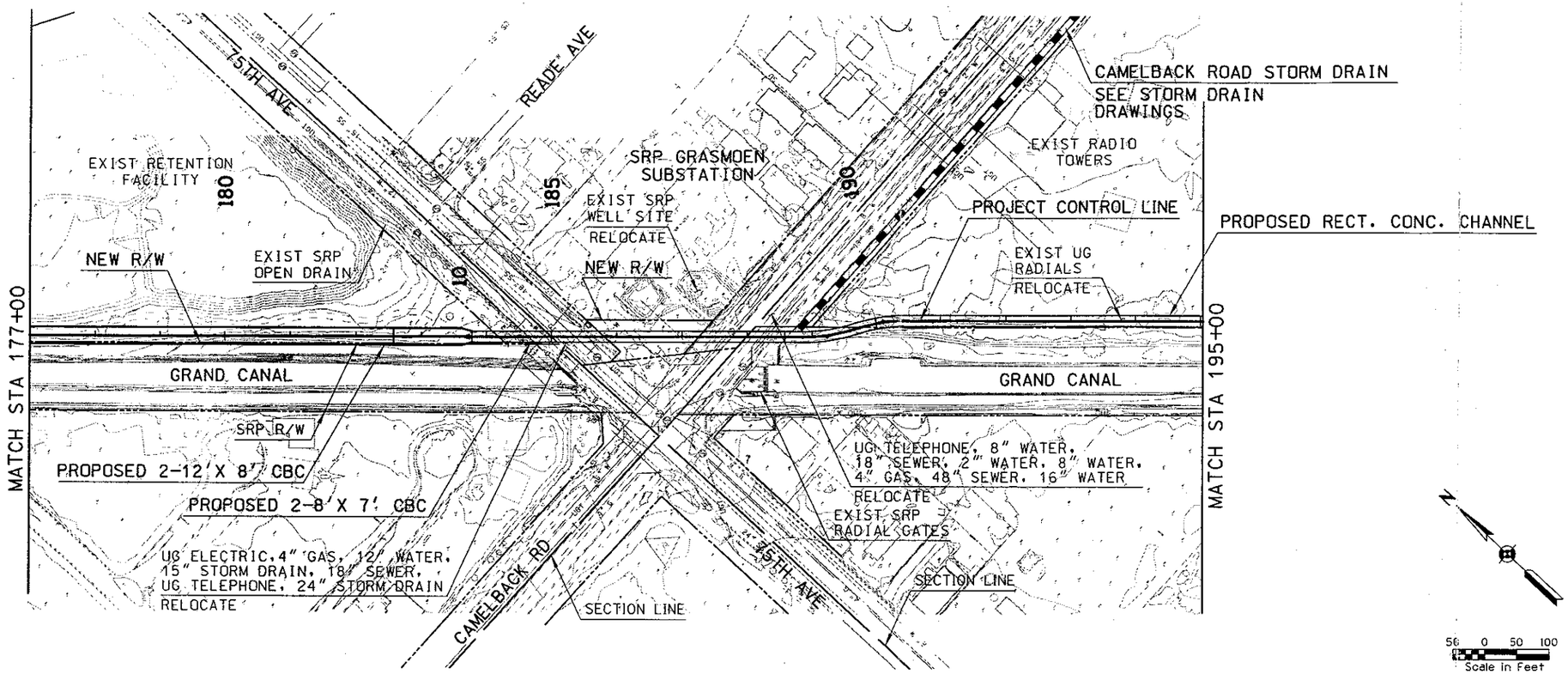
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

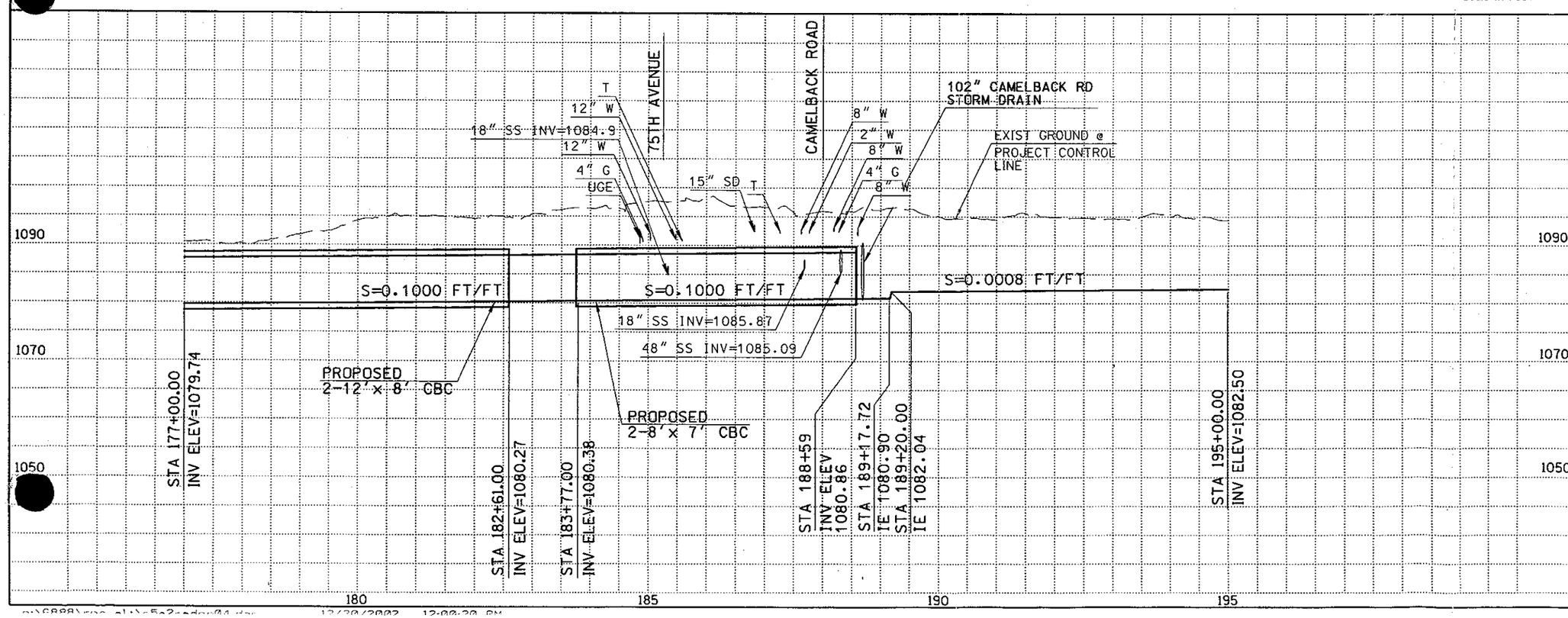
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 164+00.00 to 177+00.00 SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

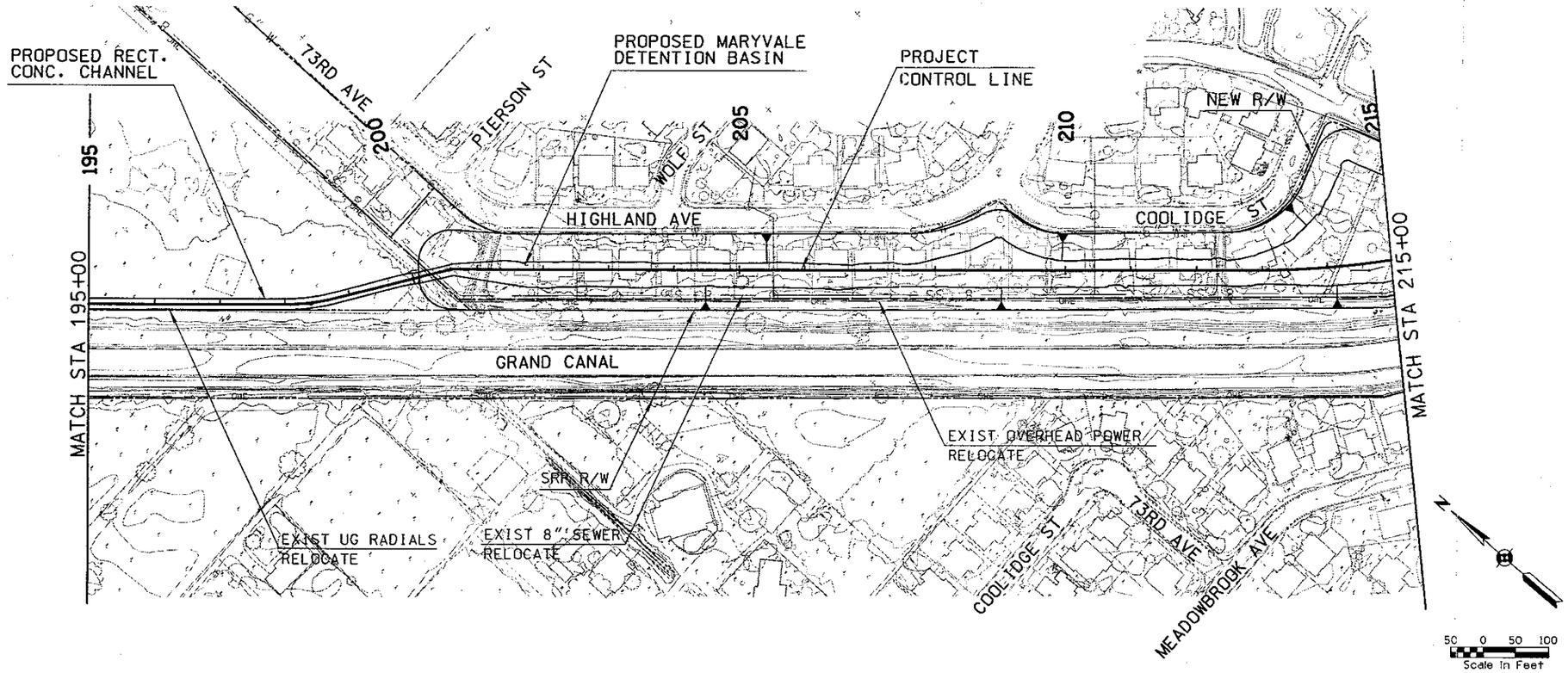
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

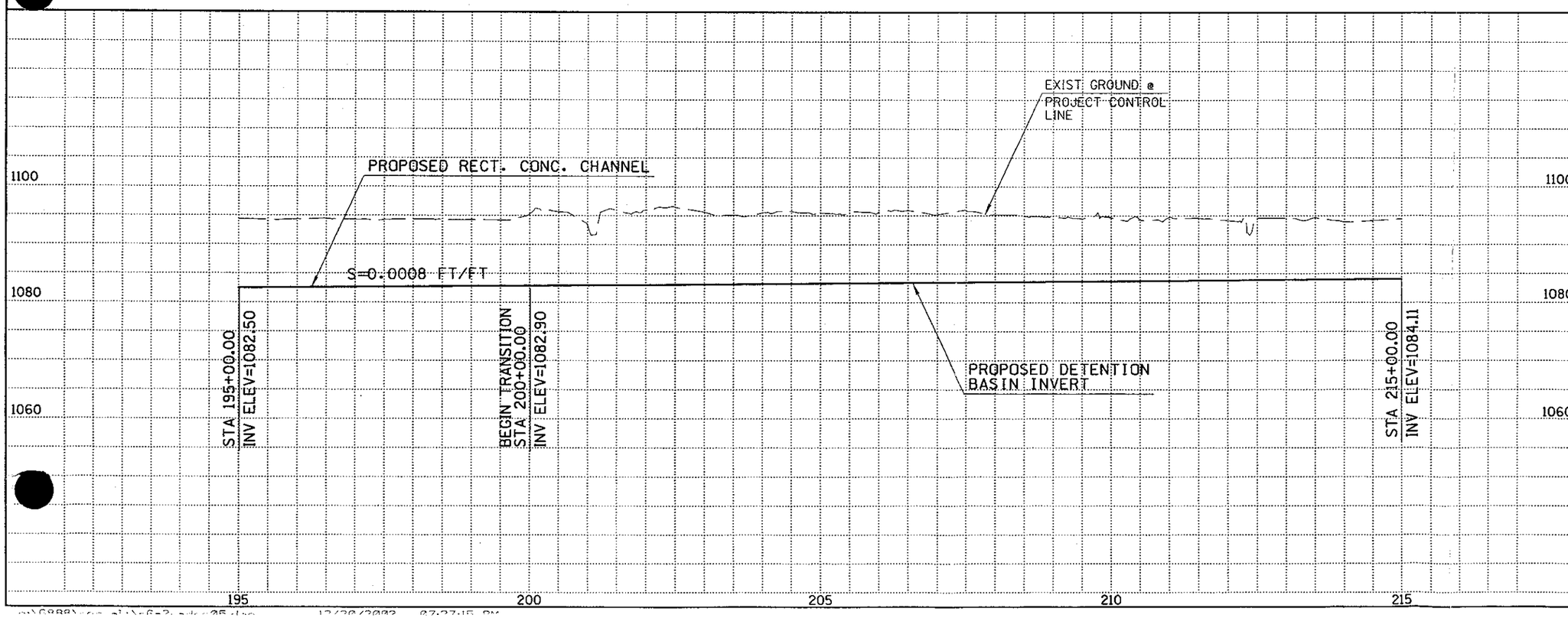
	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJMHARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 177+00.00 to 195+00.00

SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

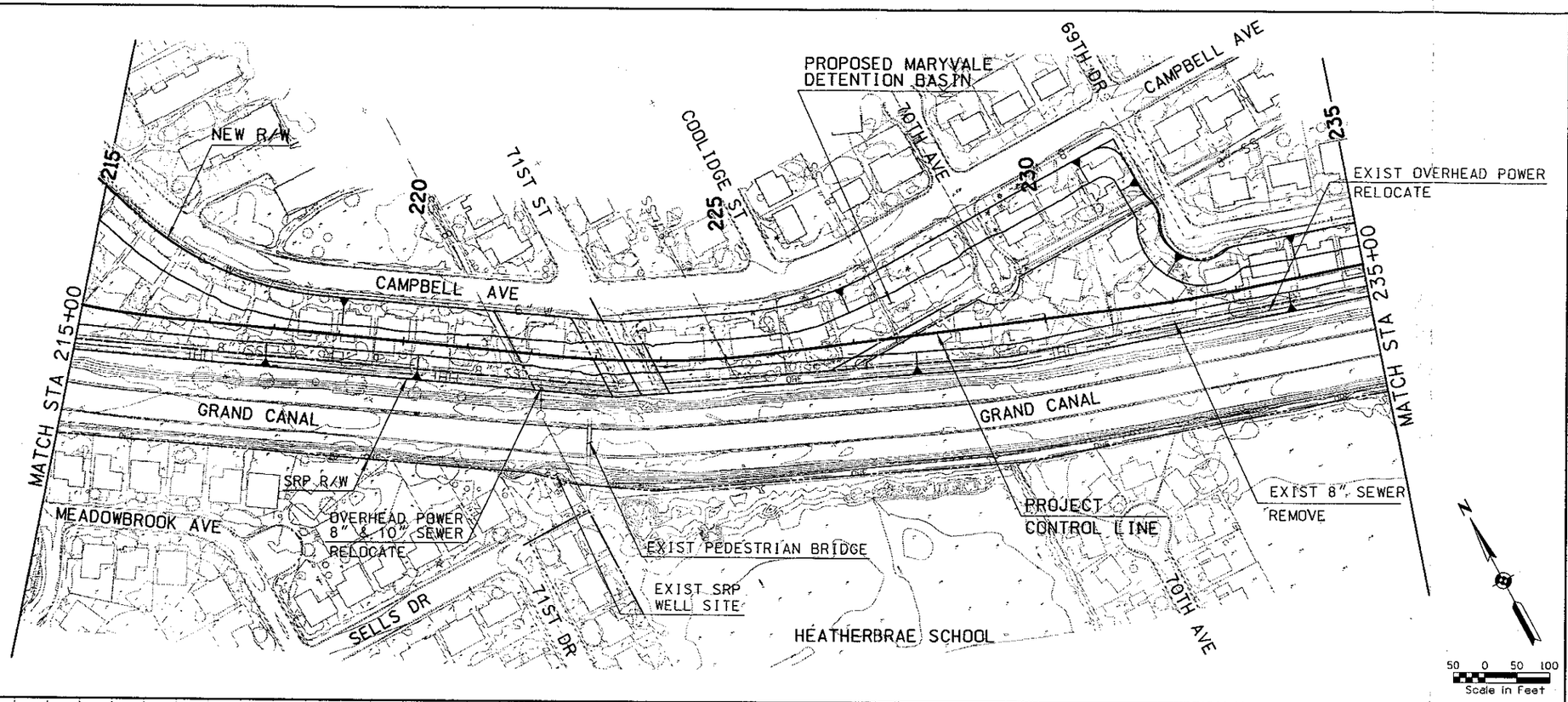
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

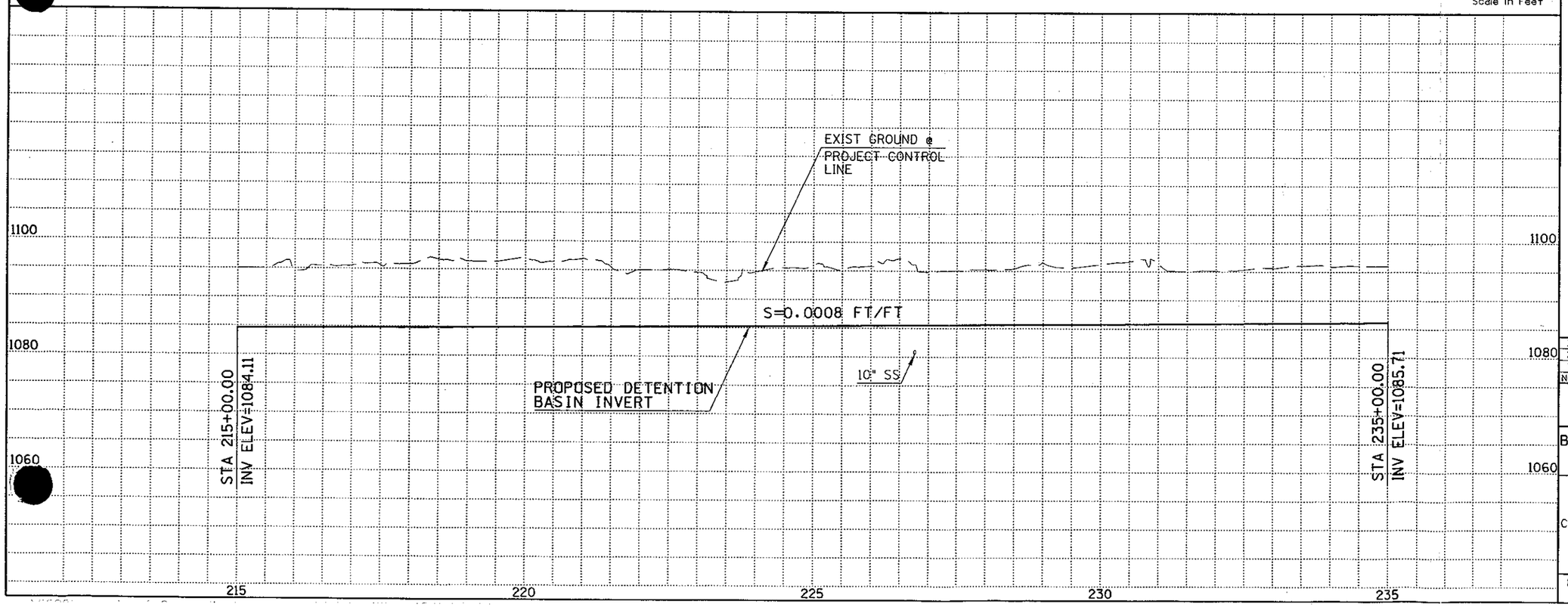
	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 195+00.00 to 215+00.00

SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

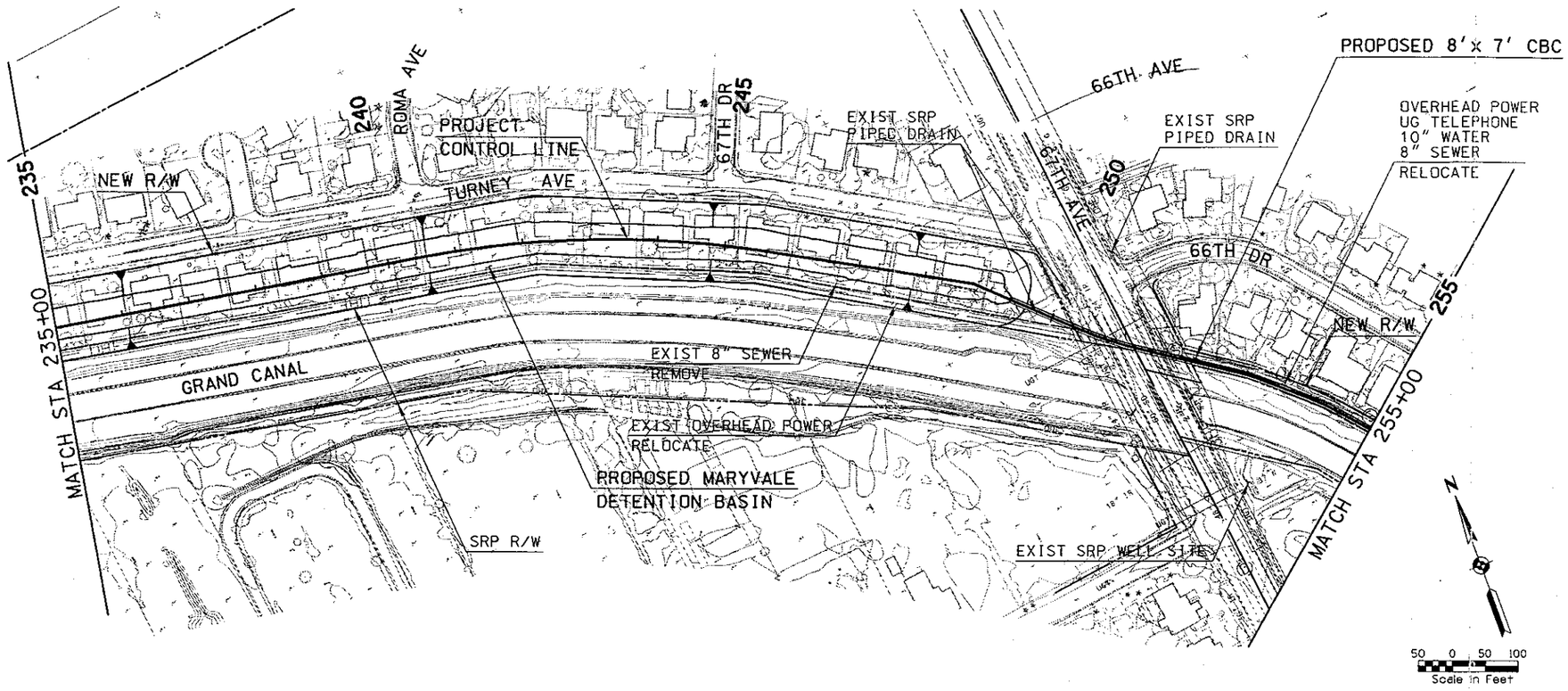
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

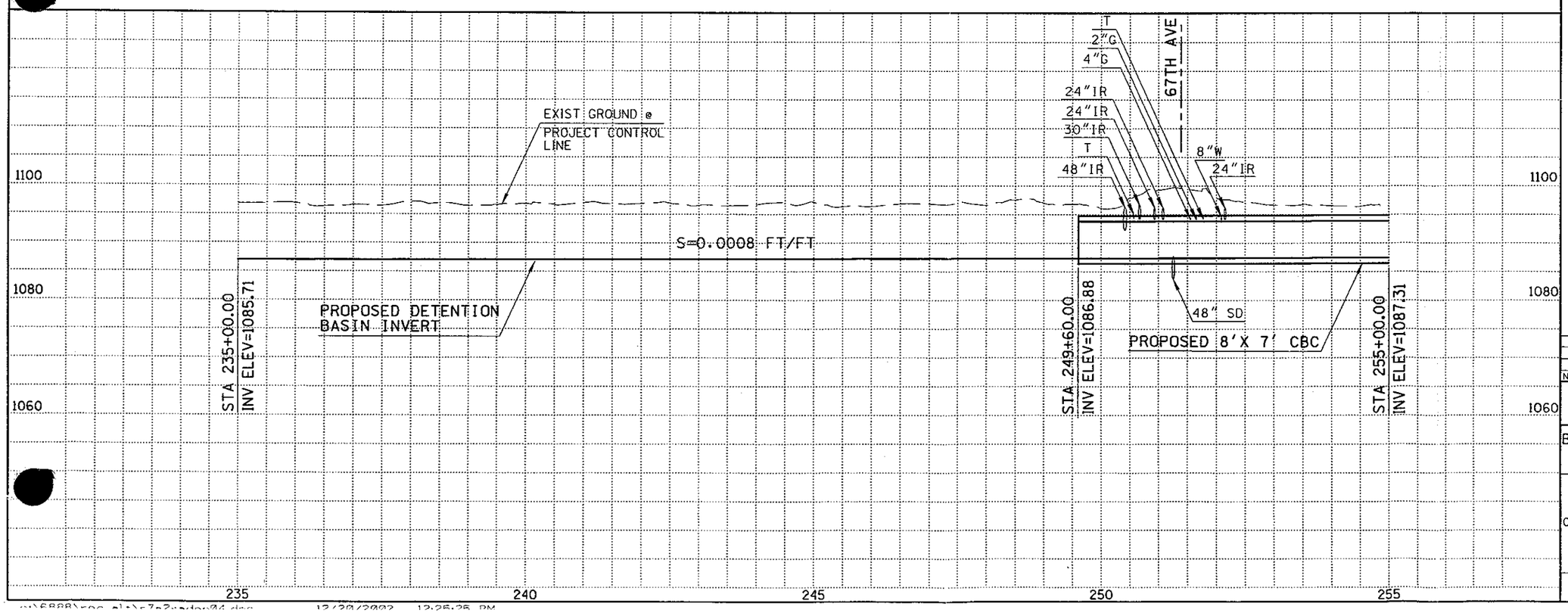
	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 215+00.00 235+00.00

SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

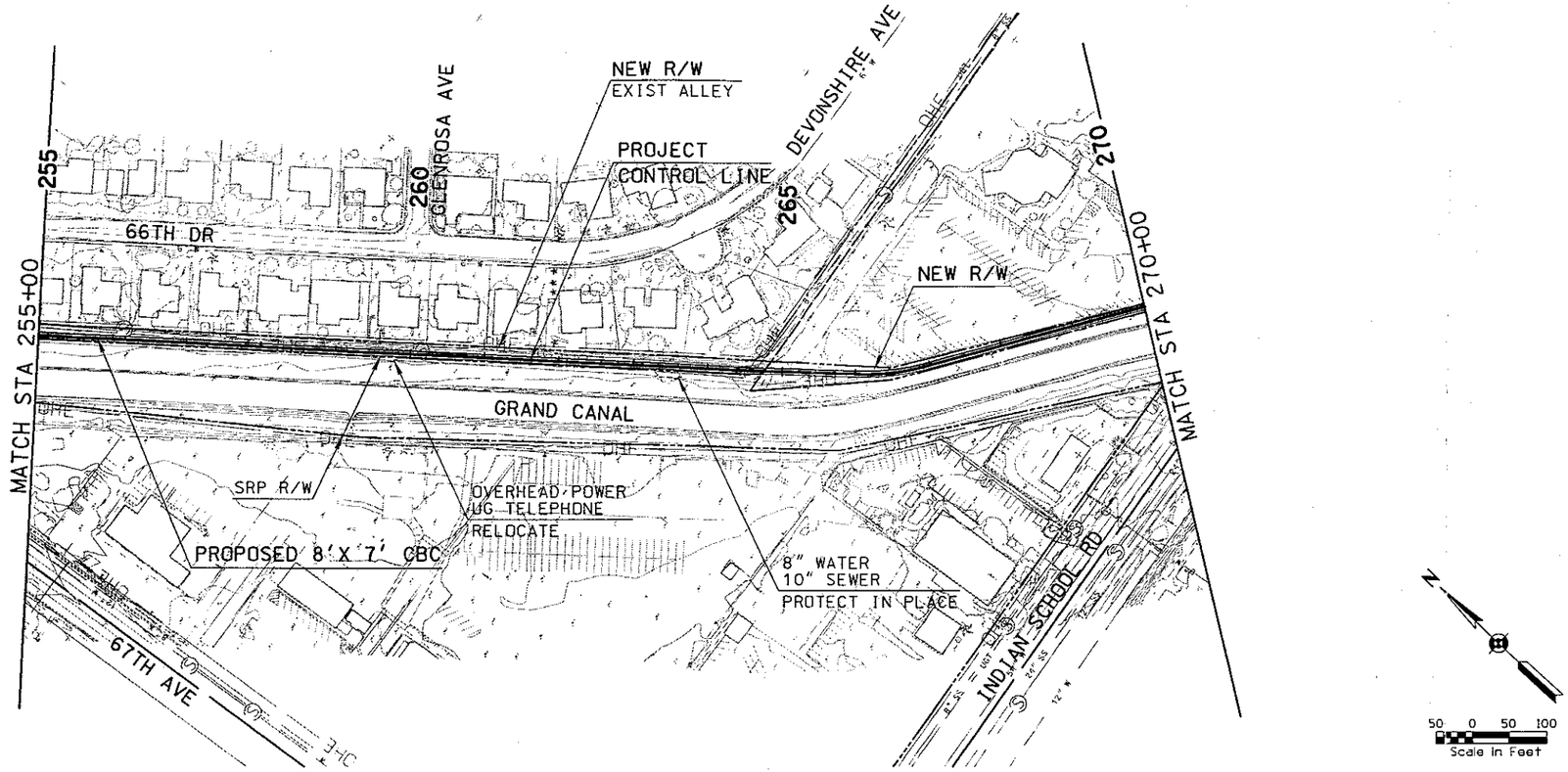
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

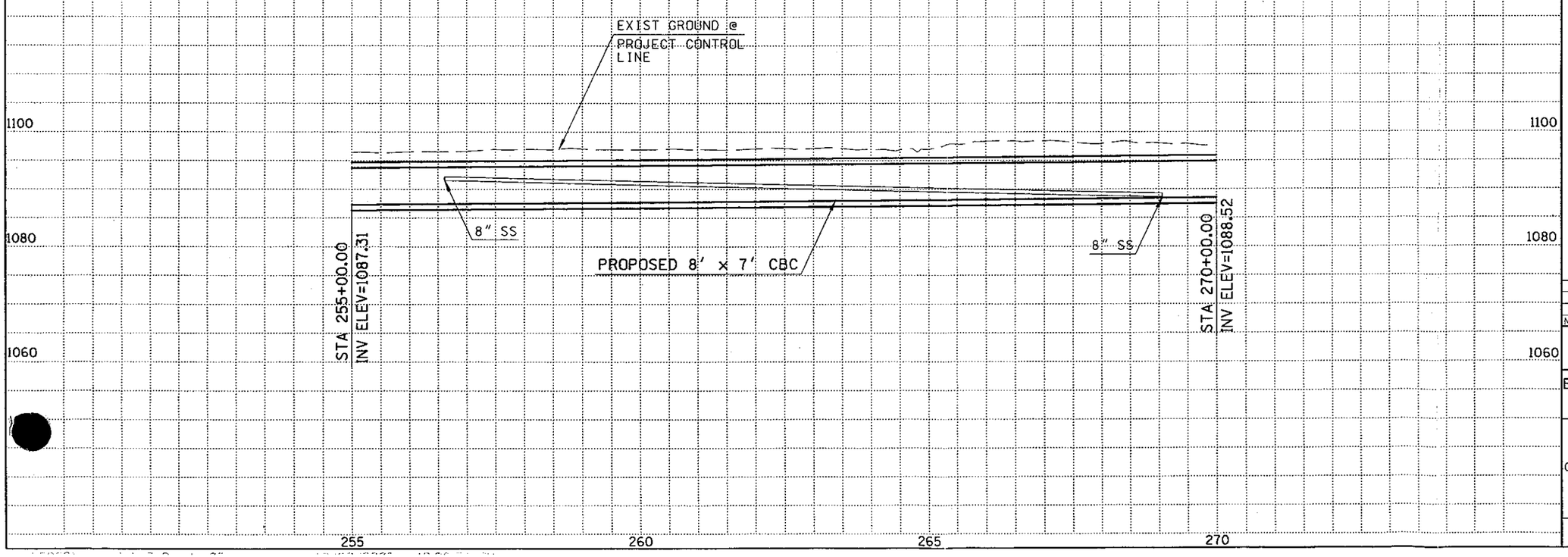
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 235+00.00 255+00.00 SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

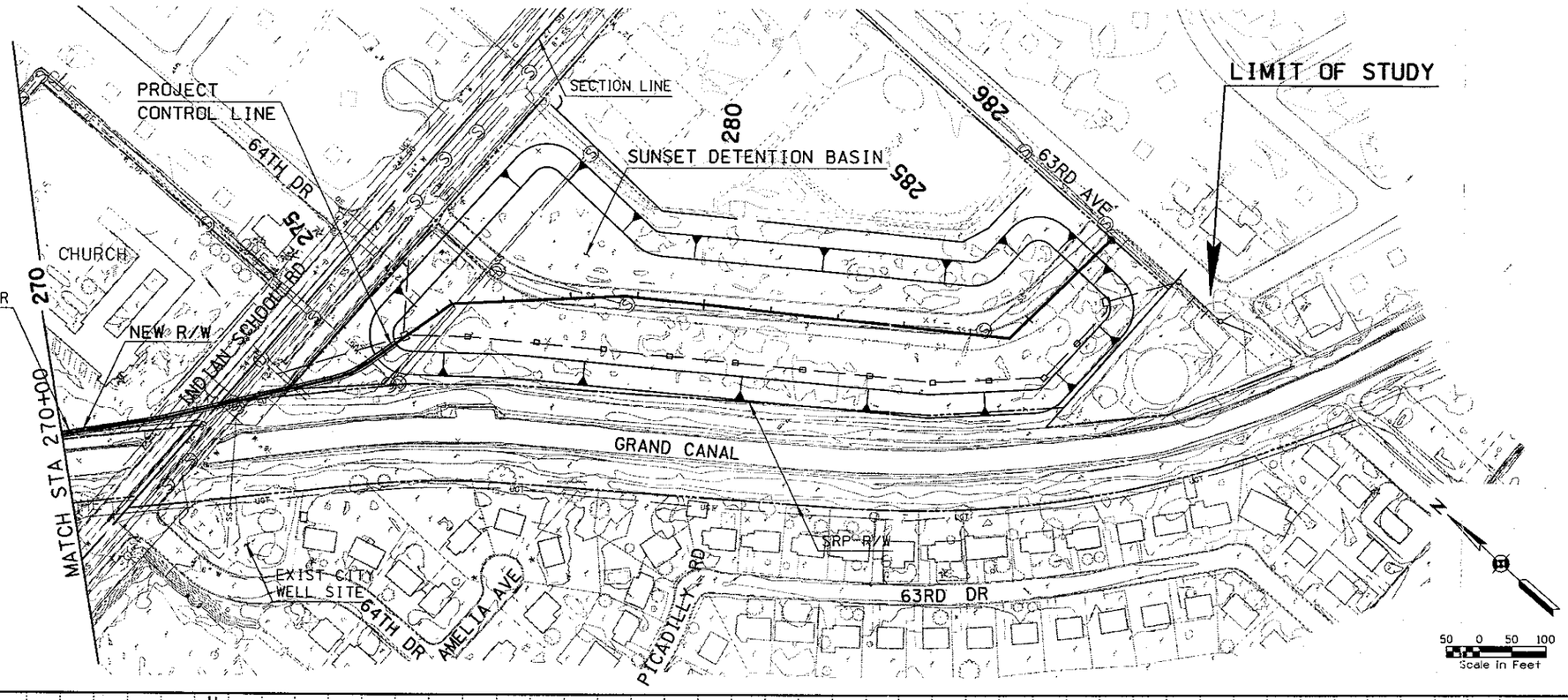
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

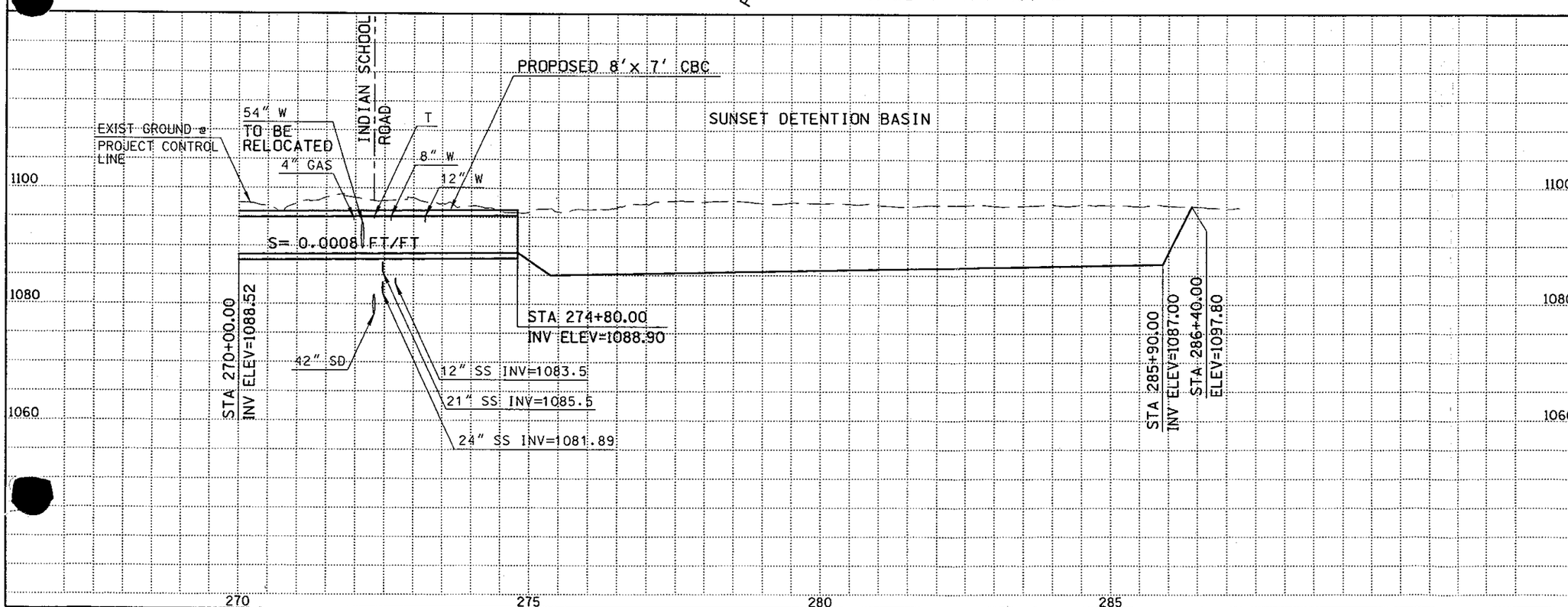
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 255+00.00 270+00.00 SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

FUTURE CONSTRUCTION

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

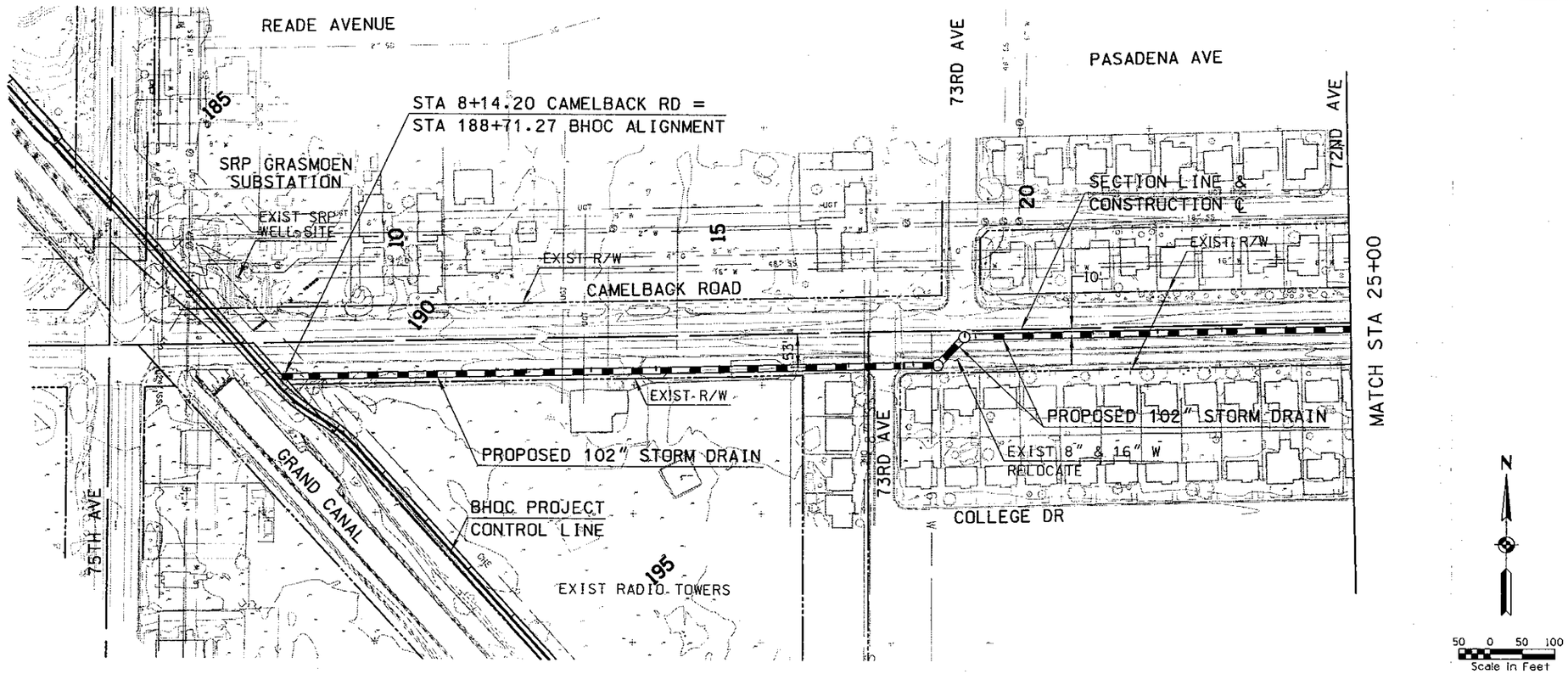
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

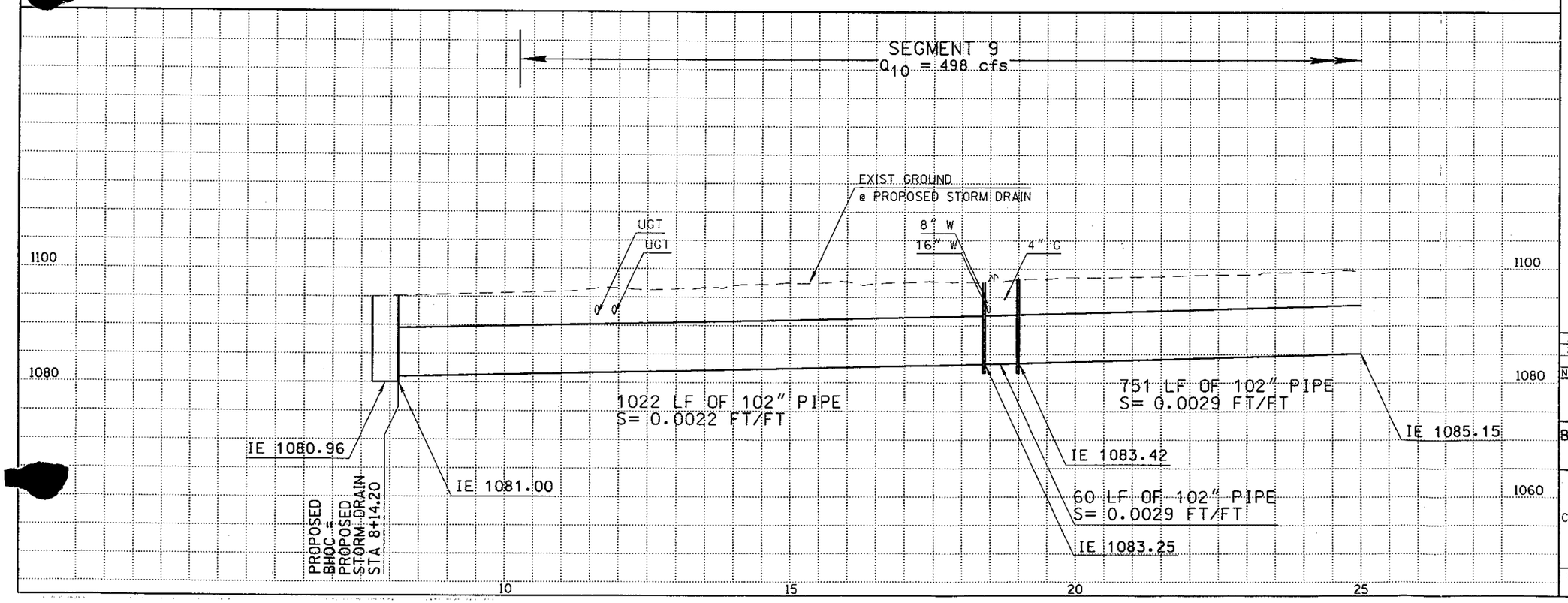
	BY	DATE
DESIGNED	DBL	12/02
DRAWN	CPG	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 270+00.00 TO 277+00.00

SHEET OF





☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

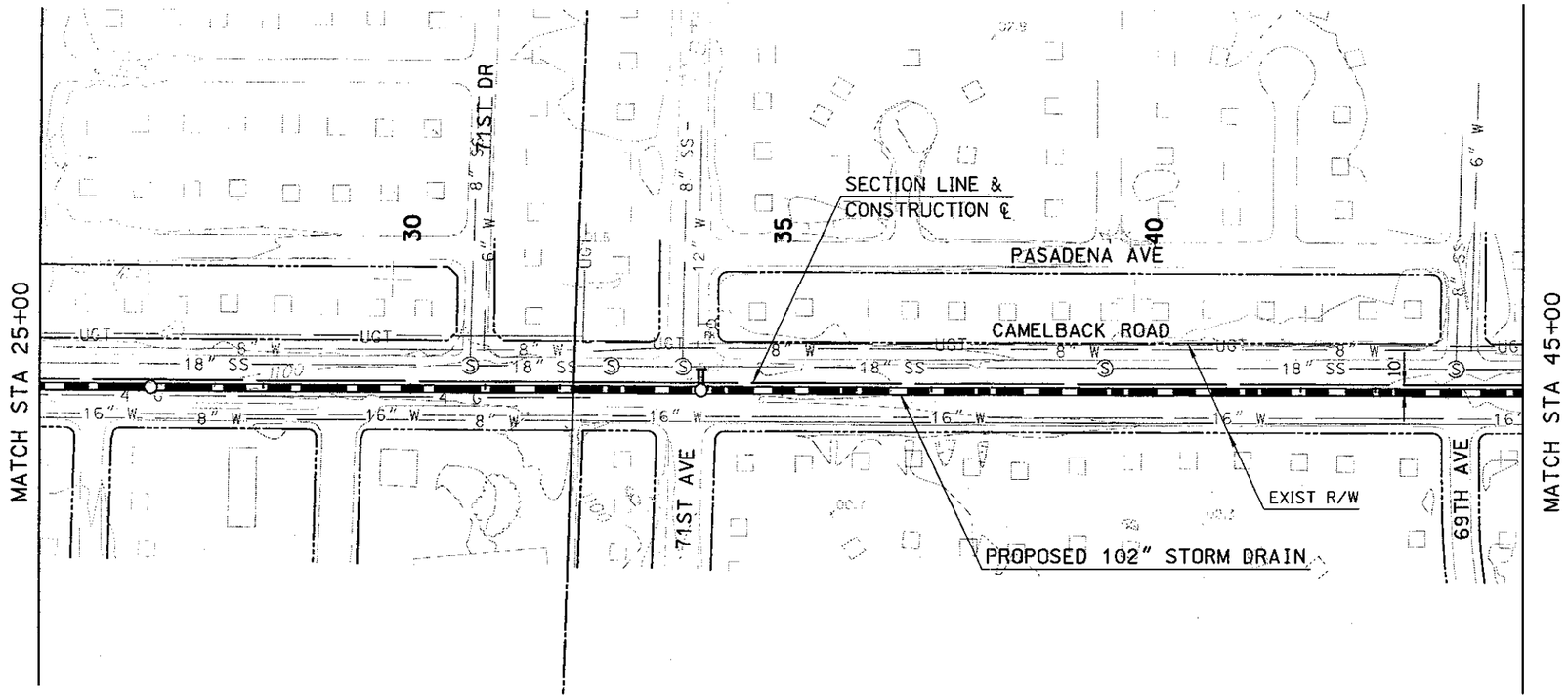
BETHANY HOME OUTFALL CHANNEL, PHASE II
PCN NO. 620 03 32

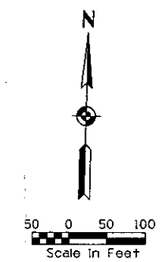
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

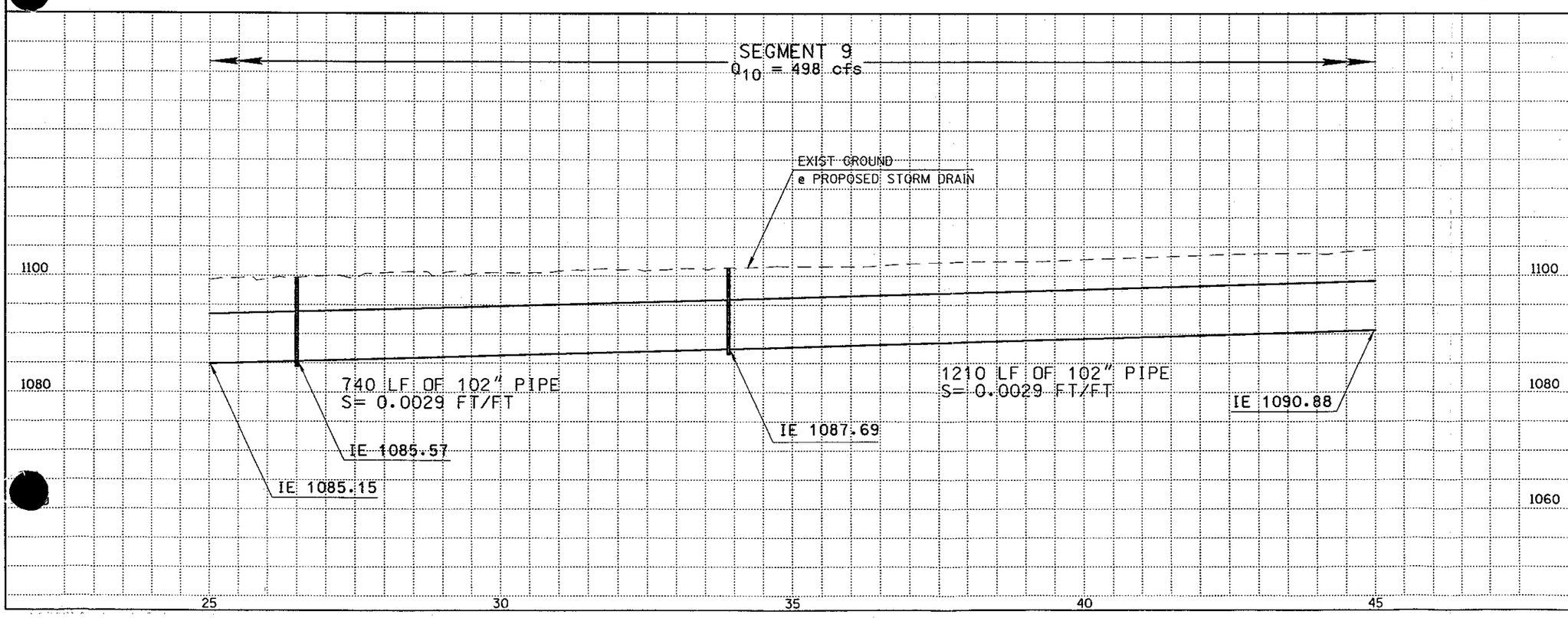
	BY	DATE
DESIGNED	JRG	12/02
DRAWN	CPG/JAE	12/02
CHECKED	JRM	12/02

DMJM HARRIS
2777 E. CAMELBACK ROAD SUITE 200
PHOENIX, AZ. 85016-4302 (602) 337-2777

DRAWING NO. 10+00.00 25+00.00 SHEET OF 32







☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

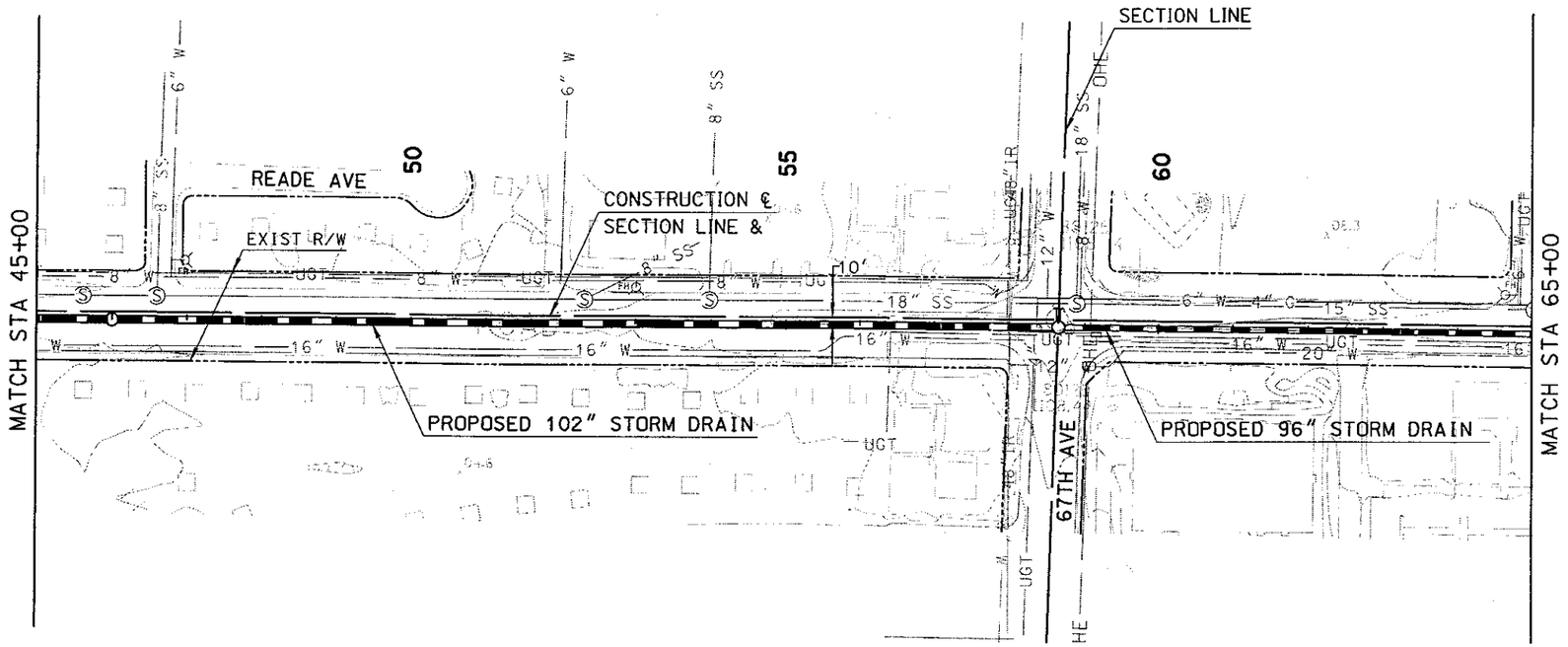
BETHANY HOME/GRAND CANAL
FLOOD CONTROL PROJECT
CAMELBACK ROAD STORM DRAIN

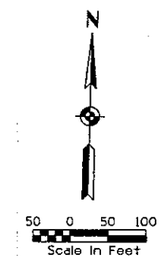
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

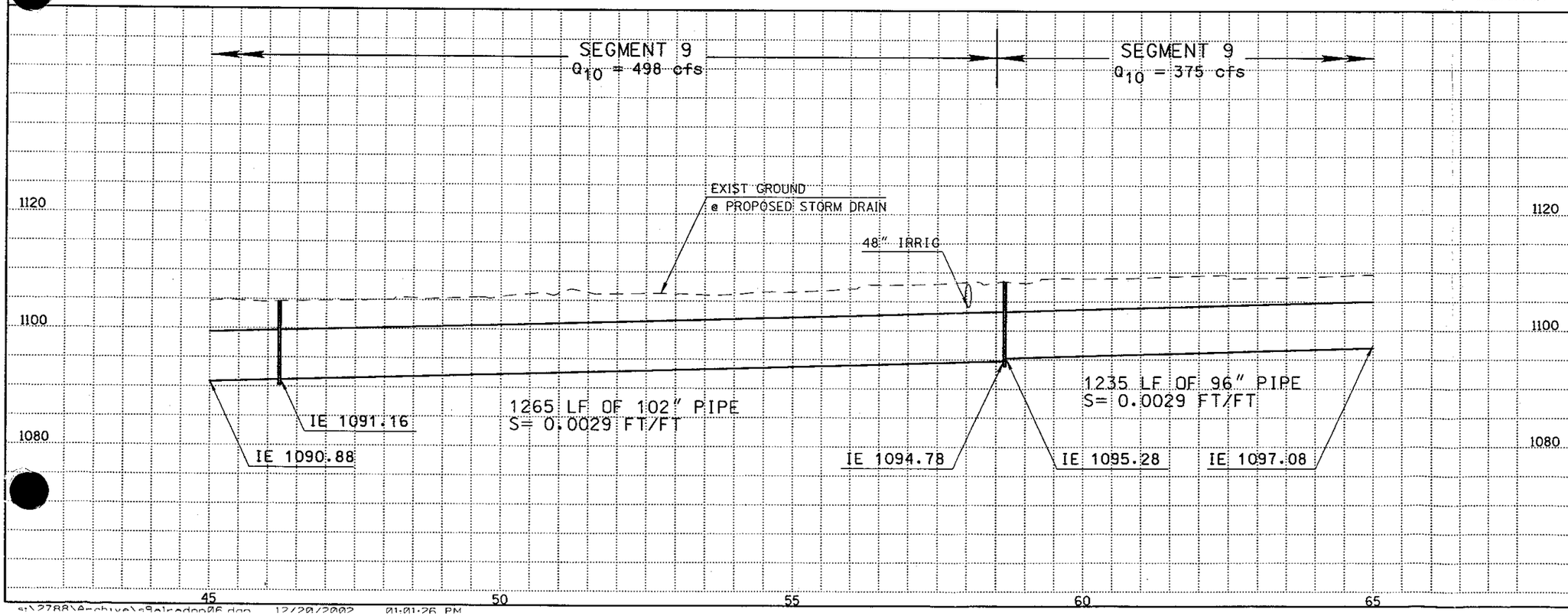
	BY	DATE
DESIGNED	JRG	9-00
DRAWN	CPG	9-00
CHECKED	JRM	9-00

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, AZ. 85016-4302
(602) 337-2777

DRAWING NO. | PLAN SHEET STA. 25+00.00 TO 45+00.00 | SHEET OF 33







☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL
FLOOD CONTROL PROJECT
CAMELBACK ROAD STORM DRAIN

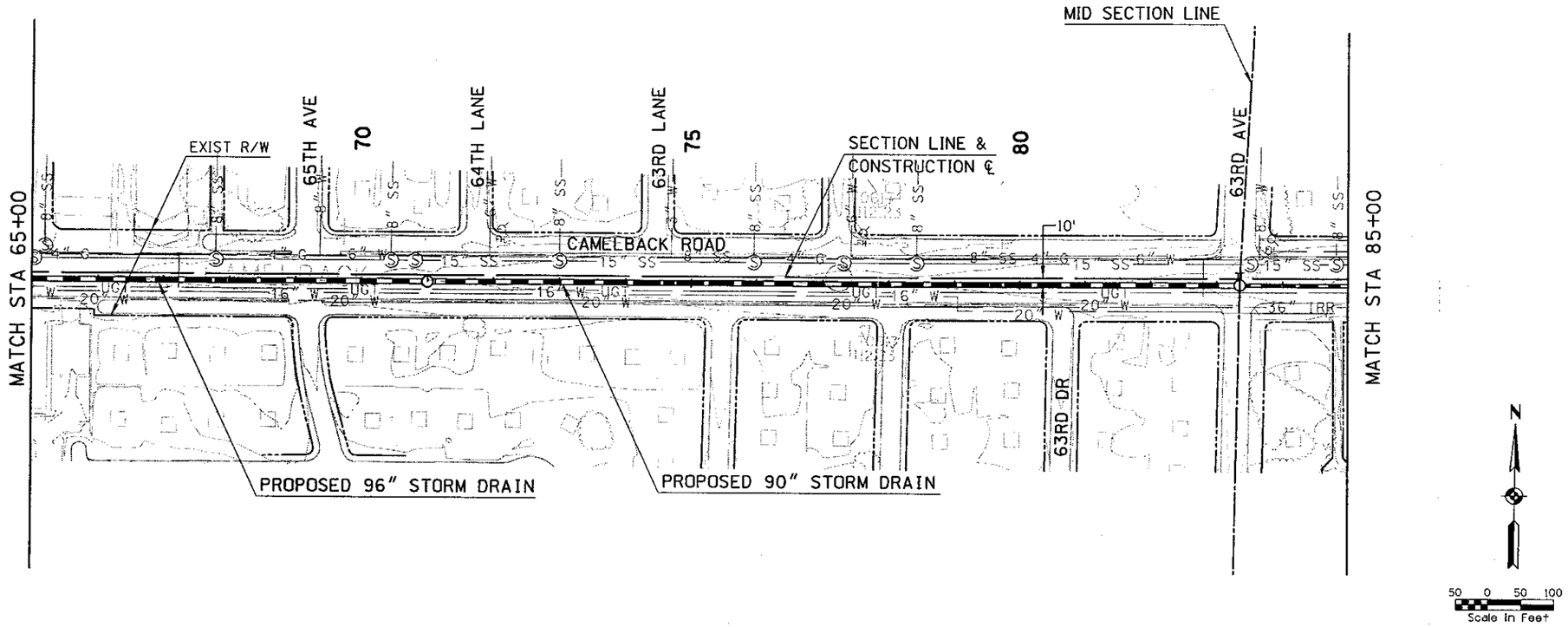
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

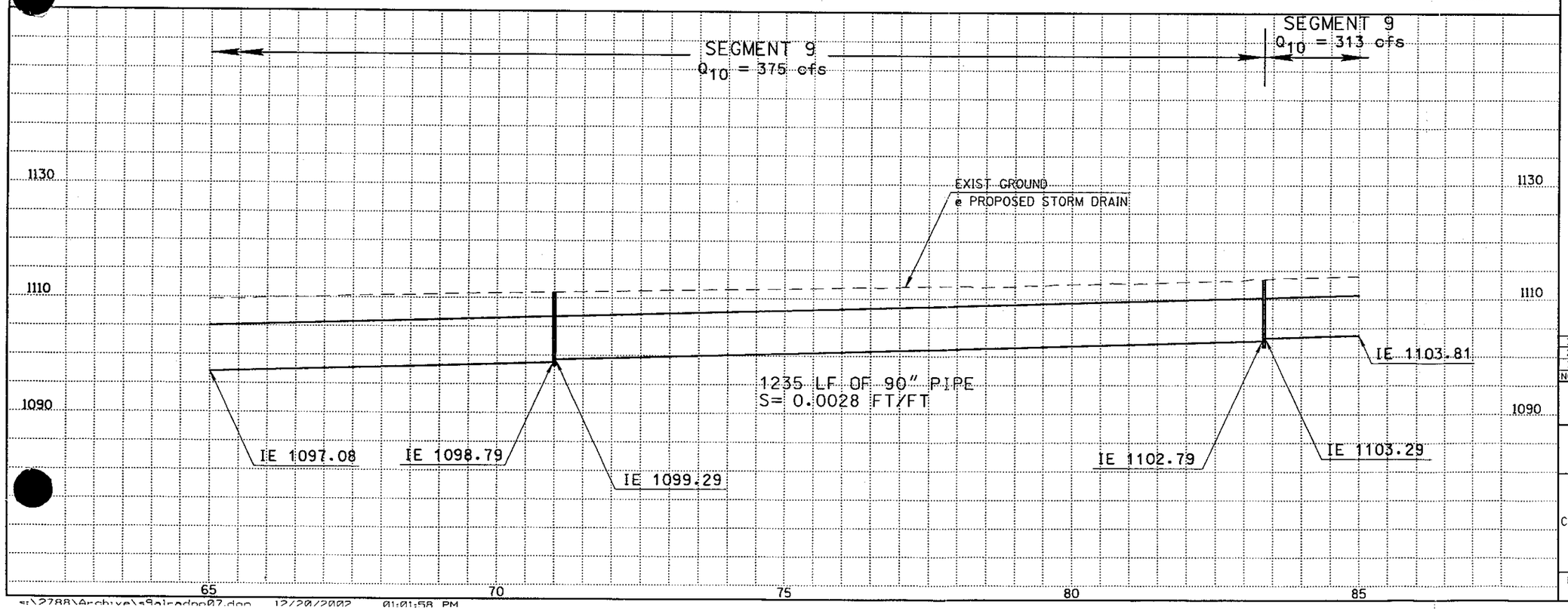
	BY	DATE
DESIGNED	JRG	9-00
DRAWN	CPG	9-00
CHECKED	JRM	9-00

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, AZ. 85016-4302
(602) 337-2777

DRAWING NO. | PLAN SHEET STA. 45+00.00 TO 65+00.00 | SHEET OF 34

s:\2788\archive\9elredpp06.dgn 12/20/2002 01:01:26 PM





☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL
FLOOD CONTROL PROJECT
CAMELBACK ROAD STORM DRAIN

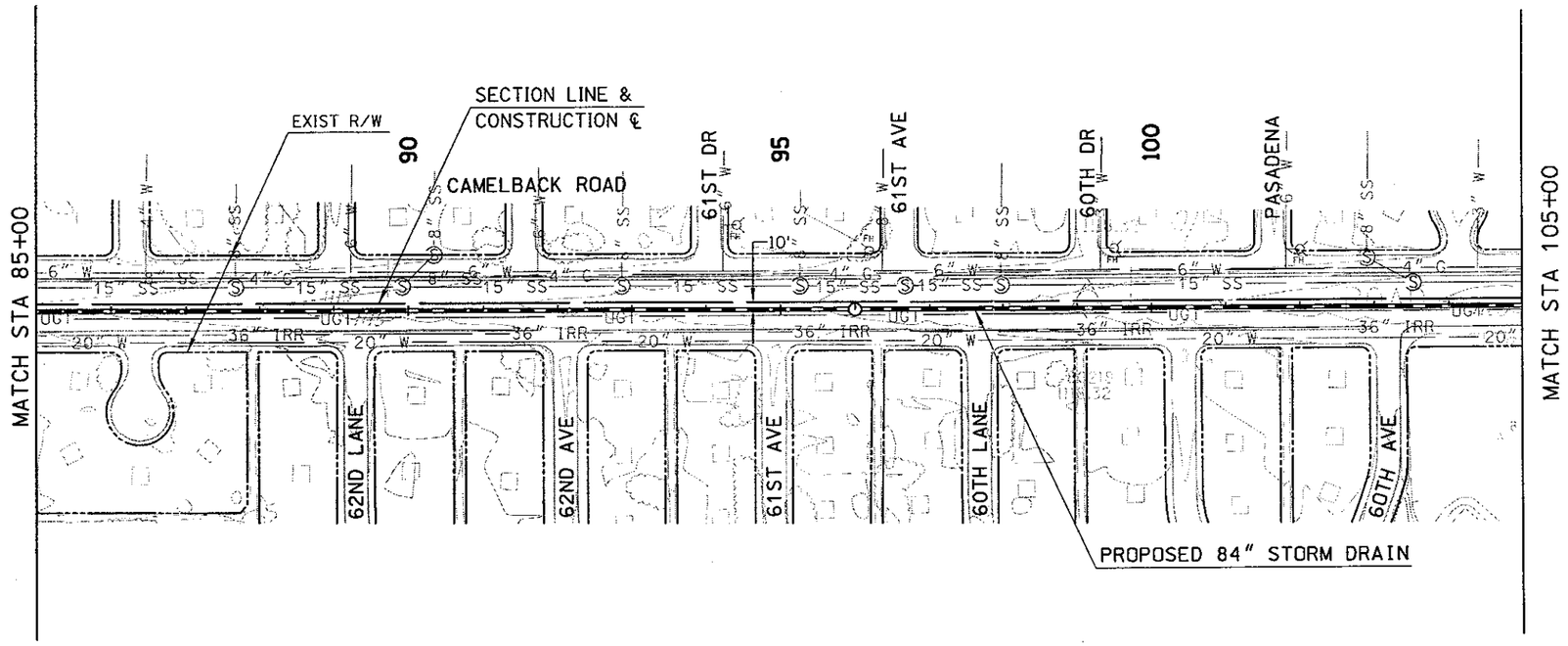
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	JRG	9-00
DRAWN	CPG	9-00
CHECKED	JRM	9-00

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, AZ. 85016-4302
(602) 337-2777

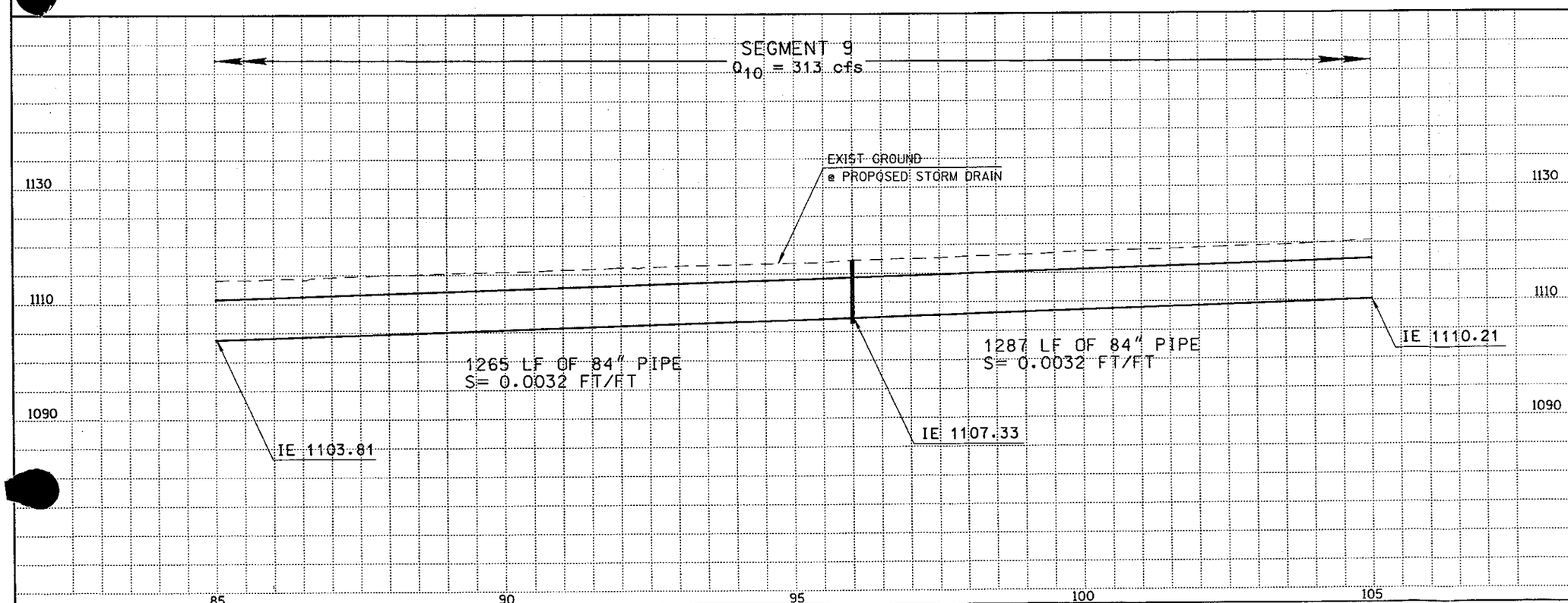
DRAWING NO. | PLAN SHEET STA. 65+00.00 TO 85+00.00 | SHEET OF 35

s:\2788\Archive\s9alrodpp07.dgn 12/20/2002 01:01:58 PM



N

50 0 50 100
Scale in Feet



☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

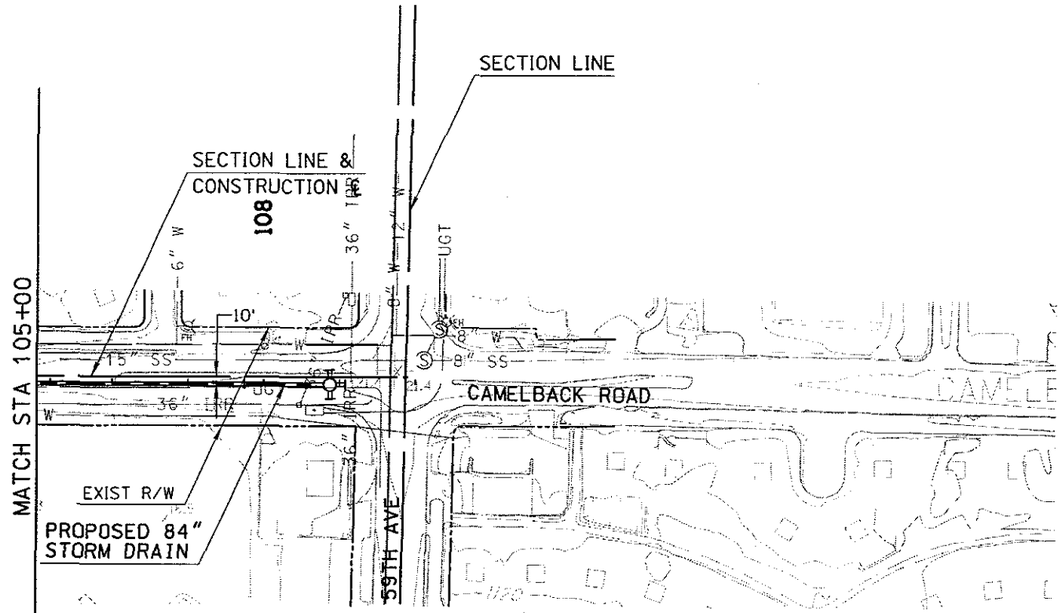
BETHANY HOME/GRAND CANAL
FLOOD CONTROL PROJECT
CAMELBACK ROAD STORM DRAIN

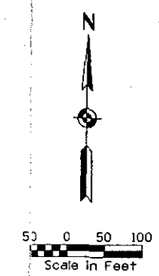
PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

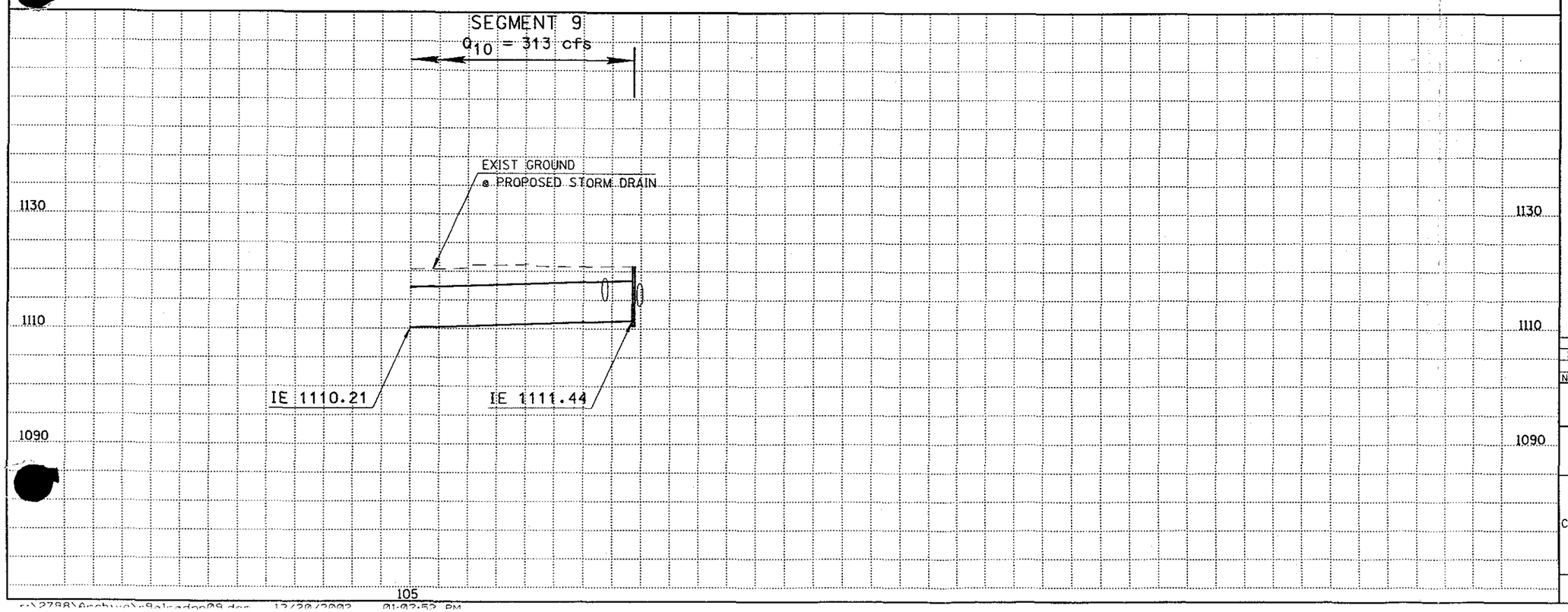
	BY	DATE
DESIGNED	JRG	9-00
DRAWN	CPG	9-00
CHECKED	JRM	9-00

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, AZ. 85016-4302
(602) 337-2777

DRAWING NO. | PLAN SHEET STA. 85+00.00 TO 105+00.00 | SHEET OF 36







☐ REMOVE ☐

○ CONSTRUCT ○

RECOMMENDED ALTERNATIVE

NO.	REVISION	BY	DATE
3			
2			
1			

FLOOD CONTROL DISTRICT OF MARICOPA COUNTY

BETHANY HOME/GRAND CANAL
FLOOD CONTROL PROJECT
CAMELBACK ROAD STORM DRAIN

PRELIMINARY NOT FOR CONSTRUCTION OR RECORDING

	BY	DATE
DESIGNED	JRG	9-00
DRAWN	CPG	9-00
CHECKED	JRM	9-00

DMJM ARIZONA, INC.
2777 E. CAMELBACK ROAD
SUITE 200
PHOENIX, AZ. 85016-4302
(602) 337-2777

DRAWING NO.

PLAN SHEET
STA. 105+00.00 TO 108+69.40

SHEET OF 37

r:\2788\Archive\r9colrado09.dgn 12/20/2003 01:03:52 PM

CITY OF GLENDALE

GLENDALE, ARIZONA

PROJECT NO. 989011
BETHANY HOME ROAD IMPROVEMENTS
83RD AVENUE TO 58TH AVENUE

GLENDALE

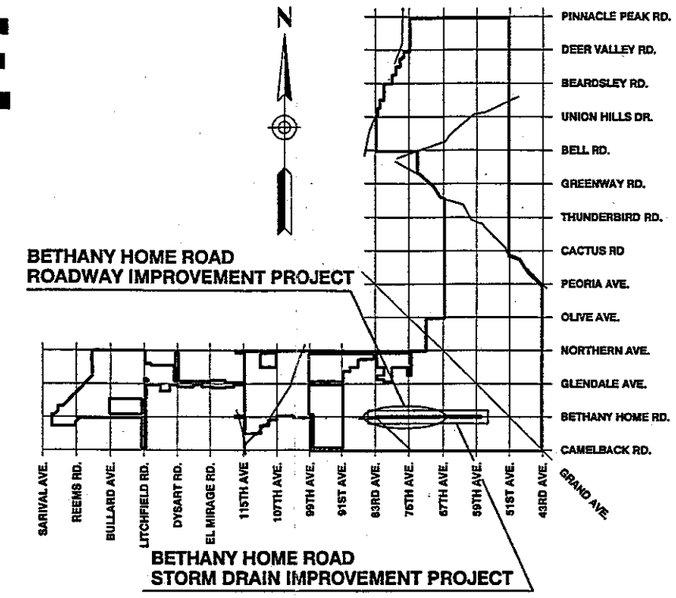
MAYOR
ELAINE M. SCRUGGS

CITY COUNCIL
THOMAS R. EGGLESTON
DAVID M. GOULET
H. PHILIP LIEBERMAN
MANUEL D. MARTINEZ
JAMES C. McALLISTER
MARTIN SAMANIEGO, JR.

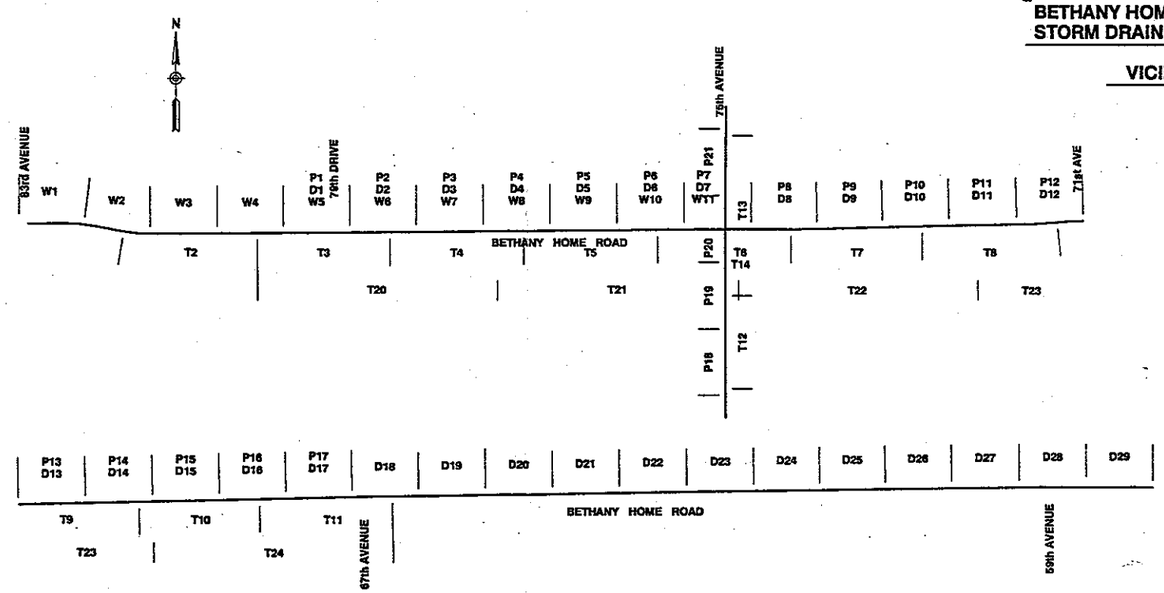
CITY MANAGER
MARTIN VANACOUR

CITY CLERK
PAMELA OLIVEIRA

CITY ATTORNEY
PETER VAN HAREN



VICINITY MAP



KEY MAP

SHEET INDEX

G1	Cover Sheet
G2 - G8	Typical Sections/Details
P1 - P21	Roadway Plan & Profile
D1 - D29	Storm Drain Plan & Profile
D30 - D43	Connector Pipe Profiles
D44 - D50	Lateral Storm Drain Profiles
D51 - D57	Side Street Connector Pipe Profiles
W1 - W11	Water Line Plan & Profile
H1 - H2	Private Irrigation Plan & Profile
T1	Pavement Marking and Signing Notes and Quantities
T2 - T11	Pavement Marking and Signing Bethany Home Road
T12 - T13	Pavement Marking and Signing 75th Avenue
T14	Traffic Signal Plan Bethany Home Road/75th Avenue
T15	Loop Detector Replacement Details
T16 - T21	COG Traffic Signal Details
T22	Lighting Notes and Details
T23 - T27	Roadway Lighting
T28	Roadway Lighting Details
L1	Landscape Notes, Details & Plant Schedule
L2 - L10	Landscape Plans
L11	Landscape Irrigation Notes & Details
L12 - L20	Landscape Irrigation Plans

APPROVAL: _____ CITY ENGINEER _____ DATE

APPROVAL: _____ TRANSPORTATION DIRECTOR _____ DATE

APPROVAL: _____ CITY LANDSCAPE ARCHITECT _____ DATE

"AS-BUILT CERTIFICATION"

I CERTIFY THAT THE "AS-BUILT" INFORMATION SHOWN HEREON WAS OBTAINED UNDER MY DIRECT SUPERVISION AND IS CORRECT AND COMPLETE TO THE BEST OF MY KNOWLEDGE AND BELIEF.

NAME _____ (SEAL) _____

REGISTRATION NO. _____ DATE _____

REVD. BY: _____
CONSTRUCTION ENGINEER

FILE NAME: $$$$$$$$$$$$$FILENAME$$$$$$$$$$$$$
REVISION DATE:
PLOTTING DATE: $$$$DATE$$$$
AUTOCAD 200, VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY
NOT FOR
CONSTRUCTION

DESIGNED	DRAWN	CHECKED
EDD	CGS	BCO

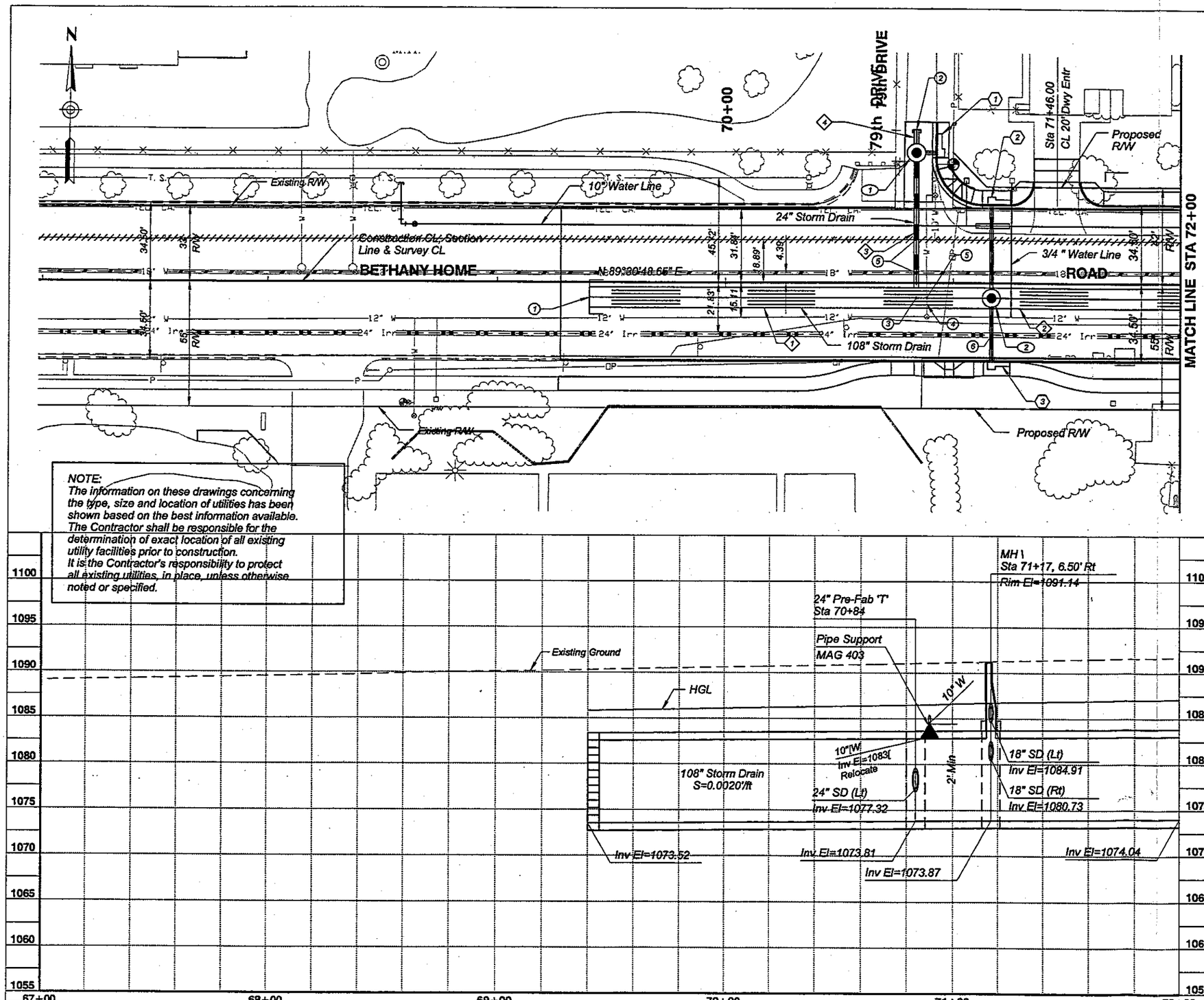
NO.	DATE	DESCRIPTION	REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STREET AND S.D. IMPROVEMENTS
83RD AVENUE TO 58TH AVENUE

Stanley Consultants INC.

(602) 263-1100

SHT. G1
OF



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	70+84, 57' Lt	MAG 520 & 522
2	71+17, 6.50' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	69+40 to 71+17	177'	108"	II
2	71+17 to 72+00	83'	108"	II
3	70+84 2.5' Rt to 57' Lt	60'	24"	III
4	70+84 57' Lt to 67' Lt	10'	24"	III

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	70+92.38 57' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	10'	18"
2	71+17, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	40'	18"
3	71+17, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	27'	18"

REMOVAL

NEW CONSTRUCTION

1. Install Pipe Plug per MAG 427 Sta 69+40
2. Install Pipe Plug per MAG 427 Sta 70+84, 67' Lt
3. Install 108" x 24" Pre-Fab 'T'
4. Vertical Realignment of 10"[Water Line MAG 370 — 1 Ea
5. Install Permanent Pipe Support MAG 403 — 3 Ea
6. Install Permanent Pipe Support SRP Det — 1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 67+00 TO STA 72+00

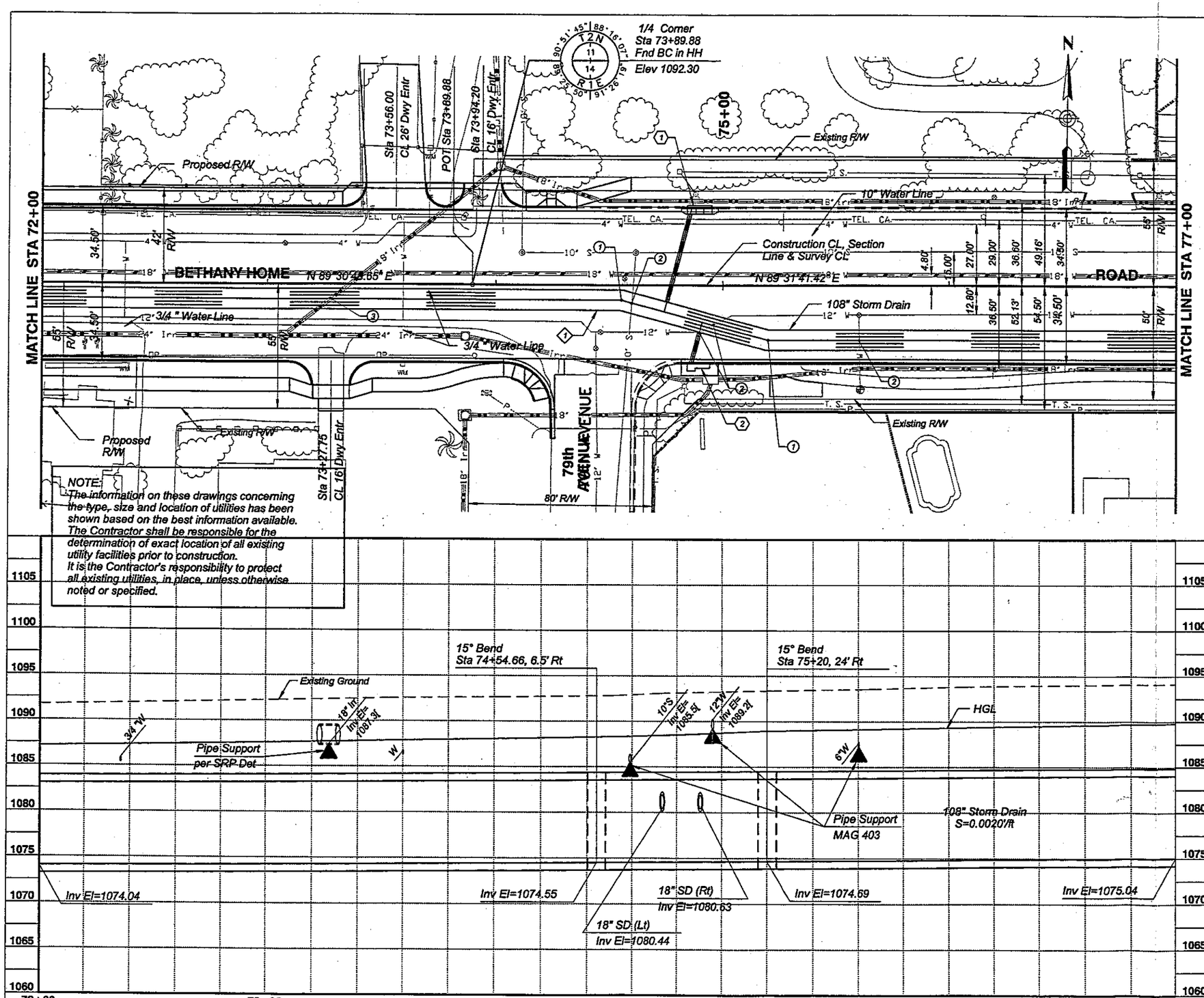
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D1
OF

FILE NAME: Q:\14685\DGN\Phase 3\Dwg\stadpp05.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	72+00 to 77+00	502'	108"	II

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	74+86, Lt	C.O.P. P-1572 Q-3	MAG 524	46'	18"
2	74+86, Rt	C.O.P. P-1569 M-1, L=6	MAG 524	19'	18"

REMOVAL

NEW CONSTRUCTION

1. Install/Construct 15° Bend
2. Install Permanent Pipe Support MAG 403 — 4 Ea
3. Install Permanent Pipe Support SRP Det — 1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 72+00 TO STA 77+00

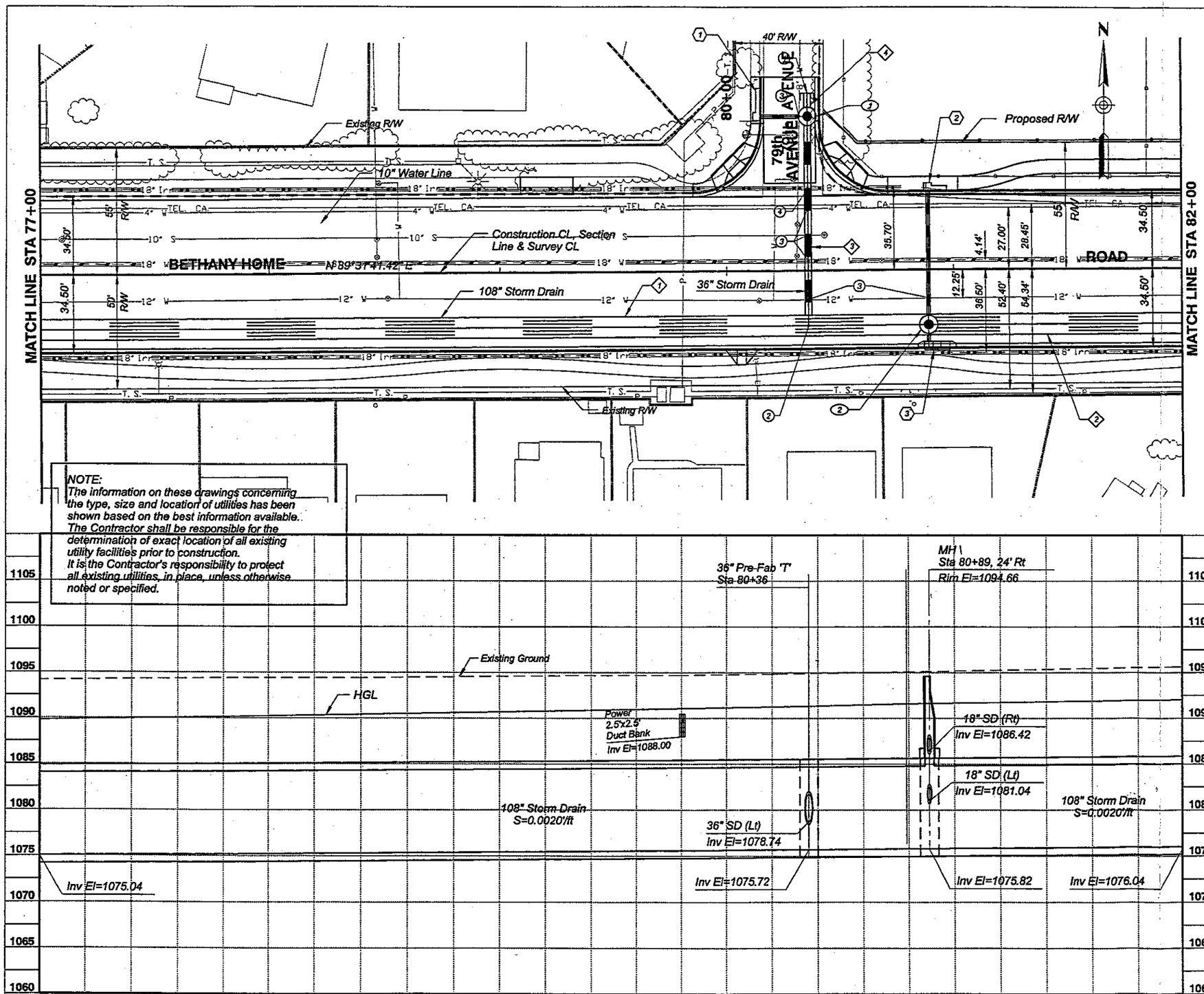
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D2
OF

FILE NAME: G:\14663\DGN\Phase 3\Dwg\sdpc06.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	80+36, 67' Lt	MAG 520 & 522
2	80+89, 24' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	77+00 to 80+89	389'	108"	II
2	80+89 to 82+00	111'	108"	II
3	80+36 20' Rt to 67' Lt	87'	36"	IV
4	80+36 67' Lt to 77' Lt	10'	36"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	80+15.53 67' Lt	C.O.P. P-1569 M-1, L=6	MAG 524	20'	18"
2	80+89, Lt	C.O.P. P-1569 M-1, L=6	MAG 524	56'	18"
3	80+89, Rt	C.O.P. P-1572 Q-3	MAG 524	8'	18"

REMOVAL

NEW CONSTRUCTION

1. Install Pipe Plug per MAG 427 Sta 80+36, 77' Lt
2. Install 108" x 36" Pre-Fab 'T'
3. Install Permanent Pipe Support MAG 403 — 6 Ea
4. Install Permanent Pipe Support SRP Det — 1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED: TEC
DRAWN: CGS
CHECKED: SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD

STORM DRAIN PLAN AND PROFILE
STA 77+00 TO STA 82+00

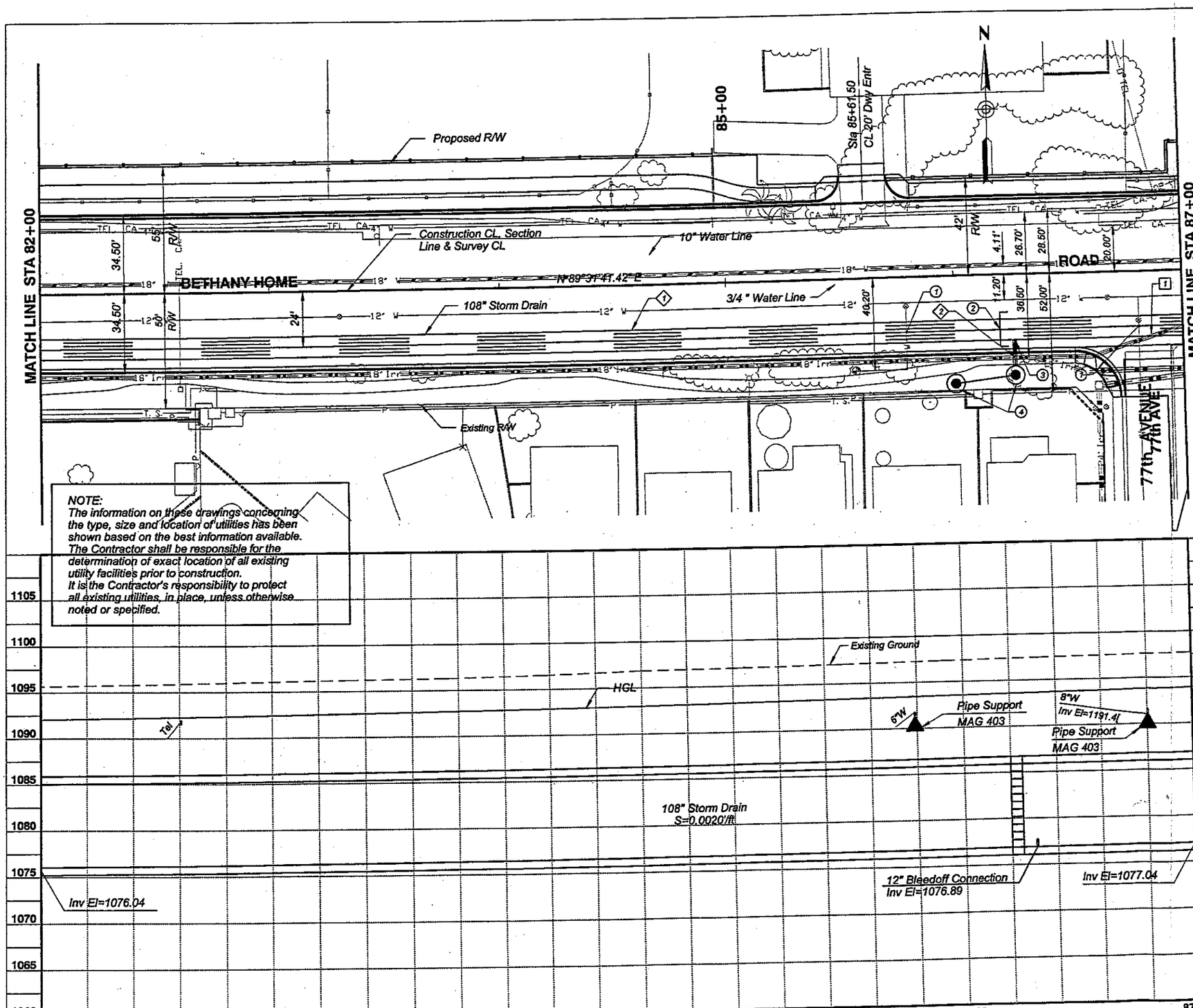
Stanley Consultants INC.
2502 West Geneva Drive
Phoenix, Arizona 85015
Tucson, Sun City Canyon
Las Cruces, New Mexico — Albuquerque

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

THIS DRAWING SHOULD NOT BE USED UNLESS IT BEARS THE SEAL, SIGNATURE AND DATE OF THE REGISTRANT
CALL FOR THE BLUE STAKES
(602) 263-1100
FOR STAKING OUTSIDE CALL COLLECT

SHT. D3
OF

FILE NAME: G:\14665 DGM Phase 3\Dwstadpp07.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	82+00 to 87+00	500'	108"	II
2	86+26 24' Rt to 44' Rt	20'	12"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE

REMOVAL

1 Remove Abandoned Irrigation Pipe within Limits of Storm Drain Trench

NEW CONSTRUCTION

1. Install Permanent Pipe Support MAG 403 — 2 Ea
2. Install Storm Drain Plug per Detail Sta 86+20
3. Construct 12" Bleedoff Connection per Detail Sta 86+26
4. Construct Maxwell Plus Drywell per Detail

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED	DRAWN	CHECKED
TEC	CGS	SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 82+00 TO STA 87+00

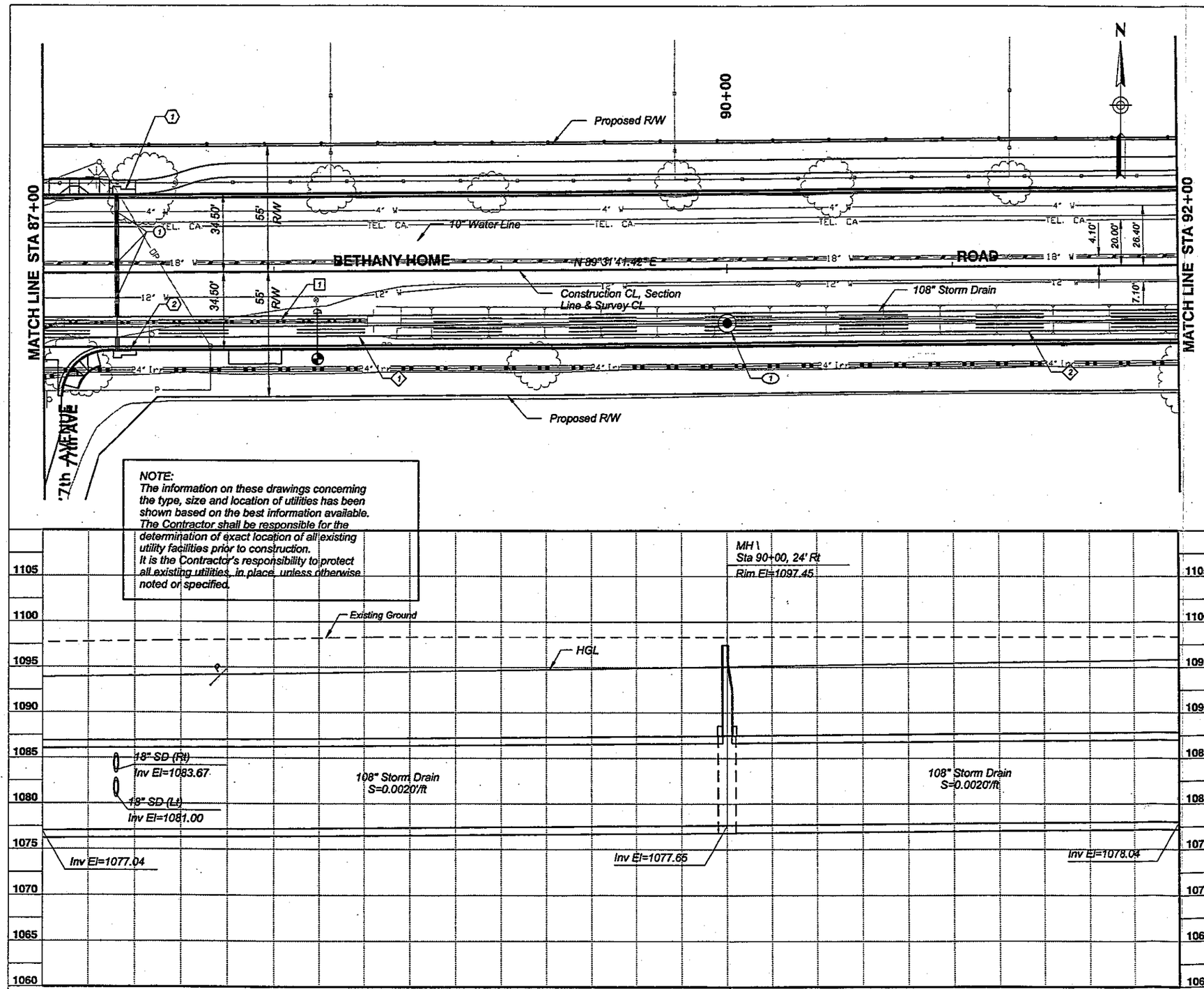
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D4 OF

FILE NAME: G:\11466S\DGN\Phase 3\Dwg\sdpp08.dwg
PLOTTING DATE: 1/9/2003
REVISION DATE:
AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	90+00, 24' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	87+00 to 90+00	300'	108"	II
2	90+00 to 92+00	200'	108"	II

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	87+32, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	57'	18"
2	87+32, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	10'	18"

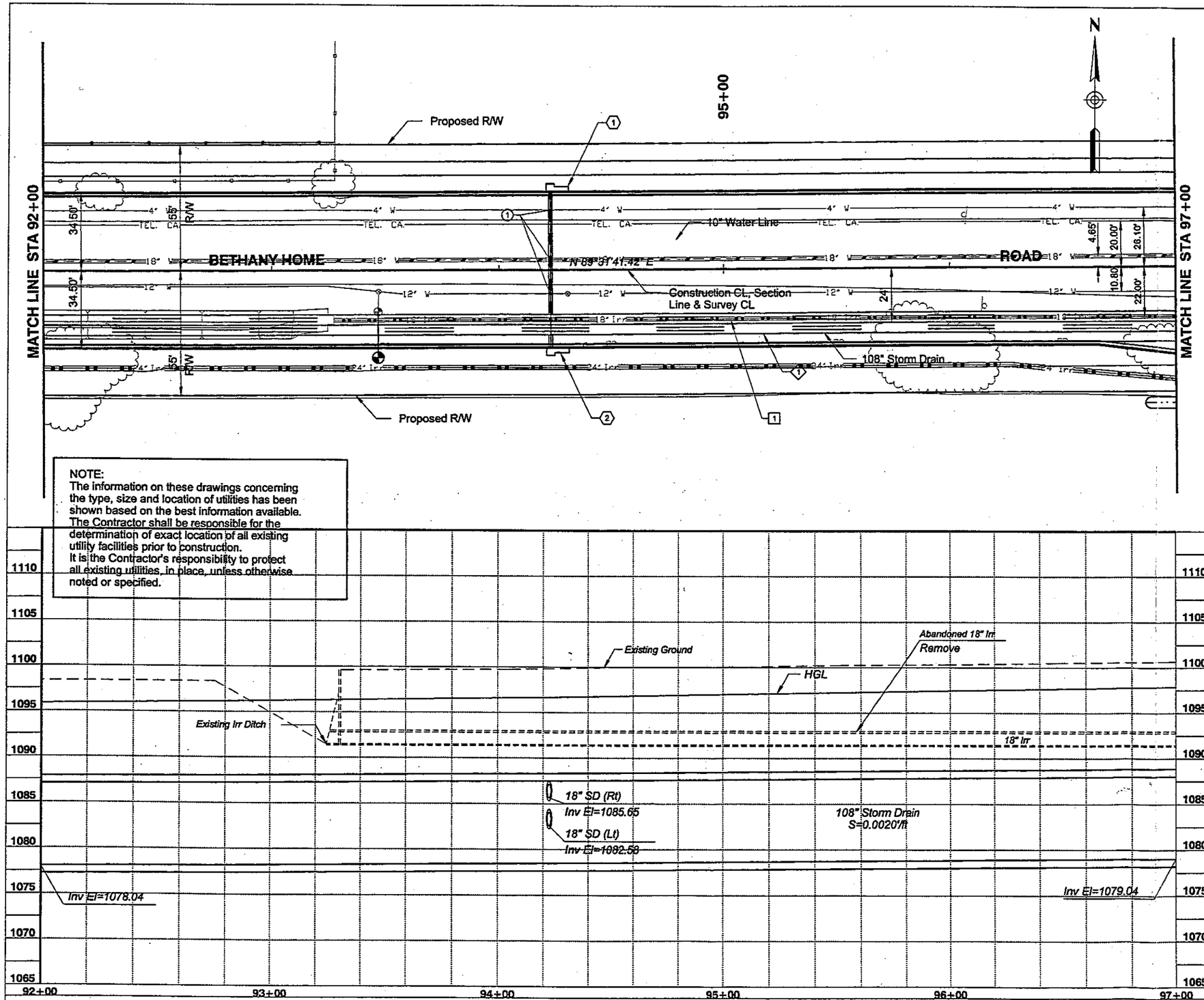
REMOVAL

1 Remove Abandoned Irrigation Pipe and Headwall within Limits of Storm Drain Trench

NEW CONSTRUCTION

1 Install Permanent Pipe Support MAG 403 — 3 Ea

FILE NAME: G:\14665\DGN\Phase 3\Dwg\adsp09.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	92+00 to 97+00	500'	108"	II

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	94+23, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	57'	18"
2	94+23, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	12'	18"

REMOVAL

1 Remove Abandoned Irrigation Pipe and Headwall within Limits of Storm Drain Trench

NEW CONSTRUCTION

1 Install Permanent Pipe Support MAG 403 — 3 Ea

FILE NAME: Q:\14669\DGN\Phase 3\Dwg\sdpp10.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5650 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION

REVISIONS

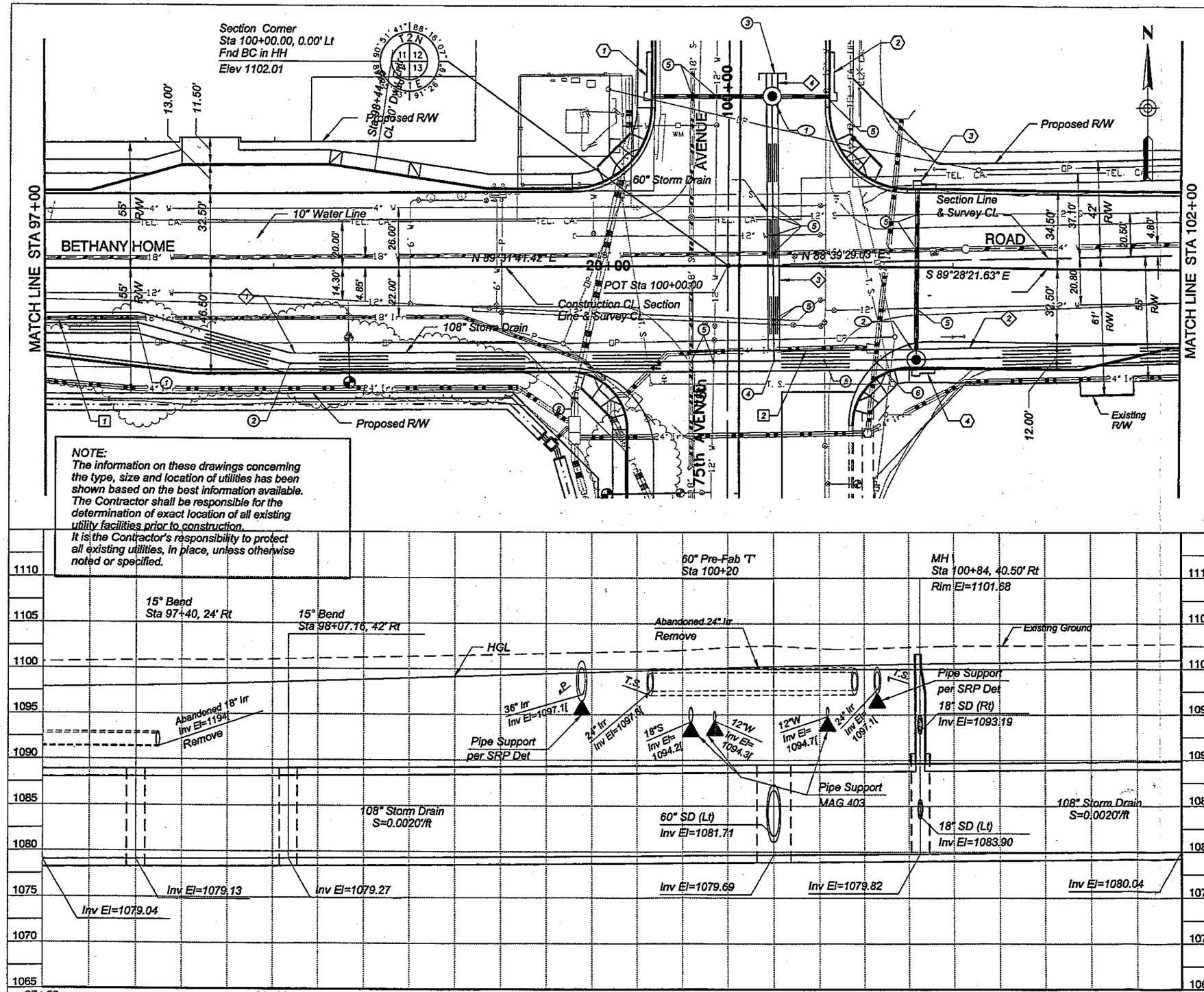
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 92+00 TO STA 97+00

Stanley Consultants Inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D6
OF



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	100+20, 74' Lt	MAG 521 & 522
2	100+84, 40.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	97+00 to 100+84	386'	108"	II
2	100+84 to 102+00	116'	108"	II
3	100+20.00 38' Rt to 74' Lt	112'	60"	IV
4	100+20.00 74' Lt to 84' Lt	10'	60"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	99+67.19 74' Lt	C.O.P. P-1569 M-1, L=17'	MAG 524	54'	18"
2	100+43.73 74' Lt	C.O.P. P-1569 M-1, L=17'	MAG 524	24'	18"
3	100+84, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	86'	18"
4	100+84, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	3'	18"

REMOVAL

1. Remove Abandoned Irrigation Pipe within Limits of Storm Drain Trench
2. Remove Abandoned Irrigation Pipe and Headwall within Limits of Storm Drain Trench

NEW CONSTRUCTION

1. Install/Construct 15° Bend
2. Install/Construct 15° Bend
3. Install Pipe Plug per MAG 427 Sta 100+20, 84' Lt
4. Install 108" x 60" Pre-Fab 'T'
5. Install Permanent Pipe Support MAG 403 — 15 Ea
6. Install Permanent Pipe Support SRP Det — 2 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 97+00 TO STA 102+00

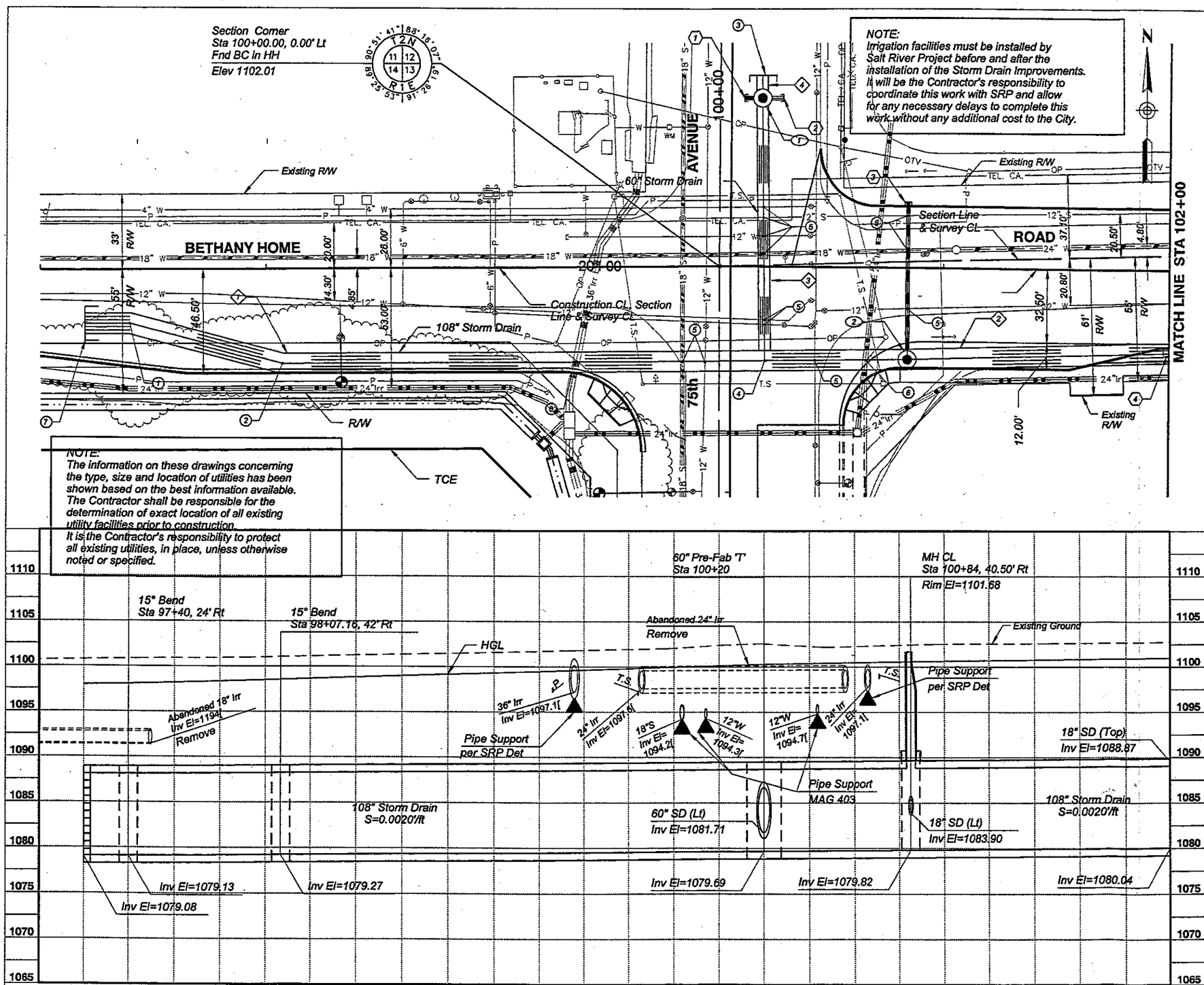
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D7
OF

FILE NAME: G:\14668\DGN\Phase 3\Dwg\sdpp11.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	100+20, 74' Lt	MAG 521 & 522
2	100+84, 40.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	97+20 to 100+84	366'	108"	II
2	100+84 to 102+00	116'	108"	II
3	100+20.00 38' Rt to 74' Lt	112'	60"	IV
4	100+20.00 74' Lt to 84' Lt	10'	60"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	100+12 74' Lt	MAG 427	MAG 524	8'	18"
2	100+28 74' Lt	MAG 427	MAG 524	8'	18"
3	100+84 28.5' Lt	MAG 427	MAG 524	77.5'	18"
4	101+99, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	3'	18"

☐ REMOVAL ☐

○ NEW CONSTRUCTION ○

1. Install/Construct 15° Bend
2. Install/Construct 15° Bend
3. Install Pipe Plug per MAG 427 Sta 100+20, 84' Lt
4. Install 108" x 60° Pre-Fab 'T'
5. Install Permanent Pipe Support MAG 403 — 12 Ea
6. Install Permanent Pipe Support SRP Det — 2 Ea
7. Install Pipe Plug per MAG 427 Sta 97+20, 25' Rt

DSC NO. 00-738
FILE NAME: Q:\14665\DGN\Phase 1\Dwg\edpp11.dwg PLOTTING DATE: 1/8/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31706

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

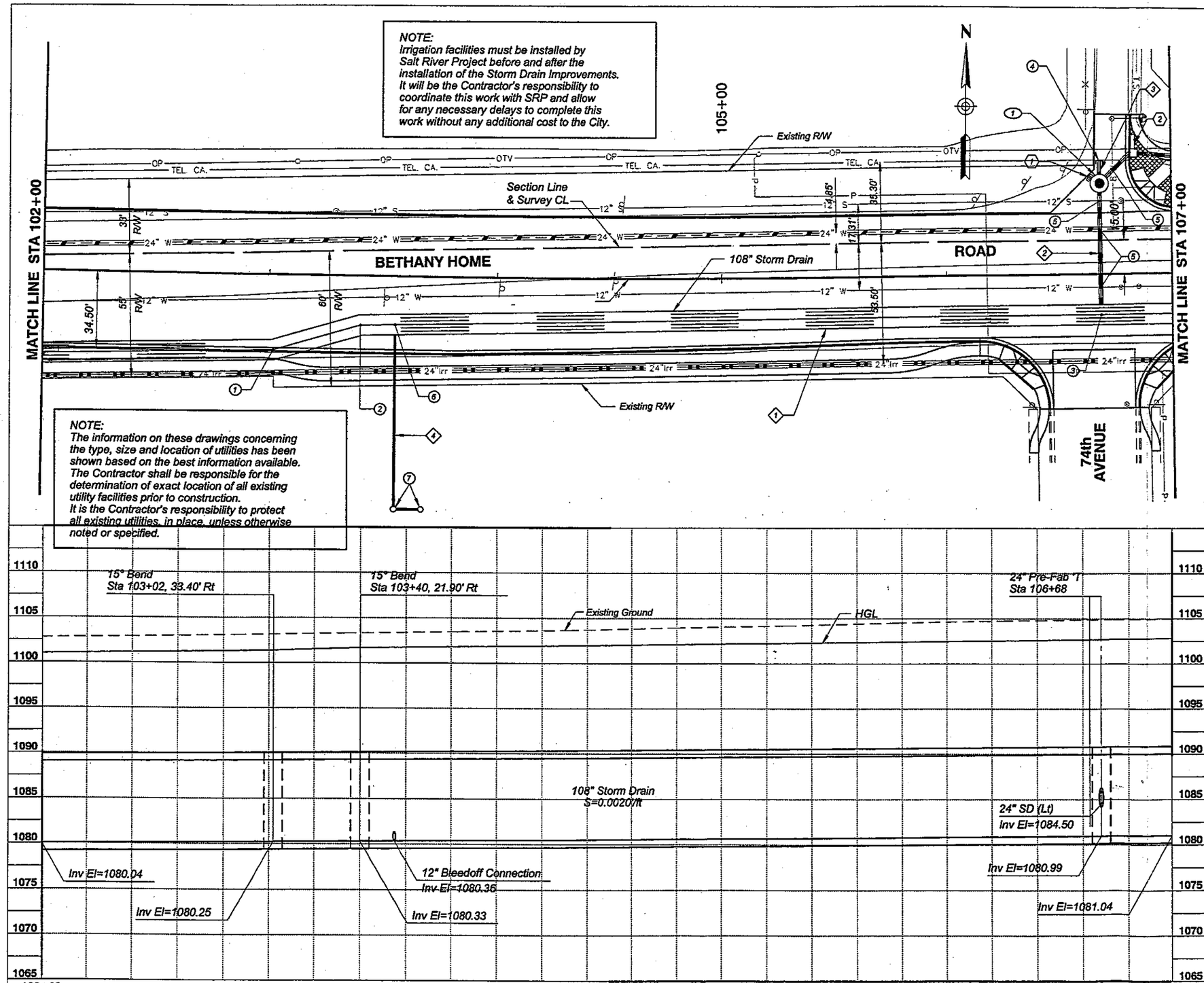
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA. 97+00 TO STA. 102+00

Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D2B
OF



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	106+68, 40' Lt	MAG 520 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	102+00 to 107+00	502'	108"	II
2	106+68 14' Rt to 40' Lt	54'	24"	IV
3	106+63 40' Lt to 50' Lt	10'	24"	IV
4	103+55 21' Rt to 104' Rt	83'	12"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	106+54.2 42' Lt	MAG 427	MAG 524	2'	18"
2	106+80.96 53' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	21'	18"

REMOVAL

NEW CONSTRUCTION

1. Install/Construct 15° Bend
2. Install/Construct 15° Bend
3. Install 108" x 24" Pre-Fab 'T'
4. Install Pipe Plug per MAG 427 Sta 106+68, 50' Lt
5. Install Permanent Pipe Support MAG 403 — 4 Ea
6. Construct 12" Bleedoff Connection per Sheet D30B Sta 103+55, 20' Rt
7. Construct MaxWell Plus Drywell per Sheet D31B Sta 103+56, 103' Rt

DSC NO. 00-735
FILE NAME: Q:\14665-DGM\Phase 1\Dwg\sdpp12.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed/dated, filed with Barrett C. Olson 31706

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

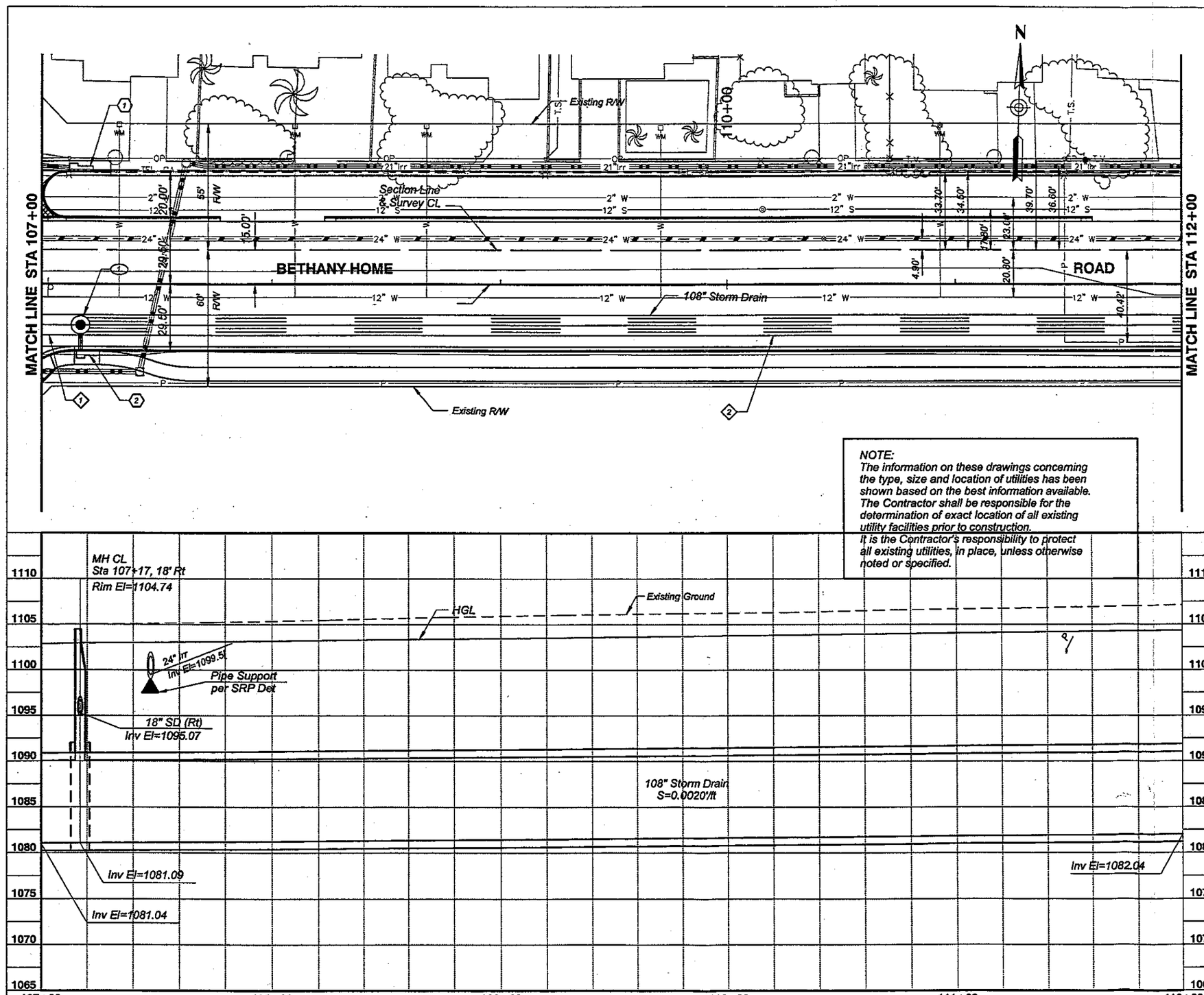
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 102+00 TO STA 107+00

Stanley Consultants INC.
2950 East Camelback Road
Phoenix, Arizona 85016
Engineers, Planners, Surveyors
and Construction Service - Nationwide

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

THE APPROVED WORK MUST BE CALL FOR THE BLUE STAKE
(602) 263-1100
BLUE STAKE CENTER
CALL COLLECT

SHT. D3B
OF



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	107+17, 18' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	107+00 to 107+17	17'	108"	II
2	107+17 to 112+00	483'	108"	III

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	107+14, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	29'	18"
2	107+17, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	11'	18"

REMOVAL

NEW CONSTRUCTION

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final signed, sealed, original sealed copy on file with Barrett C. Olson 31706

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 107+00 TO STA 112+00

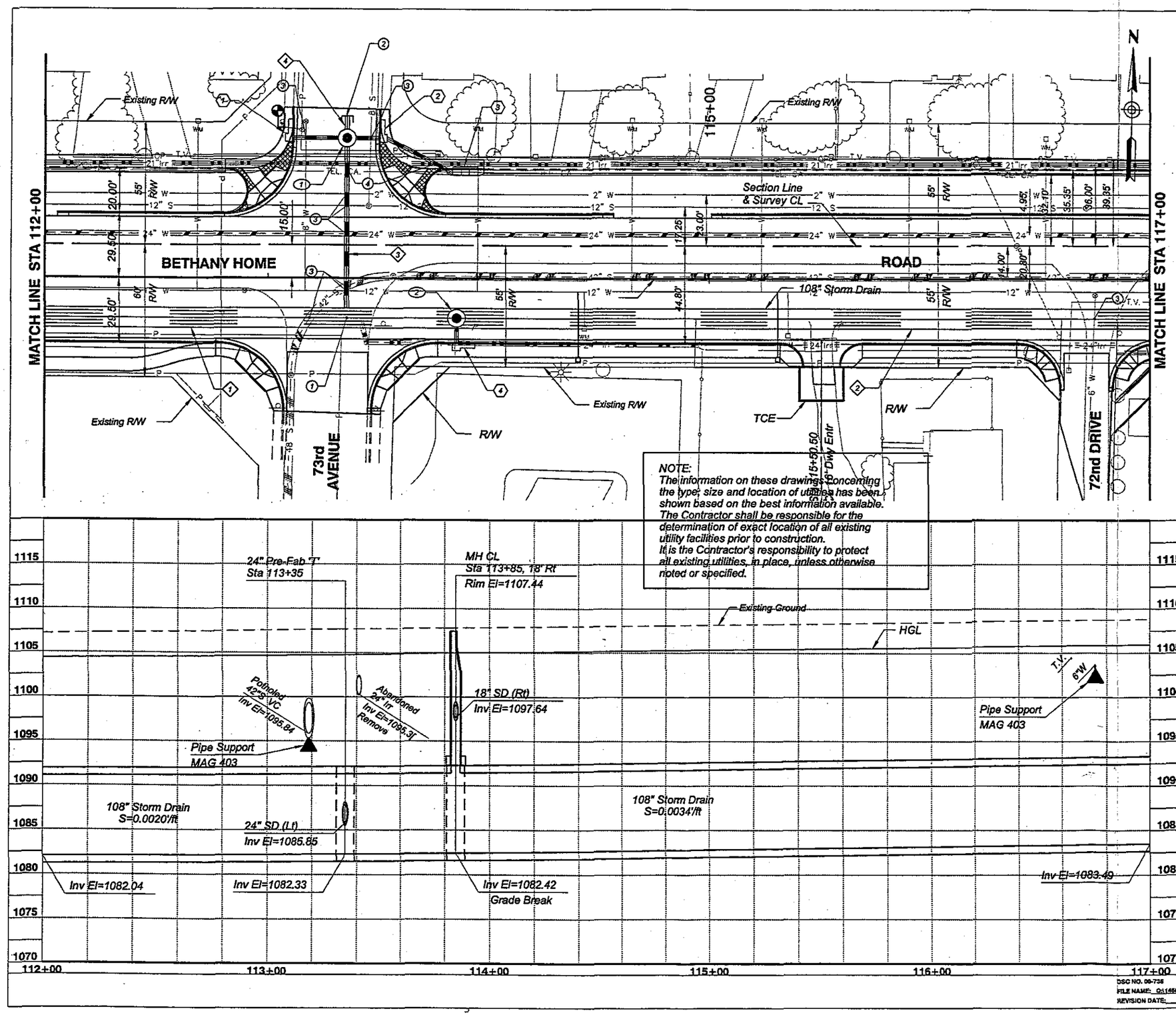
Stanley Consultants INC

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

CALL FOR THE BLUE STAKES
(602) 263-1100
BLUE STAKE CENTER
CALL COLLECT

SHT. D4B
OF

DGC NO. 00-735
FILE NAME: Q:\14663\DGN\Phase 1\Dwg\dcp13.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	113+35, 63' Lt	MAG 520 & 522
2	113+85, 18' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	112+00 to 113+85	185'	108"	III
2	113+85 to 117+00	315'	108"	*
3	113+35 14' Rt to 63' Lt	77'	24"	IV
4	113+35 63' Lt to 73' Lt	10'	24"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	113+11.33 63' Lt	C.O.P. P-1569 M-1, L=6	MAG 524	27'	18"
2	113+49.46 63' Lt	C.O.P. P-1569 M-1, L=6	MAG 524	15'	18"
3	113+85, Lt	C.O.P. P-1572 C-3, Modified	MAG 524	35'	18"
4	113+85, Rt	C.O.P. P-1569 M-1, L=6	MAG 524	13'	18"

REMOVAL

NEW CONSTRUCTION

1. Install 108" x 24" Pre-Fab 'T'
2. Install Pipe Plug per MAG 427 Sta 113+35, 73' Lt
3. Install Permanent Pipe Support MAG Det 403 — 9 Ea
4. Install Permanent Pipe Support SRP Det — 2 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31704

DESIGNED TEC
DRAWN CGS
CHECKED SAW

REVISIONS

NO.	DATE	DESCRIPTION

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 112+00 TO STA 117+00

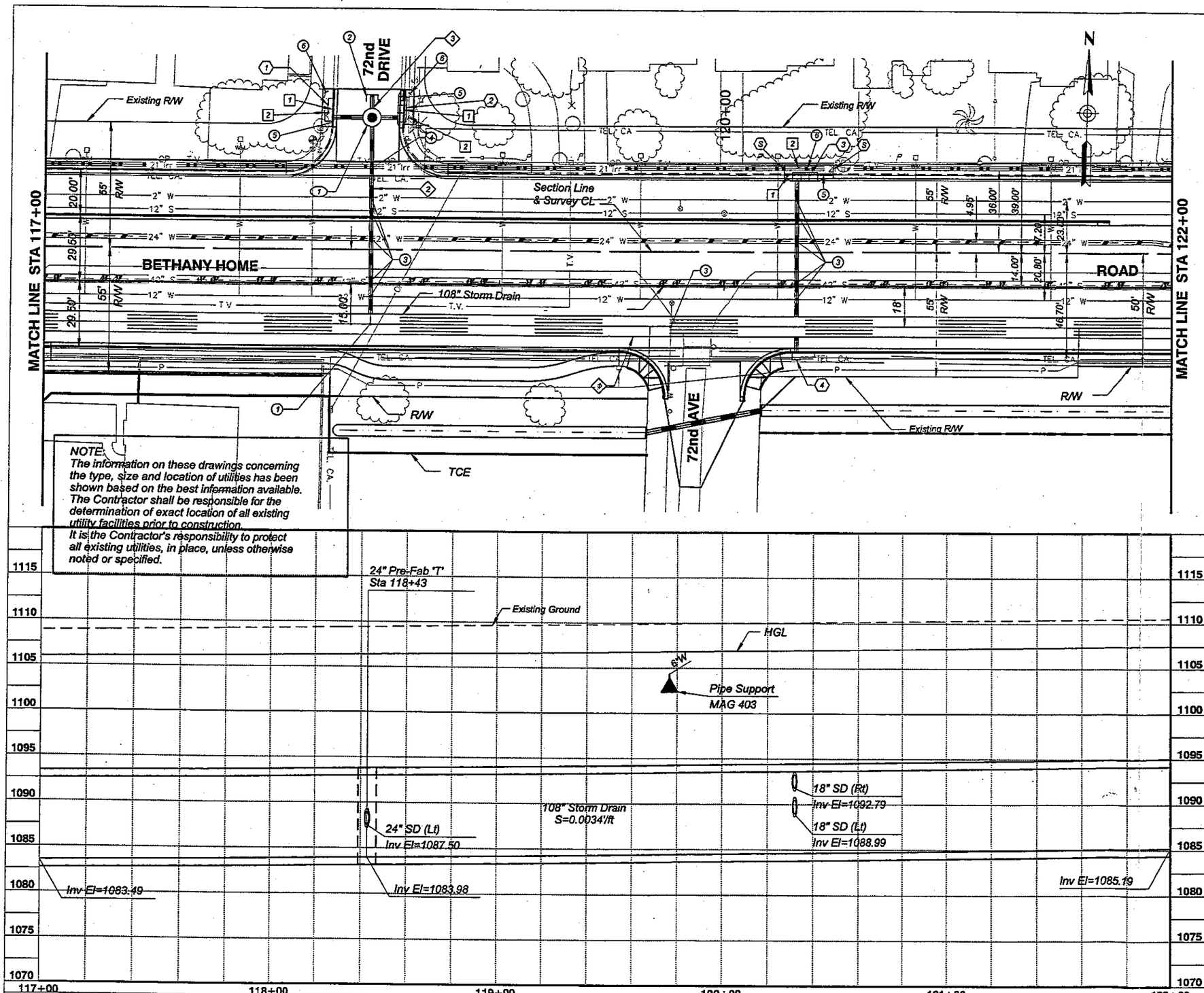
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D5B
OF

DSG NO. 00-736
FILE NAME: G:\14565\DGN\Phase 1\Dwg\sdpp14.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	118+43, 73' Lt	MAG 520 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	117+00 to 122+00	500'	108"	*
2	118+43 14' Rt to 73' Lt	87'	24"	IV
3	118+43 73' Lt to 83' Lt	10'	24"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE - CONN.	PIPE LENGTH	SIZE
1	118+26.11 73' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	19'	18"
2	118+56.32 73' Lt	C.O.P. P-1572 Q-3	MAG 524	12'	18"
3	120+32, Lt	C.O.P. P-1572 Q-3, Modified, Sht D30B	MAG 524	66'	18"
4	120+32, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	15'	18"

REMOVAL

1	Remove Existing Concrete Curb & Gutter	54 LF
2	Remove Existing Concrete Sidewalk	224 SF

NEW CONSTRUCTION

1	Install 108" x 24" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 118+43, 83' Lt	
3	Install Permanent Pipe Support MAG 403	11 Ea
4	Install Permanent Pipe Support SRP Det	1 Ea
5	Vertical Curv & Gutter Replacement MAG 220, Type "A", h=6"	54 LF
6	Concrete Sidewalk Replacement MAG 230	224 SF

DSC NO. 00-736
FILE NAME: Q:\114663\DGN\Phase 1\Dwg\adpp15.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
6850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed & signed with Barrett C. Olson 31706

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION

REVISIONS

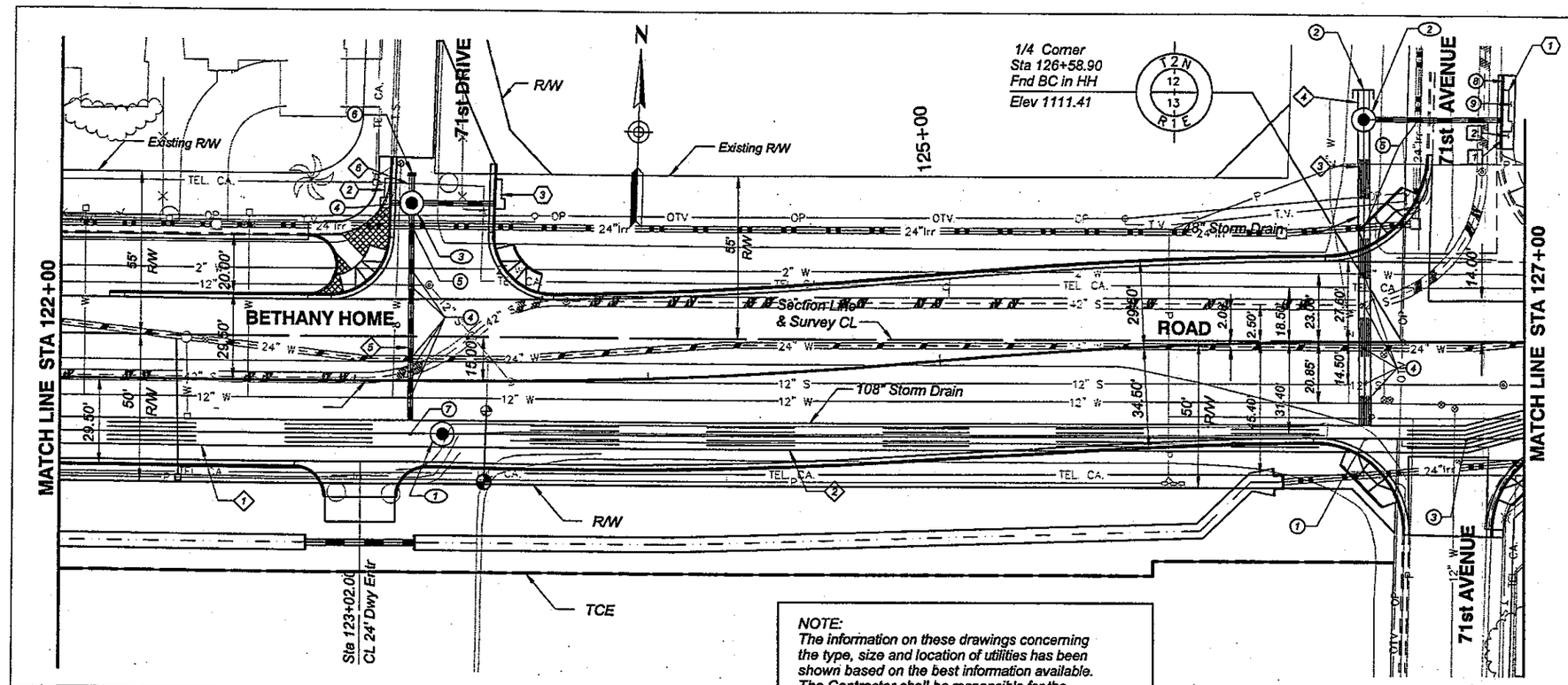
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 117+00 TO STA 122+00

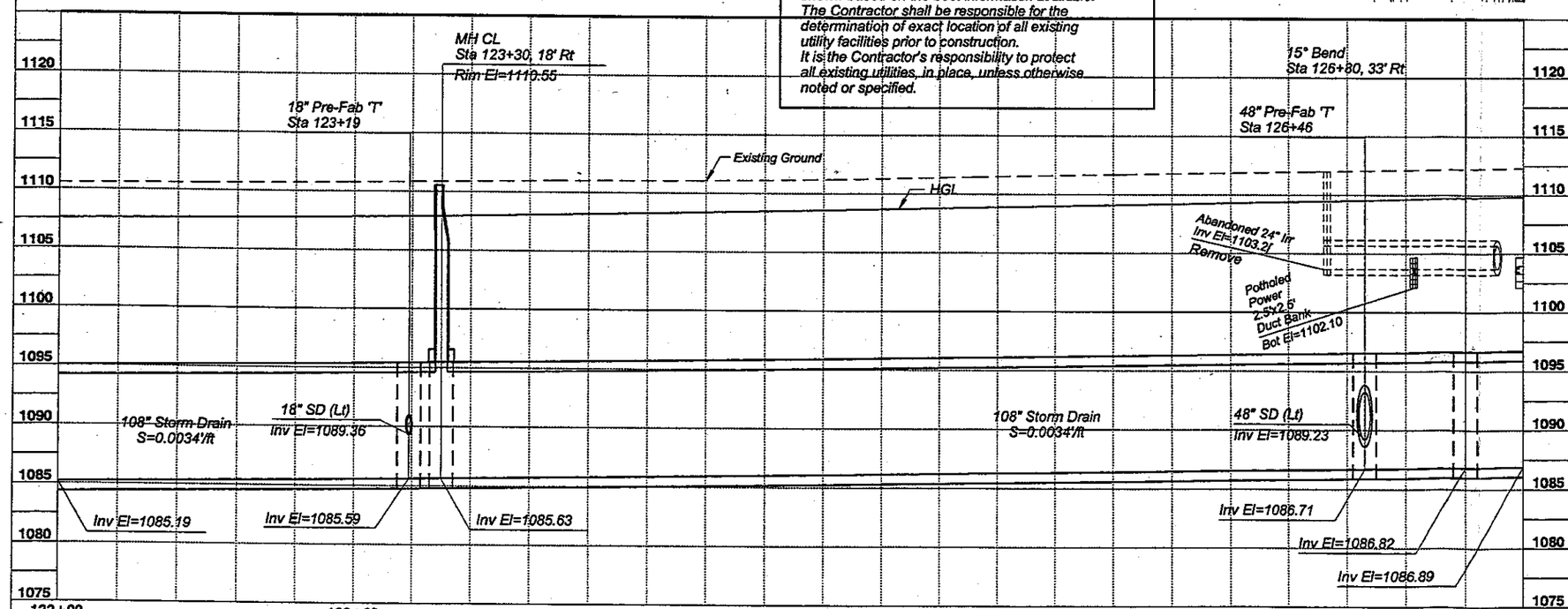
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D6B
OF





NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	123+30, 18' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522
2	126+46, 75' Lt	MAG 520 & 522
3	123+19, 60' Lt	MAG 520 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	122+00 to 123+30	130'	108"	*
2	123+30 to 127+00	371'	108"	*
3	126+46 29' Rt to 75' Lt	104'	48"	IV
4	126+46 75' Lt to 85' Lt	10'	48"	IV
5	123+19 18' Rt to 60' Lt	78'	18"	IV
6	123+19 60' Lt to 70' Lt	10'	18"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	126+91.76 75' Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	46'	18"
2	123+11.76 60' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	10'	18"
3	123+47.12 60' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	29'	18"

REMOVAL

1	Remove Existing Concrete Curb & Gutter	25 LF
2	Remove Existing Concrete Sidewalk	99 SF

NEW CONSTRUCTION

1	Install 108" x 48" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 126+46, 85' Lt	
3	Install/Construct 15° Bend	
4	Install Permanent Pipe Support MAG 403	11 Ea
5	Install Permanent Pipe Support SRP Det	3 Ea
6	Install Pipe Plug per MAG 427 Sta 123+19, 70 Lt	
7	Install 108" x 18" Pre-Fab 'T'	
8	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	25 LF
9	Concrete Sidewalk Replacement MAG 230	99 SF

DSC NO. 00-736
FILE NAME: C:\1445\DGN\Phase 1\Dwg\sdpa18.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31706

DESIGNED	DRAWN	CHECKED
TEC	CGS	SAW

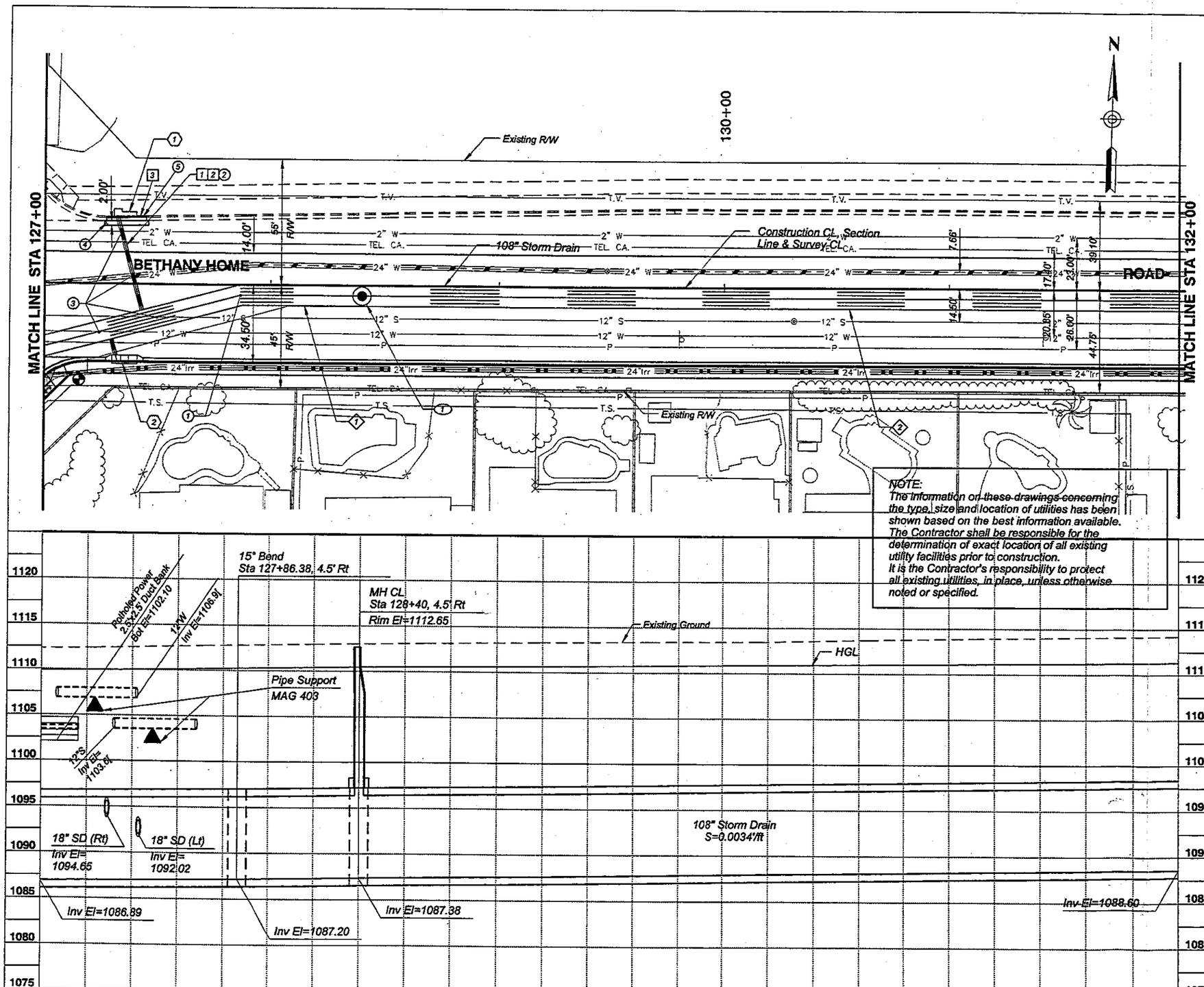
NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 122+00 TO STA 127+00

Stanley Consultants INC
2122 East Camelback Road
Suite 200
Phoenix, Arizona 85016
(602) 263-1100

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

SHT. D7B
OF



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	128+40, 4.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	127+00 to 128+40	143'	108"	*
2	128+40 to 132+00	360'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	127+32, Lt	C.O.P. P-1569 M-1, L=6	MAG 524	45'	18"
2	127+32, Rt	C.O.P. P-1572 Q-3	MAG 524	17'	18"

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing AC Pavement — 7 SY
3. Remove Existing Concrete Curb & Gutter — 18 LF

NEW CONSTRUCTION

1. Install/Construct 15" Bend
2. AC Pavment Replacement MAG 200, Type "A", T-Top — 7 SY
3. Install Permanent Pipe Support MAG 403 — 4 Ea
4. Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6" — 18 LF

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31708

DESIGNED	DRAWN	CHECKED
TEC	CGS	SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 127+00 TO STA 132+00

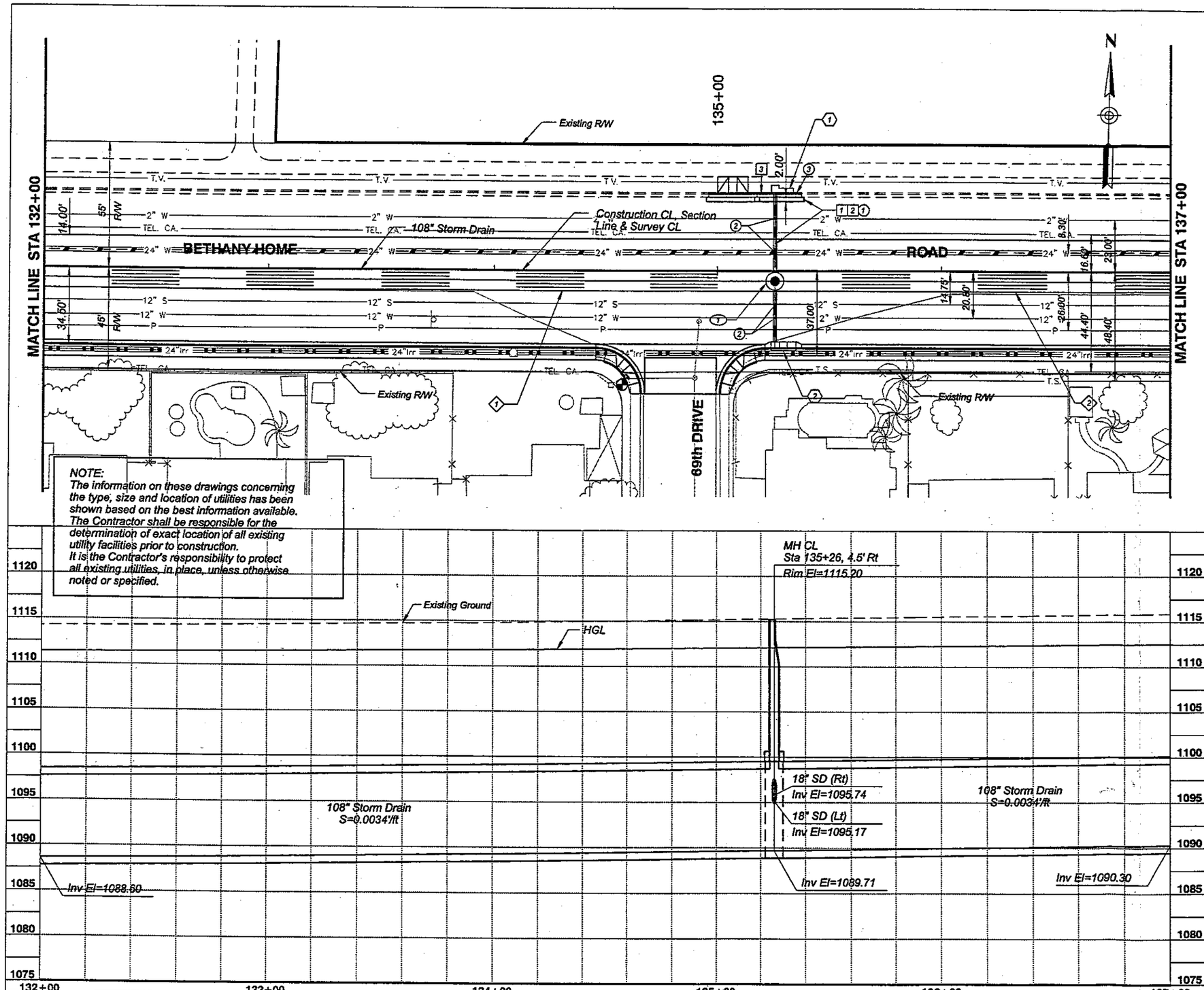
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D8B
OF

DSC NO. 00-736
FILE NAME: Q:\14665\DGN\Phase 1\Dwg\sdpp17.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	135+26, 4.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	132+00 to 135+26	326'	108"	*
2	135+26 to 137+00	174'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	135+26, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	38'	18"
2	135+26, Rt	C.O.P. P-1572 D-3, Modified, Sht D30B	MAG 524	29'	18"

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing AC Pavement — 24 SY
3. Remove Existing Concrete Curb & Gutter — 20 LF

NEW CONSTRUCTION

1. AC Pavment Replacement MAG 200, Type "A", T-Top — 24 SY
2. Install Permanent Pipe Support MAG 403 — 4 Ea
3. Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6" — 20 LF

DSC NO. 00-736
FILE NAME: Q:\14563\DGN\Phase 1\Dwg\ebpp18.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31706

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

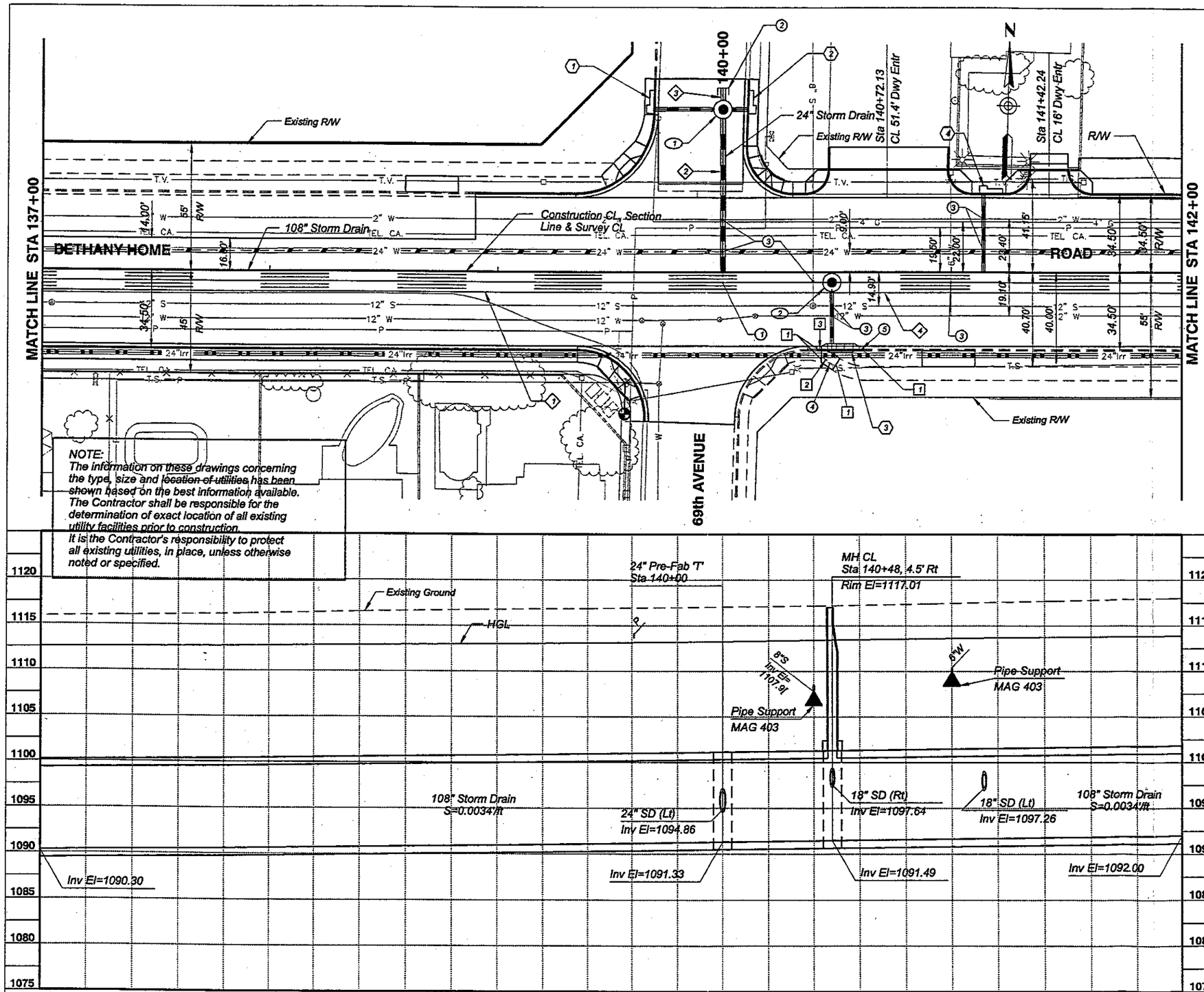
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 132+00 TO STA 137+00

Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

THE STORM DRAIN MATERIAL WITH THE CALL FOR THE DRAIN STAKES
(602) 263-1100
PLEASE STORM DRAIN CALL COLLECT

SHT. D9B
OF



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	140+00, 71' Lt	MAG 520 & 522
2	140+48, 4.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	137+00 to 140+48	348'	108"	*
2	140+00 0.5' Rt to 71' Lt	72'	24"	IV
3	140+00 71' Lt to 81' Lt	10'	24"	IV
4	140+48 to 142+00	152'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	139+70.00 71' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	30'	18"
2	140+10.69 71' Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	11'	18"
3	140+48, Rt	C.O.P. P-1572 Q-3, Modified, Sht D30B	MAG 524	29'	18"
4	141+14, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	38'	18"

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing Concrete Sidewalk — 49 SF
3. Remove Existing Concrete Curb & Gutter — 22 LF

NEW CONSTRUCTION

1. Install 108" x 24" Pre-Fab 'T'
2. Install Pipe Plug per MAG 427 Sta 140+00, 81' Lt
3. Install Permanent Pipe Support MAG 403 — 8 Ea
4. Concrete Sidewalk Replacement MAG 230 — 49 SF
5. Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6" — 22 LF

DGC NO. 00-736
FILE NAME: Q:\14665\DGN\Phase 1\Dwg\sdpp19.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31706

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

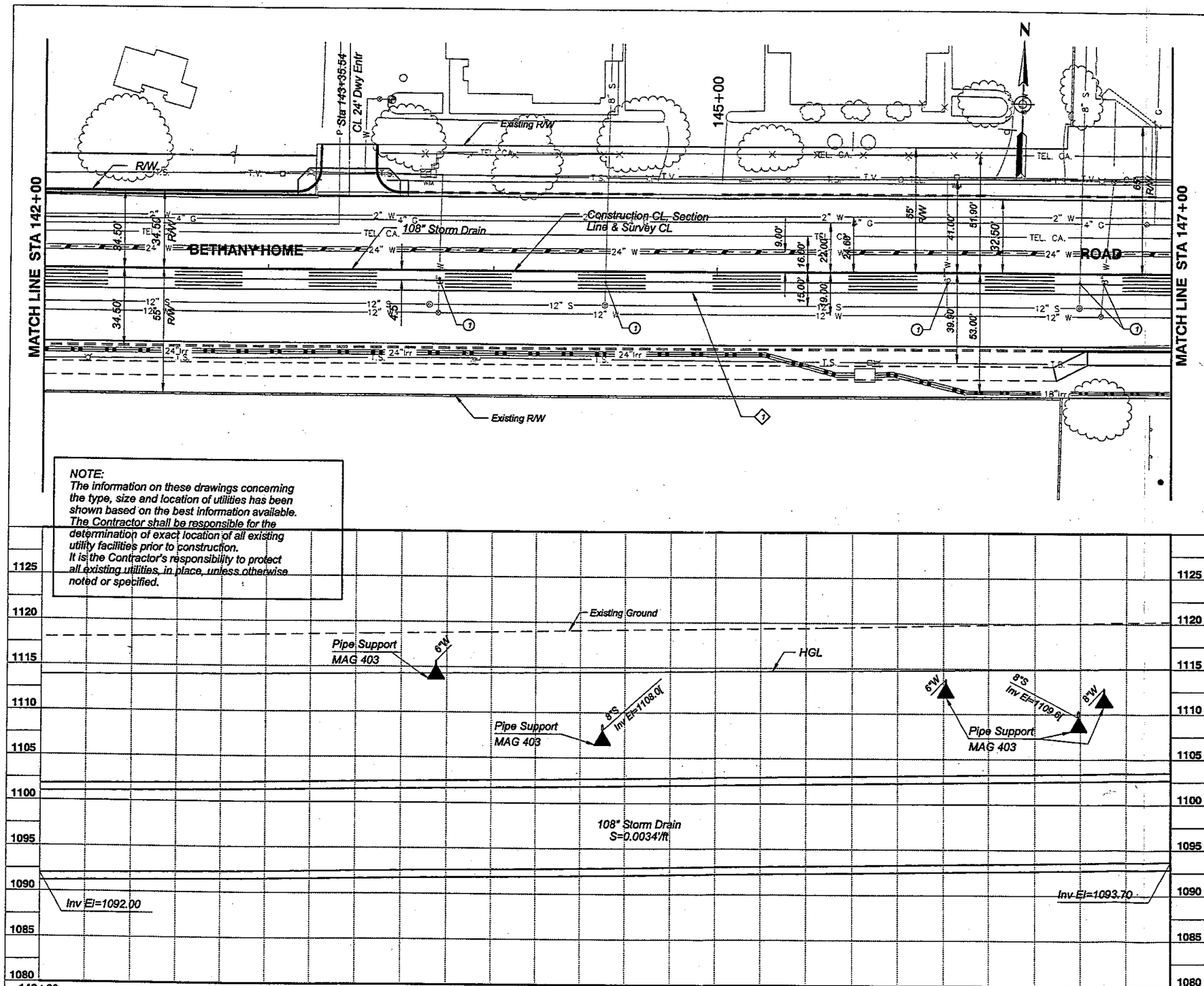
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 137+00 TO STA 142+00

Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D10B
OF



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	142+00 to 147+00	500'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE

REMOVAL

NEW CONSTRUCTION

1 Install Permanent Pipe Support MAG 403 — 5 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

DESIGNED TEC
DRAWN CGS
CHECKED SAW

electronic copy of final document, original, sealed, signed and dated with Barrett G. Olson 31706

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 142+00 TO STA 147+00

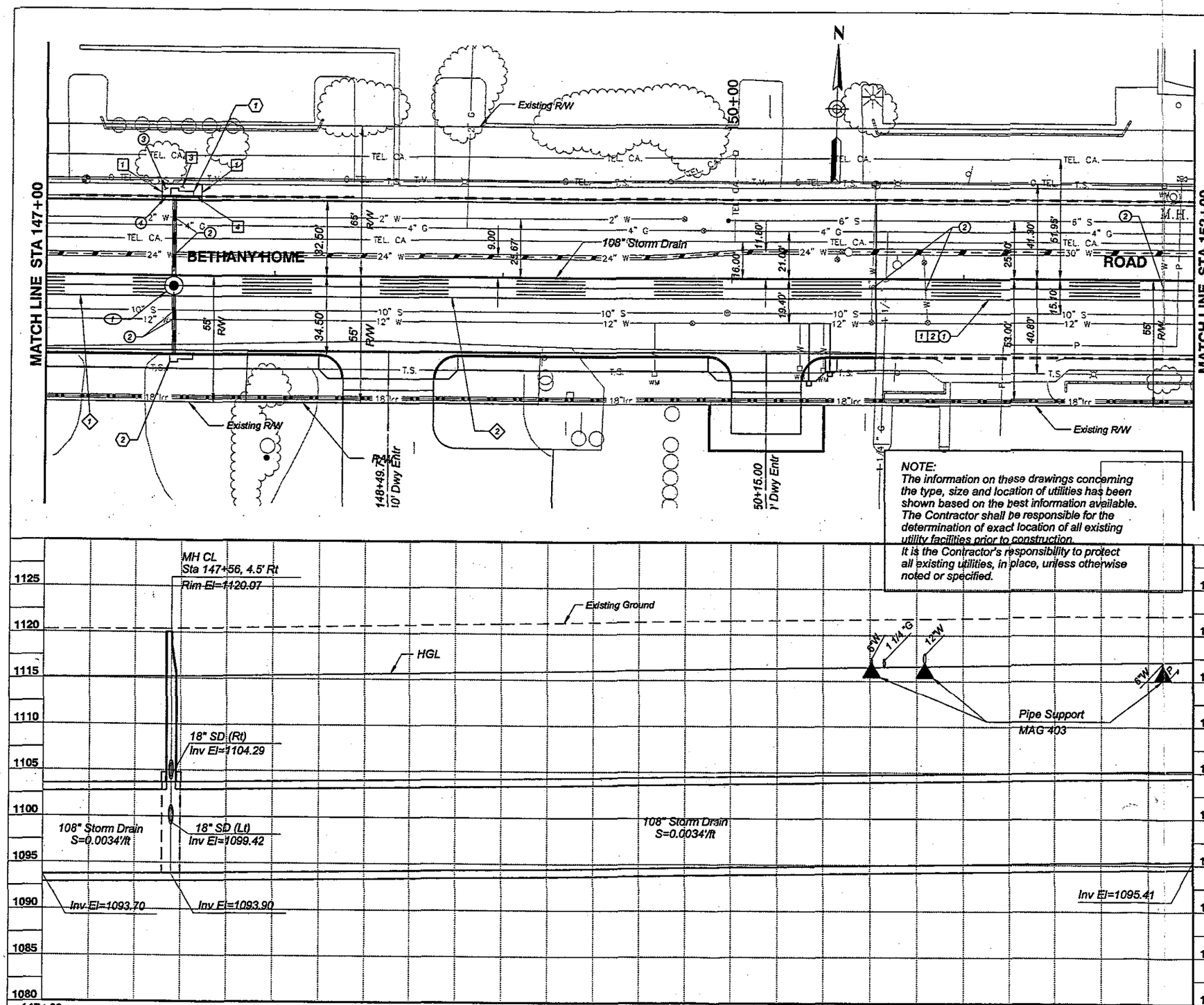
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D11B
OF

DSC NO. 00-736
FILE NAME: Q:\14545\DGN\Phase 1\Dwg\sdpp28.dwg
PLOTTING DATE: 1/8/2003
REVISION DATE:
AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	147+56, 4.5' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	147+00 to 147+56	56'	108"	*
2	147+56 to 152+00	444'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	147+56, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	39'	18"
2	147+56, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	30'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	243 SY
3	Remove Existing Concrete Sidewalk	88 SY
4	Remove Existing Concrete Curb & Gutter	18 LF

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	243 SY
2	Install Permanent Pipe Support MAG 403	7 Ea
3	Concrete Sidewalk Replacement MAG 230	88 SY
4	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	18 LF

DSC NO. 00-736
FILE NAME: Q:\114583\DGN\Phase 1\Dwg\adpp21.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31798

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD

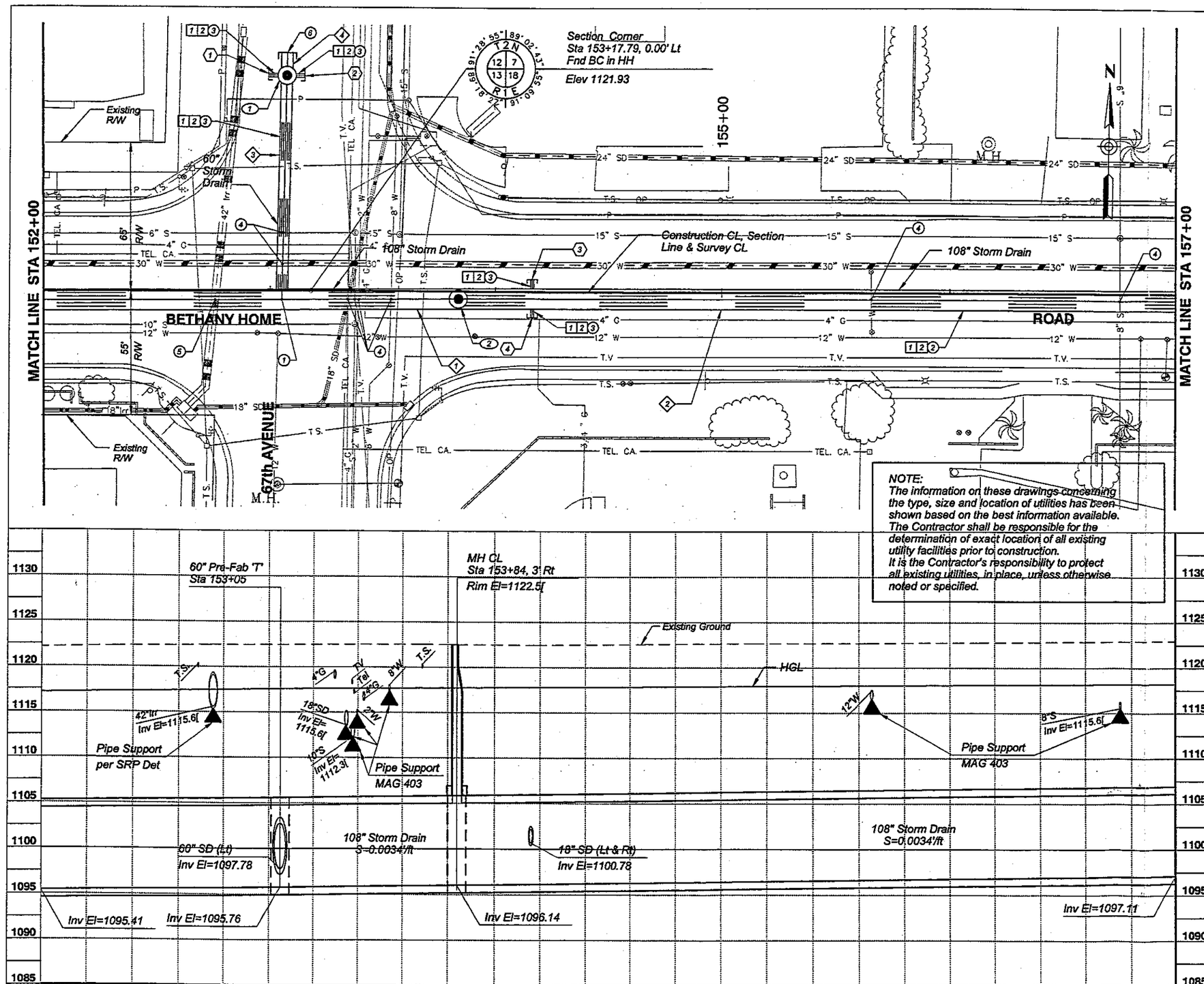
STORM DRAIN PLAN AND PROFILE
STA 147+00 TO STA 152+00

Stanley Consultants inc
2020 N. Central Ave. Phoenix, Arizona 85004
Engineers, Planners, Surveyors and Construction Services - Worldwide

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

THIS DRAWING MAY CONTAIN VALUABLE CIVILS FOR THE BLUE STAKERS
(602) 263-1100
BLUE STAKERS CENTER CALL CIVILLIST

SHT. D12B
OF



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	153+07.5, 94' Lt	MAG 521 & 522
2	153+84, 3' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	152+00 to 153+84	184'	108"	*
2	153+84 to 157+00	316'	108"	*
3	153+05 1' Lt to 94' Lt	93'	60"	IV
4	153+05 94' Lt to 104' Lt	10'	60"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	152+98.5 94' Lt	MAG 427	MAG 524	4'	18"
2	153+11.5 94' Lt	MAG 427	MAG 524	4'	18"
3	154+16 5.5' Lt	MAG 427	MAG 524	4'	18"
4	154+16 11.5' Rt	MAG 427	MAG 524	4'	18"

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing AC Pavement — 1019 SY

NEW CONSTRUCTION

1. Install 108" x 60" Pre-Fab 'T'
2. AC Pavment Replacement MAG 200, Type "A" — 880 SY
3. AC Pavment Replacement MAG 200, Type "A", T-Top — 139 SY
4. Install Permanent Pipe Support MAG 403 — 8 Ea
5. Install Permanent Pipe Support SRP Det — 1 Ea
6. Install Pipe Plug per MAG 427 Sta 153+05, 104 Lt

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

electronic copy of final document, original sealed document with Barrett C. Olson 31706

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD

STORM DRAIN PLAN AND PROFILE
STA 152+00 TO STA 157+00

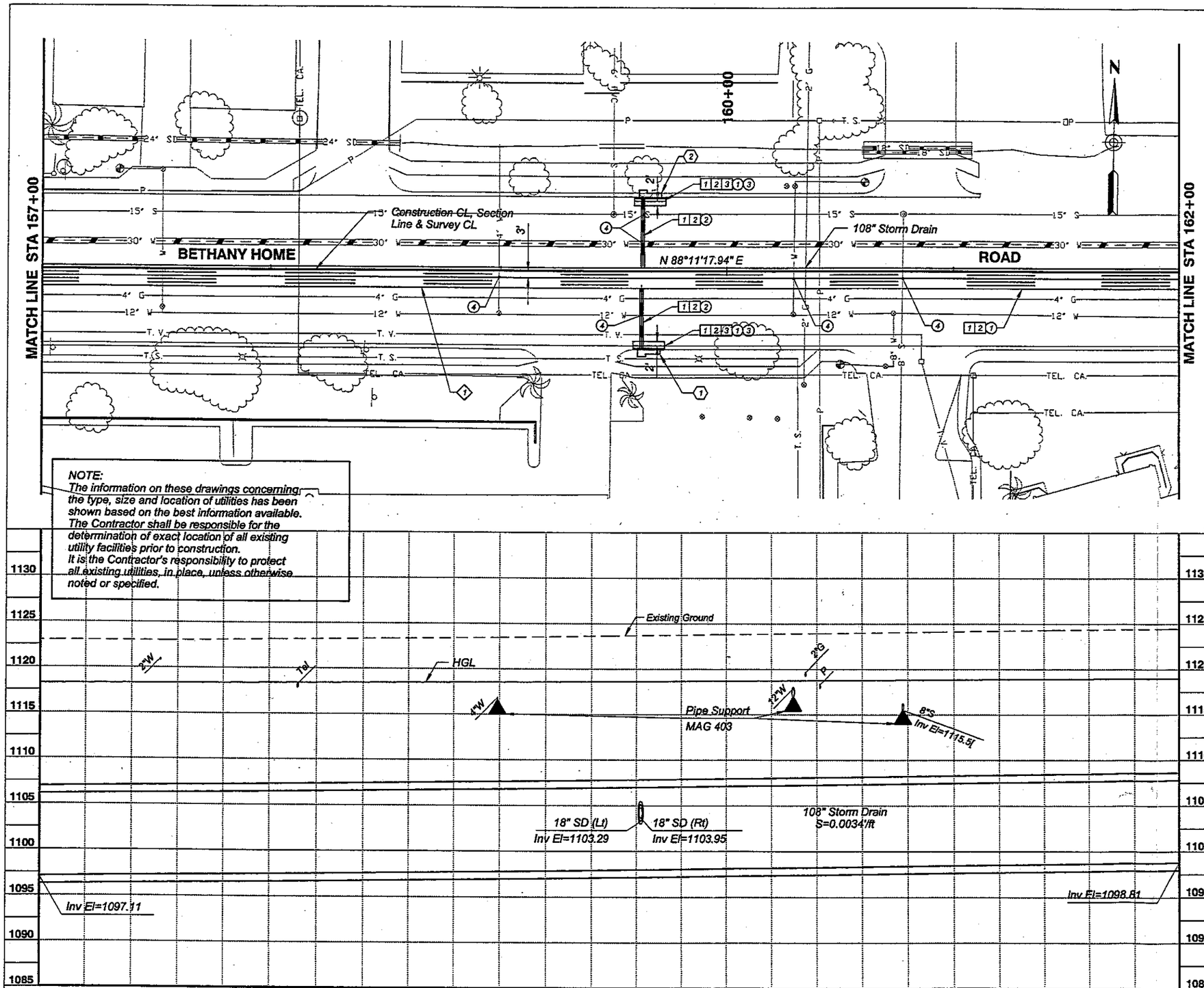
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D13B
OF

DSC NO. 00-736
FILE NAME: C:\11468\DGN\Phase 1\Dwg\adpo22.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	157+00 to 162+00	500'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	159+62, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	31'	18"
2	159+62, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	36'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	804 SY
3	Remove Existing Concrete Curb & Gutter	27 LF

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	766 SY
2	AC Pavment Replacement MAG 200, Type "A", T-Top	37 SY
3	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	27 LF
4	Install Permanent Pipe Support MAG 403	6 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 157+00 TO STA 162+00

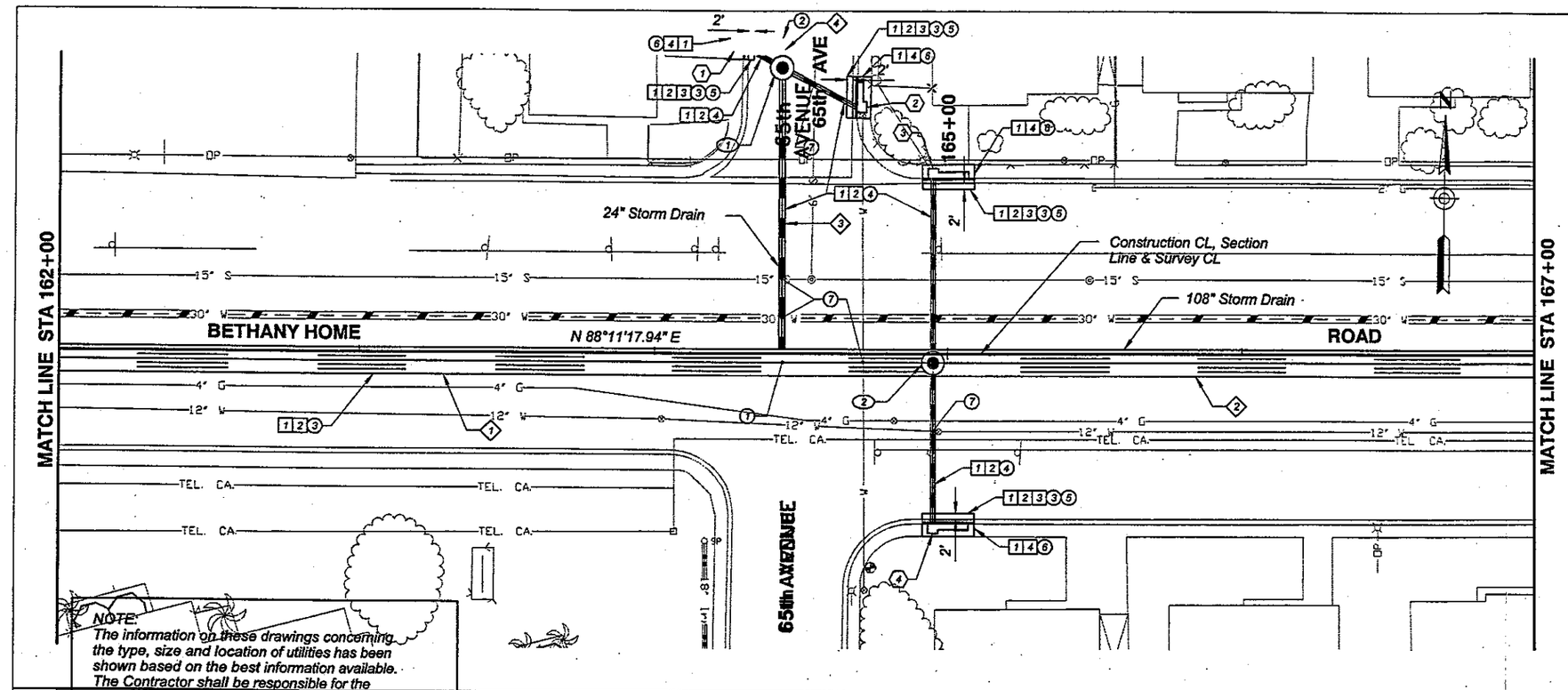
Stanley Consultants inc.

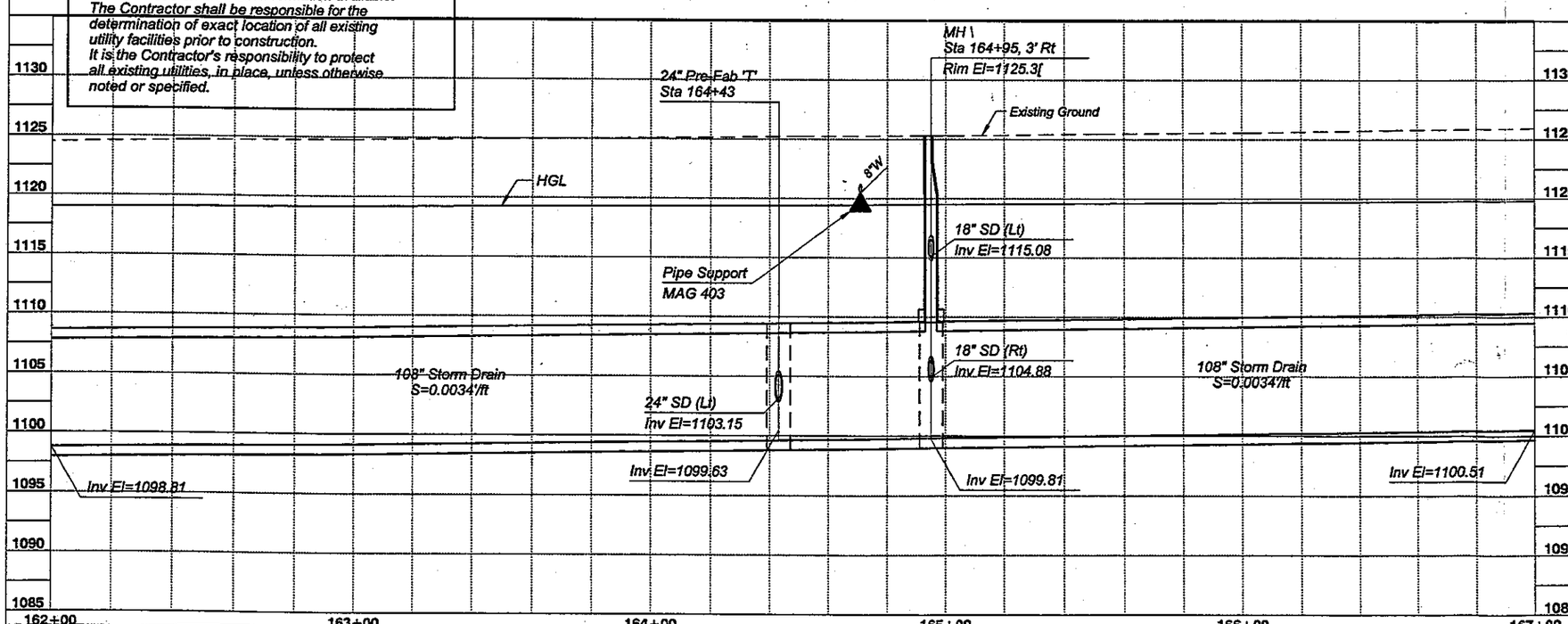
SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

CALL FOR THE BLUE STAKE
(602) 263-1100
BLUE STAKE CENTER
CALL COLLECT

SHT. D19
OF

FILE NAME: Q:\14665\DGN\Phase 2\Dwgs\dp23.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:





STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	164+43, 96' Lt	MAG 520 & 522
2	164+95, 3' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	162+00 to 164+95	295'	108"	*
2	164+95 to 167+00	205'	108"	*
3	164+43 1' Lt to 96' Lt	95'	24"	IV
4	164+43 96' Lt to 106' Lt	10'	24"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	164+30.25 103' Lt	C.O.P. P-1569 M-1, L=5'	MAG 524	15'	18"
2	164+68.07 83' Lt	C.O.P. P-1569 M-1, L=5'	MAG 524	27'	18"
3	164+95, Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	63'	18"
4	164+95, Rt	C.O.P. P-1569 M-1, L=10'	MAG 524	54'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	937 SY
3	Remove Existing Concrete Curb & Gutter	63 LF
4	Remove Existing Concrete Sidewalk	313 SF

NEW CONSTRUCTION

1	Install 108" x 24" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 164+43, 93' Lt	
3	AC Pavment Replacement MAG 200, Type "A"	775 SY
4	AC Pavment Replacement MAG 200, Type "A", T-Top	162 SY
5	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	63 LF
6	Concrete Sidewalk Replacement MAG 230	313 SF
7	Install Permanent Pipe Support MAG 403	5 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 162+00 TO STA 167+00

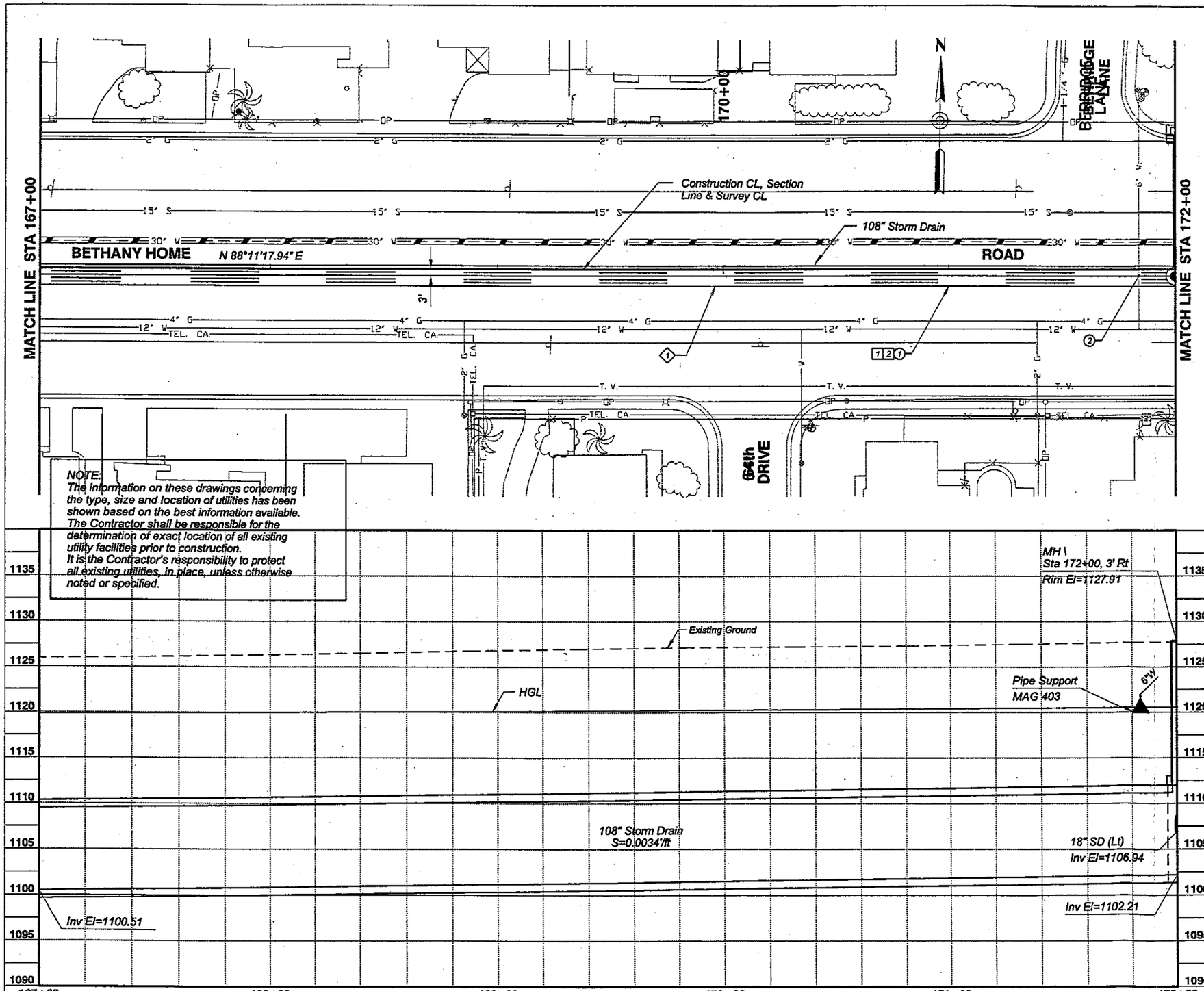
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

602) 263-1100

SHT. D20
OF

FILE NAME: G:\14865\DGN\Phase 2\Dwg\pdpp24.dwg PLOTTING DATE: 1/8/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction.
It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	167+00 to 172+00	500'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing AC Pavement — 759 SY

NEW CONSTRUCTION

1. AC Pavment Replacement MAG 200, Type "A" — 759 SY
2. Install Permanent Pipe Support MAG 403 — 1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 167+00 TO STA 172+00

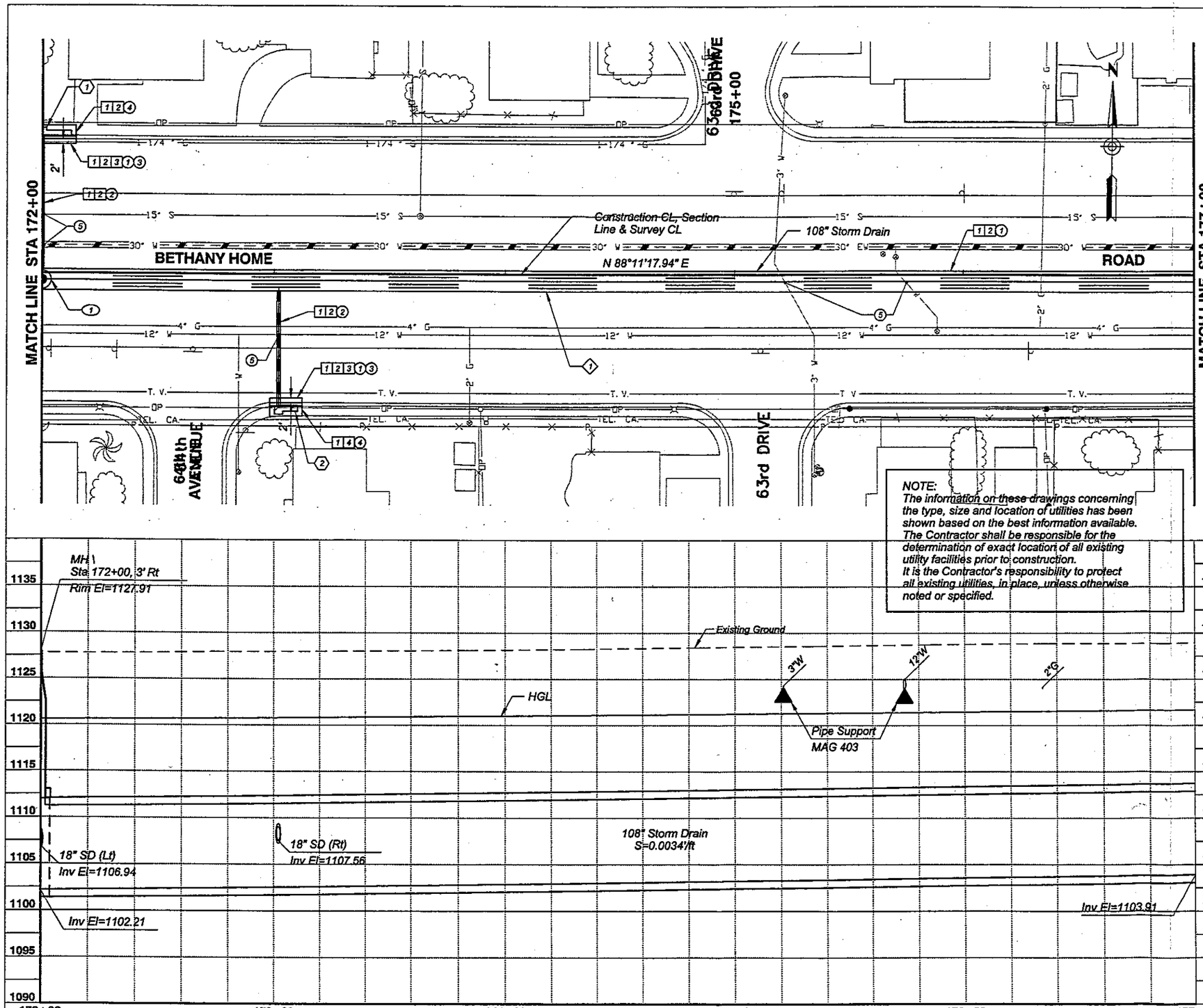
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D21
OF

FILE NAME: Q:\14683\DGN\Phase 2\Dwg\sdpp25.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.

STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	172+00, 3' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	172+00 to 177+00	500'	108"	*

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	172+00, Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	59'	18"
2	173+02, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	53'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	834 SY
3	Remove Existing Concrete Curb & Gutter	31 LF
4	Remove Existing Concrete Sidewalk	157 SF

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	767 SY
2	AC Pavment Replacement MAG 200, Type "A", T-Top	67 SY
3	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	31 LF
4	Concrete Sidewalk Replacement MAG 230	157 SF
5	Install Permanent Pipe Support MAG 403	5 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 172+00 TO STA 177+00

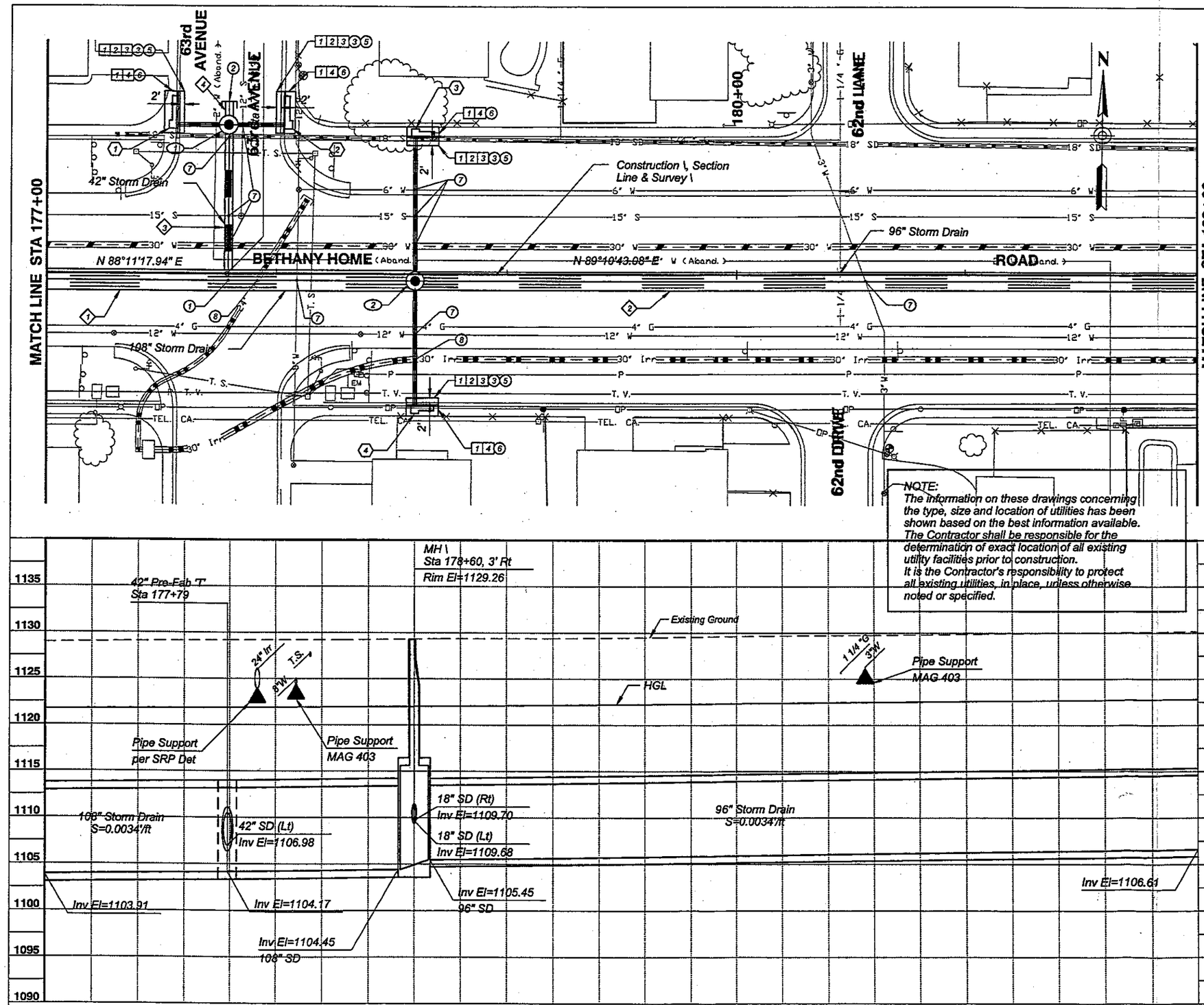
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D22
OF

FILE NAME: G:\1466S\DGN\Phase 2\Dwg\adopp26.dwg PLOTTING DATE: 1/9/2009
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	177+79, 64' Lt	MAG 520 & 522
2	178+60, 3' Rt	C.O.P. P-1560 Mod (use F=28" for D=108") & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	177+00 to 178+60	160'	108"	*
2	178+60 to 182+00	340'	96"	III
3	177+79 1' Lt to 64' Lt	63'	42"	IV
4	177+79 64' Lt to 74' Lt	10'	42"	IV

* Install D-1650 Storm Drain per Specifications

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	177+56.59 64' Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	23'	18"
2	178+03.09 64' Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	26'	18"
3	178+60, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	61'	18"
4	178+60, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	53'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	898 SY
3	Remove Existing Concrete Curb & Gutter	63 LF
4	Remove Existing Concrete Sidewalk	313 SF

NEW CONSTRUCTION

1	Install 108" x 42" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 177+79, 71' Lt	
3	AC Pavment Replacement MAG 200, Type "A"	738 SY
4	AC Pavment Replacement MAG 200, Type "A", T-Top	160 SY
5	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	63 LF
6	Concrete Sidewalk Replacement MAG 230	313 SF
7	Install Permanent Pipe Support MAG 403	10 Ea
8	Install Permanent Pipe Support SRP Det	2 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3830

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED	DRAWN	CHECKED
TEC	CGS	SAW

NO.	DATE	DESCRIPTION

REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 177+00 TO STA 182+00

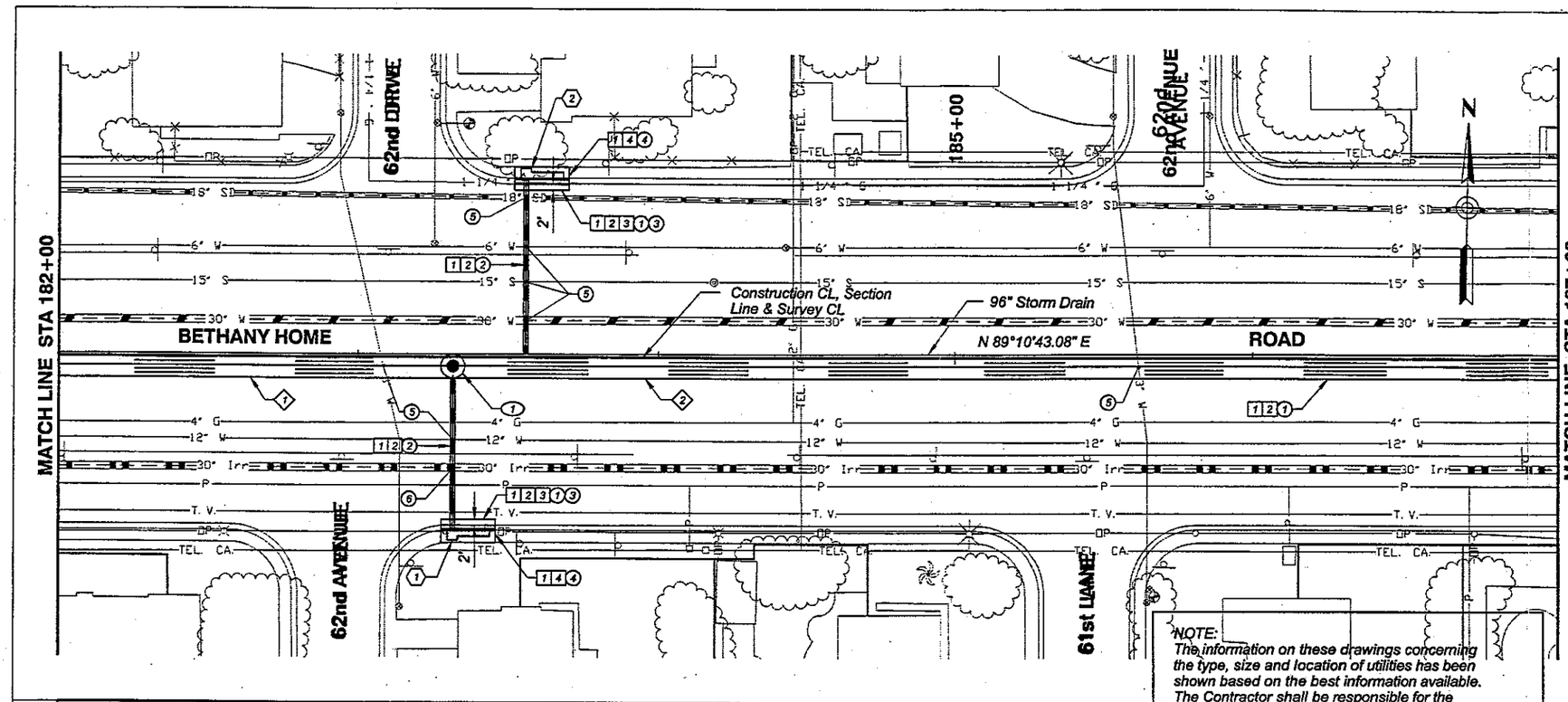
Stanley Consultants INC
2555 E. Camelback Road
Phoenix, Arizona 85016
A Stanley Group Company
Offices in Principal Cities Throughout the World — Worldwide

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

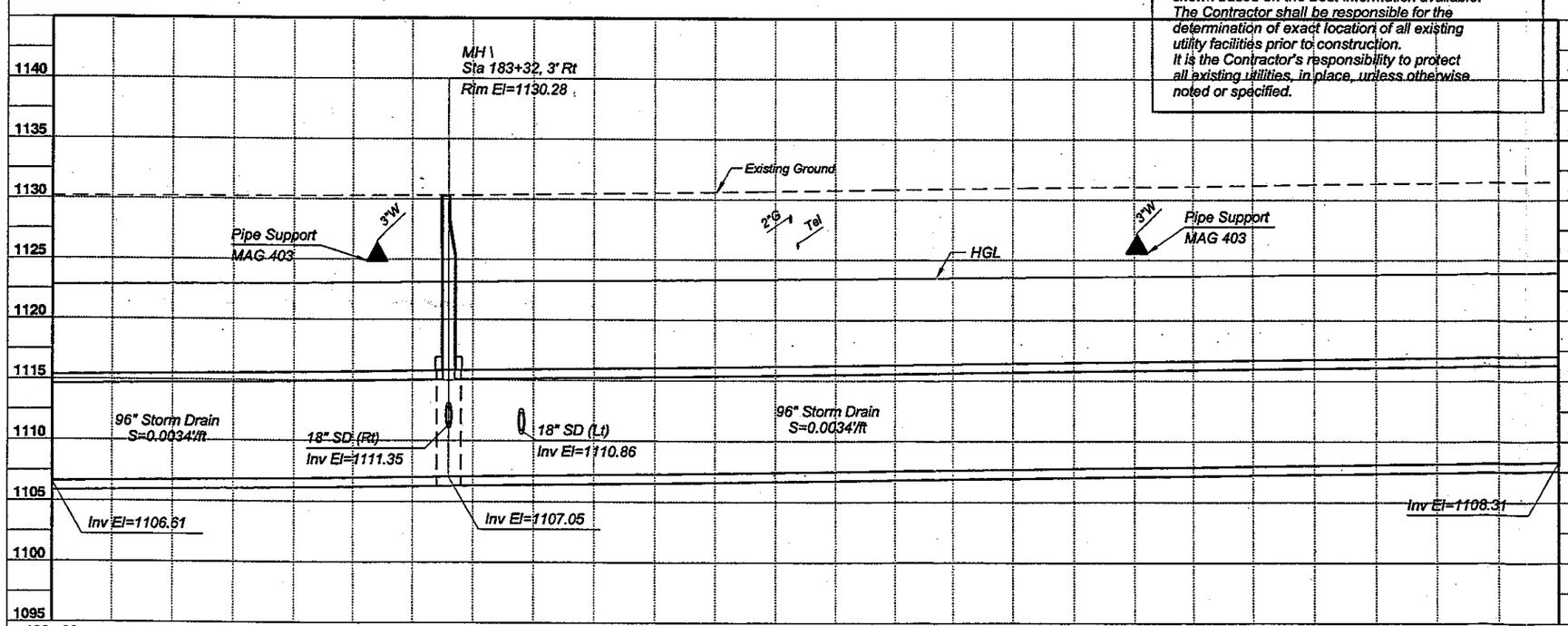
TWO WORKING DAYS BEFORE YOU DIG CALL FOR THIS BLUE STAKES
(602) 263-1100
BLUE STAKE, INC.
CALL COLLECT

SHT. D23
OF

FILE NAME: Qc\14662\DGN\Phase 2\Dwg\sdpa27.dwg PLOTTING DATE: 1/8/2003
REVISION DATE: AUTOCAD VER.:



NOTE:
The information on these drawings concerning the type, size and location of utilities has been shown based on the best information available. The Contractor shall be responsible for the determination of exact location of all existing utility facilities prior to construction. It is the Contractor's responsibility to protect all existing utilities, in place, unless otherwise noted or specified.



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	183+32, 3' Rt	MAG 521 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	182+00 to 183+32	132'	96"	III
2	183+32 to 187+00	368'	96"	III

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	183+32, Rt	C.O.P. P-1569 M-1, L=10'	MAG 524	53'	18"
2	183+56, Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	63'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	779SY
3	Remove Existing Concrete Curb & Gutter	35 LF
4	Remove Existing Concrete Sidewalk	177 SF

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	712 SY
2	AC Pavment Replacement MAG 200, Type "A", T-Top	67 SY
3	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	35 LF
4	Concrete Sidewalk Replacement MAG 230	177 SF
5	Install Permanent Pipe Support MAG 403	7 Ea
6	Install Permanent Pipe Support SRP Det	1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 182+00 TO STA 187+00

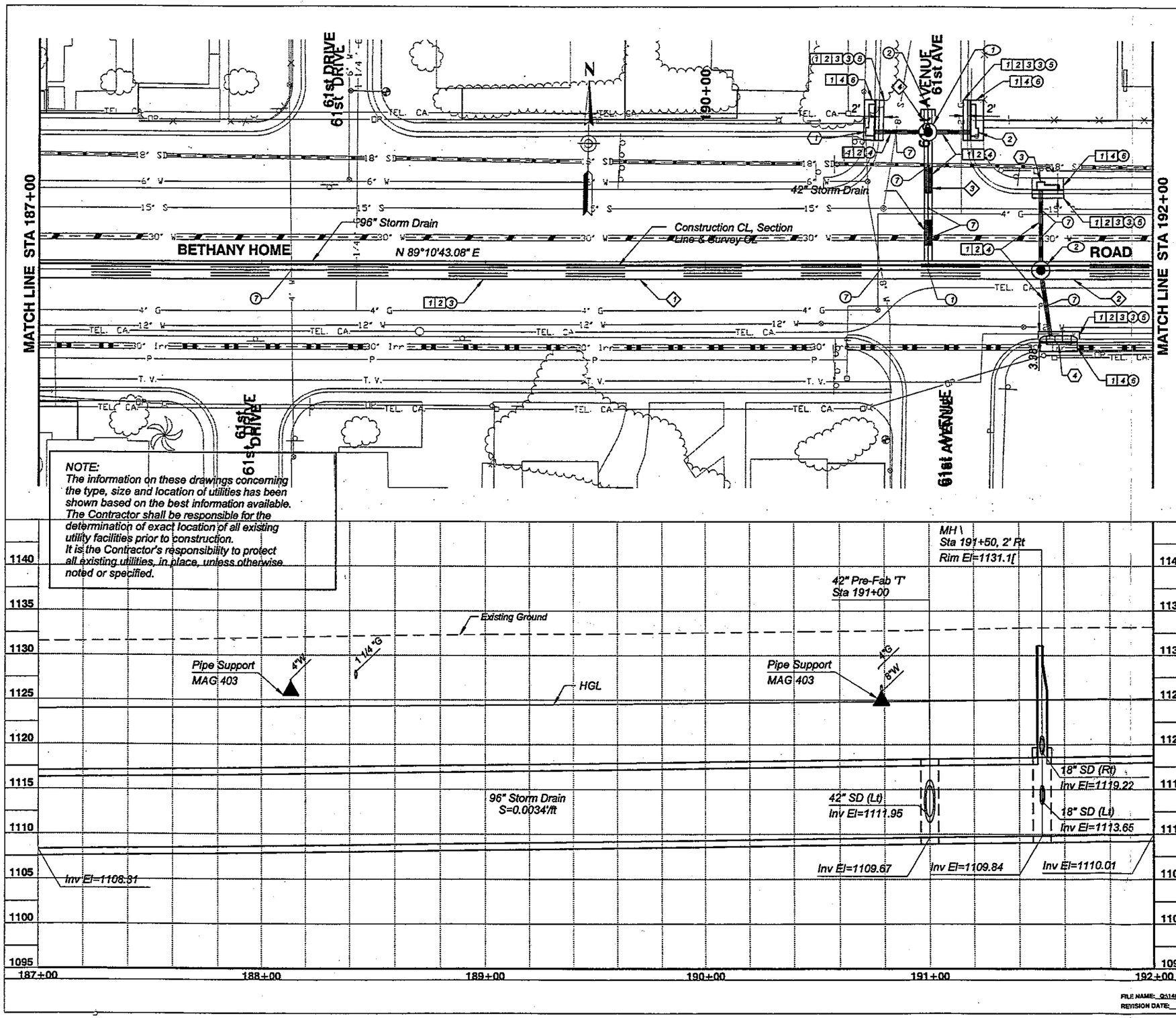
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D24
OF

FILE NAME: O:\14663\DGN\Phase 2\Dwg\sdpp28.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	191+00, 60' Lt	MAG 520 & 522
2	191+50, 2' Rt	MAG 521 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	187+00 to 191+50	450'	96"	III
2	191+50 to 192+00	50'	96"	III
3	191+00 2' Lt to 60' Lt	58'	42"	IV
4	191+00 60' Lt to 70' Lt	10'	42"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	190+75.82 60' Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	26'	18"
2	191+18.89 60' Lt	C.O.P. P-1569 M-1, L=10'	MAG 524	18'	18"
3	191+50, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	36'	18"
4	191+50, Rt	C.O.P. P-1572 Q-3, Modified	MAG 524	30'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	845 SY
3	Remove Existing Concrete Curb & Gutter	66 LF
4	Remove Existing Concrete Sidewalk	328 SF

NEW CONSTRUCTION

1	Install 96" x 42" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 191+00, 70' Lt	
3	AC Pavment Replacement MAG 200, Type "A"	723 SY
4	AC Pavment Replacement MAG 200, Type "A", T-Top	122 SY
5	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	66 LF
6	Concrete Sidewalk Replacement MAG 230	328 SF
7	Install Permanent Pipe Support MAG 403	9 Ea

FILE NAME: Q:\14565\DGN\Phase 2\Dwg\sdpc23.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

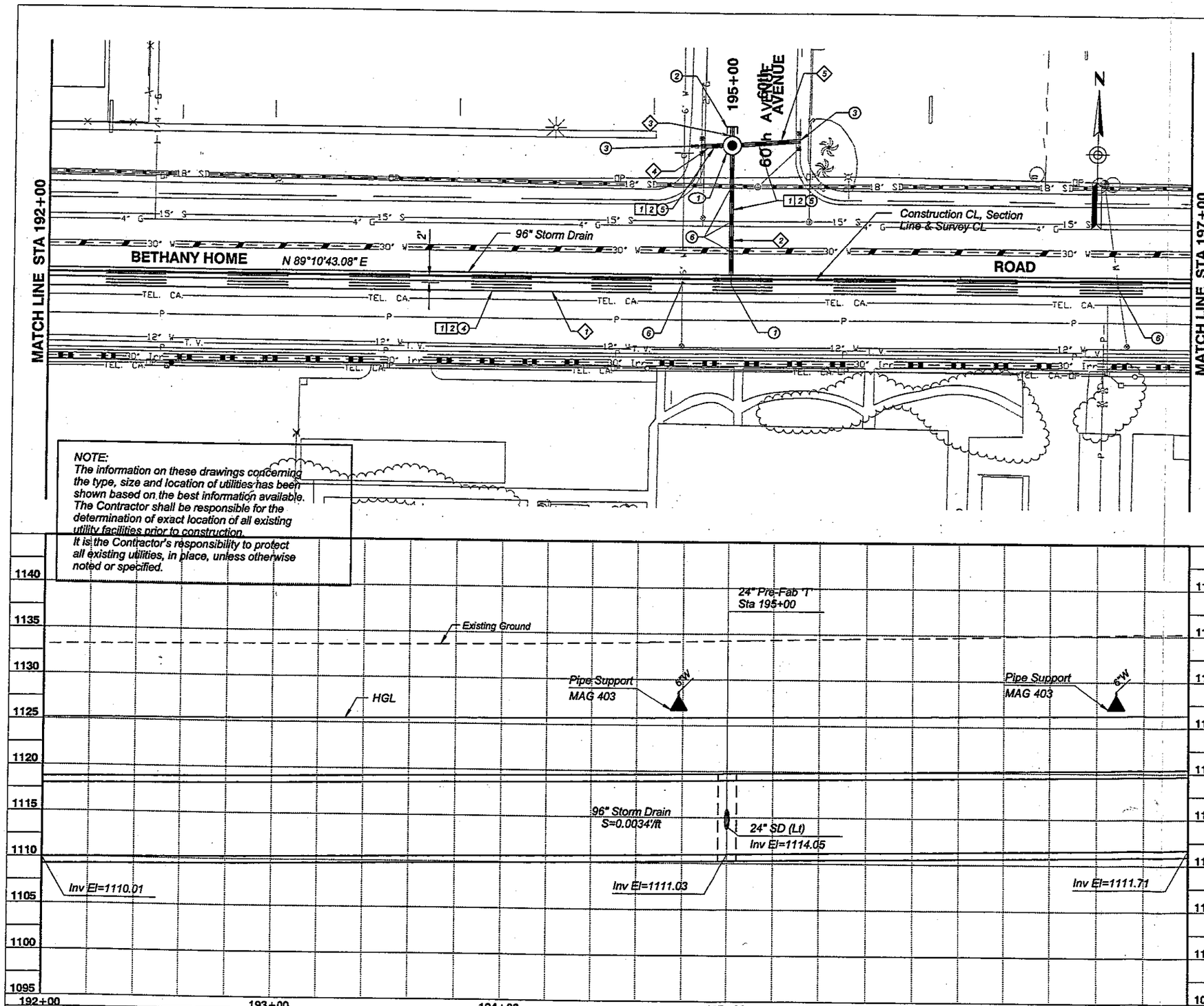
PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 187+00 TO STA 192+00

Stanley Consultants INC

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D25
OF



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	195+00, 58' Lt	MAG 520 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	192+00 to 197+00	500'	96"	III
2	195+00 2' Lt to 58' Lt	56'	24"	IV
3	195+00 58' Lt to 68' Lt	10'	24"	IV
4	195+00, 58' Lt to Exist CB	14'	18"	IV
5	195+00, 58' Lt to Exist CB	31'	18"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE

REMOVAL

1. Sawcut and Match Existing
2. Remove Existing AC Pavement — 767 SY

NEW CONSTRUCTION

1. Install 96" x 18" Pre-Fab 'T'
2. Install Pipe Plug per MAG 427 Sta 195+00, 67' Lt
3. Connect to Exist Catch Basin Inlet. See 60th Avenue Connector Pipe Profile.
4. AC Pavment Replacement MAG 200, Type "A" — 704 SY
5. AC Pavment Replacement MAG 200, Type "A", T-Top — 63 SY
6. Install Parmanent Pipe Support MAG 403 — 5 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD

STORM DRAIN PLAN AND PROFILE
STA 192+00 TO STA 197+00

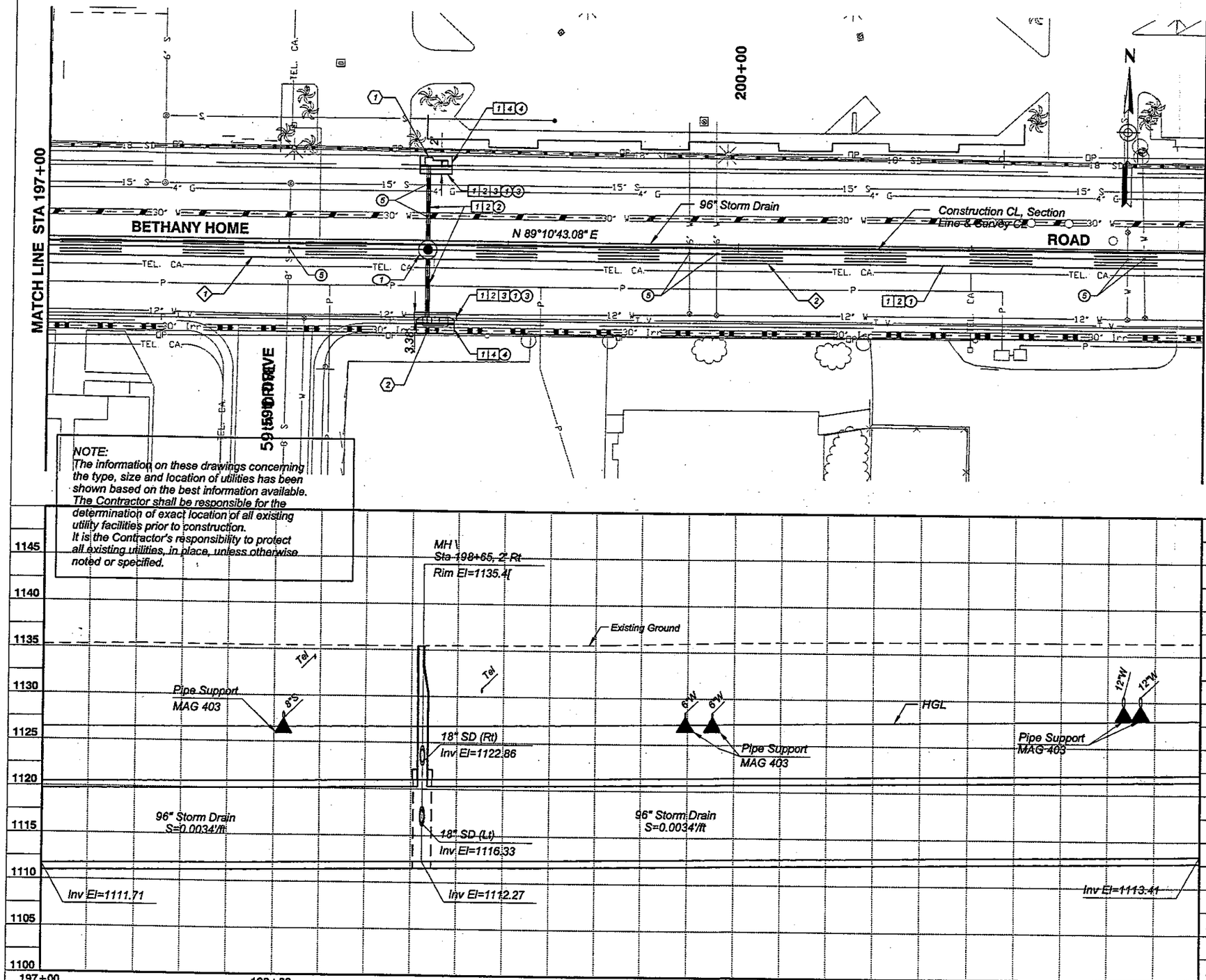
Stanley Consultants inc.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100

SHT. D26
OF

FILE NAME: Q:\14465\DGN\Phase 2\Dwg\adpo30.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	198+65, 2' Rt	MAG 521 & 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	197+00 to 198+65	165'	96"	III
2	198+65 to 202+00	335'	96"	III

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	198+65, Lt	C.O.P. P-1569 M-1, L=6	MAG 524	37'	18"
2	198+65, Rt	C.O.P. P-1572 Q-3, Modified	MAG 524	30'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	752 SY
3	Remove Existing Concrete Curb & Gutter	30 LF
4	Remove Existing Concrete Sidewalk	151 SF

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	712 SY
2	AC Pavment Replacement MAG 200, Type "A", T-Top	38 SY
3	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	30 LF
4	Concrete Sidewalk Replacement MAG 230	151 SF
5	Install Permanent Pipe Support MAG 403	7 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION
		REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 197+00 TO STA 202+00

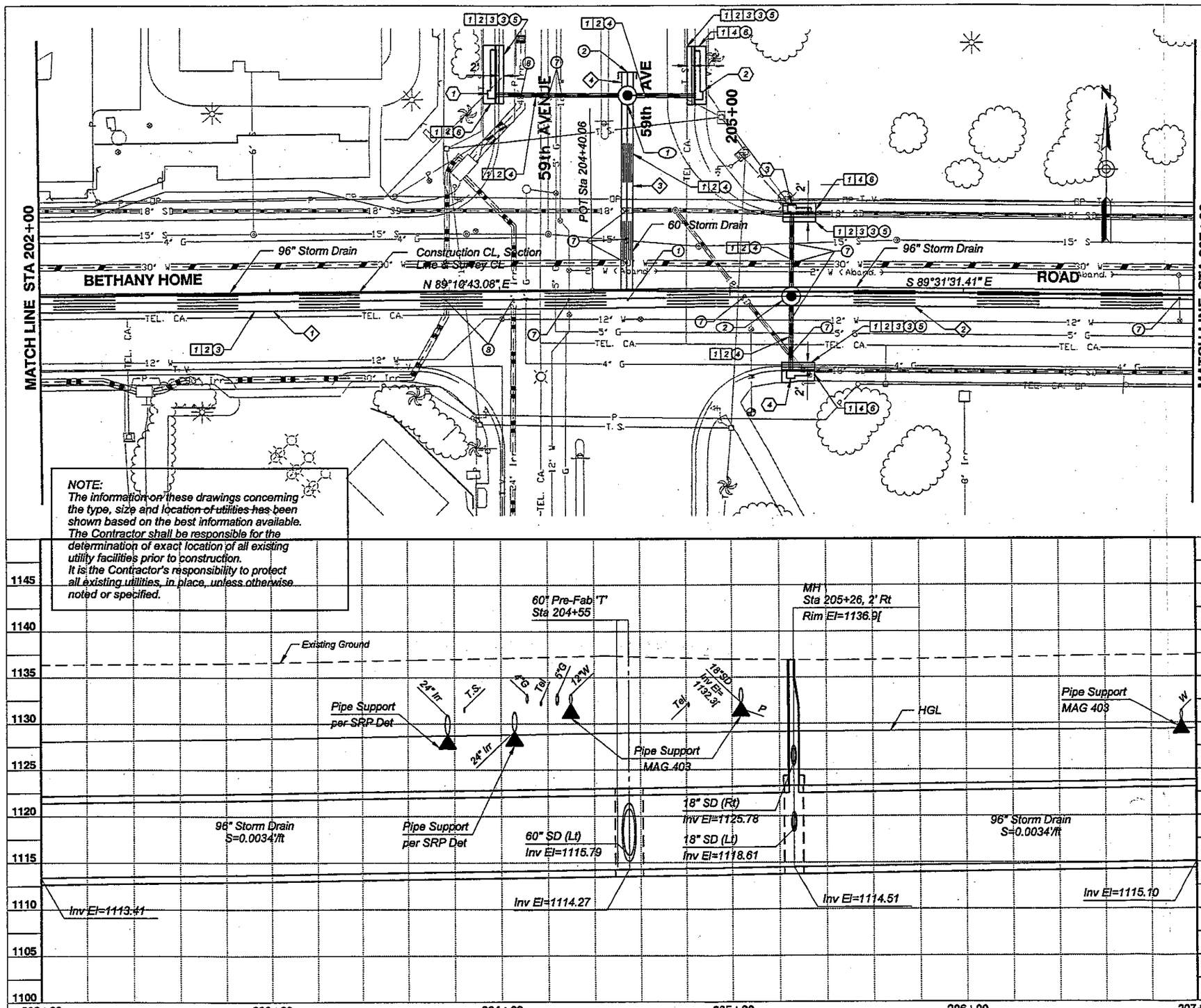
Stanley Consultants INC.
2121 N. Central Ave.
Phoenix, AZ 85004
A Stanley Group Company
Engineering, Environmental
Specialties, Surveying

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

THE INFORMATION SHOWN BEFORE YOU DIG CALL FOR THE BLUE STAKE
(602) 263-1100
BLUE STAKE CENTER
CALL COLLECT

SHT. D27
OF

FILE NAME: G:\14685\DGN\Phase 2\Dwg\p4pp31.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	204+55, 84' Lt	MAG 521 & 522
2	205+26, 2' Rt	C.O.P. P-1560

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	202+00 to 205+26	326'	96"	III
2	205+26 to 207+00	174'	96"	III
3	204+55 2' Lt to 84' Lt	82'	60"	IV
4	204+55 84' Lt to 94' Lt	10'	60"	IV

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE
1	203+99.85 84' Lt	C.O.P. P-1569 M-1, L=17'	MAG 524	57'	18"
2	204+83.61 84' Lt	C.O.P. P-1569 M-1, L=17'	MAG 524	29'	18"
3	205+26, Lt	C.O.P. P-1569 M-1, L=6'	MAG 524	37'	18"
4	205+26, Rt	C.O.P. P-1569 M-1, L=6'	MAG 524	31'	18"

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	918 SY
3	Remove Existing Concrete Curb & Gutter	77 LF
4	Remove Existing Concrete Sidewalk	383 SF

NEW CONSTRUCTION

1	Install 96" x 60" Pre-Fab 'T'	
2	Install Pipe Plug per MAG 427 Sta 204+55, 94' Lt	
3	AC Pavment Replacement MAG 200, Type "A"	722 SY
4	AC Pavment Replacement MAG 200, Type "A", T-Top	196 SY
5	Vertical Curb & Gutter Replacement MAG 220, Type "A", h=6"	77 LF
6	Concrete Sidewalk Replacement MAG 230	383 SF
7	Install Permanent Pipe Support MAG 403	12 Ea
8	Install Permanent Pipe Support SRP Det	3 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC
DRAWN CGS
CHECKED SAW

NO.	DATE	DESCRIPTION

REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 202+00 TO STA 207+00

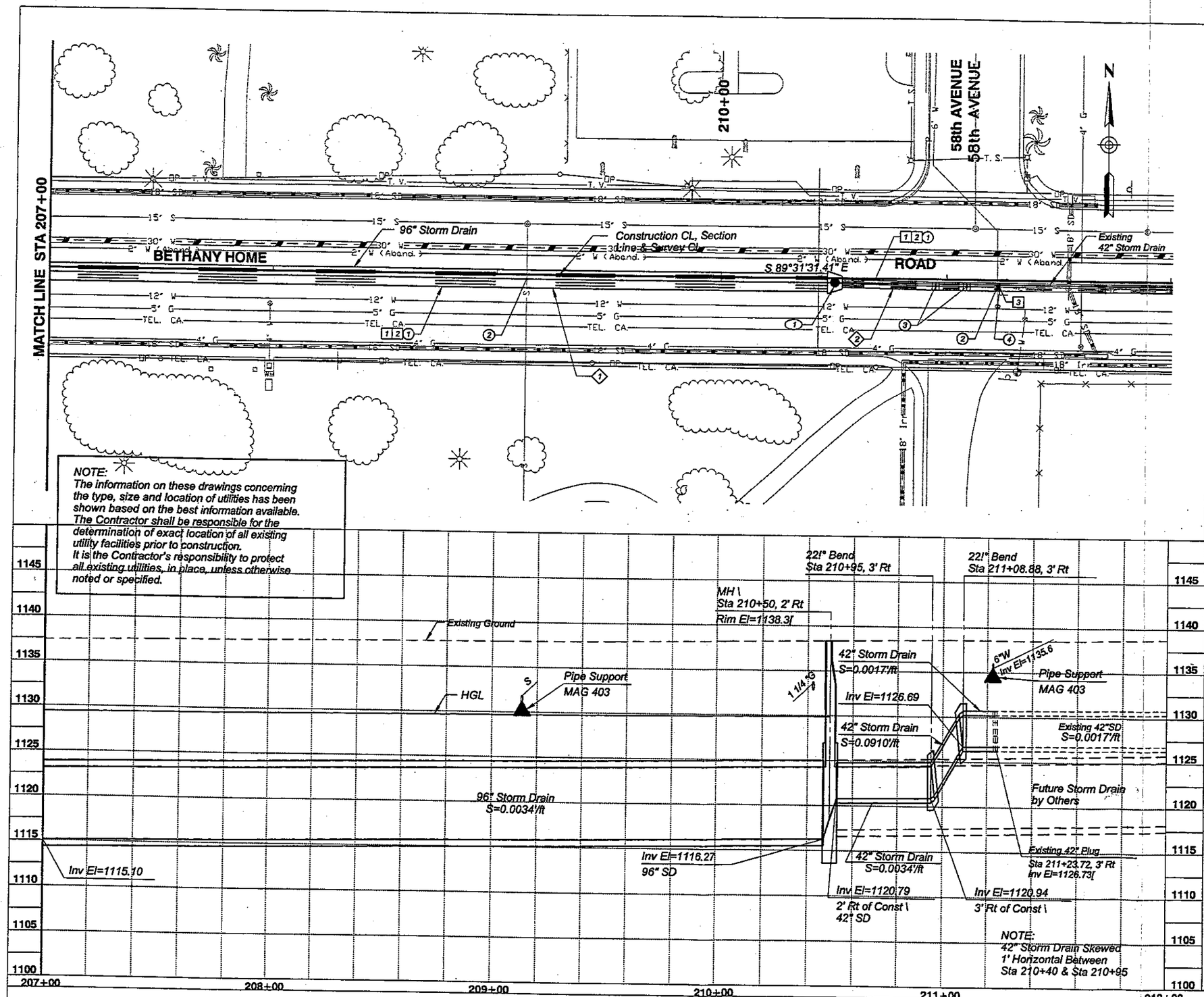
Stanley Consultants INC.

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

CALL FOR THE BLUE STAKES
(602) 263-1100
BLUE STAKES CENTER
CALL COLLECT

SHT. D28
OF

FILE NAME: Q:\14664\DGN\Phase 2\Dwg\sdno32.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:



STORM DRAIN MANHOLE

NO.	STA.	TYPE
1	210+40, 2' Rt	C.O.P. P-1560 & MAG 522

STORM DRAIN PIPE

NO.	STA. to STA.	LENGTH	SIZE	CLASS
1	207+00 to 210+50	350'	96"	III
2	210+50 to 211+24	74'	42"	III

CONCRETE CATCH BASINS AND PIPE FOR CONNECTIONS

NO.	INLET STA.	INLET DETAIL	TYPE CONN.	PIPE LENGTH	SIZE

REMOVAL

1	Sawcut and Match Existing	
2	Remove Existing AC Pavement	536 SY
3	Remove Existing 42" Plug	1 Ea

NEW CONSTRUCTION

1	AC Pavment Replacement MAG 200, Type "A"	536 SY
2	Install Permanent Pipe Support MAG 403	2 Ea
3	Install 22 1/2 ° Bend, Concrete Pipe Collar MAG 505	2 Ea
4	Install Concrete Pipe Collar MAG 505	1 Ea

CITY OF GLENDALE
ENGINEERING DEPARTMENT
5850 W. GLENDALE AVE.
GLENDALE, ARIZONA 85301 (623) 930-3630

PRELIMINARY NOT FOR CONSTRUCTION

DESIGNED TEC | DRAWN CGS | CHECKED SAW

NO.	DATE	DESCRIPTION

REVISIONS

PROJECT NO. 989011
BETHANY HOME ROAD
STORM DRAIN PLAN AND PROFILE
STA 207+00 TO STA 212+00

Stanley Consultants INC
1500 Lake Cunningham Road
Phoenix, Arizona 85054
Tel (602) 263-1100
Fax (602) 263-1101
Civil Engineering, Land Surveying, Construction Services

SCALE:
HORIZ: 1"=20'
VERT: 1"=5'

(602) 263-1100
BLUE STAKES CENTER
CALL COLLECT

SHT. D29
OF

FILE NAME: Q:\1448S\DGN\Phase 2\Dwg\sdpo33.dwg PLOTTING DATE: 1/9/2003
REVISION DATE: AUTOCAD VER.:

E.2 – ROUGHNESS COEFFICIENT ESTIMATION

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 17+41 to Sta 20+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.029**

Note: Use n=0.030 minimum for grass-lined channel.

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 20+00 to Sta 32+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.004
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.003
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.032**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 32+00 to Sta 44+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.001
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.030**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 44+00 to Sta 54+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.003
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.005
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.033**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 56+40 to Sta 74+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.001
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.030**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 74+00 to Sta 76+76

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.002
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.004
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.030**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 78+29 to Sta 80+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.029**

Note: Use n=0.030 minimum for grass-lined channel.

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 80+00 to Sta 84+00

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	0.002
Minor (0.005 - 0.015)	
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	0.005
Medium (0.010 - 0.025)	
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.002
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.029**

Note: Use n=0.030 minimum for grass-lined channel.

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 84+00 to Sta 111+35

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.002
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	
Minor (0.005 - 0.015)	0.010
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	
Medium (0.010 - 0.025)	0.010
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.003
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.045**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 112+81 to Sta 116+14

Mannings n Computations	
Base Condition	0.020
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.002
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	
Minor (0.005 - 0.015)	0.010
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	
Medium (0.010 - 0.025)	0.010
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.003
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.045**

BHOC Project - Phase 2

Mannings Roughness Calculations

Sta 116+14 to Sta 117+55

Mannings n Computations	
Base Condition	0.040
Degree of Irregularity	
Smooth (0.0)	0.000
Minor (0.001 - 0.005)	0.002
Moderate (0.006 - 0.010)	
Severe (0.011 - 0.020)	
Effects of Obstruction	
Negligible (0.0 - 0.004)	
Minor (0.005 - 0.015)	0.002
Appreciable (0.020 - 0.030)	
Severe (0.040 - 0.060)	
Vegitation	
Small (0.002 - 0.010)	
Medium (0.010 - 0.025)	0.010
Large (0.025 - 0.050)	
Very Large (0.050 - 0.100)	
Variations in Channel Cross Section	
Gradual (0.0)	
Moderate Alternating (0.001 - 0.005)	0.001
Appreciable Alternating (0.010 - 0.015)	
Degree of Meandering	
Minor (1.0)	X
Appreciable (1.15)	
Severe (1.3)	
Recommended n =	**0.055**

A common method of selecting the roughness coefficient, *n*, is to first select a base value of *n* for the bed material (table 1). The base values of *n* are for a straight uniform channel of a given bed material. Cross-section irregularities, channel alignment, obstructions, vegetation, and other factors that increase roughness are accounted for by adding increments of roughness to the base value of *n*. Ranges of adjustments for the factors that may add to channel roughness are shown in table 2.

Many alluvial channels in Maricopa County have bed material that moves during floodflow. In addition to the changing channel geometry of these channels, the roughness coefficient may change during floodflow because of the changing form of the channel bed in parts of the channel cross section (Davidian, 1984). Bedforms, such as dunes, antidunes, and plane bed have been observed during large floods. Within a few minutes, dunes can appear, disappear, and reappear at different locations across a large stream channel. The Manning roughness coefficient can double or triple when the bedform changes from plane to dunes. A method of defining reliable values of Manning's *n* for unstable alluvial channels is not available. A plane bedform is common during large floods, and for this report, plane-bed conditions are assumed where the roughness coefficient is related to the size of the channel material and not the form of the channel bed. Plane-bed conditions were assumed for nearly all indirect measurements of peak discharge where the slope-area method was used.

Table 1.--*Base values of Manning's n for stable channels*

[Modified from Aldridge and Garrett, 1973, table 1]

Channel material	Size of bed material		Base *n* values	
	Millimeters	Inches	Benson and Dalrymple (1967)[1]	Chow (1959)[2]
Concrete.....	-------	--------	0.012-0.018	0.011
Rock cut.....	-------	--------	----------	.025
Firm soil.....	-------	--------	.025- .032	.020
Coarse sand.....	1-2	--------	.026- .035	-----
Fine gravel.....	-------	--------	----------	.024
Gravel.....	2-64	0.08-2.5	.028- .035	-----
Coarse gravel.....	-------	--------	----------	.028
Cobble.....	64-256	2.5-10.0	.030- .050	-----
Boulder.....	>256	>10.0	.040- .070	-----

[1]Straight uniform channel.
[2]Smoothest channel attainable in indicated material.

Table 2.--*Adjustment factors for the determination of overall Manning's n values*

[Modified from Chow, 1959]

Channel conditions	Manning's n adjustment[1]	Example
Degree of irregularity:		
Smooth	0.000	Smoothest channel attainable in given bed material.
Minor	.001- .005	Channels with slightly eroded or scoured side slopes.
Moderate	.006- .010	Channels with moderately sloughed or eroded side slopes.
Severe	.011- .020	Channels with badly sloughed banks; unshaped, jagged, and irregular surfaces of channels in rock.
Effects of obstruction[2]:		
Negligible	.000- .004	A few scattered obstructions, which include debris deposits, stumps, exposed roots, logs, piers, or isolated boulders, that occupy less than 5 percent of the cross-sectional area.
Minor	.005- .015	Obstructions occupy 5 to 15 percent of the cross-sectional area and the spacing between obstructions is such that the sphere of influence around one obstruction does not extend to the sphere of influence around another obstruction. Smaller adjustments are used for curved smooth-surfaced objects than are used for sharp-edged angular objects.
Appreciable	.020- .030	Obstructions occupy from 15 to 50 percent of the cross-sectional area or the space between obstructions is small enough to cause the effects of several obstructions to be additive, thereby blocking an equivalent part of a cross section.
Severe	.040- .060	Obstructions occupy more than 50 percent of the cross-sectional area or the space between obstructions is small enough to cause turbulence across most of the cross section.
Vegetation:		
Small	.002- .010	Dense growths of flexible turf grass, such as Bermuda, or weeds where the average depth of flow is at least two times the height of the vegetation; supple tree seedlings such as willow, cottonwood, arrow weed, or saltcedar where the average depth of flow is at least three times the height of the vegetation.
Medium	.010- .025	Grass or weeds where the average depth of flow is from one to two times the height of the vegetation; moderately dense stemmy grass, weeds, or tree seedlings where the average depth of flow is from two to three times the height of the vegetation; moderately dense brush, similar to 1- to 2-year-old saltcedar in the dormant season, along the banks and no significant vegetation along the channel bottoms where the hydraulic radius exceeds 2 feet.
Large	.025- .050	Turf grass or weeds where the average depth to flow is about equal to the height of vegetation; small trees intergrown with some weeds and brush where the hydraulic radius exceeds 2 feet.

See footnotes at end of table.

Table 2.--*Adjustment factors for the determination of overall Manning's n values*--Continued

Channel conditions	Manning's n adjustment[1]	Example
Vegetation—Continued:		
Very large	.050- .100	Turf grass or weeds where the average depth of flow is less than half the height of vegetation; small bushy trees intergrown with weeds along side slopes of dense cattails growing along channel bottom; trees intergrown with weeds and brush.
Variations in channel cross section:		
Gradual	.000	Size and shape of cross sections change gradually.
Alternating	.001- .005	Large and small cross sections alternate occasionally, or the main flow occasionally shifts from side to side owing to changes in cross-sectional shape.
Alternating	.010- .015	Large and small cross sections alternate frequently, or the main flow frequently shifts from side to side owing to changes in cross-sectional shape.
Degree of meadering[3]:		
Minor	1.00	Ratio of the meander length to the straight length of the channel reach is 1.0 to 1.2.
Appreciable	1.15	Ratio of the meader length to the straight length of channel is 1.2 to 1.5.
Severe	1.30	Ratio of the meander length to the straight length of channel is greater than 1.5.

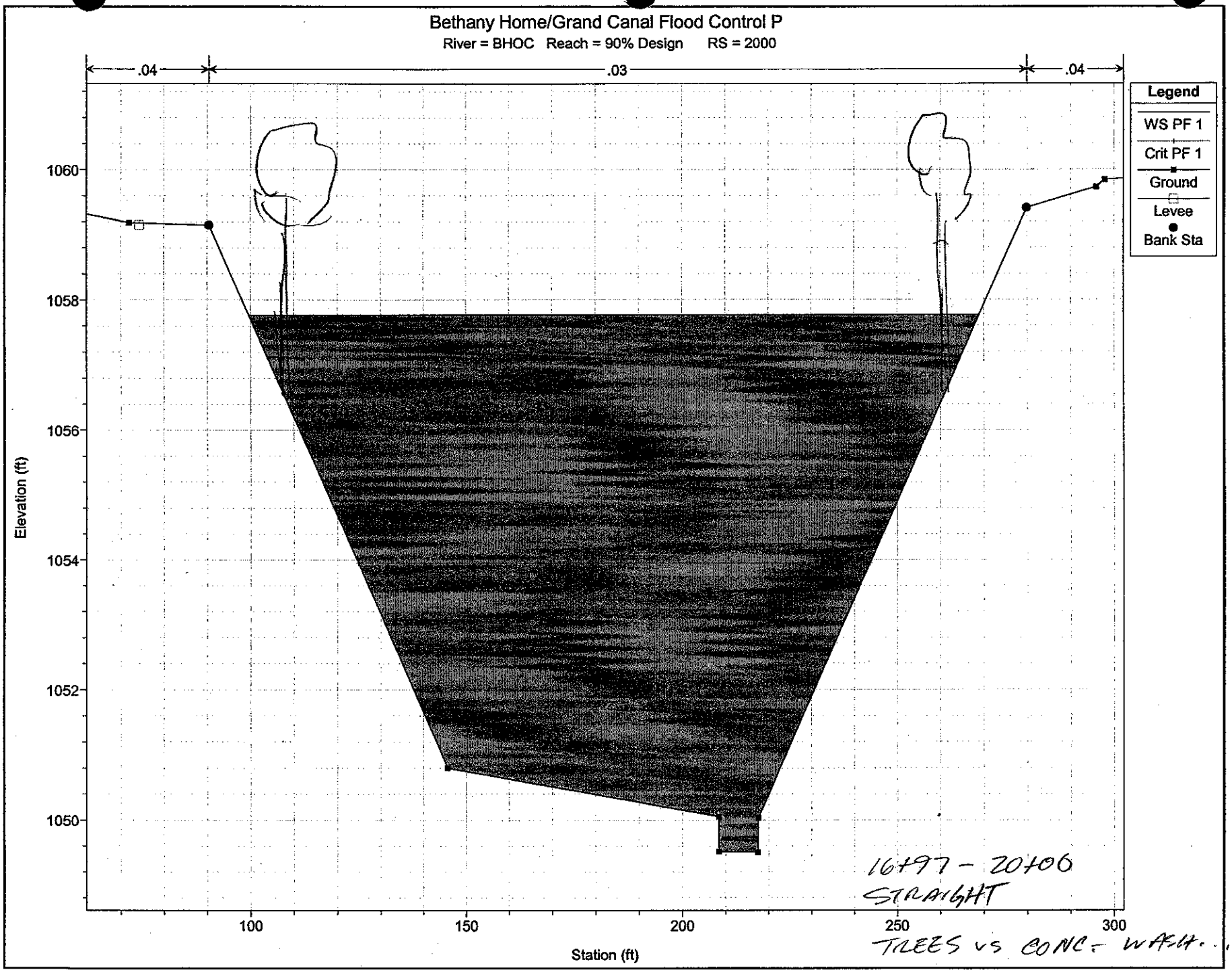
[1]Adjustments for degree of irregularity, variations in cross section, effect of obstructions, and vegetation are added to the base n value (table 1) before multiplying by the adjustment for meander.

[2]Conditions considered in other steps must not be reevaluated or duplicated in this section.

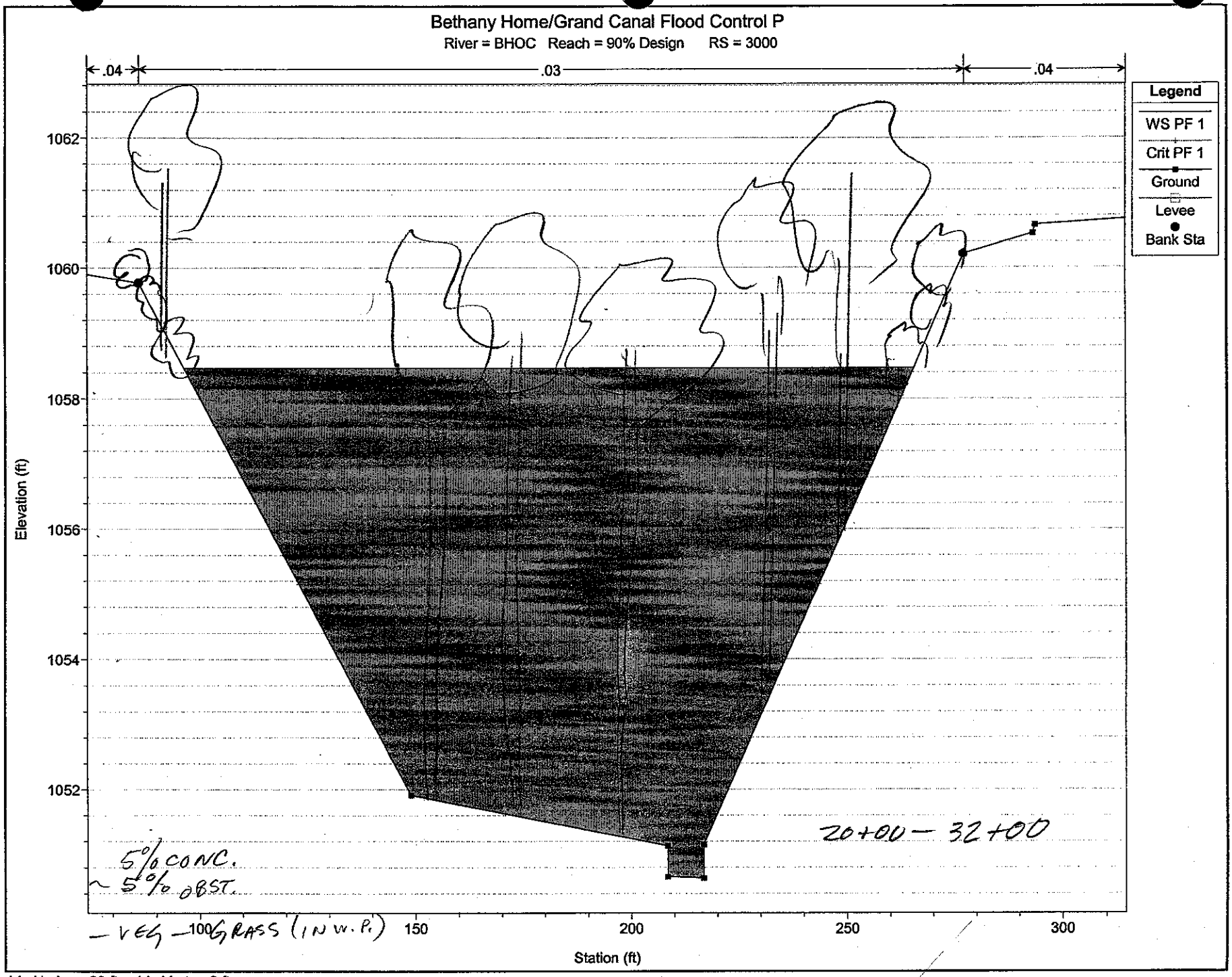
[3]Adjustment values apply to flow confined in the channel and do not apply where downvalley flow crosses meanders. The adjustment is a multiplier.

For floodflows in sand channels with moveable beds, roughness mainly is a function of the size of the bed material as shown in the following table (Benson and Dalrymple, 1967, p. 22).

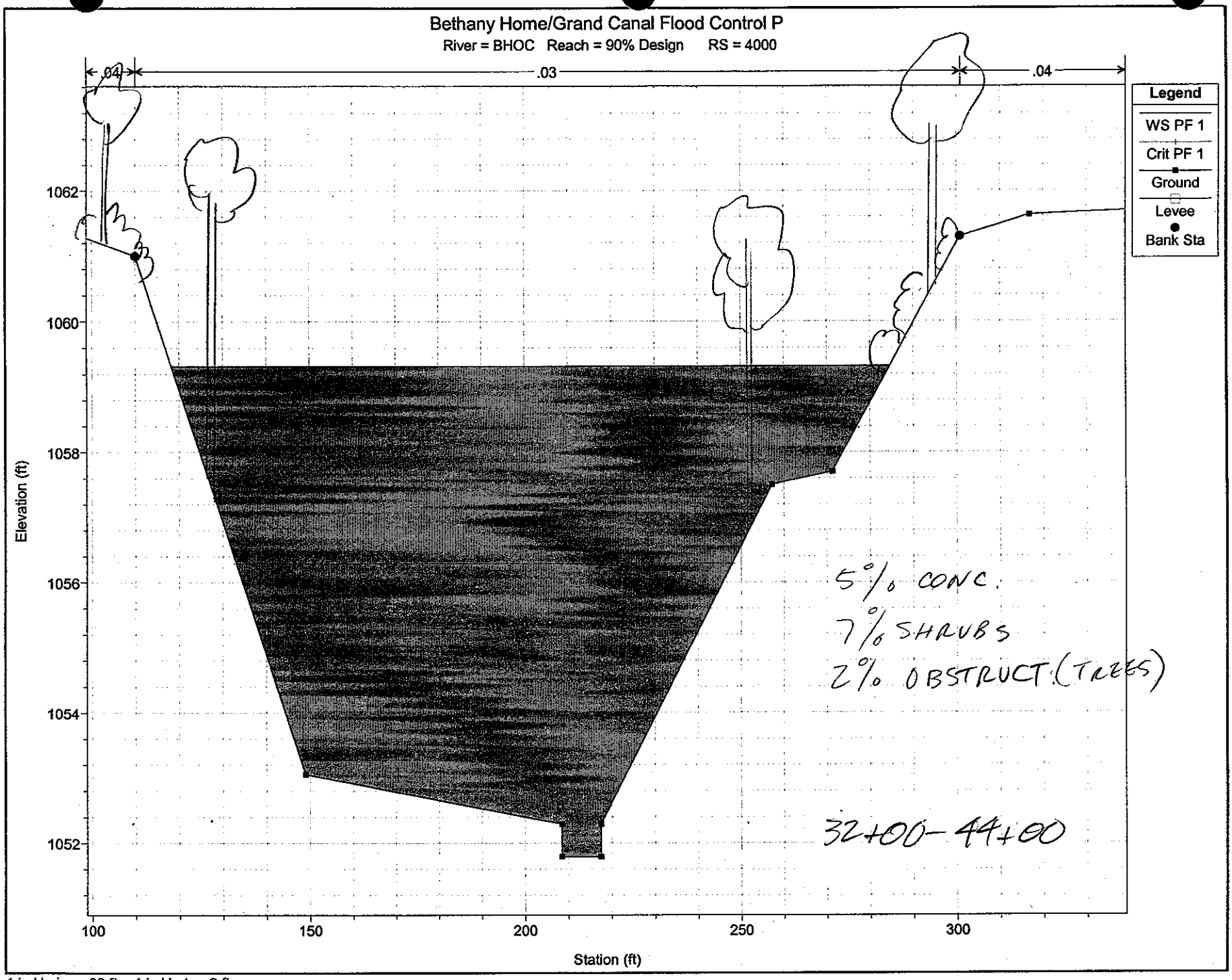
Median grain size, in millimeters	Manning's *n*	Median grain size, in millimeters	Manning's *n*
0.2	0.012	0.6	.023
.3	.017	.8	.025
.4	.020	1.0	.026
.5	.022		



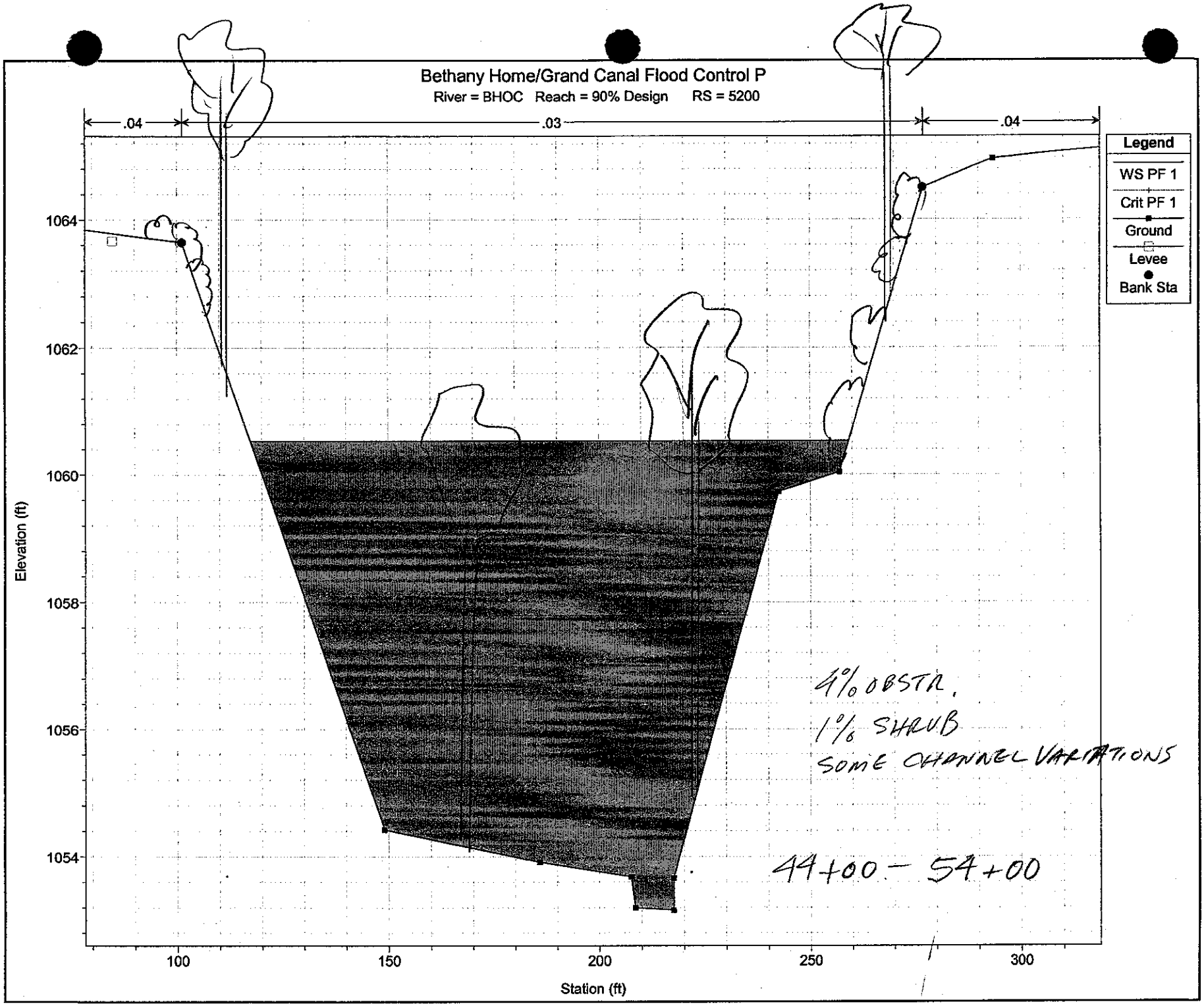
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



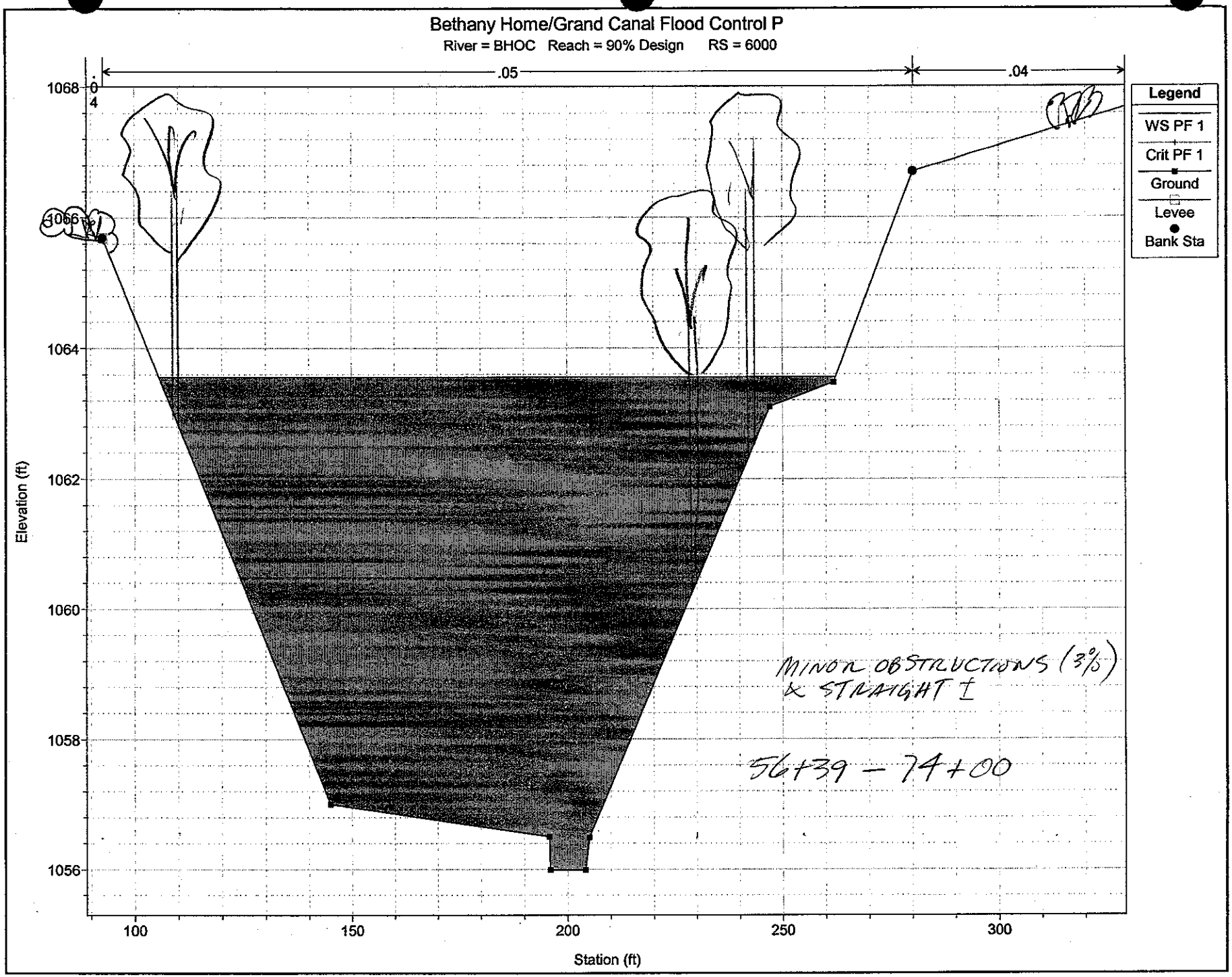
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



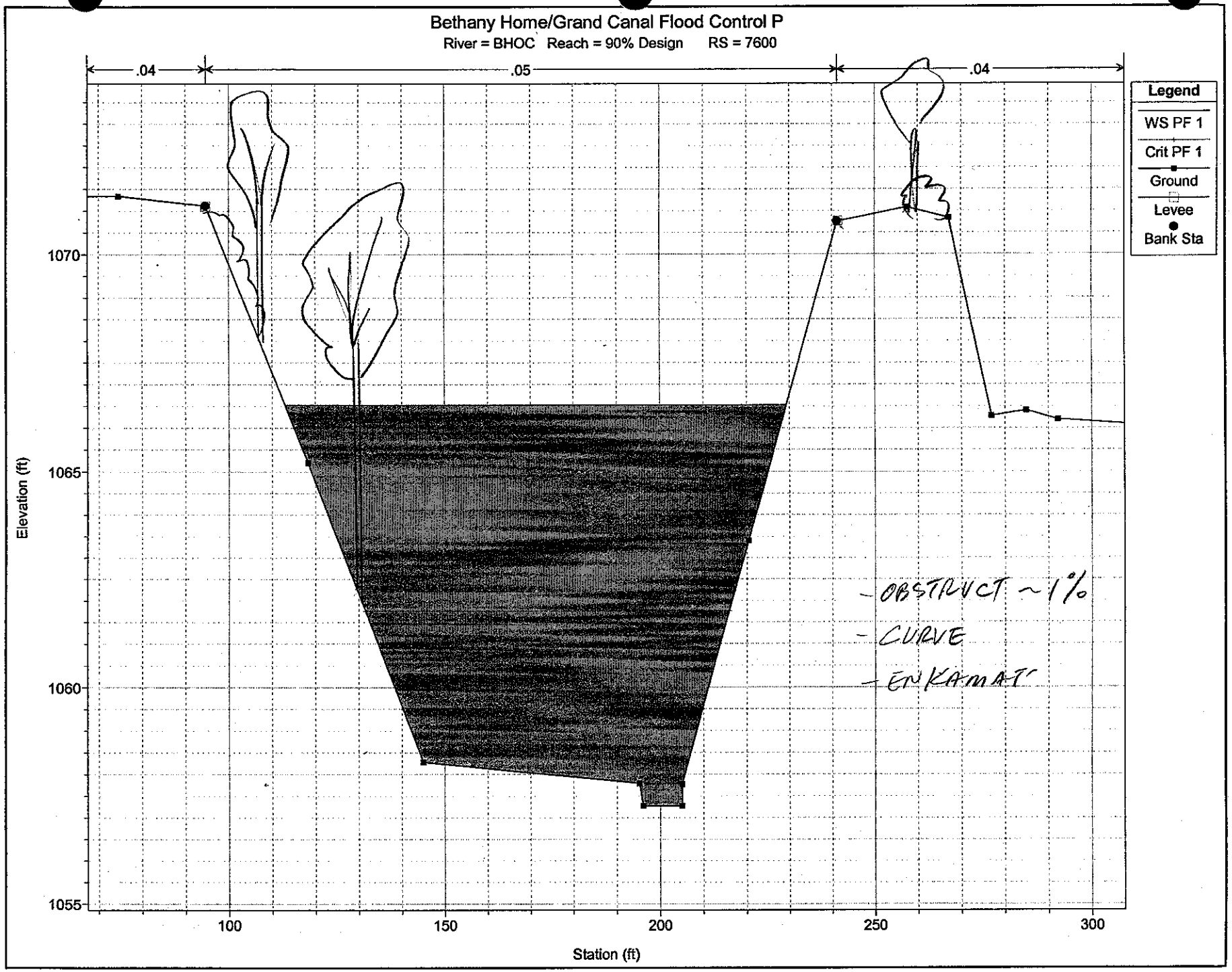
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



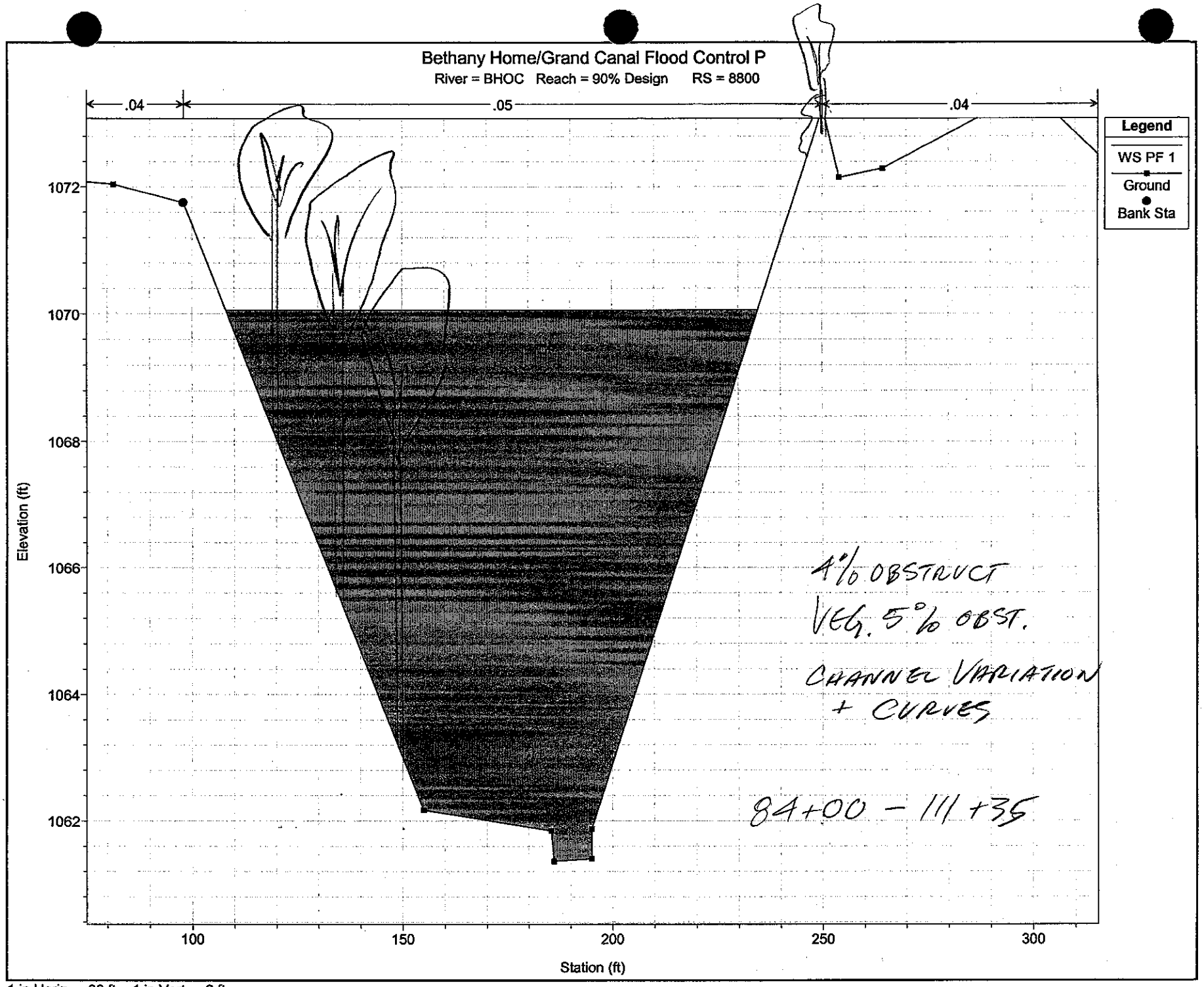
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



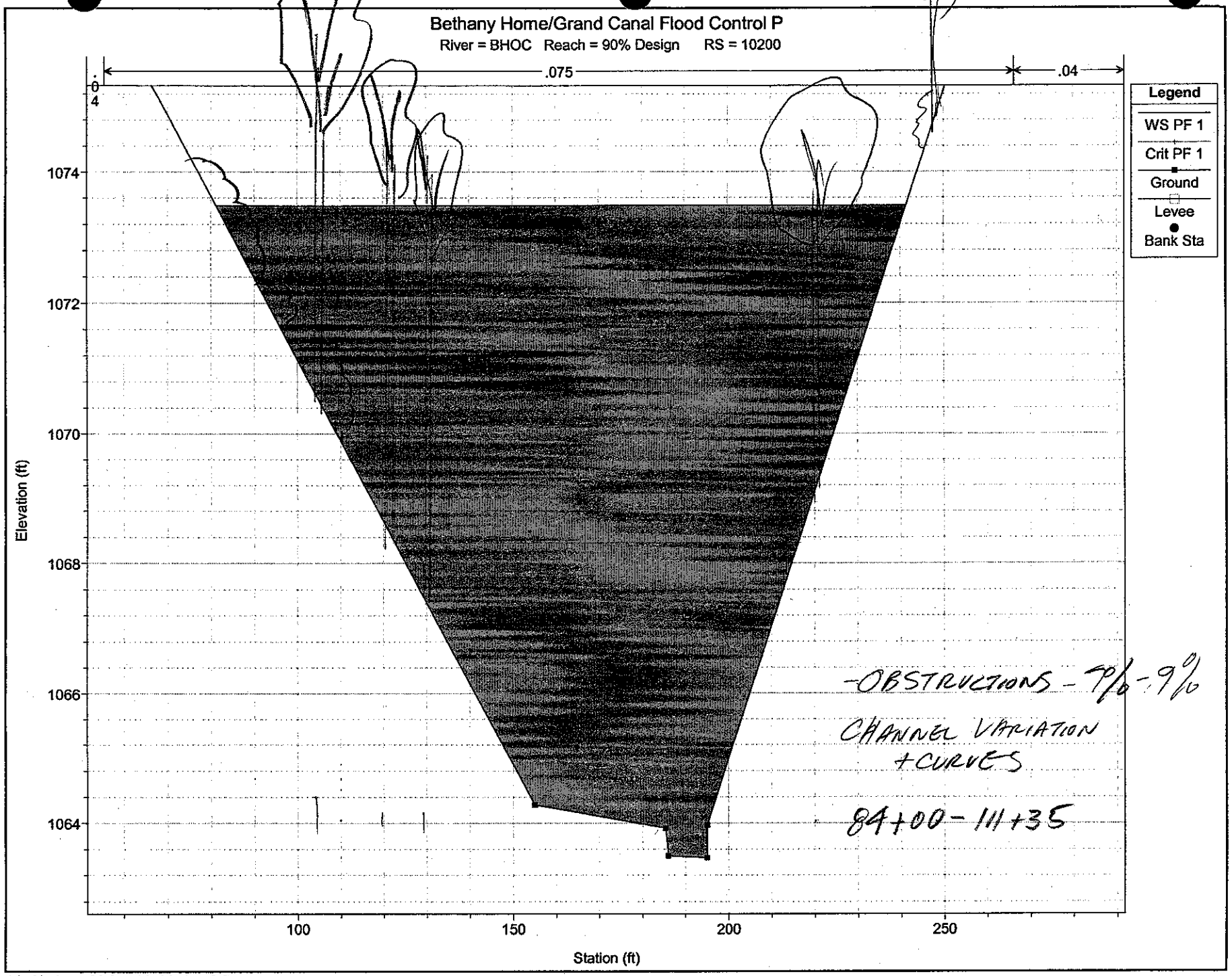
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



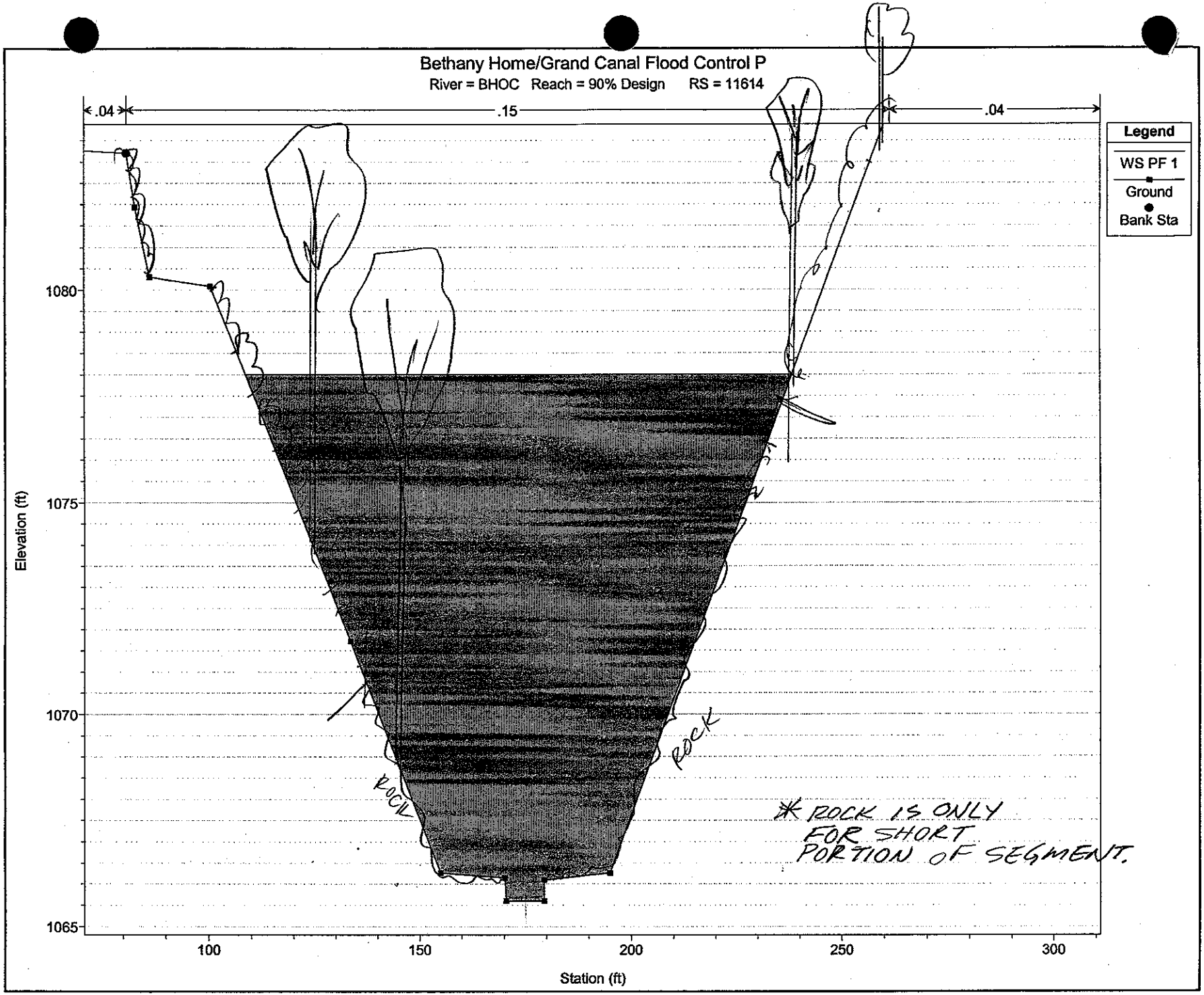
1 in Horiz. = 30 ft 1 in Vert. = 3 ft



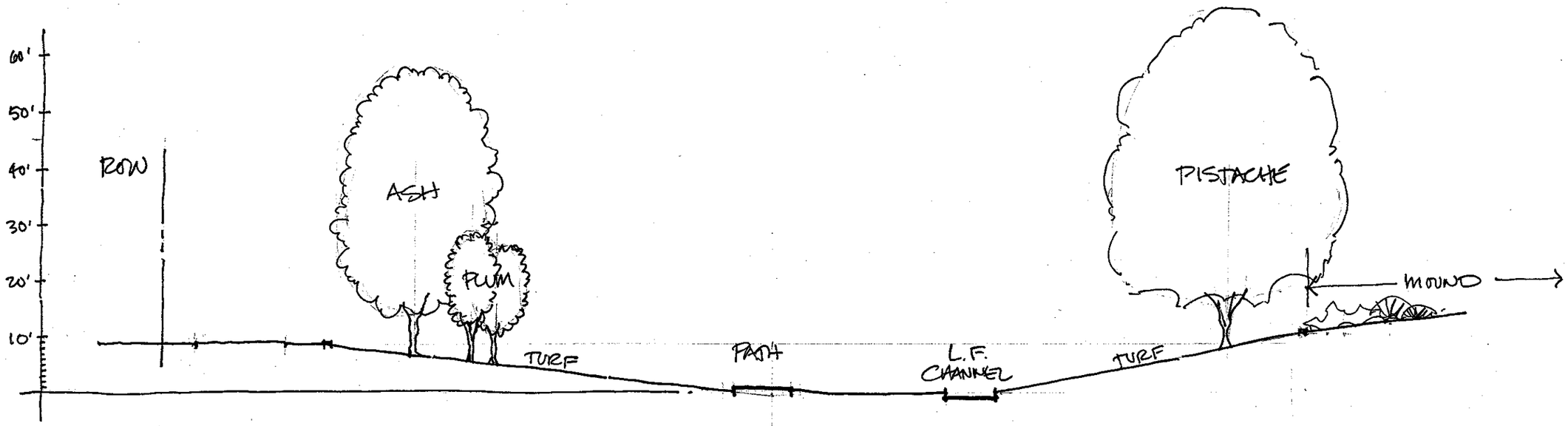
1 in Horiz. = 30 ft 1 in Vert. = 2 ft



1 in Horiz. = 30 ft 1 in Vert. = 2 ft



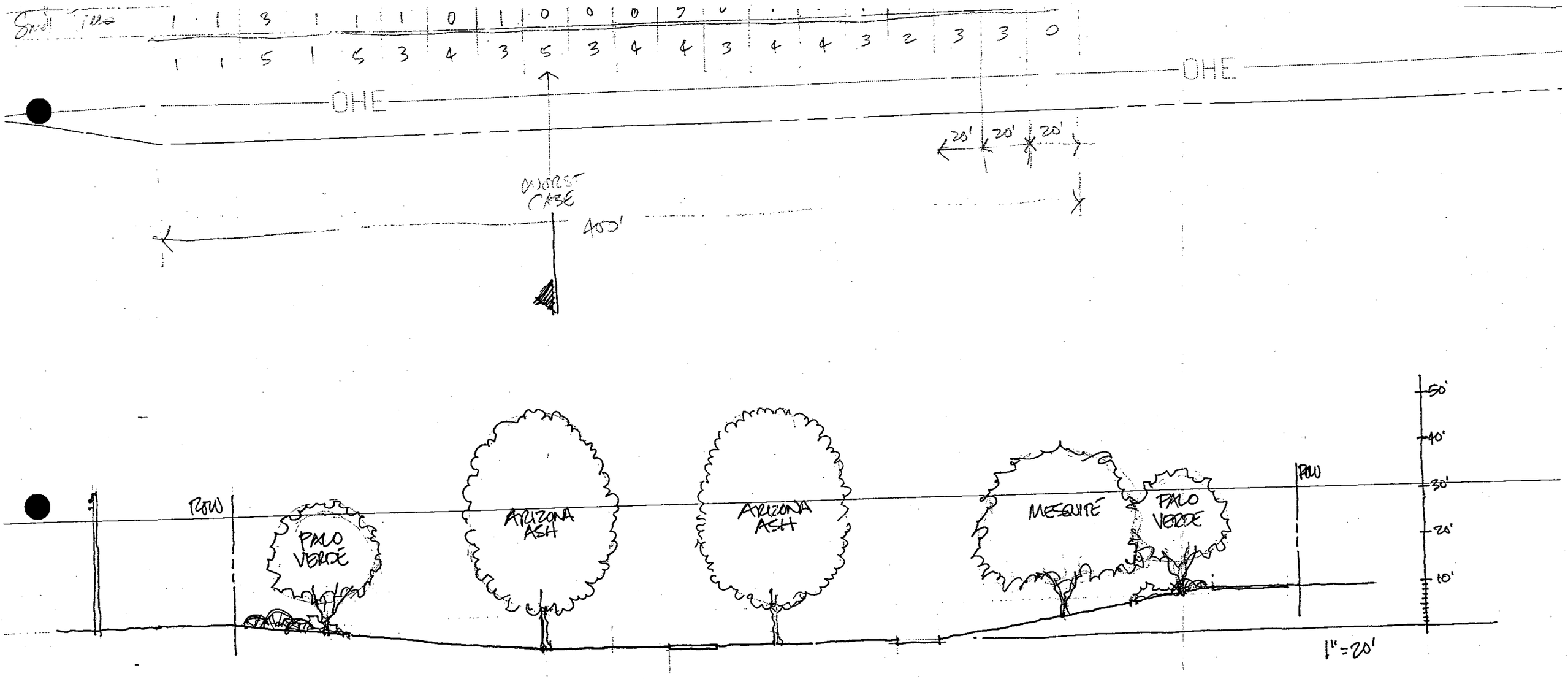
1 in Horiz. = 30 ft 1 in Vert. = 3 ft

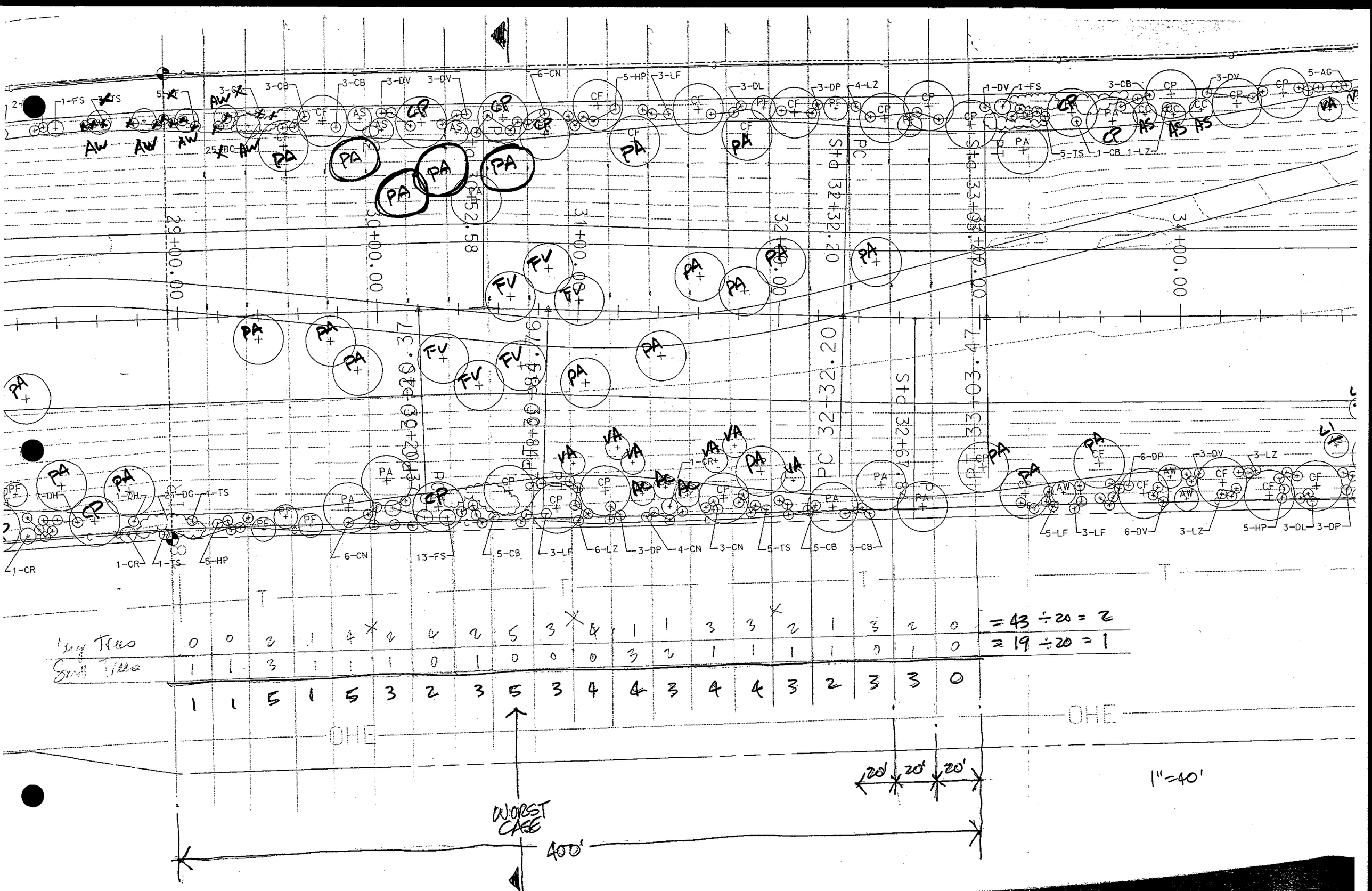


STA 90+70 ±
WELBORN AREA

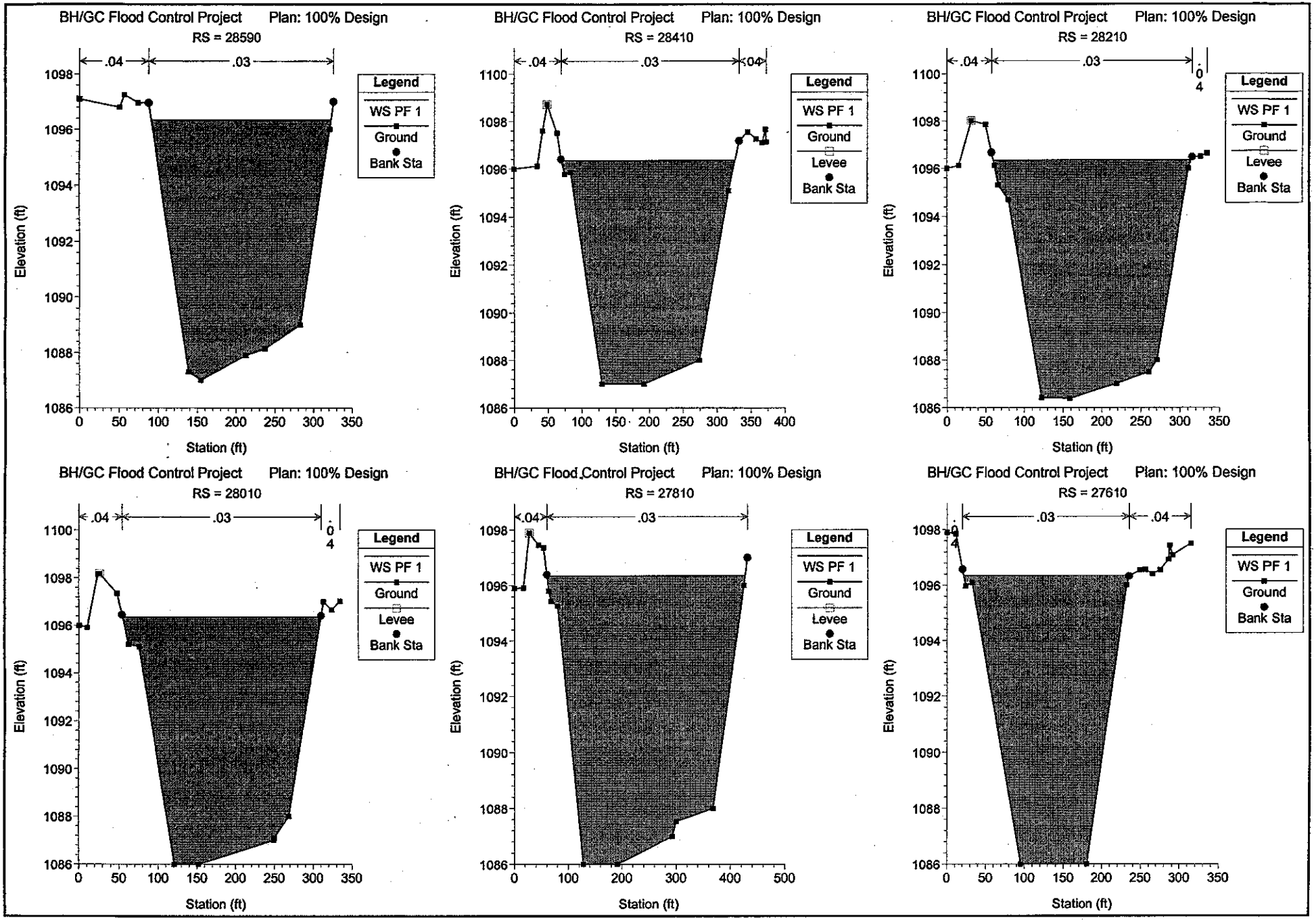
SCALE 1" = 20'

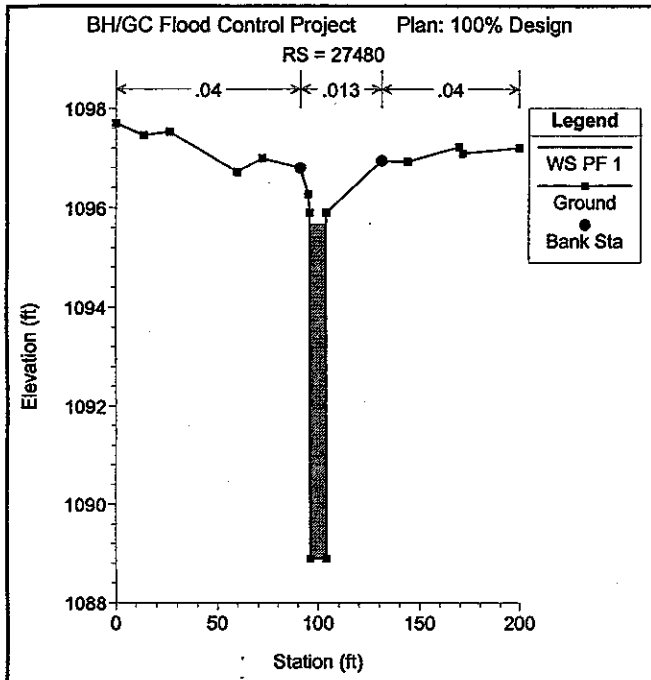
= 43 ÷ 24 = 1.8 = 2
= 11 ÷ 24 = 0.4 = 1
average
WORST CASE
316

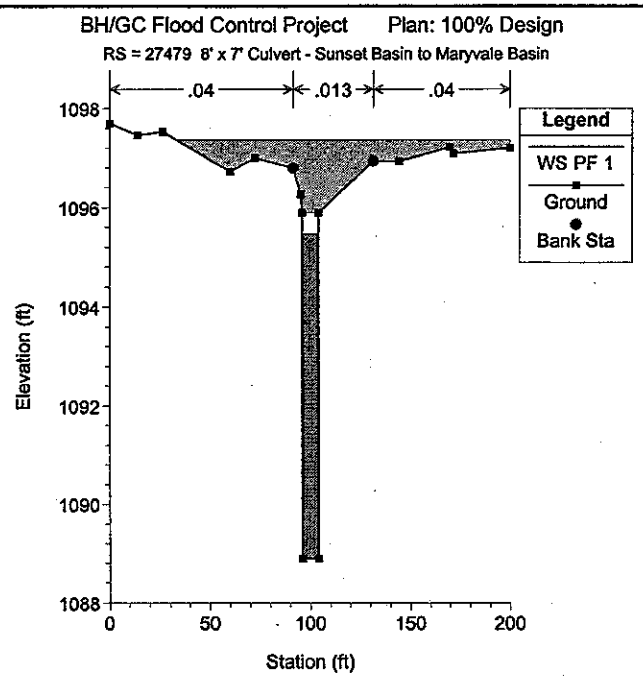

Snell Tree
1 1 3 1 1 1 0 1 0 0 0 7
1 1 5 1 5 3 4 3 5 3 4 4 3 4 4 3 2 3 3 0
OHE
OHE
20' 20' 20'
WORST CASE
400'
ROW
PALO VERDE
ARIZONA ASH
ARIZONA ASH
MESQUITE
PALO VERDE
ROW
50'
40'
30'
20'
10'
1" = 20'

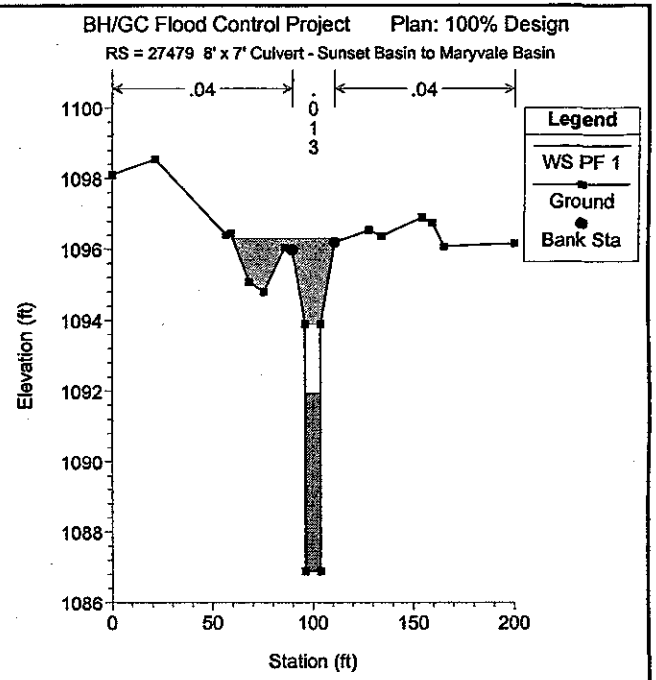

29+00.00
30+00.00
31+00.00
32+00.00
34+00.00
PC Sta 32+32.20
PC 32+32.20
Sta 32+67.76
PT 33+03.47
Sta 33+03.47
30+20.37
30+52.58
31+98.96
OHE
Big Trees 0 0 3 1 4 2 4 2 5 3 4 1 1 3 3 2 1 3 2 0 = 43 ÷ 20 = 2
Small Trees 1 1 3 1 1 1 0 1 0 0 0 3 2 1 1 1 1 0 1 0 = 19 ÷ 20 = 1
1 1 5 1 5 3 2 3 5 3 4 4 3 4 4 3 2 3 3 0
WORST CASE
20' 20' 20'
400'
1"=40'

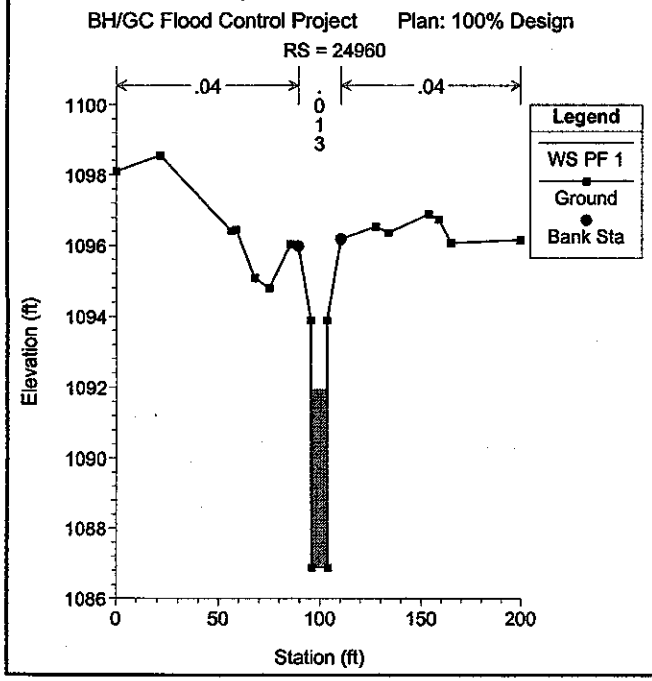
E.3 – CROSS SECTION PLOTS

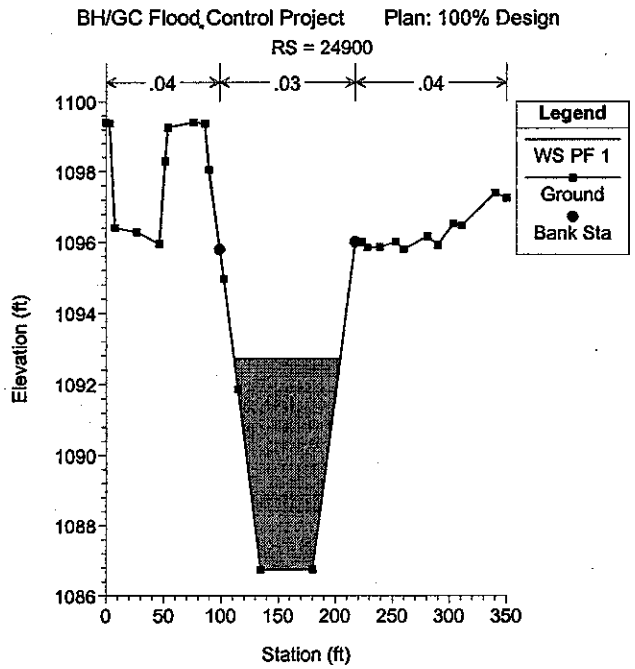

BH/GC Flood Control Project Plan: 100% Design
RS = 28590
.04
.03
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 28410
.04
.03
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 28210
.04
.03
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 28010
.04
.03
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 27810
.04
.03
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 27610
.03
.04
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

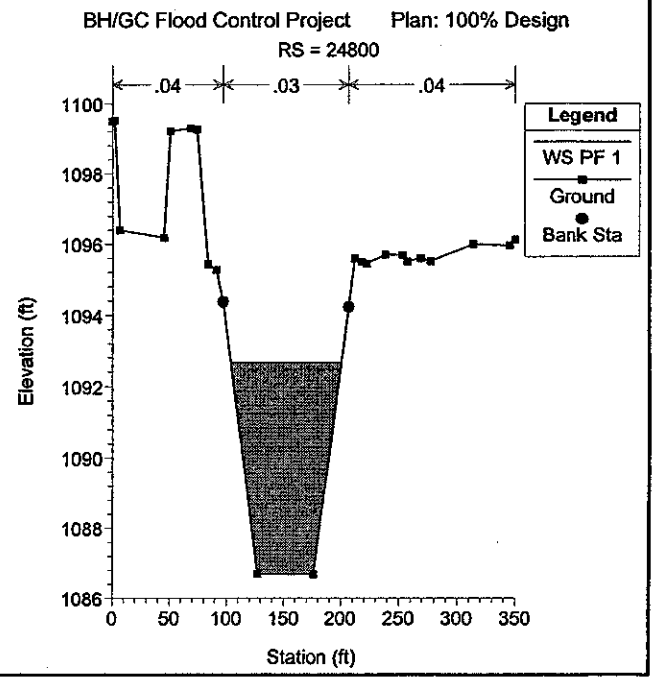

BH/GC Flood Control Project Plan: 100% Design
RS = 27480
.04
.013
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

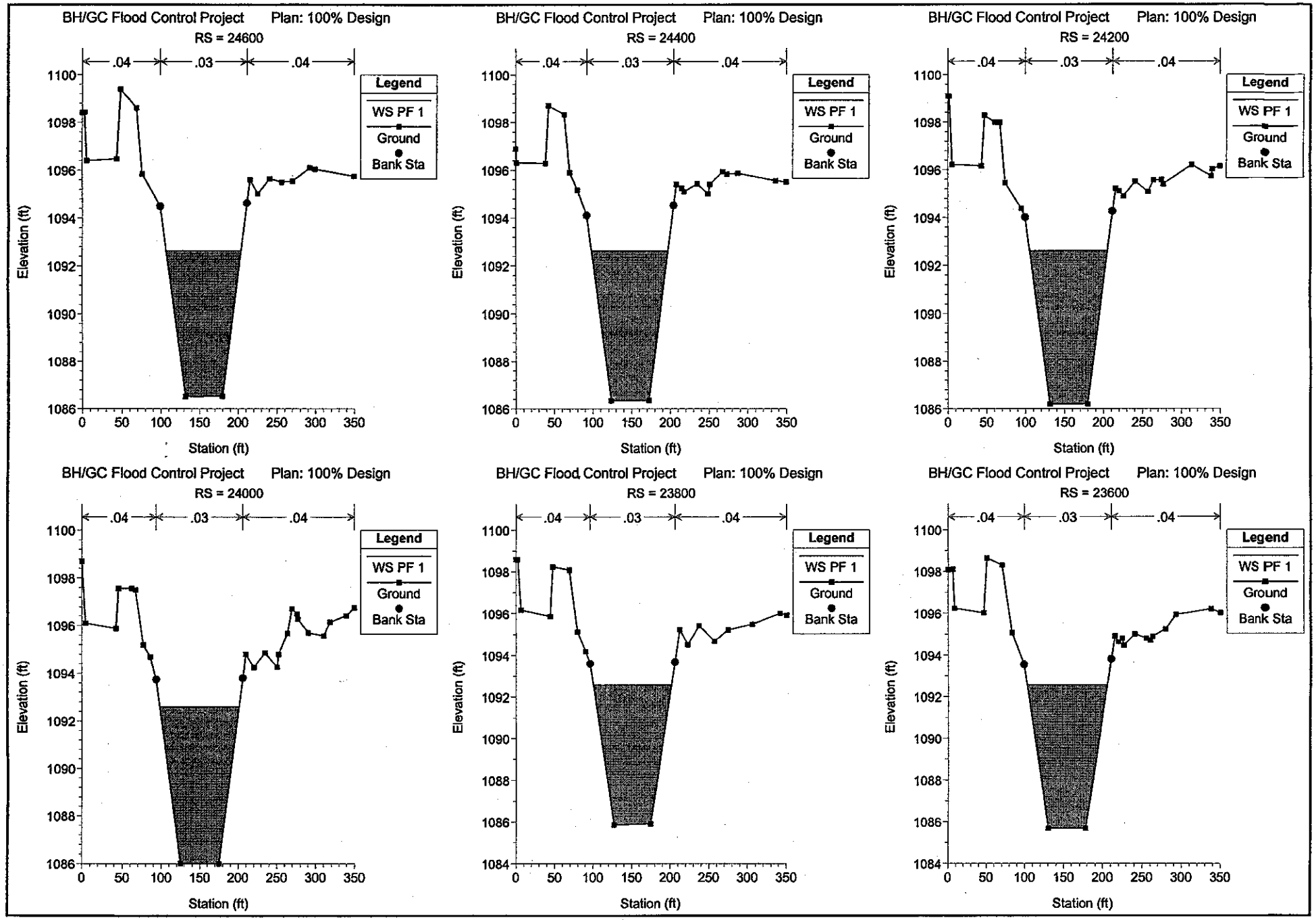

BH/GC Flood Control Project Plan: 100% Design
RS = 27479 8' x 7' Culvert - Sunset Basin to Maryvale Basin
.04
.013
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

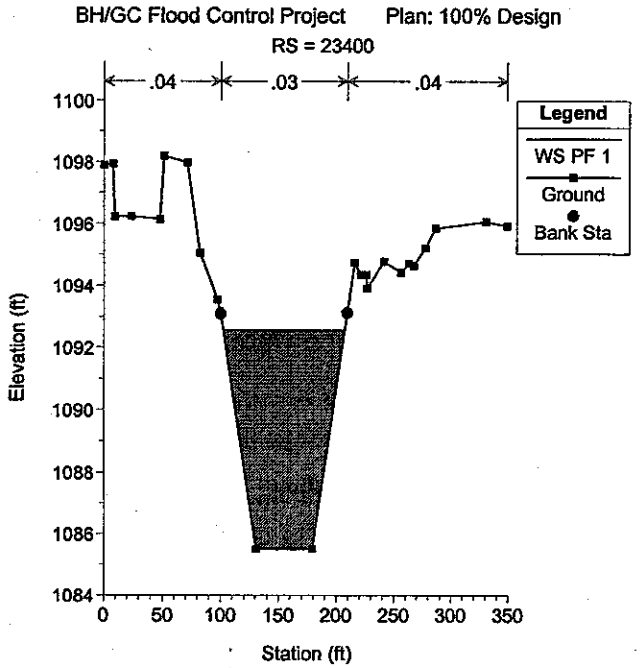

BH/GC Flood Control Project Plan: 100% Design
RS = 27479 8' x 7' Culvert - Sunset Basin to Maryvale Basin
.04
.013
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

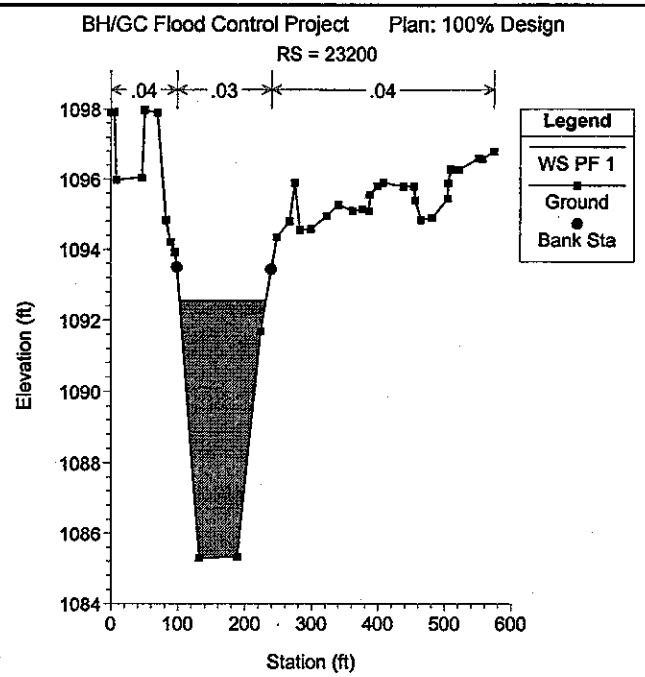

BH/GC Flood Control Project Plan: 100% Design
RS = 24960
.04
.013
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

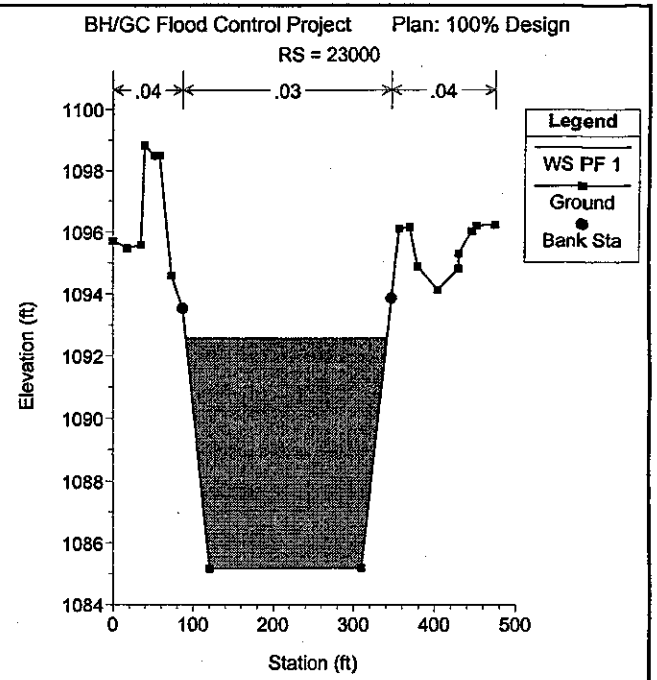

BH/GC Flood Control Project Plan: 100% Design
RS = 24900
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

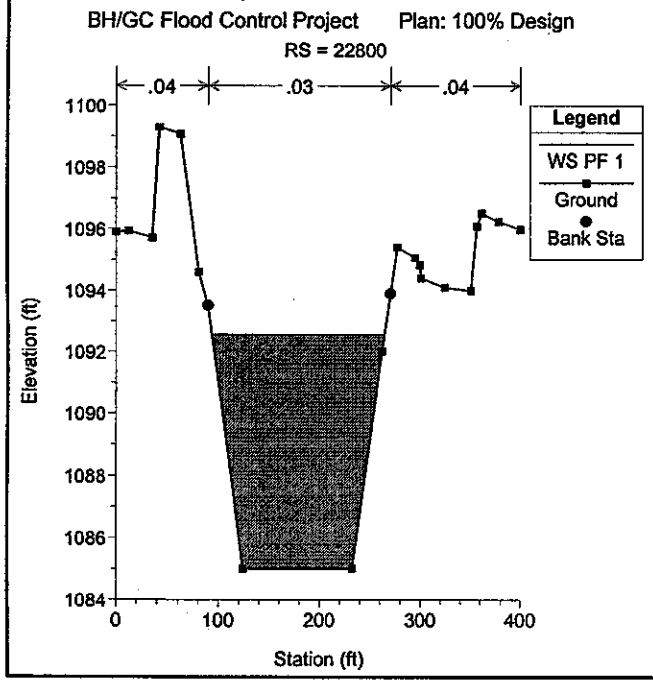

BH/GC Flood Control Project Plan: 100% Design
RS = 24800
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

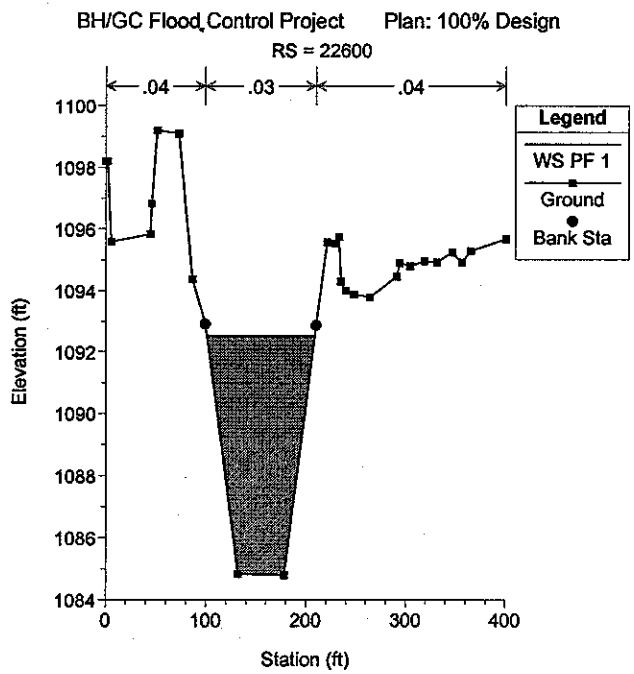

BH/GC Flood Control Project Plan: 100% Design
RS = 24600
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 24400
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 24200
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 24000
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 23800
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 23600
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

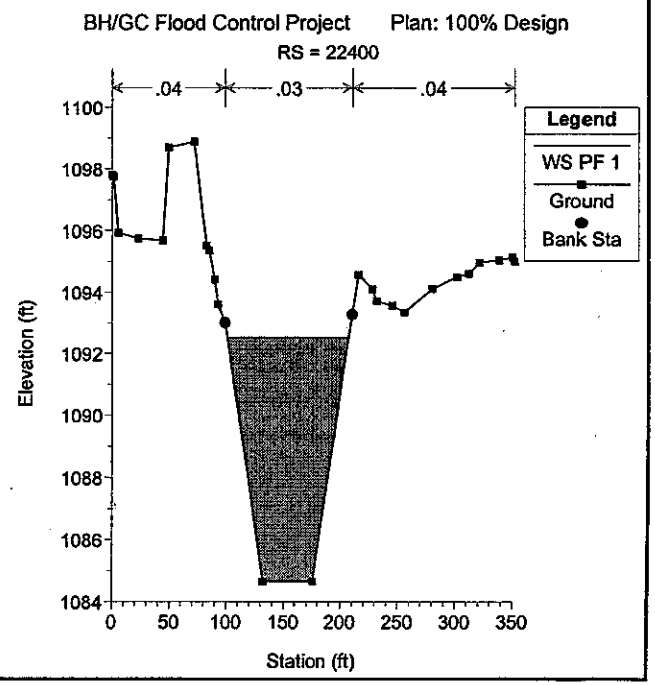

BH/GC Flood Control Project Plan: 100% Design
RS = 23400
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

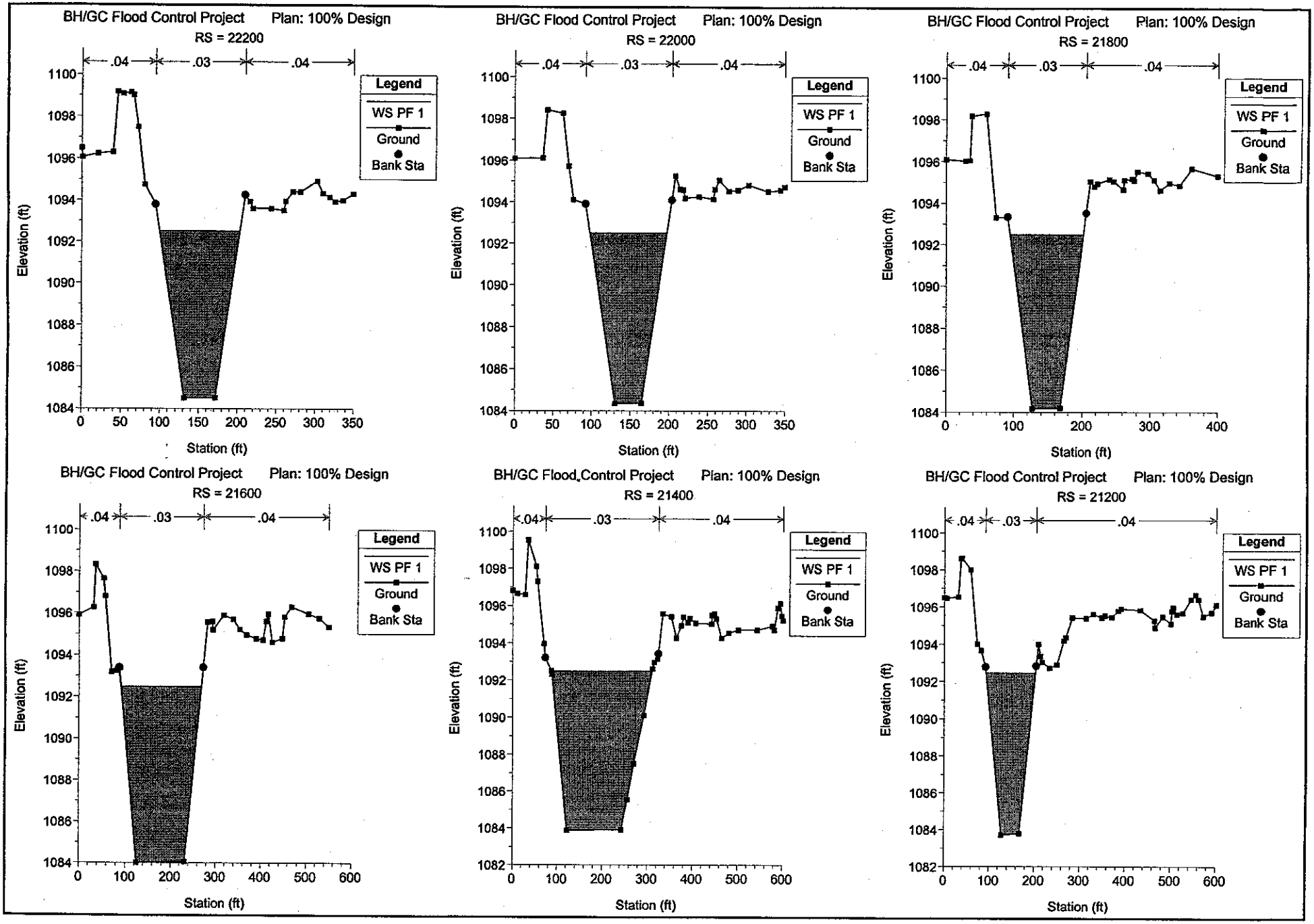

BH/GC Flood Control Project Plan: 100% Design
RS = 23200
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

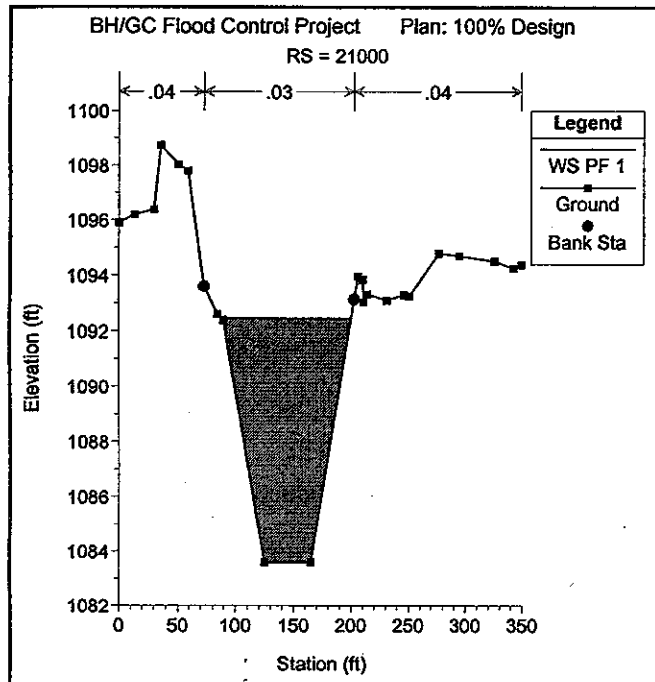

BH/GC Flood Control Project Plan: 100% Design
RS = 23000
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

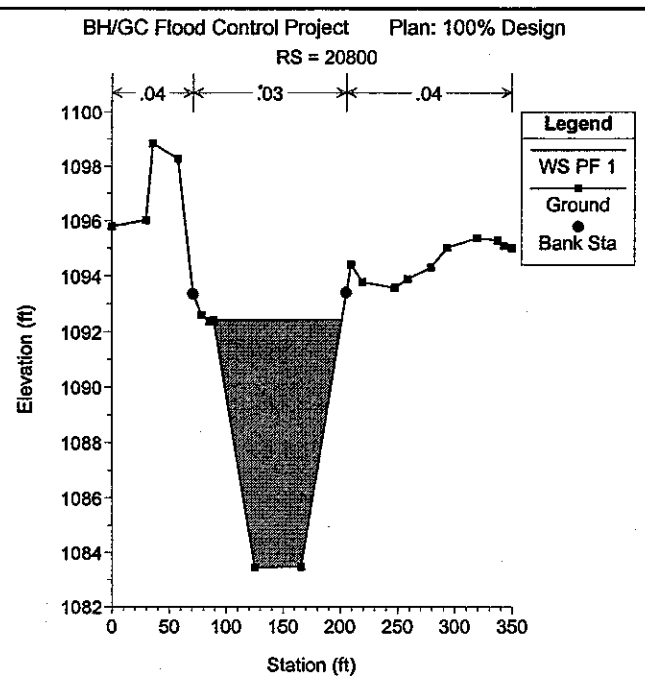

BH/GC Flood Control Project Plan: 100% Design
RS = 22800
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

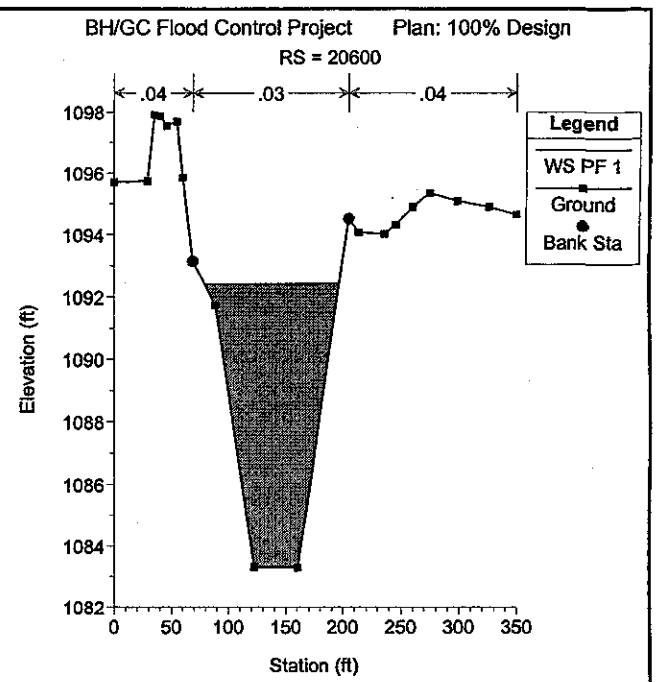

BH/GC Flood Control Project Plan: 100% Design
RS = 22600
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

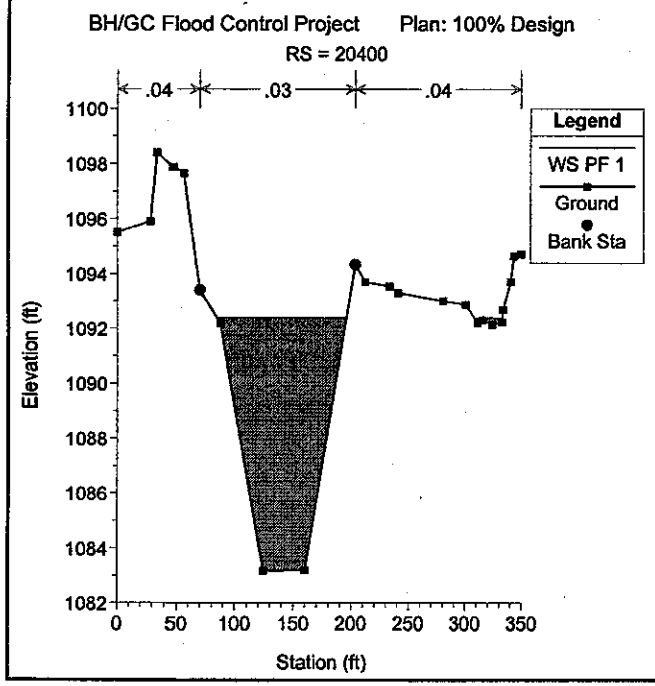

BH/GC Flood Control Project Plan: 100% Design
RS = 22400
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

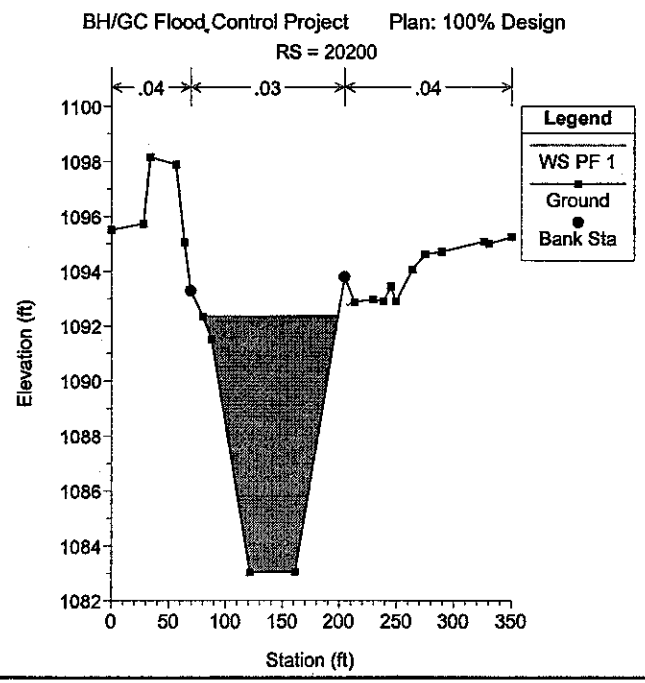

BH/GC Flood Control Project Plan: 100% Design
RS = 22200
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 22000
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 21800
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 21600
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 21400
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 21200
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

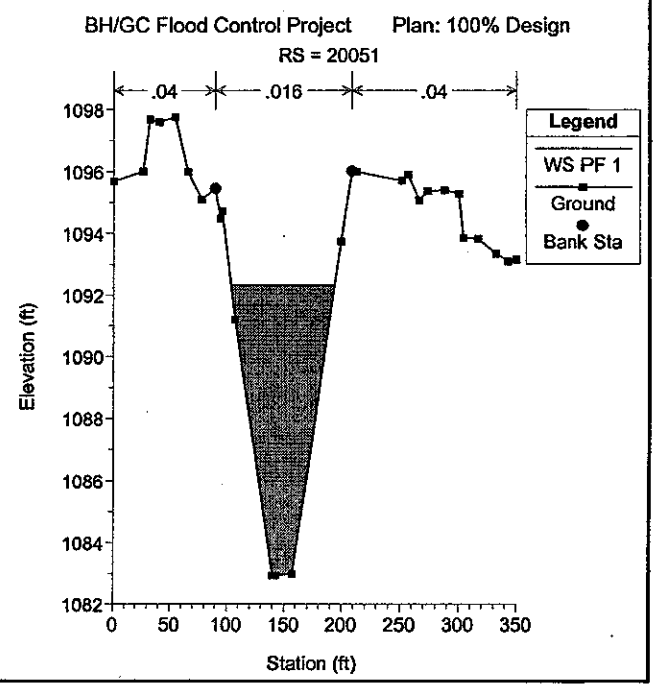

BH/GC Flood Control Project Plan: 100% Design
RS = 21000
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

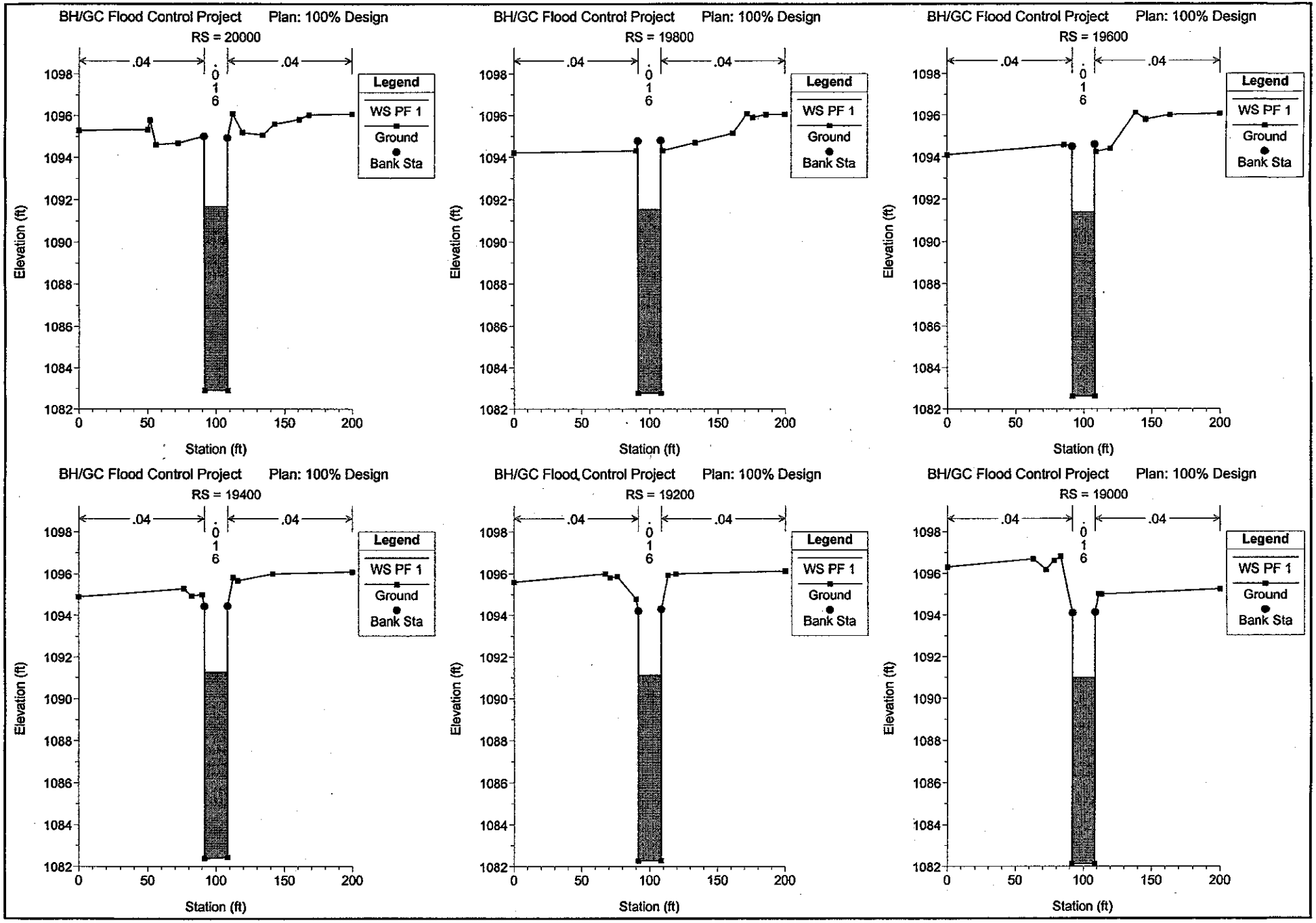

BH/GC Flood Control Project Plan: 100% Design
RS = 20800
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

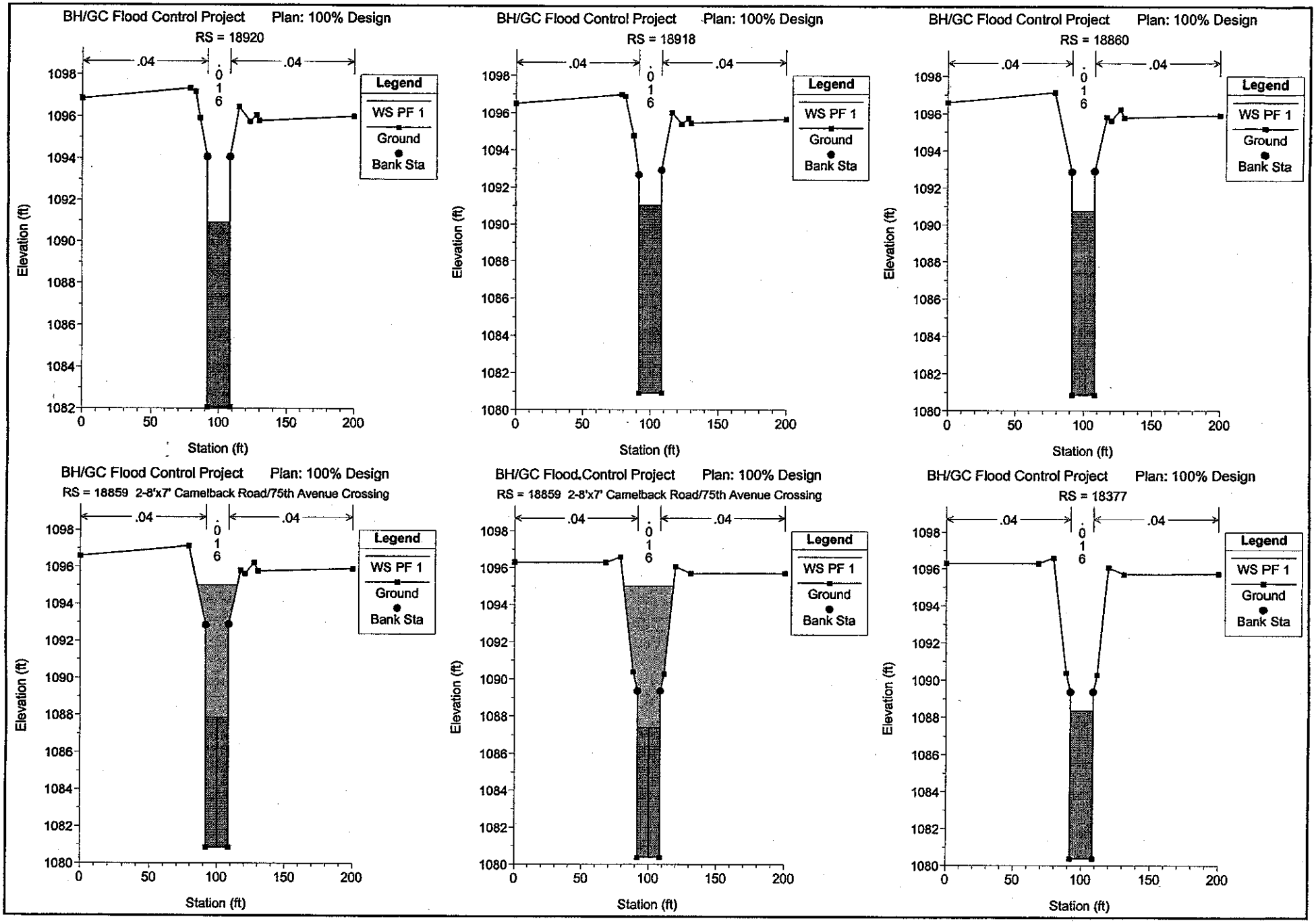

BH/GC Flood Control Project Plan: 100% Design
RS = 20600
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

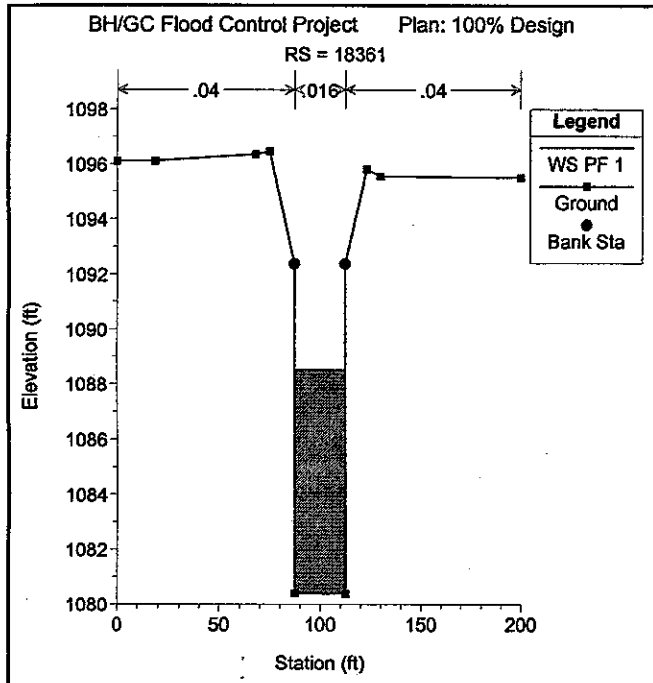

BH/GC Flood Control Project Plan: 100% Design
RS = 20400
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

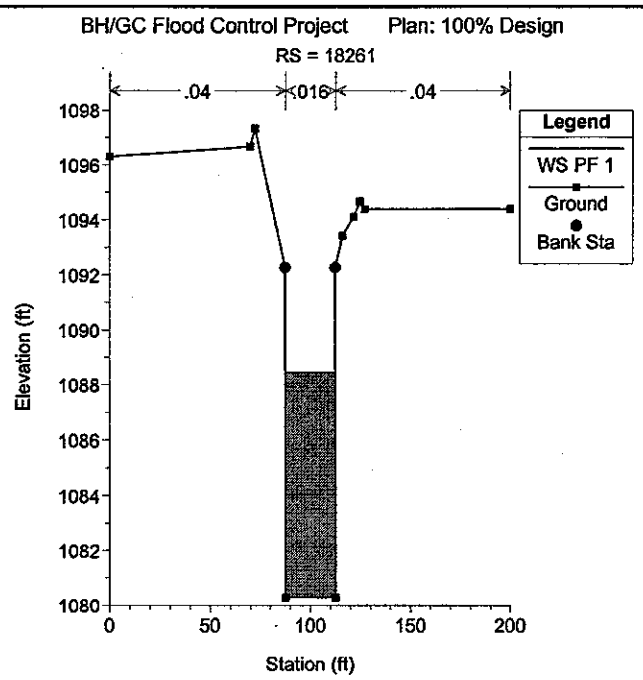

BH/GC Flood Control Project Plan: 100% Design
RS = 20200
.04
.03
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

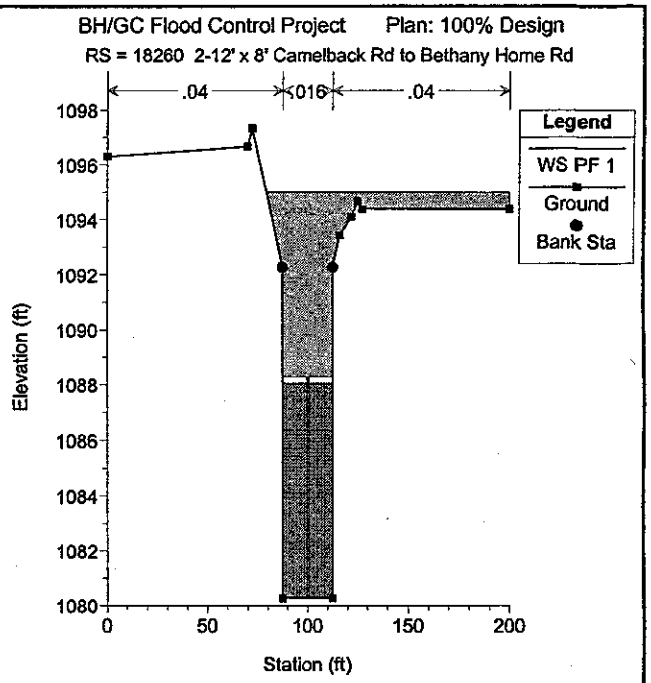

BH/GC Flood Control Project Plan: 100% Design
RS = 20051
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

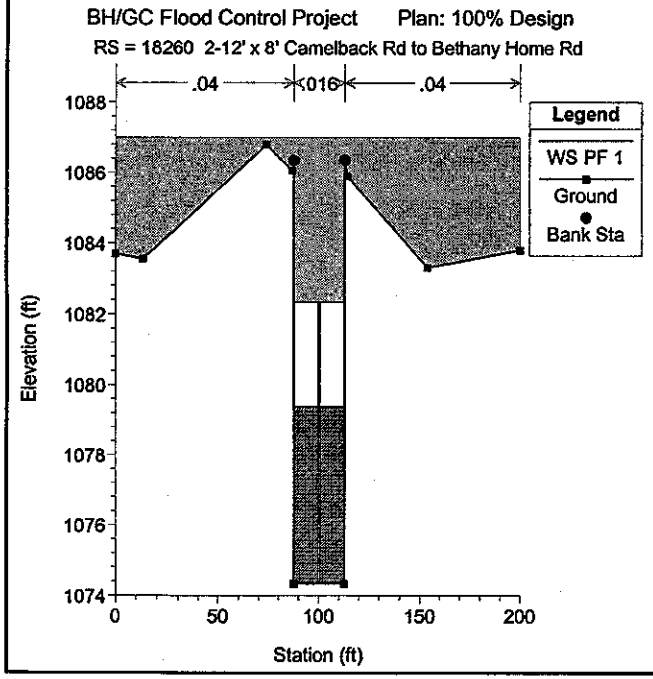

BH/GC Flood Control Project Plan: 100% Design
RS = 20000
BH/GC Flood Control Project Plan: 100% Design
RS = 19800
BH/GC Flood Control Project Plan: 100% Design
RS = 19600
BH/GC Flood Control Project Plan: 100% Design
RS = 19400
BH/GC Flood Control Project Plan: 100% Design
RS = 19200
BH/GC Flood Control Project Plan: 100% Design
RS = 19000
.04
.016
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1082
1084
1086
1088
1090
1092
1094
1096
1098
0
50
100
150
200

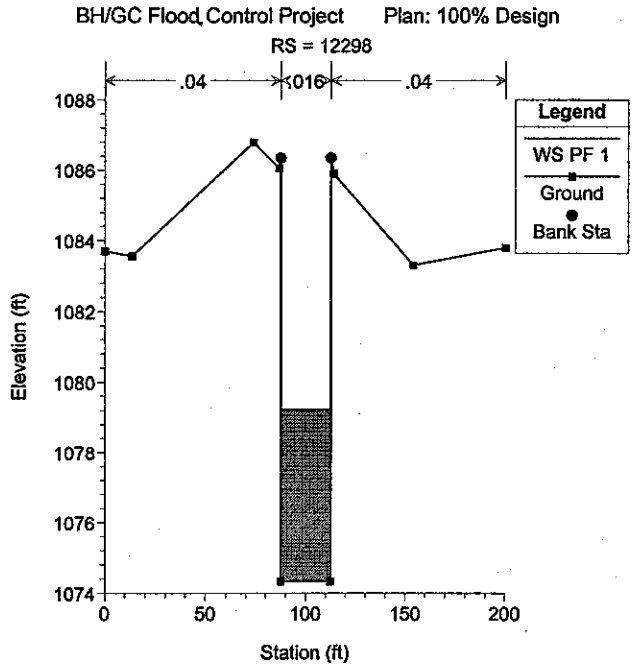

BH/GC Flood Control Project Plan: 100% Design
RS = 18920
BH/GC Flood Control Project Plan: 100% Design
RS = 18918
BH/GC Flood Control Project Plan: 100% Design
RS = 18860
BH/GC Flood Control Project Plan: 100% Design
RS = 18859 2-8'x7' Camelback Road/75th Avenue Crossing
BH/GC Flood Control Project Plan: 100% Design
RS = 18859 2-8'x7' Camelback Road/75th Avenue Crossing
BH/GC Flood Control Project Plan: 100% Design
RS = 18377
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
1098
1096
1094
1092
1090
1088
1086
1084
1082
1080
0
50
100
150
200

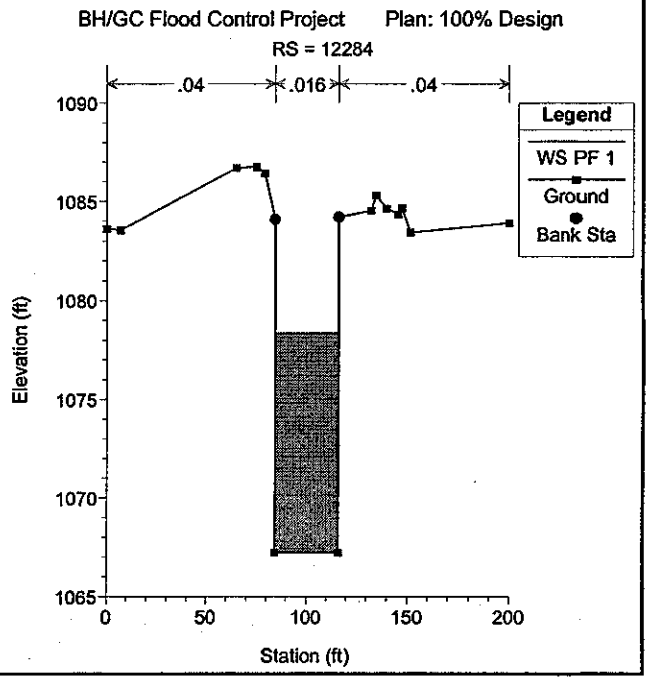

BH/GC Flood Control Project Plan: 100% Design
RS = 18361
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

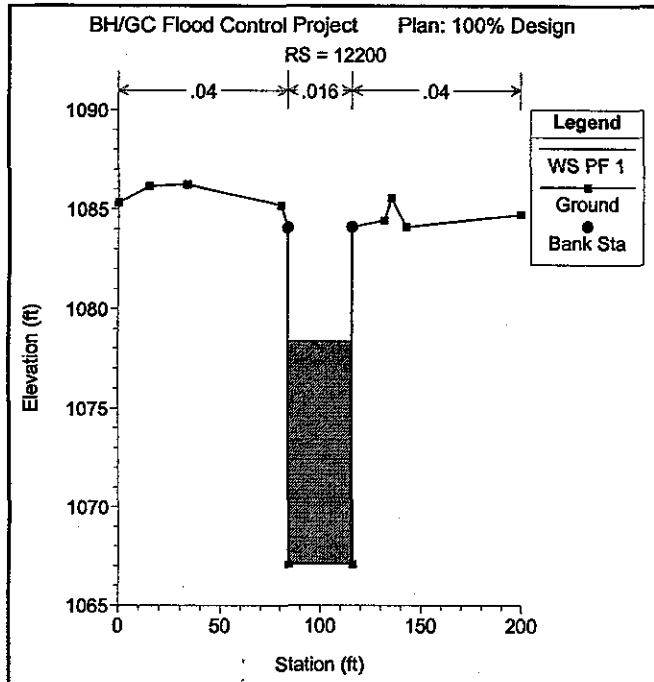

BH/GC Flood Control Project Plan: 100% Design
RS = 18261
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

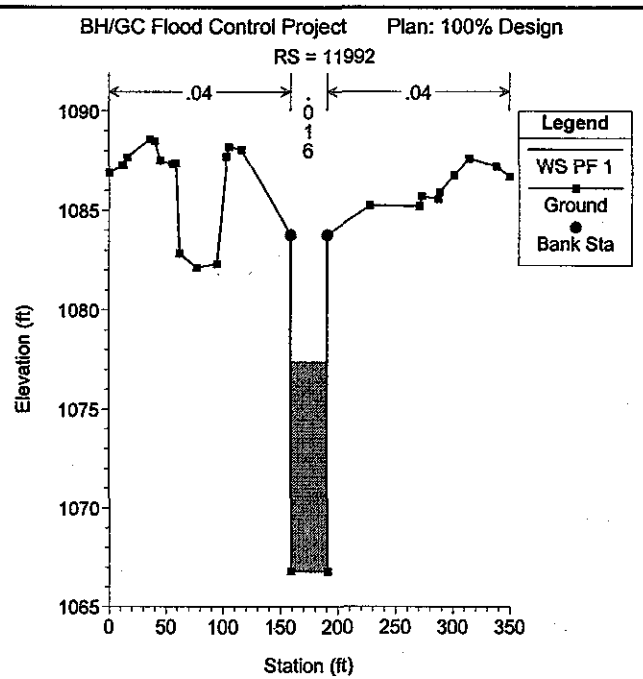

BH/GC Flood Control Project Plan: 100% Design
RS = 18260 2-12' x 8' Camelback Rd to Bethany Home Rd
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

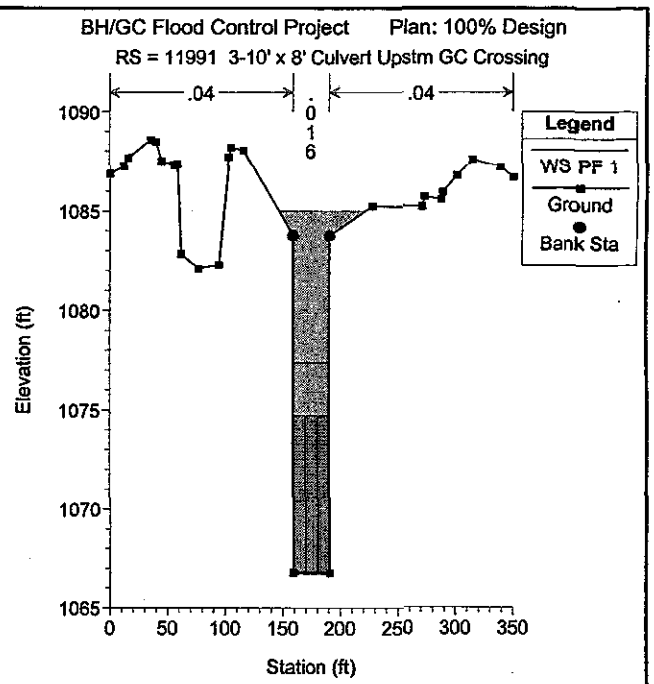

BH/GC Flood Control Project Plan: 100% Design
RS = 18260 2-12' x 8' Camelback Rd to Bethany Home Rd
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

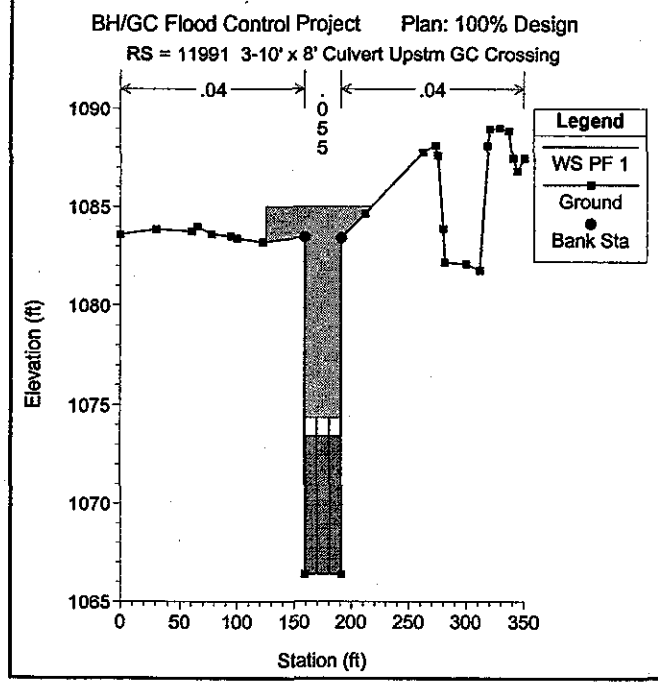

BH/GC Flood Control Project Plan: 100% Design
RS = 12298
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

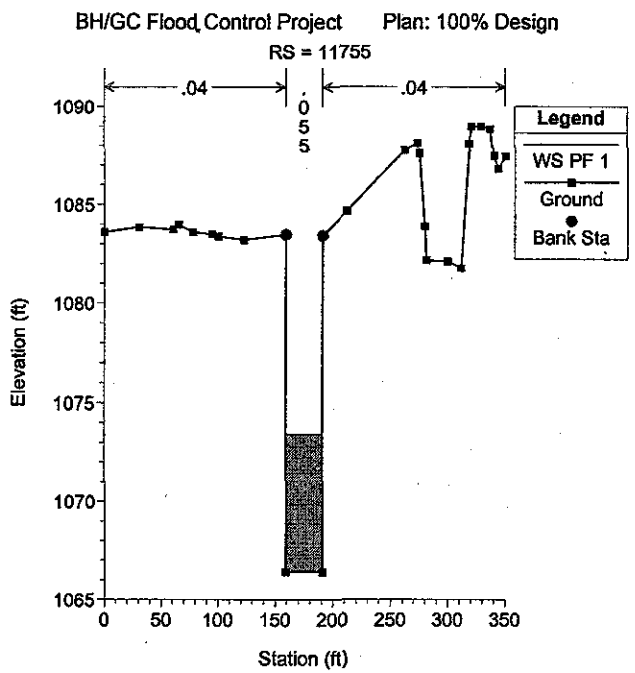

BH/GC Flood Control Project Plan: 100% Design
RS = 12284
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

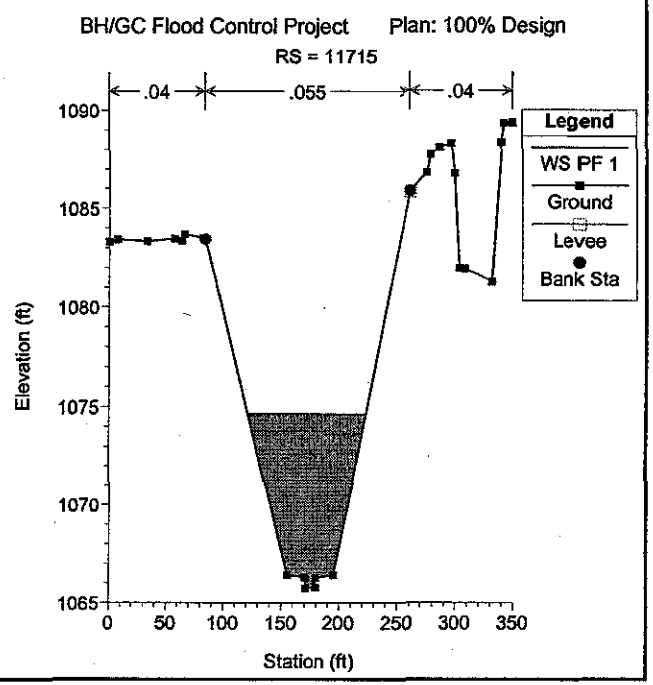

BH/GC Flood Control Project Plan: 100% Design
RS = 12200
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

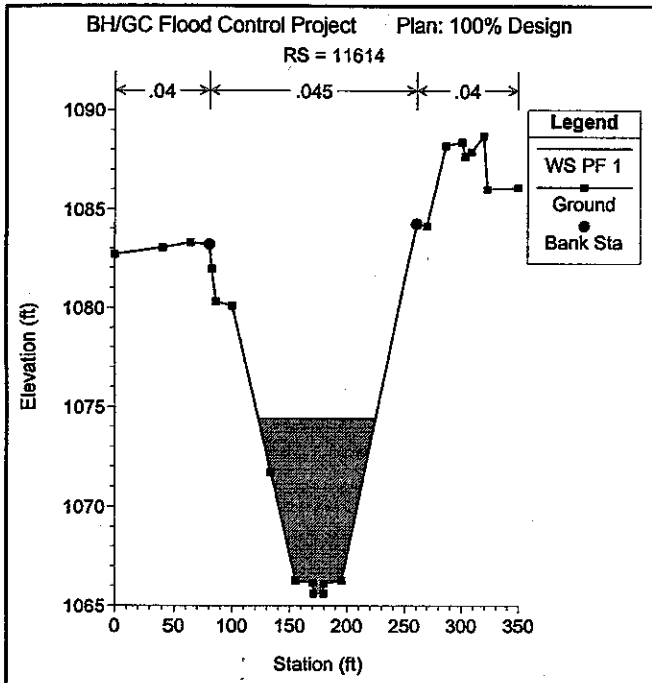

BH/GC Flood Control Project Plan: 100% Design
RS = 11992
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

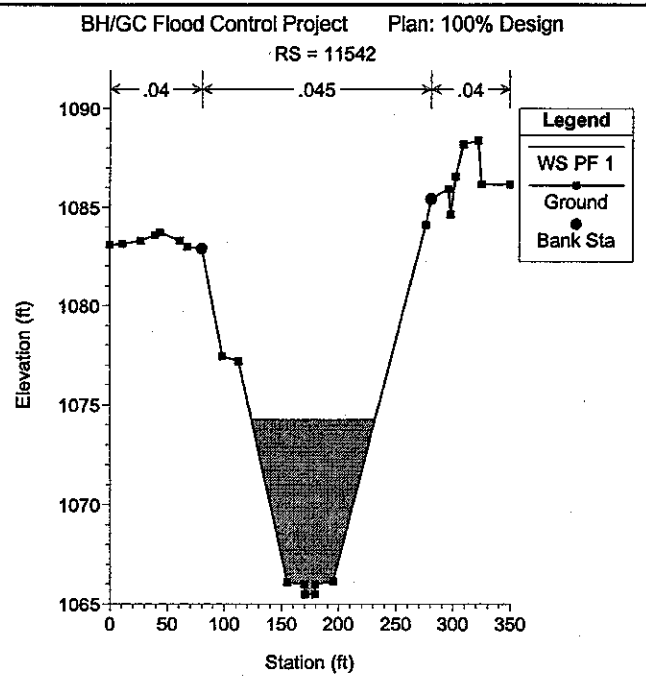

BH/GC Flood Control Project Plan: 100% Design
RS = 11991 3-10' x 8' Culvert Upstm GC Crossing
.04
.016
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

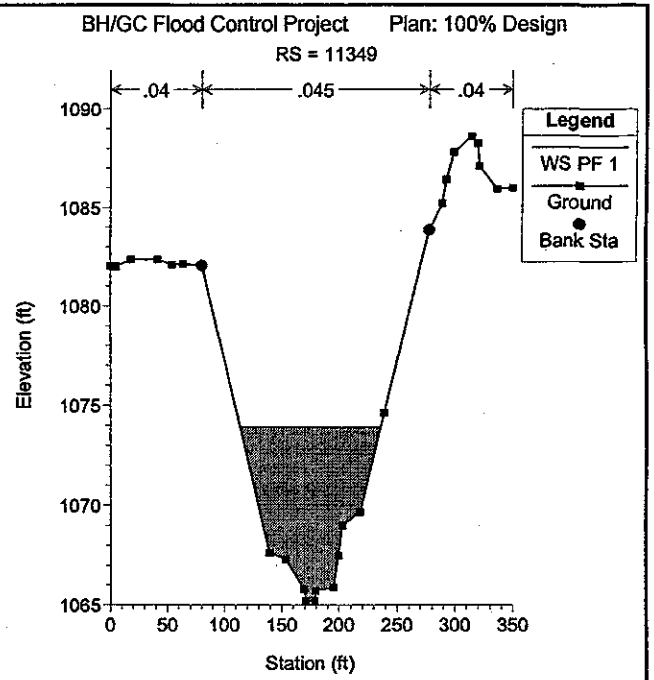

BH/GC Flood Control Project Plan: 100% Design
RS = 11991 3-10' x 8' Culvert Upstm GC Crossing
.04
.055
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

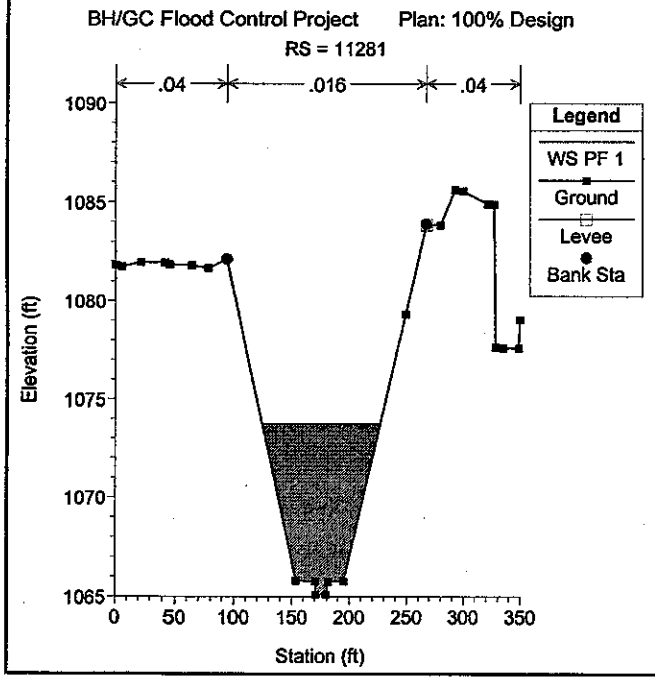

BH/GC Flood Control Project Plan: 100% Design
RS = 11755
.04
.055
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

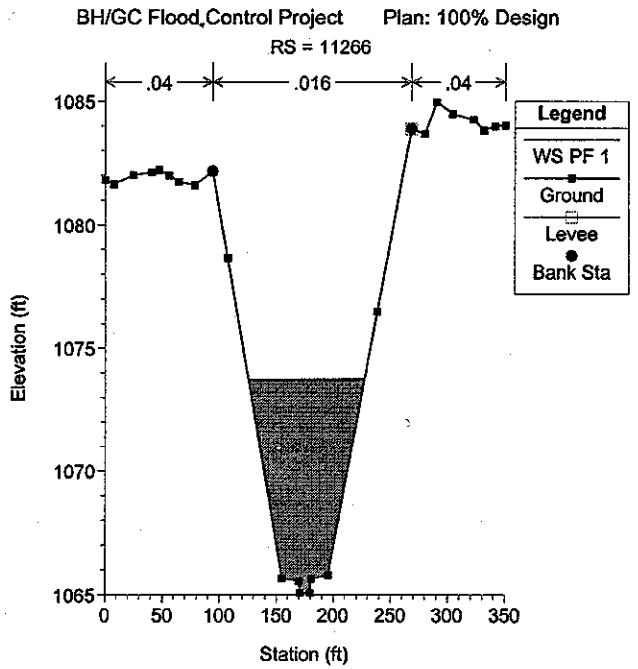

BH/GC Flood Control Project Plan: 100% Design
RS = 11715
.04
.055
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

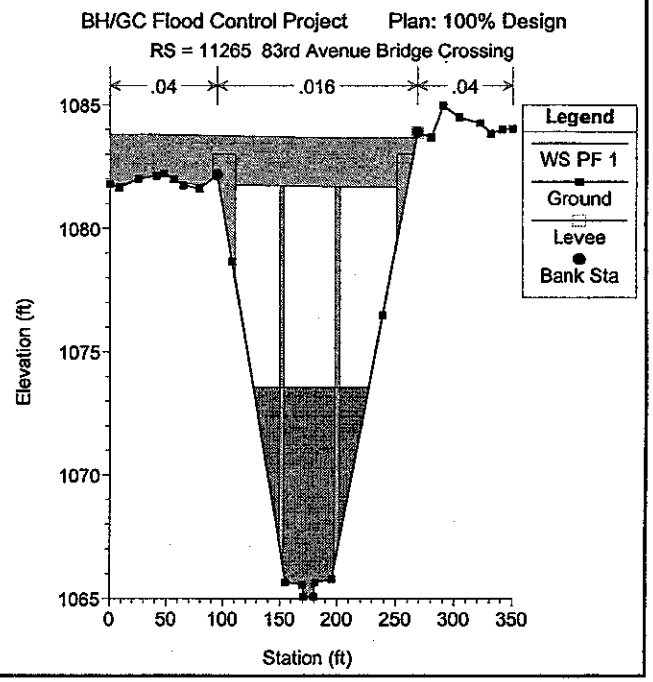

BH/GC Flood Control Project Plan: 100% Design
RS = 11614
.04
.045
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

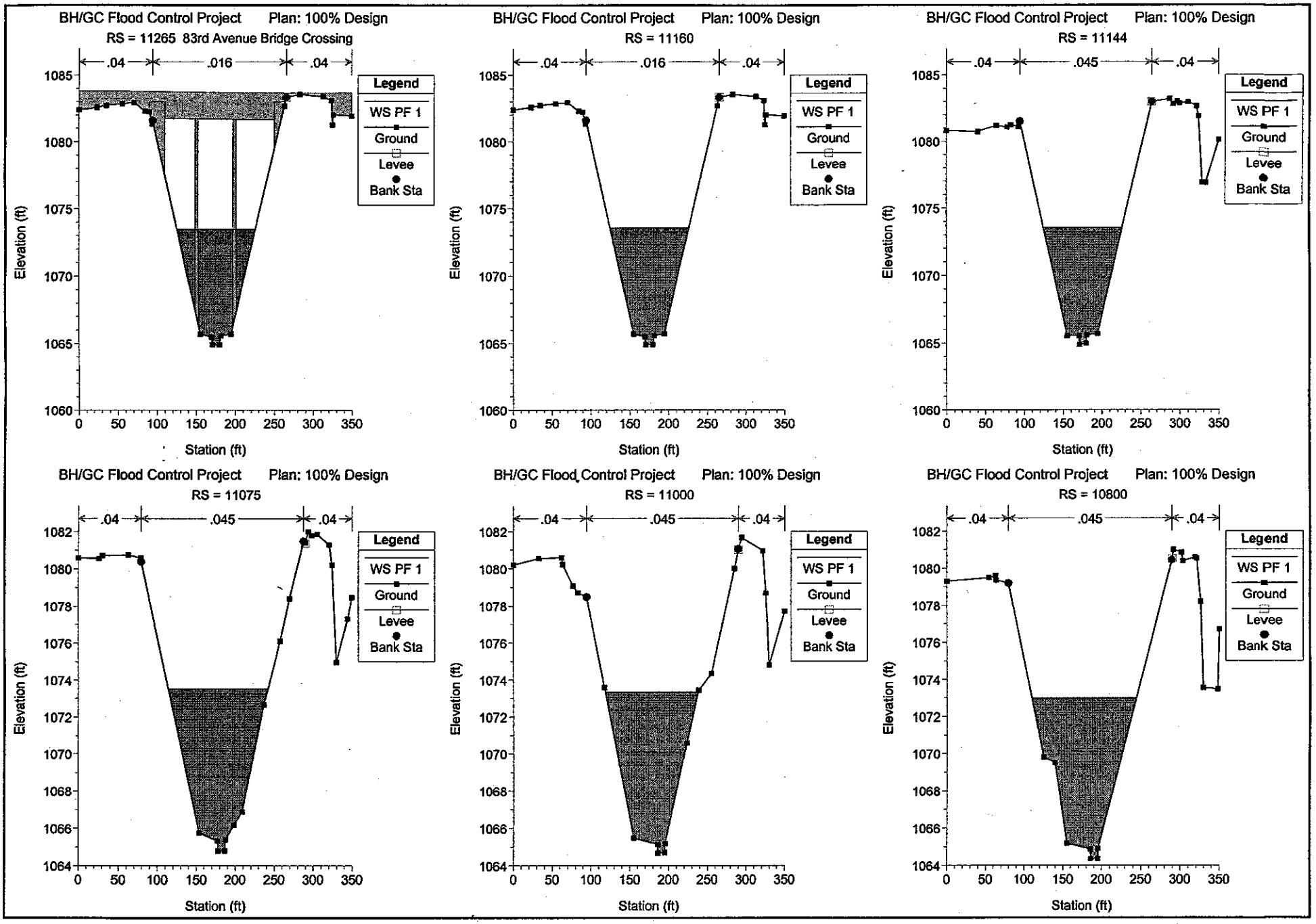

BH/GC Flood Control Project Plan: 100% Design
RS = 11542
.04
.045
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

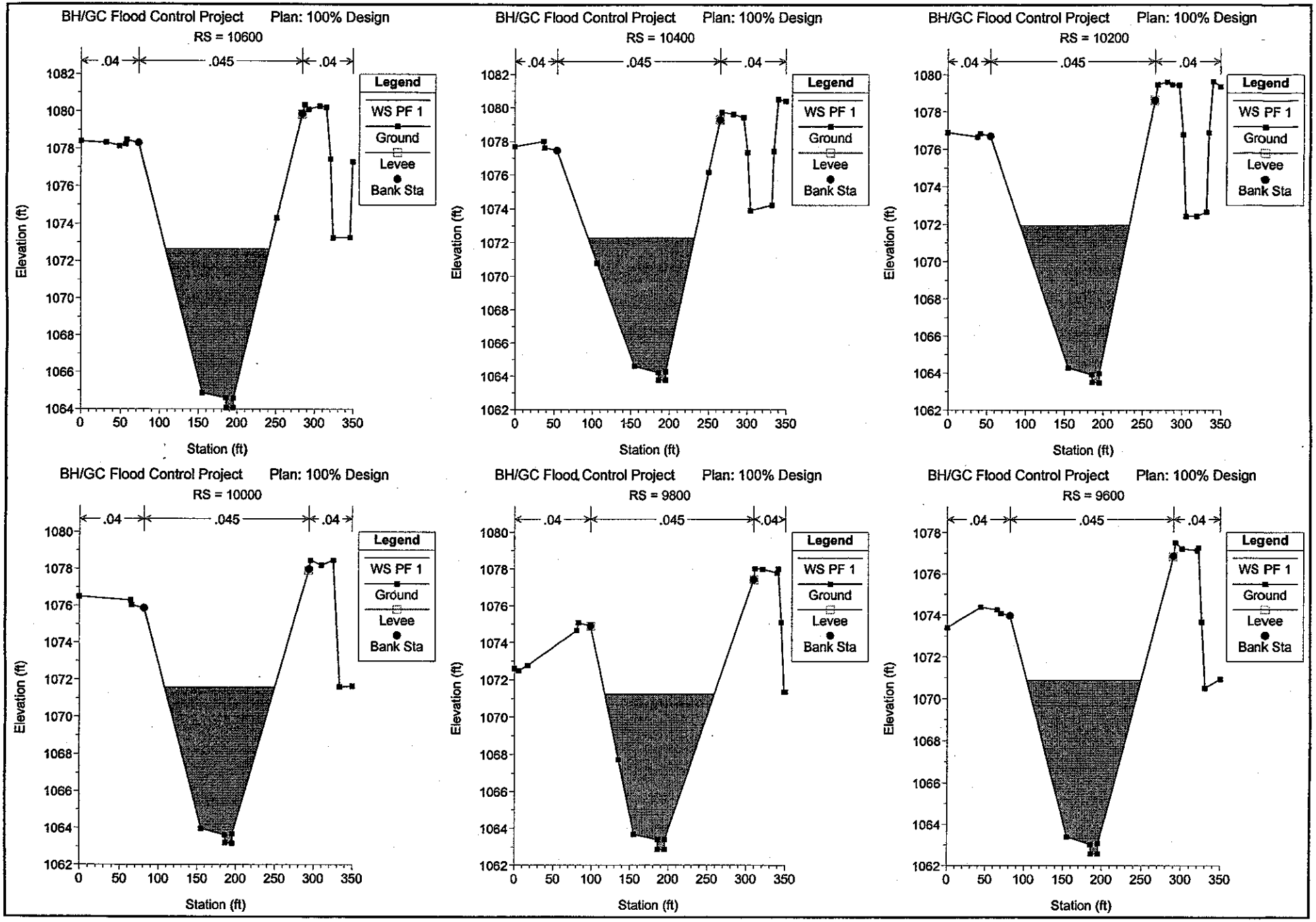

BH/GC Flood Control Project Plan: 100% Design
RS = 11349
.04
.045
.04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

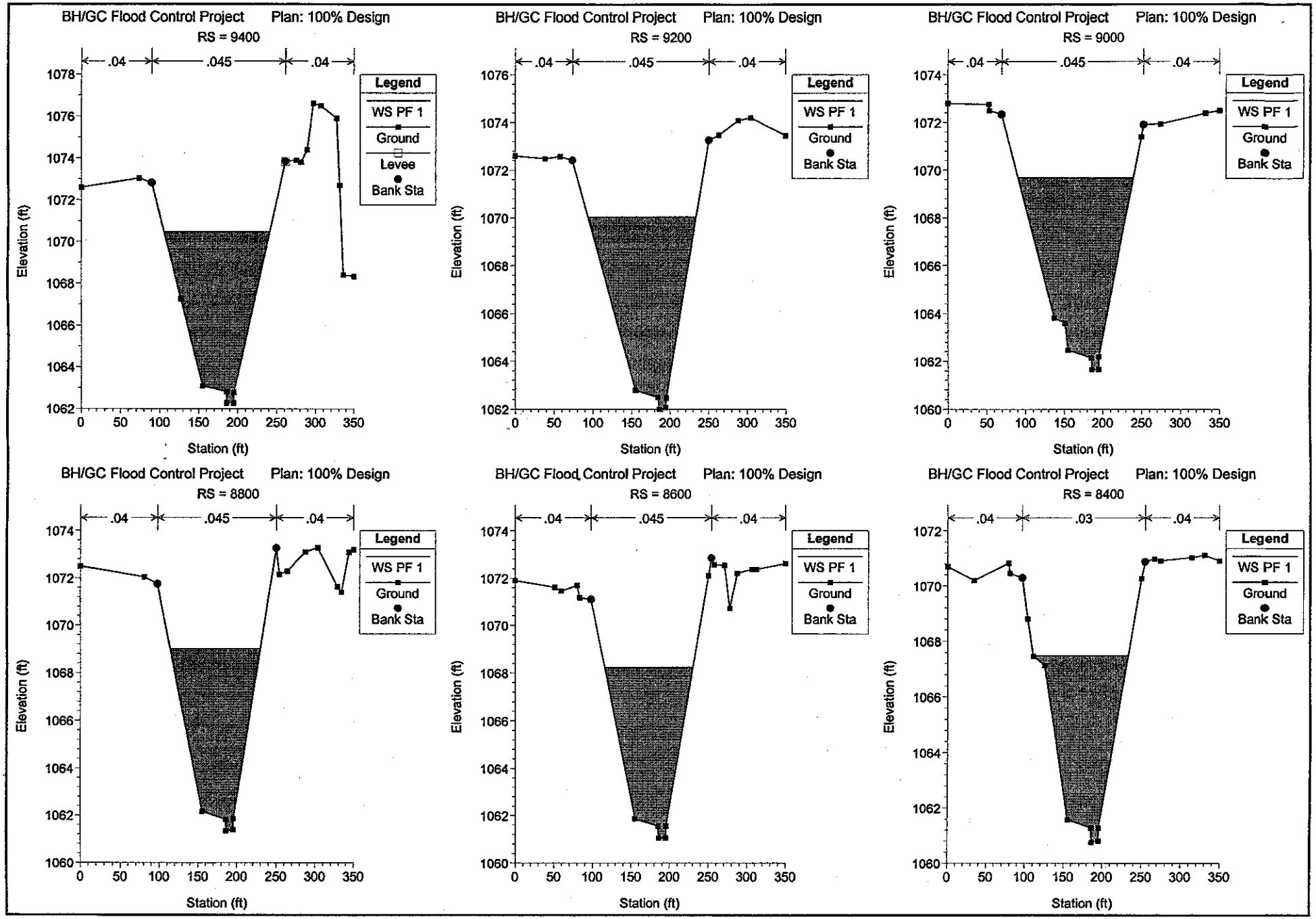

BH/GC Flood Control Project Plan: 100% Design
RS = 11281
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

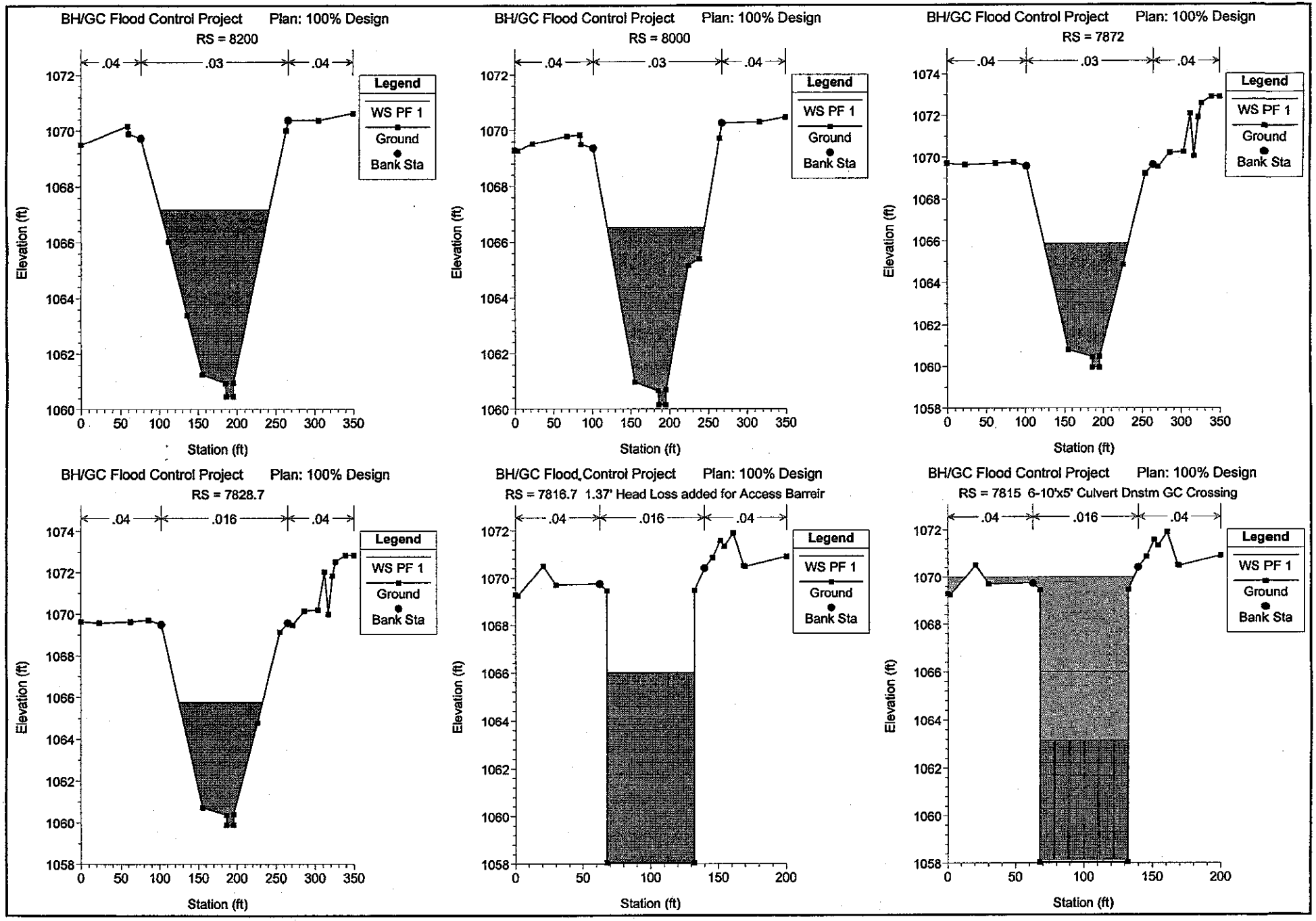

BH/GC Flood Control Project Plan: 100% Design
RS = 11266
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

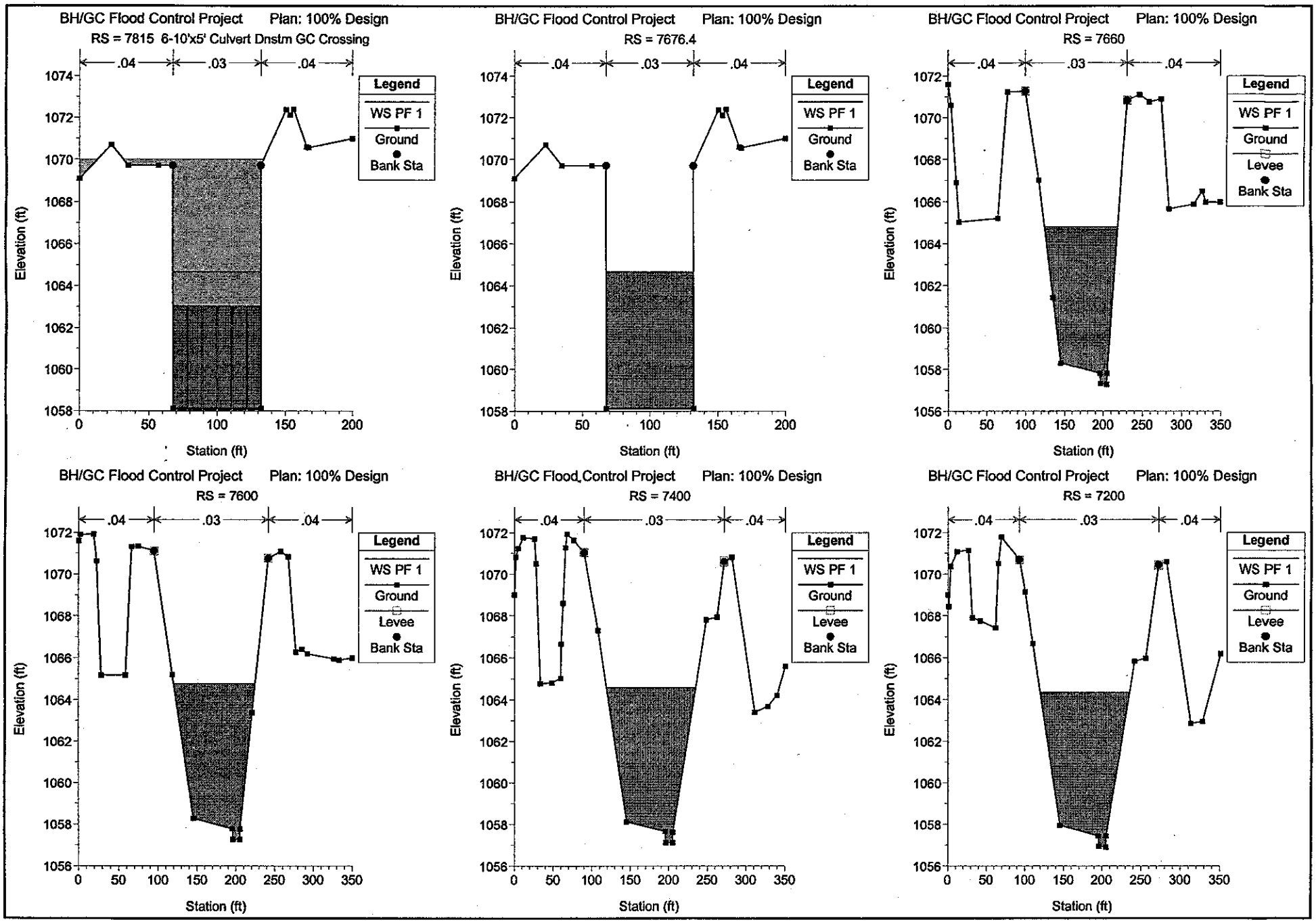

BH/GC Flood Control Project Plan: 100% Design
RS = 11265 83rd Avenue Bridge Crossing
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

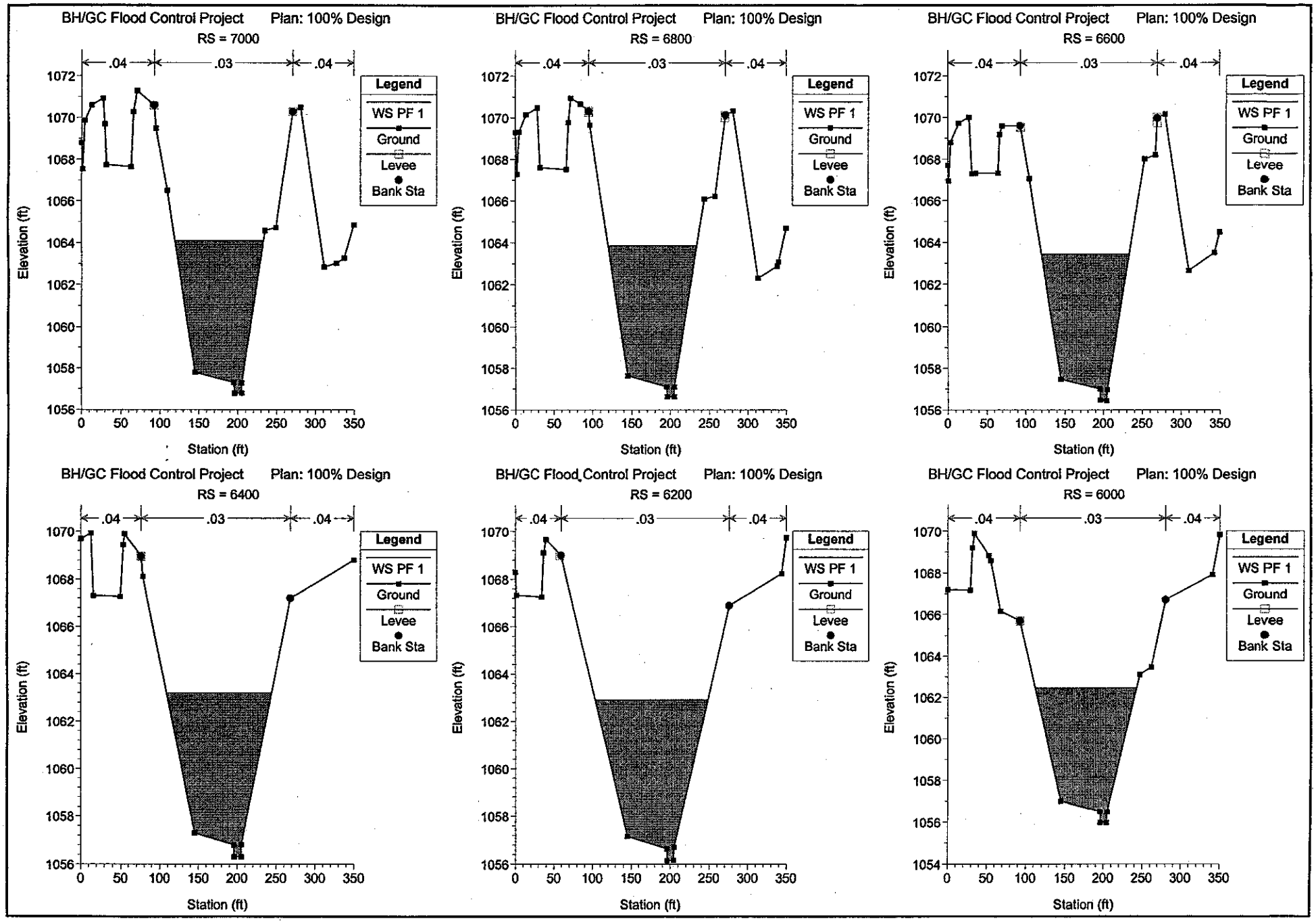

BH/GC Flood Control Project Plan: 100% Design
RS = 11265 83rd Avenue Bridge Crossing
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 11160
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 11144
.04 .045 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 11075
.04 .045 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 11000
.04 .045 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 10800
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

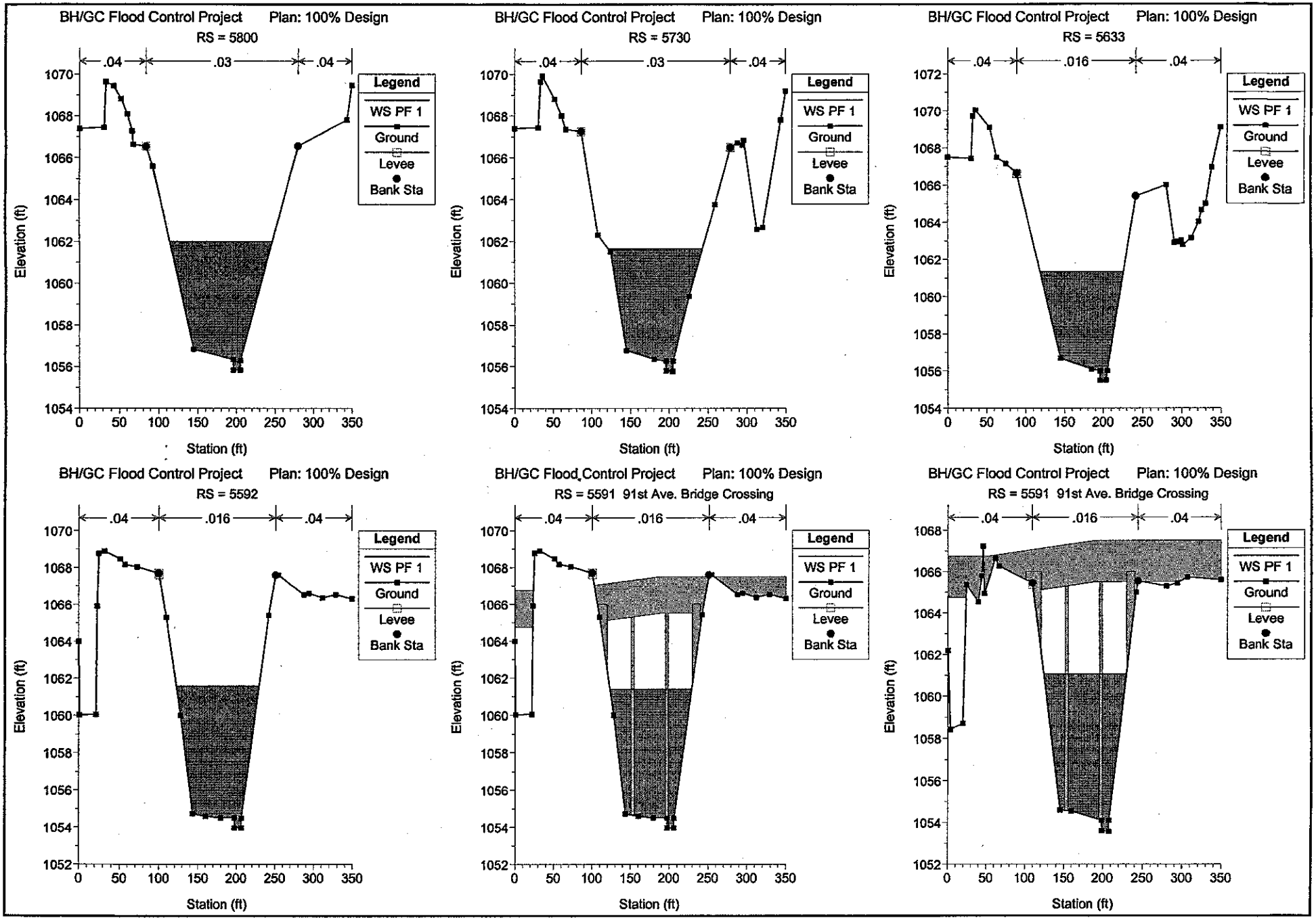

BH/GC Flood Control Project Plan: 100% Design
RS = 10600
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 10400
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 10200
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 10000
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 9800
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 9600
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

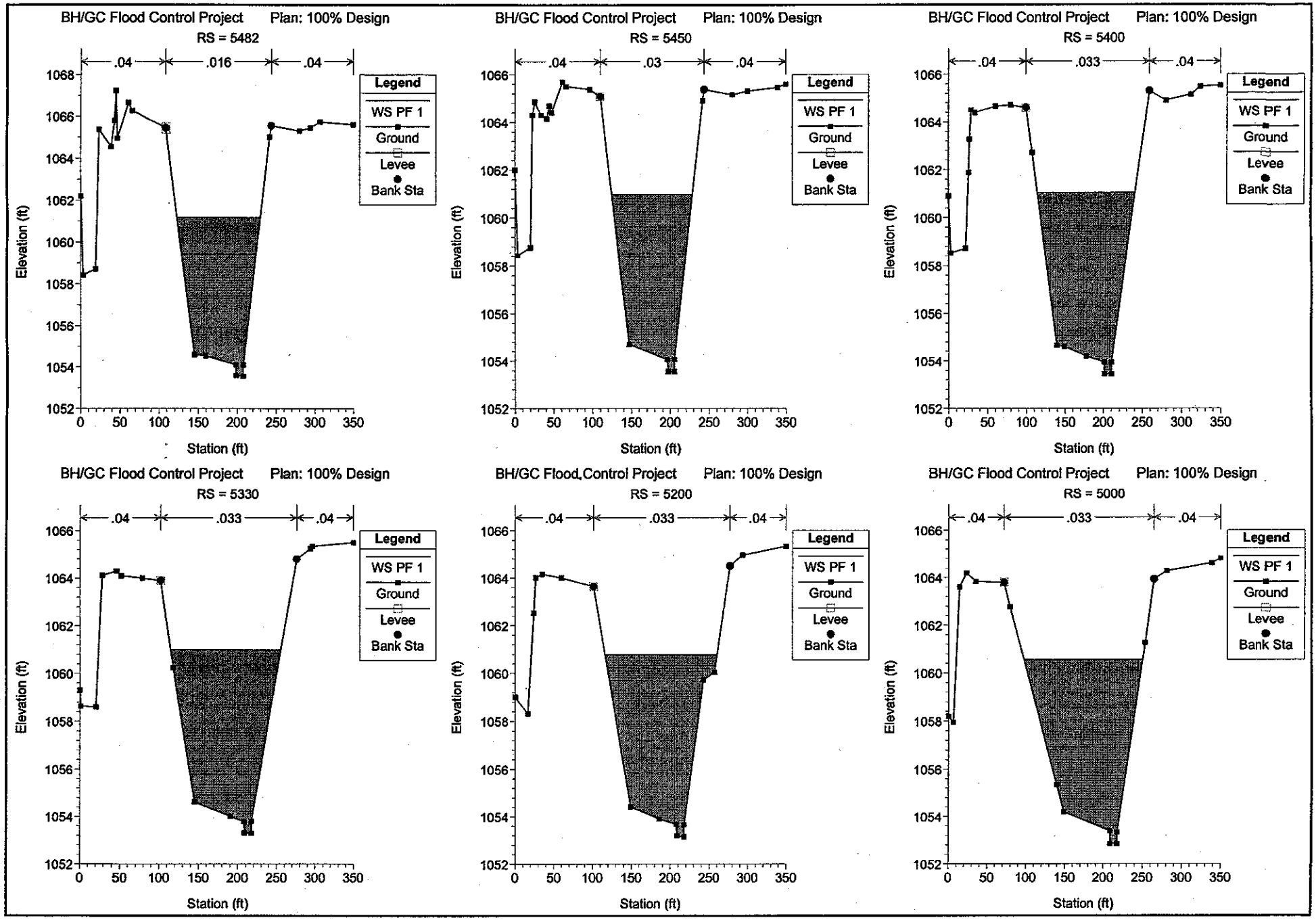

BH/GC Flood Control Project Plan: 100% Design
RS = 9400
.04 .045 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 9200
.04 .045 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 9000
.04 .045 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 8800
.04 .045 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 8600
.04 .045 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 8400
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

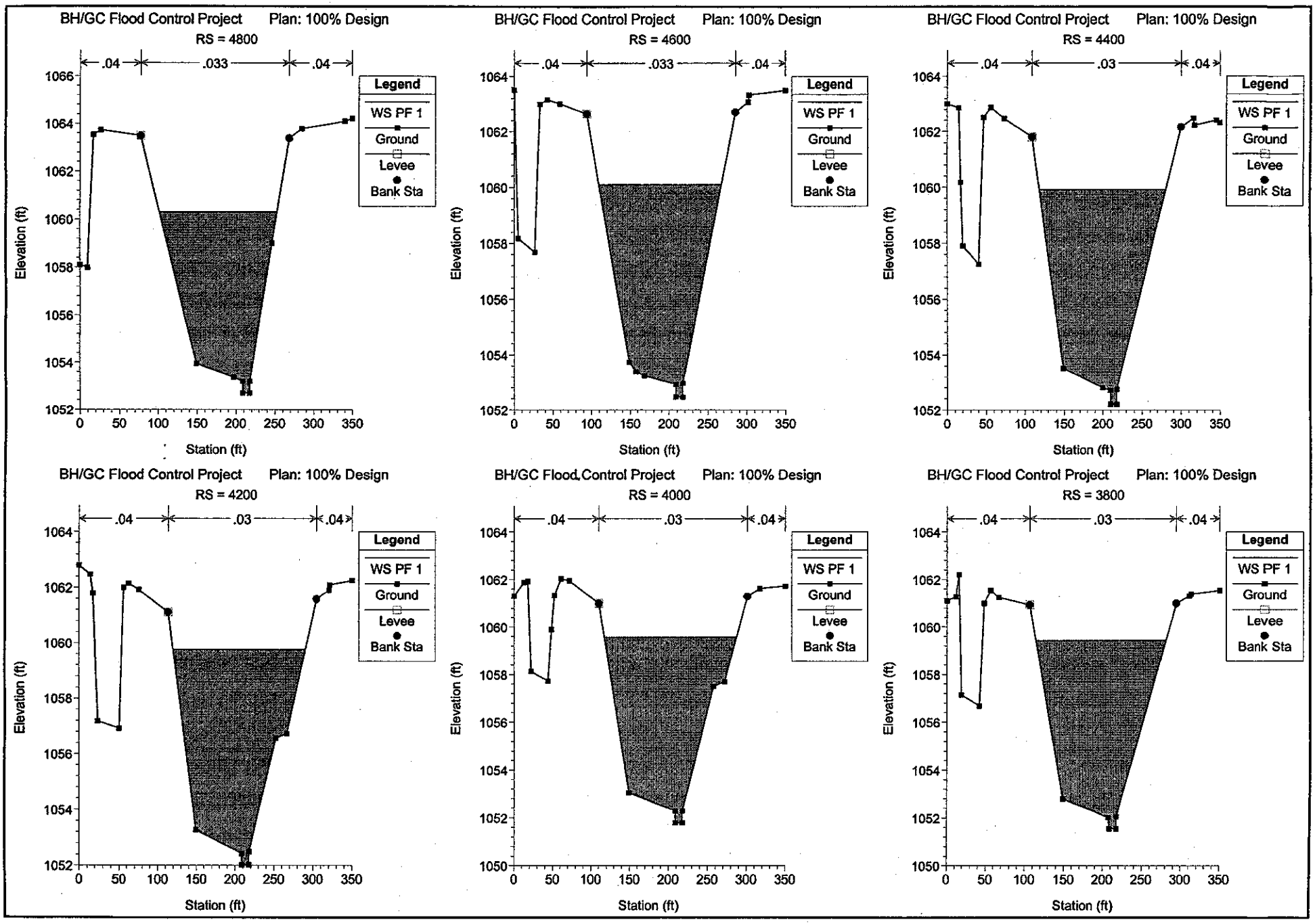

BH/GC Flood Control Project Plan: 100% Design
RS = 8200
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 8000
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 7872
.04 .03 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 7828.7
.04 .016 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 7816.7 1.37' Head Loss added for Access Barreir
.04 .016 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 7815 6-10'x5' Culvert Dnstm GC Crossing
.04 .016 .04
Legend
WS PF 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

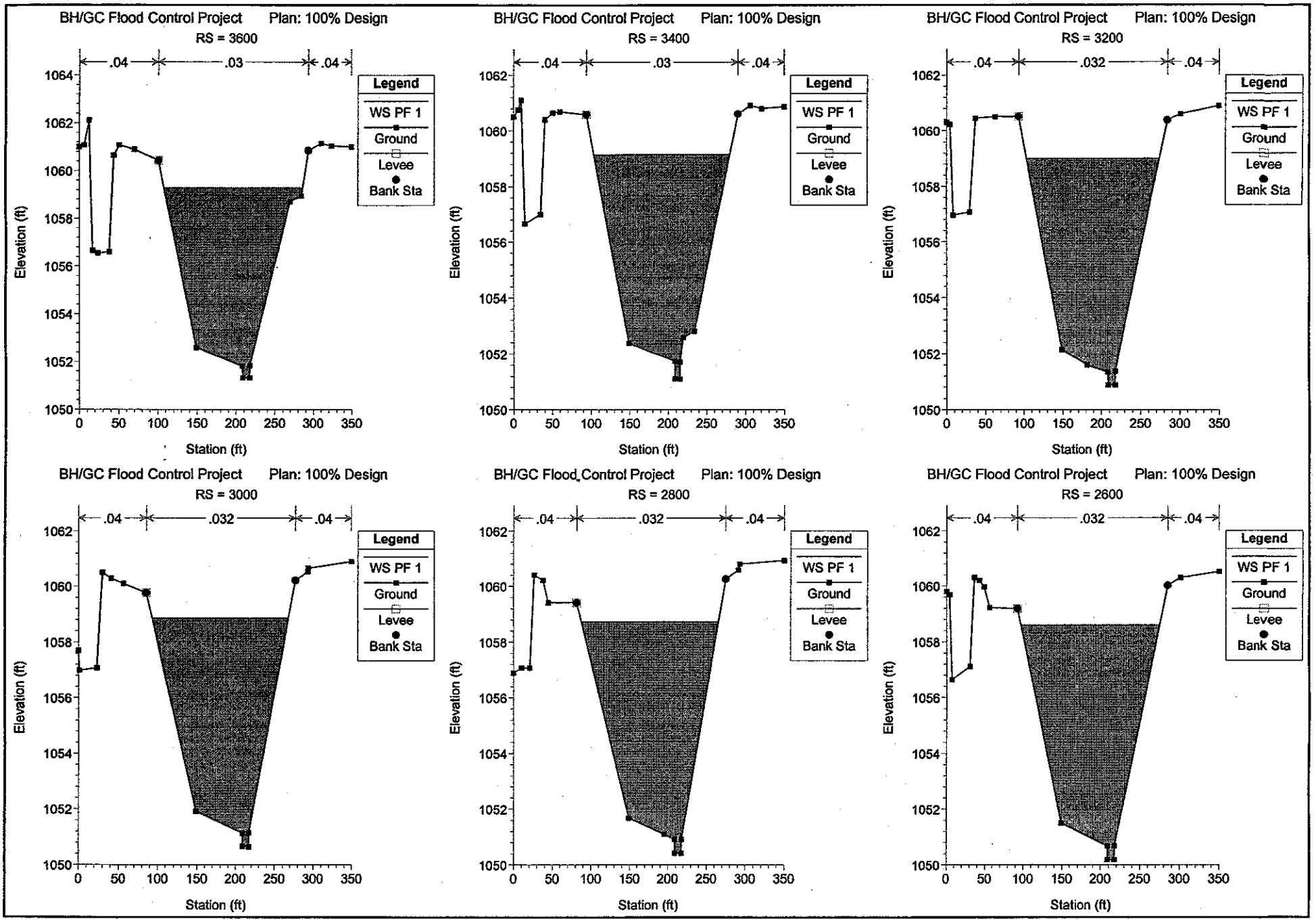

BH/GC Flood Control Project Plan: 100% Design
RS = 7815 6-10'x5' Culvert Dnstm GC Crossing
BH/GC Flood Control Project Plan: 100% Design
RS = 7676.4
BH/GC Flood Control Project Plan: 100% Design
RS = 7660
BH/GC Flood Control Project Plan: 100% Design
RS = 7600
BH/GC Flood Control Project Plan: 100% Design
RS = 7400
BH/GC Flood Control Project Plan: 100% Design
RS = 7200
.04
.03
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

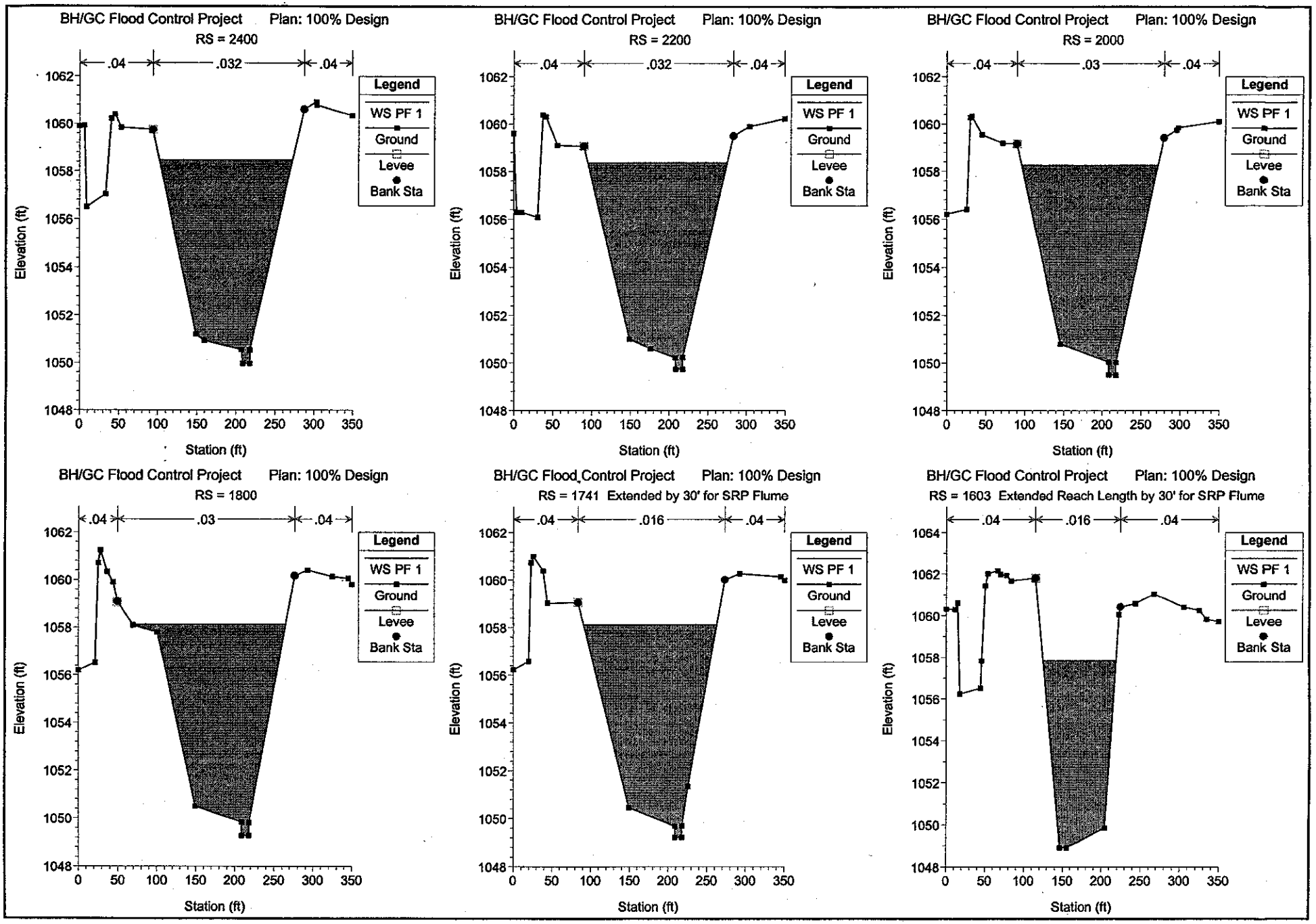

BH/GC Flood Control Project Plan: 100% Design
RS = 7000
BH/GC Flood Control Project Plan: 100% Design
RS = 6800
BH/GC Flood Control Project Plan: 100% Design
RS = 6600
BH/GC Flood Control Project Plan: 100% Design
RS = 6400
BH/GC Flood Control Project Plan: 100% Design
RS = 6200
BH/GC Flood Control Project Plan: 100% Design
RS = 6000
.04
.03
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

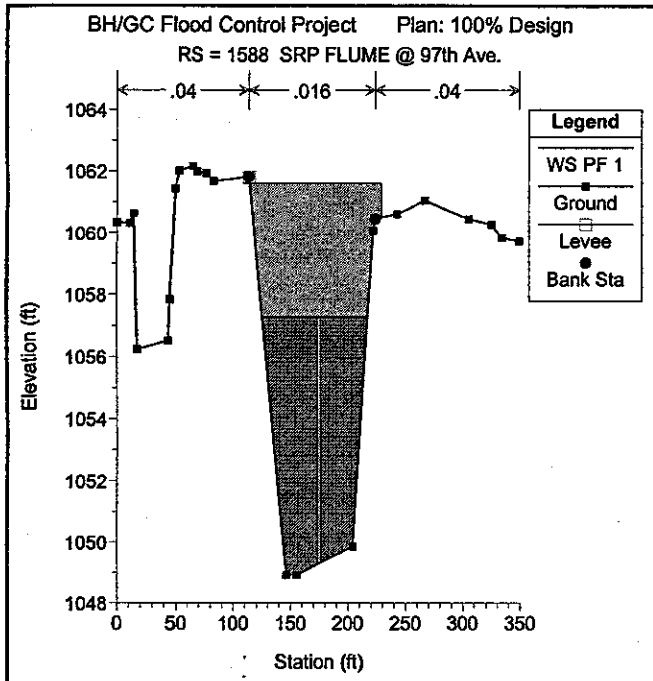

BH/GC Flood Control Project Plan: 100% Design
RS = 5800
.04 .03 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 5730
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5633
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5592
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5591 91st Ave. Bridge Crossing
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5591 91st Ave. Bridge Crossing
.04 .016 .04

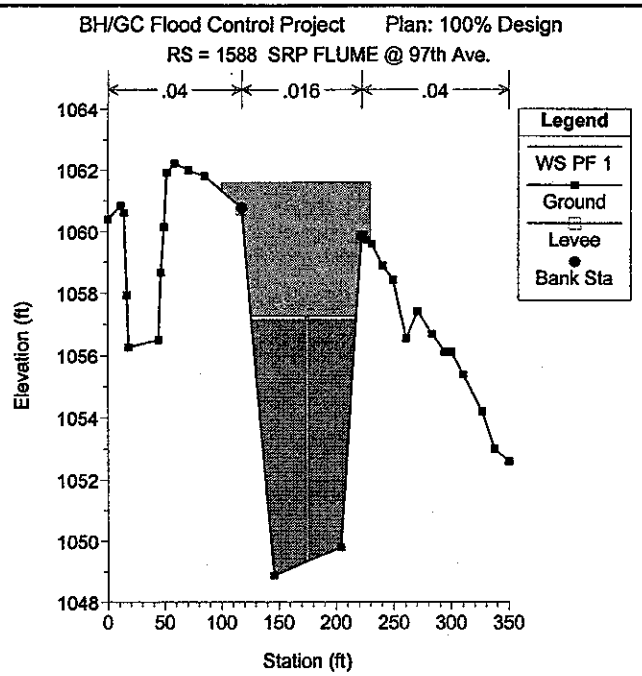

BH/GC Flood Control Project Plan: 100% Design
RS = 5482
.04 .016 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 5450
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5400
.04 .033 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5330
.04 .033 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5200
.04 .033 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 5000
.04 .033 .04

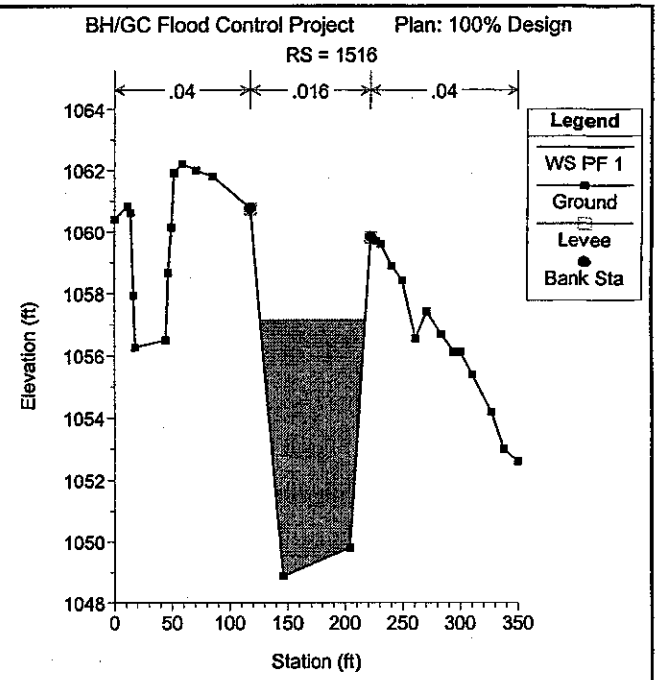

BH/GC Flood Control Project Plan: 100% Design
RS = 4800
.04 .033 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 4600
.04 .033 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 4400
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 4200
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 4000
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 3800
.04 .03 .04

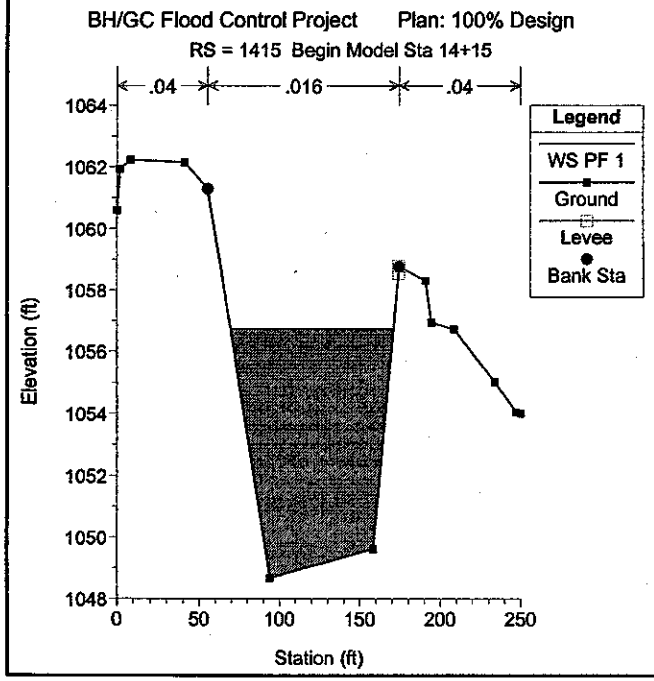

BH/GC Flood Control Project Plan: 100% Design
RS = 3600
.04 .03 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 3400
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 3200
.04 .032 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 3000
.04 .032 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 2800
.04 .032 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 2600
.04 .032 .04

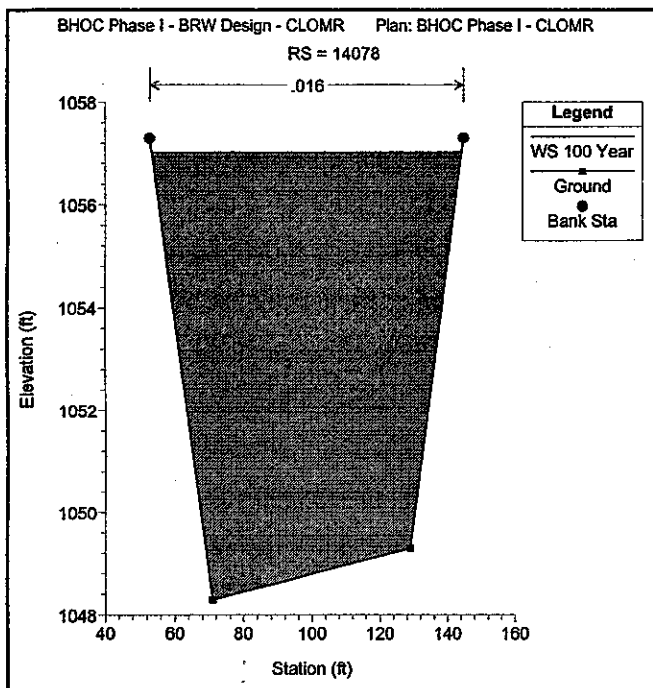

BH/GC Flood Control Project Plan: 100% Design
RS = 2400
.04 .032 .04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)
BH/GC Flood Control Project Plan: 100% Design
RS = 2200
.04 .032 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 2000
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 1800
.04 .03 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 1741 Extended by 30' for SRP Flume
.04 .016 .04
BH/GC Flood Control Project Plan: 100% Design
RS = 1603 Extended Reach Length by 30' for SRP Flume
.04 .016 .04

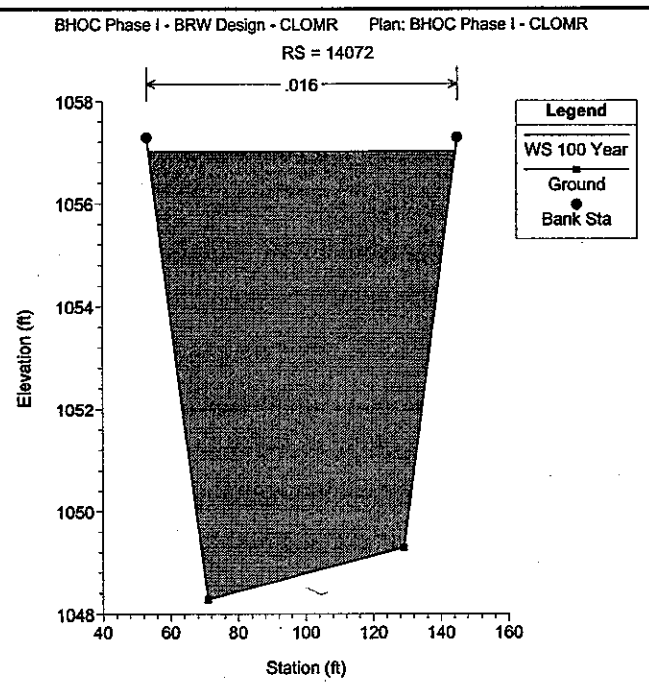

BH/GC Flood Control Project Plan: 100% Design
RS = 1588 SRP FLUME @ 97th Ave.
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

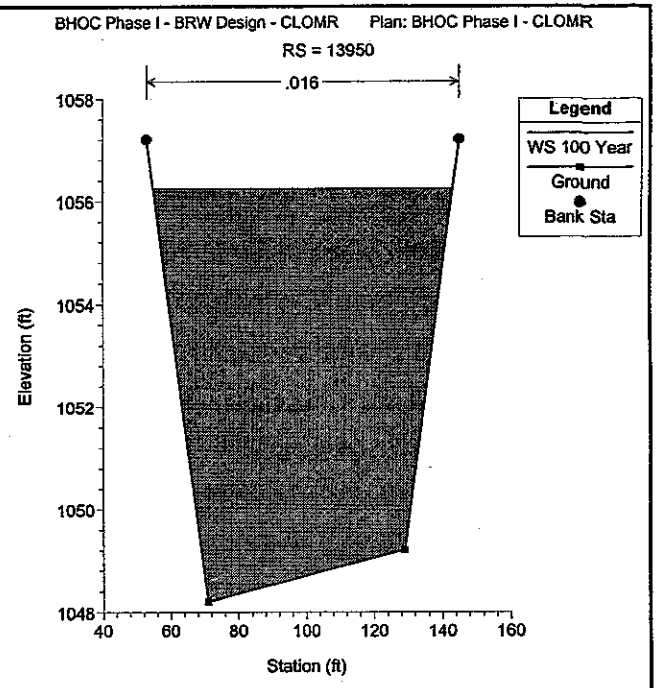

BH/GC Flood Control Project Plan: 100% Design
RS = 1588 SRP FLUME @ 97th Ave.
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

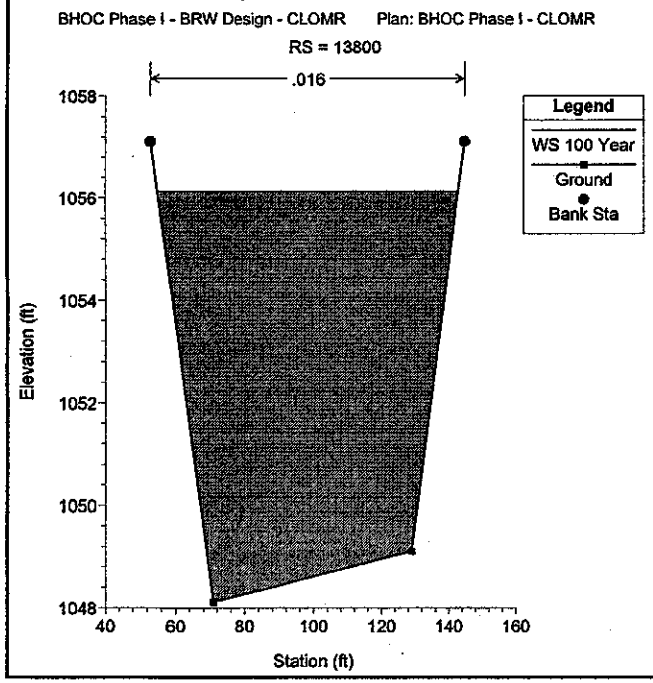

BH/GC Flood Control Project Plan: 100% Design
RS = 1516
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

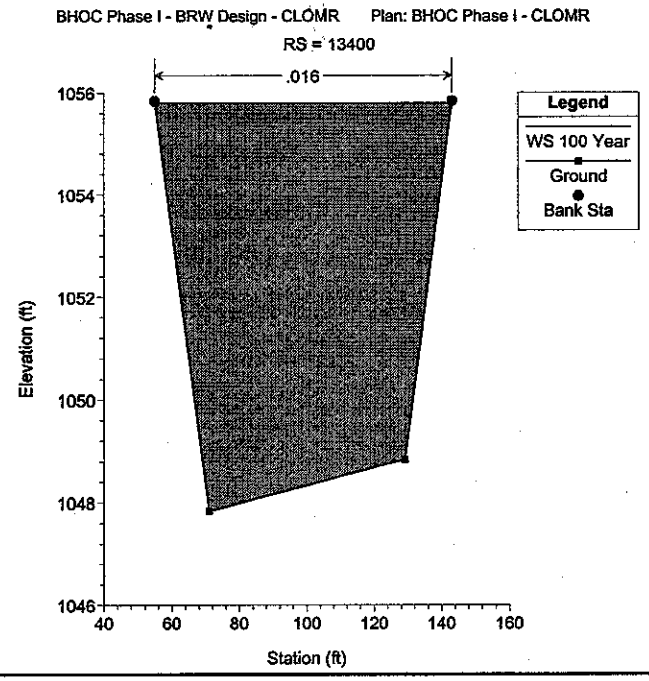

BH/GC Flood Control Project Plan: 100% Design
RS = 1415 Begin Model Sta 14+15
.04
.016
.04
Legend
WS PF 1
Ground
Levee
Bank Sta
Elevation (ft)
Station (ft)

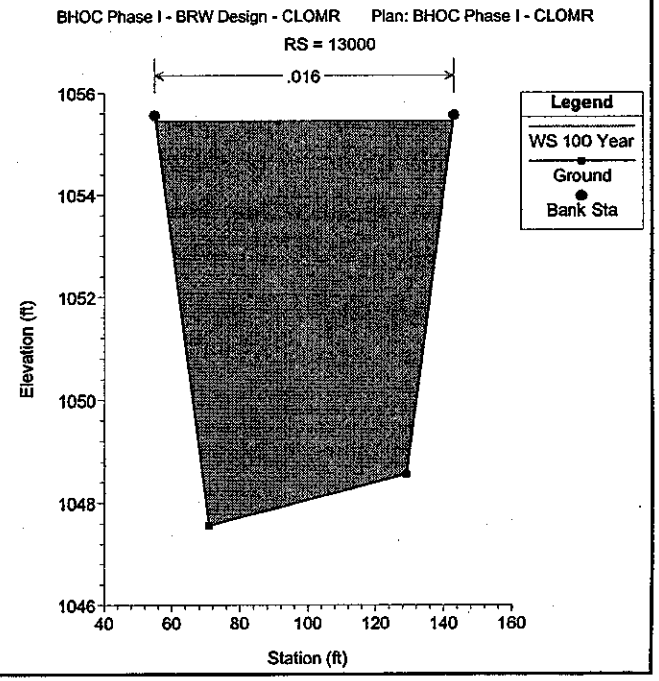

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 14078
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

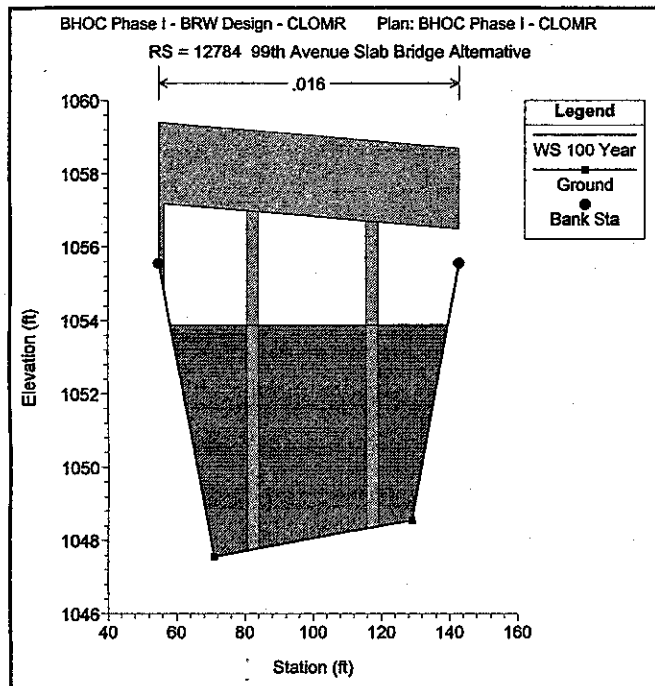

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 14072
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

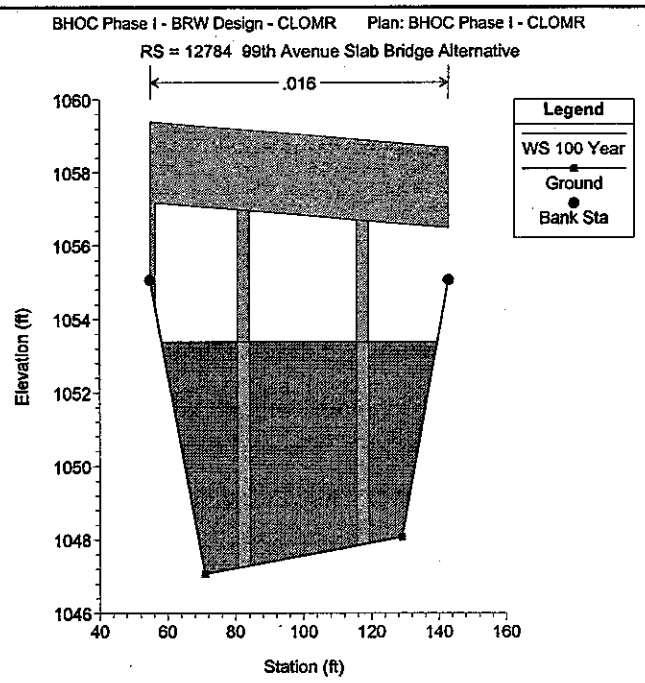

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 13950
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

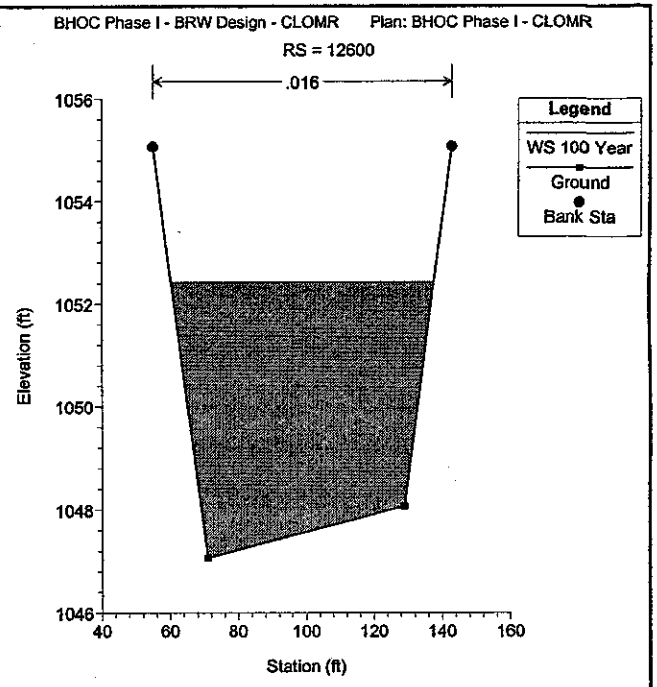

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 13800
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

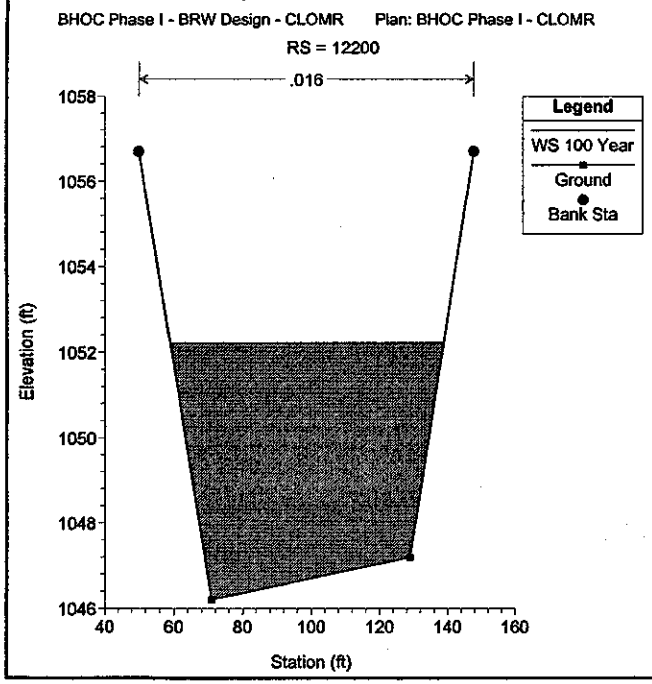

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 13400
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

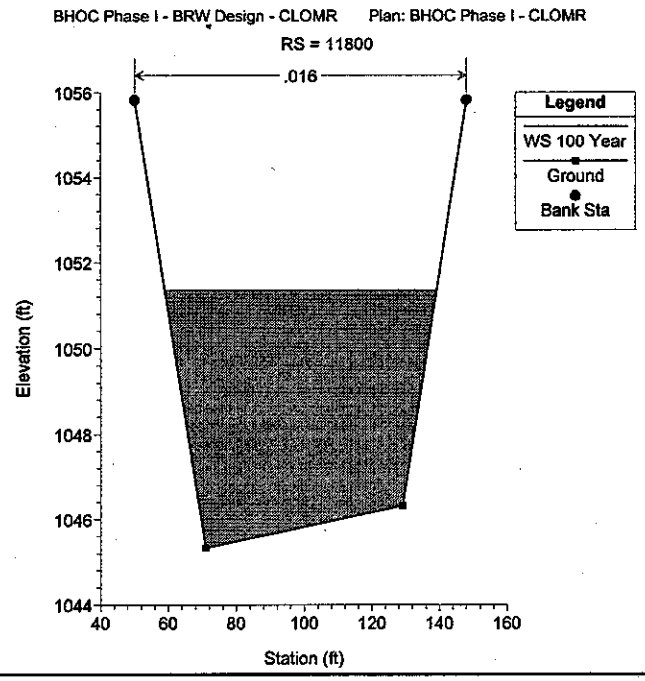

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 13000
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

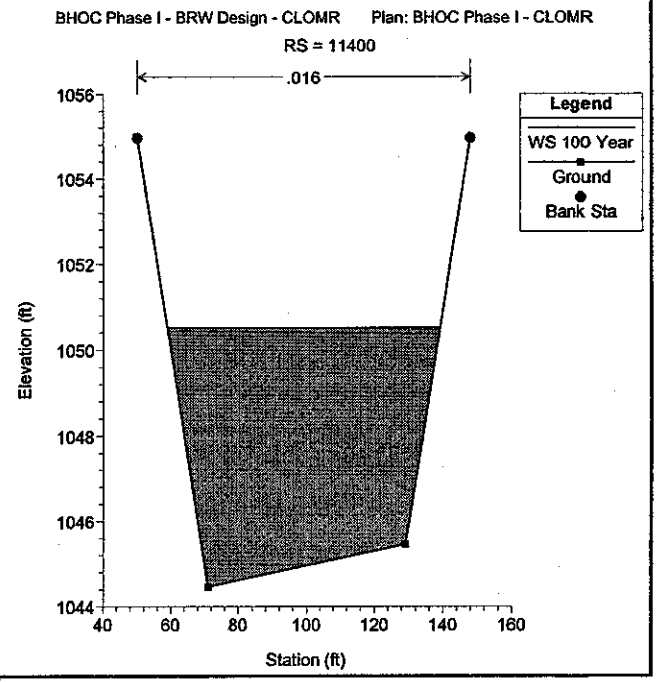

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 12784 99th Avenue Slab Bridge Alternative
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

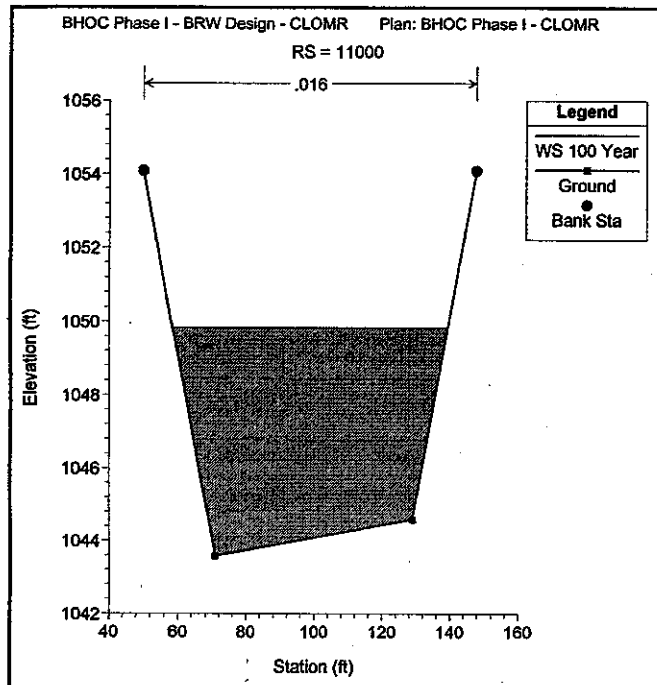

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 12784 99th Avenue Slab Bridge Alternative
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

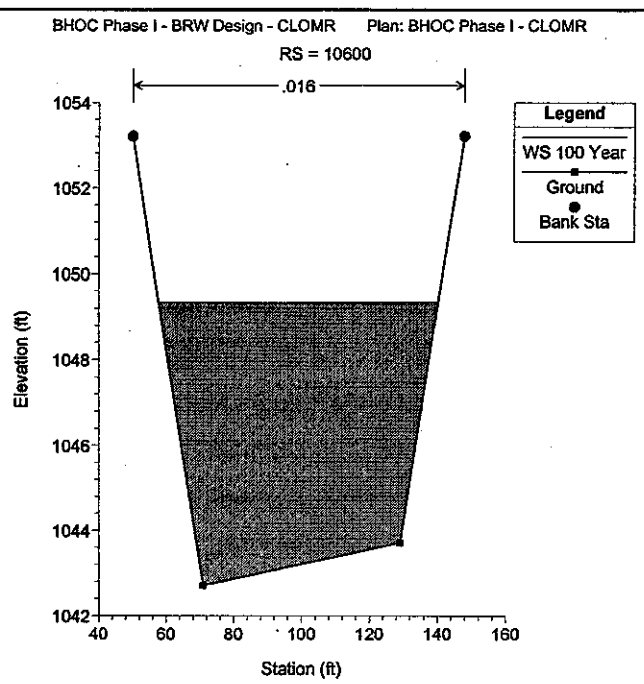

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 12600
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

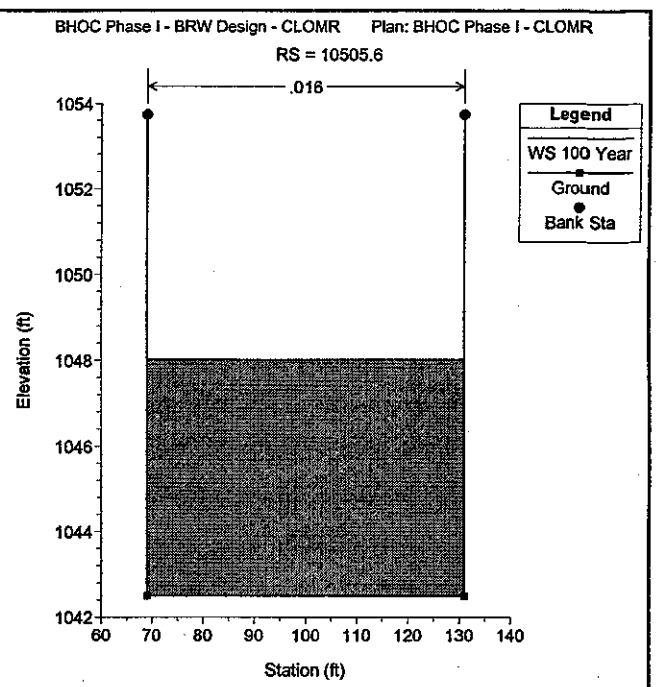

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 12200
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

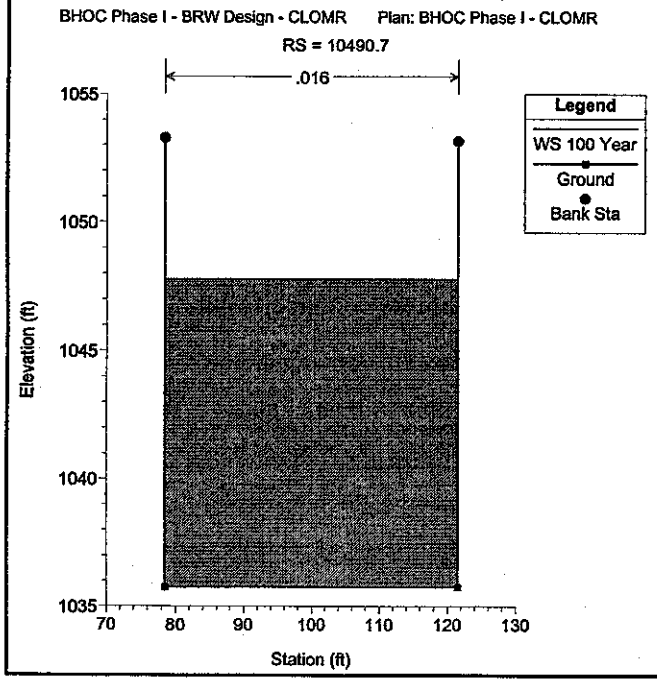

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 11800
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

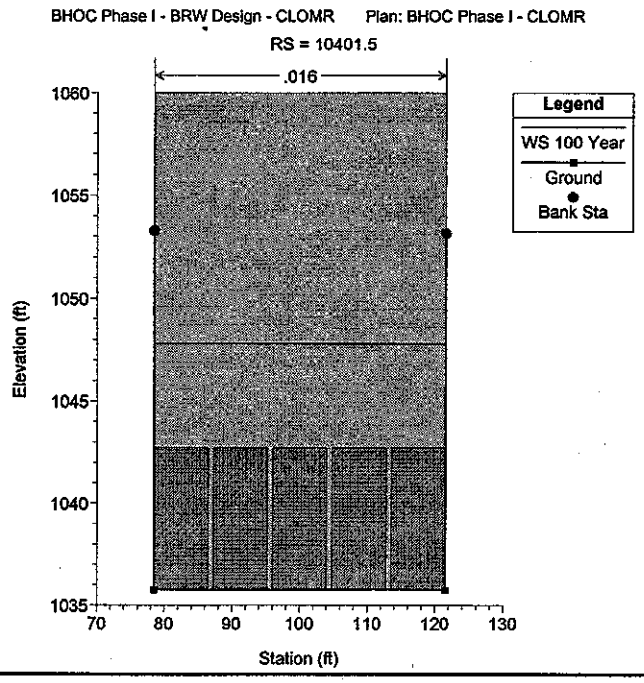

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 11400
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

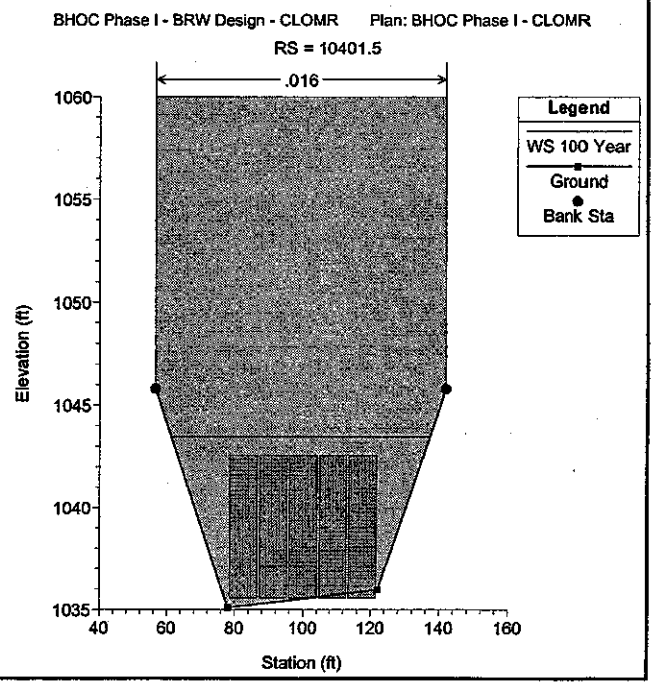

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 11000
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

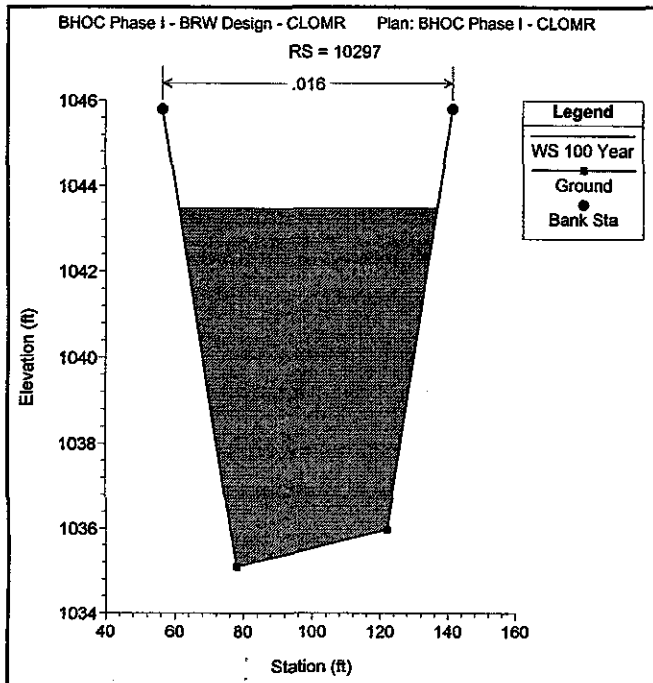

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10600
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

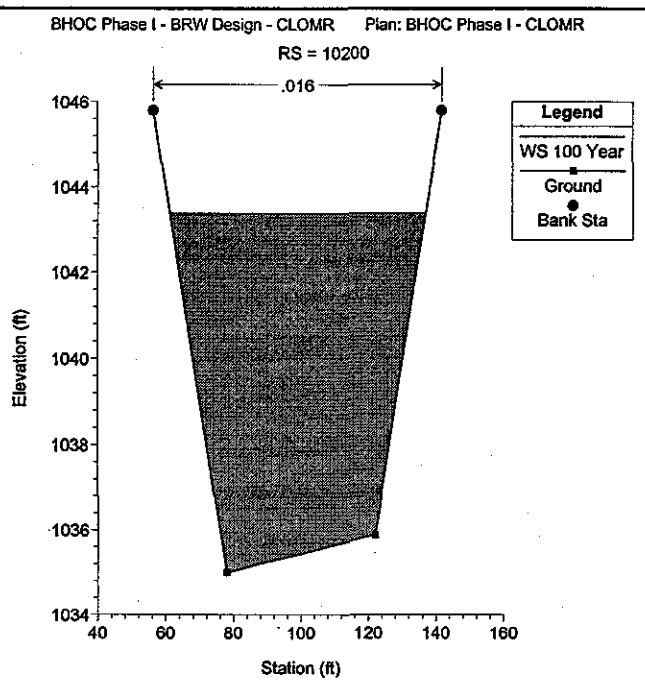

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10505.6
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

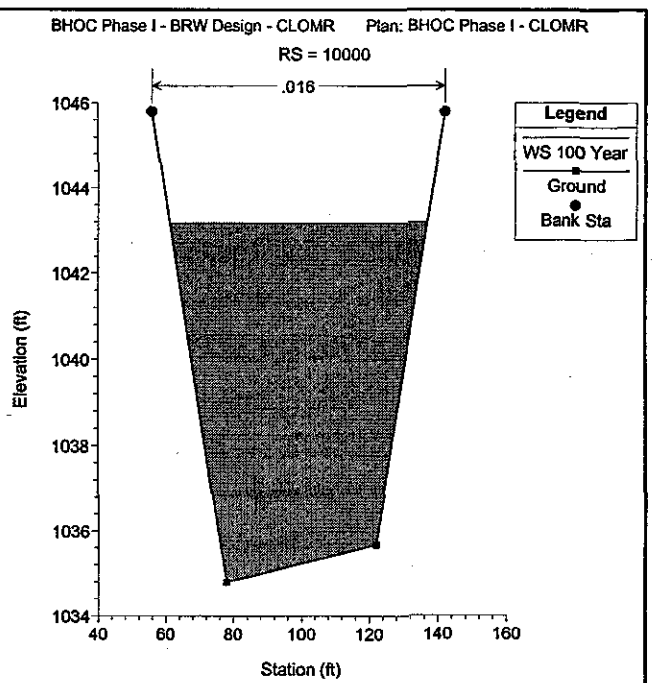

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10490.7
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

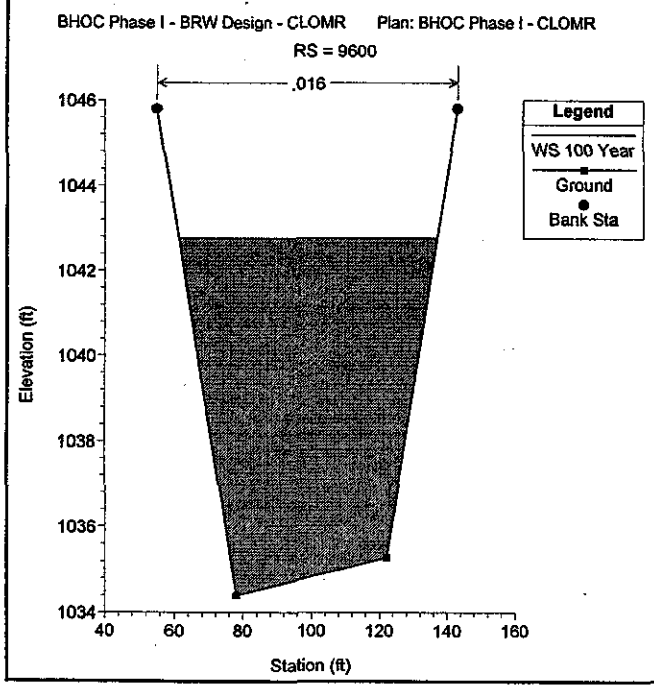

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10401.5
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

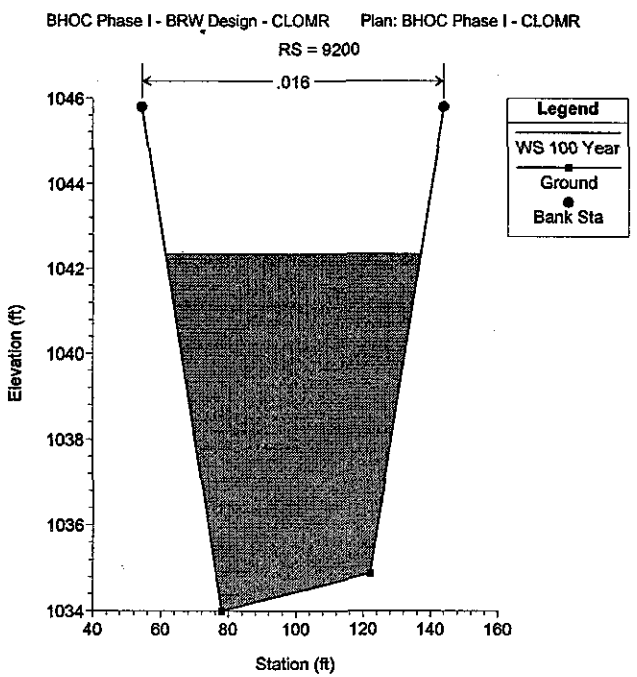

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10401.5
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

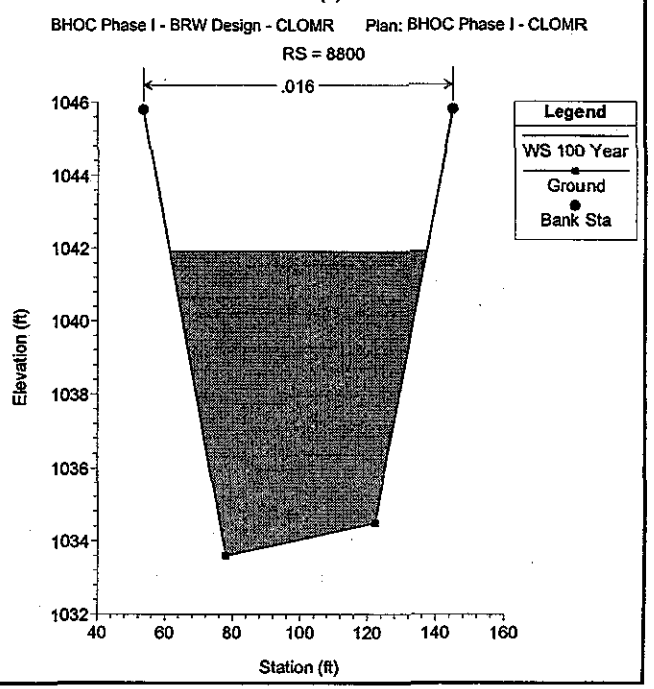

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10297
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10200
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 10000
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

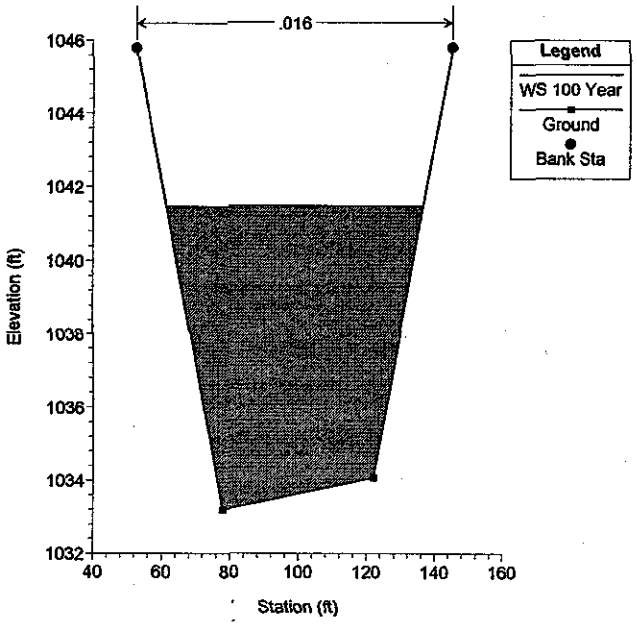

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 9600
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 9200
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)


BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
RS = 8800
.016
Legend
WS 100 Year
Ground
Bank Sta
Elevation (ft)
Station (ft)

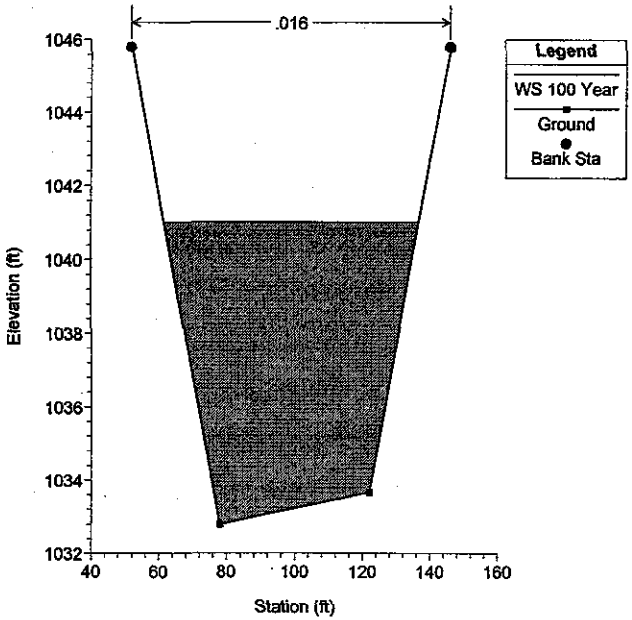
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 8400



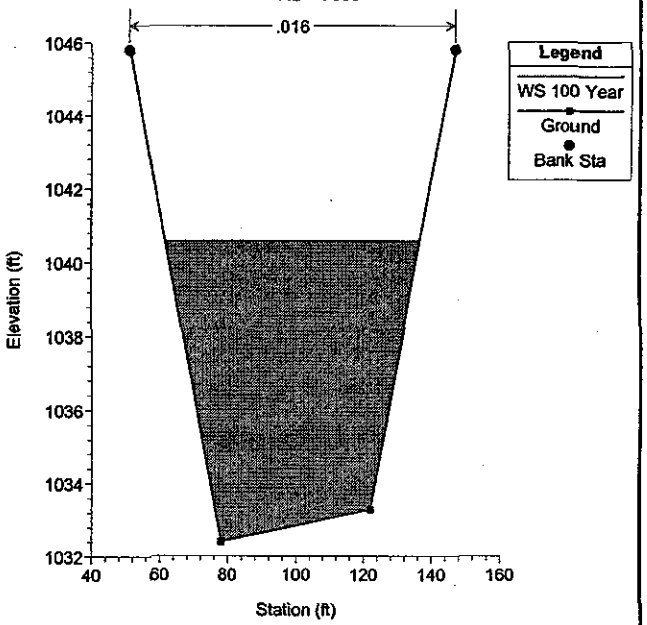
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 8000



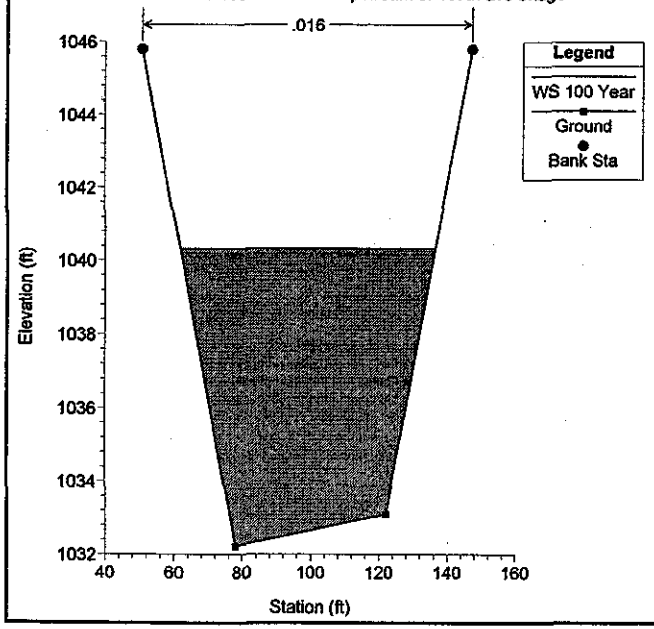
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7600



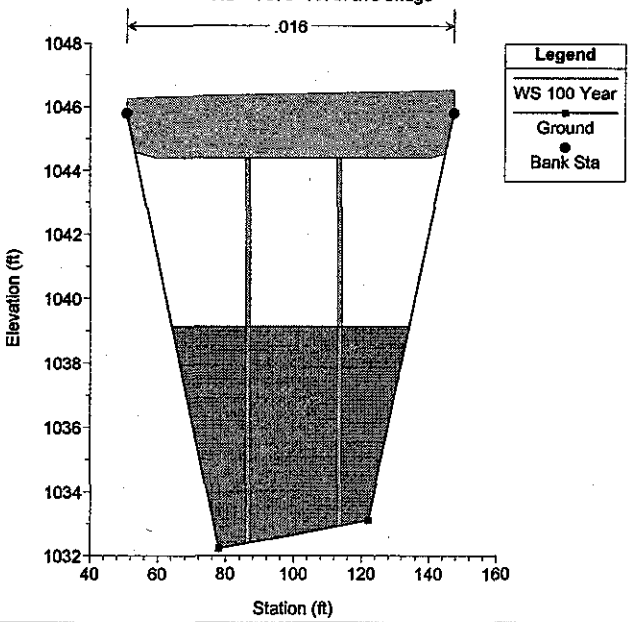
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7418 cross-section 17' upstream of 107th ave bridge



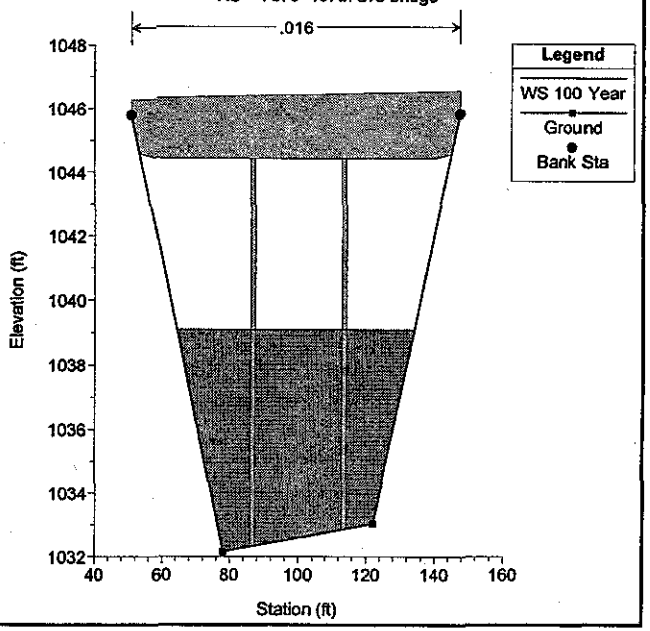
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7375 107th ave bridge



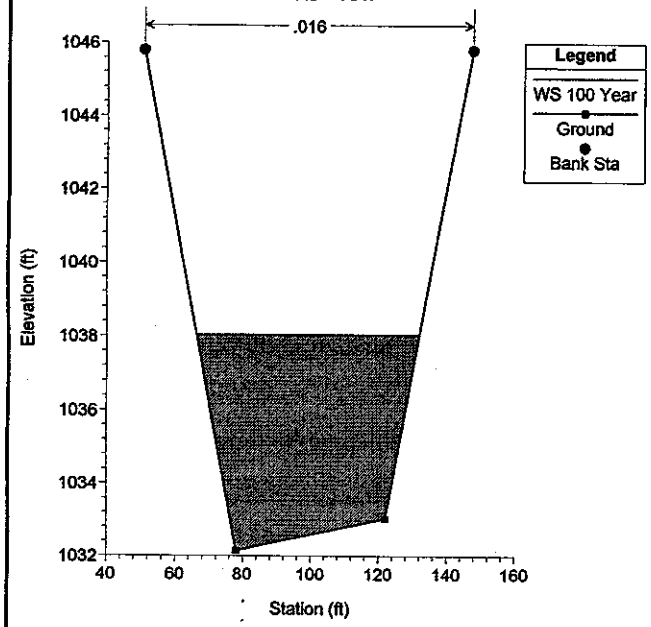
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7375 107th ave bridge



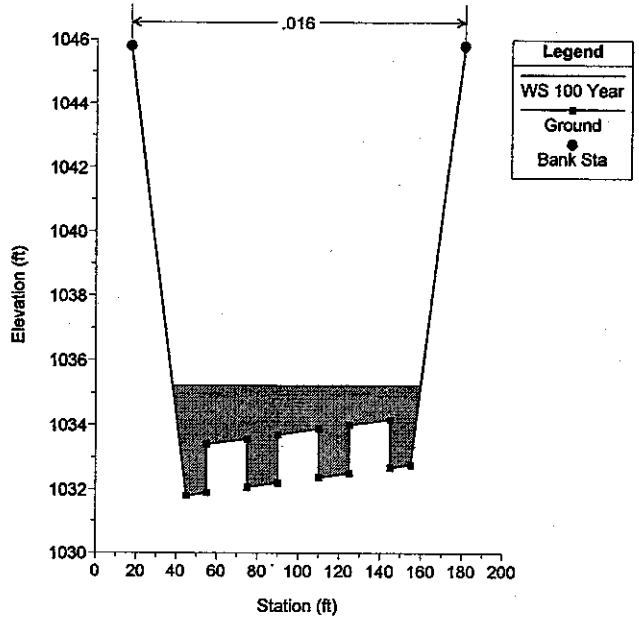
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7347



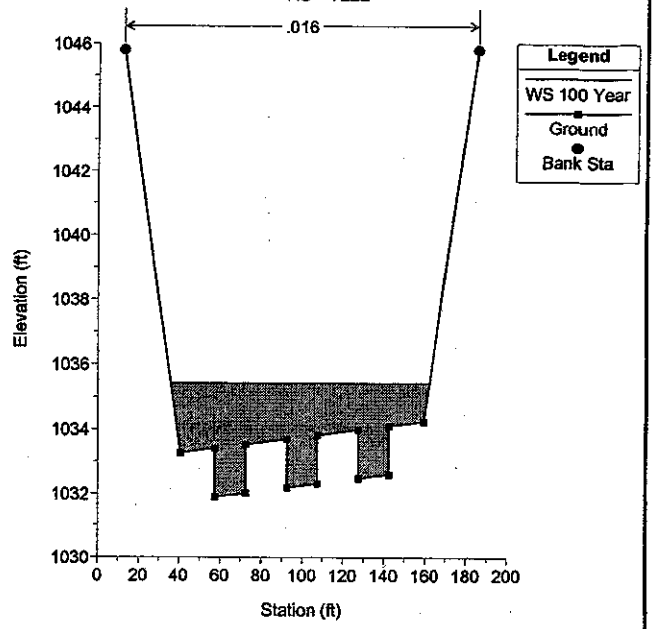
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7237



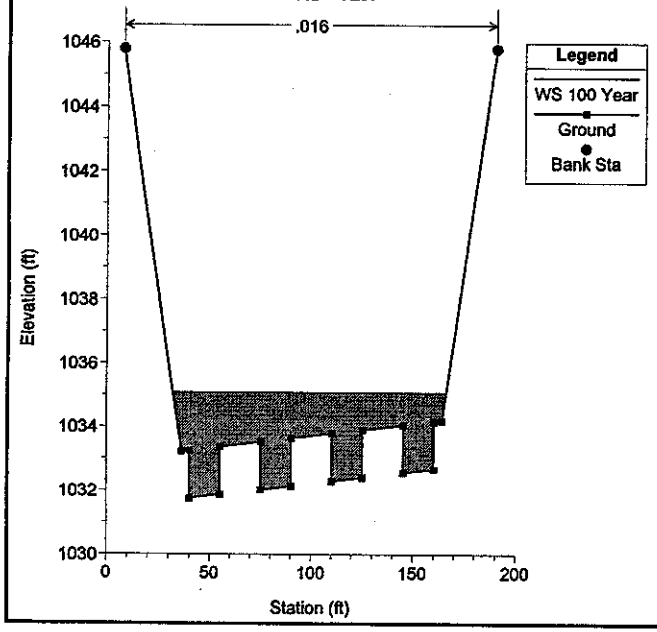
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7222



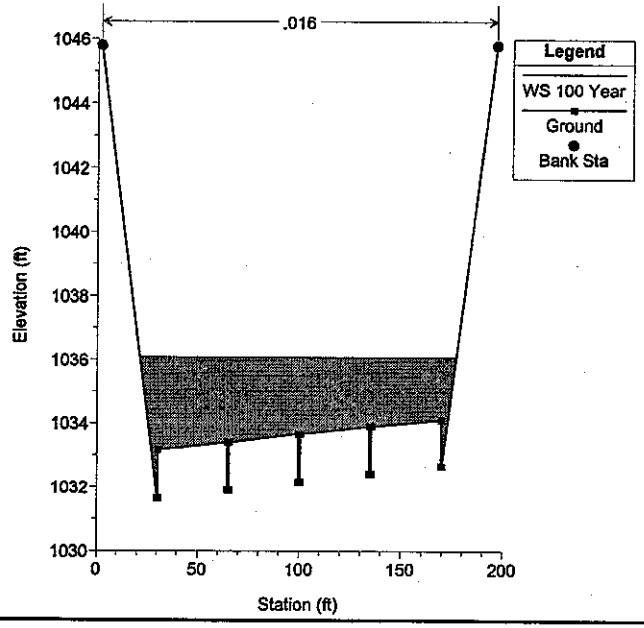
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7207

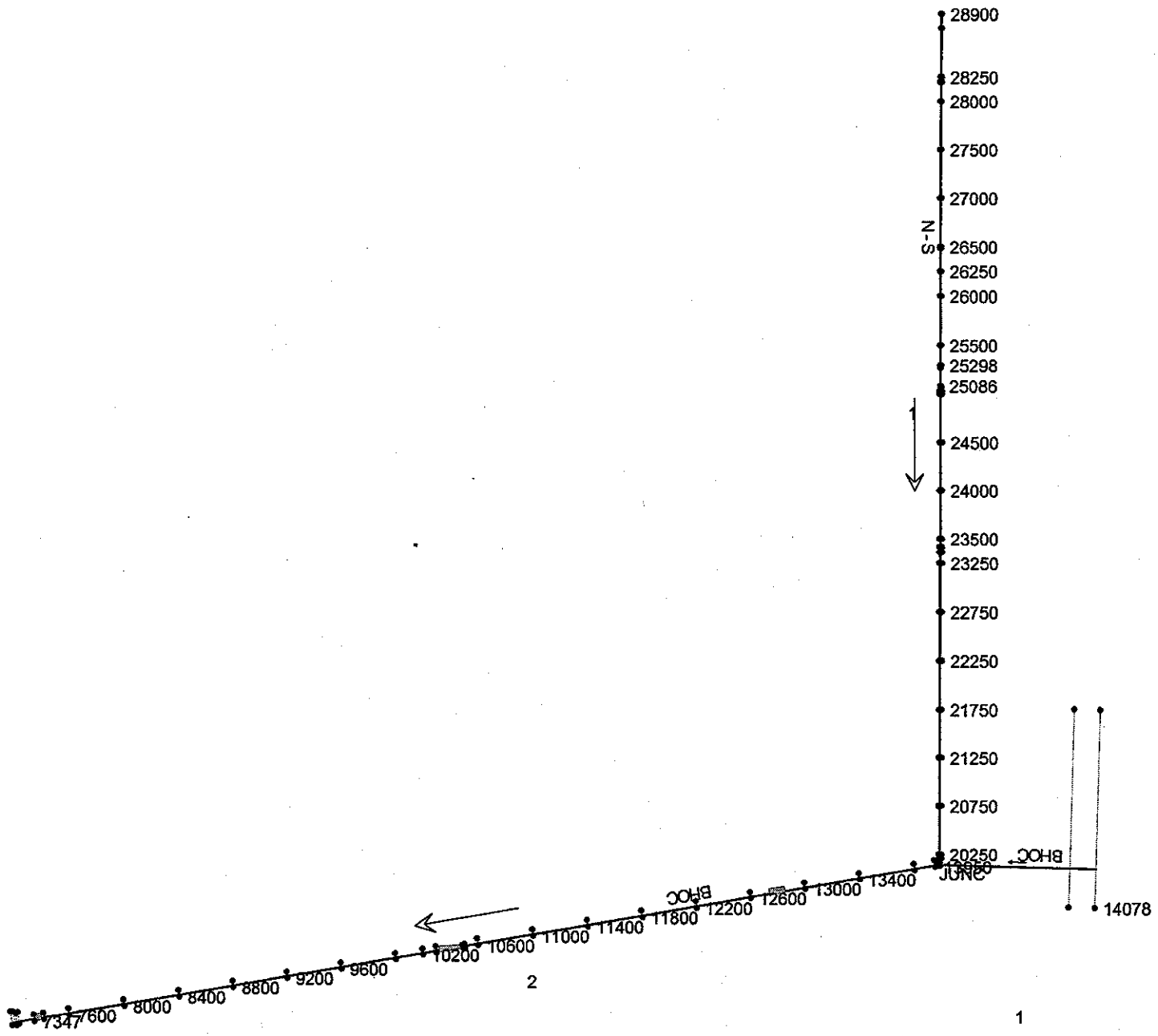


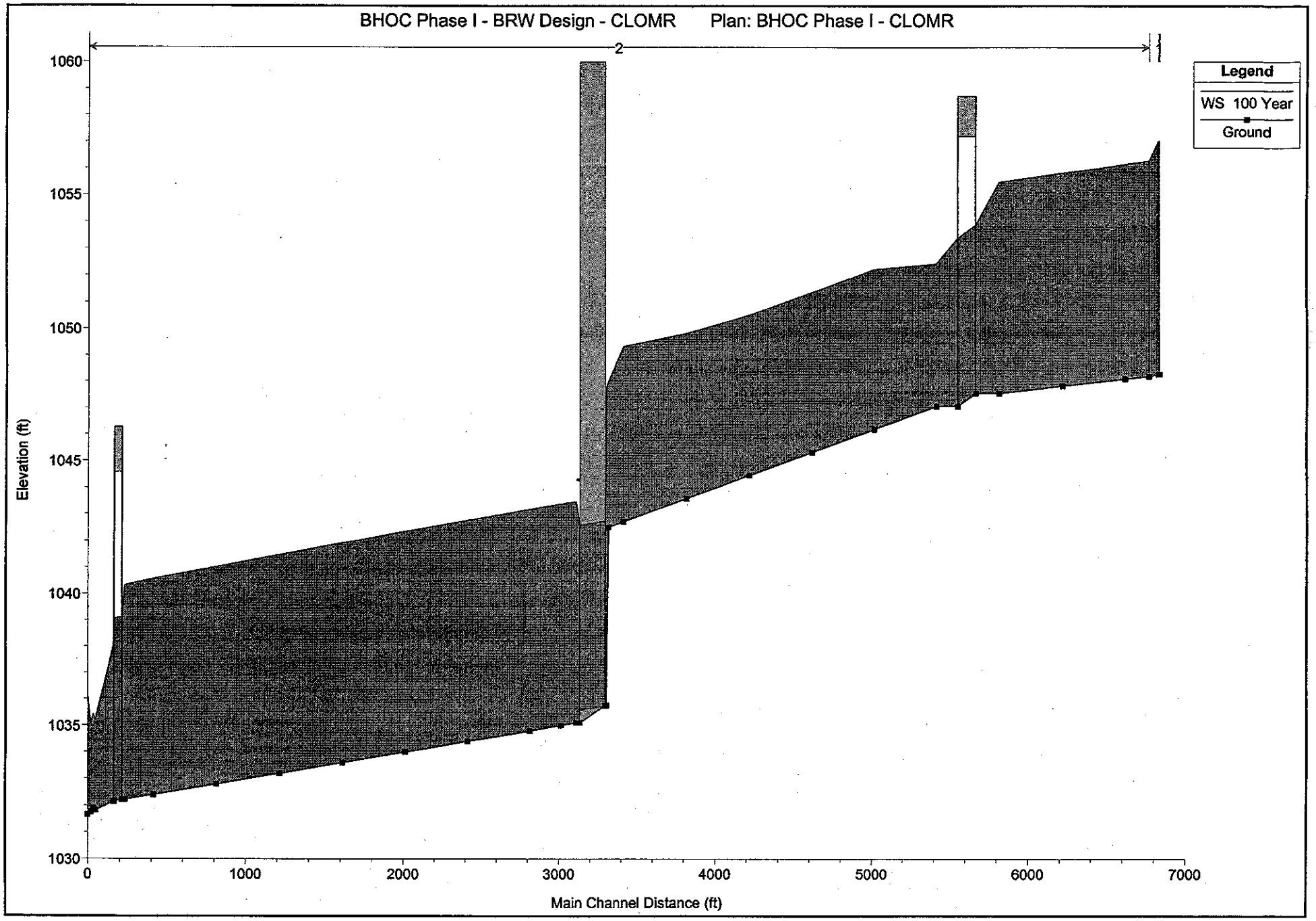
BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR

RS = 7187



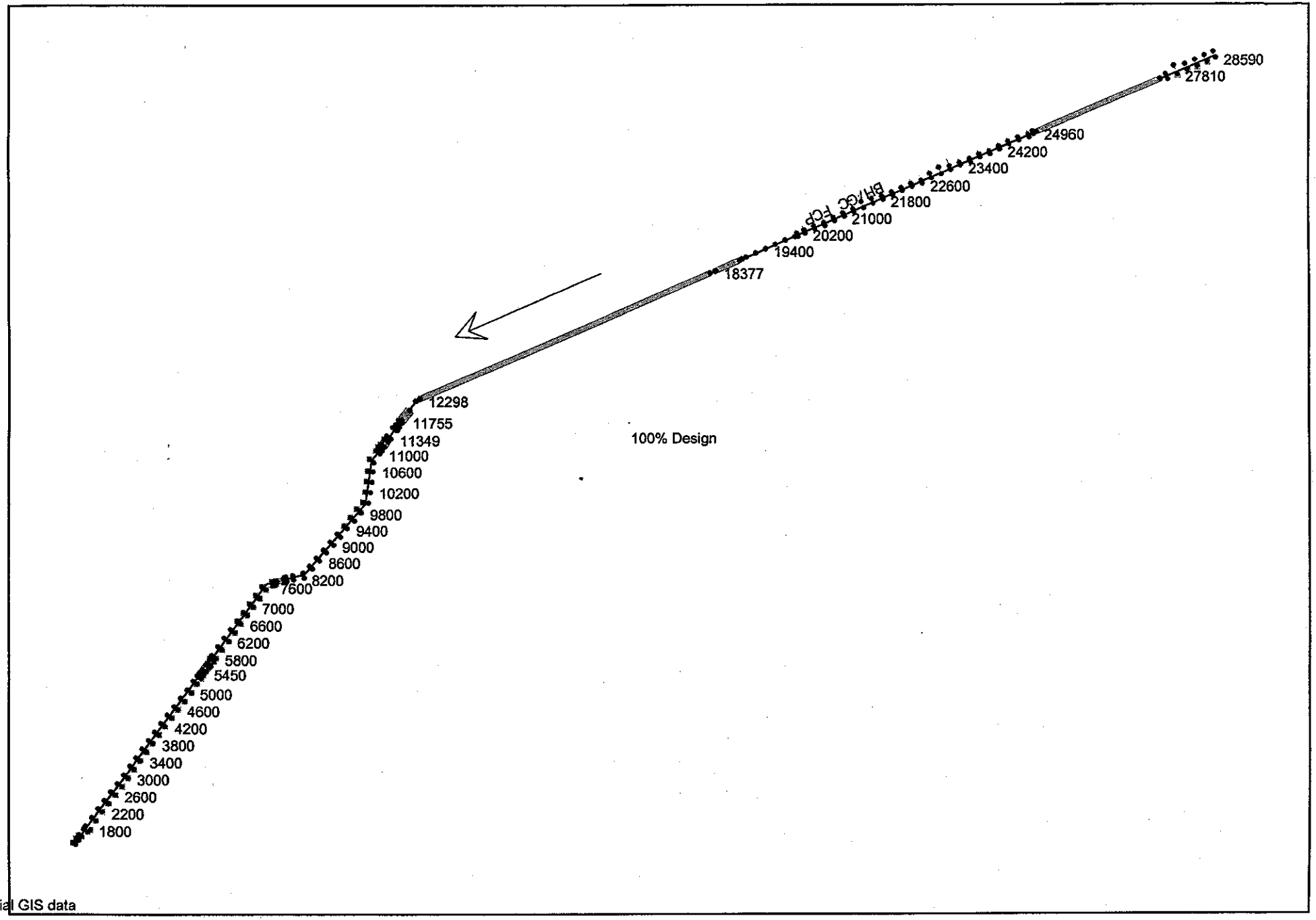
E.4 – HYDRAULIC CALCULATIONS


28900
28250
28000
27500
27000
26500
26250
26000
25500
25298
25086
24500
24000
23500
23250
22750
22250
21750
21250
20750
20250
N-S
1
BHOC
JUNC
14078
13400
13000
12600
12200
11800
11400
11000
10600
10200
9600
9200
8800
8400
8000
7600
7347
BHOC
2
1

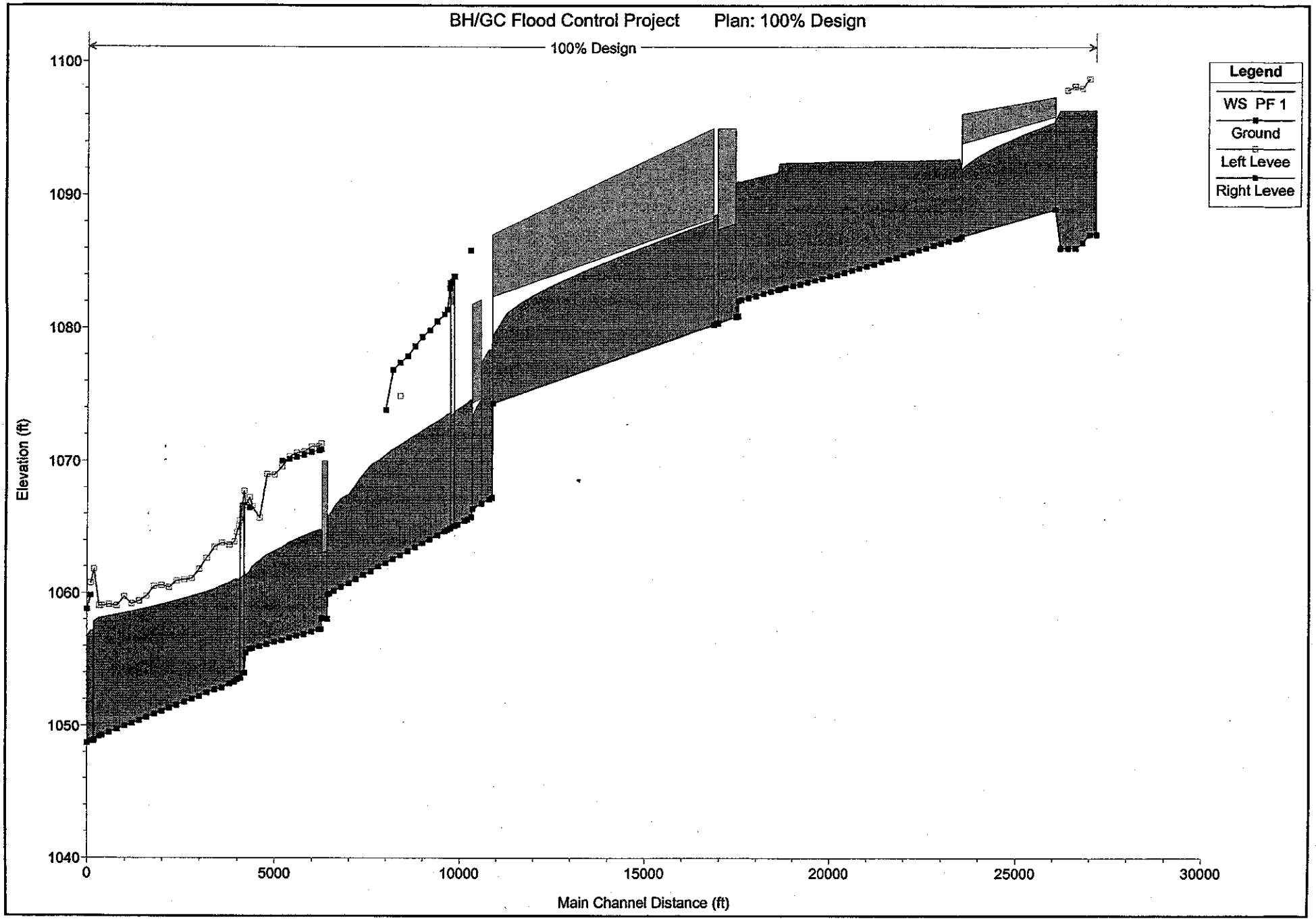

BHOC Phase I - BRW Design - CLOMR Plan: BHOC Phase I - CLOMR
2
Legend
WS 100 Year
Ground
Elevation (ft)
1060
1055
1050
1045
1040
1035
1030
0
1000
2000
3000
4000
5000
6000
7000
Main Channel Distance (ft)

HEC-RAS Plan: bhocCLOMR Profile: 100 Year

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
2	7187	4579.00	1031.66	1036.09	1036.66	1038.37	0.005850	12.12	377.80	155.70	1.37
2	7207	4579.00	1031.75	1035.08	1036.39	1039.56	0.014874	16.99	269.53	134.14	2.11
2	7222	4579.00	1031.90	1035.41	1036.70	1039.81	0.013018	16.62	272.29	126.48	2.02
2	7237	4579.00	1031.81	1035.22	1036.72	1040.44	0.016656	18.33	249.82	121.72	2.25
2	7347	4579.00	1032.15	1038.02	1038.85	1041.68	0.003823	15.35	298.39	65.72	1.27
2	7375	Bridge									
2	7418	4579.00	1032.22	1040.32	1038.92	1041.89	0.001127	10.08	454.47	74.62	0.72
2	7600	4579.00	1032.40	1040.56		1042.10	0.001094	9.97	459.25	74.88	0.71
2	8000	4579.00	1032.80	1041.01		1042.53	0.001068	9.89	463.12	75.09	0.70
2	8400	4579.00	1033.20	1041.46		1042.96	0.001043	9.80	467.01	75.29	0.69
2	8800	4579.00	1033.60	1041.91		1043.38	0.001022	9.74	470.25	75.46	0.69
2	9200	4579.00	1034.00	1042.34		1043.80	0.001007	9.69	472.65	75.59	0.68
2	9600	4579.00	1034.40	1042.76		1044.21	0.000998	9.66	474.23	75.67	0.68
2	10000	4579.00	1034.80	1043.17		1044.61	0.000993	9.64	475.11	75.72	0.68
2	10200	4579.00	1035.00	1043.37		1044.81	0.000992	9.64	475.24	75.73	0.68
2	10297	4579.00	1035.10	1043.47		1044.91	0.000995	9.65	474.73	75.70	0.68
2	10401.5	Culvert									
2	10490.7	4579.00	1035.75	1047.79	1042.81	1049.00	0.000595	8.84	517.71	43.00	0.45
2	10505.6	4579.00	1042.50	1048.02	1048.02	1050.80	0.002650	13.38	342.13	62.00	1.00
2	10600	4579.00	1042.71	1049.33	1048.62	1051.09	0.001517	10.64	430.49	82.49	0.82
2	11000	4579.00	1043.58	1049.82		1051.86	0.001902	11.48	398.99	80.94	0.91
2	11400	4579.00	1044.46	1050.51	1050.37	1052.72	0.002129	11.92	384.22	80.21	0.96
2	11800	4579.00	1045.33	1051.36	1051.24	1053.59	0.002165	11.98	382.06	80.10	0.97
2	12200	4579.00	1046.20	1052.21	1052.09	1054.46	0.002190	12.03	380.63	80.03	0.97
2	12600	4579.00	1047.07	1052.42	1052.98	1055.43	0.003405	13.93	328.60	77.39	1.19
2	12784	Bridge									
2	13000	4579.00	1047.56	1055.45	1053.47	1056.57	0.000787	8.51	537.88	87.54	0.61
2	13400	4579.00	1047.84	1055.79		1056.89	0.000763	8.42	543.60	87.80	0.60
2	13800	4579.00	1048.11	1056.12		1057.20	0.000740	8.34	549.19	88.05	0.59
2	13950	4579.00	1048.21	1056.25		1057.32	0.000733	8.31	551.06	88.14	0.59
1	14072	3340.00	1048.29	1057.01		1057.47	0.000287	5.46	612.09	90.87	0.37
1	14078	3340.00	1048.30	1057.01	1053.22	1057.48	0.000287	5.46	611.85	90.86	0.37



Partial GIS data


BH/GC Flood Control Project Plan: 100% Design
100% Design
Legend
WS PF 1
Ground
Left Levee
Right Levee
Elevation (ft)
1100
1090
1080
1070
1060
1050
1040
0
5000
10000
15000
20000
25000
30000
Main Channel Distance (ft)

HEC-RAS Plan: 100% River: BH/GC FCP Reach: 100% Design Profile: PF 1

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
100% Design	1415	4579.00	1048.68	1056.72	1054.17	1057.54	0.000559	7.27	629.69	101.40	0.51
100% Design	1516	3340.00	1048.87	1057.14	1053.74	1057.65	0.000337	5.73	583.08	91.09	0.40
100% Design	1588	Bridge									
100% Design	1603	3340.00	1048.92	1057.85	1053.72	1058.26	0.000246	5.14	650.04	94.33	0.34
100% Design	1741	3340.00	1049.23	1058.12	1053.73	1058.30	0.000140	3.45	967.05	171.81	0.26
100% Design	1800	3340.00	1049.28	1058.13	1053.80	1058.32	0.000629	3.53	946.45	195.39	0.28
100% Design	2000	3340.00	1049.50	1058.25	1053.93	1058.43	0.000488	3.41	979.34	175.80	0.25
100% Design	2200	3340.00	1049.74	1058.36	1054.16	1058.54	0.000584	3.44	972.21	179.80	0.26
100% Design	2400	3340.00	1049.97	1058.47	1054.40	1058.67	0.000643	3.62	923.69	170.17	0.27
100% Design	2600	3340.00	1050.19	1058.60	1054.65	1058.80	0.000658	3.67	935.52	178.27	0.27
100% Design	2800	3340.00	1050.42	1058.73	1054.88	1058.93	0.000694	3.63	919.13	177.66	0.28
100% Design	3000	3340.00	1050.64	1058.85	1055.12	1059.07	0.000742	3.73	895.24	174.74	0.29
100% Design	3200	3340.00	1050.88	1058.99	1055.28	1059.22	0.000761	3.79	880.13	170.91	0.29
100% Design	3400	3340.00	1051.10	1059.14	1055.51	1059.36	0.000653	3.72	897.80	176.03	0.29
100% Design	3600	3340.00	1051.33	1059.27	1055.77	1059.51	0.000802	3.94	847.18	178.17	0.32
100% Design	3800	3340.00	1051.56	1059.42	1055.97	1059.67	0.000768	4.00	835.23	166.35	0.31
100% Design	4000	3340.00	1051.79	1059.57	1056.26	1059.83	0.000870	4.12	811.66	169.56	0.33
100% Design	4200	3340.00	1052.02	1059.75	1056.41	1060.00	0.000802	4.01	832.40	170.02	0.32
100% Design	4400	3340.00	1052.20	1059.91	1056.66	1060.18	0.000870	4.19	797.35	162.11	0.33
100% Design	4600	3340.00	1052.47	1060.08	1056.86	1060.37	0.001091	4.29	779.19	157.34	0.34
100% Design	4800	3340.00	1052.70	1060.30	1057.25	1060.61	0.001219	4.50	742.62	151.39	0.36
100% Design	5000	3340.00	1052.85	1060.54	1057.43	1060.85	0.001182	4.44	752.79	152.99	0.35
100% Design	5200	3340.00	1053.16	1060.77	1057.76	1061.14	0.001453	4.83	690.87	144.15	0.39
100% Design	5330	3340.00	1053.30	1060.99	1057.79	1061.32	0.001157	4.56	732.88	140.70	0.35
100% Design	5400	3340.00	1053.46	1061.04	1058.00	1061.42	0.001346	4.97	672.51	126.55	0.38
100% Design	5450	3340.00	1053.57	1060.97	1058.56	1061.56	0.001783	6.19	540.01	103.74	0.48
100% Design	5482	3097.00	1053.57	1061.16	1058.24	1061.60	0.000358	5.34	580.17	106.58	0.40
100% Design	5591	Bridge									
100% Design	5592	3097.00	1053.97	1061.58	1058.44	1062.00	0.000329	5.20	596.11	106.74	0.39
100% Design	5633	3097.00	1055.49	1061.32	1060.15	1062.15	0.001009	7.31	423.54	106.87	0.65
100% Design	5730	3097.00	1055.77	1061.63	1060.25	1062.32	0.003080	6.68	463.58	120.83	0.60
100% Design	5800	3097.00	1055.83	1061.99	1060.25	1062.52	0.002260	5.87	527.62	132.27	0.52
100% Design	6000	3097.00	1055.99	1062.45	1060.45	1062.94	0.001918	5.62	550.91	130.64	0.48
100% Design	6200	3097.00	1056.16	1062.91	1060.56	1063.29	0.001477	4.99	621.03	144.94	0.42
100% Design	6400	3097.00	1056.31	1063.18	1060.76	1063.59	0.001474	5.12	604.45	134.83	0.43
100% Design	6600	3097.00	1056.44	1063.43	1061.10	1063.93	0.001668	5.69	544.22	113.39	0.46
100% Design	6800	2844.00	1056.63	1063.84	1061.03	1064.23	0.001207	4.97	571.68	114.24	0.39
100% Design	7000	2844.00	1056.79	1064.09	1061.20	1064.47	0.001172	4.94	576.22	113.87	0.39
100% Design	7200	2844.00	1056.90	1064.33	1061.35	1064.70	0.001112	4.84	587.80	114.95	0.38
100% Design	7400	2844.00	1057.11	1064.57	1061.53	1064.92	0.001074	4.78	595.30	115.63	0.37
100% Design	7600	2844.00	1057.27	1064.76	1061.75	1065.16	0.001164	5.09	558.99	104.33	0.39
100% Design	7660	2844.00	1057.29	1064.79	1061.85	1065.25	0.001270	5.43	524.07	94.21	0.41
100% Design	7676.4	2844.00	1058.11	1064.66		1065.36	0.001918	6.72	423.41	64.62	0.46
100% Design	7815	Culvert									
100% Design	7816.7	2844.00	1058.05	1066.00	1061.96	1066.47	0.000301	5.54	513.36	64.61	0.35
100% Design	7828.7	2844.00	1059.89	1065.77		1066.58	0.001113	7.26	391.99	107.68	0.67
100% Design	7872	2844.00	1059.96	1065.86		1066.67	0.003833	7.20	394.92	108.02	0.66
100% Design	8000	2844.00	1060.16	1066.51		1067.11	0.002842	6.21	458.18	125.56	0.57
100% Design	8200	2844.00	1060.46	1067.16		1067.57	0.001787	5.17	550.34	140.63	0.46
100% Design	8400	2844.00	1060.76	1067.47		1068.06	0.002681	6.15	462.31	122.73	0.56
100% Design	8600	2844.00	1061.06	1068.23		1068.72	0.003992	6.59	508.59	114.15	0.47
100% Design	8800	2844.00	1061.36	1069.01		1069.43	0.003145	5.18	548.67	115.25	0.42
100% Design	9000	2844.00	1061.66	1069.67		1069.92	0.001833	3.98	713.69	149.12	0.32
100% Design	9200	2844.00	1062.00	1070.04		1070.31	0.002070	4.24	670.12	139.82	0.34
100% Design	9400	2844.00	1062.27	1070.44	1067.14	1070.73	0.002069	4.29	662.51	134.97	0.34
100% Design	9600	2844.00	1062.57	1070.87	1067.34	1071.11	0.001754	3.96	717.71	146.25	0.32
100% Design	9800	2844.00	1062.87	1071.21	1067.68	1071.47	0.001808	4.05	702.09	141.08	0.32
100% Design	10000	2844.00	1063.17	1071.57	1067.99	1071.82	0.001743	4.01	709.99	141.49	0.32
100% Design	10200	2844.00	1063.47	1071.92	1068.31	1072.17	0.001745	4.02	706.80	139.99	0.32
100% Design	10400	2844.00	1063.77	1072.27	1068.64	1072.53	0.001762	4.06	700.39	137.43	0.32
100% Design	10600	2844.00	1064.07	1072.62	1068.97	1072.89	0.001771	4.11	691.17	133.64	0.32
100% Design	10800	2844.00	1064.38	1072.97	1069.39	1073.24	0.001866	4.17	682.60	134.49	0.33
100% Design	11000	2844.00	1064.68	1073.32	1069.68	1073.63	0.001968	4.43	641.54	119.32	0.34
100% Design	11075	2844.00	1064.79	1073.50	1069.69	1073.77	0.001676	4.13	688.76	127.14	0.31
100% Design	11144	2844.00	1064.89	1073.55	1070.15	1073.94	0.002438	5.04	564.83	101.45	0.38
100% Design	11180	2844.00	1064.92	1073.56	1070.18	1073.96	0.000313	5.08	560.14	100.94	0.38
100% Design	11285	Bridge									
100% Design	11286	2844.00	1065.08	1073.74	1070.19	1074.12	0.000287	4.93	576.87	101.73	0.36
100% Design	11291	2844.00	1065.10	1073.75	1070.24	1074.12	0.000288	4.92	578.37	102.26	0.36
100% Design	11349	2844.00	1065.19	1073.89		1074.17	0.001845	4.31	659.78	122.25	0.33
100% Design	11542	2844.00	1065.49	1074.23		1074.57	0.002079	4.69	606.48	107.75	0.35
100% Design	11614	2844.00	1065.60	1074.36		1074.73	0.002222	4.89	582.10	101.74	0.36
100% Design	11715	2844.00	1065.75	1074.64	1070.90	1075.00	0.003118	4.78	594.60	102.51	0.35
100% Design	11755	2844.00	1066.40	1073.41		1075.94	0.027106	12.77	222.78	31.81	0.85

HEC-RAS Plan: 100% River: BH/GC ECP Reach: 100% Design Profile: PF 1 (Continued)

Reach	River Sta	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
		(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
100% Design	11991	Culvert									
100% Design	11992	2844.00	1066.78	1077.37	1073.07	1078.48	0.000702	8.44	336.92	31.85	0.46
100% Design	12200	1533.00	1067.10	1078.36		1078.64	0.000169	4.25	360.54	32.03	0.22
100% Design	12284	1533.00	1067.22	1078.37	1071.37	1078.65	0.000175	4.31	355.37	31.96	0.23
100% Design	12298	1533.00	1074.34	1079.21	1079.21	1081.65	0.003411	12.53	122.34	25.11	1.00
100% Design	18260	Culvert									
100% Design	18261	1533.00	1080.27	1088.43	1085.13	1089.30	0.000771	7.49	204.78	25.12	0.46
100% Design	18361	1533.00	1080.37	1088.50		1089.38	0.000781	7.52	203.85	25.12	0.47
100% Design	18377	1141.00	1080.38	1088.34		1089.48	0.001293	8.54	133.63	16.80	0.53
100% Design	18859	Culvert									
100% Design	18860	1141.00	1080.86	1090.72	1086.08	1091.46	0.000734	6.89	165.49	16.79	0.39
100% Design	18918	959.00	1080.90	1091.02		1091.52	0.000486	5.65	169.74	16.80	0.31
100% Design	18920	959.00	1082.06	1090.92		1091.57	0.000688	6.45	148.81	16.79	0.38
100% Design	19000	959.00	1082.12	1090.98		1091.62	0.000689	6.46	148.52	16.79	0.38
100% Design	19200	959.00	1082.28	1091.11		1091.76	0.000695	6.48	148.05	16.79	0.38
100% Design	19400	959.00	1082.40	1091.25		1091.90	0.000696	6.48	148.04	16.79	0.38
100% Design	19600	959.00	1082.60	1091.38		1092.04	0.000705	6.51	147.29	16.79	0.39
100% Design	19800	959.00	1082.76	1091.52		1092.18	0.000710	6.53	146.86	16.80	0.39
100% Design	20000	959.00	1082.90	1091.67		1092.31	0.000687	6.46	148.50	17.08	0.39
100% Design	20051	959.00	1082.95	1092.32		1092.38	0.000043	1.89	507.42	90.56	0.14
100% Design	20200	959.00	1083.04	1092.38		1092.39	0.000067	1.33	718.86	118.57	0.10
100% Design	20400	830.00	1083.18	1092.39		1092.41	0.000059	1.24	673.68	136.69	0.09
100% Design	20600	830.00	1083.30	1092.40		1092.43	0.000060	1.22	679.36	117.52	0.09
100% Design	20800	830.00	1083.45	1092.42		1092.44	0.000058	1.21	686.11	117.52	0.09
100% Design	21000	830.00	1083.59	1092.43		1092.46	0.000060	1.25	666.75	111.70	0.09
100% Design	21200	830.00	1083.73	1092.45		1092.48	0.000065	1.29	643.83	108.93	0.09
100% Design	21400	700.00	1083.90	1092.47		1092.48	0.000008	0.48	1472.67	223.50	0.03
100% Design	21600	700.00	1084.02	1092.48		1092.49	0.000011	0.59	1190.35	176.78	0.04
100% Design	21800	700.00	1084.18	1092.48		1092.50	0.000053	1.14	616.28	107.65	0.08
100% Design	22000	700.00	1084.34	1092.49		1092.51	0.000072	1.29	542.98	99.24	0.10
100% Design	22200	700.00	1084.50	1092.50		1092.52	0.000063	1.22	574.40	103.76	0.09
100% Design	22400	700.00	1084.66	1092.51		1092.53	0.000061	1.19	586.05	106.09	0.09
100% Design	22600	700.00	1084.80	1092.53		1092.55	0.000060	1.18	593.68	107.81	0.09
100% Design	22800	700.00	1085.00	1092.54		1092.55	0.000016	0.67	1048.62	170.32	0.05
100% Design	23000	700.00	1085.17	1092.55		1092.56	0.000006	0.43	1618.74	250.43	0.03
100% Design	23200	700.00	1085.30	1092.55		1092.57	0.000053	1.06	659.84	128.73	0.08
100% Design	23400	700.00	1085.50	1092.55		1092.58	0.000078	1.29	541.87	105.08	0.10
100% Design	23600	700.00	1085.68	1092.56		1092.59	0.000088	1.35	517.81	102.71	0.11
100% Design	23800	700.00	1085.85	1092.57		1092.60	0.000098	1.41	497.98	101.23	0.11
100% Design	24000	700.00	1086.00	1092.59		1092.62	0.000098	1.40	501.61	102.54	0.11
100% Design	24200	700.00	1086.20	1092.60		1092.64	0.000113	1.48	474.48	99.81	0.12
100% Design	24400	700.00	1086.35	1092.62		1092.66	0.000122	1.51	463.00	98.94	0.12
100% Design	24600	700.00	1086.51	1092.64		1092.68	0.000137	1.58	442.54	96.77	0.13
100% Design	24800	700.00	1086.68	1092.66		1092.70	0.000147	1.62	433.34	96.53	0.13
100% Design	24900	345.00	1086.74	1092.70		1092.71	0.000041	0.84	408.58	92.31	0.07
100% Design	24960	345.00	1086.88	1091.92		1093.05	0.001903	8.53	40.45	8.04	0.67
100% Design	27479	Culvert									
100% Design	27480	345.00	1088.90	1095.66	1092.75	1096.27	0.000873	8.30	54.78	8.21	0.43
100% Design	27510	345.00	1086.00	1096.34		1096.34	0.000002	0.23	1491.14	214.59	0.02
100% Design	27810	345.00	1086.00	1096.34	1086.77	1096.34	0.000000	0.12	2834.20	366.28	0.01
100% Design	28010	345.00	1086.00	1096.34	1086.97	1096.34	0.000001	0.18	1898.20	264.94	0.01
100% Design	28210	345.00	1086.38	1096.34	1087.32	1096.34	0.000001	0.19	1851.12	254.19	0.01
100% Design	28410	345.00	1087.00	1096.34	1087.81	1096.34	0.000001	0.20	1750.67	256.52	0.01
100% Design	28590	345.00	1087.00	1096.34	1088.26	1096.34	0.000002	0.22	1585.54	231.88	0.01

APPENDIX F

EROSION AND SEDIMENT TRANSPORT ANALYSES SUPPORTING DOCUMENTATION

DMJM HARRIS	PROJECT: BHO C, Phase II	JOB NO. 6888	SHEET 1-1 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Erosion Control Measures		CHECKED BY JRM	DATE 3/11/02

The erosion control measures evaluated for this project include:

(1) Enkamat Turf Reinforcement Matting (TRM), and

(2) Conlock I and Conlock II Articulated Concrete Blocks (ACB)

As shown in the following pages,

- Enkamat is proposed in the vicinity of proposed bridges (ie, 83rd Avenue and 91st Avenue bridges) and the 6-10' x 5' RCBC, and
- Conlock is proposed in the vicinity of the 3-10' x 8' RCBC and along the spillways.

The applications of these erosion control measures are provided in the following pages. The hydraulic tests and guidelines provided by the manufacturers and other hydraulic criteria documented in several hydraulic text-books were used in the computations.

The guidelines documented by the manufacturers (ie, hydraulic tests) are provided at the end of the hand computations.

The longitudinal extend and type of erosion control measures, in the vicinity of the proposed structures, are also summarized at the end of the hand computations.

(1) ENKAMAT TRM :

Among alternative erosion protection treatments, a fiber matrix system (Enkamat) was chosen for further evaluation. The application of these systems upstream and downstream of the proposed bridge crossings (ie, 83rd Avenue and 91st Avenue) and the 6-10' x 5' RCBC are analyzed.

To achieve stable channel design, the hydraulic forces (ie, maximum channel velocity and boundary shear stress) will be evaluated.

Boundary shear stress

The average boundary shear stress is the tractive force per unit of wetted area and can be calculated as:

$$\tau_0 = \gamma_w \; R \; S_e \quad \left(\text{the maximum shear stress, } (\tau_0)_{max} = \gamma \; y \; S_e \right)$$

y = flow depth

Where:

τ_0 = mean boundary shear stress, lb/ft^2

γ_w = unit weight of water, 62.4 lb/ft^3

R = hydraulic radius = $\dfrac{\text{Area}}{\text{Top width}}$, ft

S_e = slope of the energy grade line

The boundary shear stress varies ~~within a river reach~~ as a consequence of the non-uniform distribution of velocity in the cross section. The local boundary shear stress that will be used in design can be calculated as follows:

$$\tau_b = K_a * \tau_o$$

Where

K_a = associated local boundary shear stress adjustment factor.

At the proposed bridge / culvert locations where Enkamat might be applied, the average boundary shear stress can be computed as:

Location	y (a) (ft)	R (a) (ft)	S_e (a) (ft/ft)	τ_o (lb/ft²)	$(\tau_o)_{max}$ (lb/ft²)
d/s face of 91st Av Bridge	6.83	4.80	0.00056	0.17	0.24
u/s face of 91st Av Bridge	6.95	5.01	0.00048	0.15	0.21
d/s face of 6-10' x 5' culvert	6.48	5.40	0.00057	0.19	0.23
u/s face of 6-10' x 5' culvert	7.91	6.35	0.00031	0.12	0.15
d/s face of 83rd Av Bridge	7.26	4.66	0.00066	0.19	0.30
u/s face of 83rd Av Bridge	7.47	4.87	0.00054	0.16	0.25
d/s face of 3-10' x 8' culvert	6.29	4.51	0.01109	3.12	4.35
u/s face of 3-10' x 8' culvert	10.60	6.36	0.00070	0.28	0.46

To compute the local boundary shear stress, the guidelines in "Sizing Riprap for the Protection of Approach Embankments and Spur Dikes and Limiting the Depth of Scour at Bridge Piers and Abutments," by Simons, Li & Assoc. (SLA, 1989) for ADOT, were used. (Report No: FHWA-AZ 89-260)

(a) See the hydraulic summary table

The following two correction factors were used to adjust τ_0:

(i) At the bridge section (Channel bed adjustment factor)

The following equation provides the boundary shear stress adjustment factor for a bridge section:

$$K_{bc} = F_1 * \left(A + 2g \frac{h_d}{V_a^2} \right)$$

Where

F_1 = component of the adjustment factor (see Chart 11 in FHWA-AZ 89-26

A = velocity head coefficient ($A = 1.1$ recommended for symmetric channels

h_d = total water-surface drop through the bridge, ft

V_a = mean velocity of approach flow, ft/s.

g = gravitational acceleration, 32.2 ft/s^2

The correction factor and the associated τ_{max} for the 91st and 83rd Av. bridges can be computed as follows:

Location	$(\tau_0)_{max}$ (1)	h_d	L (2)	F_1	A	V_a	K_{bc}	τ_b (3)
91st Av bridge	0.24	0.21	106	0.98	1.1	7.09 (4)	1.29	0.31
	0.17	0.50	106	0.98	1.1			
83rd Av bridge	0.30	0.02	104	1.0	1.1	5.86 (5)	1.13	0.34

(1) maximum boundary shear stress (see page 2)

(2) width of the bridge

(3) local boundary shear stress used at bridge locations.

(4) Average of Sections 5592 - 5800

(ii) Bend adjustment factor

A channel bend causes an increase in local boundary shear stress. The adjustment factor is calculated as follows:

$$K_r = 3.16 * \left(\frac{R_c}{T}\right)^{-0.5} \quad \text{for } \frac{R_c}{T} < 10$$

$$K_r = 1.0 \quad \text{for } \frac{R_c}{T} \geq 10$$

where

R_c = centerline radius of the bend, ft

T = flow topwidth at upstream end of the bend, ft

A bend adjustment factor is required at the outlet of 6-10' x 5' RCBC. Using the R_c of the bend and the hydraulic properties at section 7686

R_c = ~~185~~ 125 ft T = 64.6 ft $\Rightarrow \frac{R_c}{T}$ = 2.9 / 1.9

Therefore, $K_r = 3.16\ (2.9)^{-0.5} = 1.86$ / 2.3

The local boundary shear stress at the 6-10' x 5' RCBC outlet is.

$\tau_b = K_r * (\tau_0)_{max} = 1.86 * 0.23 = 0.43$ lb/ft^2 ✓

$2.3\ (0.19) = 0.43$

DMJM HARRIS	PROJECT: BHOC, Phase II	JOB NO. 6888	SHEET 5 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of Enkamat		CHECKED BY JRM	DATE 2/10/02

To evaluate the applicability of the Enkamat Turf Reinforcement Mat, the following two performance properties, permissible shear stress and permissible velocity, were compute

(a) Permissible Shear Stress

The technical data associated with a variety of Enkamat products (i.e, 7000-, 7200-, and 7900-series) are provided in the following page.

As shown in this table the minimum and maximum permissible shear stresses (τ_p) are 6.0 lb/ft^2 and 8.0 lb/ft^2, respectively.

As recommended in the SLA (1989) report, a factor of safety is applied to τ_p to compute the design shear stresses (τ_d) that will be used in the design of erosion control measures.

The recommended safety factors for the bridges and culverts are 1.60 and 1.25, respectively

Therefore, the design shear stresses that will be used for the application of the Enkamat products are summarized as follows:

$$\tau_d = (\tau_p) \;/\; (\text{Factor of Safety})$$

Structure	τ_p (1)	Factor of Safety	τ_d
Bridge	6 lb/ft^2	1.60	3.75 lb/ft^2
Culvert	6 lb/ft^2	1.25	4.80 lb/ft^2

(1) The minimum available shear stress as supported by the Enkamat TRM (50-hr vegetated values are used).

→ To complete the evaluation of the shear stress, the local boundary shear stress (τ_b) will be compared to the design shear stress (τ_d)

→ If $\tau_b < \tau_d$, the application of Enkamat is appropriate wrt to the shear stress criteria

DMJM HARRIS	PROJECT: BHOC, Phase II	JOB NO. 6888	SHEET 6 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of Enkamat		CHECKED BY JRM	DATE 2/10/02

Location	τ_b	τ_d	Application of Enkamat[1]
91st Av Bridge	0.31	3.75	Adequate (Use Enkamat 7020[3])
6-10' x 5' culvert	0.43	4.80	Adequate (Use Enkamat 7020[3])
83rd Av Bridge	0.34	3.75	Adequate (Use Enkamat 7020[3])
3-10' x 8' culvert	4.35	4.80	Adequate[2]

(1) Applicability of the Enkamat wrt shear stress.

(2) Application of Enkamat is not adequate wrt permissible velocity. (see the summary at the end of this page)

(3) The upstream and downstream limits are documented in p. 21-24.

(b) Permissible Velocity

→ Similar to the permissible shear stress, permissible velocity values are documented in the technical data summary table.

→ To evaluate the application of Enkamat, V_p values are compared to the maximum channel velocities (V_{max}) at the outlet of the culvert and the u/s and d/s faces of the bridge.

If $V_{max} < V_p$, the application of Enkamat is appropriate wrt to the velocity criteria.

Location	V_{max} (ft/s)	V_p[1] (ft/s)	Application of Enkamat
91st Av bridge, d/s face	6.3	14.0	Adequate
91st Av bridge u/s face	6.0	14.0	Adequate
6-10' x 5' culvert outlet	6.8	14.0	Adequate
83rd Av bridge, d/s face	6.6	14.0	Adequate
83rd Av bridge, u/s face	6.2	14.0	Adequate
3-10' x 8' culvert outlet	14.2	14.0	NOT Adequate ✓

Enkamat® 7020

COLBOND
GEOSYNTHETICS

Description

Enkamat 7020 is a three-dimensional turf reinforcement mat (TRM) made of heavy nylon monofilaments fused at their intersections. Ninety-five percent of the geomatrix is open and available for soil and root interaction with filaments.

Recommended Applications

- *Slopes*
- *Turf Reinforcement*
- *Landfill Closures*
- *Channels*
- *Ponds*
- *Weathered Embankments*

7020 TECHNICAL DATA			
PROPERTY	TEST METHOD	UNIT	TYPICAL VALUE
Color	Visual		Black
Mass/Unit Area	ASTM D 5261	oz/yd^2	12.0
Thickness	ASTM D 5199	inches	0.7
Tensile Strength	ASTM D 5035 mod.		
Machine (Roll) Direction		lb./ft.	240.0
Cross Machine Direction		lb./ft.	145.0
Area Holding Capacity	Calculated	in^3/yd^2	850
Porosity	Calculated	%	>95
UV Stability	ASTM G53, ASTM D1682 mod.	%	80
Performance Data			
Permissible Velocity			
7020 alone, direct measurement	Independent Testing(1)	ft./sec.	20.0
30 minute, vegetated	Independent Testing(1)	ft./sec.	19.0
50 hour, vegetated	Independent Testing(1)	ft./sec.	14.0
Permissible Shear stress			
7020 alone, direct measurement	Independent Testing(1)	$lb./ft.^2$	11.2
30 minute, vegetated	Independent Testing(1)	$lb./ft.^2$	10.0
50 hour, vegetated	Independent Testing(1)	$lb./ft.^2$	8.0

1) Test Data developed through Independent Laboratory - available upon request.

(2) CONLOCK ACB

The application of Conlock ACB, as erosion control measures, at the culvert outlets and along the spillways are tested. The specific type of the Conlock unit is chosen by testing the factor of safety against sliding and overturning.

(a) Stability against sliding : The guidelines presented in the Erosion Control Manuals are used to check the stability of a single block against sliding at the culvert outlet and the spillways.

(i) 3 - 10' x 8' culvert

As shown on pages 2 and 6, the maximum boundary shear stress, $(\tau_o)_{max}$, at the culvert outlet is 0.23 lb/ft^2, and the local boundary, τ_b, is 0.43 lb/ft^2.

To check the stability of the blocks wrt to sliding, τ_b is compared to the resistive slip shear traction (τ_{st}). τ_{st} is expressed as:

$$\tau_{st} = f_c \left(W \left(1 - \sin\alpha \right) \right)$$

where :

f_c = static friction at block / fabric interface

W = submerged weight of block (lb/ft^2)

α = channel bottom slope (in degrees)

Since CONLOCK II 4VM-30 block has the greatest percent open area (26% - 28.3%) and exhibits the lowest weight per ft^2, it will be used for preliminary computations.

As documented in the Hydropave Erosion System Manuals (1999 and 2001)

$f_c = 0.65$

$W = (21.2 \text{ lb}) / (1.20 \text{ ft}^2) = 17.67 \text{ lb/ft}^2$

Table 1. Conlock Hydraulic Data

CONLOCK II BLOCK DATA													
Block Class	Weight	Cov.	Weight	Weight submerged	L	W	H	n	Moment Arms l1	l2	l3	l4	Tc
	(lb)	(ft^2)	(lb/ft^2)	(lb)	(in)	(in)	(in)		(ft)	(ft)	(ft)	(ft)	(lb/ft^2)
4NVM-05	43.2	1.04	41.6	23.3	16.7	12.0	4.0	0.022	0.167	0.780	0.267	0.780	11.48
4NVM-10	43.2	1.10	39.4	23.3	16.7	12.0	4.0	0.024	0.167	0.780	0.267	0.780	11.48
4NVM-20	43.2	1.20	36.1	23.3	16.7	12.0	4.0	0.026	0.167	0.780	0.267	0.780	11.48
6NVM-05	65.4	1.04	62.9	35.2	16.7	12.0	6.0	0.022	0.250	0.780	0.400	0.780	14.79
6NVM-l0	65.4	1.10	59.5	35.2	16.7	12.0	6.0	0.024	0.250	0.780	0.400	0.780	14.79
6NVM-20	65.4	1.20	54.5	35.2	16.7	12.0	6.0	0.026	0.250	0.780	0.400	0.780	14.79
8NVM-05	86.5	1.04	83.2	46.5	16.7	12.0	8.0	0.022	0.333	0.780	0.533	0.780	17.03
8NVM-10	86.5	1.10	78.6	46.5	16.7	12.0	8.0	0.025	0.333	0.780	0.533	0.780	17.03
8NVM-20	86.5	1.20	72.1	46.5	16.7	12.0	8.0	0.027	0.333	0.780	0.533	0.780	17.03
4VM-10	39.3	1.04	37.8	21.2	16.7	12.0	4.0	0.026	0.167	0.780	0.267	0.780	10.44
4VM-20	39.3	1.10	35.7	21.2	16.7	12.0	4.0	0.028	0.167	0.780	0.267	0.780	10.44
*4VM30	39.3	1.20	32.8	21.2	16.7	12.0	4.0	0.030	0.167	0.780	0.267	0.780	10.44
6VM-10	59.2	1.04	56.9	31.8	16.7	12.0	6.0	0.026	0.250	0.780	0.400	0.780	13.38
6VM-20	59.2	1.10	53.8	31.8	16.7	12.0	6.0	0.028	0.250	0.780	0.400	0.780	13.38
6VM-30	59.2	1.20	49.3	31.8	16.7	12.0	6.0	0.030	0.250	0.780	0.400	0.780	13.38
8VM-10	78.7	1.04	75.7	42.3	16.7	12.0	8.0	0.027	0.333	0.780	0.533	0.780	15.49
8VM-20	78.7	1.10	71.5	42.3	16.7	12.0	8.0	0.029	0.333	0.780	0.533	0.780	15.49
8VM-30	78.7	1.20	65.6	42.3	16.7	12.0	8.0	0.031	0.333	0.780	0.533	0.780	15.49

CONLOCK I BLOCK DATA													
Block Class	Weight	Cov.	Weight	Weight submerged	L	W	H	n	Moment Arms l1	l2	l3	l4	Tc
	(lb)	(ft^2)	(lb/ft^2)	(lb)	(in)	(in)	(in)		(ft)	(ft)	(ft)	(ft)	(lb/ft^2)
400-02	42.4	1.0	42.4	22.8	16.0	12.0	4.0	0.022	0.167	0.833	0.267	0.833	25.43
400-07	39.5	1.0	39.5	21.2	16.0	12.0	4.0	0.023	0.167	0.833	0.267	0.833	23.67
400~17*	35.2	1.0	35.2	18.9	16.0	12.0	4.0	0.028	0.167	0.833	0.267	0.833	21.12
400-24	32.3	1.0	32.3	17.3	16.0	12.0	4.0	0.030	0.167	0.833	0.267	0.833	19.35
600-02	62.6	1.0	63.6	33.7	16.0	12.0	6.0	0.023	0.250	0.833	0.400	0.833	32.01
600-07	58.6	1.0	59.3	31.5	16.0	12.0	6.0	0.024	0.250	0.833	0.400	0.833	29.94
600-17	51.8	1.0	52.8	27.9	16.0	12.0	6.0	0.029	0.250	0.833	0.400	0.833	26.50
600-24	47.7	1.0	47.7	25.6	16.0	12.0	6.0	0.030	0.250	0.833	0.400	0.833	24.37
800-02	83.5	1.0	84.8	44.9	16.0	12.0	8.0	0.023	0.333	0.833	0.533	0.833	37.18
800-07	76.6	1.0	79.0	41.2	16.0	12.0	8.0	0.024	0.333	0.833	0.533	0.833	34.09
800-17	69.1	1.0	70.4	37.2	16.0	12.0	8.0	0.029	0.333	0.833	0.533	0.833	30.77
800-24	63.3	1.0	63.3	34.0	16.0	12.0	8.0	0.031	0.333	0.833	0.533	0.833	28.16

* Flume Tested

DMJM HARRIS	PROJECT: BHO C - Phase II	JOB NO. 6888	SHEET 8 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of ~~Enkamat~~ CONLOCK		CHECKED BY VRM	DATE 2/10/02

Using the channel bottom slope in the vicinity of the proposed culvert,

$S_0 = 0.001507$ ft/ft ($\alpha = \tan^{-1}(0.001507) = 0.086°$), τ_{st} can be computed as

$$\tau_{st} = 0.65\left(17.67\left(1 - \sin(0.086)\right)\right) = 11.48 \text{ lb/ft}^2$$

For design purposes a safety factor (wrt sliding) of 2.0 will be used in the computations. Therefore, the design shear stress can be computed as:

$$\tau_d = \tau_{st} / 2.0 = 5.74 \text{ lb/ft}^2$$

Since $\tau_b < \tau_d$, application of CONLOCK II 4VM-30 is adequate ✓ wrt <u>sliding</u>.

(ii) Spillways Slope = 6:1 ⇒ $\theta = 9.5°$

Use 4VM-30 (CONLOCK II) $S = 0.1667$ ft/ft

$\tau_{st} = 0.65\,(17.67\,(1 - \sin(9.5))) = 9.60$ lb/ft^2

$\tau_d = \tau_{st} / 2.0 = 9.60 / 2 = 4.80$ lb/ft^2

$\tau_0 = \gamma\, y^{(1)} S^{(2)} = 62.4 * 1.0 * 0.1667 = 10.4$ lb/ft^2

Since $\tau_0 > \tau_d$ application of CONLOCK II 4VM-30 is not adequate.

Use 800-07 (CONLOCK I)

$\tau_{st} = 0.65\,(41.20^{(3)}(1 - \sin(9.5))) = 22.36$ lb/ft^2

$\tau_d = 11.18$ lb/ft^2

Since $\tau_0 < \tau_d$ application of 800-07 is adequate.

Assumptions:

(1) Flow depth is 1 ft at the spillway crest

(2) Spillway is at a 6:1 slope ($S \approx 0.1667$ ft/ft)

(3) Submerged weight of the individual block = (41.2 lb)/(1 ft^2) = 41.2 lb/ft

(b) Stability against overturning

As defined in the Hydropave Engineering & Technical Manual (2001) the stability of a single concrete block on a sloping face wrt to overturning can be computed as follows:

$$\ell_2 W_A \cos\theta = \ell_1 W_A \sin\theta \cos\beta + \ell_3 F_D \cos\delta + \ell_4 F_L$$

Where:

W_A = submerged weight of the block (lb/ft^2)

ℓ_1 and ℓ_2 = moment arms of the weight of the block (side - and longitudinal-slope)

F_D = drag force on the block

F_L = lift force on the block

ℓ_3 and ℓ_4 = moment arms of the lift and drag forces on the block

θ = side slope angle relative to the horizontal plane

λ = angle between the horizontal and the velocity vector measured in the plane of the side slope.

δ = angle between the drag force and particle movement direction = $90 - \beta - \lambda$

β = angle between the block movement direction and the vertical plane.

The factor safety, SF, for the block is defined as the ratio of moments resisting motion to those tending to rotate the block out of its resting position. The factor of safety can be expressed as:

$$SF = \frac{\ell_2 W_A \cos\theta}{\ell_1 W_A \sin\theta \cos\beta + \ell_3 F_D \cos\delta + \ell_4 F_L} \quad \ldots\ldots \quad (1)$$

For the special case of:

- Canlocks applied to the main channel bed instead of the side slopes, the SF can be computed by interpreting some of the parameters as follows:

$\theta =$ channel bottom slope

$\lambda = 90^\circ$

$\beta = \delta = 0^\circ \qquad (\delta = 90 - \beta - 90 = 0^\circ)$

Then the safety factor simplifies to;

$$SF = \frac{\ell_2 W_A \cos\theta}{\ell_1 W_A \sin\theta + \ell_3 F_D + \ell_4 F_L} \quad \ldots\ldots \quad (2)$$

Numerical tests indicate that the drag force on the block can be computed as follows:

$$F_D = c\,(\Delta z\, w\, \rho\, V^2)$$

Where

$\Delta z =$ projection height (assume 1 inches = 0.083 ft)

$w =$ width of projection

$C =$ momentum transfer coefficient (assumed equal to 0.5)

$\rho =$ fluid density (1.94 slug/ft^3)

$V =$ velocity (ft/s.)

When the additional forces of projecting blocks are considered, the factor of safety equation becomes:

$$SF = \frac{\cos\theta\left(\frac{l_2}{l_1}\right)}{\eta'\left(\frac{l_2}{l_1}\right) + \sin\theta\cos\beta + \frac{l_3 F_D \cos\delta + l_4 F_L}{l_1 W_A}} \quad \ldots\ldots (3)$$

For the special case of conlocks applied to the main channel bed instead of the side slopes, the factor of safety can be computed as:

$$SF = \frac{\cos\theta\left(\frac{l_2}{l_1}\right)}{\eta'\left(\frac{l_2}{l_1}\right) + \sin\theta + \frac{l_3 F_D + l_4 F_L}{l_1 W_A}} \quad \ldots\ldots (4)$$

where:

$$\eta' = \left\{\frac{\frac{M}{N} + \sin(\lambda+\beta)}{\frac{M}{N}+1}\right\}\eta$$

$$\frac{M}{N} = \frac{l_4 F_L}{l_3 F_D}$$

$$\eta = \frac{\tau_o}{\tau_c}$$

τ_o = shear stress acting on the channel

τ_c = critical shear stress when failure occurs.

DMJM HARRIS	PROJECT: BHOC, Phase II	JOB NO. 6888	SHEET 13 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of Conlock		CHECKED BY JRM	DATE 2/10/02

(i) 3-10' x 8' RCBC

First, test the applicability of CONLOCK II 4VM-30;

$$F_D = 0.5\left(0.083\,(1.0)\,(1.94)\,(11.8^{(1)})^2\right) = 11.2 \text{ N}$$

Assume that $F_D = F_L$ (2)

$$S = 0.1507\% = 0.001507 \text{ ft/ft}$$

$$\therefore \tan\theta = 0.001507 \Rightarrow \theta = 0.086^\circ$$

$$\eta = \frac{\tau_o}{\tau_c} = \frac{4.35}{10.44} = 0.417$$

As shown on p. 6, $\tau_o = 4.35$ lb/ft^2

Using the guidelines in the Hydropave Erosion Control Manual (2001) for 4VM-30, $\tau_c = 10.44$ lb/ft^2

$$\frac{M}{N} = \frac{l_4}{l_3} = 2.92$$

$$\eta' = \left\{\frac{2.92+1}{2.92+1}\right\} 0.417 = 0.417$$

$$SF = \frac{\cos(0.086)\left(\frac{0.78}{0.167}\right)}{0.417\left(\frac{0.78}{0.167}\right) + \sin(0.086) + \frac{(0.267 * 16.3) + (0.78 * 16.3)}{0.167 * 17.67}} = 0.60$$

Assumptions:

(1) Based on the following hydraulic conditions; TW water-surface elevation = 1074 ft.

(2) Assume that the additional lift due to the vertical displacement is equal to the additional drag.

DMJM HARRIS	PROJECT: BHOC - Phase II	JOB NO. 6888	SHEET 14 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of Conlock		CHECKED BY JRM	DATE 2/10/02

Since SF < 1.5, the application of CONLOCK II 4VM-30 is not adequate, therefore, test the applicability of 6VM-30;

$$\eta = \frac{4.35}{13.38} = 0.325$$

$$\eta' = 0.325$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.78}{0.25}\right)}{0.325\left(\frac{0.78}{0.25}\right) + \sin(0.086) + \frac{(0.4 * 11.2) + (0.78 * 11.2)}{0.25 * 26.5}} = \underline{\underline{1.03}}$$

Since SF < 1.5, test the applicability of 8VM-30;

$$\eta = \frac{4.35}{15.49} = 0.28 \qquad \eta' = 0.28$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.78}{0.333}\right)}{0.28\left(\frac{0.78}{0.333}\right) + \sin(0.086) + \frac{(0.533 * 11.2) + (0.78 * 11.2)}{0.333 * 35.25}} = \underline{\underline{1.23}}$$

Since SF < 1.5, the application of CONLOCK II is <u>not adequate</u> at the outlet of 3 - 10' x 8' culvert

DMJM HARRIS	PROJECT: BHOC, Phase II	JOB NO. 6888	SHEET 15 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT: Application of Conlock		CHECKED BY JRM	DATE 2/10/02

As an alternative erosion control measure, application of Conlock I will be tested at the culvert outlet. First, 400-17 will be applied as follows;

$$\eta = \frac{\tau_o}{\tau_c} = \frac{4.35}{21.12} = 0.206 \qquad \eta' = 0.206$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.833}{0.167}\right)}{0.206\left(\frac{0.833}{0.167}\right) + \sin(0.086) + \frac{(0.267 * 11.2) + (0.833 * 11.2)}{0.167 * 18.9}} = 1.01$$

Since SF < 1.5, application of 600-17 will be tested;

$$\eta = \frac{\tau_o}{\tau_c} = \frac{4.35}{26.50} = 0.164 \qquad \eta' = 0.164$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.833}{0.25}\right)}{0.164\left(\frac{0.833}{0.25}\right) + \sin(0.086) + \frac{(0.4 * 11.2) + (0.833 * 11.2)}{0.25 * 27.9}} = 1.32$$

Since SF < 1.5, application of 800-24 will be tested;

$$\eta = \frac{4.35}{28.16} = 0.154 \quad \eta' = 0.128$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.833}{0.333}\right)}{0.154\left(\frac{0.833}{0.333}\right) + \sin(0.086) + \frac{(0.533 * 11.2 + 0.833 * 11.2)}{[illegible]}} = 1.44$$

Since SF < 1.5, application of 800-17 will be tested;

$$\eta = \frac{4.35}{30.77} = 0.141 \qquad \eta' = 0.141$$

$$SF = \frac{(\cos(0.086))\left(\frac{0.833}{0.333}\right)}{0.141\left(\frac{0.833}{0.333}\right) + \sin(0.086) + \frac{(0.533 * 11.2 + 0.833 * 11.2)}{0.333 * 37.2}} = 1.57$$

Since SF = 1.57 > 1.5, application of 800-17 is adequate ✓
(POTENTIAL ALTERNATIVE)

The application of CONLOCK I (800-17) will also be tested wrt sliding.

$$\tau_{st} = 0.65\left(37.2\left(1 - \sin(0.086)\right)\right) = 24.14 \text{ lb/ft}^2$$

$$\tau_d = \tau_{st} / 2 = 12.07 \text{ lb/ft}^2$$

Since $\tau_b = 4.35 < \tau_d$, application of CONLOCK I (800-17) is adequate wrt sliding as well. ✓

NOTE: Since the local hydraulic conditions at the outlet of the 3-10' x 8' culvert may destabilize[1] the conlocks, especially in the long-term for extended time frames, a riprap energy dissipator will be used as an erosion control measure. The design of this basin is presented at the end of the hand computations.

(1) POTENTIAL FOR HYDRAULIC JUMP AT CULVERT OUTLET

(ii) Spillways : Since the conlocks are applied along the sloping face of the retentio basin, the expressions derived for channels with side-slopes are used to compute the Safety Factor.

First, test the applicability of CONLOCK II 4VM-30;

$$\beta = \tan^{-1} \frac{\cos \lambda}{\left(\frac{\frac{M}{N}+1}{\eta} \quad \frac{\ell_1}{\ell_2} \right) \sin \theta + \sin \lambda} \qquad \eta = \frac{\tau_o}{\tau_c}$$

Channel bottom slope , $S = 1\% = 0.001 \Rightarrow \lambda = 0.057^\circ$

Side slope , $6:1 = 0.1667$ ft/ft $\Rightarrow \theta = 9.46^\circ$

Assume a trapezoidal spillway section with

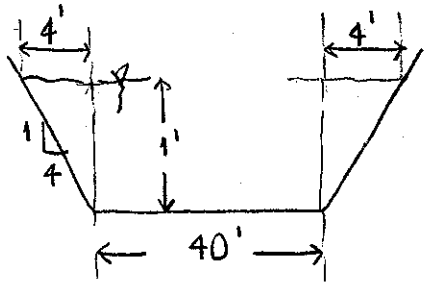
side slope: 4:1

Length : 40 ft

C : 3.0

H : 1 ft

$$Q = C L H^{3/2} = 3.0 \, (40) \, (1)^{3/2} = 120 \text{ cfs.}$$



$$A = \frac{(40+48)}{2} * 1 = 44 \text{ ft}^2$$

$$Q = V * A \Rightarrow V = \frac{120}{44} = 2.73 \text{ ft/s}$$

$$F_D = 0.5 \left(0.083 \, (1.0) \, (1.94) \, (2.73^2) \right) = 0.6 \text{ N}$$

$$\eta = \frac{\tau_o}{\tau_c} = \frac{10.4}{10.44} = 0.996$$

$$\beta = \tan^{-1}\left[\frac{\cos 0.057}{\left(\frac{\frac{0.78}{0.267}+1}{0.996} * \frac{0.167}{0.78}\right)\sin(9.46) + \sin(0.057)}\right] = 82.06$$

$$\delta = 90 - \beta - \lambda = 90 - 82.06 - 0.057 = 7.883$$

$$\eta' = \left(\frac{\frac{0.78}{0.267} + \sin(0.057 + 82.06)}{\left(\frac{0.78}{0.267} + 1\right)}\right) 0.996 = 0.994$$

$$SF = \frac{\cos(9.46)\left(\frac{0.78}{0.167}\right)}{0.994\left(\frac{0.78}{0.167}\right) + \sin(9.46)\cos(82.06) + \frac{0.267 * 0.6 * \cos(7.883) + 0.78 * 0.6}{0.167 * 17.67}}$$

$$= 0.95$$

Since $SF < 1.5$, application of 4VM-30 is <u>not</u> <u>adequate</u>.

Use 8 VM-30

$$F_D = 0.5\left(0.083(1.0)(1.94)(2.73)^2\right) = 0.6$$

$$\eta = \frac{\tau_o}{\tau_c} = \frac{10.4}{15.49} = 0.67$$

$$\beta = \tan^{-1}\left(\frac{\cos 0.057}{\left(\frac{\frac{0.78}{0.533}+1}{0.67} * \frac{0.333}{0.78}\right)\sin 9.46 + \sin 0.057}\right) = 75.5^\circ$$

$$\delta = 90 - \beta - \lambda = 90 - 75.5 - 0.057 = 14.44$$

$$\eta' = \left\{\frac{\left(\frac{0.78}{0.533}\right) + \sin(0.057 + 75.5)}{\left(\frac{0.78}{0.533}+1\right)}\right\} 0.67 = 0.66$$

$$SF = \left(\frac{\cos(9.46)\left(\frac{0.78}{0.333}\right)}{0.66\left(\frac{0.78}{0.333}\right) + \sin(9.46)\cos(75.5) + \frac{0.533(0.6)\cos(14.44) + 0.78 * 0.6}{0.333 * 35.25}}\right)$$

$$= 1.28$$

Since SF < 1.5, application of 8VM-30 is not adequate along the spillways. Therefore, an alternative conlock application (CONLOCK I 800-07) will be tested.

Use 800-07

$$\eta = \frac{10.4}{34.09} = 0.305$$

$$\beta = 61.05^\circ$$

$$\delta = 90 - 61.05 - 0.057 = 28.89$$

$$\eta' = 0.29$$

$$SF = 2.51$$

since SF > 1.5, application of 800-07 is adequate at the spillways.

As shown on p.9, the application of 800-07 is adequate w/r sliding as well.

Therefore, apply CONLOCK I 800-07 along the spillways. ⟸

Longitudinal Extend of Erkamat :

The erosion control measures in the vicinity of the proposed culverts and bridges will be finalized using the guidelines in "Design of Roadside Channels with Flexible Linings," (HEC-15, 1988) and "Performance of Flexible Ditch Linings," (FHWA/RD-86/114, 1985) by the FHWA, and the Hydraulics Manual of the FDCMC (Volume II, 1996).

The longitudinal extend of the Erkamat will be based on the permissible velocity and shear stress of the "grass lining". Erkamat will be applied upstream and downstream of the proposed structures, up to segments of the channel system where the maximum velocity and shear stress are below the permissible velocity and permissible shear stress of "bermuda grass", the type of grass recommended along the BHOC.

(1) As documented by the FCDMC, the permissible velocity of bermuda grass at a slope range of 0-5% for erosion resistant and easily eroded soils are 6.0 ft/s and 4.5 ft/s, respectively.

Since the characteristic soil type in the vicinity of the proposed structures is fine-grained, silty to sandy clay, and are generally moderately firm to firm within the upper five to eight feet (becoming firmer with depth), the soil conditions along the BHOC is considered as erosion resistant. Therefore, the application limits of Erkamat, wrt to the velocity, will be checked using the permissible velocity of 6.0 ft/s for the bermuda grass.

(2) As documented by the FHWA (1988), the permissible shear stress for bermuda grass (Class B Retardance as shown in Table 1) is 2.1 lb/ft^2 (shown in Table 2).

(1) Application limits wrt permissible velocity

The upstream and downstream application limits of the Enkamat can be summarized as follows:

Structure	Downstream limit	Upstream limit	Type of Enkamat
83rd Av Bridge			
u/s face	112+80.82 (b)	112+99.00 (a)	ENKAMAT 7020
d/s face	111+11.50 (a)	111+34.83 (b)	ENKAMAT 7020
91st Av Bridge			
u/s face	56+38.35 (b)	58+00.00 (a)	ENKAMAT 7020
d/s face	54+00.00 (a)	54+50.00 (b)	ENKAMAT 7020
6-10'x5' Culvert			
u/s face	78+24.50 (b)	80+20.00 (a)	ENKAMAT 7020
d/s face	73+88.00 (c)	76+85.00 (b)	ENKAMAT 7020

(a) As shown in the hydraulic summary table, maximum channel velocity at this station is less than the permissible velocity, 6.0 ft/s.

(b) As shown in the plans "End of Concrete Lining"

(c) See the hand computations in the following page

As recommended in HEC-15 (FHWA, 1988), the total length of the Enkamat lining around the bend segment of the channel is the sum of the length in the bend plus the length required for downstream protection.

The downstream distance is found using Chart 11 in HEC-15 as follows;

Given: $n = 0.03$

$R = 5.22$ (average hydraulic radius downstream of the culvert outlet sections 7400 - 7686)

Find L_p, the downstream distance using the following equation

$$\frac{L_p}{R} = 0.604 \left(\frac{R^{1/6}}{n} \right)$$

$$L_p = 0.604 \left(\frac{5.22^{1/6}}{0.03} \right) 5.22 \Rightarrow L_p = 138.5 \text{ ft.}$$

Use $L_p = 140.0$ ft.

As shown on the plans, the downstream limit of the bend is Station 75+28.44. Therefore, the downstream limit of the Enkamat is 73+88.44 (Design Recommendation is 73+88.00).

This approach results in a more conservative Enkamat lining length and therefore will be the basis of design.

Longitudinal Extend of Riprap Basin:

As an alternative to CONLOCK, the application of Riprap Basin is tested at the outlet of the 3-10' x 8' RCBC.

The guidelines in HEC-11 and HEC-14 are used to design the dimensions of the riprap basin.

Design discharge = 2846 cfs [design Q per barrel = 949 cfs]

Tailwater depth = 7.6 ft.

Normal flow depth at the culvert outlet, y_0

→ $y_0 = 6.3$ ft (based on the HEC-RAS analysis)

→ Use the guideline in HEC-14 (Fig III-9)

Culvert span, B = 10 ft

Culvert height, D = 8 ft.

$$\frac{Q}{B D^{1.5}} = \frac{949}{(10)(8)^{1.5}} = 4.2$$

$$\frac{TW}{D} = \frac{7.6}{8} = 0.95$$

Use Fig. III-9 → $\frac{y_0}{D} = 0.97$

$y_0 = 7.8$ ft.

For design computations use $y_0 = 6.3$ ft.

Assume normal flow depth (y_0) = brink depth (y_c) = 6.3 ft.

$$V_0 = \frac{Q}{A} = \frac{949}{(10)(6.3)} = 15.1 \text{ ft/s.}$$

$$F_r = \frac{V_0}{\sqrt{g y_e}} = \frac{15.1}{\sqrt{(32.2)(6.3)}} = 1.06$$

$$\frac{TW}{y_e} = \frac{7.6}{6.3} = 1.2 \Rightarrow \text{High tailwater depth}$$

Therefore use Fig. XI-3 to compute the length

To compute the equivalent diameter, D_e

$$\text{Area} = (B)(y_e) = \frac{\pi D_e^2}{4} = 63 \text{ ft}^2 \Rightarrow D_e = 8.96 \text{ ft.} \sim 9.0 \text{ ft.}$$

$\frac{L}{D_e}$	$L^{(a)}$ (ft)	V_L/V_0 (b)	V_L (ft/s)
10	90	0.59	8.91
15	135	0.39	5.89

As shown in this table at a length of 135 ft downstream of the culvert outlet, the velocity is 5.89 ft/s, which is less than the permissible velocity of bermuda grass, 6 ft/s.

Therefore, a 135 ft long riprap basin is recommended at the culvert outlet.

DMJM HARRIS	PROJECT:	JOB NO. 6888	SHEET 26 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT:		CHECKED BY JRM	DATE 3/9/02

Based on the hydraulic conditions in the vicinity of the 3 - 10' x 8' RCBC, tailwater depth (TW) = 7.6 ft , Q = 2846 cfs , [Q per barrel = 949 cfs]

$$\frac{TW}{D} = \frac{7.6}{8} = 0.95$$

$$\frac{Q}{BD^{3/2}} = \frac{949}{(10)(8)^{3/2}} = 4.2$$

using Fig III-9 in HEC-14

$$\frac{y_o}{D} = 0.97 \Rightarrow y_o = 7.76 \text{ ft.}$$

Assume $y_o = y_e = 7.76$ ft.

$$V_o = \frac{Q}{A} = \frac{949}{(10)(7.76)} = 12.23 \text{ ft/s}$$

$$F_r = \frac{V_o}{\sqrt{g y_e}} = \frac{12.23}{\sqrt{(32.2)(7.76)}} = 0.77$$

As shown in Fig. X1-2, for $F_r = 0.77$, the 2 options for the $\frac{d_{50}}{y_e}$ range,

(1) $0.1 \leq \frac{d_{50}}{y_e} \leq 0.2$

(2) $0.21 \leq \frac{d_{50}}{y_e} \leq 0.3$

DMJM HARRIS	PROJECT:	JOB NO. 6888	SHEET 27 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT:		CHECKED BY JRM	DATE 3/11/02

(1) For $0.1 \leq \frac{d_{50}}{y_e} \leq 0.2$

→ Try $\frac{d_{50}}{y_e} = 0.1 \rightarrow d_{50} = 0.78$ ft.

From Fig. X1-2, $\frac{h_s}{y_e} = 0.74 \rightarrow h_s = 5.74$ ft.

$\frac{h_s}{d_{50}} = 7.36$

USE: 18" D_{50}

→ Try $\frac{d_{50}}{y_e} = 0.2 \Rightarrow d_{50} \doteq 1.55$ ft. $= 18.6"$

Fig X1-2, $\frac{h_s}{y_e} = 0.74 \rightarrow h_s = 5.74$ ft

$\frac{h_s}{d_{50}} = 3.7$

$2 < \frac{h_s}{d_{50}} < 4$

O.K. ✓

(2) For $0.21 \leq \frac{d_{50}}{y_e} \leq 0.3$

→ Try $\frac{d_{50}}{y_e} = 0.21 \Rightarrow d_{50} = 1.63$ ft.

Fig. X1-2, $\frac{h_s}{y_e} = 0.1 \rightarrow h_s = 0.776$

$\frac{h_s}{d_{50}} = 0.48$

→ Try $\frac{d_{50}}{y_e} = 0.3 \rightarrow d_{50} = 2.33$ ft.

Fig. X1-2, $\frac{h_s}{y_e} = 0.1 \rightarrow h_s = 0.776$

$\frac{h_s}{d_{50}} = 0.33$

DMJM HARRIS	PROJECT:	JOB NO. 6888	SHEET 28 of 28
		DESIGNED BY IKT	DATE 1/30/02
SUBJECT:		CHECKED BY JRM	DATE 3/9/02

Using the guidelines in HEC-14;

$L_s = \min\left[10(h_s),\ 3(B)\right] = 30$ ft.

$10\,h_s = 10(5.74) = 57.4$ ft

$3(B) = 3(10) = 30$ ft

FROM HEC-RAS HYDRAULIC MODEL: (83rd AVE CULVERT)
AVG. TOPWIDTH VARIES 92 TO 98' → USE 100' D/S OF CULVERT
CULVERT TOPWIDTH ≅ 32'
Δ T_W ⇒ FULL VALLEY SECTION (HEC-RAS)

100'
− 32'
2 | 68'
34' @ 3:1 Expansion ⇒ 102' TO FULL VALLEY SECTION
≅ 100' AND ACCURATE HYDRAULIC CONDITIONS IN HEC-RAS

OUTLET OF CULVERT STA. 117+55
− 1 00
D/S RIPRAP LIMITS = 116+55 ± AVG VELOCITY ≤ 6 fps ± OK

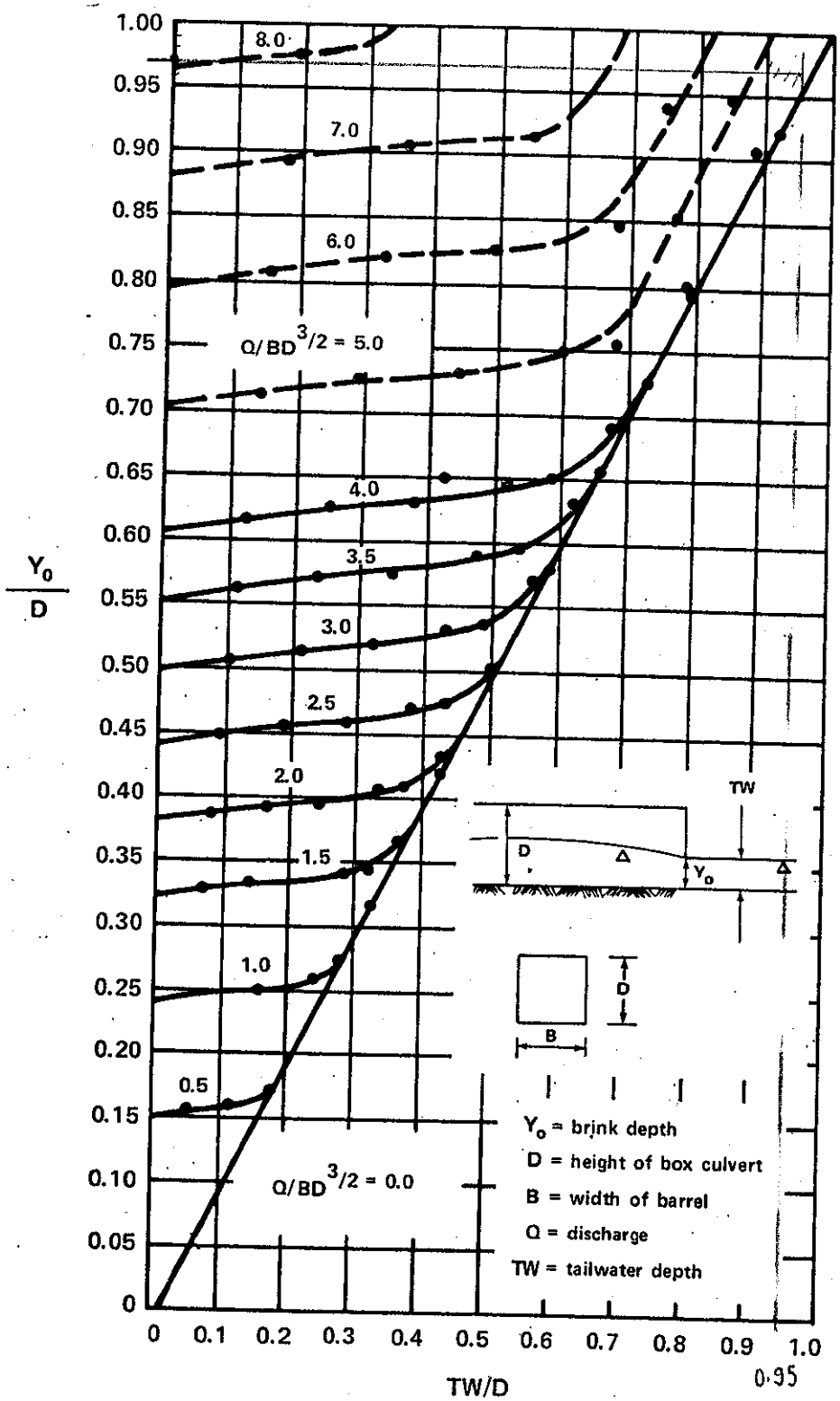


Figure III-9 Dimensionless Rating Curves for the Outlets of Rectangulars Culverts on Horizontal and Mild Slopes from Reference III-2

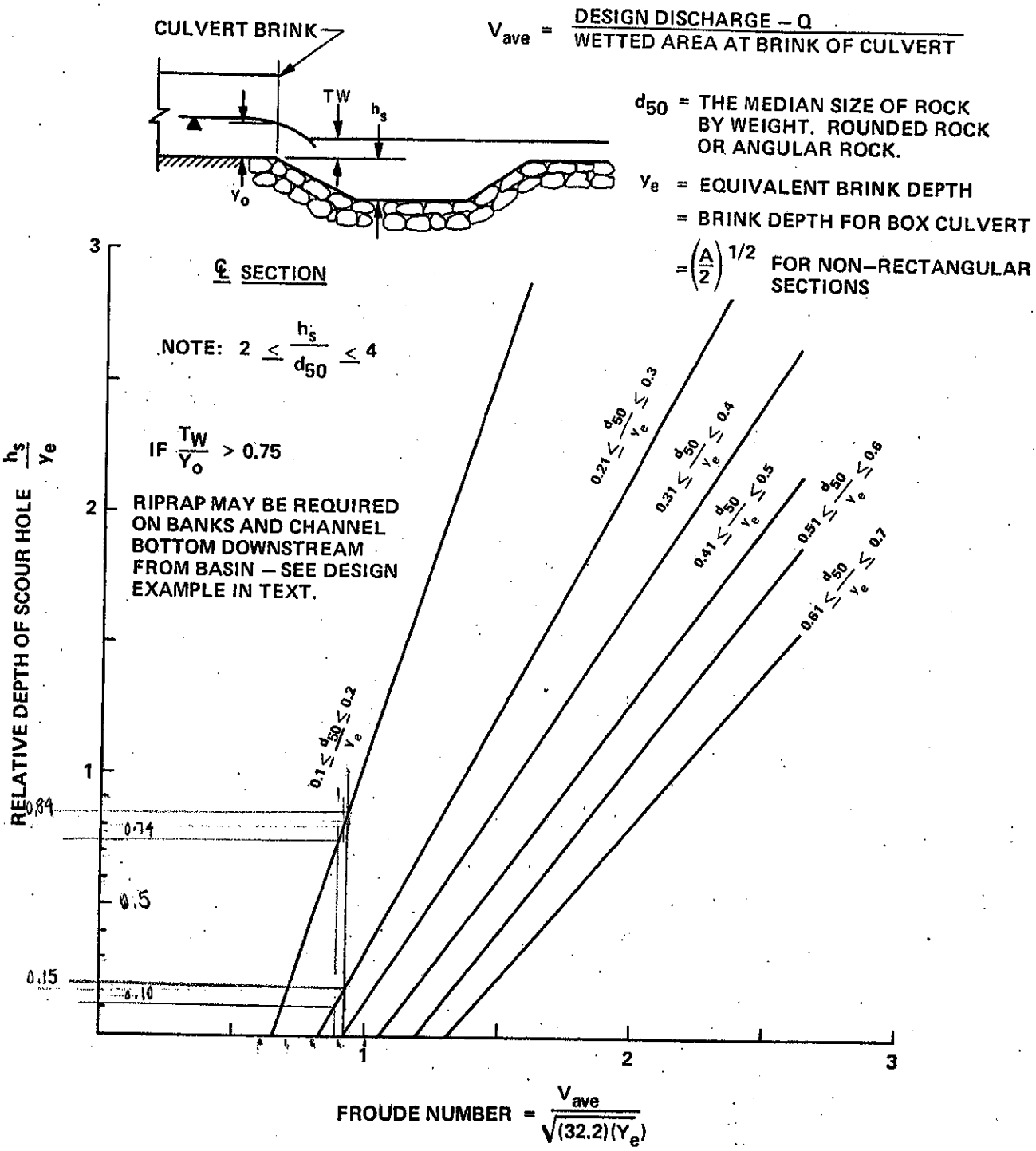
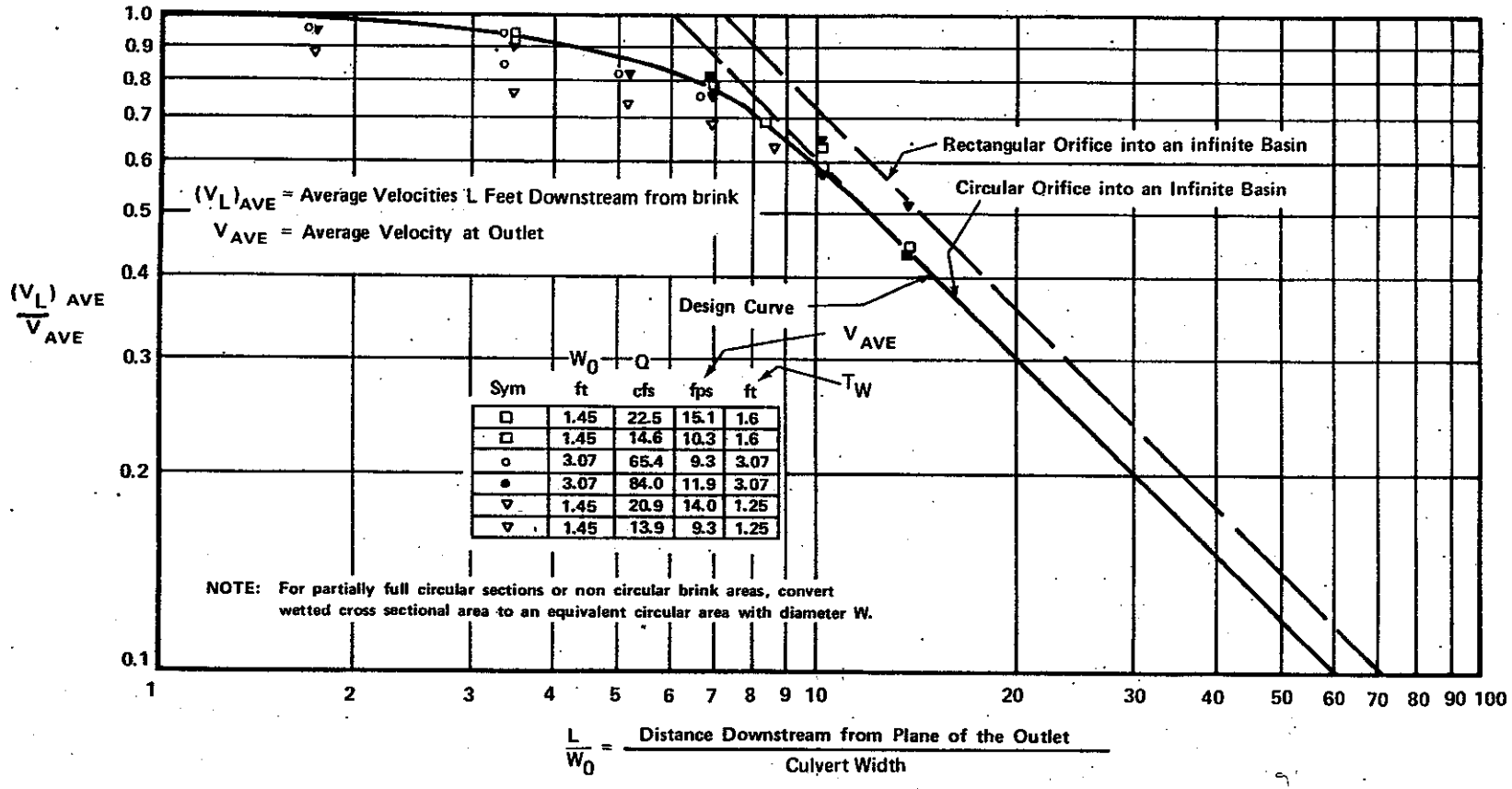


FIGURE X1–2. RELATIVE DEPTH OF SCOUR HOLE VERSUS FROUDE NUMBER AT BRINK OF CULVERT WITH RELATIVE SIZE OF RIPRAP AS A THIRD VARIABLE



Sym	W_0 ft	Q cfs	fps	ft
□	1.45	22.5	15.1	1.6
□	1.45	14.6	10.3	1.6
○	3.07	65.4	9.3	3.07
●	3.07	84.0	11.9	3.07
▽	1.45	20.9	14.0	1.25
▽	1.45	13.9	9.3	1.25

Figure XI - 3 Distribution of Centerline Velocity for Flow from Submerged Outlets from Reference XI - 2. to be used for Predicting Channel Velocities Downstream from Culvert Outlet where High Tailwater prevails. Velocities obtained from the use of this Chart can be used with Figure 2 of HEC No. 11 for sizing riprap (DO not use Figure 1 HEC No. 11, use Mean Velocity Values)