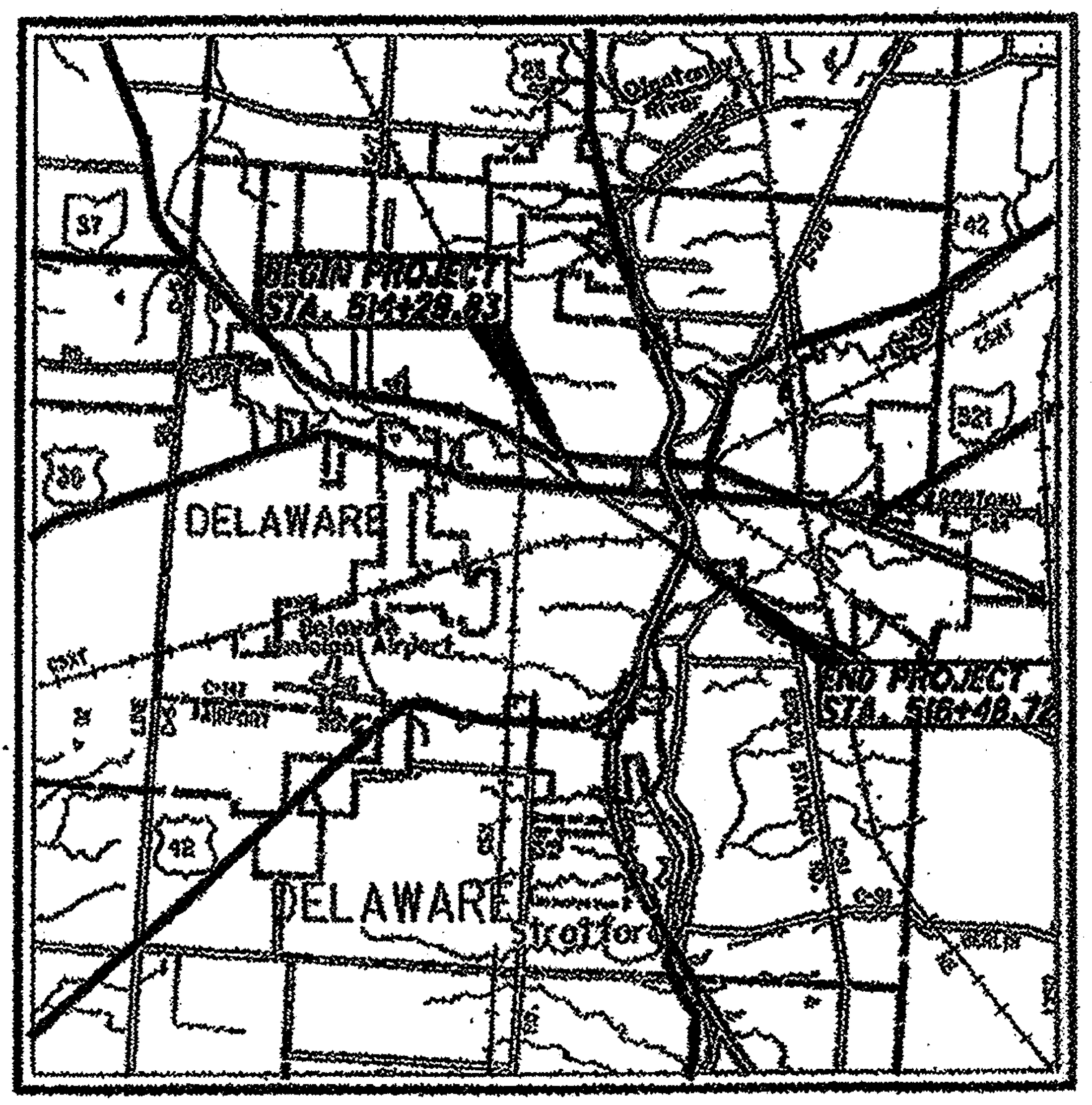
DEL - US-36-9.81
110347 PID - 79373
Dist 6 6/2/2011

Contract Proposal available @www.contracts.dot.state.oh.us/home

STATE OF OHIO
DEPARTMENT OF TRANSPORTATION
DEL-36-9.81
CITY OF DELAWARE
DELAWARE COUNTY



LOCATION MAP

LATITUDE: 40°17'55" LONGITUDE: 83°04'25"

SCALE IN MILES

0 1 2 3 4

N

PORTION TO BE IMPROVED
INTERSTATE & DIVIDED HIGHWAY
UNDIVIDED STATE & FEDERAL ROUTES
OTHER ROADS

DESIGN DESIGNATION

CURRENT ADT (2011)	13460
DESIGN YEAR ADT (2031)	14460
DESIGN HOURLY VOLUME (2031)	1450
DIRECTIONAL DISTRIBUTION	60%
TRUCKS (24 HOUR B&C)	7%
DESIGN SPEED	35 MPH
LEGAL SPEED	25 MPH
DESIGN FUNCTIONAL CLASSIFICATION: URBAN MINOR ARTERIAL	
NHS PROJECT	N/A

DESIGN EXCEPTIONS

NONE

UNDERGROUND UTILITIES
CONTACT BOTH SERVICES
CALL TWO WORKING DAYS
BEFORE YOU DIG
CALL
1-800-362-2764
(TOLL FREE)
OHIO UTILITIES PROTECTION SERVICE
NON-MEMBERS
MUST BE CALLED DIRECTLY
OIL & GAS PRODUCERS PROTECTIVE
SERVICE CALL: 1-800-929-0988

PLAN PREPARED BY:
OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF PRODUCTION
1980 WEST BROAD STREET
COLUMBUS, OHIO 43223

I:\pr\project\DEL\79373\roadway\sheets\79373GT001.dgn 29-DEC-2010

INDEX OF SHEETS:

PROJECT DESCRIPTION

REHABILITATION OF A 15 FT STONE ARCH STRUCTURE UNDER US36 USING AN INSITU LINER. THE ARCH SPIRAL WOUND RENEWAL SYSTEM WILL BE USED CONSISTING OF A PVC LINER AND GROUTING THE ANNULAR SPACE.

PROJECT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)
ESTIMATED CONTRACTOR EARTH DISTRUBED AREA: N/A (MAINTENANCE PROJECT)
NOTICE OF INTENT EARTH DISTURBED AREA: N/A (MAINTENANCE PROJECT)

2010 SPECIFICATIONS

THE STANDARD SPECIFICATIONS OF THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, INCLUDING CHANGES AND SUPPLEMENTAL SPECIFICATIONS LISTED IN THE PROPOSAL SHALL GOVERN THIS IMPROVEMENT.

I HEREBY APPROVE THESE PLANS AND DECLARE THAT THE MAKING OF THIS IMPROVEMENT WILL NOT REQUIRE THE CLOSING TO TRAFFIC OF THE HIGHWAY EXCEPT FOR THE SIDE ROADS AS DESCRIBED ON SHEETS 4 AND THAT PROVISIONS FOR THE MAINTENANCE AND SAFETY OF TRAFFIC WILL BE AS SET FORTH ON THE PLANS AND ESTIMATES.

PLANS CERTIFIED BY:
NAME [illegible] DATE 1-4-11
DISTRICT SIX
OHIO DEPARTMENT OF TRANSPORTATION

APPROVED [illegible]
DATE 1-4-11 DISTRICT DEPUTY DIRECTOR

APPROVED [illegible]
DATE 2-2-11 DIRECTOR, DEPARTMENT OF TRANSPORTATION

ENGINEERS SEAL:
STATE OF OHIO
REGISTERED PROFESSIONAL ENGINEER
SIGNED: [illegible]
DATE: December 29, 2010

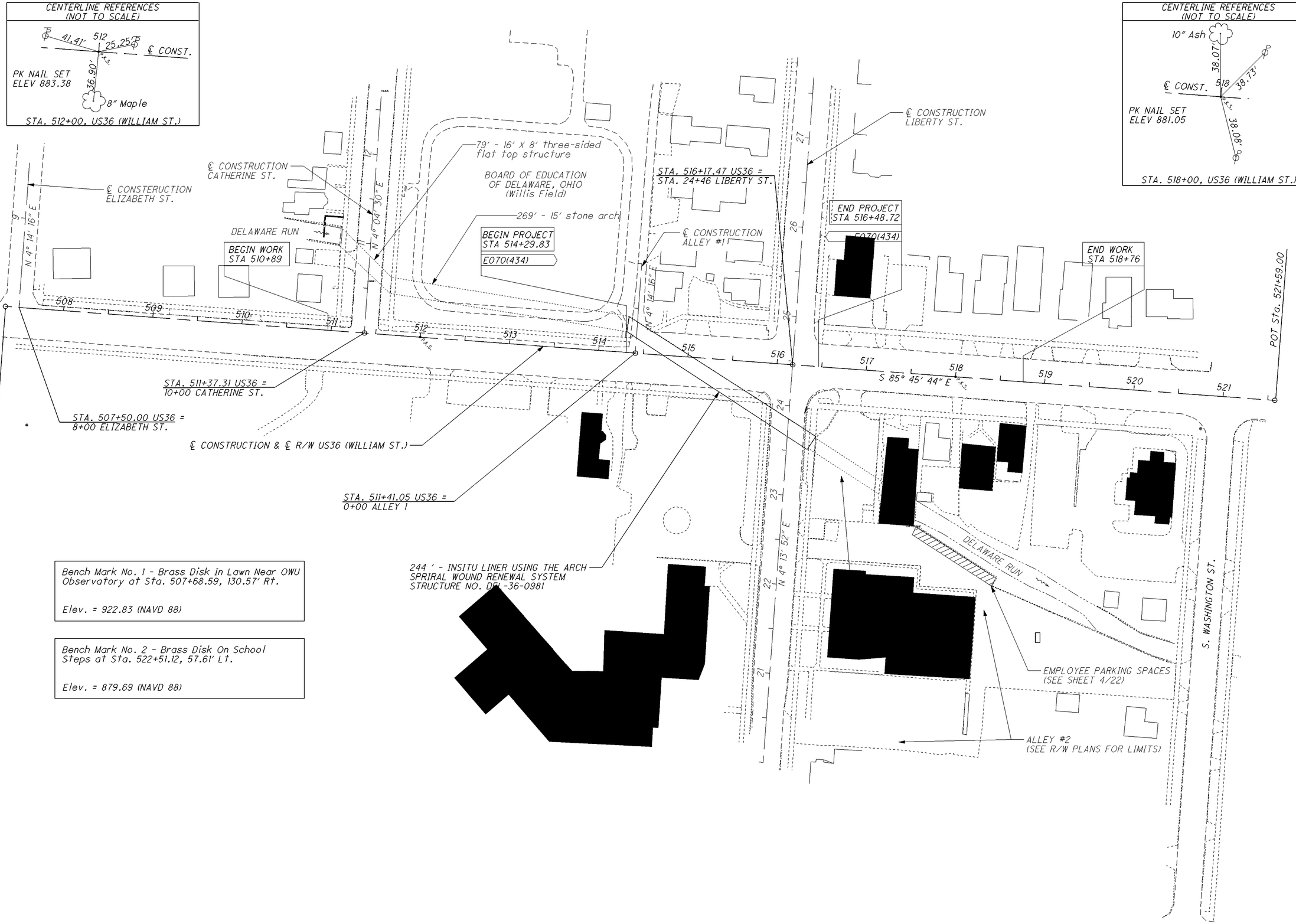
STANDARD CONSTRUCTION DRAWINGS

F-1.1	4/16/10				
HL-50.11	1/19/07				
MT-101.60	4/17/09				
MT-105.10	1/16/09				
MT-110.10	1/16/09				
TC-41.20	1/19/01				

SUPPLEMENTAL SPECIFICATIONS	
800	4/15/11
832	5/5/09
837	07/16/10

SPECIAL PROVISIONS
WATERWAY PERMIT COND.
DATED: 1/4/10
FLOODPLAIN PERMIT - 06/14/2010 #20100482

FEDERAL PROJECT NO. E070(434)
PID NO. 79373
CONSTRUCTION PROJECT NO.
RAILROAD INVOLVEMENT NONE
DEL-36-9.81
1/22



Bench Mark No. 1 - Brass Disk In Lawn Near OWU Observatory at Sta. 507+68.59, 130.57' Rt.

Elev. = 922.83 (NAVD 88)

Bench Mark No. 2 - Brass Disk On School Steps at Sta. 522+51.12, 57.61' Lt.

Elev. = 879.69 (NAVD 88)

HORIZONTAL SCALE IN FEET
0 25 50 100

CALCULATED MLC
CHECKED MDC

SCHEMATIC PLAN
US36 - WILLIAM STREET

DEL-36-9.81

2
22

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UTILITIES

LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

ELECTRIC:
AMERICAN ELECTRIC POWER
850 TECH CENTER DRIVE
GAHANNA, OH 43230-6605
PAUL PAXTON
OFFICE 614-883-6831
FAX 614-883-6868

TELEPHONE:
VERIZON
550 LEADER STREET
MARION, OH 43302
CHRIS AVERY
OFFICE 740-383-0551

GAS:
COLUMBIA GAS OF OHIO
3550 JOHNNY APPLESEED COURT
COLUMBUS, OH 43231
MATT COYNE
OFFICE 614-818-2107
FAX 614-365-3406

SANITARY, STORM:
CITY OF DELAWARE
225 CHERRY STREET
DELAWARE, OH 43015
DALE FILBY
OFFICE 740-203-1961
CELL 740-816-7338
FAX 740-203-1997

CABLE:
TIME WARNER CABLE
3760 INTERCHANGE DRIVE
COLUMBUS, OH 43204
RAY MAURER
OFFICE 614-481-5262

WATER:
CITY OF DELAWARE WATER
3080 US 23 NORTH
DELAWARE, OH 43015
RON AMBROSE
OFFICE 740-203-1972
FAX 740-203-1998

WORK LIMITS

THE WORK LIMITS SHOWN ON THESE PLANS ARE FOR PHYSICAL CONSTRUCTION ONLY. PROVIDE THE INSTALLATION AND OPERATION OF ALL WORK ZONE TRAFFIC CONTROL AND WORK ZONE TRAFFIC CONTROL DEVICES REQUIRED BY THESE PLANS WHETHER INSIDE OR OUTSIDE THESE WORK LIMITS.

ELEVATION DATUM

ALL ELEVATIONS ARE ORTHOMETRIC HEIGHTS USING THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88) AND THE GEOID03 GEOID. HORIZONTAL POSITIONS ARE BASED ON THE OHIO STATE PLANE NORTH ZONE, A LAMBERT CONFORMAL CONIC MAP PROJECTION, THE NORTH AMERICAN DATUM OF 1983 ADJUSTED TO THE NATIONAL SPATIAL REFERENCE SYSTEM OF 2007 (NAD 83 (NSRS 2007)), AND THE GRS80 ELLIPSOID.

CLEARING AND GRUBBING

ALTHOUGH THERE ARE NO TREES OR STUMPS SPECIFICALLY MARKED FOR REMOVAL WITHIN THE LIMITS OF THE PROJECT, A LUMP SUM QUANTITY IS INCLUDED IN THE GENERAL SUMMARY FOR ITEM 201, CLEARING AND GRUBBING. ALL PROVISIONS AS SET FORTH IN THE SPECIFICATIONS UNDER THIS ITEM ARE INCLUDED IN THE LUMP SUM PRICE BID FOR ITEM 201, CLEARING AND GRUBBING.

ITEM 607 - FENCE, TYPE CL, AS PER PLAN

THE CONTRACTOR SHALL FURNISH TEMPORARY FREE-STANDING CHAIN LINK FENCE PANELS FOR THE CONSTRUCTION STAGING AREAS AND PEDESTRAIN SAFETY. THE CONTRACTOR SHALL NOT DRILL/ DRIVE POSTS TO ERECT FENCE. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY:

607, FENCE, TYPE CL, AS PER PLAN 450 FT.

SEEDING AND MULCHING

THE FOLLOWING QUANTITIES ARE PROVIDED TO PROMOTE GROWTH AND CARE OF PERMANENT SEEDED AREAS:

659, REPAIR SEEDING AND MULCHING 300 SQ. YD

659, WATER 2 M. GAL.

SEEDING AND MULCHING SHALL BE APPLIED TO ALL AREAS OF EXPOSED SOIL BETWEEN THE RIGHT-OF-WAY LINES, AND WITHIN THE CONSTRUCTION LIMITS FOR AREAS OUTSIDE THE RIGHT-OF-WAY LINES COVERED BY WORK AGREEMENT OR SLOPE EASEMENT. QUANTITY CALCULATIONS FOR SEEDING AND MULCHING ARE BASED ON THESE LIMITS.

REVIEW OF DRAINAGE FACILITIES

BEFORE ANY WORK IS STARTED ON THE PROJECT AND AGAIN BEFORE FINAL ACCEPTANCE BY THE STATE, REPRESENTATIVES OF THE STATE AND THE CONTRACTOR, ALONG WITH LOCAL REPRESENTATIVES, SHALL MAKE AN INSPECTION OF ALL EXISTING SEWERS WHICH ARE TO REMAIN IN SERVICE AND WHICH MAY BE AFFECTED BY THE WORK. THE CONDITION OF THE EXISTING CONDUITS AND THEIR APPURTENANCE SHALL BE DETERMINED FROM FIELD OBSERVATIONS. RECORDS OF THE INSPECTION SHALL BE KEPT IN WRITING BY THE STATE.

ALL NEW CONDUITS, INLETS, CATCH BASINS, AND MANHOLES THAT MAY BE CONSTRUCTED AS A PART OF THE PROJECT SHALL BE FREE ORF ALL FOREIGN MATTER AND IN A CLEAN CONDITION BEFORE THE PROJECT WILL BE ACCEPTED BY THE STATE.

ALL EXISTING SEWERS INSPECTED INITIALLY BY THE ABOVE MENTIONED PARTIES SHALL BE MAINTAINED AND LEFT IN A CONDITION REASONABLY COMPARABLE TO THAT DETERMINED BY THE ORIGINAL INSPECTION. ANY CHANGE IN THE CONDITION RESULTING FROM THE CONTRACTOR'S OPERATIONS SHALL BE CORRECTED BY THE CONTRACTOR TO THE SATISFACTION OF THE ENGINEER.

PAYMENT FOR ALL OPERATIONS DESCRIBED ABOVE SHALL BE INCLUDED IN THE CONTRACT PRICE FOR ITEM 603 CONDUIT, MISC.: 15' SPAN X 7' RISE ARCH SPIRAL WOUND RENEWAL SYSTEM.

UNRECORDED STORM WATER DRAINAGE

FURNISH A CONTINUANCE FOR ALL UNRECORDED STORM WATER DRAINAGE, SUCH AS ROOF DRAINS, FOOTER DRAINS, OR YARD DRAINS, DISTURBED BY THE WORK. FURNISH EITHER AN OPEN CONTINUANCE OR AN UNOBSTRUCTED CONTINUANCE BY CONNECTING A CONDUIT THROUGH THE CURB OR INTO A DRAINAGE STRUCTURE. THE LOCATION, TYPE, SIZE AND GRADE OF THE NEEDED CONDUIT TO REPLACE OR EXTEND AN EXISTING DRAIN WILL BE DETERMINED BY THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT.

THE FOLLOWING CONDUIT TYPES MAY BE USED: 707.33, 707.41 NON-PERFORATED, 707.42, 707.43, 707.45, 707.46, 707.47, 707.51, 707.52 SDR35.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE:

603, 6" CONDUIT, TYPE B, FOR DRAINAGE CONNECTION 50 FT.

603, 6" CONDUIT, TYPE C, FOR DRAINAGE CONNECTION 50 FT.

UNRECORDED ACTIVE SANITARY SEWER CONNECTIONS

FURNISH A CONTINUANCE FOR ALL UNRECORDED ACTIVE SANITARY SEWER CONNECTIONS SUCH AS SANITARY, WASTEWATER, CURTAIN/ GRADIENT DRAINS, AND FOUNDATION FLOOR DRAINS DISTURBED BY THE WORK. FURNISH AN UNOBSTRUCTED CONTINUANCE OF THE UNRECORDED ACTIVE SANITARY SEWER CONNECTIONS TO THE SATISFACTION OF THE ENGINEER. ALL SUCH CONTINUANCE REQUIRES A RIGHT OF WAY USE PERMIT. ALL SANITARY AND SANITARY WASTEWATER CONTINUANCE MAY ALSO REQUIRE A NPDES PERMIT FROM THE OHIO ENVIRONMENTAL PROTECTION AGENCY. REPORT ALL CONTINUANCE TO THE LOCAL HEALTH DEPARTMENT.

THE FOLLOWING CONDUIT TYPES MAY BE USED: 707.42, 707.43, 707.44, 707.45, 707.46, 707.47, 707.51, 707.52 SDR35, 706.01, 706.02, OR 706.08 WITH JOINTS AS PER 706.11 OR 706.12.

THE FOLLOWING ESTIMATED QUANTITIES HAVE BEEN INCLUDED IN THE GENERAL SUMMARY FOR USE AS DIRECTED BY THE ENGINEER FOR THE WORK NOTED ABOVE:

603, 8" CONDUIT, TYPE B, FOR SANITARY 50 FT.

603, 8" CONDUIT, TYPE C, FOR SANITARY 50 FT.

AIRWAY/HIGHWAY CLEARANCE FOR AIRPORTS AND HELIPORTS

THIS PROJECT HAS BEEN IDENTIFIED AS BEING WITHIN THE INFLUENCE AREA OF A PUBLIC USE AIRPORT OR HELIPORT. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT AT MAXIMUM OPERATING HEIGHT SHALL EXCEED A HEIGHT OF 167 FT. IF ANY TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT WILL EXCEED THIS HEIGHT, FURTHER COORDINATION WITH THE FEDERAL AVIATION ADMINISTRATION (FAA), AND ODOT OFFICE OF AVIATION, WILL BE NECESSARY PRIOR TO ERECTING SUCH TEMPORARY STRUCTURES OR OPERATING SUCH EQUIPMENT ON THE PROJECT. THE CONTRACTOR WILL BE REQUIRED TO SUBMIT FORM 7460-1 TO THE FAA. A COPY OF THE SUBMISSION AND TWO COPIES OF FORM 7460-1 SHALL BE FORWARDED TO THE ODOT OFFICE OF AVIATION. NO TEMPORARY STRUCTURES OR CONSTRUCTION EQUIPMENT SHALL EXCEED THE PERMISSIBLE HEIGHT, UNTIL A COPY OF THE FAA APPROVAL AND ODOT OFFICE OF AVIATION PERMIT HAS BEEN FURNISHED TO THE PROJECT ENGINEER.

Express Processing Center
The Federal Aviation Administration
Southwest Regional Office
Air Traffic Airspace Branch ASW-520
2601 Meachan Blvd.
Fort Worth, TX 76137-4298

Ohio Department of Transportation
Office of Aviation
2829 West Dublin-Granville Road
Columbus, Ohio 43235
614-387-2346

STREAM CHANNEL EXCAVATION

THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT ANY INCIDENTAL DISCHARGES ASSOCIATED WITH THE EXCAVATION AND HAULING OF MATERIAL FROM THE STREAM CHANNEL. THIS PERTAINS TO ANY EXCAVATION OPERATIONS SUCH AS, FOUNDATION PIER OR ABUTMENT EXCAVATION, CHANNEL CLEANOUT, EXCAVATION FOR ROCK CHANNEL PROTECTION AND REMOVAL OF ANY TEMPORARY FILL ASSOCIATED WITH CONSTRUCTION OPERATIONS.

ENVIRONMENTAL COMMITMENT - WILLIS FIELD

THE WORKS INVOLVES LINING A STONE ARCH THAT CARRIES DELAWARE RUN UNDER THE LOCAL ROADWAY NETWORK IN THE CITY OF DELAWARE, DELAWARE COUNTY, OHIO. IN ORDER TO FACILITATE CONSTRUCTION, SEWER EASEMENTS ARE NEEDED TO PROVIDE FOR RIGHT-OF-ENTRY ACCESS. THE MAJORITY OF THE WORK AND ANY FUTURE MAINTENANCE IS TO OCCUR UNDERGROUND. THERE WILL BE NO TEMPORARY OR PERMANENT INTERFERENCE WITH THE INTENDED FUNCTIONS OR ATTRIBUTES ASSOCIATED WITH THE EXISTING RECREATIONAL FACILITY.

SHOULD THE CONTRACTOR NEED ACCESS TO THE STONE ARCH THROUGH A MANHOLE AT STA. 514+29.96 LT. FOR GROUTING NO OPERATIONS PERMANENT OR ADVERSE EFFECTS WILL OCCUR. THE CONTRACTOR WILL ONLY OCCUPY THE AREA TO DROP A GROUT LINE THROUGH THE OPENING.

WILLIS FIELD IS TO REMAIN UNAFFECTED BY THE WORK.

WATERSHED PROTECTION

THE WORK ASSOCIATED WITH THIS PROJECT IS BEING PERFORMED WITHIN A CORRIDOR MANAGEMENT ZONE & SOURCE WATER PROTECTION AREA. IT IS ESSENTIAL THAT ALL ACTIVITIES WITH THIS WORK BE PERFORMED IN A MANNER CONSISTENT WITH BEST WATERSHED MANAGEMENT PRACTICES INCLUDING, BUT NOT LIMITED

AREAS OF DISTURBED GROUND SHALL HAVE APPROPRIATE EROSION AND SEDIMENT CONTROLS. IF HAZARDOUS/TOXIC MATERIALS INCLUDING BUT NOT LIMITED TO FUELS, OILS, BITUMEN'S PAINT, SEALANTS, OR OTHER CHEMICALS, ARE STORED ON SITE, THEY SHOULD BE STORED IN A DOUBLE-CONTAINMENT MANNER. ALL EQUIPMENT REPAIRS, MAINTENACE, AND MECHANICAL WORK THAT COULD RESULT IN THE RELEASE OF HAZARDOUS/TOXIC MATERIALS WILL BE PERFORMED IN AN APPROPRIATELY CONTAINED AREA PREFERABLY OFF-SITE OR AN APPROPRIATE OFF-SITE FACILITY.

IN THE EVENT THAT ANY HAZARDOUS/TOXIC MATERIALS INCLUDING, BUT NOT LIMITED TO FUELS, OILS, BITUMEN'S PAINT, SEALANTS OR OTHER CHEMICALS ARE SPILLED, THE CONTRACTOR WILL IMMEDIATELY NOTIFY THE OHIO EPA @ (800)282-9378 AND THE DELCO PUBLIC WATER SYSTEM @ (800)521-6779. THE CONTRACTOR SHOULD BE PREPARED TO PROVIDE DETAILED INFORMATION RELATIVE TO THE TYPE AND QUANTITY OF MATERIAL THAT HAS BEEN SPILLED AS WELL AS THE EXACT LOCATION AND THE EXACT TIME AT WHICH THE SPILL OCCURRED. THE CONTRACTOR WILL BE SOLEY RESPONSIBLE FOR INFORMING ALL SUBCONTRACTORS AND OTHER AGENTS OF THESE RESPONSIBLITIES, PRECAUTIONS, AND PROHIBITIONS.

NO TOXIC OR HAZARDOUS MATERIALS SUCH AS SEALANTS, PAINT SOLVENTS, CLEANING AGENTS, EARTHEN MATERIALS, WASTE-WATER FUELS OR DEBRIS OF ANY KIND WILL BE DISCHARGED TO ANY STREAMS, DRAINAGE COURSES OR BODIES OF WATER. ALL ASPHALT OR CONCRETE GRINDINGS, EXCESS ASPHALTIC OR CONCRETE MATERIALS OR ANY DEBRIS GENERATED DURING RE-SURFACING OR OTHER SIMILIAR ACTIVITIES WILL NOT BE DISPOSED OF WITHIN A FLOODPLAIN BELOW THE 100-YEAR FLOOD ELEVATION. THE CONTRACTOR WILL TAKE ALL PRECAUTIONS NECESSARY TO PREVENT LIQUIDS USED TO REPAIR, CLEAN, SEAL, OR TREAT ANY BRIDGE STRUCTURE (E.G. PAINT, SOLVENT) FROM ENTERING STREAMS, WETLANDS, OR OTHER "WATERS OF THE UNITED STATES" AND TAKE THE APPROPRIATE ACTIONS IN THE EVENT OF A RELEASE.

CALCULATED MLC
CHECKED MDC

GENERAL NOTES

DEL-36-9.81

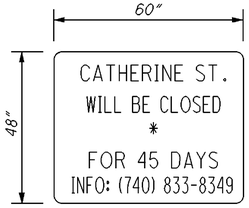
ITEM 614, MAINTAINING TRAFFIC

A MINIMUM OF ONE LANE OF TRAFFIC IN EACH DIRECTION IS TO BE MAINTAINED AT ALL TIMES, EXCEPT FOR A PERIOD NOT TO EXCEED 45 CONSECUTIVE CALENDAR DAYS, WHEN THROUGH TRAFFIC MAY BE DETOURED ON CATHERINE STREET AS SHOWN.

BEFORE THE WORK BEGINS, THE CONTRACTOR WILL SUBMIT TO THE ENGINEER THE NAMES AND TELEPHONE NUMBERS OF THE PERSON OR PERSONS WHO CAN BE CONTACTED 24 HOURS PER DAY BY THE OHIO DEPARTMENT OF TRANSPORTATION, DELAWARE COUNTY ENGINEER, AND ALL INTERESTED POLICE AGENCIES. THIS PERSON OR PERSONS IS RESPONSIBLE FOR PLACING OR REPLACING NECESSARY TRAFFIC CONTROL DEVICES IN ACCORDANCE WITH THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES.

THE CONTRACTOR WILL ADVISE THE ODOT DISTRICT PUBLIC INFORMATION OFFICER AT (740) 833-8349, AND THE CITY OF DELAWARE AT (740) 203-1700, SEVEN (7) DAYS PRIOR TO THE START OF CONSTRUCTION ACTIVITES. THE PROJECT ENGINEER WILL PROVIDE ASSISTANCE/CLARIFICATION FOR ANY QUESTIONS.

NOTICE OF CLOSURE SIGNS, AS DETAILED IN THESE PLANS, ARE TO BE ERECTED BY THE CONTRACTOR AT LEAST ONE WEEK IN ADVANCE OF THE SCHEDULED ROAD OR RAMP CLOSURE. THE SIGNS WILL BE ERECTED ON THE RIGHTHAND SIDE OF THE ROAD FACING TRAFFIC. THEY WILL BE PLACED SO AS NOT TO INTERFERE WITH THE VISIBILITY OF ANY OTHER TRAFFIC CONTROL SIGNS. THEY SHOULD BE ERECTED AT THE POINT OF CLOSURE.



W20-H13-60

* DATE OF CLOSURE

IF LIMITED CLOSURE OF ALLEYS 1 IS NEEDED FOR CONSTRUCTION ACTIVITIES, THE CONTRACTOR WILL USE THE PROPER CLOSURE SIGNS. THE ALLEY IS TO REOPEN AFTER DAILY CONSTRUCTION ACTIVITIES AND WILL NOT BE CLOSED OVERNIGHT. LIMIT CLOSURE OF ALLEY 1 TO THE SOUTHERN PORTION NEAR WILLIAM STREET.

LIMITED ACCESS OF ALLEY 2 NEAR DELAWARE RUN MAY BE AVAILABLE TO THE CONTRACTOR FOR CONSTRUCTION OPERATIONS. THE CONTRACTOR MAY NOT BLOCK THE DRIVE ACCESS TO THE REAR OF THE POST OFFICE OR POSTAL DROP BOXES. THE CONTRACTOR MUST MINIMIZE THE DISRUPTION TO POSTAL TRAFFIC. SEVERAL EMPLOYEE PARKING SPACES ADJACENT TO DELAWARE RUN MAY BE MADE AVAILABLE TO THE CONTRACTOR. SEE SHEET 2/22. THE CONTRACTOR MUST CONTACT JOSEPH SCHNEIDER, POST MASTER (740) 363-1906 TO NEGOTIATE THE USE OF THE ALLEY AND PARKING SPACES. THE CONTRACTOR WILL USE THE PROPER SIGNING WHEN CONDUCTING ANY CONSTRUCTION ACTIVITIES IN THIS AREA.

THE CONTRACTOR WILL MAINTAIN INGRESS AND EGRESS TO THE RESIDENTIAL DRIVE ALONG CATHERINE STREET UNLESS OTHERWISE NEGOTIATED WITH THE PROPERTY OWNWER.

THE EAST SIDEWALK ALONG CATHERINE STREET WILL REMAIN OPEN FOR PEDESTRIAN TRAFFIC UNLESS THE CONSTRUCTION ACTIVITIES PROVE TO BE A SAFETY CONCERN. THE CONTRACTOR WILL THEN PROVIDE DETOURING PER MT-110.10.

HOURS OF CONSTRUCTION EQUIPMENT OPERATION WILL CONFORM TO ANY PERTINENT LOCAL ORDINACES THAT MAY EXIST.

ALL WORK AND TRAFFIC CONTROL DEVICES ARE TO BE IN ACCORDANCE WITH CMS 614 AND OTHER APPLICABLE PORTIONS OF THE SPECIFICATIONS, AS WELL AS THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS WILL BE INCLUDED IN THE LUMP SUM CONTRACT PRICE FOR ITEM 614, MAINTAINING TRAFFIC, UNLESS SEPARATELY ITEMIZED IN THE PLAN.

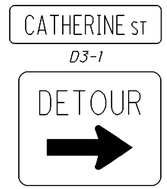
DETOUR SIGNING

PROVIDE, MAINTAIN, AND SUBSEQUENTLY REMOVE ALL DETOUR SIGNS AND SUPPORTS. PAYMENT FOR ALL LABOR, EQUIPMENT AND MATERIALS FOR DETOUR SIGING WILL BE INCLUDED IN THE LUMP SUM BID PRICE FOR ITEM 614 - DETOUR SIGNING.

NOTIFICATION OF CONSTRUCTION INITIATION

AT LEAST FOURTEEN DAYS PRIOR TO ANY CONSTRUCTION ACTIVITIES, THE CONTRACTOR WILL ADVISE THE DISTRICT OFFICE OF COMMUNICATIONS VIA EMAIL AT D06.PIO@DOT.STATE.OH.US AND THE DISTRICT WORK ZONE TRAFFIC MANAGER VIA EMAIL AT D06.MOT@DOT.STATE.OH.US OF THE ANTICIPATED START DATE OF ANY CONSTRUCTION ACTIVITIES, INCLUDING BUT NOT LIMITED TO THE PLACING OF WORK ZONE SIGNS. THE NOTIFICATION WILL ALSO INCLUDE THE PROJECT NUMBER, PID, NAME AND PHONE NUMBER OF THE CONTRACTOR, A POINT OF CONTACT AND THE ANTICIPATED IMPACT ON TRAFFIC. THE CONTRACTOR WILL IMMEDIATELY INFORM THE DISTRICT OFFICE OF COMMUNICATIONS AND THE DISTRICT WORK ZONE TRAFFIC MANAGER OF ANY AND ALL DELAYS AND/OR CHANGES REGARDING THE CONSTRUCTION INITIATION DATE.

1

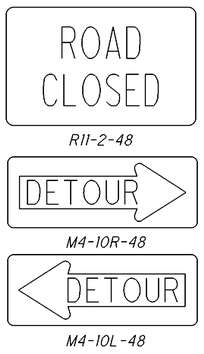


M4-9R-30

2

M4-9L-30

3



R11-2-48

M4-10R-48

M4-10L-48

4

R11-2-48

5

R11-4-60

NOTIFICATION TO EMERGENCY SERVICES AND LOCAL SCHOOLS

THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING ALL LOCAL, COUNTY, STATE AND FEDERAL EMERGENCY SERVICES AND EVERY EFFECTED SCHOOL FACILITY OF ANY ANTICIPATED ROAD CLOSURES AT LEAST FOURTEEN (14) DAYS BEFORE THE CLOSURE. SPECIFICALLY, THE ROAD CLOSURE NOTICE MUST DISCLOSE 1) THE EXACT PORTION OF THE ROAD TO BE CLOSED 2) THE DATE OF THE ANTICIPATED CLOSURE 3) THE DURATION OF THE CLOSURE 4) AND THE DETOUR ROUTE(S). A COPY OF THIS NOTIFICATION MUST BE PRESENTED AT THE PRECONSTRUCTION MEETING. THE CONTRACTOR IS ALSO RESPONSIBLE FOR NOTIFYING THE PROJECT ENGINEER WHEN, INCLUDING DATE AND TIME, THE NOTIFICATION IS DISTRIBUTED. A COPY OF EVERY NOTIFICATON MUST BE SENT TO ODOT COMMUNICATIONS AT DO6.PIO@STATE.OH.US.

NOTIFICATION OF TRAFFIC RESTRICTIONS

THROUGHOUT THE DURATION OF THE PROJECT, THE CONTRACTOR WILL NOTIFY THE PROJECT ENGINEER IN WRITING OF ALL TRAFFIC RESTRICTIONS AND UPCOMING MAINTENANCE OF TRAFFIC CHANGES. THE CONTRACTOR WILL ENSURE THE WRITTEN NOTIFICATION IS SUBMITTED IN A TIMELY MANNER TO ALLOW THE PROJECT ENGINEER TO MEET THE REQUIRED TIME FRAMES SET FORTH IN THE TABLE BELOW. THIS NOTIFICATION SHALL BE RECEIVED BY THE PROJECT ENGINEER PRIOR TO THE PHYSICAL SETUP OF ANY APPLICABLE SIGNS OR MESSAGE BOARDS.

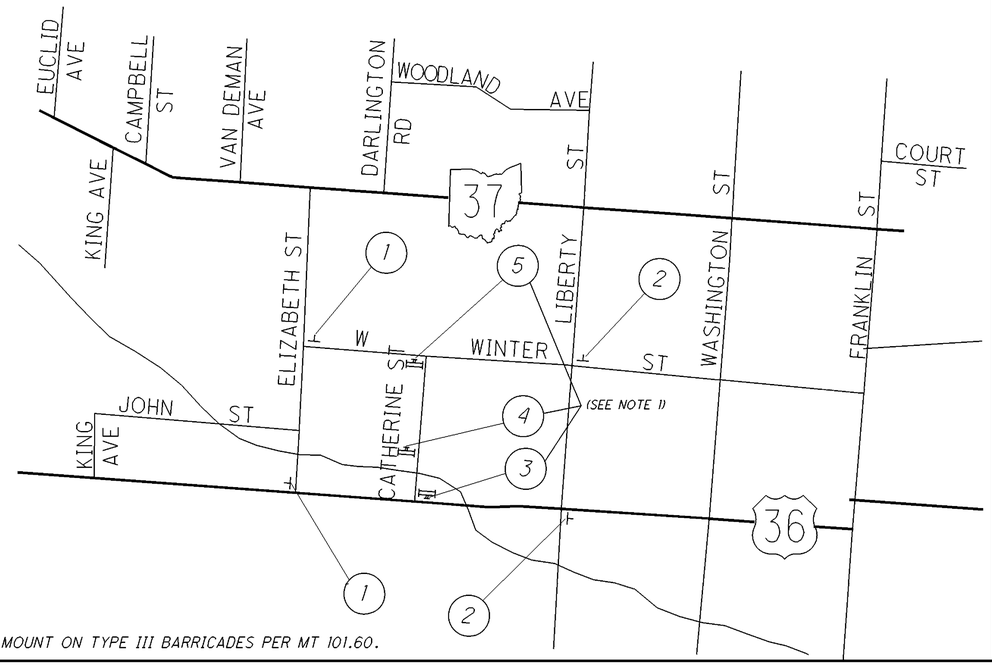
INFORMATION SHOULD INCLUDE BUT IS NOT LIMITED TO ALL CONSTRUCTION ACTIVITIES THAT IMPACT OR INTERFERE WITH TRAFFIC AND SHOULD LIST THE SPECIFIC LOCATION, TYPE OF WORK, ROAD STATUS, DATE AND TIME OF RESTRICTION, DURATION OF RESTRICTION, NUMBER OF LANES MAINTAINED, DETOUR ROUTES IF APPLICABLE, AND ANY OTHER INFORMATION REQUESTED BY THE PROJECT ENGINEER.

NOTIFICATION TIME FRAME TABLE

ITEM	DURATION OF CLOSURE	NOTIFICATION TO DISTRICT 6 COMMUNICATIONS OFFICE
RAMP AND ROAD CLOSURES	> = 2 WEEKS	14 BUSINESS DAYS PRIOR TO CLOSURE
	> 12 HOURS AND < 2 WEEKS	7 BUSINESS DAYS PRIOR TO CLOSURE
	< 12 HOURS	2 BUSINESS DAYS PRIOR TO CLOSURE
LANE CLOSURES AND RESTRICTIONS	> = 2 WEEKS	7 BUSINESS DAYS PRIOR TO CLOSURE
	< 2 WEEKS	2 BUSINESS DAYS PRIOR TO CLOSURE

ANY UNFORESEEN CONDITIONS NOT SPECIFIED IN THE PLANS REQUIRING TRAFFIC RESTRICTIONS SHALL ALSO BE REPORTED TO THE PROJECT ENGINEER USING THE NOTIFICATION TIME FRAME TABLE.

THE CONTRACTOR SHALL CONTACT MIKE BROOKOVER FROM THE CITY OF DELAWARE 14 DAYS PRIOR TO ANY STREET CLOSURES AT 740-203-1715 or mbrookover@delawareohio.net.



NOTE 1: MOUNT ON TYPE III BARRICADES PER MT 101.60.

NOT TO SCALE

CALCULATED MLC CHECKED MDC

MAINTENANCE OF TRAFFIC NOTES AND DETOUR MAP

DEL-36-9.81

4 22

SHEET NUMBER												PARTICIPATION 70/30		ITEM	ITEM EXT.	GRAND TOTAL	UNIT	DESCRIPTION	SEE SHEET NO.
		3	4				9		11			ODOT	CITY						
																		ROADWAY	
		LUMP												201	11000	LUMP		CLEARING AND GRUBBING	
									244			171	73	SPECIAL	20270100	244	FT	SPECIAL - PIPE CLEANOUT	11
		450										315	135	607	20001	450	FT	FENCE, TYPE CL, AS PER PLAN	3
																		EROSION CONTROL	
		300										210	90	659	14000	300	SQ YD	REPAIR SEEDING AND MULCHING	
		2										1.4	0.6	659	35000	2	M GAL	WATER	
												700	300	832	30000	1000	EACH	EROSION CONTROL	
																		DRAINAGE	
		50										35	15	603	00900	50	FT	6" CONDUIT, TYPE B, FOR DRAINAGE CONNECTION	
		50										35	15	603	01100	50	FT	6" CONDUIT, TYPE C, FOR DRAINAGE CONNECTION	
		50										35	15	603	01800	50	FT	8" CONDUIT, TYPE B, FOR SANITARY	
		50										35	15	603	02000	50	FT	8" CONDUIT, TYPE C, FOR SANITARY	
							244					171	73	603	98300	244	FT	CONDUIT, MISC.: 15' X 7' ARCH SPIRAL WOUND RENEWAL SYSTEM	9
																		MAINTENANCE OF TRAFFIC	
			LUMP											614	12420	LUMP		DETOUR SIGNING	
			LUMP											614	11000	LUMP		MAINTAINING TRAFFIC	
														623	10000	LUMP		CONSTRUCTION LAYOUT STAKES	
														624	10000	LUMP		MOBILIZATION	

CALCULATED MLC
CHECKED MDC

GENERAL SUMMARY

DEL-36-9.81

Delaware Run
Ex R/W
TMP
EXPOSED UTILITY LINE ATTACHED TO THE BRIDGE PARAPET WALL
BEGIN WORK STA 510+89
11' x 8' 3-sided flat top culvert
℄ CONST. Catherine St.
N 4° 14' 16" E
CONSTRUCTION LIMITS (FOR PRIMARY ACCESS AND STAGING - SEE R/W SHEETS)
CONSTRUCTION LIMITS (FOR ACCESS ONLY)
15' stone arch
Board of Education of Delaware, Ohio (Willis Field)
BEGIN PROJECT STA 514+29.83
℄ Alley #1
24" SAN
Ex SW
SW
Ex R/W
15' STONE ARCH (TO BE LINED)
24"
90°10'
90°
511
512
513
514
S 85° 45' 44" E
STA. 511+37.31 US36 = STA 10+00 CATHERINE ST.
℄ CONSTRUCTION AND ℄ R/W - US36 (WILLIAM ST.)
buried abandoned trolley car tracks
8" SAN
18"
MATCH LINE STA. 515+00
CONSTRUCTION LIMITS (INSITU LINING)
Ohio Wesleyan University
SEE CULVERT DETAILS SHEETS 9-12

* STA. 514+96.79, 34.0 Rt.
CB INLET ELEV. 880.38
21" (E) 875.18
STA. 514+63.18, 31.2' Lt.
SAN. GRATE ELEV. 880.94
24" (NW/E) 876.90
* STA. 514+29.96, 31.3 Lt.
MANHOLE GRATE ELEV. 880.93
℄ = 872.85
STA. 514+12.94, 4.8 Lt.
CB GRATE ELEV. 880.4
15" SE 875.80
STA. 513+56.23, 21.0' Rt.
SAN. GRATE ELEV. 880.91
8" (W/E/S) 877.12
Ex -0.72 %
8" san.
24" san.
8" san.
STONE ARCH
* THESE STRUCTURES OUTLET DIRECTLY TO THE STONE ARCH FOR ACCESS FOR GROUTING OPERATIONS.

900 895 890 885 880 875 870 865
881.04 880.68 880.98 881.28
511+00 512+00 513+00 514+00 515+00

HORIZONTAL SCALE IN FEET
0 10 20 40
CALCULATED MLC
CHECKED MDC

PLAN AND PROFILE - US36
STA. 510+20 TO STA. 515+00

DEL-36-9.81

6
22

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Ex R/W

24" SAN

MATCH LINE STA. 515+00

buried abandoned trolley car tracks

90°

STA. 516+17.47 US36 ℄
STA. 24+46 LIBERTY ST.

END PROJECT
STA 516+48.72

END WORK
STA 518+76

516 517 518 519

℄ CONSTRUCTION & ℄ R/W - US36 (WILLIAM ST.)

S 85° 45' 44" E

8" SAN

12" W

21" vcp

15' STONE ARCH (TO BE LINED)

12" cpp

24

15" vcp

CONSTRUCTION LIMITS
(INSITU LINING)

Ohio Wesleyan - Parking Lot

℄ CONST.
Liberty St.
N 4° 13' 52" E

23

14' x 7'3" corrugated metal

United Dairy Farmers

Delaware Run

CONSTRUCTION LIMITS
(FOR ACCESS ONLY)

ALLEY #2
(LIMITED ACCESS AND STAGING - SEE R/W SHEETS)

SEE CULVERT DETAILS SHEETS 9-12

STA. 515+34.33, 11.4 Rt.
SAN. GRATE ELEV. 881.14
8" (W/E) 875.40

*STA. 515+94.33, 38.5' Rt.
CB GRATE ELEV. 879.78
12" (SE) 877.73

STA. 516+17.57, 8.6' Rt.
SAN. GRATE ELEV. 880.35
8" (W) 874.86
8" (N/E) 873.35

STA. 516+27.80, 32.2 Lt.
SAN. GRATE ELEV. 880.10
12" (N) 872.22
24" (W) 875.49
24" (E) 871.82

STA. 516+61.56, 33.6' Lt.
SAN. GRATE ELEV. 880.52
24" (W/SE) 871.31

STA. 516+95.00, 7.9' Rt.
SAN GRATE ELEV. 880.45
8" (W) 872.75
8"(E) 872.37
24"(NE/SW) 871.17

STA. 517+11.19, 32.4 Rt.
SAN. GRATE ELEV. 880.77
24" (NE/W) 871.15

885 880 875 870 865 860

24" san. 24" san. 8" san. 8" san. 21" vcp 12" cpp 15" vcp 8" san. 8" san.

STA. 516+51.45, 27.2' Rt.
CB GRATE ELEV. 879.40
12" (W) 877.62

*STA 516+34.05, 23.8' Rt.
MH GRATE ELEV. 879.90
12" (SE) 874.30
15" (SW) 873.80

STA 516+38.33, 27.2' Rt.
MH GRATE ELEV. 879.82
12" (E) 877.48
12" (NW) 875.12

* THESE STRUCTURES OUTLET DIRECTLY TO THE STONE ARCH FOR ACCESS FOR GROUTING OPERATIONS.

881.28 881.09 880.70 880.38 880.59 880.76 881.02 881.30 881.23

515+00 516+00 517+00 518+00 519+00

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MLC
CHECKED MDC

PLAN AND PROFILE - US36
STA. 515+00 TO STA. 519+80

DEL-36-9.81

7
22

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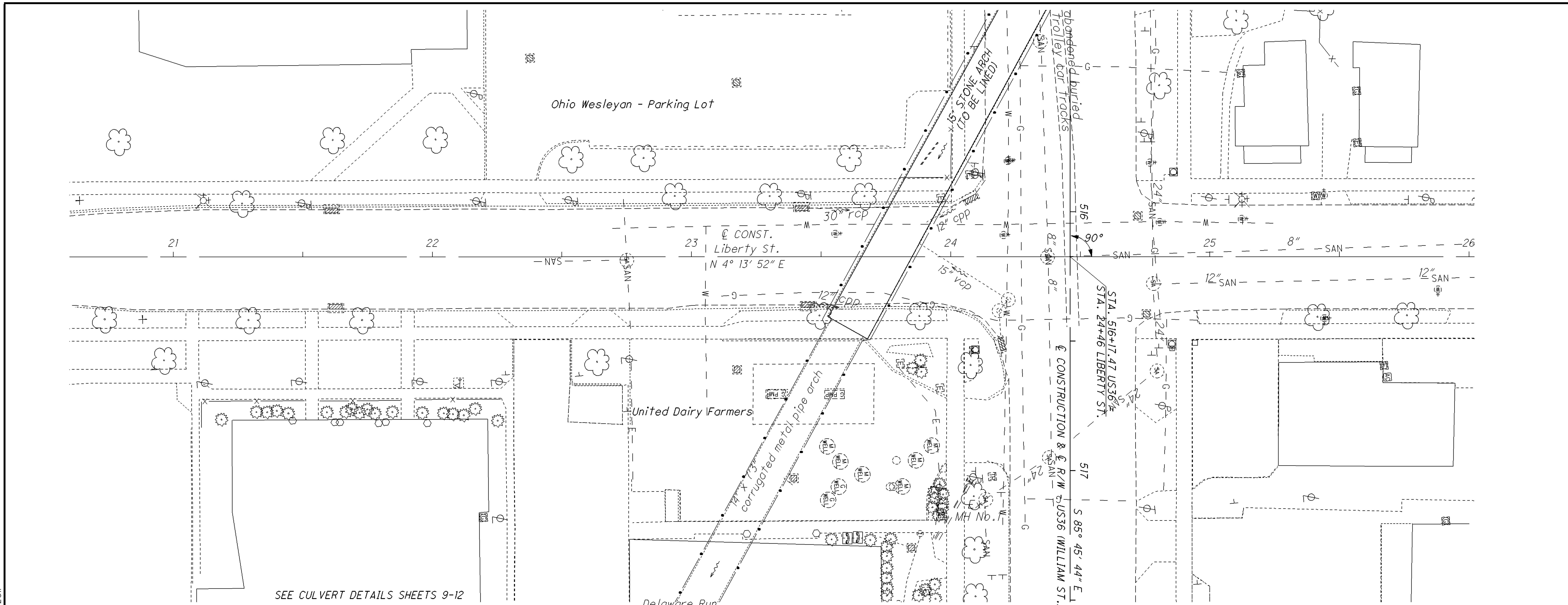

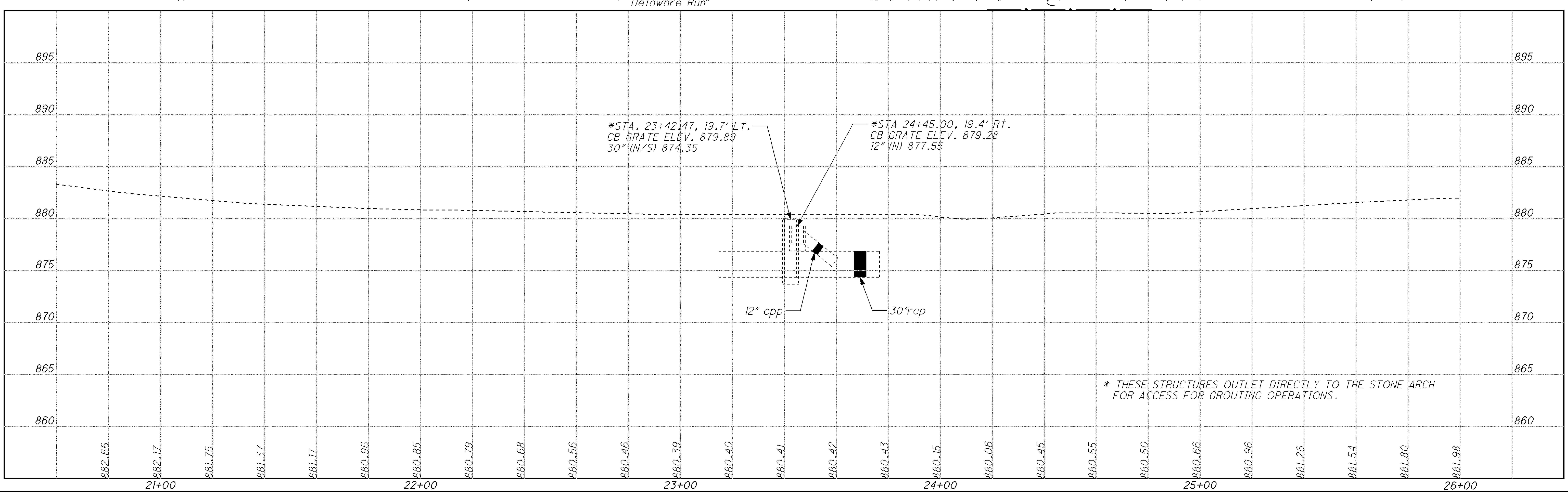

HORIZONTAL SCALE IN FEET 0 10 20 40

CALCULATED MLC
CHECKED MDC

PLAN AND PROFILE - LIBERTY ST.
STA. 21+00 TO STA. 26+00

DEL-36-9.81

8/22

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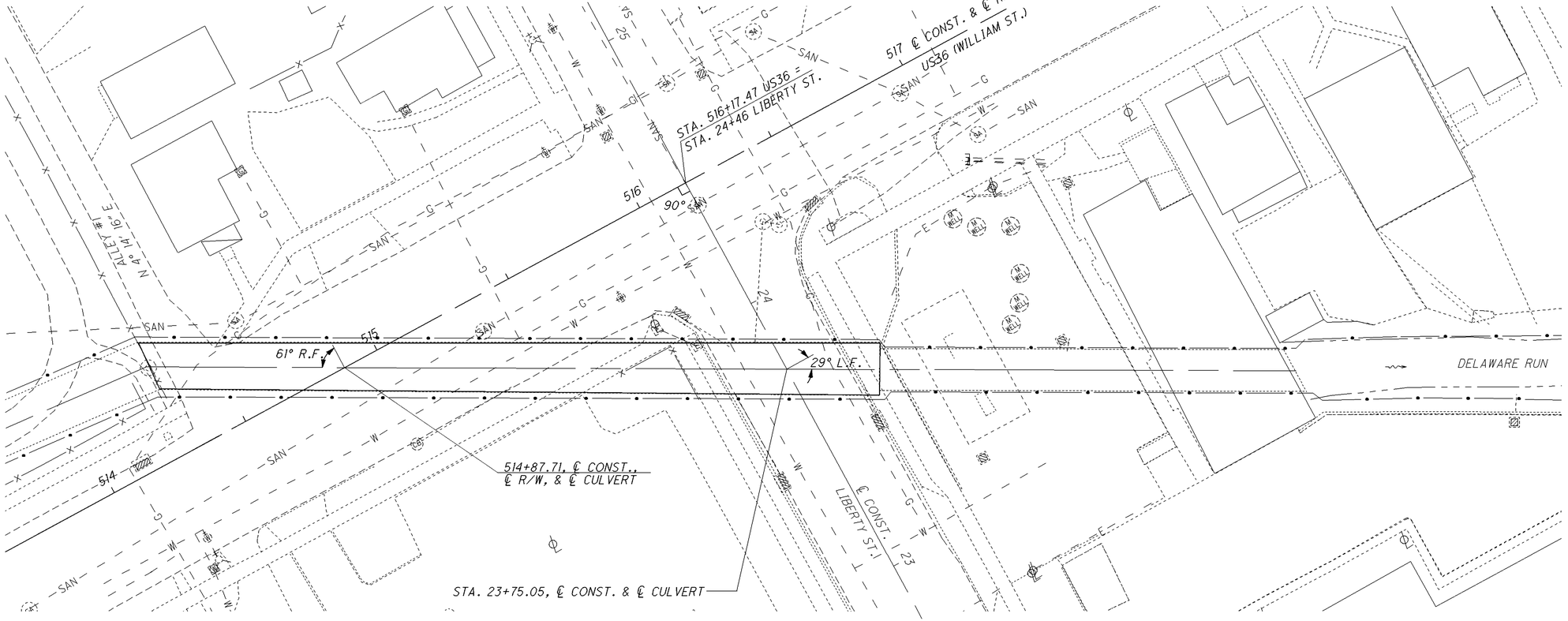
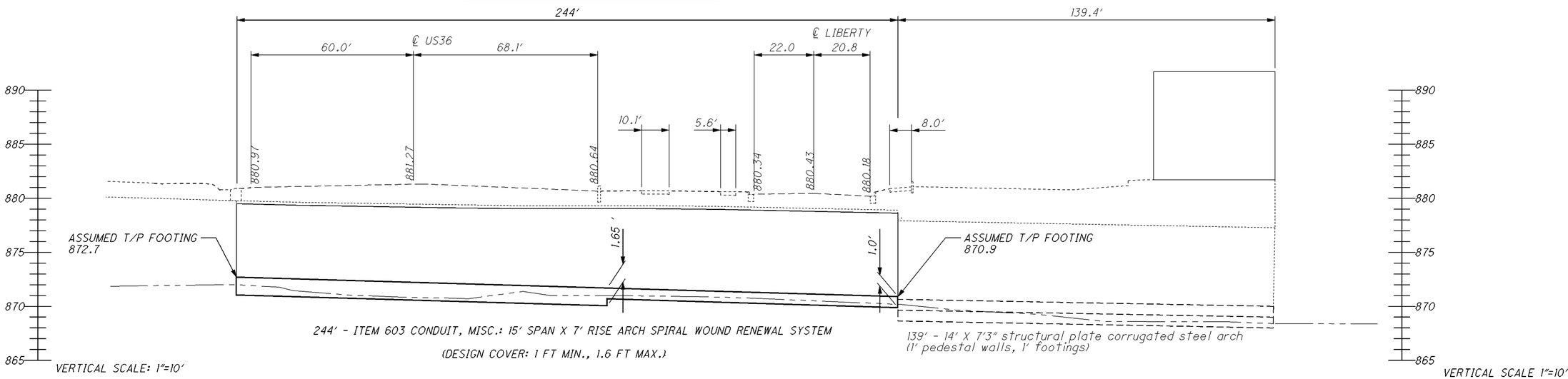


EXISTING STRUCTURE
TYPE: 15 FT STONE ARCH
SKEW: 61° R.F.
ALIGNMENT: TANGENT
DATE BUILT: 1800'S
SFN: 2100851

PROPOSED STRUCTURE
TYPE: INSITU LINER USING THE ARCH SPIRAL WOUND PROFILE METHOD
SKEW: 61° R.F.
ALIGNMENT: TANGENT
DATE BUILT: 1800'S
SFN: 2100851

HYDRAULIC DATA
USGS REGRESSION:
Q(25): 1120 CFS
Q(100): 1510 CFS



HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MLC
CHECKED MDC

CULVERT DETAIL - STA. 514+87.71
DEL-36-0981

DEL-36-9.81

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22

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ITEM 603 CONDUIT,MISC.: 15' SPAN X 7' RISE ARCH SPIRAL WOUND RENEWAL SYSTEM

DESCRIPTION.

A. GENERAL: THE CONTRACTOR SHALL FURNISH ALL TOOLS, EQUIPMENT, MATERIALS AND SUPPLIES AND SHALL PERFORM ALL LABOR REQUIRED TO COMPLETE INSTALLATION OF THE SPIRAL WOUND HDPE OR PVC PROFILE RENEWAL PROCESS IN FULL CONFORMITY WITH THE CONTRACT DOCUMENTS.

THE SPIRAL WOUND PVC PROFILE RENEWAL PROCESS UTILIZES AN EXTRUDED POLYVINYL CHLORIDE (PVC) PROFILE STRIP OR PANEL THAT IS SPIRAL WOUND OR ERECTED INTO AN EXISTING CONDUIT (HOST PIPE). THE EXTRUDED PROFILE STRIP IS MECHANICALLY LOCKED TOGETHER BY VIRTUE OF THE PROFILE DESIGN. THE INSTALLATION SYSTEM SHALL PROVIDE PRECISE CONTROL OF THE INTERNAL DIMENSIONS OF THE NEWLY FORMED PVC CONDUIT THAT WILL ENSURE THE SPECIFIED ANNULAR GROUT SPACE IS MAINTAINED THROUGHOUT THE RENEWAL LENGTH. THE ANNULAR SPACE IS FILLED WITH A CEMENTITIOUS GROUT.

MATERIAL.

A. FURNISH MATERIALS CONFORMING TO THE FOLLOWING:

1. PVC PROFILE STRIP USED SHALL CONFORM TO ASTM F 1697 OR ASTM F 1735. THE PROFILE GEOMETRY SHALL BE COMPATIBLE WITH THE DESIGN REQUIREMENTS FOR THE RENEWED CONDUIT AND SHALL BE SUITABLE FOR INSTALLATION IN THE HOST PIPE.

2. ANNULUS GROUT USED SHALL CONFORM TO SS 837.03.

3. IF USED, THE STEEL REINFORCING STRIP SHALL CONFORM ASTM F 1697.

B. PRODUCT HANDLING

1. ALL OTHER PRODUCTS REQUIRED TO COMPLETE THE SPIRAL WOUND PVC LINING RENEWAL PROCESS SHALL BE HANDLED AND STORED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS. EACH PRODUCT SHALL BE ACCOMPANIED BY ITS RELEVANT SPECIFICATION AND MSDS INFORMATION.

C. MATERIAL MARKING

1. THE PVC PROFILE STRIP SHALL BE DISTINCTLY MARKED ON ITS INSIDE SURFACE AT APPROPRIATE INTERVALS WITH A CODE NUMBER IDENTIFYING THE MANUFACTURER, PLANT, DATE OF MANUFACTURE, AND PROFILE DESIGNATION.

2. ALL OTHER PRODUCTS REQUIRED TO COMPLETE THE SPIRAL WOUND PVC LINING RENEWAL PROCESS SHALL BE DISTINCTLY MARKED WITH PRODUCT TYPE AND MANUFACTURER.

REFERENCE STANDARDS.

A. ASTM F-1697 STANDARD SPECIFICATION FOR PVC PROFILE STRIP FOR MACHINE SPIRAL WOUND LINER PIPE REHABILITATION OF EXISTING SEWERS AND CONDUIT.

B. ASTM F-1741 STANDARD PRACTICE FOR INSTALLATION OF MACHINE SPIRAL WOUND PVC LINER PIPE REHABILITATION OF EXISTING AND CONDUITS.

C. ASTM D-1784 STANDARD SPECIFICATION FOR RIGID PVC AND CPVC COMPOUNDS.

D. ASTM C-109 STANDARD TEST METHOD FOR COMPRESSIVE STRENGTH OF HYDRAULIC CEMENT MORTARS (USING 2-IN. CUBE SPECIMEN)

E. ASTM A653/A653M-06 STANDARD SPECIFICATION FOR STEEL SHEET, ZINC-COATED (GALVANIZED) OR ZINC-IRON ALLOY-COATED (GALVANNEALED) BY THE HOT-DIP PROCESS

F. ASTM F1698-02(2008) STANDARD PRACTICE FOR INSTALLATION OF POLY(VINYL CHLORIDE) (PVC) PROFILE STRIP LINER AND CEMENTITIOUS GROUT FOR REHABILITATION OF EXISTING MAN-ENTRY SEWERS AND CONDUITS.

G. ASTM F1735-02(2008) STANDARD SPECIFICATION FOR POLY(VINYL CHLORIDE) (PVC) PROFILE STRIP FOR PVC LINERS REHABILITATION OF EXISTING MAN-ENTRY SEWERS AND CONDUIT.

CONTRACTOR SUBMITTALS

A. PRIOR TO COMMENCING WITH CONSTRUCTION THE CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGINEER:

1. DESIGN SUBMITTAL: SHOP DRAWINGS FOR THE RENEWED CONDUIT. THESE DRAWINGS SHALL ADDRESS THE PVC PROFILE DESIGNATION (GEOMETRY), GROUT THICKNESS REQUIRED, AND THE STEEL REINFORCING STRIP IF USED.

2. PRE-INSTALLATION VIDEO OR PHOTO SURVEY OF HOST PIPE.

3. DESIGN SUBMITTAL: THE DETAILS FOR THE LEVELING PAD/FOOTER THAT THE SPRIAL WOUND PVC LINING WILL ATTACH TO ALONG WITH THE TYPE OF CONNECTION.

B. DURING CONSTRUCTION THE CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGINEER:

1. COMPRESSIVE STRENGTH TEST RESULTS FOR ANNULUS GROUT, TESTED PER ASTM C109.

C. WITHIN 2 WEEKS OF THE SPIRAL WOUND PROFILE BEING INSTALLED, THE CONTRACTOR SHALL SUBMIT THE FOLLOWING TO THE ENGINEER:

1. POST-INSTALLATION VIDEO OR PHOTO SURVEY OF THE RENEWED CONDUIT WITH A COPY SENT TO THE OFFICE OF STRUCTURAL ENGINEERING.

EXECUTION

A. SAFETY

1. PERFORM ALL WORK IN ACCORDANCE WITH APPLICABLE OSHA STANDARDS.

B. PREPARATION

1. HOST PIPE ACCESS:

i.UNLESS OTHERWISE SPECIFIED BY THE ENGINEER, THE CONTRACTOR MAY UTILIZE ANY OF THE EXISTING MANHOLES AND/OR CATCHBASINS IN THE PROJECT AREA AS ACCESS POINTS.

ii.SHOULD TEMPORARY EXCAVATIONS BE NEEDED TO ACCESS THE HOST PIPE, SUCH WORK SHALL BE COORDINATED WITH THE ENGINEER. EXCAVATIONS SHALL BE SLOPED OR SHORED IN ACCORDANCE WITH ALL APPLICABLE SAFETY REGULATIONS.

2. CLEANING:

i. WATER JETTING SHALL BE USED TO CLEAN AND PREPARE THE SURFACE OF THE HOST PIPE. ALL LOOSE MATERIAL, ACIDS, GREASE AND OTHER DELETERIOUS SUBSTANCES SHALL BE REMOVED DURING CLEANING, AND THE PREPARED SURFACE SHALL BE SUITABLE FOR BONDING WITH CEMENTITIOUS GROUT.

ii.CARE WILL BE TAKEN TO NOT DISLODGE THE STONES THAT FORM THE STONE ARCH ESPECIALLY THE TOP KEY STONES.

3. ANY VOIDS IN THE HOST PIPE WILL BE FILLED WITH GROUT.

4. FLOW BYPASSING

i.WHERE REQUIRED DUE TO EXCESSIVE FLOW OR WHERE OTHERWISE DESIRABLE, THE CONTRACTOR SHALL BYPASS FLOWS AROUND THE LENGTH OF HOST PIPE DESIGNATED FOR RENEWAL.

ii.THE BYPASS SHALL BE MADE BY PLUGGING THE HOST PIPE AT AN EXISTING UPSTREAM MANHOLE AND PUMPING THE FLOW INTO A DOWNSTREAM MANHOLE, OR OTHERWISE AS APPROVED BY THE ENGINEER.

iii.FLOW INTERRUPTIONS SHALL BE COORDINATED WITH THE ENGINEER AT LEAST 14 DAYS IN ADVANCE AND WITH PROPERTY OWNERS AND BUSINESSES AT LEAST 3 DAYS IN ADVANCE.

iv.ONCE THE RENEWAL PROCESS HAS BEGUN, THE FLOW BYPASS SHALL BE MAINTAINED UNTIL THE RENEWAL PROCESS IS COMPLETE OR AS APPROVED BY THE ENGINEER.

5. PRE-INSTALLATION INSPECTION:

i.AFTER CLEANING, AND PRIOR TO INSTALLING THE PVC PROFILE, THE CONTRACTOR SHALL INSPECT THE HOST PIPE TO ENSURE THERE ARE NO EXCESSIVE VARIATIONS IN THE HOST PIPE PROFILE AND NO OBSTRUCTIONS THAT WOULD HINDER THE RENEWAL PROCESS. CONTRACTOR SHALL ALSO VERIFY THAT THE SIZING OF THE PROFILE (WOUND GEOMETRY) WILL BE SUITABLE FOR THE HOST PIPE GEOMETRY.

ii.THE LONGITUDINAL AND RADIAL LOCATIONS OF ALL LATERAL CONNECTIONS TO THE HOST PIPE SHALL BE LOGGED FOR SUBSEQUENT REINSTATEMENT.

iii.THE CONTRACTOR SHALL PERFORM A PRE-INSTALLATION VIDEO SURVEY OF THE HOST PIPE AS REQUIRED BY THE ENGINEER.

C. INSTALLATION

1. PROFILE WINDING

i.WINDING OF THE PVC PROFILE SHALL CONFORM TO APPROVED SUBMITTALS.

ii.THE PVC PROFILE SHALL BE WOUND USING THE SELF-WINDING MACHINE THAT TRAVERSES DOWN THE HOST PIPE FORMING THE SPIRAL WOUND PVC LINING CONDUIT AS IT GOES ACCORDING TO ASTM F 1741 OR MANUALLY ACCORDING TO ASTM F1698.
(SEE SHEET FOR NOTES AND DETAIL)

iii.THE WINDING PROCESS SHALL BE CONTINUOUS UNTIL THE SPIRAL WOUND PVC LINING IS COMPLETE FOR THE LENGTH OF HOST PIPE TO BE RENEWED.

2. LEVELING PAD/FOOTER.

(SEE SHEET FOR NOTES AND DETAIL)

3. ANNULUS GROUTING:

i.ANNULUS GROUTING SHALL CONFORM TO THE CONTRACTOR'S APPROVED SUBMITTALS.

ii.AFTER THE SPIRAL WOUND PVC LINING CONDUIT HAS BEEN INSTALLED, AND BEFORE THE ANNULUS IS GROUTED, THE CONTRACTOR SHALL RESTORE SERVICE AT ALL LATERAL CONNECTIONS. FIELD CONDITIONS WILL DICTATE WHETHER SERVICE RESTORATION CAN BE DONE FROM INSIDE THE CONDUIT OR WHETHER RESTORATION WILL REQUIRE THE EXTERIOR OF THE CONDUIT AND CONNECTING PIPES TO BE EXPOSED.

iii.GROUTING SHALL BE DONE BETWEEN BULKHEADS INSTALLED AT PRE-DETERMINED DISTANCES APART ALONG THE CONDUIT.

iv.PRIOR TO GROUTING, A BRACING FRAMEWORK SHALL BE INSTALLED WHICH SHALL BE DESIGNED BY THE CONTRACTOR TO SERVE THE FOLLOWING FUNCTIONS DURING GROUTING; (A) PREVENTING FLOTATION OF THE SPIRAL WOUND PVC CONDUIT, (B) ALIGNING THE PVC CONDUIT WITHIN THE HOST PIPE SO THAT THE REQUIRED ANNULAR SPACE IS MAINTAINED BETWEEN THE PVC CONDUIT AND HOST PIPE, (C) PREVENTING EXCESSIVE DEFLECTION OR BUCKLING OF THE PVC CONDUIT.

v.VENT HOLES SHALL BE PROVIDED AT SUITABLE LOCATIONS TO PERMIT AIR TO BE EXPELLED FROM THE ANNULAR SPACE AND TO MONITOR GROUT FILL LEVELS.

vi.GROUTING MAY BE PERFORMED IN ONE OR MORE LIFTS IN ORDER TO COMPLETELY FILL THE ANNULAR SPACE.

vii.GROUT SHALL BE SAMPLED AND TESTED AS DESIGNATED BY THE ENGINEER. SAMPLE PREPARATION AND TESTING SHALL CONFORM TO ASTM C39 OR ASTM C109.

COMPLETION OF WORK AND SITE RESTORATION

A. ENDS OF RENEWED CONDUIT:

1. THE ENDS OF THE SPIRAL WOUND PVC CONDUIT SHALL BE SECURELY GROUTED IN POSITION. THE PVC CONDUIT SHALL BE SEALED TO THE HOST PIPE WITH MATERIAL CAPABLE OF ACHIEVING A WATERTIGHT SEAL. 2. THE STEP IN THE FLOW LINE AT THE ENDS OF THE RENEWED CONDUIT SHALL BE BLENDED INTO THE EXISTING FLOW LINE USING APPROPRIATE MATERIALS.

B. ANY HOLES MADE IN THE PVC PROFILE DURING THE GROUTING OPERATION SHALL BE SEALED USING MEANS AND METHODS APPROVED BY THE ENGINEER.

C. AT POINTS WHERE TEMPORARY EXCAVATION WAS REQUIRED FOR ACCESS TO THE HOST PIPE OR LATERAL CONNECTIONS, APPROPRIATE ENCASEMENT SHALL BE PROVIDED FOR THE EXPOSED PVC PROFILE AND/OR CONNECTING PIPES. ENCASEMENT MATERIALS MAY CONSIST OF CONCRETE, SAND SLURRY, OR OTHER SUITABLE MATERIALS AS APPROVED BY THE ENGINEER.

D. FINAL INSPECTION AND ACCEPTANCE:

1. THE GROUTED IN-PLACE, SPIRAL WOUND PVC PROFILE LINING IN THE RENEWED CONDUIT SHALL BE CONTINUOUS OVER THE ENTIRE LENGTH OF AN INSTALLATION RUN AND BE FREE FROM DEFECTS SUCH AS FOREIGN INCLUSIONS, HOLES, CUTS, TEARS, AND GROUT VOIDS. THE RENEWED CONDUIT SHALL BE IMPERVIOUS AGAINST LEAKAGE OUT OF THE CONDUIT TO THE SURROUNDING GROUND OR INTO THE CONDUIT FROM THE SURROUNDING GROUND.

2. ANY DEFECT WHICH WILL OR POTENTIALLY COULD AFFECT THE STRUCTURAL INTEGRITY OR PERFORMANCE OF THE RENEWED CONDUIT SHALL BE REPAIRED AT THE CONTRACTOR'S EXPENSE USING MEANS AND METHODS APPROVED BY THE ENGINEER.

3. THE CONTRACTOR SHALL PERFORM A POST-INSTALLATION VIDEO SURVEY OF THE RENEWED CONDUIT AS REQUIRED BY THE ENGINEER.

CALCULATED MLC | CHECKED MDC

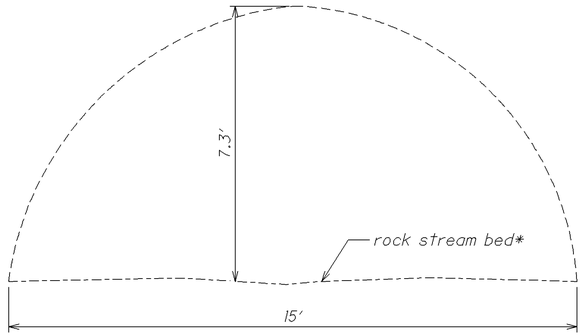
CULVERT DETAIL - STA. 514+87.71

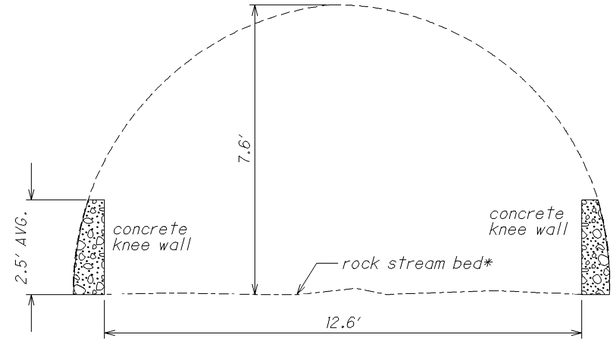
DEL-36-0981

DEL-36-9.81

TYPICAL SHAPES OF THE STONE ARCH THROUGHOUT THE LENGTH TO BE LINED.

* SEE THE SOIL PROFILE SHEETS

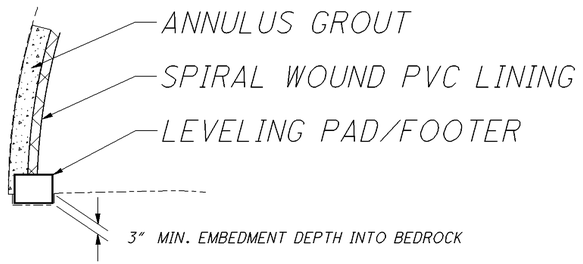




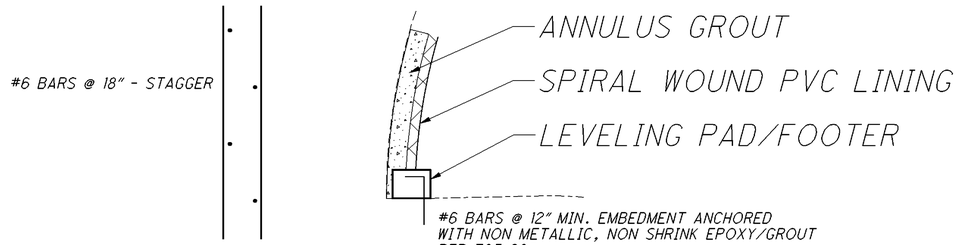
2. LEVELING PAD/FOOTER.

i.THE SPIRAL WOUND PVC LINING WILL ENCOMPASS THE ENTIRE CIRCUMFERENCE OF THE STONE ARCH. THE CONTRACTOR WILL NOT CONSTRUCT THE LINING AT THE TOP OF THE EXISTING CONCRETE KNEE WALLS BUT ALONG THE BOTTOM OF THE STREAM BED ATOP THE LEVELING PAD/FOOTER.

ii.THE LEVELING PAD/FOOTER ELEVATIONS/DIMENSIONS SHOWN IN THE PLAN ARE FOR DETAIL PURPOSES. THE CONTRACTOR MAY ADJUST THE ELEVATIONS/DIMENSIONS TO ACCOMODATE THE VARIATIONS IN THE STREAM BED PROFILE TO MINIMIZE THE ROCK CUT REQUIRED FOR THE MANUFACTURE'S RECOMMENDED LEVELING PAD/FOOTING DIMENSIONS.



iii.IN LIEU OF KEYING INTO THE ROCK, THE CONTRACTOR MAY DOWEL INTO THE ROCK.

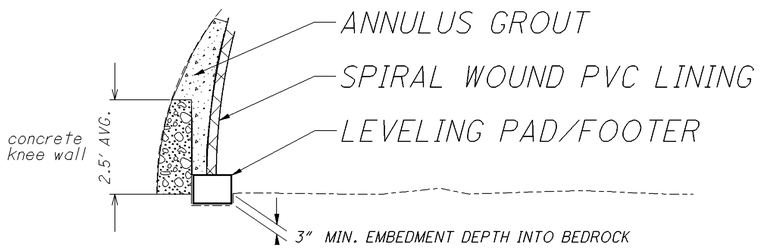


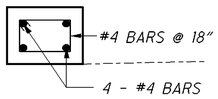
FOR ESTIMATING PURPOSES:
1300 LBS -509 EPOXY COATED REINFORCING
325 EACH - 510 DOWEL HOLES WITH NONSHRINK, NONMETALLIC GROUT

iv.THE MANUFACTURE MAY PROVIDE A DESIGN OTHER THAN THE ONES SHOWN IN THE PLANS PER THE CONTRACTOR SUBMITTALS - 3. SHEET 10.

METHOD OF MEASUREMENT.

THE DEPARTMENT WILL MEASURE THE RELINING OF EXISTING PIPE USING SPIRAL WOUND RENEWAL SYSTEM BY THE NUMBER OF FEET (METERS) OF EXISTING PIPE RELINED.





FOR ESTIMATING PURPOSES:
2022 LBS - 509 EPOXY COATED REINFORCING

BASIS OF PAYMENT.

THE PAYMENT FOR FURNISHING THE SPIRAL WOUND PVC PIPE RENEWAL SYSTEM, ANNULUS GROUT, LEVELING PAD/FOOTER, ALL REINFORCING, ALL LABOR, DEBRIS REMOVAL, INCIDENTALS AND EQUIPMENT NEEDED TO COMPLETE THIS ITEM OF WORK WILL BE MADE AT THE CONTRACT PRICE FOR ITEM 603 CONDUIT, MISC.: 15' SPAN X 7' RISE ARCH SPIRAL WOUND PIPE RENEWAL SYSTEM.

ITEM SPECIAL - PIPE CLEANOUT

THIS WORK SHALL CONSIST OF REMOVING SEDIMENT AND DEBRIS FROM THE EXISTING STRUCTURE SPECIFIED IN THE PLANS. ALL MATERIAL REMOVED SHALL BE DISPOSED OF AS PER 105.16 AND 105.17. THE STRUCTURE SHALL BE CLEANED OUT TO THE SATISFACTION OF THE ENGINEER.

CLEANOUT OF THE STRUCTURE SHALL BE PAID FOR AT THE UNIT BID PRICE FOR ITEM SPECIAL - PIPE CLEANOUT. THIS PRICE SHALL INCLUDE THE COST FOR MATERIAL, EQUIPMENT, LABOR, AND ALL INCIDENTALS REQUIRED TO COMPLETE THE CLEANOUT. THE FOLLOWING ESTIMATED QUANTITY HAS BEEN INCLUDED IN THE GENERAL SUMMARY FOR THE ABOVE NOTED WORK:

ITEM SPECIAL, PIPE CLEANOUT 244 FT.

CALCULATED MLC
CHECKED MDC

CULVERT DETAIL - STA. 514+87.71
DEL-36-0981

DEL-36-9.81

11
22

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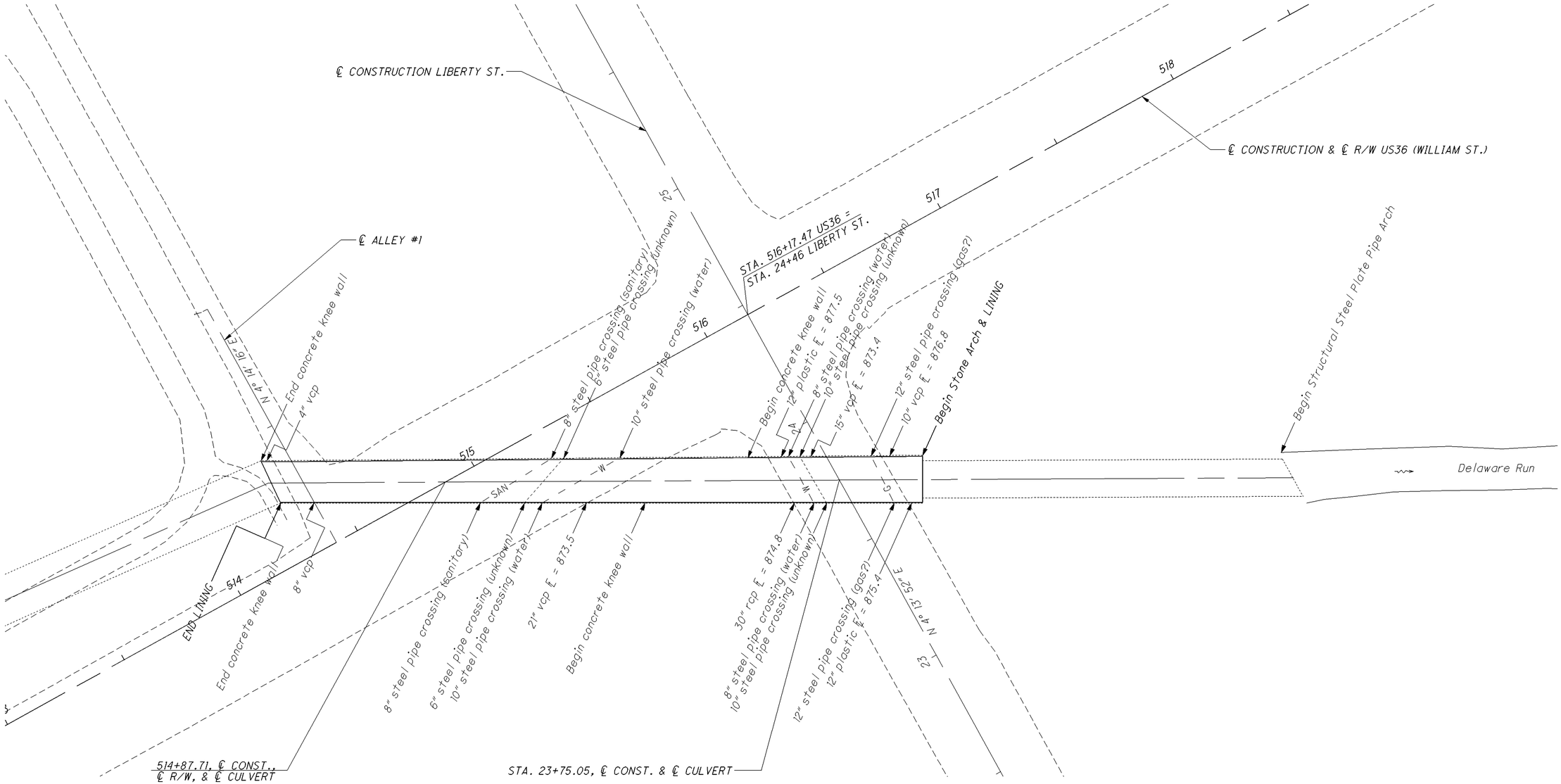

PIPE CONNECTIONS AND UTILITY CROSSINGS

HORIZONTAL SCALE IN FEET
0 10 20 40

CALCULATED MLC
CHECKED MDC

CULVERT DETAIL - STA. 514+87.71
DEL-36-0981

DEL-36-9.81

12
22

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RIGHT OF WAY LEGEND SHEET DEL-36-9.75

DELAWARE COUNTY
CITY OF DELAWARE

PROJECT DESCRIPTION
REPAIR WORK TO DELAWARE RUN CULVERT
AT THE INTERSECTION OF WILLIAM ST. AND
LIBERTY ST. IN THE CITY OF DELAWARE, OH.

PROJECT CONTROL
STATE PLANE GRID:OHIO NORTH ZONE (SPC 3401) NAD83 (1995)
PROJECT ADJUSTMENT FACTOR: 0.99998968

UTILITIES
LISTED BELOW ARE ALL UTILITIES LOCATED WITHIN THE PROJECT CONSTRUCTION LIMITS TOGETHER WITH THEIR RESPECTIVE OWNERS:

SEWERS:
CITY OF DELAWARE
SANITARY/STORM SEWER
225 CHERRY ST.
DELAWARE, OH 43015
740-203-1961

WATER:
CITY OF DELAWARE WATER
3080 US 23 NORTH
DELAWARE, OH 43015
740-203-1972

TRAFFIC SIGNALS:
CITY OF DELAWARE
DEPT. OF ENGINEERING SERVICES
20 EAST WILLIAM ST.
DELAWARE, OHIO 43015
740-203-1749

TELEPHONE AND FIBER OPTIC:
VERIZON
550 LEADER ST.
MARION, OHIO 43302
PHONE: 740-383-0551

ELECTRIC:
AEP
850 TECH CENTER DRIVE
GAHANNA, OHIO 43230
PHONE: 614-883-6831

GAS:
COLUMBIA GAS OF OHIO
3550 JOHNNY APPLESEED COURT
COLUMBUS, OHIO 43231
PHONE: 614-818-2107

CABLE:
TIME WARNER CABLE
3760 INTERCHANGE DR.
COLUMBUS, OH 43204
614-481-5262

NOTES: THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN ON THE PLANS ARE OBTAINED FROM THE OWNER OF THE UTILITIES AS REQUIRED BY SECTION 153.64 O.R.C.

INDEX OF SHEETS:

PLANS PREPARED BY:

FIRM NAME : O.D.O.T. CENTRAL OFFICE

PLANS PREPARED BY: MICHAEL JAMES WARE

FIELD REVIEW BY: MJW

DATE COMPLETED: 12/28/09

OWNERSHIP VERIFIED BY: MJW

DATE COMPLETED: 12/29/09

DATE COMPLETED: 12/29/09

LEGEND:
WD = WARRANTY DEED
SH = STANDARD HIGHWAY EASEMENT
T = TEMPORARY EASEMENT
S = SEWER EASEMENT
CH = CHANNEL EASEMENT
U = UTILITY EASEMENT
WA = WORK AGREEMENT
SA = SPECIAL AGREEMENT AND WAIVER OF DAMAGES

STRUCTURE KEY

- RESIDENTIAL
- COMMERCIAL
- OUT-BUILDING

CONVENTIONAL SYMBOLS

County Line
Township Line
Section Line
Corporation Line or
Fence Line (Ex) (Pr)
Center Line
Right of Way (Ex) Ex R/W
Right of Way (Pr) R/W
Standard Highway Ease.(Ex) Ex SH
Temporary Right of Way TMP
Sewer Ease. (Pr) SW
General Ease. (Ex)
Railroad or
Guardrail (Ex) (Pr)
Construction Limits
Edge of Pavement (Ex)
Edge of Pavement (Pr)
Edge of Shoulder (Ex)
Edge of Shoulder (Pr)

Ditch / Creek (Ex)
Ditch / Creek (Pr)
Tree Line (Ex)
Ownership Hook Symbol , Example
Property Line Symbol , Example
Break Line Symbol , Example
Tree (Pr) , Tree (Ex) , Shrub (Ex)
Tree (Remove) , Shrub (Remove)
Evergreen (Ex) , Stump
Evergreen (Remove) , Stump (Remove)
Wetland (Pr) , Grass (Pr) , Aerial Target
Post (Ex) , Mailbox (Ex) , Mailbox (Pr)
Light (Ex) , Telephone Marker (Ex) TEL
Fire Hydrant (Ex) , Water Meter (Ex)
Water Valve (Ex) , Utility Valve Unknown (Ex.)
Telephone Pole (Ex) , Power Pole (Ex)
Light Pole (Ex)

I, Michael James Ware, P. S. have conducted a survey of the existing conditions for the Ohio Department of Transportation in July, 2007. The results of that survey are contained herein.

Underground utility locations are shown for informational purposes only. Though they are believed to be accurate, their location is as provided by Tampa Bay Engineering, Inc. (Project No. OH09500610), as part of a SUE contract. This information has been incorporated into the plans as a part of this project.

As a part of this project, I have reestablished the locations of the existing property lines for property takes contained herein.

As a part of this project I have established the proposed property lines, calculated the Gross Take, present roadway occupied (PRO), Net Take and Net Residue; as well as prepared the legal descriptions necessary to acquire the parcels as shown herein.

As a part of this work I have set monuments at the proposed Property corners, Section Corners and other points, as shown herein.

Any monuments to be set will be done so in accordance with OAC 4733-37 as cited below.

All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "Minimum Standards for Boundary Surveys" unless noted otherwise.

The words I and my as used herein are to mean either myself or someone working under my direct supervision.

Michael James Ware Date: 12/31/2009

Michael James Ware, Professional Land Surveyor 8054

SURVEYORS SEAL

STATE OF OHIO
MICHAEL JAMES WARE
S-8054
REGISTERED
PROFESSIONAL SURVEYOR

SIGNED: Michael James Ware
DATE: 12/31/2009

FEDERAL PROJECT NO. E070(434)
PID NO. 79373
CALCULATED JTM
CHECKED MJW

RIGHT OF WAY LEGEND SHEET

DEL-36-9.75

1 / 10

13 / 22

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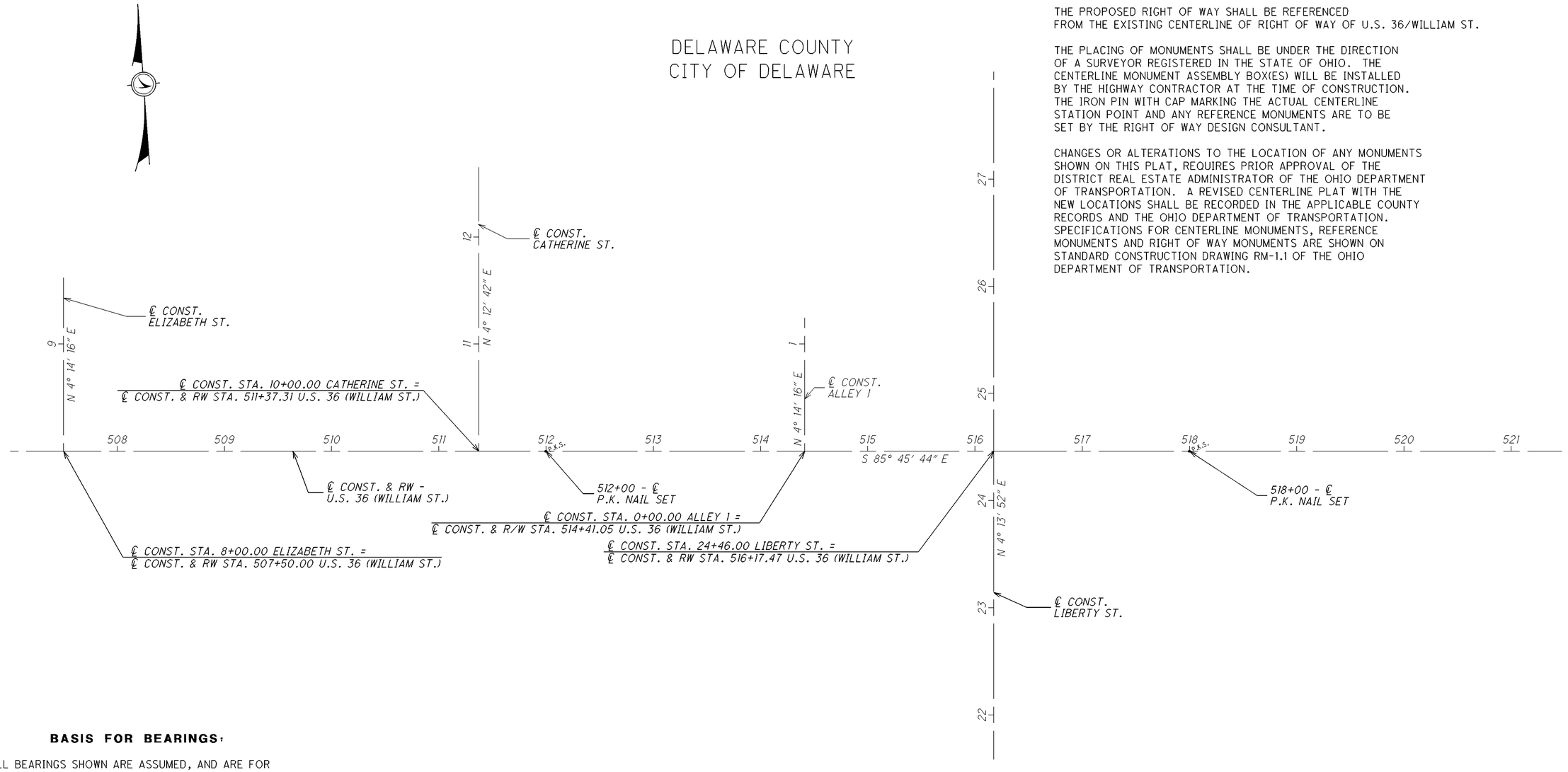
DEL-36-9.75

DELAWARE COUNTY
CITY OF DELAWARE

THE PROPOSED RIGHT OF WAY SHALL BE REFERENCED FROM THE EXISTING CENTERLINE OF RIGHT OF WAY OF U.S. 36/WILLIAM ST.

THE PLACING OF MONUMENTS SHALL BE UNDER THE DIRECTION OF A SURVEYOR REGISTERED IN THE STATE OF OHIO. THE CENTERLINE MONUMENT ASSEMBLY BOX(ES) WILL BE INSTALLED BY THE HIGHWAY CONTRACTOR AT THE TIME OF CONSTRUCTION. THE IRON PIN WITH CAP MARKING THE ACTUAL CENTERLINE STATION POINT AND ANY REFERENCE MONUMENTS ARE TO BE SET BY THE RIGHT OF WAY DESIGN CONSULTANT.

CHANGES OR ALTERATIONS TO THE LOCATION OF ANY MONUMENTS SHOWN ON THIS PLAT, REQUIRES PRIOR APPROVAL OF THE DISTRICT REAL ESTATE ADMINISTRATOR OF THE OHIO DEPARTMENT OF TRANSPORTATION. A REVISED CENTERLINE PLAT WITH THE NEW LOCATIONS SHALL BE RECORDED IN THE APPLICABLE COUNTY RECORDS AND THE OHIO DEPARTMENT OF TRANSPORTATION. SPECIFICATIONS FOR CENTERLINE MONUMENTS, REFERENCE MONUMENTS AND RIGHT OF WAY MONUMENTS ARE SHOWN ON STANDARD CONSTRUCTION DRAWING RM-1.1 OF THE OHIO DEPARTMENT OF TRANSPORTATION.



BASIS FOR BEARINGS:

ALL BEARINGS SHOWN ARE ASSUMED, AND ARE FOR PROJECT USE ONLY.

NOTE: THE EXISTING R/W WIDTH AND LOCATION WERE DETERMINED USING:
FOUND MONUMENTATION
CURRENT DEED INFORMATION
DELAWARE COUNTY TAX MAP INFO.

MONUMENT LEGEND

- EXISTING R/W MONUMENT BOX
- PROPOSED R/W MONUMENT BOX
- EXISTING CONCRETE MONUMENT
- PROPOSED CONCRETE MONUMENT
- RAILROAD SPIKE FOUND
- RAILROAD SPIKE SET
- I.P.F. IRON PIN FOUND
- I.P.F. IRON PIN FOUND W/ ID CAP
- I.P.S. IRON PIN SET W/ ID CAP
- P.F. IRON PIPE FOUND
- P.S. IRON PIPE SET
- P.K.F. P.K. NAIL FOUND
- P.K.S. P.K. NAIL SET

I, Michael James Ware, P. S. have conducted a survey of the existing conditions for the Ohio Department of Transportation in 2007. The results of that survey are contained herein.

As a part of this project I have reestablished the locations of the existing property lines and the existing centerline of Right of Way for property takes contained herein.

As a part of this work I have set monuments at the proposed Property corners, Section Corners, or other points, as shown herein.

Any monuments to be set will be done so in accordance with OAC 4733-37 as cited below.

All of my work contained herein was conducted in accordance with Ohio Administrative Code 4733-37 commonly known as "Minimum Standards for Boundary Surveys" unless noted otherwise.

The words I and my as used herein are to mean either myself or someone working under my direct supervision.

---------- Date:----------

Michael James Ware, Professional Land Surveyor 8054

SURVEYORS SEAL

SIGNED:_____
DATE:_____

RECEIVED _____, 20___
RECORDED _____, 20___
BOOK _____ PAGE _____

_____
COUNTY RECORDER

HORIZONTAL SCALE IN FEET
0 25 50 100

PID NO. 79373

R/W DESIGNER JTM
R/W REVIEWER MJW

CENTERLINE PLAT

DEL-36-9.75

2 / 10

14 / 22

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CITY OF DELAWARE
DELAWARE COUNTY
STATE OF OHIO

PROPERTY OWNERS

(10) MYRON NEIL SHENEFIELD
BILLIE JOY SHENEFIELD
51943229008000

(11) FERGUS J. HUTCHINSON
CHRIS J. WINGET
51943229011000

(12) JOHN P. NARWICZ
KAREN P. NARWICZ
51943229011000
#190 W. WILLIAM ST.

(13) MARTHA WOODRUFF
51943229015000
#14 CATHERINE ST.

(14) SCOTT SOLOMON
51943229014000
#16 CATHERINE ST.

(15) PIEPER HOLDINGS LLC
51943229012000
#180 W. WILLIAM ST.

(16) MARY E. ALBAYATI
51943229013000
#176 W. WILLIAM ST.

(17) BOARD OF EDUCATION
51943228005000
#74 W. WINTER ST.

(18) GMN ENTERPRISES
51943304002000
#145 W. WILLIAM ST.

(19) OHIO WESLEYAN UNIVERSITY
51943304003000

(20) OHIO WESLEYAN UNIVERSITY
AND TRUSTEES OF OHIO
WESLEYAN UNIVERSITY
51943304001000

(21) DAVID M. OGLE
51943228006000
51943228008000
51943228009000

(22) L. WENDELL NUTTER
E. MAXINE NUTTER
51943228007000
#3 N. LIBERTY ST.

(23) UNITED DAIRY FARMERS INC
51943303007000
#123 W. WILLIAM ST.

PROPERTY OWNERS

(24) KPO LLC
51943303009000
51943303021000
#35 S. LIBERTY ST.

(25) FRANCO J. OREFICE
51943327010000
#122 W. WILLIAM ST.

(26) THE THOMAS A. MITCHELL
REVOCABLE TRUST,
u/d/t 12/23/08,
THOMAS A. MITCHELL, TRUSTEE,
51943327011000
#120 W. WILLIAM ST.

(27) FORREST KEITH SHEETS
MARY KATHRYN SHEETS
51943303006000
#109 W. WILLIAM ST.

(28) SHRI INC.
51943303005000
#107 W. WILLIAM ST.

(29) AJ REAL ESTATE
HOLDING LLC
51943303004000
#105 W. WILLIAM ST.

(30) TIM DONUT U.S. LIMITED, INC.
51943303001000
51943303002000
51943303001000
93 W. WILLIAM ST.

(31) ROBERT P. PEOPLES
ESTHER P. PEOPLES
51943303022000
#20 S. WASHINGTON ST.

(32) UNKNOWN OWNER

REX SPRAGUE
51943228004000
#151 W. WINTER ST.

KIM A. LANCE
51943228003000
#133 W. WINTER ST.

33' ALLEY
(VACATED 2/14/2000
BY ORD. #00-13)

CATHERINE ST. 66' R/W

16.5' ALLEY

(Willis Field)

20' SANITARY SEWER EASEMENT
DV 334, PG 85

LIBERTY ST. 66' R/W

W. WILLIAM ST. (R/W WIDTH VARIES)

S 85° 45' 44" E

℄ CONST. & R/W U.S. 36 (WILLIAM ST.)

N 4° 13' 52" E

DELAWARE RUN

WASHINGTON ST. 66' R/W

HORIZONTAL SCALE IN FEET
0 25 50 100

PID NO. 79373

R/W DESIGNER JTM
R/W REVIEWER MJW

PROPERTY MAP

DEL-36-9.75

REV. BY	DATE	DESCRIPTION
MJW	10/11/10	UPDATED OWNER, CHANGED 14-S TO 14-T
MJW	9/28/10	REVISED PARCEL 23-SS
MJW	7/08/10	REVISED PARCELS 20, 23

DATE COMPLETED: 12/29/09

3 / 10

15 / 22

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TOTAL NUMBER OF :

4 OWNERSHIPS 0 TOTAL TAKES
4 PARCELS 0 OWNERSHIPS W/ STRUCTURES INVOLVED

RECORD AREA - TOTAL PRO - NET TAKE = NET RESIDUE
GROSS TAKE - PRO IN TAKE = NET TAKE

ALL AREAS IN ACRES

GRANTEE:

ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
1-9	NOT USED													STATE	ALL RECORD AREAS SHOWN PER AUDITOR		
10	MYRON NEIL SHENEFIELD	3	OR 657	655	51943229008000	0.2200	0.0000	0.0000	0.0000	0.0000					S. 32' OF INLOT 730, ALL OF INLOT 731		
	BILLIE JOY SHENEFIELD														NO ADDITIONAL R/W REQUIRED		
11	FERGUS J. HUTCHINSON	3	OR 577	138	51943229009000	0.1340	0.0000	0.0000	0.0000	0.0000					INLOTS 732 AND 1724		
	CHRIS J. WINGET														NO ADDITIONAL R/W REQUIRED		
					51943229010000	0.1270	0.0000	0.0000	0.0000	0.0000							
12	JOHN P. NARWICZ	7,9	OR 699	783	51943229011000	0.1380	0.0000	0.0000	0.0000	0.0000					ALL OF INLOT 1725, W. 10' OF INLOT 1726		
	KAREN P. NARWICZ														NO ADDITIONAL R/W REQUIRED		
13	MARTHA WOODRUFF	7,9	OR 562	468	51943229015000	0.1170	0.0000	0.0000	0.0000	0.0000					S. HALF OF INLOT 766		
	A.K.A. MARTHA A. WOODRUFF		DV 667	802											NO ADDITIONAL R/W REQUIRED		
14-T	SCOTT SOLOMON	7,9	OR 990	666	51943229014000	0.1700	0.0000	0.0111	0.0000	0.0111					TEMPORARY ACCESS		
															0.0056 AC IN EXISTING EASEMENT		
															EASEMENT (DV 535, PG 457)		
															RIGHT-OF-ENTRY AGREEMENT (DV 535, PG 456)		
															INLOT 765		
15	PIEPER HOLDINGS, LLC	7,9	OR223	1133	51943229012000	0.0930	0.0000	0.0000	0.0000	0.0000					E. 50' OF INLOT 1726		
															NO ADDITIONAL R/W REQUIRED		
16	MARY E. ALBAYATI	7,9	OR 36	2115	51943229013000	0.1450	0.0000	0.0000	0.0000	0.0000					INLOT 764		
															NO ADDITIONAL R/W REQUIRED		
17-S	BOARD OF EDUCATION	7,9	DB 43	155	51943228005000	2.2350	0.0000	0.3044	0.0000	0.3044					INLOTS 584-588		
	OF DELAWARE OHIO		DB 43	156											0.0225 AC IN EXISTING SANITARY SEWER EASEMENT		
			DB 44	157											SANITARY SEWER EASEMENT (DV 334, PG 85)		
			DB 121	435											INLOTS 579-580		
			DB 120	612										STATE			

LEGEND:
WL = FEE SIMPLE WITH LIMITATION OF ACCESS
WD = WARRANTY DEED
BS = BILL OF SALE
PRW = PROPERTY RIGHT FEE SIMPLE
SH = STANDARD HIGHWAY EASEMENT
LA = LIMITED ACCESS EASEMENT
T = TEMPORARY EASEMENT
SL = SLOPE EASEMENT
S = SEWER EASEMENT
CH = CHANNEL EASEMENT
FL = FLOW EASEMENT
U = UTILITY EASEMENT
A = AERIAL EASEMENT
PRE = PROPERTY RIGHT
SS = SUBSURFACE EASEMENT
V = IN NAME OF ANOTHER STATE AGENCY, LPA, ETC.
R = SPECIAL RESERVATION
WA = WORK AGREEMENT
SA = SPECIAL AGREEMENT AND WAIVER OF DAMAGES

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

NOTE: ALL RECORD AREAS ARE PER AUDITOR TAX RECORDS, AND MAY DIFFER FROM DEED AREAS.

(c) = CALCULATED AREA

REV. BY	DATE	DESCRIPTION
MJW	10/11/10	UPDATED OWNER, CHANGED 14-S TO 14-T
MJW	01/25/10	REVISED DEED REFERENCE INFO-PARCEL 17
FIELD REVIEW BY: MJW		DATE: 12/28/09
OWNERSHIP VERIFIED BY: MJW		DATE: 12/29/09
DATE COMPLETED: 12/29/09		

FEDERAL PROJECT NO. E070(434)
PID NO. 79373
STATE JOB NO. 4659 7(1)
R/W DESIGNER JTM
R/W REVIEWER MJW

SUMMARY OF ADDITIONAL RIGHT OF WAY

DEL-36-9.75

4 / 10

16 / 22

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RECORD AREA - TOTAL PRO - NET TAKE = NET RESIDUE
GROSS TAKE - PRO IN TAKE = NET TAKE

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

ALL AREAS IN ACRES

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
18	G.M.N. ENTERPRISES, LTD.	7,9	OR 262	1978	51943304002000	0.2470	0.0000	0.0000	0.0000	0.0000				STATE	W. HALF OF INLOT 124		
															NO ADDITIONAL R/W REQUIRED		
19	OHIO WESLEYAN UNIVERSITY	7,9	OR 478	341	51943304003000	3.1620	0.0000	0.0000	0.0000	0.0000					E. PART OF INLOT 125		
															NO ADDITIONAL R/W REQUIRED		
20-SS	OHIO WESLEYAN UNIVERSITY	7-10	OR 473	247	51943304001000	0.3290	0.0000	0.0085	0.0000	0.0085					SUBSURFACE EASEMENT		
	AND TRUSTEES OF		OR 474	290											PART INLOT 125		
	OHIO WESLEYAN UNIVERSITY		OR 517	341													
21	DAVID M. OGLE	7-10	OR 597	2108	51943228006000	0.0630	0.0000	0.0000	0.0000	0.0000					PART OUTLOT 32, PART INLOT 362		
															NO ADDITIONAL R/W REQUIRED		
			OR 597	2130	51943228008000	0.0760	0.0000	0.0000	0.0000	0.0000							
			OR 597	2130	51943228009000	0.5200	0.0000	0.0000	0.0000	0.0000							
22	L. WENDELL NUTTER	8,10	DV 570	148	51943228007000	0.0830	0.0000	0.0000	0.0000	0.0000					PART OUTLOT 32		
			DV 419	579											NO ADDITIONAL R/W REQUIRED		
23-SS	UNITED DAIRY FARMERS, INC.	8,10	DV 523	363	51943303007000	0.3270	0.0000	0.0485	0.0000	0.0485					SUBSURFACE EASEMENT		
															INLOT 92, PART INLOTS 91, 240 AND 241		
24	KPO, LLC	8,10	OR 521	570	51943303009000	1.0240(c)	0.0000	0.0000	0.0000	0.0000					PART OUTLOTS 236-241		
															LEASE TO UNITED STATES POSTAL SERVICE		
			OR 521	569	51943303021000	0.1520	0.0000	0.0000	0.0000	0.0000					OR 54, PG 785		
															EASEMENT (DV 536, PG 100)		
															NO ADDITIONAL R/W REQUIRED		
25	FRANCO J. OREFICE	8,10	OR 600	136	51943227010000	0.1670	0.0000	0.0000	0.0000	0.0000					S.W. PART INLOT 53		
															NO ADDITIONAL R/W REQUIRED		
26	THE THOMAS A. MITCHELL	8,10	DV541	306	51943227011000	0.1530	0.0000	0.0000	0.0000	0.0000					S.W. PART INLOT 52, S.E. PART INLOT 53		
	REVOCABLE TRUST,		OR 878	1615											NO ADDITIONAL R/W REQUIRED		
	u/d/t 12/23/08,																
	THOMAS A. MITCHELL, TRUSTEE																
27	FORREST KEITH SHEETS	8,10	OR 403	220	51943303006000	0.1330	0.0000	0.0000	0.0000	0.0000					PART INLOT 91		
	MARY KATHRYN SHEETS														NO ADDITIONAL R/W REQUIRED		
														STATE			

LEGEND:
WL = FEE SIMPLE WITH LIMITATION OF ACCESS
WD = WARRANTY DEED
BS = BILL OF SALE
PRW = PROPERTY RIGHT FEE SIMPLE
SH = STANDARD HIGHWAY EASEMENT
LA = LIMITED ACCESS EASEMENT
T = TEMPORARY EASEMENT
SL = SLOPE EASEMENT
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SS = SUBSURFACE EASEMENT
V = IN NAME OF ANOTHER STATE AGENCY, LPA, ETC.
R = SPECIAL RESERVATION
WA = WORK AGREEMENT
SA = SPECIAL AGREEMENT AND WAIVER OF DAMAGES

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

NOTE: ALL RECORD AREAS ARE PER AUDITOR TAX RECORDS, AND MAY DIFFER FROM DEED AREAS.

(c) = CALCULATED AREA

REV. BY	DATE	DESCRIPTION
MJW	9/28/10	REVISED PARCEL 23-SS
MJW	7/08/10	REVISED PARCELS 20-SS, 23-SS

FIELD REVIEW BY: MJW DATE: 12/28/09
OWNERSHIP VERIFIED BY: MJW DATE: 12/29/09
DATE COMPLETED: 12/29/09

FEDERAL PROJECT NO. E070(434)
PID NO. 79373
STATE JOB NO. 46597(1)
R/W DESIGNER JTM
R/W REVIEWER MJW

SUMMARY OF ADDITIONAL RIGHT OF WAY

DEL-36-9.75

5 / 10

17 / 22

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RECORD AREA - TOTAL PRO - NET TAKE = NET RESIDUE
GROSS TAKE - PRO IN TAKE = NET TAKE

GRANTEE:
ALL RIGHT OF WAY ACQUIRED IN THE NAME OF
THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION
UNLESS OTHERWISE SHOWN.

ALL AREAS IN ACRES

PARCEL NO.	OWNER	SHEET NO.	OWNERS RECORD BOOK	OWNERS RECORD PAGE	AUDITOR'S PARCEL	RECORD AREA	TOTAL P.R.O.	GROSS TAKE	P.R.O. IN TAKE	NET TAKE	STRUCTURE	NET RESIDUE LEFT	NET RESIDUE RIGHT	TYPE FUND	REMARKS	AS ACQUIRED BOOK	AS ACQUIRED PAGE
														STATE			
28	SHRI, INC.	8,10	OR 584	1132	51943303005000	0.1410	0.0000	0.0000	0.0000	0.0000					PART INLOT 91		
															NO ADDITIONAL R/W REQUIRED		
29	A.J. REAL ESTATE HOLDING, L.L.C.	8,10	OR 707	2116	51943303004000	0.1550	0.0000	0.0000	0.0000	0.0000					PART INLOTS 90 AND 91		
															ACCESS EASEMENT - OR 584 PG 1137		
															NO ADDITIONAL R/W REQUIRED		
30	TIM DONUT U.S. LIMITED, INC.	8,10	OR 618	667	51943303001000	0.3240(c)	0.0000	0.0000	0.0000	0.0000					PART INLOTS 89 AND 90		
															NO ADDITIONAL R/W REQUIRED		
					51943303002000	0.0950	0.0000	0.0000	0.0000	0.0000							
					51943303003000	0.3220(c)	0.0000	0.0000	0.0000	0.0000							
31	ROBERT P. PEOPLES	8,10	OR 986	994	51943303022000	0.1440	0.0000	0.0000	0.0000	0.0000					S. PART INLOT 89		
	ESTHER P. PEOPLES														NO ADDITIONAL R/W REQUIRED		
32	UNKNOWN OWNER	8,10			N/A	0.0897(c)	0.0000	0.0000	0.0000	0.0000					DELAWARE RUN		
														STATE			

LEGEND:
WL = FEE SIMPLE WITH LIMITATION OF ACCESS
WD = WARRANTY DEED
BS = BILL OF SALE
PRW = PROPERTY RIGHT FEE SIMPLE
SH = STANDARD HIGHWAY EASEMENT
LA = LIMITED ACCESS EASEMENT
T = TEMPORARY EASEMENT
SL = SLOPE EASEMENT
S = SEWER EASEMENT
CH = CHANNEL EASEMENT
FL = FLOW EASEMENT
U = UTILITY EASEMENT
A = AERIAL EASEMENT
PRE = PROPERTY RIGHT
SS = SUBSURFACE EASEMENT
V = IN NAME OF ANOTHER STATE AGENCY, LPA, ETC.
R = SPECIAL RESERVATION
WA = WORK AGREEMENT
SA = SPECIAL AGREEMENT AND WAIVER OF DAMAGES

NOTE: ALL TEMPORARY PARCELS TO BE OF 12 MONTH DURATION.

NOTE: UNDER NO CIRCUMSTANCES ARE TEMPORARY EASEMENTS TO BE USED FOR STORAGE OF MATERIAL OR EQUIPMENT BY THE CONTRACTOR UNLESS NOTED OTHERWISE.

NOTE: ALL RECORD AREAS ARE PER AUDITOR TAX RECORDS, AND MAY DIFFER FROM DEED AREAS.

(c) = CALCULATED AREA

REV. BY	DATE	DESCRIPTION

FIELD REVIEW BY: MJW DATE: 12/28/09
OWNERSHIP VERIFIED BY: MJW DATE: 12/29/09
DATE COMPLETED: 12/29/09

FEDERAL PROJECT NO. E070(434)
PID NO. 79373
STATE JOB NO. 46597(1)
R/W DESIGNER JTM
R/W REVIEWER MJW

SUMMARY OF ADDITIONAL RIGHT OF WAY

DEL-36-9.75

6 / 10

18 / 22

CITY OF DELAWARE
DELAWARE COUNTY
STATE OF OHIO

THE CONTRACTOR MAY GAIN PRIMARY ACCESS TO THE STONE ARCH FROM THE UPSTREAM END AT CATHERINE ST. OR LIMITED ACCESS FROM THE DOWNSTREAM END AT ALLEY #2.

THE CONTRACTOR MAY ATTEMPT TO SECURE OTHER ACCESS LOCATIONS.

(13) MARTHA WOODRUFF
51943229015000
#14 CATHERINE ST.
(RESIDENTIAL)

(14) SCOTT SOLOMON
51943229014000
#16 CATHERINE ST.
(RESIDENTIAL)

(12) JOHN P. NARWICZ
KAREN P. NARWICZ
51943229011000
#190 W. WILLIAM ST.
(RESIDENTIAL)

(15) PIEPER HOLDINGS LLC
51943229012000
#180 W. WILLIAM ST.
(RESIDENTIAL)

(16) MARY E. ALBAYATI
51943229013000
#176 W. WILLIAM ST.
(RESIDENTIAL)

(17) BOARD OF EDUCATION
OF DELAWARE OHIO
51943228005000
#74 W. WINTER ST.
(WILLIS FIELD)

(21) DAVID M. OGLE
51943228008000
#7 N. LIBERTY ST.

(19) OHIO WESLEYAN
UNIVERSITY
51943304003000

(20) OHIO WESLEYAN
UNIVERSITY AND
TRUSTEES OF OHIO
WESLEYAN UNIVERSITY
51943304001000

16.5' ALLEY

12' R/W

Ex R/W

Ex SW

20' SANITARY SEWER EASEMENT
DV 334, PG 85

℄ CONST. CATHERINE ST.
N 4° 12' 42" E

S 85° 47' 25" E
20.00'

510+84.18
127.16' LT

511+04.18
127.17' LT

N 4° 12' 35" E
23.29'

S 4° 12' 35" W
25.00'

TMP
14-T

510+84.20
103.88' LT

511+04.20
102.17' LT

N 80° 54' 6" W
20.07'

EXIST. 10'x25' ESMT.
DV 535, PG 457

511+70.21
83.27' LT

S 79° 23' 11" E
266.79'

514+35.35
53.64' LT

℄ CONST. ALLEY 1
N 4° 14' 16" E

35.00'
S 4° 06' 54" W

N 4° 12' 42" E
65.00'

511+70.24
18.27' LT

265.19'
N 85° 50' 34" W

514+35.43
18.64' LT

S 85° 45' 44" E

℄ CONST. & R/W U.S. 36 (WILLIAM ST.)

℄ CONST. STA. 10+00.00 CATHERINE ST. =
℄ CONST. & R/W STA. 511+37.31 U.S. 36 (WILLIAM ST.)

W. WILLIAM ST. (R/W WIDTH VARIES)

℄ CONST. STA. 0+00.00 ALLEY 1 =
℄ CONST. & R/W STA. 514+41.05 U.S. 36 (WILLIAM ST.)

MATCH LINE STA. 515+00 U.S. 36 (WILLIAM ST.) SEE SHEET 8

510 511 512 513 514

10 11 12

M.N.F.

MONUMENT LEGEND

- EXISTING R/W MONUMENT BOX
- PROPOSED R/W MONUMENT BOX
- EXISTING CONCRETE MONUMENT
- PROPOSED CONCRETE MONUMENT
- RAILROAD SPIKE FOUND
- RAILROAD SPIKE SET
- I.R.F. IRON PIN FOUND
- I.R.F. IRON PIN FOUND W/ ID CAP
- I.R.S. IRON PIN SET W/ ID CAP
- P.F. IRON PIPE FOUND
- P.S. IRON PIPE SET
- P.K.F. P.K. NAIL FOUND
- P.K.S. P.K. NAIL SET

REV. BY	DATE	DESCRIPTION
MJW	10/11/10	UPDATED OWNER, CHANGED 14-S TO 14-T
MJW	01/25/10	REVISED OWNER NAME-PARCEL 19

DATE COMPLETED: 12/29/09

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 79373

R/W DESIGNER JTM
R/W REVIEWER MJW

RIGHT OF WAY BOUNDARY
STA. 510+00 TO STA. 515+00

DEL-36-9.75

7 / 10

19 / 22

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CITY OF DELAWARE
DELAWARE COUNTY
STATE OF OHIO

MONUMENT LEGEND

- EXISTING R/W MONUMENT BOX
- PROPOSED R/W MONUMENT BOX
- EXISTING CONCRETE MONUMENT
- PROPOSED CONCRETE MONUMENT
- RAILROAD SPIKE FOUND
- RAILROAD SPIKE SET
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- I.R.F. IRON PIN FOUND W/ ID CAP
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- P.F. IRON PIPE FOUND
- P.S. IRON PIPE SET
- P.K.F. P.K. NAIL FOUND
- P.K.S. P.K. NAIL SET

HORIZONTAL SCALE IN FEET
0 10 20 40

PID NO. 79373

R/W DESIGNER JTM
R/W REVIEWER MJW

RIGHT OF WAY BOUNDARY
STA. 515+00 TO STA. 520+00

DEL-36-9.75

8 / 10

20 / 22

MATCH LINE STA. 515+00 U.S. 36 (WILLIAM ST.) SEE SHEET 7

(21) L. WENDELL NUTTER
E. MAXINE NUTTER
51943228007000
#3 N. LIBERTY ST.
(RESIDENTIAL)

(22) OHIO WESLEYAN UNIVERSITY
AND TRUSTEES OF OHIO
WESLEYAN UNIVERSITY
51943304001000
(COMMERCIAL)

(25) FRANCO J. OREFICE
51943327010000
#122 W. WILLIAM ST.
(COMMERCIAL)

(26) THE THOMAS A. MITCHELL
REVOCABLE TRUST,
u/d/t 12/23/08,
THOMAS A. MITCHELL, TRUSTEE
51943327011000
#120 W. WILLIAM ST.
(COMMERCIAL)

(23) UNITED DAIRY FARMERS INC
51943303007000
#123 W. WILLIAM ST.
(COMMERCIAL)

(27) FORREST KEITH SHEETS
MARY KATHERINE SHEETS
51943303006000
#109 W. WILLIAM ST.
(RESIDENTIAL)

(29) AJ REAL
HOLDIN
51943303
#105 W.
(COMMERCIAL)

(30) TIM DONUT US LIMITED, INC.
51943303003000
(COMMERCIAL)

(32) UNKNOWN

(24) KPO LLC
51943303021000
(COMMERCIAL)

51943303002000

(31) ROBERT P. PEOPLES
ESTHER P. PEOPLES
51943303022000
#20 S. WASHINGTON
(RESIDENTIAL)

℄ CONST. STA. 24+46.00 LIBERTY ST. =
℄ CONST. & R/W STA. 516+17.47 U.S. 36 (WILLIAM ST.)

W. WILLIAM ST. (R/W WIDTH VARIES)

S 85° 45' 44" E

℄ CONST. & R/W U.S. 36 (WILLIAM ST.)

℄ CONST. LIBERTY ST.

515+47.80 47.67' RT
S 85° 45' 44" E 36.69'
515+84.49 47.67' RT
S 3° 58' 18" W 20.11'
515+84.58 67.77' RT
N 57° 5' 47" W 41.92'
20-SS

516+50.49 47.67' RT
N 85° 45' 44" W 115.50'
517+65.99 47.67' RT
516+50.64 79.95' RT
N 3° 58' 18" E 32.29'
N 3° 58' 18" E 18.28'
516+50.72 98.24' RT
23-SS
S 57° 5' 48" E 132.13'
N 57° 5' 48" W 132.16'
S 3° 53' 16" W
517+66.57 143.34' RT

16.5' ALLEY (ALLEY #2)

CONTRACTOR MAY GAIN PRIMARY ACCESS TO THE STONE ARCH
THE UPSTREAM END AT CATHERINE ST. OR LIMITED ACCESS
THE DOWNSTREAM END AT ALLEY #2.

CONTRACTOR MAY ATTEMPT TO SECURE OTHER ACCESS
TIONS.

REV. BY	DATE	DESCRIPTION
MJW	9/28/10	REVISED PARCEL 23-SS
MJW	7/08/10	REVISED PARCELS 20-SS, 23-SS

DATE COMPLETED: 12/29/09

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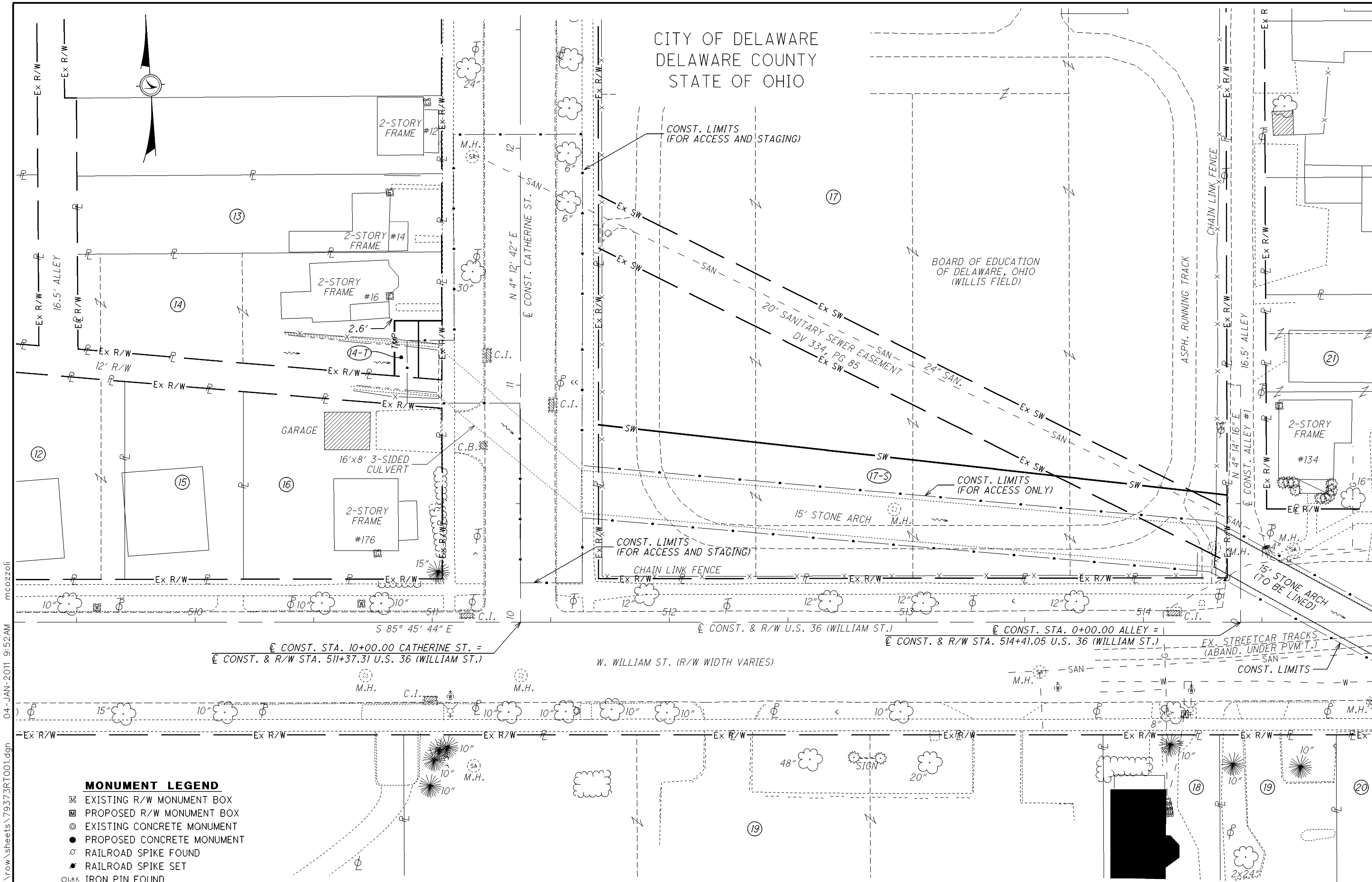

THE CONTRACTOR MAY GAIN PRIMARY ACCESS TO THE STONE ARCH FROM THE UPSTREAM END AT CATHERINE ST. OR LIMITED ACCESS FROM THE DOWNSTREAM END AT ALLEY #2.

THE CONTRACTOR MAY ATTEMPT TO SECURE OTHER ACCESS LOCATIONS.

REV. BY	DATE	DESCRIPTION
MJW	10/11/10	CHANGED 14-S TO 14-T

DATE COMPLETED: 12/29/09

HORIZONTAL SCALE IN FEET 0 10 20 40

PID NO. 79373

R/W DESIGNER JTM
R/W REVIEWER MJW

RIGHT OF WAY PLAN
STA. 510+00 TO STA. 515+00

DEL-36-9.75

CITY OF DELAWARE
DELAWARE COUNTY
STATE OF OHIO

MONUMENT LEGEND

- EXISTING R/W MONUMENT BOX
- PROPOSED R/W MONUMENT BOX
- EXISTING CONCRETE MONUMENT
- PROPOSED CONCRETE MONUMENT
- RAILROAD SPIKE FOUND
- RAILROAD SPIKE SET
- I.R.F. IRON PIN FOUND
- I.R.F. IRON PIN FOUND W/ ID CAP
- I.R.S. IRON PIN SET W/ ID CAP
- P.F. IRON PIPE FOUND
- P.S. IRON PIPE SET
- P.K.F. P.K. NAIL FOUND
- P.K.S. P.K. NAIL SET

HORIZONTAL SCALE IN FEET: 0, 10, 20, 40

PID NO. 79373

R/W DESIGNER JTM

R/W REVIEWER MJW

RIGHT OF WAY PLAN
STA. 515+00 TO STA. 520+00

DEL-36-9.75

MATCH LINE STA. 515+00 U.S. 36 (WILLIAM ST.) SEE SHEET 9

N 4° 13' 52" E

℄ CONST. STA. 24+46.00 LIBERTY ST. =
℄ CONST. & R/W STA. 516+17.47 U.S. 36 (WILLIAM ST.)

S 85° 45' 44" E

℄ CONST. & R/W U.S. 36 (WILLIAM ST.)

W. WILLIAM ST. (R/W WIDTH VARIES)

℄ CONST. LIBERTY ST.

2-STORY FRAME #3

SCULPTURE

EX. STREETCAR TRACKS (ABAND. UNDER PVM'T)

15' STONE ARCH (TO BE LINED)

15" VCP

12" CMP

12" VCP

STEEL RAILING

GAS PUMPS

14'X7.25' CMP ARCH

1-STORY BRICK #123

2-STORY FRAME #109

2-STORY BRICK #107

2-STORY FRAME #105

1-STORY BRICK #93

5-STORY BLOCK

UNITED STATES POST OFFICE
1-STORY BRICK
#35

4" PVC

15" (2)

CONST. LIMITS (FOR ACCESS ONLY)

CONST. LIMITS (FOR ACCESS AND STAGING)

6" CPP

4" STEEL

16.5' ALLEY #2

DROP BOX

THE CONTRACTOR MAY GAIN PRIMARY ACCESS TO THE STONE ARCH FROM THE UPSTREAM END AT CATHERINE ST. OR LIMITED ACCESS FROM THE DOWNSTREAM END AT ALLEY #2.

THE CONTRACTOR MAY ATTEMPT TO SECURE OTHER ACCESS LOCATIONS.

REV. BY	DATE	DESCRIPTION
MJW	9/28/10	REVISED PARCEL 23-SS
MJW	7/08/10	REVISED PARCELS 20-SS, 23-SS

DATE COMPLETED: 12/29/09

10 / 10

22 / 22

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PROJECT DESCRIPTION

REHABILITATION OF A 15 FT STONE ARCH STRUCTURE UNDER US 36 USING AN INSITU LINER. THE SPIRAL WOUND METHOD WILL BE USED CONSISTING OF A PVC LINER AND GROUTING THE ANNULAR SPACE.

HISTORIC RECORDS

NO HISTORIC RECORDS WERE FOUND FOR THIS PROJECT.

GEOLOGY

THE PROJECT IS LOCATED WITHIN THE CENTRAL OHIO CLAYEY TILL PLAIN WHICH IS CHARACTERIZED BY FLAT-LYING GROUND MORAINE WITH WELL DEFINED END MORAINES. THIN OVERBURDEN SOILS GENERALLY CONSISTING OF COHESIVE, HIGH CLAY CONTENT SOILS UNDERLAIN BY DEVONIAN AGED DELAWARE LIMESTONE.

RECONNAISSANCE

A FIELD RECONNAISSANCE WAS COMPLETED ON APRIL 16, 2008 BY PERSONNEL FROM THE OFFICE OF GEOTECHNICAL ENGINEERING. THE PROJECT AREA WAS NOTED AS BEING MIXED COMMERCIAL AND URBAN RESIDENTIAL WITH HOUSES AND A PARK. THE CULVERT WAS NOTED AS BEING A THREE SIDED CONCRETE BOX AT THE INLET LEADING INTO A CUT STONE ARC WITH A CORRUGATED GALVANIZED STEEL OUTLET. THE STONE ARC, THE MAJORITY OF WHICH IS LOCATED UNDER THE ROADWAY AND COMMERCIAL BUILDINGS, IS NOTED AS BEING IN POOR CONDITION WITH SEVERAL SECTIONS OF HEAVY DETERIORATION AND SEVERAL KEY STONES MISSING. THE INLET BOX WAS NOTED AS HAVING A OVER TWO INCHES OF SHIFTING AT THE ARCH JOINT AND THE OUTLET PIPE IS NOTED AS BEING CORRODED. SEVERAL UTILITY PIPES HAVE BEEN INSTALLED THROUGH THE SIDE WALLS OF THE ARCH WITH SEVERAL ATTEMPTS TO PATCHING THE PUNCH THROUGH AREAS. PAVEMENT CONDITIONS WITHIN EXISTING SR 36 WERE NOTED AS BEING POOR WITH HEAVY SETTLEMENT WITHIN THE ROADWAY INCLUDING RUTS AND DEPRESSIONS.

SUBSURFACE EXPLORATION

THREE (3) BORINGS WERE DRILLED ADJACENT TO THE EXISTING CULVERT. THE BORINGS WERE DRILLED WITH A TRUCK MOUNTED ROTARY DRILL RIG, USING 3 1/4-INCH I.D. HOLLOW STEM AUGERS TO ADVANCE THE BORINGS THROUGH THE SOIL. THE HAMMER SYSTEM USED WAS LAST CALIBRATED IN FEBRUARY 20, 2007, AND THE AVERAGE DRILL ROD ENERGY RATIO (ER) IS 83.4%. DISTURBED SAMPLES WERE COLLECTED IN ACCORDANCE WITH THE STANDARD PENETRATION TEST (AASHTO T206) AT 2.5 FOOT INTERVALS WITH THE OVERBURDEN SOILS. THE BORINGS WERE ADVANCED INTO BEDROCK AND SAMPLED (AASHTO T225) USING AN N SERIES WIRELINE CORE BARREL, WATER METHOD.

EXPLORATION FINDINGS

SUBSURFACE CONDITIONS REVEALED BY THE BORINGS INDICATED THAT BORINGS B-001 AND B-002 ENCOUNTERED OVERBURDEN SOILS CONSISTING PREDOMINATELY OF GLACIAL TILL COMPRISED OF SILT AND CLAY (A-6a) IN VERY STIFF CONSISTENCY AND DAMP. B-003 ENCOUNTERED FILL BELOW THE PAVEMENT COMPRISED OF STONE FRAGMENT WITH SAND, SILT AND CLAY CONTAINING BRICK FRAGMENTS IN LOOSE COMPACTNESS AND MOIST TO ELEVATION 877.7. BELOW THIS STRATUM THE BORING ENCOUNTERED STONE FRAGMENTS WITH SAND AND SILT (A-2-4) IN LOOSE TO MEDIUM DENSE IN COMPACTNESS IN MOIST CONDITION AND SLIGHTLY TO MODERATELY ORGANIC. ALL BORINGS WERE ADVANCED INTO BEDROCK TO CONFIRM THE CONDITIONS. THE BORINGS REVEALED TOP OF ROCK RANGING BETWEEN 872.4 IN B-002 TO 870.6 IN B-003 CONSISTING OF VERY STRONG LIMESTONE IN MODERATELY WEATHERED CONDITION CONTAINING CHERT, SHALE AND CLAY SEAMS. UNIT ROD VALUES RANGED BETWEEN 32% AND 56% AND REPORTED LOSS BETWEEN 2% AND 5%. ALL BORINGS WERE TERMINATED IN THIS LAYER.

SPECIFICATIONS

THIS GEOTECHNICAL EXPLORATION WAS PERFORMED IN ACCORDANCE WITH THE STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, OFFICE OF GEOTECHNICAL ENGINEERING, SPECIFICATIONS FOR GEOTECHNICAL EXPLORATIONS, DATED APRIL 2008.

AVAILABLE INFORMATION

ALL AVAILABLE SOIL AND BEDROCK INFORMATION THAT CAN BE CONVENIENTLY SHOWN ON THE GEOTECHNICAL EXPLORATION SHEETS HAS BEEN SO REPORTED. ADDITIONAL EXPLORATIONS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF GEOTECHNICAL ENGINEERING AT 1600 WEST BROAD STREET OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1980 WEST BROAD STREET.

LEGEND

	DESCRIPTION	ODOT CLASS	CLASSIFIED MECH./VISUAL	
	GRAVEL AND/OR STONE FRAGS. WITH SAND & SILT	*A-2-4*	*1*	*1*
	GR. AND/OR ST. FRAGS. WITH SAND, SILT & CLAY	*A-2-6*	*1*	*1*
	SILT AND CLAY	*A-6a*	*3*	*3*
	CLAY	*A-7-6*	*0*	*1*
		TOTAL	*5*	*6*
	LIMESTONE	*VISUAL*		
	PAVEMENT OR BASE = X = APPROXIMATE THICKNESS	*VISUAL*		

BORING LOCATION - PLAN VIEW.

DRIVE SAMPLE AND/OR ROCK CORE BORING PLOTTED TO VERTICAL SCALE ONLY. HORIZONTAL BAR INDICATES A CHANGE IN STRATIGRAPHY.

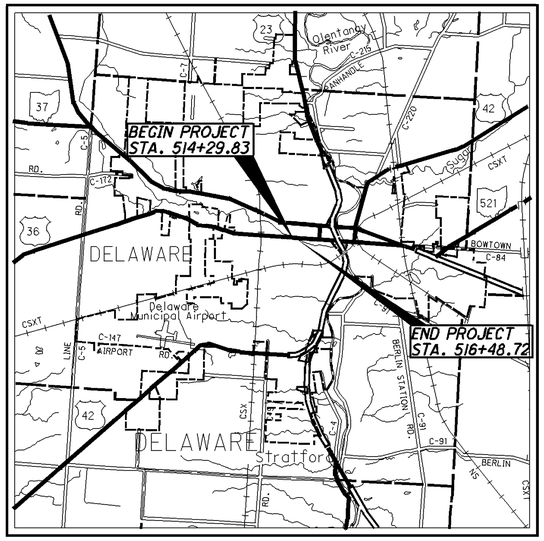
WC INDICATES WATER CONTENT IN PERCENT.

N_{60} INDICATES STANDARD PENETRATION RESISTANCE NORMALIZED TO 60% DRILL ROD ENERGY RATIO.

X/Y/Z NUMBER OF BLOWS FOR STANDARD PENETRATION TEST (*SPT*):
X= NUMBER OF BLOWS FOR FIRST 6 INCHES.
Y= NUMBER OF BLOWS FOR SECOND 6 INCHES.
Z= NUMBER OF BLOWS FOR THIRD 6 INCHES.

SS INDICATES A SPLIT SPOON SAMPLE.

TR INDICATES TOP OF ROCK.



LOCATION MAP

SCALE IN MILES

0 1 2 3 4

N

PARTICLE SIZE DEFINITIONS

12"	3"	2.0 mm	0.42 mm	0.074 mm	0.005 mm
BOULDERS	COBBLES	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY
		No. 10 SIEVE	No. 40 SIEVE	No. 200 SIEVE		

RECON. - DAN, KDB 04/16/08
DRILLING - KAM 07/21-22/08
DRAWN - JAG 09/09
REVIEWED - BKL 09/09

DESIGN AGENCY
OHIO DEPARTMENT OF TRANSPORTATION
OFFICE OF GEOTECHNICAL ENGINEERING
1600 W. BROAD ST. COLUMBUS, OH 43223

PID NO. 79373

FOUNDATION EXPLORATION
CULVERT OVER DELAWARE RUN

DEL-36-9.75

1/4

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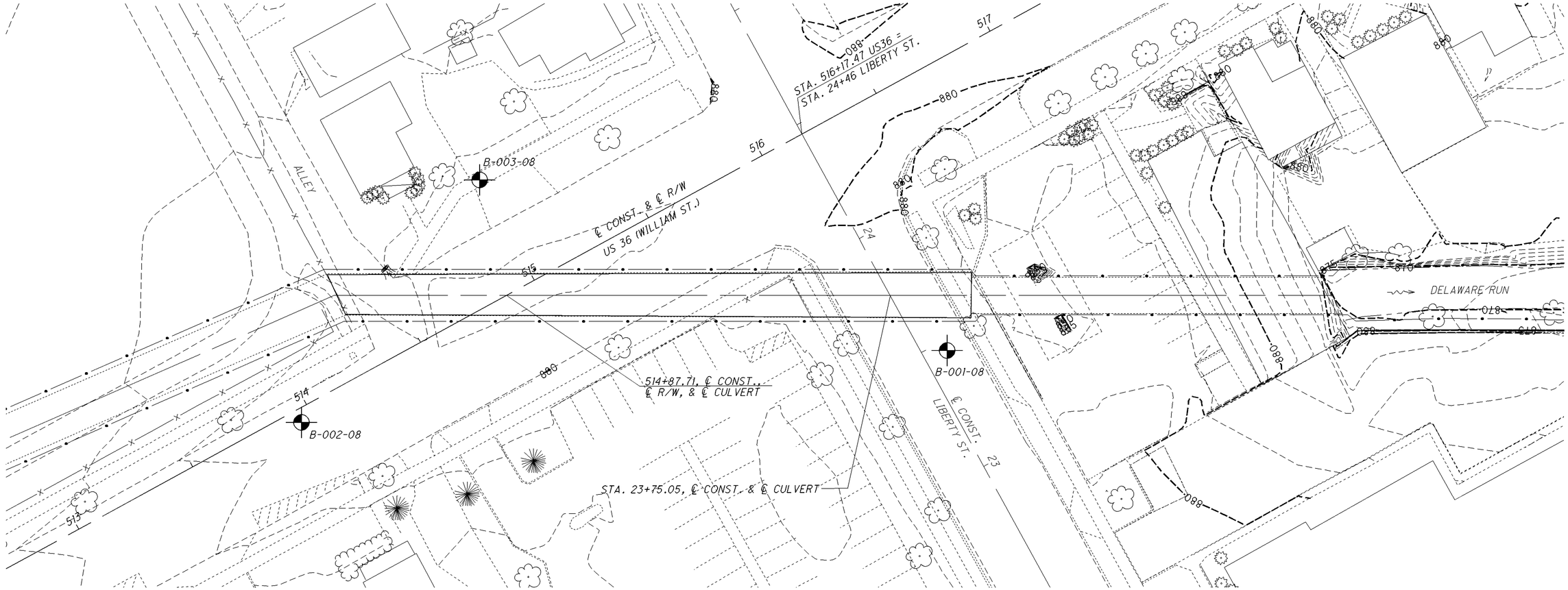

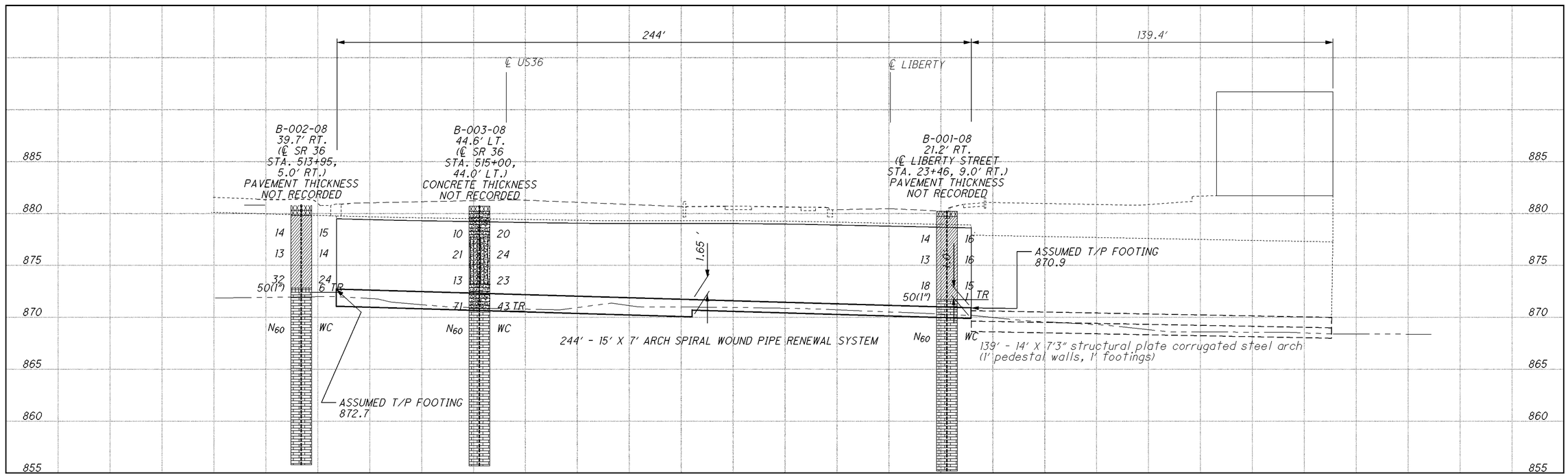

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HORIZONTAL SCALE IN FEET
0 10 20 40

DRAWN JAG CHECKED BKL

FOUNDATION EXPLORATION
CULVERT OVER DELAWARE RUN

DEL-36-9.75

2 / 4

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PROJECT: DEL-36-9.75
TYPE: STRUCTURE - CULVERT
PID: 79373 BRIDGE ID: N/A
START: 7/21/08 END: 7/21/08

DRILLING FIRM / OPERATOR: ODOT / SABO
SAMPLING FIRM / LOGGER: ODOT / MCLEISH
DRILLING METHOD: 3.25" HSA / NQ2
SAMPLING METHOD: SPT / NQ2

DRILL RIG: CME 55
HAMMER: AUTOMATIC
CALIBRATION DATE: 2/20/07
ENERGY RATIO (%): 83.4

STA / OFFSET: 23+46, 9.0' RT.
ALIGNMENT: ℄ LIBERTY STREET
ELEV: 880.2 FT (MSL) EOB: 25.0 FT
COORDS: 837812.137 N, 1808655.657 E

EXPLORATION ID: B-001-08
PAGE 1 of 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 880.2	DEPTHS	SPT / RQD	N60	REC %	HP (TSF)	SAMPLE ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	SNI
ASPHALT (THICKNESS NOT RECORDED)																	(VISUAL)	
VERY STIFF BROWN SILT & CLAY, SOME GRAVEL, LITTLE SAND, GLACIAL TILL, DAMP		1																
		2	4 5 5	14	100	4.00	SS-1	24	7	10	29	30	29	18	11	16	A-6a (5)	
		3																
		4	3 4 5	13	100	4.00	SS-2	-	-	-	-	-	-	-	-	16	A-6a (V)	
@ 6.0'; HARD		5																
		6																
		7	3 5 8	18	100	4.50	SS-3	-	-	-	-	-	-	-	-	15	A-6a (V)	
	871.7 TOR	8																
LIMESTONE, DARK GRAY WITH BROWN. MODERATELY WEATHERED, VERY STRONG, THIN BEDDED, CHERTY, SLIGHTLY FOSSILIFEROUS, CONTAINS SHALE AND CLAY SEAMS, FRACTURED TO MODERATELY FRACTURED; ROD 56%, LOSS 5%.		9	50/1"	-	42	-	SS-4	-	-	-	-	-	-	-	-	1	ROCK (V)	
		10																
		11																
		12																
		13																
		14																
		15	NR		98		RC-1										CORE	
@ 16.2' - 16.8'; HIGH ANGLE FRACTURE, FRESH.		16																
@ 16.8'; CLAY SEAM.		17																
		18																
		19																
		20																
		21																
		22																
		23																
@ 24.1'; CLAY SEAM.		24																
	855.2 EOB		NR		93		RC-2										CORE	

NOTES: HOLE DRY BEFORE CORING.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: 3 BAGS "HOLE PLUG" BENTONITE, DRY METHOD.

PROJECT: DEL-36-9.75
TYPE: STRUCTURE - CULVERT
PID: 79373 BRIDGE ID: N/A
START: 7/22/08 END: 7/22/08

DRILLING FIRM / OPERATOR: ODOT / SABO
SAMPLING FIRM / LOGGER: ODOT / MCLEISH
DRILLING METHOD: 3.25" HSA / NQ2
SAMPLING METHOD: SPT / NQ2

DRILL RIG: CME 55
HAMMER: AUTOMATIC
CALIBRATION DATE: 2/20/07
ENERGY RATIO (%): 83.4

STA / OFFSET: 513+95, 5.0' RT.
ALIGNMENT: ℄ US 36
ELEV: 880.8 FT (MSL) EOB: 25.0 FT
COORDS: 837925.197 N, 1808434.540 E

EXPLORATION ID: B-002-08
PAGE 1 of 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 880.8	DEPTHS	SPT / RQD	N60	REC %	HP (TSF)	SAMPLE ID	GR	CS	FS	SI	CL	LL	PL	PI	WC	ODOT CLASS (GI)	SNI
ASPHALT (THICKNESS NOT RECORDED)																	(VISUAL)	
CONCRETE (THICKNESS NOT RECORDED)		1															(VISUAL)	
VERY STIFF BROWN SILT & CLAY, "AND" GRAVEL, LITTLE SAND, GLACIAL TILL, DAMP		2	9 4 6	14	67	4.00	SS-1	44	6	8	21	21	30	17	13	15	A-6a (2)	
		3																
@ 3.5'; DARK BROWN, SOME GRAVEL		4	8 5 4	13	67	2.50	SS-2	26	4	15	32	23	31	18	13	14	A-6a (5)	
		5																
@ 6.0'; MOIST		6																
		7	3 7 16	32	78	3.00	SS-3	-	-	-	-	-	-	-	-	24	A-6a (V)	
	872.8																	
HARD GRAY CLAY, "AND" STONE FRAGMENTS, DAMP (CONTAINS BOULDERS)	872.4 TOR	8	50/1"	-	42	-	SS-4	-	-	-	-	-	-	-	-	6	A-7-6 (V)	
LIMESTONE, DARK GRAY WITH BROWN. MODERATELY WEATHERED, VERY STRONG, THIN BEDDED, CHERTY, SLIGHTLY FOSSILIFEROUS, CONTAINS SHALE AND CLAY SEAMS, FRACTURED TO MODERATELY FRACTURED; ROD 52%, LOSS 2%.		9																
		10																
		11																
		12																
		13																
		14																
		15	NR		91		RC-1										CORE	
		16																
		17																
		18																
		19																
		20																
		21																
		22																
		23																
		24																
	855.8 EOB		NR		98		RC-2										CORE	

NOTES: HOLE DRY BEFORE CORING.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: 3 BAGS OF "HOLE PLUG" BENTONITE, DRY METHOD

PROJECT: DEL-36-9.75
TYPE: STRUCTURE - CULVERT
PID: 79373 BRIDGE ID: N/A
START: 7/22/08 END: 7/22/08

DRILLING FIRM / OPERATOR: ODOT / SABO
SAMPLING FIRM / LOGGER: ODOT / MCLEISH
DRILLING METHOD: 3.25" HSA / NQ2
SAMPLING METHOD: SPT / NQ2

DRILL RIG: CME 55
HAMMER: AUTOMATIC
CALIBRATION DATE: 2/20/07
ENERGY RATIO (%): 83.4

STA / OFFSET: 515+00, 44.0' LT.
ALIGNMENT: ℄ US 36
ELEV: 880.7 FT (MSL) EOB: 25.0 FT
COORDS: 837964.219 N, 1808547.271 E

EXPLORATION ID: B-003-08
PAGE 1 of 1

MATERIAL DESCRIPTION AND NOTES	ELEV. 880.7	DEPTHS	SPT / RQD	N60	REC %	HP (TSF)	SAMPLE ID	GRADATION (%) GR	CS	FS	SI	CL	ATTRBRG. LL	PL	PI	WC	ODOT CLASS (GI)	SNI
CONCRETE (THICKNESS NOT RECORDED)																	(VISUAL)	
LOOSE BROWN STONE FRAGMENTS WITH SAND, SILT & CLAY, CONTAINS BRICK FRAGMENTS, MOIST	877.7		4 2 5	10	56	-	SS-1	46	9	10	20	15	30	19	11	20	A-2-6 (0)	
MEDIUM DENSE BROWN WITH GRAY STONE FRAGMENTS WITH SAND & SILT, TRACE CLAY, SLIGHTLY ORGANIC, MOIST			7 6 9	21	56	-	SS-2	60	10	8	12	10	29	20	9	24	A-2-4 (0)	
@ 873.2'; LOOSE, MODERATELY ORGANIC			7 6 3	13	17	-	SS-3	-	-	-	-	-	-	-	-	23	A-2-4 (V)	
	870.6	TOR	2 1 50	71	11	-	SS-4	67	5	8	11	9	-	-	-	43	A-2-6 (V)	
LIMESTONE, DARK GRAY WITH BROWN. MODERATELY WEATHERED, VERY STRONG, THIN BEDDED, CHERTY, SLIGHTLY FOSSILIFEROUS, CONTAINS SHALE AND CLAY SEAMS, FRACTURED TO MODERATELY FRACTURED; RQD 32%, LOSS 3%.			NR		97		RC-1										CORE	
@ 21.4'; CLAY SEAM.																		
@ 24.0'; CLAY SEAM.	855.7	EOB	NR		100		RC-2										CORE	

NOTES: HOLE DRY BEFORE CORING.
ABANDONMENT METHODS, MATERIALS, QUANTITIES: 3 BAGS "GOLD SEAL" BENTONITE, DRY METHOD

SPECIAL PROVISIONS

WATERWAY PERMITS CONDITIONS

C-R-S: DEL-36-9.75

PID: 79373

Date: 01/04/10

1. Waterway Permit Time Restrictions:

Complete all work in streams and wetlands depicted in the plans, Special Provisions, and/or working drawings for temporary fill by 10/23/2014.

For work on streams and wetlands, the Department will consider the Contractor's submission of an extension to the waterway permit end date based on project constraints. In order to be considered, the Contractor must submit a justification to the Engineer at least two months prior to the waterway permit end date.

The Engineer will submit the request for a time extension to ODOT- Office of Environmental Services- Waterway Permits Unit (614-466-7100) for consideration and coordination with the USACE and/or Ohio EPA.

2. Deviations from Permitted Construction Activities

No deviation from the requirements for work in streams and wetlands depicted in the plans, Special Provisions, and/or working drawings may be made unless a modification has been submitted to ODOT and approved by the appropriate agencies (i.e., USACE, Ohio EPA, USCG, ODNR, and USFWS).

For emergency situations resulting in unanticipated impacts to streams or wetlands, provide notification (verbal or written) to the Engineer as soon as possible following discovery of the situation. Written notification to the Engineer and notification to the ODOT- Office of Environmental Services- Waterway Permits Unit must be made within 24 hours.

For non-emergency situations, notify the Engineer in writing for submission to the ODOT- Office of Environmental Services- Waterway Permits Unit (614-466-7100) for consideration and coordination with the appropriate agencies. Notification must be made at least two months prior to planned non-permitted activities. Consideration of the requested deviation is at the discretion of the Director and must be coordinated with the appropriate regulatory agencies.

3. In-Stream Work Restrictions

Work in the following sensitive streams is further restricted as follows

Steam Name /Description	Location	Work restriction dates (No in-stream work permitted)
Delaware Run	510+20 to 519+80	None

Examples of "fill materials" include (but are not limited to) bridge piers, abutments, bridge demolition debris, culverts, rock channel protection, scour protection, and temporary work pads. Temporary work pads can be constructed of rock or include any structures (e.g., scaffolds, ladders, barges that touch the bottom of the stream, etc).

Fills (such as temporary work pads) placed within a stream identified in the above table outside

of the work restriction dates can continue to be worked from during the work restriction dates, but cannot be expanded, removed, or otherwise modified (below ordinary high water) until once again outside of the work restriction dates.

The Engineer will submit the request for a time extension to ODOT- Office of Environmental Services- Waterway Permits Unit (614-466-7100) for consideration and coordination with the USACE and/or Ohio EPA.

4. Materials:

Materials utilized in or adjacent to streams and wetlands on this project for temporary or permanent fill or bank protection shall consist of suitable material free from toxic contaminants in other than trace quantities. Broken asphalt is specifically excluded.

Cadmium, chromium, arsenate (CCA), creosote, and other pressure treated lumber shall not be used in structures that are placed in wetlands and streams.

5. Cultural Resources

If archeological sites or human remains are discovered, cease all work in the immediate area and notify the Engineer who will immediately contact the Office of Environmental Services – Cultural Resource Section
(614-466-7100) and the Ohio Historic Preservation Office.

In the event of human remains are discovered the Engineer shall also contact the Delaware County Sherriff's Office. (740)833-2810.

6. Water Resource Demarcation:

All streams, wetlands, lakes, and ponds indicated on the plans shall be demarcated in the field as per SS 832 prior to site disturbance. The fence shall remain in place and be maintained throughout the construction process. Following the completion of the project, the fence and posts shall be removed.

7. Spill containment:

Provide and Maintain an Oil Spill Kit with a minimum capacity of 65 gallons. The Spill Kit shall contain:

- 6 - 3 in. X 8 ft. Oil only socks
- 4 - 18 in. X18 in. Oil only pillows
- 2 - 5 in. X 10ft. Booms
- 50 - 16in. X 20 in. Oil only pads
- 10- Disposable Bags
- 1- 65 Gallon drum with lid
- 25 pounds of Granular Oil Absorbent

The Oil Spill Kit shall be located within 150 feet of any equipment working in a stream or

Special Provisions / Plan Notes for DEL-36-9.75 (PID 79373)

wetland. The oil Spill Kit shall be maintained for the life of the contract. Any materials utilized during the project will be replaced within 48 hours.

All costs associated with furnishing and maintaining the above referenced spill containment kit is incidental to work.

8. Blasting:

State law requires notification to the Ohio Department of Natural Resources should blasting be required within or near stream channels (See ORC 1533.58 & CMS 107.09).

Notify Engineer, in writing, for submission to ODOT Office of Environmental Services – Waterway Permits Unit (614-466-7100) for coordination with the Ohio Department of Natural Resources.

9. Waterway Permits:

A copy of the waterway permits: RGP Part B Permit shall be kept at the work site at all times and made available to all contractors and subcontractors. The Permit is effective starting: 01/10/2011. The Permit expires: 10/23/2014

10. Bridge Inspection:

Prior to the removal of bridge structures, the underside must be carefully examined for the presence of birds and bats. Should any birds or bats be found roosting on the underside of the bridge, the Contractor is required to notify the Engineer for coordination with ODOT- Office of Environmental Services (614-466-7100).

11. Project Inspection:

Inspection of Work may include inspection by representatives of other government agencies or railroad corporations that pay a portion of the cost of the Work or regulate the Work through State and Federal law. Comments from the representatives of these agencies shall be directed to the Engineer. Please forward a copy to ODOT Office of Environmental Services. Waterway Permits Unit (614-466-7100).

12. Construction Completion Certification:

Upon Completion of the work, notify the Engineer. The US Army Corps of Engineers Construction Completion Certification must be completed and signed by the Engineer then forwarded to the:

U.S. Corps of Engineers
DSCC
Building 10, Section 10
3990 East Broad Street
Columbus, Ohio 43218

Foward a copy of the certification to ODOT Office of Environmental Services. Waterway Permits Unit.

13. Temporary Access Fills (Stream and River Crossings and Fills)

Special Provisions Notes:
Regional General Permit (RGP) for the State of Ohio Department of Transportation

Definitions:

Hydraulic Opening
The cross sectional area allowing an unimpeded discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)*.

Standard Temporary Discharge
The hydraulic opening providing a capacity for a discharge equal to twice the *highest monthly flow* without producing a rise in the backwater above the OHWM shall be known as the Standard Temporary Discharge. The U.S. Geologic Service publication "Techniques for estimating Selected Streamflow Characteristics of Rural Unregulated Streams in Ohio" provides equations that estimate monthly flow for Ohio Waterways These flows are also available in a web application by USGS StreamStats, (http//water.usgs.gov/osw/streamstat/ohi.html).

Average Monthly Flow
The average monthly flow represents the estimated "normal" flow.

Temporary Access Fills (TAFs)
In Streams and Rivers may include, but are not limited to, causeways, cofferdams (as described by other items of work), access pads, temporary bridges, etc. The Contractor will make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Fording of streams and rivers is prohibited.
Construct TAFs in such a manner that will maintain flows, minimize upstream flooding, and avoid overtopping the TAF on a regular basis. ***TAFs shall be designed and constructed so that the hydraulic opening provides capacity for a discharge equal to twice the highest monthly flow without producing a rise in the backwater above the Ordinary High Water Mark (OHWM)*.***

Do not exceed an overall length of 250 feet measured linearly upstream to downstream.

Requirements

Special Provisions / Plan Notes for DEL-36-9.75 (PID 79373)

21 calendar days prior to the initiation of any in-stream work, provide the Engineer with working drawings that include:

- Plan view drawing (200 scale or less) showing the location of all jurisdictional temporary fill proposed for use on the project
- Scaled Cross section and profile drawing showing the OHWM and the proposed compliant hydraulic opening.
- A description of the installation and staging of all temporary jurisdictional fill over the life of the contract.
- A description of the removal of all jurisdictional temporary fill and restoration of the channel and all areas impacted by the jurisdictional temporary fill.
- A schedule outlining the timing of the placement and removal of all TAF.

- Have an Ohio Registered Engineer prepare, sign, seal and date the working drawings. Have a second Ohio Registered Engineer check, sign, seal and date the working drawings. The preparer and checker are two different Engineers. Include the following statement on the working drawings:
  "These working drawings were prepared in compliance with the terms of the Regional General Permit and all contract documents."
- Include supporting hydraulic calculations developed by the engineer(s) who sealed the working drawings.
- Do not begin instream work until the Engineer has accepted the working drawings.

If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (as defined in SS 832) or the peak discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

If the Contractor proposes a TAF which does not provide for the Standard Temporary Discharge (discharge equal to twice the highest monthly flow without producing a rise in the backwater), the Contractor is required to coordinate the request for the contractor's proposed TAF with the Engineer and the ODOT Office of Environmental Services (OES). The Department makes no guarantee to grant the request. The contractor's proposed TAF request will be coordinated by OES with the U.S. Army Corps of Engineers and the Ohio Environmental Protection Agency, as appropriate.

In addition to the requirements described in SS 832, supply the Engineer/OES with the following:

1. A plan and Profile showing the temporary access fill(s) with the OHWM.
2. Cross section showing the hydraulic opening and the anticipated discharge flow.
3. A restoration plan for the area affected by the temporary access fill(s).
4. A schedule outlining the timing of the placement and removal of the temporary access fill(s)

The time frame allowed for the coordination of the contractor's proposed TAF will be a minimum of 60 days. Installation of any jurisdictional fill without a 404 Permit authorized by the USACE is strictly prohibited. All direct coordination with the USACE and/or OEPA will be performed through OES.

Temporary Access Fills Construction and Payment

Begin planning and installing causeways and access fills as early in construction as possible to avoid conflicts with 404/401 permits or other environmental commitments that have been included in the construction plans.

Temporary Access Fills (TAFs) in Streams and Rivers may include, but are not limited to, causeways, cofferdams, access pads, temporary bridges, etc. Make every attempt minimize disturbance to water bodies, stream banks, stream beds, and approach sections during the construction, maintenance, and removal of the TAFs. Make every attempt to minimize disturbance to water bodies during construction, maintenance and removal of the causeway and access fills. Construct the causeway and access fills as narrow as practical. Install instream conduits parallel to the stream banks. Make the causeway and access fills in shallow areas rather than deep pools where possible. Minimize clearing, grubbing, and excavation of stream banks, bed, and approach sections. Construct the causeway and access fills as to not erode stream banks or allow sediment deposits in the channel.

Prior to the initiation of any in-stream work, establish a monument upstream of proposed temporary crossing or temporary construction access fill to visually monitor the water elevation in the waterway where the fill is permitted. Maintain the monument throughout the project. Provide a visual mark on the monument that identifies the elevation 1 foot above the OHWM. If the OHWM is not shown on the plans, the Department will establish the OHWM based on the definition of OHWM (SS 832.02) or the peak discharge from the 2 year event, using the method described in the most current version of the Department's Location and Design Manual Volume II.

Ensure that the monument can be read from the bank of the waterway. Have this elevation set and certified by an Ohio Registered Surveyor.

Temporary access fills placed by the contractor above the OHWM are not subject to the 404/401 permit constraints.

Should the water elevation of the waterway, exceed the elevation 1 foot above OHWM, the Department will compensate the Contractor for repair of any resulting damage to the permitted temporary access fill up to the elevation of 1 foot above the OHWM. The Department will not pay for repair and maintenance of temporary access structures that are related to the construction access fill.

Should the water elevation of the waterway exceed the elevation shown on the monument, the Department will recognize this event as an excusable, non-compensable delay in accordance with Section 108.06 of the Construction & Materials Specifications.

All costs associated with furnishing and maintaining the above referenced monument is incidental to the work.

Construct the causeway and access fills to a water elevation at least 1 foot (0.3 m) above the OHWM. If the causeway fills more than one-third the width of the stream, then use culvert pipes to allow the movement of aquatic life. Ensure that any ponding of water behind the causeway and access fills will not damage property or threaten human health and safety.

The following minimum requirements apply to TAFs where culverts are used.

A. Furnish culverts on the existing stream bottom.
B. Avoid a drop in water elevation at the downstream end of the culvert.
C. Furnish a sufficient number of culverts in addition to stream openings to providing a

Special Provisions / Plan Notes for DEL-36-9.75 (PID 79373)

discharge equal to twice the highest monthly flow without producing a rise in the backwater above the OHWM.
D. Furnish culverts with a minimum diameter of 18 inches (0.5 m)...

For all fill and surface material placed in the channel, around the culverts, or on the surface of the causeway and access fills furnish clean, non-erodible, nontoxic dumped rock fill, Type B, C, or D, as specified in C&MS 703.19.B. Extend rock fill up the slope from original stream bank for 50 feet (10 m) to catch and remove erodible material from equipment.

When the work requiring the TAFs is complete all portions of the TAF (including all rock and culverts) will be removed in its entirety. The material will not be disposed in other waters of the US or isolated wetland. The stream bottom affected by the causeway and access fills will be restored to its pre-construction elevations. The TAF will not be paid as a separate item but will be included by the Contractor as part of the total project cost.

All environmental protection and control associated with the 404/401 permit activities are incidental to the work within the boundaries of the 404/401 permit or as otherwise identified in the 404/401 permit application.

SPECIAL PROVISIONS

Flood Plain Permit

CO-RT-SEC

DEL-36-9.81
PID: 79373

DATE: 6-14-10

City of Delaware, OH
Department of Planning
and Community Development
1 S. Sandusky St.
Delaware, OH 43015

Fees Due: $0.00
Application Type: Flood - -Floodplain Development Permit

THIS MUST BE ON THE JOB SITE FOR ALL INSPECTIONS.

City of Delaware

Plan Approval

Approval Number: 20100482

Address: 123 W WILLIAM ST **Lot #:** PTS 91 **Subdivision:** DELAWARE TOWN PLAT

Conditions:

CITY OF DELAWARE
PLANNING & COMMUNITY DEVELOPMENT

SPECIAL FLOOD HAZARD AREA DEVELOPMENT PERMIT APPLICATION

Permit No. 20100487

SINGLE FAMILY $100.00 Fee **ALL OTHER PURPOSES $300.00 Fee**

Application is hereby made for a DEVELOPMENT PERMIT as required by the Flood Plain Standards, Chapter 1150 of the City of Delaware Codified Ordinances for the development in an identified flood hazard area. All activities shall be completed in accordance with the requirements of said Standards. The development to be performed is described below and in attachments hereto. The applicant understands and agrees that:

- this permit is issued on the conditions and facts described;
- any permit may be repealed if conditions or facts change;
- permit void if the activity has not begun within 180 days of the issuance date;
- the permit will remain valid for one year from date of issuance.

Owner's Name: Ohio Department of Transportation – District 6 Address: 400 E. William Street, Delaware, Ohio 43015

Parcel Number_____ Address_____

Builder_____ Address_____

Contact email_____

Contact phone_____

1. Location of proposed development site-address: Below the intersection of US36 (William St.) & Liberty St.

   Legal description: refer to R/W plan sheets

2. Kind of development proposed

new building	_____	existing structure	_____	filling/grading	_____
residential	_____	alteration	_____	mining/dredging	_____
non-residential	_____	addition	_____	watercourse alteration	_____
manufactured home		accessory	_____		
installation	_____	materials storage	_____	other*	X

*Describe activity: Rehabilitation of a 15 ft stone arch structure under US36 using an insitu liner.

3. If the proposed construction is an alteration, addition or improvement to an existing structure, indicate the cost of proposed construction $_____. What is the estimated market value of the existing structure $_____?

NOTE: An existing structure must comply with the floor protection standards if it is substantially improved (an improvement equal to or greater than 50% of the market value of the structure). FEMA maintains that the "substantial improvement" definition applies to existing structures only and that once a structure meets the definition of "new construction" any further improvements to that structure must meet "new construction" requirements. For floodplain management purposes "new construction" means structures for which "start of construction" began on or after the effective date of the initial Flood Insurance Rate Map issued by FEMA for the community.

4. Does proposed development involve a subdivision or other development containing at least 50 lots or 5 acres (whichever is less)
   ☐ Yes X No ?

NOTE If yes, base flood elevation data is required from applicant if it has not been provided by FEMA.

ADMINISTRATIVE: The following is to be completed by the local floodplain administrator. All references to elevations are in feet mean sea level (m.s.l.). The term base flood elevation means the same as the 100-year elevation.

5. Is the proposed development located in:
   - X an identified floodway?
   - _____ a flood hazard area where base flood elevations exist with no identified floodway?
   - _____ an area within the floodplain fringes?
   - _____ an approximate flood hazard area?

NOTE: Floodway development must demonstrate through hydrologic and hydraulic analysis, performed in accordance with standard engineering practice, that no increase in base flood elevation will result during occurrence of the flood discharge. If base flood elevations exist with no floodway delineation, hydrologic and hydraulic analysis is required to demonstrate not more than one foot increase at any point to the water surface elevation of the base flood.

6. Does proposed development meet NFIP and local General Standards? N/A
   - _____ Construction materials and methods resistant to flood damage.
   - _____ Anchored properly.
   - _____ Utilities safe from flooding.
   - _____ Subdivision designed to minimize flood damage.
   - _____ Encroachments-proposed action will not obstruct flood waters.
   - _____ Proposed site grada elevation if fill or topographic alterations planned.
   - _____ Lowest floor elevated to or above BFE.
   - _____ Specific Standards?
   - _____ Lowest floor floodproofed above BFE.

7. Base flood elevation (100-year) at proposed site 885.9 feet m.s.l.

   Data source: FIRM Flood Insurance Rate Map, Delaware County, Ohio and Incorporated Areas

   Community-Panel No.: Panel 112 of 295, Map# 39041CO112K

   Map effective date: April 16, 2009

8. Does the structure contain a N/A basement; N/A enclosed are used only for parking access or storage, other than basement, below the lowest floor?

9. For structures located in unnumbered A zones (no BFE available) the structure's lowest floor is N/A feet above the highest grade adjacent to the structure.

10. The certified as-built elevation of the structure lowest floor is N/A feet above m.s.l.*

11. The certified as-built floodproofed elevation of the structure's is N/A feet above m..s.l.*

NOTE: *Certificates of a registered engineer or land surveyor documenting these elevations are necessary if elevations are provided by applicant.

12. The proposed development is in compliance with applicable floodplain standards.
    PERMIT ISSUED ON 6-14-10.

13. The proposed development is not in compliance with applicable floodplain standards.
    PERMIT DENIED ON _____.

Reason:_____.

NOTE:All structures must be built with the lowest floor, including the basement, elevated or floodproofed to or above the base flood elevation (100-year) unless a variance has been granted. Only nonresidential structures may be floodproofed.

14. The proposed development is exempt from the floodplain standards per Section_____ of the Flood Damage Prevention Ordinance (Resolution) No._____.

The undersigned is either the property owner or a duly authorized agent of the property owner and do hereby verify the truth and correctness of all facts and information presented with this application and authorize on-site inspections by City Staff.

Owner or Authorized Agent _____ Date 6/7/2010

Approved By_____ Date_____

Planning/Zoning_____ Date_____

CBO_____ Date_____

OHIO DEPARTMENT OF TRANSPORTATION

DISTRICT 6 • INTER-OFFICE COMMUNICATION

June 7, 2010

TO: David Efland, Director of Planning and Community Development
FROM: Brian S. Tatman, Office of Planning, ODOT-District 6 BST
SUBJECT: DEL-36-9.75 (PID 79373) – Floodplain Permit Application

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ODOT District 6 is planning to line the stone arch culvert under US 36 that carries Delaware Run through urbanized areas. The line will be installed in-situ and consists of a spiral wound profile method consisting of a PVC liner and grouting the annular space. No new right-of-way or in-stream beyond clearing debris out of the culvert is required for this project.

Per your request, enclosed you will find a document containing the No-Rise Certification, Flood Permit, and Floodplain Study outlining the final results of the HEC-RAS Analysis. The results show little change in pre/post conditions which can be expected due to lining operation location. Please let me know if this is acceptable to receive the necessary floodplain permit. Thanks!

Enclosure(s)

BST:bt

ENGINEERING "NO-RISE" CERTIFICATION

This is to certify that I am a duly qualified engineer licensed to practice in the State of Ohio. It is to further certify that the attached technical data supports the fact that proposed development: DEL-36-9.81 (rehabilitation of a portion an existing stone arch) in the floodway will not increase the Base Flood Elevations (100-year flood), floodway elevations and the floodway widths on Delaware Run at published sections in the Flood Insurance Study for Delaware County, Ohio (Map #39041C0112K), dated April 16, 2009 and will not increase the Base Flood Elevations (100-year flood), floodway elevations, and floodway widths at unpublished cross-sections in the vicinity of the proposed development.

(Name of Development)

(Name of Stream)

(Name of Community)

Date: May 21, 2010

Signature: Matthew B Cozzoli...

Phone Number: 614-466-3152 ***EMAIL:*** matt.cozzoli@dot.state.oh.us

Representing: Ohio Department of Transportation – District 6

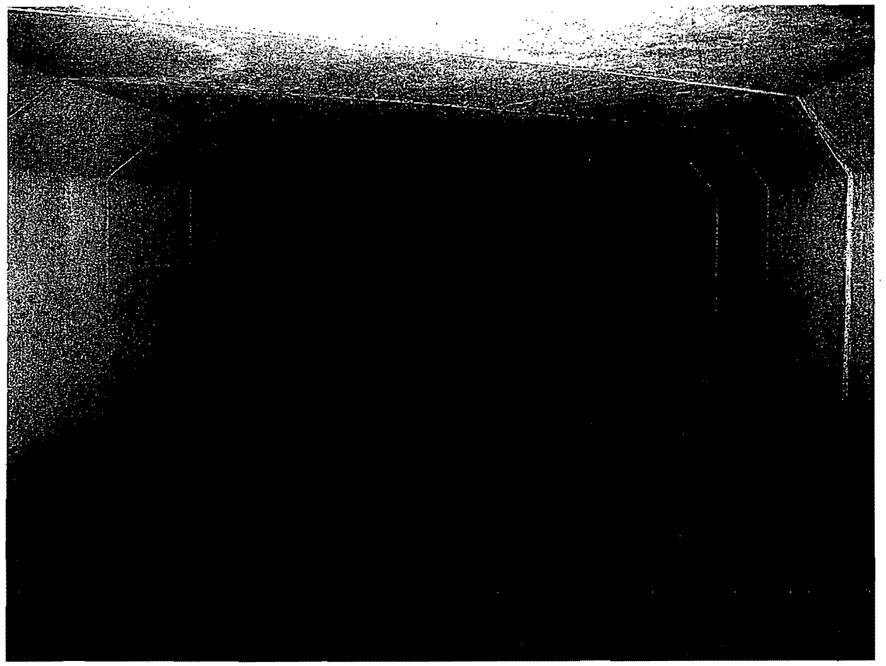
Address: 400 E. William Street

City: Delaware ***State:*** Ohio ***Zip Code:*** 43015

STATE OF OHIO
MATTHEW
LAWRENCE
COZZOLI
E-63914
REGISTERED
PROFESSIONAL ENGINEER

CERTIFYING SEAL OR STAMP

FLOODPLAIN STUDY



DEL-36-9.81

PID 79373

May 19, 2010

Prepared for:

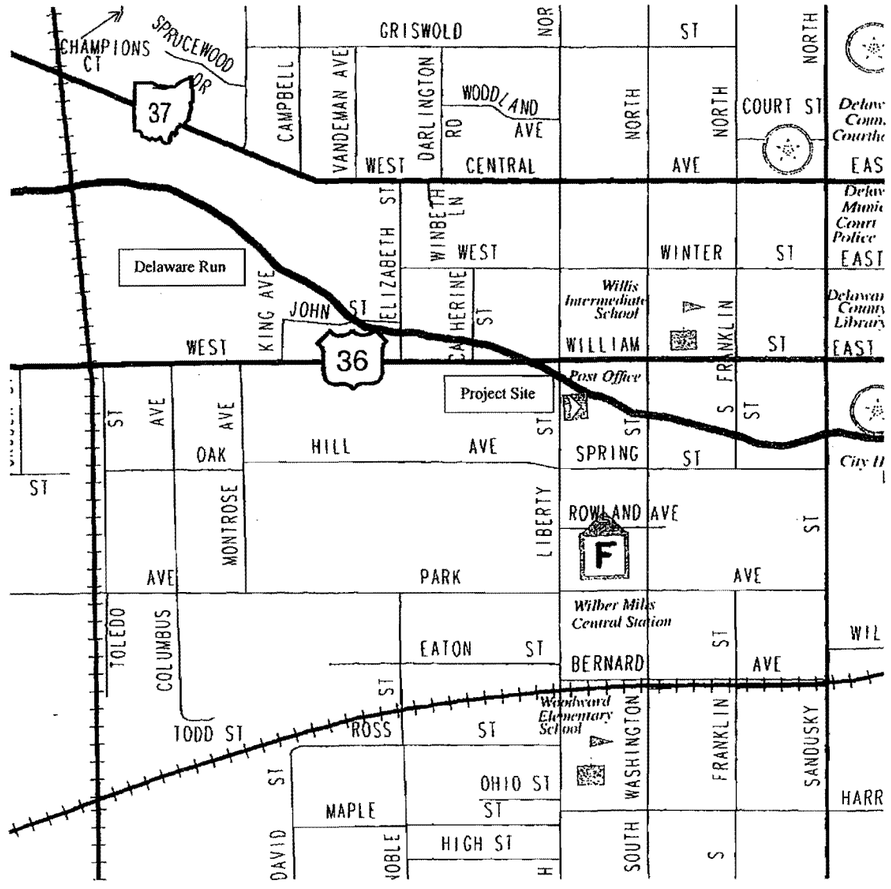
Jerry Warner, City of Delaware
Chief Building Official and Code Enforcement Officer
Floodplain Administrator

ODOT - District 6

Prepared by:
Central Office, Office of Production

INTRODUCTION

The purpose of this study is to perform a hydraulic analysis to verify that the proposed partial lining of the 15' stone arch will not result in any increase in the 100-year flood elevation. The structure lies under US36 (W William St.) within the City of Delaware, Delaware County, Ohio.



The stone arch structure was constructed in the 1800's during the early beginnings of the City of Delaware. The structure currently has a general appraisal and operational status rating of a 3A (Serious, no restriction). The structure spans Delaware Run which is a tributary of the Olentangy River. The project site lies in a designated FEMA Flood Zone where base flood elevations have been established.

HYDRAULIC DESIGN DATA

A drainage area of 8.85 miles^2 (5667 acres) was hand delineated from the USGS quadrangles. A *Gazetteer of Ohio Streams* was used to check the delineated drainage area. The project site lies upstream near the mouth of Delaware Run. The *Gazetteer* lists a drainage area at the mouth of 10.1 miles^2 which makes the 8.85 miles^2 a reasonable estimate. The USGS StreamStats program was also used to delineate a drainage area of 9.24 miles^2. We feel this drainage area may be a little conservatively oversized but it also a validates our original estimate.

The USGS WRI 93-4080 Regression Equations were used to calculate the flood peak discharges for the site as well as USGS StreamStats program.

The project site lies in a designated FEMA Flood Zone where base flood elevations have been established. A flood discharge was calculated from the *FEMA Flood Insurance Study* at the cross section near Catherine Street.

USGS WRI 93-4080 Regression Equations:
Q(25) – 1120 cfs
Q(100) – 1510 cfs

StreamStats:
Q(25) – 1250 cfs
Q(100) – 1650 cfs
Q(500) – 2110 cfs

Floodway Data:
FEMA – 2058 cfs
Known Water Surface Elevation @ Section I, 875.3

Below are the discharges used for the analyses and the downstream slope used for the normal depth calculations. A known starting water surface elevation was also used based upon the Floodway Data from Table 11.

flow 1: Q25 (1120 cfs), Q100 (1510 cfs), FEMA (2058 cfs) for Reach 1, slope 1.0%
flow 2: Q25 (1120 cfs), Q100 (1510 cfs), FEMA (2058 cfs) for Reach 2, slope 1.0%
flow 3: Q25 (1120 cfs), Q100 (1510 cfs), FEMA (2058 cfs) for Reach 1, slope 0.9%
flow 4: Q25 (1120 cfs), Q100 (1510 cfs), FEMA (2058 cfs) for Reach 2, slope 0.9%
flow 5: FEMA (2058 cfs) for Reach 2, Known WS elevation 875.3

$$\left\{\frac{32(0.013)^{1.5} + 23.5(0.030)^{1.5} + 23.5(0.030)^{1.5} + 22.5(0.034)^{1.5}}{101.5}\right\}^{0.67}$$

= 0.0258

With the structure shape and n =0.0258 added to the input, the existing system was analyzed to establish existing water surface elevations.

w/ structure no lining
g07, plan7, flow4: straight alignment but revised channel profile/xsections
g07, plan8, flow5: straight alignment but revised channel profile/xsections, WS

Inlet @ river STA. 60+56
Q_{100} – 884.74
Q_{FEMA} – 886.20

$Q_{FEMA\ \&\ KNOWN\ WS\ ELEVATION}$ – 886.5

$$\left\{\frac{32(0.013)^{1.5} + 23.5(0.030)^{1.5} + 23.5(0.012)^{1.5} + 22.5(0.034)^{1.5}}{101.5}\right\}^{0.67}$$

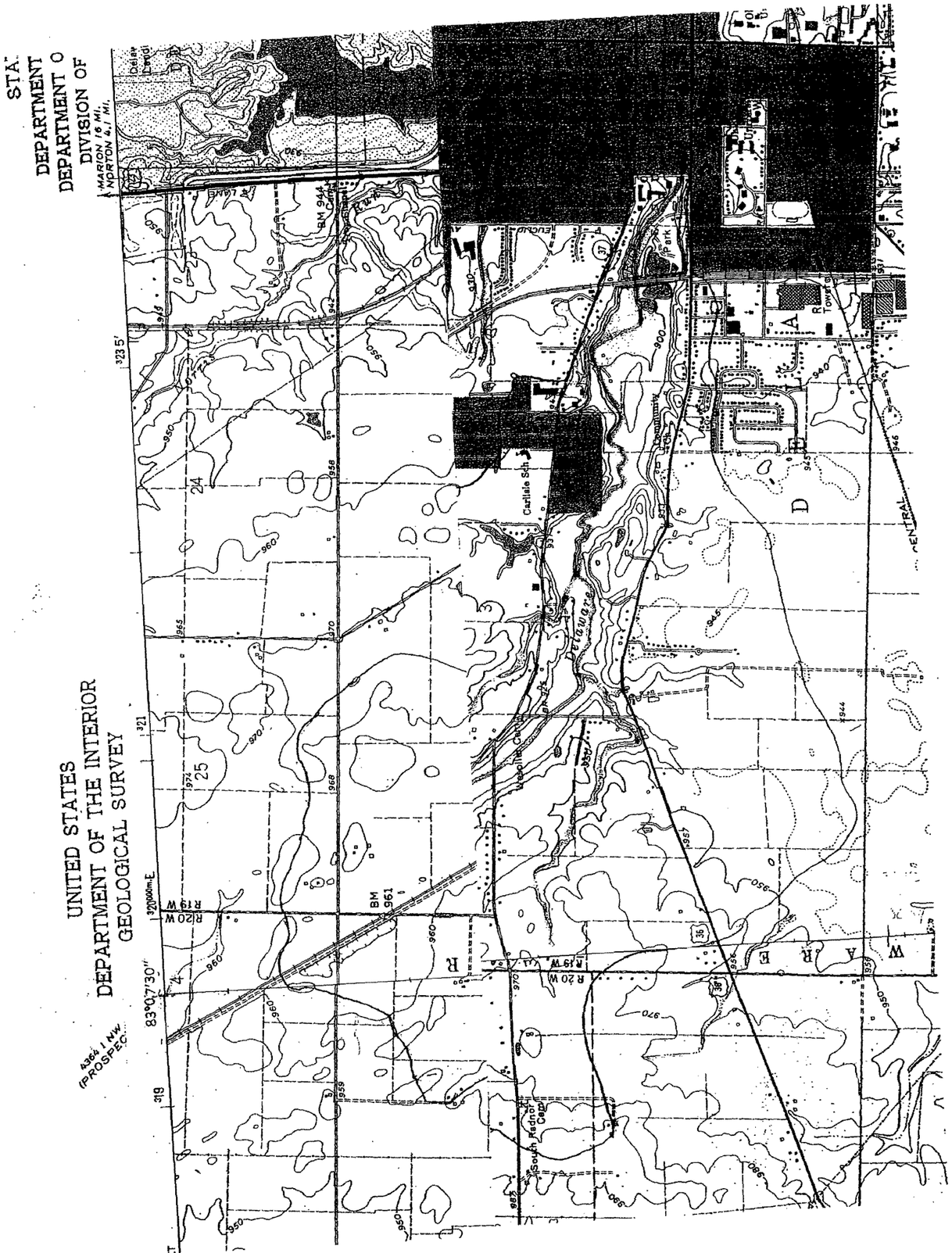
= 0.0220

The system was analyzed again using an n =0.0220 to account for the partial lining of the stone arch.

w/ structure lining
g08, plan9, flow4: straight alignment but revised channel profile/xsections
g08, plan10, flow5: straight alignment but revised channel profile/xsections, WS

Inlet @ river STA. 60+56
Q_{100} – 884.73
Q_{FEMA} – 886.15

$Q_{FEMA\ \&\ KNOWN\ WS\ ELEVATION}$ – 886.47



DEL36.PKE Date: 8/15/05

Project: DEL-36-9.75
Stream name: DELAWARE RUN
Location: DELAWARE/OSTRANDER QUAD

Geographic region = A

Contributing drainage area = 8.85 square miles (5667 acres)
Main-channel slope = (956 ft - 893 ft)/(0.75 * (7.10 miles))
= 11.9 feet per mile
Storage area = 0.00%

Recurrence Interval (Years)	Regression Estimate (cfs)
2	473
5	781
10	1010
25	1300
50	1530
100	1760

Warning: The regression equations used by this program tend to overestimate peak discharges for basins having approximately 30 percent or more surface-mined area. For more information, refer to page 15 of the reference report.

DEL36.PKE

Project: DEL-36-9.75
Stream name: DELAWARE RUN
Location: DELAWARE/OSTRANDER QUADS

Date: 8/15/05

Geographic region = A

Contributing drainage area = 8.85 square miles (5667 acres)
Main-channel slope = (956 ft - 893 ft)/(0.75 * (7.10 miles))
= 11.9 feet per mile
Storage area = 0.53%

Recurrence Interval (Years)	Regression Estimate (cfs)
2	417
5	681
10	873
25	1120
50	1310
100	1510

Warning: The regression equations used by this program tend to overestimate peak discharges for basins having approximately 30 percent or more surface-mined area. For more information, refer to page 15 of the reference report.

USGS StreamStats

Streamflow Statistics Report

Date: Mon May 3 2010 08:23:32
Site Location: Ohio
Latitude: 40.2994
Longitude: -83.0749
Drainage Area: 9.24 mi2
Latitude (NAD83): 40.2994 (40 17 57)
Longitude (NAD83): -83.0749 (-83 04 29)

Peak Flow Basin Characteristics

100% Peak Flow Full Model (9.24 mi2)

Parameter	Value	Min	Max
Drainage Area (square miles)	9.24	0.01	7422
Ohio Region C Indicator 1 if in C else 0 (dimensionless)	0	0	1
Ohio Region A Indicator 1 if in A else 0 (dimensionless)	1	0	1
Stream Slope 10 and 85 Longest Flow Path (feet per mi)	10.6	1.53	674
Percent Storage from NLCD (percent)	0.91	0	25.8

Low Flow Basin Characteristics

100% Low Flow Lattitude LE 41.2 (9.24 mi2)

Parameter	Value	Min	Max
Drainage Area (square miles)	9.24	0.12	7422
Percent Forest (percent)	13.1	0	99.1
Percent Storage from NLCD (percent)	0.91	0	19
Mean Annual Precipitation (inches)	36.4	34	43.2
Streamflow Variability Index (dimensionless)	0.7	0.25	1.13
Latitude of Basin Centroid (decimal degrees)	40.3257	38.68	41.2
Longitude of Basin Centroid (decimal degrees)	83.1138	80.53	84.6

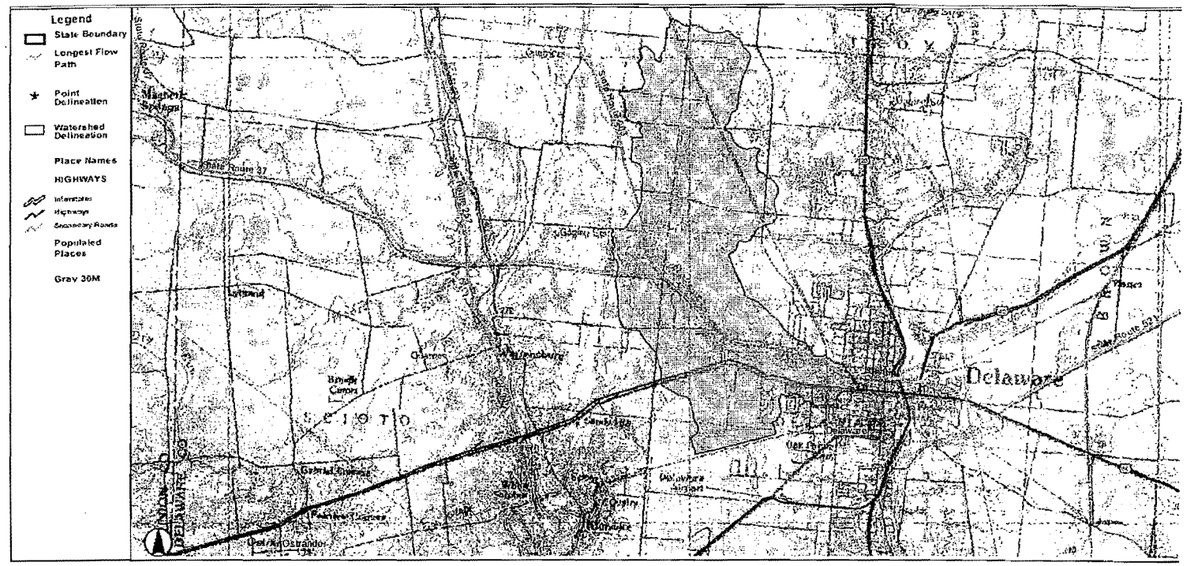
Streamflow Statistics

Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
PK2	484	37	2.1	268	874
PK5	781	35	3.3	449	1360
PK10	991	34	4.4	571	1720
PK25	1250	35	5.9	714	2210

PK50	1450	37	6.8	811	2600
PK100	1650	38	7.5	903	3020
PK500	2110	42	8.6	1090	4100

Streamflow Statistics

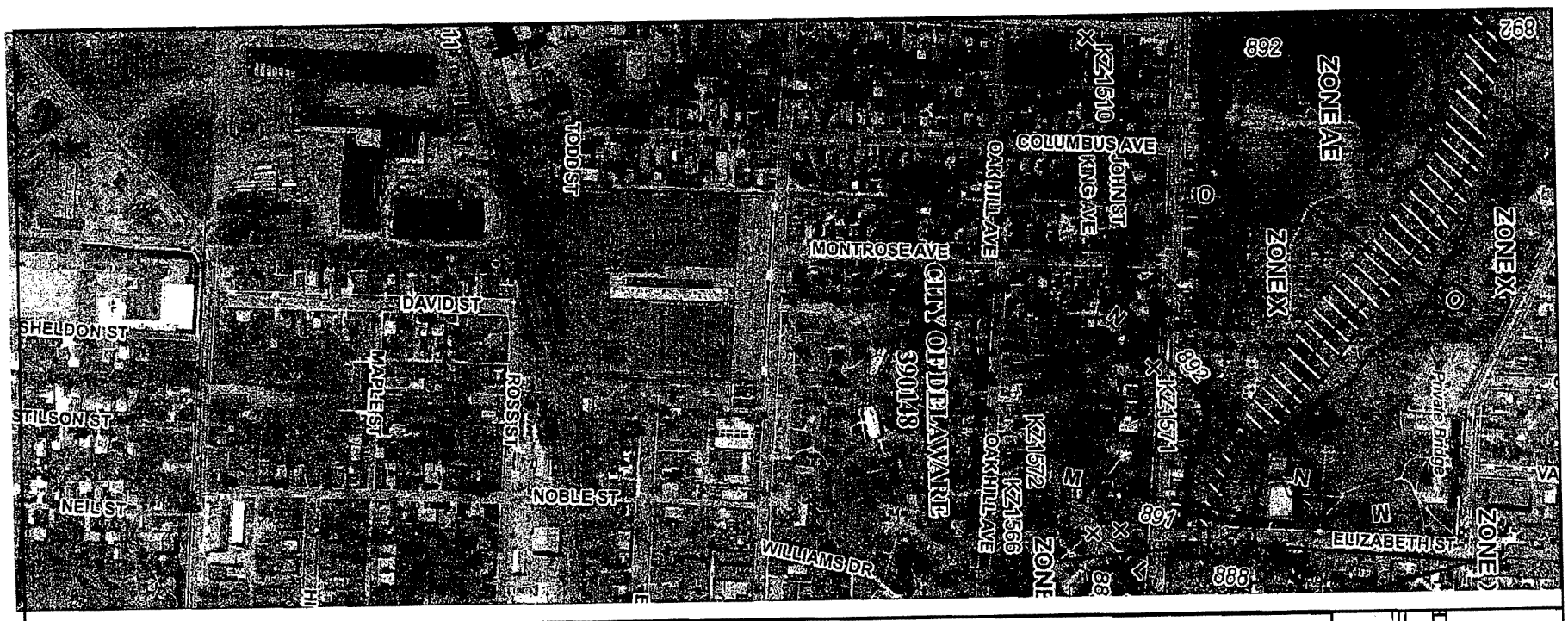
Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
Q1	12.4	17			
Q2	14.8	12			
Q3	17.1	14			
Q4	15.4	11			
Q5	10.4	20			
Q6	6.3	27			
Q7	3.65	28			
Q8	2.12	37			
Q9	1.31	44			
QA	8.81	11			
Q10	1.63	51			
Q11	4.4	38			
Q12	8.76	22			
QAH	0.59	66			
FPS25	7.67	29			
FPS50	2.69	40			
FPS75	0.9	48			



FLOODING SOURCE		FLOODWAY				1-PERCENT-ANNUAL-CHANCE FLOOD WATER SURFACE ELEVATION (FEET NAVD)			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	WIDTH REDUCED FROM PRIOR STUDY	SECTION AREA (SQUARE FEET)	MEAN VELOCITY (FEET PER SECOND)	REGULATORY	WITHOUT FLOODWAY	WITH FLOODWAY	INCREASE (FEET)
Deep Run									
A	315	23		89	8.4	777.8	777.8	777.9	0.1
B	1,120	168		182	4.1	807.8	807.8	807.8	0.0
C	2,380	34		83	9.0	836.0	836.0	836.0	0.0
D	3,270	21		69	10.2	854.4	854.4	854.4	0.0
E	4,470	45		88	7.1	884.0	884.0	884.0	0.0
F	5,140	35		114	5.0	897.9	897.9	898.5	0.6
G	5,270	39		82	7.0	901.1	901.1	901.1	0.0
H	5,580	30		79	7.3	905.6	905.6	905.7	0.1
I	6,425	40		368	1.6	922.6	922.6	922.8	0.2
J	6,715	50		282	1.9	922.6	922.6	922.9	0.3
Delaware Run									
A	438	67		384	5.3	862.1	860.2[2]	860.2	0.0
B	680	50		341	6.0	862.1	860.5[2]	860.6	0.1
C	910	40		324	6.5	865.8	863.8	865.8	0.0
D	1,355	69		411	5.0	863.9	863.9	864.7	0.8
E	1,730	22		253	8.1	867.3	867.3	867.8	0.5
F	2,115	32		313	6.6	870.4	870.4	870.7	0.3
G	2,414	24		230	8.9	870.9	870.9	871.6	0.7
H	2,600	61		458	4.5	872.3	872.3	873.3	1.0
I	2,913	18	251×8.2	157	13.0	875.3	875.3	875.7	0.4
J	3,060	49		524	3.9	879.8	879.8	880.3	0.5
K	3,986	26	=2058	251	8.2	885.9	885.9	886.9	1.0
L	4,106	29		269	7.6	888.1	888.1	888.1	0.0
M	4,422	52		628	3.3	891.3	891.3	892.0	0.7

[1]Feet above confluence with Olentangy River [2]Elevation computed without consideration of backwater effects from Olentangy River

Table 11	FEDERAL EMERGENCY MANAGEMENT AGENCY DELAWARE COUNTY, OHIO AND INCORPORATED AREAS	FLOODWAY DATA DEEP RUN - DELAWARE RUN



MAP SCALE 1" = 500'

0 500 1000 FEET

0 150 300 METERS

NATIONAL FLOOD INSURANCE PROGRAM

NFIP

PANEL 0112K

FIRM

FLOOD INSURANCE RATE MAP

DELAWARE COUNTY, OHIO AND INCORPORATED AREAS

PANEL 112 OF 295

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DELAWARE, CITY OF	390146	0112	K
DELAWARE COUNTY	390146	0112	K

Notice to User: The Map Number shown below should be used when placing map orders; the Community Number shown above should be used on insurance applications for the subject community.

MAP NUMBER
39041C0112K
MAP REVISED
APRIL 16, 2009

Federal Emergency Management Agency

HEC-RAS Plan: Plan01 River: Delawre Run Reach: Reach1

Reach	River Sta	Profile	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)	
Reach1	6350.000	Q25	1120.00	876.90	882.98		884.32	0.004833	9.28	120.71	19.91	0.66
Reach1	6350.000	Q100	1510.00	876.90	884.32		885.95	0.005025	10.24	147.39	19.94	0.66
Reach1	6350.000	FEMA	2058.00	876.90	886.13		888.08	0.005130	11.21	183.54	19.97	0.65
Reach1	6300.000	Q25	1120.00	876.80	882.53		884.04	0.005701	9.84	113.87	19.91	0.72
Reach1	6300.000	Q100	1510.00	876.80	883.87		885.66	0.005746	10.75	140.43	19.94	0.71
Reach1	6300.000	FEMA	2058.00	876.80	885.85	883.72	887.82	0.005297	11.32	195.05	86.65	0.66
Reach1	6250.000	Q25	1120.00	876.25	882.35		883.73	0.005029	9.43	118.74	19.52	0.67
Reach1	6250.000	Q100	1510.00	876.25	883.66		885.36	0.005313	10.47	144.24	19.55	0.68
Reach1	6250.000	FEMA	2058.00	876.25	886.98		887.22	0.000886	4.99	661.96	296.09	0.27
Reach1	6200.000	Q25	1120.00	876.10	881.83		883.43	0.006152	10.14	110.44	19.31	0.75
Reach1	6200.000	Q100	1510.00	876.10	883.09		885.04	0.006420	11.22	134.60	19.34	0.75
Reach1	6200.000	FEMA	2058.00	876.10	886.45	883.17	887.11	0.002089	7.45	400.53	186.90	0.41
Reach1	6150.000	Q25	1120.00	875.85	881.56		883.16	0.004856	10.14	110.40	19.49	0.75
Reach1	6150.000	Q100	1510.00	875.85	882.80	881.59	884.75	0.005061	11.22	134.58	19.55	0.75
Reach1	6150.000	FEMA	2058.00	875.85	884.42	882.90	886.78	0.005229	12.34	169.71	39.36	0.75
Reach1	6100.000	Q25	1120.00	875.60	880.37	880.37	882.76	0.008585	12.41	90.22	19.03	1.00
Reach1	6100.000	Q100	1510.00	875.60	881.42	881.42	884.33	0.008809	13.70	110.21	19.09	1.00
Reach1	6100.000	FEMA	2058.00	875.60	882.75	882.75	886.32	0.009161	15.17	135.62	19.15	1.00
Reach1	6056.000	Q25	1120.00	874.30	879.24	879.24	881.71	0.008806	12.60	88.86	18.02	1.00
Reach1	6056.000	Q100	1510.00	874.30	880.32	880.32	883.34	0.009175	13.96	108.17	18.04	1.00
Reach1	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach1	5320.000	Q25	1120.00	868.70	874.39		875.37	0.003987	7.93	141.20	26.91	0.61
Reach1	5320.000	Q100	1510.00	868.70	875.31		876.60	0.004517	9.10	165.93	26.93	0.65
Reach1	5320.000	FEMA	2058.00	868.70	876.76	874.79	878.20	0.004124	9.75	228.74	61.83	0.62
Reach1	5250.000	Q25	1120.00	868.35	873.65	873.10	874.97	0.006895	9.25	121.13	30.66	0.82
Reach1	5250.000	Q100	1510.00	868.35	874.79		876.23	0.005849	9.60	157.33	32.42	0.77
Reach1	5250.000	FEMA	2058.00	868.35	876.86		877.81	0.002851	8.20	295.56	90.13	0.55
Reach1	5200.000	Q25	1120.00	868.30	872.93	872.71	874.54	0.009542	10.18	109.97	29.28	0.93
Reach1	5200.000	Q100	1510.00	868.30	874.53	873.59	875.92	0.006053	9.46	159.61	33.10	0.76
Reach1	5200.000	FEMA	2058.00	868.30	877.06		877.56	0.002058	6.23	402.62	131.21	0.46
Reach1	5150.000	Q25	1120.00	867.20	873.47		874.01	0.002338	6.04	202.20	67.09	0.49
Reach1	5150.000	Q100	1510.00	867.20	875.11		875.49	0.001301	5.28	337.32	97.47	0.38
Reach1	5150.000	FEMA	2058.00	867.20	877.19		877.43	0.000630	4.45	595.62	155.47	0.28
Reach1	5100.000	Q25	1120.00	866.70	873.48		873.87	0.001687	5.00	223.81	49.20	0.41
Reach1	5100.000	Q100	1510.00	866.70	875.06		875.42	0.001255	4.88	324.10	96.15	0.36
Reach1	5100.000	FEMA	2058.00	866.70	877.15		877.39	0.000630	4.20	575.98	166.23	0.27
Reach1	5050.000	Q25	1120.00	866.50	871.17	871.17	873.49	0.012279	12.24	91.47	19.65	1.00
Reach1	5050.000	Q100	1510.00	866.50	872.19	872.19	875.03	0.012574	13.52	111.68	19.68	1.00
Reach1	5050.000	FEMA	2058.00	866.50	873.48	873.48	876.98	0.013053	15.02	137.12	20.47	1.00
Reach1	5000.000	Q25	1120.00	865.90	870.65	870.36	872.63	0.010005	11.29	99.18	20.94	0.91
Reach1	5000.000	Q100	1510.00	865.90	871.74	871.34	874.12	0.010003	12.38	121.99	20.97	0.90
Reach1	5000.000	FEMA	2058.00	865.90	873.16	872.60	876.01	0.010005	13.55	151.91	21.01	0.89

HEC-RAS Plan: Plan02 River: Delawre Run Reach: Reach2

Reach	River Sta	Profile	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)	
Reach2	6350.000	Q25	1120.00	876.90	882.98		884.32	0.004833	9.28	120.71	19.91	0.66
Reach2	6350.000	Q100	1510.00	876.90	884.32		885.95	0.005025	10.24	147.39	19.94	0.66
Reach2	6350.000	FEMA	2058.00	876.90	886.13		888.08	0.005130	11.21	183.54	19.97	0.65
Reach2	6300.000	Q25	1120.00	876.80	882.53		884.04	0.005701	9.84	113.87	19.91	0.72
Reach2	6300.000	Q100	1510.00	876.80	883.87		885.66	0.005746	10.75	140.43	19.94	0.71
Reach2	6300.000	FEMA	2058.00	876.80	885.85	883.72	887.82	0.005297	11.32	195.05	86.65	0.66
Reach2	6250.000	Q25	1120.00	876.25	882.35		883.73	0.005029	9.43	118.74	19.52	0.67
Reach2	6250.000	Q100	1510.00	876.25	883.66		885.36	0.005313	10.47	144.24	19.55	0.68
Reach2	6250.000	FEMA	2058.00	876.25	886.98		887.22	0.000886	4.99	661.96	296.09	0.27
Reach2	6200.000	Q25	1120.00	876.10	881.83		883.43	0.006152	10.14	110.44	19.31	0.75
Reach2	6200.000	Q100	1510.00	876.10	883.09		885.04	0.006420	11.22	134.60	19.34	0.75
Reach2	6200.000	FEMA	2058.00	876.10	886.45	883.17	887.11	0.002089	7.45	400.53	186.90	0.41
Reach2	6150.000	Q25	1120.00	875.85	881.56		883.16	0.004856	10.14	110.40	19.49	0.75
Reach2	6150.000	Q100	1510.00	875.85	882.80	881.59	884.75	0.005061	11.22	134.58	19.55	0.75
Reach2	6150.000	FEMA	2058.00	875.85	884.42	882.90	886.78	0.005229	12.34	169.71	39.36	0.75
Reach2	6100.000	Q25	1120.00	875.60	880.37	880.37	882.76	0.008585	12.41	90.22	19.03	1.00
Reach2	6100.000	Q100	1510.00	875.60	881.42	881.42	884.33	0.008809	13.70	110.21	19.09	1.00
Reach2	6100.000	FEMA	2058.00	875.60	882.75	882.75	886.32	0.009161	15.17	135.62	19.15	1.00
Reach2	6056.000	Q25	1120.00	874.30	879.24	879.24	881.71	0.008806	12.60	88.86	18.02	1.00
Reach2	6056.000	Q100	1510.00	874.30	880.32	880.32	883.34	0.009175	13.96	108.17	18.04	1.00
Reach2	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach2	5320.000	Q25	1120.00	868.70	874.39		875.37	0.003987	7.93	141.20	26.91	0.61
Reach2	5320.000	Q100	1510.00	868.70	875.31		876.60	0.004517	9.10	165.93	26.93	0.65
Reach2	5320.000	FEMA	2058.00	868.70	876.76	874.79	878.20	0.004124	9.75	228.74	61.83	0.62
Reach2	5250.000	Q25	1120.00	868.35	873.65	873.10	874.97	0.006895	9.25	121.13	30.66	0.82
Reach2	5250.000	Q100	1510.00	868.35	874.79		876.23	0.005849	9.60	157.33	32.42	0.77
Reach2	5250.000	FEMA	2058.00	868.35	876.86		877.81	0.002851	8.20	295.56	90.13	0.55
Reach2	5200.000	Q25	1120.00	868.30	872.93	872.71	874.54	0.009542	10.18	109.97	29.28	0.93
Reach2	5200.000	Q100	1510.00	868.30	874.53	873.59	875.92	0.006053	9.46	159.61	33.10	0.76
Reach2	5200.000	FEMA	2058.00	868.30	877.06		877.56	0.002058	6.23	402.62	131.21	0.46
Reach2	5150.000	Q25	1120.00	867.20	873.47		874.01	0.002338	6.04	202.20	67.09	0.49
Reach2	5150.000	Q100	1510.00	867.20	875.11		875.49	0.001301	5.28	337.32	97.47	0.38
Reach2	5150.000	FEMA	2058.00	867.20	877.19		877.43	0.000630	4.45	595.62	155.47	0.28
Reach2	5100.000	Q25	1120.00	866.70	873.48		873.87	0.001687	5.00	223.81	49.20	0.41
Reach2	5100.000	Q100	1510.00	866.70	875.06		875.42	0.001255	4.88	324.10	96.15	0.36
Reach2	5100.000	FEMA	2058.00	866.70	877.15		877.39	0.000630	4.20	575.98	166.23	0.27
Reach2	5050.000	Q25	1120.00	866.50	871.17	871.17	873.49	0.012279	12.24	91.47	19.65	1.00
Reach2	5050.000	Q100	1510.00	866.50	872.19	872.19	875.03	0.012574	13.52	111.68	19.68	1.00
Reach2	5050.000	FEMA	2058.00	866.50	873.48	873.48	876.98	0.013053	15.02	137.12	20.47	1.00
Reach2	5000.000	Q25	1120.00	865.90	870.65	870.36	872.63	0.010005	11.29	99.18	20.94	0.91
Reach2	5000.000	Q100	1510.00	865.90	871.74	871.34	874.12	0.010003	12.38	121.99	20.97	0.90
Reach2	5000.000	FEMA	2058.00	865.90	873.16	872.60	876.01	0.010005	13.55	151.91	21.01	0.89

HEC-RAS Plan: Plan 03 River: Delawre Run Reach: Reach1

Reach	River Sta	Profile	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)	
Reach1	6350.000	Q25	1120.00	876.90	882.98		884.32	0.004830	9.28	120.73	19.91	0.66
Reach1	6350.000	Q100	1510.00	876.90	884.32		885.95	0.005025	10.24	147.39	19.94	0.66
Reach1	6350.000	FEMA	2058.00	876.90	886.04		888.03	0.005274	11.33	181.67	19.97	0.66
Reach1	6300.000	Q25	1120.00	876.80	882.54		884.04	0.005696	9.83	113.91	19.91	0.72
Reach1	6300.000	Q100	1510.00	876.80	883.87		885.66	0.005746	10.75	140.43	19.94	0.71
Reach1	6300.000	FEMA	2058.00	876.80	885.57		887.73	0.005881	11.79	174.48	19.98	0.70
Reach1	6250.000	Q25	1120.00	876.25	882.35		883.73	0.005024	9.43	118.78	19.52	0.67
Reach1	6250.000	Q100	1510.00	876.25	883.66		885.36	0.005313	10.47	144.24	19.55	0.68
Reach1	6250.000	FEMA	2058.00	876.25	885.33		887.43	0.005660	11.63	176.88	19.58	0.68
Reach1	6200.000	Q25	1120.00	876.10	881.84		883.43	0.006141	10.13	110.52	19.31	0.75
Reach1	6200.000	Q100	1510.00	876.10	883.08		885.04	0.006421	11.22	134.60	19.34	0.75
Reach1	6200.000	FEMA	2058.00	876.10	884.69		887.09	0.006752	12.42	165.66	19.37	0.75
Reach1	6150.000	Q25	1120.00	875.85	881.56		883.16	0.004856	10.14	110.40	19.49	0.75
Reach1	6150.000	Q100	1510.00	875.85	882.80	881.59	884.75	0.005061	11.22	134.57	19.55	0.75
Reach1	6150.000	FEMA	2058.00	875.85	884.39	882.90	886.78	0.005297	12.41	165.85	19.63	0.75
Reach1	6100.000	Q25	1120.00	875.60	880.37	880.37	882.76	0.008586	12.41	90.22	19.03	1.00
Reach1	6100.000	Q100	1510.00	875.60	881.42	881.42	884.33	0.008807	13.70	110.22	19.09	1.00
Reach1	6100.000	FEMA	2058.00	875.60	882.75	882.75	886.32	0.009161	15.17	135.62	19.15	1.00
Reach1	6056.000	Q25	1120.00	874.30	879.25	879.25	881.71	0.008806	12.60	88.86	18.02	1.00
Reach1	6056.000	Q100	1510.00	874.30	880.33	880.33	883.34	0.009100	13.92	108.49	18.04	1.00
Reach1	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach1	5320.000	Q25	1120.00	868.70	874.41		875.38	0.003953	7.91	141.61	26.91	0.61
Reach1	5320.000	Q100	1510.00	868.70	875.37		876.63	0.004395	9.02	167.48	26.93	0.64
Reach1	5320.000	FEMA	2058.00	868.70	876.80	874.79	878.21	0.004051	9.69	230.92	62.72	0.62
Reach1	5250.000	Q25	1120.00	868.35	873.58	873.03	874.98	0.007021	9.46	118.33	29.12	0.83
Reach1	5250.000	Q100	1510.00	868.35	874.77		876.25	0.006111	9.76	154.70	32.24	0.79
Reach1	5250.000	FEMA	2058.00	868.35	876.89		877.84	0.002862	8.21	296.64	91.99	0.55
Reach1	5200.000	Q25	1120.00	868.30	872.93	872.71	874.54	0.009542	10.18	109.97	29.28	0.93
Reach1	5200.000	Q100	1510.00	868.30	874.53		875.92	0.006032	9.45	159.81	33.11	0.76
Reach1	5200.000	FEMA	2058.00	868.30	877.04		877.59	0.002216	6.45	388.75	130.97	0.48
Reach1	5150.000	Q25	1120.00	867.20	873.47		874.01	0.002338	6.04	202.20	67.09	0.49
Reach1	5150.000	Q100	1510.00	867.20	875.12		875.49	0.001299	5.28	337.51	97.51	0.38
Reach1	5150.000	FEMA	2058.00	867.20	877.20		877.44	0.000624	4.44	598.28	156.00	0.27
Reach1	5100.000	Q25	1120.00	866.70	873.48		873.87	0.001687	5.00	223.81	49.20	0.41
Reach1	5100.000	Q100	1510.00	866.70	875.05		875.43	0.001294	4.95	305.20	54.62	0.37
Reach1	5100.000	FEMA	2058.00	866.70	877.10		877.40	0.000745	4.54	516.13	135.49	0.29
Reach1	5050.000	Q25	1120.00	866.50	871.17	871.17	873.49	0.012279	12.24	91.47	19.65	1.00
Reach1	5050.000	Q100	1510.00	866.50	872.19	872.19	875.03	0.012574	13.52	111.68	19.68	1.00
Reach1	5050.000	FEMA	2058.00	866.50	873.48	873.48	876.98	0.013053	15.02	137.12	20.47	1.00
Reach1	5000.000	Q25	1120.00	865.90	870.65	870.36	872.63	0.010005	11.29	99.18	20.94	0.91
Reach1	5000.000	Q100	1510.00	865.90	871.74	871.34	874.12	0.010003	12.38	121.99	20.97	0.90
Reach1	5000.000	FEMA	2058.00	865.90	873.16	872.59	876.01	0.010020	13.55	151.84	21.01	0.89

HEC-RAS Plan: Plan 04 River: Delaware Run Reach: Reach2

Reach	River Sta	Profile	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)	
Reach2	6350.000	Q25	1120.00	876.90	882.98		884.32	0.004830	9.28	120.73	19.91	0.66
Reach2	6350.000	Q100	1510.00	876.90	884.32		885.95	0.005025	10.24	147.39	19.94	0.66
Reach2	6350.000	FEMA	2058.00	876.90	886.04		888.03	0.005274	11.33	181.67	19.97	0.66
Reach2	6300.000	Q25	1120.00	876.80	882.54		884.04	0.005696	9.83	113.91	19.91	0.72
Reach2	6300.000	Q100	1510.00	876.80	883.87		885.66	0.005746	10.75	140.43	19.94	0.71
Reach2	6300.000	FEMA	2058.00	876.80	885.57		887.73	0.005881	11.79	174.48	19.98	0.70
Reach2	6250.000	Q25	1120.00	876.25	882.35		883.73	0.005024	9.43	118.78	19.52	0.67
Reach2	6250.000	Q100	1510.00	876.25	883.66		885.36	0.005313	10.47	144.24	19.55	0.68
Reach2	6250.000	FEMA	2058.00	876.25	885.33		887.43	0.005660	11.63	176.88	19.58	0.68
Reach2	6200.000	Q25	1120.00	876.10	881.84		883.43	0.006141	10.13	110.52	19.31	0.75
Reach2	6200.000	Q100	1510.00	876.10	883.08		885.04	0.006421	11.22	134.60	19.34	0.75
Reach2	6200.000	FEMA	2058.00	876.10	884.69		887.09	0.006752	12.42	165.66	19.37	0.75
Reach2	6150.000	Q25	1120.00	875.85	881.56		883.16	0.004856	10.14	110.40	19.49	0.75
Reach2	6150.000	Q100	1510.00	875.85	882.80	881.59	884.75	0.005061	11.22	134.57	19.55	0.75
Reach2	6150.000	FEMA	2058.00	875.85	884.39	882.90	886.78	0.005297	12.41	165.85	19.63	0.75
Reach2	6100.000	Q25	1120.00	875.60	880.37	880.37	882.76	0.008586	12.41	90.22	19.03	1.00
Reach2	6100.000	Q100	1510.00	875.60	881.42	881.42	884.33	0.008807	13.70	110.22	19.09	1.00
Reach2	6100.000	FEMA	2058.00	875.60	882.75	882.75	886.32	0.009161	15.17	135.62	19.15	1.00
Reach2	6056.000	Q25	1120.00	874.30	879.25	879.25	881.71	0.008806	12.60	88.86	18.02	1.00
Reach2	6056.000	Q100	1510.00	874.30	880.33	880.33	883.34	0.009100	13.92	108.49	18.04	1.00
Reach2	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach2	5320.000	Q25	1120.00	868.70	874.41		875.38	0.003953	7.91	141.61	26.91	0.61
Reach2	5320.000	Q100	1510.00	868.70	875.37		876.63	0.004395	9.02	167.48	26.93	0.64
Reach2	5320.000	FEMA	2058.00	868.70	876.80	874.79	878.21	0.004051	9.69	230.92	62.72	0.62
Reach2	5250.000	Q25	1120.00	868.35	873.58	873.03	874.98	0.007021	9.46	118.33	29.12	0.83
Reach2	5250.000	Q100	1510.00	868.35	874.77		876.25	0.006111	9.76	154.70	32.24	0.79
Reach2	5250.000	FEMA	2058.00	868.35	876.89		877.84	0.002862	8.21	296.64	91.99	0.55
Reach2	5200.000	Q25	1120.00	868.30	872.93	872.71	874.54	0.009542	10.18	109.97	29.28	0.93
Reach2	5200.000	Q100	1510.00	868.30	874.53		875.92	0.006032	9.45	159.81	33.11	0.76
Reach2	5200.000	FEMA	2058.00	868.30	877.04		877.59	0.002216	6.45	388.75	130.97	0.48
Reach2	5150.000	Q25	1120.00	867.20	873.47		874.01	0.002338	6.04	202.20	67.09	0.49
Reach2	5150.000	Q100	1510.00	867.20	875.12		875.49	0.001299	5.28	337.51	97.51	0.38
Reach2	5150.000	FEMA	2058.00	867.20	877.20		877.44	0.000624	4.44	598.28	156.00	0.27
Reach2	5100.000	Q25	1120.00	866.70	873.48		873.87	0.001687	5.00	223.81	49.20	0.41
Reach2	5100.000	Q100	1510.00	866.70	875.05		875.43	0.001294	4.95	305.20	54.62	0.37
Reach2	5100.000	FEMA	2058.00	866.70	877.10		877.40	0.000745	4.54	516.13	135.49	0.29
Reach2	5050.000	Q25	1120.00	866.50	871.17	871.17	873.49	0.012279	12.24	91.47	19.65	1.00
Reach2	5050.000	Q100	1510.00	866.50	872.19	872.19	875.03	0.012574	13.52	111.68	19.68	1.00
Reach2	5050.000	FEMA	2058.00	866.50	873.48	873.48	876.98	0.013053	15.02	137.12	20.47	1.00
Reach2	5000.000	Q25	1120.00	865.90	870.65	870.36	872.63	0.010005	11.29	99.18	20.94	0.91
Reach2	5000.000	Q100	1510.00	865.90	871.74	871.34	874.12	0.010003	12.38	121.99	20.97	0.90
Reach2	5000.000	FEMA	2058.00	865.90	873.16	872.59	876.01	0.010020	13.55	151.84	21.01	0.89

HEC-RAS Plan: Plan05 River: Delawre Run Reach: Reach1

Reach	River Sta	Profile	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)	
Reach1	6350.000	Q25	1120.00	876.90	882.42		884.04	0.006368	10.22	109.54	19.90	0.77
Reach1	6350.000	Q100	1510.00	876.90	883.68		885.63	0.006458	11.21	134.67	19.92	0.76
Reach1	6350.000	FEMA	2058.00	876.90	885.35		887.68	0.006528	12.26	167.92	19.96	0.74
Reach1	6300.000	Q25	1120.00	876.57	882.12		883.72	0.006269	10.17	110.14	19.91	0.76
Reach1	6300.000	Q100	1510.00	876.57	883.36		885.31	0.006429	11.19	134.88	19.93	0.76
Reach1	6300.000	FEMA	2058.00	876.57	885.02		887.35	0.006523	12.25	167.96	19.97	0.74
Reach1	6250.000	Q25	1120.00	876.25	881.24	880.93	883.31	0.008953	11.55	97.00	19.50	0.91
Reach1	6250.000	Q100	1510.00	876.25	882.51	881.96	884.90	0.008496	12.39	121.86	19.53	0.87
Reach1	6250.000	FEMA	2058.00	876.25	884.22		886.95	0.008068	13.26	155.22	19.56	0.83
Reach1	6200.000	Q25	1120.00	875.75	880.74	880.46	882.85	0.009194	11.67	95.95	19.30	0.92
Reach1	6200.000	Q100	1510.00	875.75	882.09	881.50	884.47	0.008407	12.36	122.20	19.32	0.87
Reach1	6200.000	FEMA	2058.00	875.75	883.83		886.54	0.007987	13.22	155.73	19.36	0.82
Reach1	6150.000	Q25	1120.00	875.25	880.54		882.40	0.006058	10.96	102.17	19.45	0.84
Reach1	6150.000	Q100	1510.00	875.25	881.92		884.05	0.005670	11.69	129.21	19.51	0.80
Reach1	6150.000	FEMA	2058.00	875.25	883.67		886.13	0.005525	12.60	163.31	19.60	0.77
Reach1	6100.000	Q25	1120.00	874.75	880.34	879.52	882.08	0.005449	10.59	105.75	19.05	0.79
Reach1	6100.000	Q100	1510.00	874.75	881.71	880.57	883.74	0.005322	11.44	131.96	19.11	0.77
Reach1	6100.000	FEMA	2058.00	874.75	883.43	881.90	885.85	0.005382	12.49	164.81	19.19	0.75
Reach1	6056.000	Q25	1120.00	874.30	879.25	879.25	881.71	0.008805	12.60	88.87	18.02	1.00
Reach1	6056.000	Q100	1510.00	874.30	880.32	880.32	883.34	0.009175	13.96	108.17	18.04	1.00
Reach1	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach1	5320.000	Q25	1120.00	868.70	874.28		875.30	0.004252	8.11	138.16	26.91	0.63
Reach1	5320.000	Q100	1510.00	868.70	875.17		876.52	0.004836	9.32	162.07	26.93	0.67
Reach1	5320.000	FEMA	2058.00	868.70	876.53	874.79	878.11	0.004628	10.16	215.18	55.92	0.66
Reach1	5250.000	Q25	1120.00	868.20	872.98	872.91	874.79	0.010026	10.77	103.96	27.59	0.98
Reach1	5250.000	Q100	1510.00	868.20	874.43		876.08	0.007089	10.31	146.44	31.34	0.84
Reach1	5250.000	FEMA	2058.00	868.20	876.59		877.69	0.003384	8.74	272.53	86.51	0.60
Reach1	5200.000	Q25	1120.00	867.70	873.04		874.22	0.006009	8.71	128.57	29.99	0.74
Reach1	5200.000	Q100	1510.00	867.70	874.48	873.04	875.65	0.004654	8.67	174.17	33.18	0.67
Reach1	5200.000	FEMA	2058.00	867.70	876.81		877.40	0.002251	6.64	374.42	124.85	0.48
Reach1	5150.000	Q25	1120.00	867.20	873.22		873.85	0.002835	6.46	186.16	62.52	0.53
Reach1	5150.000	Q100	1510.00	867.20	874.88		875.31	0.001531	5.61	314.52	93.05	0.41
Reach1	5150.000	FEMA	2058.00	867.20	876.98		877.24	0.000716	4.67	563.44	148.89	0.29
Reach1	5100.000	Q25	1120.00	866.70	873.24		873.68	0.001958	5.28	212.28	48.38	0.44
Reach1	5100.000	Q100	1510.00	866.70	874.81		875.23	0.001455	5.16	292.55	53.81	0.39
Reach1	5100.000	FEMA	2058.00	866.70	876.86		877.20	0.000860	4.78	484.03	129.48	0.31
Reach1	5050.000	Q25	1120.00	866.30	871.06	870.97	873.30	0.011628	12.02	93.20	19.65	0.97
Reach1	5050.000	Q100	1510.00	866.30	872.12	871.99	874.84	0.011843	13.24	114.06	19.67	0.97
Reach1	5050.000	FEMA	2058.00	866.30	873.52	873.26	876.79	0.011901	14.53	141.72	20.63	0.95
Reach1	5000.000	Q25	1120.00	865.90	870.82	870.36	872.67	0.009005	10.89	102.83	20.95	0.87
Reach1	5000.000	Q100	1510.00	865.90	871.96	871.34	874.17	0.009001	11.93	126.59	20.98	0.86
Reach1	5000.000	FEMA	2058.00	865.90	873.44	872.60	876.09	0.009004	13.04	157.78	21.01	0.84

HEC-RAS Plan: Plan 06 River: Delaware Run Reach: Reach2

Reach	River Sta	Profile	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)	
Reach2	6350.000	Q25	1120.00	876.90	882.42		884.04	0.006368	10.22	109.54	19.90	0.77
Reach2	6350.000	Q100	1510.00	876.90	883.68		885.63	0.006458	11.21	134.67	19.92	0.76
Reach2	6350.000	FEMA	2058.00	876.90	885.35		887.68	0.006528	12.26	167.92	19.96	0.74
Reach2	6300.000	Q25	1120.00	876.57	882.12		883.72	0.006269	10.17	110.14	19.91	0.76
Reach2	6300.000	Q100	1510.00	876.57	883.36		885.31	0.006429	11.19	134.88	19.93	0.76
Reach2	6300.000	FEMA	2058.00	876.57	885.02		887.35	0.006523	12.25	167.96	19.97	0.74
Reach2	6250.000	Q25	1120.00	876.25	881.24	880.93	883.31	0.008953	11.55	97.00	19.50	0.91
Reach2	6250.000	Q100	1510.00	876.25	882.51	881.96	884.90	0.008496	12.39	121.86	19.53	0.87
Reach2	6250.000	FEMA	2058.00	876.25	884.22		886.95	0.008068	13.26	155.22	19.56	0.83
Reach2	6200.000	Q25	1120.00	875.75	880.74	880.46	882.85	0.009194	11.67	95.95	19.30	0.92
Reach2	6200.000	Q100	1510.00	875.75	882.09	881.50	884.47	0.008407	12.36	122.20	19.32	0.87
Reach2	6200.000	FEMA	2058.00	875.75	883.83		886.54	0.007987	13.22	155.73	19.36	0.82
Reach2	6150.000	Q25	1120.00	875.25	880.54		882.40	0.006058	10.96	102.17	19.45	0.84
Reach2	6150.000	Q100	1510.00	875.25	881.92		884.05	0.005670	11.69	129.21	19.51	0.80
Reach2	6150.000	FEMA	2058.00	875.25	883.67		886.13	0.005525	12.60	163.31	19.60	0.77
Reach2	6100.000	Q25	1120.00	874.75	880.34	879.52	882.08	0.005449	10.59	105.75	19.05	0.79
Reach2	6100.000	Q100	1510.00	874.75	881.71	880.57	883.74	0.005322	11.44	131.96	19.11	0.77
Reach2	6100.000	FEMA	2058.00	874.75	883.43	881.90	885.85	0.005382	12.49	164.81	19.19	0.75
Reach2	6056.000	Q25	1120.00	874.30	879.25	879.25	881.71	0.008805	12.60	88.87	18.02	1.00
Reach2	6056.000	Q100	1510.00	874.30	880.32	880.32	883.34	0.009175	13.96	108.17	18.04	1.00
Reach2	6056.000	FEMA	2058.00	874.30	881.71	881.71	885.41	0.009542	15.43	133.41	18.07	1.00
Reach2	5320.000	Q25	1120.00	868.70	874.28		875.30	0.004252	8.11	138.16	26.91	0.63
Reach2	5320.000	Q100	1510.00	868.70	875.17		876.52	0.004836	9.32	162.07	26.93	0.67
Reach2	5320.000	FEMA	2058.00	868.70	876.53	874.79	878.11	0.004628	10.16	215.18	55.92	0.66
Reach2	5250.000	Q25	1120.00	868.20	872.98	872.91	874.79	0.010026	10.77	103.96	27.59	0.98
Reach2	5250.000	Q100	1510.00	868.20	874.43		876.08	0.007089	10.31	146.44	31.34	0.84
Reach2	5250.000	FEMA	2058.00	868.20	876.59		877.69	0.003384	8.74	272.53	86.51	0.60
Reach2	5200.000	Q25	1120.00	867.70	873.04		874.22	0.006009	8.71	128.57	29.99	0.74
Reach2	5200.000	Q100	1510.00	867.70	874.48	873.04	875.65	0.004654	8.67	174.17	33.18	0.67
Reach2	5200.000	FEMA	2058.00	867.70	876.81		877.40	0.002251	6.64	374.42	124.85	0.48
Reach2	5150.000	Q25	1120.00	867.20	873.22		873.85	0.002835	6.46	186.16	62.52	0.53
Reach2	5150.000	Q100	1510.00	867.20	874.88		875.31	0.001531	5.61	314.52	93.05	0.41
Reach2	5150.000	FEMA	2058.00	867.20	876.98		877.24	0.000716	4.67	563.44	148.89	0.29
Reach2	5100.000	Q25	1120.00	866.70	873.24		873.68	0.001958	5.28	212.28	48.38	0.44
Reach2	5100.000	Q100	1510.00	866.70	874.81		875.23	0.001455	5.16	292.55	53.81	0.39
Reach2	5100.000	FEMA	2058.00	866.70	876.86		877.20	0.000860	4.78	484.03	129.48	0.31
Reach2	5050.000	Q25	1120.00	866.30	871.06	870.97	873.30	0.011628	12.02	93.20	19.65	0.97
Reach2	5050.000	Q100	1510.00	866.30	872.12	871.99	874.84	0.011843	13.24	114.06	19.67	0.97
Reach2	5050.000	FEMA	2058.00	866.30	873.52	873.26	876.79	0.011901	14.53	141.72	20.63	0.95
Reach2	5000.000	Q25	1120.00	865.90	870.82	870.36	872.67	0.009005	10.89	102.83	20.95	0.87
Reach2	5000.000	Q100	1510.00	865.90	871.96	871.34	874.17	0.009001	11.93	126.59	20.98	0.86
Reach2	5000.000	FEMA	2058.00	865.90	873.44	872.60	876.09	0.009004	13.04	157.78	21.01	0.84

HEC-RAS Plan: Plan07 River: Delaware Run Reach: Reach2

Reach	River Sta	Profile	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)	
Reach2	6350.000	Q25	1120.00	876.90	883.65		884.74	0.003591	8.35	134.16	19.92	0.57
Reach2	6350.000	Q100	1510.00	876.90	885.35		886.61	0.003509	8.99	168.01	19.96	0.55
Reach2	6350.000	FEMA	2058.00	876.90	886.51		888.31	0.004597	10.76	191.21	19.98	0.61
Reach2	6300.000	Q25	1120.00	876.57	883.53		884.55	0.003305	8.10	138.20	19.94	0.54
Reach2	6300.000	Q100	1510.00	876.57	885.22		886.42	0.003289	8.78	172.06	19.97	0.53
Reach2	6300.000	FEMA	2058.00	876.57	886.33		888.07	0.004415	10.60	194.10	19.99	0.60
Reach2	6250.000	Q25	1120.00	876.25	883.37		884.38	0.003267	8.08	138.54	19.54	0.54
Reach2	6250.000	Q100	1510.00	876.25	885.05		886.25	0.003313	8.81	171.47	19.58	0.52
Reach2	6250.000	FEMA	2058.00	876.25	886.03	883.27	887.84	0.004634	10.80	190.60	19.60	0.61
Reach2	6200.000	Q25	1120.00	875.75	883.27		884.20	0.002875	7.72	145.03	19.35	0.50
Reach2	6200.000	Q100	1510.00	875.75	884.95		886.07	0.003023	8.51	177.39	19.38	0.50
Reach2	6200.000	FEMA	2058.00	875.75	885.86	882.81	887.59	0.004358	10.55	195.07	19.40	0.59
Reach2	6150.000	Q25	1120.00	875.25	883.24		884.05	0.001890	7.23	154.90	19.58	0.45
Reach2	6150.000	Q100	1510.00	875.25	884.91		885.91	0.002047	8.05	187.61	19.66	0.46
Reach2	6150.000	FEMA	2058.00	875.25	885.79	882.30	887.36	0.003001	10.04	205.07	19.70	0.55
Reach2	6100.000	Q25	1120.00	874.75	883.19		883.95	0.001720	6.99	160.23	19.18	0.43
Reach2	6100.000	Q100	1510.00	874.75	884.84		885.80	0.001926	7.87	191.97	19.26	0.44
Reach2	6100.000	FEMA	2058.00	874.75	885.68	881.92	887.20	0.002874	9.88	208.74	33.08	0.53
Reach2	6056.000	Q25	1120.00	874.30	883.09	879.25	883.87	0.001780	7.08	158.27	18.10	0.42
Reach2	6056.000	Q100	1510.00	874.30	884.74	880.32	885.71	0.001952	7.95	205.84	99.93	0.43
Reach2	6056.000	FEMA	2058.00	874.30	886.20	881.71	886.85	0.001393	7.33	476.62	311.77	0.38
Reach2	5688		Culvert									
Reach2	5320.000	Q25	1120.00	868.70	874.28		875.30	0.004252	8.11	138.16	26.91	0.63
Reach2	5320.000	Q100	1510.00	868.70	875.17		876.52	0.004836	9.32	162.07	26.93	0.67
Reach2	5320.000	FEMA	2058.00	868.70	876.53	874.79	878.11	0.004628	10.16	215.18	55.92	0.66
Reach2	5250.000	Q25	1120.00	868.20	872.98	872.91	874.79	0.010028	10.77	103.96	27.59	0.98
Reach2	5250.000	Q100	1510.00	868.20	874.43		876.08	0.007089	10.31	146.44	31.34	0.84
Reach2	5250.000	FEMA	2058.00	868.20	876.59		877.69	0.003384	6.74	272.53	86.51	0.60
Reach2	5200.000	Q25	1120.00	867.70	873.04		874.22	0.006009	8.71	128.57	29.99	0.74
Reach2	5200.000	Q100	1510.00	867.70	874.48	873.04	875.65	0.004654	8.67	174.17	33.18	0.67
Reach2	5200.000	FEMA	2058.00	867.70	876.61		877.40	0.002251	6.64	374.42	124.85	0.48
Reach2	5150.000	Q25	1120.00	867.20	873.22		873.85	0.002835	6.46	186.16	62.52	0.53
Reach2	5150.000	Q100	1510.00	867.20	874.88		875.31	0.001531	5.61	314.52	93.05	0.41
Reach2	5150.000	FEMA	2058.00	867.20	876.98		877.24	0.000716	4.67	563.44	148.89	0.25
Reach2	5100.000	Q25	1120.00	866.70	873.24		873.68	0.001958	5.28	212.28	48.38	0.44
Reach2	5100.000	Q100	1510.00	866.70	874.81		875.23	0.001455	5.16	292.55	53.81	0.39
Reach2	5100.000	FEMA	2058.00	866.70	876.86		877.20	0.000860	4.78	484.03	129.48	0.31
Reach2	5050.000	Q25	1120.00	866.30	871.06	870.97	873.30	0.011628	12.02	93.20	19.65	0.97
Reach2	5050.000	Q100	1510.00	866.30	872.12	871.99	874.84	0.011842	13.24	114.07	19.67	0.97
Reach2	5050.000	FEMA	2058.00	866.30	873.52	873.26	876.79	0.011901	14.53	141.72	20.63	0.95
Reach2	5000.000	Q25	1120.00	865.90	870.82	870.36	872.67	0.009005	10.89	102.83	20.95	0.87
Reach2	5000.000	Q100	1510.00	865.90	871.96	871.35	874.17	0.009001	11.93	126.59	20.98	0.86
Reach2	5000.000	FEMA	2058.00	865.90	873.44	872.61	876.09	0.009004	13.04	157.78	21.01	0.84

HEC-RAS Plan: Plan 08 River: Delaware Run Reach: Reach2 Profile: FEMA

Reach	River Sta	Profile	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)	
Reach2	6350.000	FEMA	2058.00	876.90	886.72		888.44	0.004342	10.54	195.33	19.98	0.59
Reach2	6300.000	FEMA	2058.00	876.57	886.55		888.22	0.004159	10.37	198.50	20.00	0.58
Reach2	6250.000	FEMA	2058.00	876.25	886.28	883.27	888.00	0.004319	10.52	195.68	28.30	0.59
Reach2	6200.000	FEMA	2058.00	875.75	886.12	882.81	887.76	0.004060	10.28	200.28	23.71	0.56
Reach2	6150.000	FEMA	2058.00	875.25	886.16	882.30	887.52	0.002566	9.48	258.42	200.94	0.51
Reach2	6100.000	FEMA	2058.00	874.75	885.95	881.92	887.38	0.002621	9.60	224.30	80.26	0.51
Reach2	6056.000	FEMA	2058.00	874.30	886.59	881.71	887.01	0.000955	6.21	605.21	337.64	0.31
Reach2	5688		Culvert									
Reach2	5320.000	FEMA	2058.00	868.70	876.81	874.79	878.22	0.004033	9.68	231.48	62.95	0.62
Reach2	5250.000	FEMA	2058.00	868.20	876.93		877.84	0.002711	8.05	303.08	92.75	0.54
Reach2	5200.000	FEMA	2058.00	867.70	877.12		877.60	0.001801	6.05	414.87	132.27	0.43
Reach2	5150.000	FEMA	2058.00	867.20	877.24		877.47	0.000610	4.40	604.03	157.14	0.27
Reach2	5100.000	FEMA	2058.00	866.70	877.14		877.43	0.000728	4.51	521.39	136.45	0.29
Reach2	5050.000	FEMA	2058.00	866.30	874.97		877.16	0.006666	11.95	176.93	27.90	0.72
Reach2	5000.000	FEMA	2058.00	865.90	875.30	872.61	876.67	0.003793	9.72	264.97	139.15	0.56

HEC-RAS Plan: Plan 09 River: Delaware Run Reach: Reach2

Reach	River Sta	Profile	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)	
Reach2	6350.000	Q25	1120.00	876.90	883.65		884.73	0.003604	8.36	133.99	19.92	0.57
Reach2	6350.000	Q100	1510.00	876.90	885.35		886.60	0.003516	8.99	167.90	19.96	0.55
Reach2	6350.000	FEMA	2058.00	876.90	886.49		888.30	0.004622	10.78	190.82	19.98	0.61
Reach2	6300.000	Q25	1120.00	876.57	883.52		884.54	0.003317	8.12	138.01	19.94	0.54
Reach2	6300.000	Q100	1510.00	876.57	885.22		886.41	0.003295	8.78	171.94	19.97	0.53
Reach2	6300.000	FEMA	2058.00	876.57	886.31		888.06	0.004440	10.63	193.69	19.99	0.60
Reach2	6250.000	Q25	1120.00	876.25	883.36		884.37	0.003280	8.10	138.35	19.54	0.54
Reach2	6250.000	Q100	1510.00	876.25	885.04		886.25	0.003320	8.81	171.34	19.58	0.52
Reach2	6250.000	FEMA	2058.00	876.25	886.00	883.27	887.82	0.004663	10.82	190.16	19.60	0.61
Reach2	6200.000	Q25	1120.00	875.75	883.26		884.19	0.002886	7.73	144.82	19.35	0.50
Reach2	6200.000	Q100	1510.00	875.75	884.94		886.07	0.003028	8.52	177.27	19.38	0.50
Reach2	6200.000	FEMA	2058.00	875.75	885.83	882.81	887.57	0.004386	10.58	194.60	19.39	0.59
Reach2	6150.000	Q25	1120.00	875.25	883.23		884.04	0.001997	7.24	154.69	19.58	0.45
Reach2	6150.000	Q100	1510.00	875.25	884.90		885.91	0.002051	8.05	187.48	19.66	0.46
Reach2	6150.000	FEMA	2058.00	875.25	885.77	882.30	887.34	0.003020	10.06	204.58	19.70	0.55
Reach2	6100.000	Q25	1120.00	874.75	883.18		883.94	0.001726	7.00	160.02	19.18	0.43
Reach2	6100.000	Q100	1510.00	874.75	884.83		885.79	0.001930	7.87	191.84	19.26	0.44
Reach2	6100.000	FEMA	2058.00	874.75	885.65	881.92	887.18	0.002897	9.91	207.93	28.59	0.53
Reach2	6056.000	Q25	1120.00	874.30	883.08	879.25	883.86	0.001786	7.09	158.07	18.10	0.42
Reach2	6056.000	Q100	1510.00	874.30	884.73	880.32	885.71	0.001959	7.96	204.97	98.25	0.44
Reach2	6056.000	FEMA	2058.00	874.30	886.15	881.71	886.84	0.001455	7.47	462.06	308.70	0.38
Reach2	5688		Culvert									
Reach2	5320.000	Q25	1120.00	868.70	874.28		875.30	0.004252	8.11	138.16	26.91	0.63
Reach2	5320.000	Q100	1510.00	868.70	875.17		876.52	0.004836	9.32	162.07	26.93	0.67
Reach2	5320.000	FEMA	2058.00	868.70	876.53	874.79	878.11	0.004628	10.16	215.18	55.92	0.66
Reach2	5250.000	Q25	1120.00	868.20	872.98	872.91	874.79	0.010028	10.77	103.96	27.59	0.98
Reach2	5250.000	Q100	1510.00	868.20	874.43		876.08	0.007089	10.31	146.44	31.34	0.84
Reach2	5250.000	FEMA	2058.00	868.20	876.59		877.69	0.003384	8.74	272.53	86.51	0.60
Reach2	5200.000	Q25	1120.00	867.70	873.04		874.22	0.006009	8.71	128.57	29.99	0.74
Reach2	5200.000	Q100	1510.00	867.70	874.48	873.04	875.65	0.004654	8.67	174.17	33.18	0.67
Reach2	5200.000	FEMA	2058.00	867.70	876.81		877.40	0.002251	6.64	374.42	124.85	0.48
Reach2	5150.000	Q25	1120.00	867.20	873.22		873.85	0.002835	6.46	186.16	62.52	0.53
Reach2	5150.000	Q100	1510.00	867.20	874.88		875.31	0.001531	5.61	314.52	93.05	0.41
Reach2	5150.000	FEMA	2058.00	867.20	876.98		877.24	0.000716	4.67	563.44	148.89	0.29
Reach2	5100.000	Q25	1120.00	866.70	873.24		873.68	0.001958	5.28	212.28	48.38	0.44
Reach2	5100.000	Q100	1510.00	866.70	874.81		875.23	0.001455	5.16	292.55	53.81	0.39
Reach2	5100.000	FEMA	2058.00	866.70	876.86		877.20	0.000860	4.78	484.03	129.48	0.31
Reach2	5050.000	Q25	1120.00	866.30	871.06	870.97	873.30	0.011628	12.02	93.20	19.65	0.97
Reach2	5050.000	Q100	1510.00	866.30	872.12	871.99	874.84	0.011842	13.24	114.07	19.67	0.97
Reach2	5050.000	FEMA	2058.00	866.30	873.52	873.26	876.79	0.011901	14.53	141.72	20.63	0.95
Reach2	5000.000	Q25	1120.00	865.90	870.82	870.36	872.67	0.009005	10.89	102.83	20.95	0.87
Reach2	5000.000	Q100	1510.00	865.90	871.96	871.35	874.17	0.009001	11.93	126.59	20.98	0.86
Reach2	5000.000	FEMA	2058.00	865.90	873.44	872.61	876.09	0.009004	13.04	157.78	21.01	0.84

HEC-RAS Plan: Plan 10 River: Delaware Run Reach: Reach2 Profile: FEMA

Reach	River Sta	Profile	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)	
Reach2	6350.000	FEMA	2058.00	876.90	886.63		888.39	0.004452	10.64	193.51	19.98	0.60
Reach2	6300.000	FEMA	2058.00	876.57	886.45		888.15	0.004269	10.47	196.56	19.99	0.59
Reach2	6250.000	FEMA	2058.00	876.25	886.17	883.27	887.93	0.004455	10.64	193.43	19.60	0.60
Reach2	6200.000	FEMA	2058.00	875.75	886.01	882.81	887.69	0.004188	10.39	198.02	19.40	0.57
Reach2	6150.000	FEMA	2058.00	875.25	885.96	882.30	887.47	0.002838	9.85	220.77	187.62	0.53
Reach2	6100.000	FEMA	2058.00	874.75	885.85	881.92	887.32	0.002715	9.71	217.14	63.09	0.52
Reach2	6056.000	FEMA	2058.00	874.30	886.47	881.71	886.95	0.001078	6.55	563.49	329.47	0.33
Reach2	5688		Culvert									
Reach2	5320.000	FEMA	2058.00	868.70	876.81	874.79	878.22	0.004033	9.68	231.48	62.95	0.62
Reach2	5250.000	FEMA	2058.00	868.20	876.93		877.84	0.002711	8.05	303.08	92.75	0.54
Reach2	5200.000	FEMA	2058.00	867.70	877.12		877.60	0.001801	6.05	414.87	132.27	0.43
Reach2	5150.000	FEMA	2058.00	867.20	877.24		877.47	0.000610	4.40	604.03	157.14	0.27
Reach2	5100.000	FEMA	2058.00	866.70	877.14		877.43	0.000728	4.51	521.39	136.45	0.29
Reach2	5050.000	FEMA	2058.00	866.30	874.97		877.16	0.006666	11.95	176.93	27.90	0.72
Reach2	5000.000	FEMA	2058.00	865.90	875.30	872.61	876.67	0.003793	9.72	264.97	139.15	0.56