



**I. PRECONSTRUCTION INCIDENTALS**

(A) PROJECT SPECIFICATIONS/REQUIREMENTS:

ALL WORK REQUIRED TO COMPLETE THIS IMPROVEMENT SHALL BE PERFORMED IN ACCORDANCE WITH SPECIFICATIONS/REQUIREMENTS OF THE CITY OF CANTON AND THE LATEST EDITION OF THE STATE OF OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, EXCEPT AS HEREIN AMENDED. IN THE CASE OF A CONFLICT BETWEEN THE CITY OF CANTON AND THE OHIO DEPARTMENT OF TRANSPORTATION SPECIFICATIONS/REQUIREMENTS, THE CITY OF CANTON REQUIREMENTS WILL TAKE PRECEDENCE, UNLESS OTHERWISE DIRECTED BY THE CITY ENGINEER.

THE DEVELOPER/CONTRACTOR SHALL COMPLY WITH THE CITY OF CANTON SUPPLEMENTAL SPECIFICATION 01-00 PROJECT DOCUMENTATION AND SUBMITTAL REQUIREMENTS.

(B) ADMINISTRATIVE REQUIREMENTS:

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR FULLY COMPLYING WITH ALL THE ADMINISTRATIVE DUTIES HEREIN CONTAINED.

THE DEVELOPER/CONTRACTOR SHALL DESIGNATE TO THE CITY AN EMPLOYEE RESPONSIBLE FOR CORRESPONDENCE, NOTIFICATIONS, AND SUBMITTALS PERTINENT TO THE PROJECT.

(C) PRECONSTRUCTION MEETING:

A PRECONSTRUCTION MEETING WITH THE DEVELOPER, CONTRACTOR, REPRESENTATIVES OF ALL UTILITY COMPANIES, THE CITY OF CANTON ENGINEERING DEPARTMENT AND THE CITY OF CANTON WATER DEPARTMENT IS REQUIRED FOR THIS PROJECT PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITY.

FOR SUBDIVISION DEVELOPMENTS, THE DEVELOPER SHALL CONTACT THE CITY ENGINEER'S OFFICE TO ARRANGE A MEETING DATE. THE DEVELOPER WILL CONTACT THE ABOVE AGENCIES TO CONFIRM THE MEETING DATE.

FOR CITY GENERAL PROJECTS, THE CITY ENGINEER WILL CONTACT THE CONTRACTOR TO ARRANGE A MEETING DATE. THE CITY ENGINEER WILL CONTACT THE ABOVE AGENCIES TO CONFIRM THE MEETING DATE.

IF THE PROPOSED PROJECT LAND-DISTURBANCE AREA IS ONE (1) OR MORE ACRES, A SEPARATE PRE-CONSTRUCTION MEETING IS ALSO REQUIRED. THIS MEETING SHALL OCCUR ON-SITE BETWEEN THE CONTRACTOR AND THE STARK SOIL & WATER CONSERVATION DISTRICT (SWCD). THE CONTRACTOR IS RESPONSIBLE FOR ARRANGING THIS MEETING. NO LAND-DISTURBANCE ACTIVITIES SHALL START UNTIL SAID MEETING HAS OCCURRED AND APPROVAL HAS BEEN GRANTED BY STARK SWCD.

(D) PROJECT SAFETY:

THE CONTRACTOR SHALL MAINTAIN A SAFE WORKING ENVIRONMENT AT THE PROJECT SITE AT ALL TIMES. THE CONTRACTOR SHALL PROPERLY SUPPORT AND/OR MAINTAIN ALL EXCAVATIONS PER APPLICABLE SAFETY REQUIREMENTS AND COMPLY WITH ALL O.S.H.A. REGULATIONS. APPROPRIATE BARRICADES, WARNING LIGHTS, SIGNS, FENCING, ETC. SHALL BE ERECTED AROUND THE CONSTRUCTION AREA DURING ALL NON-WORKING HOURS TO ALERT PERSONS OF THE POTENTIAL DANGER ASSOCIATED WITH THE AREA UNDER CONSTRUCTION AS WELL AS TO PREVENT ACCESS BY UNAUTHORIZED PERSONNEL TO THE CONSTRUCTION SITE/AREA. THE CONTRACTOR IS RESPONSIBLE FOR ENSURING THE SAFETY OF THE GENERAL PUBLIC AS WELL AS ALL CONSTRUCTION PERSONNEL. PUBLIC STREETS SHALL BE KEPT CLEAN AND FREE OF DEBRIS (MUD, STONE, ETC.) AT ALL TIMES. THE CONTRACTOR SHALL ALERT ALL LOCAL EMERGENCY AGENCIES (FIRE, POLICE, AMBULANCE, ETC.) OF THE NATURE OF THE PROPOSED PROJECT PRIOR TO BEGINNING AND CONSTRUCTION ACTIVITY. ACCESS FOR EMERGENCY VEHICLES SHALL BE MAINTAINED AT ALL TIMES.

(E) UNDERGROUND UTILITIES:

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES SHOWN ON THE PLANS WERE OBTAINED BY FIELD OBSERVATIONS, FROM EXISTING RECORDS, AND/OR FROM THE OWNERS OF THE RESPECTIVE UTILITIES. THE INFORMATION AS SHOWN IS BELIEVED TO BE CORRECT; HOWEVER, THE COMPLETENESS AND ACCURACY OF THIS INFORMATION CANNOT BE GUARANTEED. THE CONTRACTOR SHALL BE RESPONSIBLE TO CONTACT ALL THE VARIOUS UTILITY COMPANIES (PUBLIC AND PRIVATE) TO VERIFY THE EXISTENCE, LIMITS AND/OR LOCATION OF ANY UTILITIES WHICH MAY BE ALONG THE ROUTE OR WITHIN THE VICINITY OF THIS IMPROVEMENT.

(F) UTILITY NOTIFICATION:

AT LEAST TWO WORKING DAYS PRIOR TO COMMENCING OPERATIONS ON THIS PROJECT, THE CONTRACTOR SHALL NOTIFY THE CITY ENGINEER, THE REGISTERED UTILITY PROTECTION AGENCY/SERVICE, AND THE OWNERS OF ANY OTHER UTILITIES (PUBLIC AND/OR PRIVATE) THAT MAY HAVE UTILITY LINES OR FACILITIES WITHIN THE VICINITY OF THIS PROJECT BUT WHO ARE NOT MEMBERS OF THE REGISTERED UTILITY PROTECTION SERVICE. THE OWNERS OF ANY UNDERGROUND UTILITY FACILITY SHALL, WITHIN 48 HOURS AFTER NOTICE IS RECEIVED, EXCLUDING SATURDAYS, SUNDAYS AND OTHER LEGAL HOLIDAYS; STAKE, MARK OR OTHERWISE DESIGNATE THE EXISTENCE AND/OR LOCATION OF THE UNDERGROUND UTILITY FACILITIES IN THE CONSTRUCTION AREA IN SUCH A MANNER AS TO INDICATE THEIR COURSE TOGETHER WITH THE APPROXIMATE DEPTH AT WHICH THEY WERE INSTALLED. THE MARKING AND/OR LOCATING SHALL BE COORDINATED TO STAY APPROXIMATELY TWO WORKING DAYS AHEAD OF THE PLANNED CONSTRUCTION.

**OHIO UTILITIES PROTECTION SERVICE: 1-800-362-2764 (CONTACT NON-MEMBERS DIRECTLY).**

THE PRIMARY UTILITIES WITHIN THE CITY OF CANTON AREA:

NATURAL GAS DIST./TRANS.  
DOMINION EAST OHIO GAS  
320 SPRINGSIDE DR.  
AKRON, OHIO 44333  
330-664-2409  
ATTN: MARY LONG  
RELOCATION@DOM.COM  
EMERGENCY NO.  
1-800-521-4400

TELEPHONE  
AT&T  
50 WEST BOWER STREET  
AKRON, OHIO 44308  
330-384-8057  
ATTN: JIM BUETEL  
  
EMERGENCY NO. - 24 HRS.  
1-800-572-4545 OPTION#4

COMMUNICATIONS CABLE  
TIME WARNER CABLE  
5520 WHIPPLE AVE N.W.  
NORTH CANTON, OHIO 44720  
330-494-9200  
ext. 330-555-3003  
ATTN: RON FERDINAND

ELECTRIC  
AMERICAN ELECTRIC POWER  
301 CLEVELAND AVE. S.W.  
P.O. BOX 24400  
CANTON, OHIO 44701-4400  
330-438-7762  
ATTN: KEN HUOT  
EMERGENCY No.  
1-800-672-2017

SANITARY SEWER  
CITY ENGINEER'S OFFICE  
2436-30TH ST. N.E.  
CANTON, OHIO 44705  
330-489-3381  
ATTN: DAN MOEGLIN

WATER  
WATER DEPARTMENT  
2664 HARRISBURG RD. N.E.  
CANTON, OHIO 44708  
330-489-3310  
ATTN: LEWI MILLER

TRAFFIC INTERCONNECT  
CITY ENGINEER'S OFFICE  
2436-30TH ST. N.E.  
CANTON, OHIO 44705  
330-489-3381  
ATTN: NICK LOUKAS

STARK COUNTY ENGINEER  
COUNTY ENGINEER'S OFFICE  
5165 SOUTHWAY ST. S.W.  
CANTON, OHIO 44706  
330-477-6781  
ATTN: KEITH BENNETT

CANTON TOWNSHIP  
TOWNSHIP OFFICE  
4711 CENTRAL AVE. S.E.  
CANTON, OHIO 44707  
330-484-2501  
ATTN: CHRIS NICHOLS

THE CITY ENGINEER'S OFFICE IS TO BE CONTACTED DIRECTLY FOR SANITARY AND STORM SEWER AND TRAFFIC INTERCONNECT FACILITIES LOCATION: 330-489-3381.

(G) PROPOSED PUBLIC UTILITY LOCATION IN PROPOSED SUBDIVISIONS:

THE DEVELOPER/CONTRACTOR AND REPRESENTATIVES OF THE CITY OF CANTON SHALL MEET WITH REPRESENTATIVES OF THE VARIOUS PUBLIC UTILITY COMPANIES (EAST OHIO GAS, AMERICAN ELECTRIC POWER, AMERITECH, WARNER CABLE, ETC.) TO DETERMINE THE APPROPRIATE LOCATION FOR THESE UTILITIES WITHIN THE PROJECT SITE. ONCE AN AGREEMENT HAS BEEN REACHED, IT SHALL BE THE RESPONSIBILITY OF THE UTILITY OWNERS TO INSPECT THE INSTALLATION OF THE VARIOUS PUBLIC UTILITY LINES WITHIN THE ROAD RIGHT-OF-WAY TO ENSURE THAT CONFLICTS ARE AVOIDED AND ADEQUATE CLEARANCE AND OFFSETS WITH OTHER UTILITIES ARE MAINTAINED. UTILITY COMPANIES SHALL SUBMIT PLANS INDICATING THEIR PROPOSED IMPROVEMENTS AND FACILITIES TO THE CITY OF CANTON FOR APPROVAL. THE SITE CONTRACTOR SHALL COORDINATE HIS WORK WITH THE INSTALLATION OF THE OTHER UTILITIES NOT OWNED BY THE CITY.

(H) EXPLORATORY BORINGS:

EXPLORATORY SOIL BORING INFORMATION IS NOT THE RESPONSIBILITY OF THE CITY OF CANTON. IT IS THE DEVELOPER/CONTRACTOR RESPONSIBILITY TO REVIEW ANY AND ALL INFORMATION AVAILABLE. IF DEVELOPER/CONTRACTOR REQUESTS TO DRILL AND OR EXCAVATE WITHIN THE PROJECT LIMITS, THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE CITY ENGINEER AT LEAST 3 WORKING DAYS PRIOR TO THIS WORK. THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL UTILITY NOTIFICATION, AS SPECIFIED, ALL TRAFFIC CONTROL, PREMIUM BACKFILL, AND COMPACTION AND RESTORATION, AS NECESSARY. SOIL BORING SHALL BE INCLUDED IN THE BID BOOK.

(I) CONTINGENCY QUANTITIES:

WHEN SPECIFIED ON PLANS OR SPECIFICATIONS, CONTINGENCY QUANTITIES ARE TO BE PERFORMED ONLY UNDER DIRECTION OF THE CITY ENGINEER. THE DEVELOPER/CONTRACTOR SHALL NOT ORDER ANY CONTINGENCY MATERIAL OR PERFORM ANY WORK UNTIL DIRECTED BY THE ENGINEER. THE ACTUAL WORK LOCATION AND QUANTITIES FOR SUCH ITEMS SHALL BE DOCUMENTED BY THE DEVELOPER/CONTRACTOR AND THE ENGINEER.

**II. CONSTRUCTION INCIDENTALS**

(A) PLAN DISCREPANCIES:

ANY DISCREPANCIES FROM THE PLAN INFORMATION SHALL BE BROUGHT TO THE ATTENTION OF THE ENGINEER SO THAT THE APPROPRIATE ADJUSTMENTS IN ALIGNMENT AND/OR GRADE MAY BE MADE PRIOR TO THE START OF CONSTRUCTION OR THE CONTINUATION OF THE SAME.

FAILURE BY THE DEVELOPER/CONTRACTOR TO VERIFY AND/OR DETERMINE EXISTING INFORMATION AS INDICATED WILL RESULT IN THE CONTRACTOR BEING RESPONSIBLE FOR ANY CHANGES NECESSARY TO COMPLETE THE WORK SPECIFIED WITHOUT ADDITIONAL COMPENSATION.

(B) VERIFICATION OF UNDERGROUND UTILITIES:

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO VERIFY THE EXISTENCE AS WELL AS THE ACTUAL LOCATION, ALIGNMENT, AND ELEVATIONS OF ALL EXISTING UTILITIES/FACILITIES WITHIN AND/OR ADJACENT TO THE GENERAL LIMITS OF THESE IMPROVEMENTS INCLUDING WATERLINES, SANITARY AND STORM SEWERS, GAS LINES, COMMUNICATION LINES/BANKS, ELECTRIC LINES, ETC. THIS MAY REQUIRE EXPLORATORY EXCAVATIONS TO BE PERFORMED BY THE CONTRACTOR FOR WHICH HE WILL NOT BE REIMBURSED. THE CONTRACTOR SHALL NOT ASSUME THAT EXISTING UTILITIES/CONDUITS WERE INSTALLED AT TYPICAL/STANDARD DEPTHS OR AT UNIFORM SLOPES/GRADES/DEPTHS BETWEEN ACCESS POINTS (CATCH BASINS, MANHOLES, JUNCTION CHAMBERS, ETC.)

WHERE PLANS PROVIDE FOR A PROPOSED CONDUIT TO BE CONNECTED TO, OR CROSS OVER OR UNDER AN EXISTING SEWER OR UNDERGROUND UTILITY, THE CONTRACTOR SHALL LOCATE THE EXISTING PIPES OR UTILITIES BOTH AS TO LINE AND GRADE BEFORE STARTING TO INSTALL THE PROPOSED CONDUIT.

(C) PROTECTION OF UTILITIES:

THE DEVELOPER/CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO PROTECT AND SUPPORT EXISTING UTILITIES ENCOUNTERED DURING THE CONSTRUCTION OF THE PROPOSED IMPROVEMENTS AS APPROVED BY THE OWNERS OF THE UTILITY AND THE CITY ENGINEER.

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO CLOSELY COORDINATE THEIR WORK WITH ALL UTILITY COMPANIES; ANY POTENTIAL DELAYS WILL NOT BE THE RESPONSIBILITY OF THE CITY.

THE CONTRACTOR SHOULD EXPECT AT A MINIMUM ONE SANITARY SEWER LATERAL, ONE ROOF DRAIN, ONE WATER SERVICE, AND ONE GAS SERVICE FOR EACH LOT. ANY OF THE ABOVE UTILITIES DAMAGED DUE TO THE CONTRACTOR'S WORK SHALL BE RESTORED TO THE UTILITY OWNER'S SATISFACTION AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIFICATIONS.

(D) MAINTENANCE OF UTILITY SERVICES:

THE CONTRACTOR SHALL BE RESPONSIBLE TO MAINTAIN UTILITY SERVICES AT ALL TIMES.

WATER SERVICE MAY BE INTERRUPTED FOR LIMITED PERIODS (4 HOURS MAXIMUM) DURING CONNECTION BETWEEN EXISTING WATER LINES AND RELOCATED/NEW WATER MAINS WHICH CANNOT BE COMPLETED OTHERWISE. NO SHUT DOWN SHALL OCCUR WITHOUT WRITTEN PERMISSION OF THE CITY OF CANTON WATER DEPARTMENT. PROPERTY OWNERS AFFECTED BY APPROVED INTERRUPTED SERVICE SHALL BE NOTIFIED 48 HOURS IN ADVANCE BY THE CONTRACTOR.

STORM SEWER AND SANITARY SEWER SERVICES SHALL BE MAINTAINED WITHOUT INTERRUPTION, UNLESS APPROVED BY THE CITY ENGINEER.

IN THE EVENT THAT CONSTRUCTION DISRUPTS THE FLOW OF A SANITARY SEWER, THE CONTRACTOR SHALL IMMEDIATELY RECTIFY THE DISRUPTED SEWER BY EITHER TEMPORARILY FLUMING WITH MATERIALS ACCEPTABLE TO THE ENGINEER OR BYPASSING WITH PUMPS. COST OF MAINTAINING AND REPAIR OF SANITARY SEWERS DISTURBED BY CONSTRUCTION SHALL BE AT THE CONTRACTOR'S EXPENSE, UNLESS OTHERWISE NOTED IN THE PLANS OR SPECIFICATIONS.

(E) OPEN TRENCH CONSTRUCTION:

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL EXCAVATION/TRENCHING PRACTICES FOR THE PROPOSED IMPROVEMENT, OR AS FURTHER SHOWN ON THE PLANS AND SPECIFICATIONS.

THE DEVELOPER/CONTRACTOR SHALL FOLLOW ALL APPLICABLE LOCAL AND STATE SAFETY REGULATIONS, INCLUDING CODE OF FEDERAL REGULATIONS, PART 1926 (SAFETY AND HEALTH REGULATIONS FOR CONSTRUCTION), SUBPART P (EXCAVATIONS), FOR ALL APPLICABLE REQUIREMENTS AND RESPONSIBILITIES.

PRIOR TO COMMENCING CONSTRUCTION, THE DEVELOPER/CONTRACTOR SHALL NOTIFY THE CITY ENGINEER OF THE PROJECT'S ASSIGNED "COMPETENT PERSON" IN OSHA EXCAVATION STANDARDS.

(G) TRENCH CLOSING AND TEMPORARY TOPPING:

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE TO DETERMINE THE NECESSARY LEVELS OF PROTECTION AND SAFEGUARDING OF ALL OPEN TRENCHES, WHEN WORK IS EITHER COMPLETED AT THE END OF THE DAY OR SUSPENDED FOR ANY OTHER REASON.

FOR TRENCH SURFACE REQUIREMENTS, REFER TO NOTE 4 ON CITY STANDARD DRAWING NO. 19.

(H) DUST CONTROL:

THE DEVELOPER/CONTRACTOR SHALL FURNISH AND APPLY WATER AND CALCIUM CHLORIDE FOR DUST CONTROL AS DIRECTED BY THE ENGINEER. SUFFICIENT QUANTITIES OF CALCIUM CHLORIDE SHALL BE STORED ON THE JOB SITE AT ALL TIMES TO BE USED FOR DUST CONTROL.

(I) TESTING OF UTILITIES:

ALL NEWLY CONSTRUCTED WATERLINES AND SANITARY SEWERS (INCLUDING LATERALS) MUST BE INSTALLED AND TESTED IN ACCORDANCE WITH APPLICABLE STANDARDS (AWWA, ETC.) PER THE OHIO ENVIRONMENTAL PROTECTION AGENCY, AND PER THE REQUIREMENTS OF THE CITY OF CANTON WATER AND ENGINEERING DEPARTMENTS.

SANITARY SEWERS SHALL BE TESTED AND TELEVIEWED BY DEVELOPER/CONTRACTOR IN ACCORDANCE WITH THE CITY OF CANTON'S SUPPLEMENTAL SPECIFICATIONS:

~~02-00 TESTING FOR EXCESSIVE DEFLECTION FOR NON-PRESSURE THERMOPLASTIC SEWER PIPE.~~

~~03-00 TESTING PRACTICES FOR LOW-PRESSURE AIR TESTING OF INSTALLED, NON-PRESSURE, THERMOPLASTIC SEWER PIPE.~~

~~04-01 STANDARD TEST METHOD FOR CONCRETE SEWER MANHOLES BY THE NEGATIVE AIR PRESSURE TEST.~~

~~SANITARY AND STORM SEWERS CONSTRUCTED WITH THIS PROJECT SHALL BE TELEVIEWED BY THE DEVELOPER/CONTRACTOR ONLY WHEN A PAY ITEM IS PROVIDED IN ACCORDANCE WITH CITY OF CANTON'S SUPPLEMENTAL SPECIFICATION:~~

**05-01 SEWER TELEVISION INSPECTION AND DOCUMENTATION PROCEDURE.**

HAMMONTREE & ASSOCIATES, LTD.  
ENGINEERS, PLANNERS, SURVEYORS  
OH-PA-WY  
5233 STONEHAM ROAD, NORTH CANTON, OHIO 44720  
CANTON: (330)499-8817 AKRON: (330)633-7274  
TOLL FREE: 1-800-394-8817 FAX: (330)499-0149  
www.hammontree-engineers.com

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NOTES  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

**II. CONSTRUCTION INCIDENTALS (continued)**

(J) PRESERVATION AND RESTORATION OF DISTURBED FEATURES:

EXISTING DRIVES, BERMS, LAWNS, PAVEMENTS, CURBS, SIDEWALKS, SIGNS, MAILBOXES, FENCES, RETAINING WALLS, LANDSCAPING ITEMS, OR OTHER APPURTENANCES DISTURBED DURING CONSTRUCTION BUT NOT SPECIFICALLY DESIGNATED FOR REMOVAL/REPLACEMENT SHALL BE RESTORED BY THE DEVELOPER/CONTRACTOR AT HIS EXPENSE TO A CONDITION EQUAL TO OR BETTER THAN THAT WHICH EXISTED PRIOR TO DISTURBANCE AND TO THE COMPLETE SATISFACTION OF THE CITY ENGINEER.

RESTORATION OF EXISTING ROADWAYS SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF THE CITY, TOWNSHIP, COUNTY, AND/OR OTHER AGENCIES HAVING AUTHORITY. COST FOR THE RESTORATION OF THESE ITEMS SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR, UNLESS OTHERWISE SPECIFIED IN THE PLANS OR SPECIFICATIONS. NO PUBLIC ROADWAY SHALL BE DISTURBED WITHOUT PRIOR WRITTEN APPROVAL FROM THE GOVERNING AGENCY AND ACQUISITION OF NECESSARY PERMITS.

(K) SALVAGED CASTINGS:

WHEN DIRECTED BY THE CITY ENGINEER, ALL METAL CASTINGS SHALL BE CAREFULLY REMOVED AND STORED ON SITE OR DELIVERED TO A LOCATION DESIGNATED BY THE CITY ENGINEER.

(L) PLUG EXISTING CONDUIT:

THIS ITEM SHALL CONSIST OF THE CONSTRUCTION OF BULKHEADS IN AN EXISTING CONDUIT TO BE ABANDONED.

BULKHEADS SHALL CONSIST OF BRICK AND/OR CONCRETE MASONRY WITH A MINIMUM THICKNESS OF 12 INCHES.

PAYMENT FOR PLUGGING OF EXISTING CONDUIT FOR ABANDONMENT SHALL BE INCLUDED IN THE UNIT BID OF THE VARIOUS ITEMS OF THE PROJECT.

(M) CONSTRUCTION LAYOUT:

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL CONSTRUCTION LAYOUT UTILIZING PERTINENT PLAN DATA. THE CITY ENGINEER WILL NOT BE RESPONSIBLE FOR STAKING HORIZONTAL OR VERTICAL CONTROL. CONSTRUCTION LAYOUT SHALL BE IN ACCORDANCE WITH ODOT 623 CONSTRUCTION LAYOUT STAKES.

AT THE CITY ENGINEER'S REQUEST, THE CONTRACTOR SHALL MAKE AVAILABLE ALL SURVEY FIELD NOTES FOR REVIEW.

(N) EXISTING MONUMENTATION:

THE CONTRACTOR SHALL PRESERVE ALL CORNERSTONES, IRON PINS, CONCRETE MONUMENTS AND/OR ANY TYPE OF LAND MONUMENT. THE CONTRACTOR SHALL HAVE ALL MONUMENTS IN THE PROXIMITY OF THE WORK REFERENCED. THE CONTRACTOR SHALL REPLACE/RESET ANY DISTURBED OR DAMAGED MONUMENTS AND SHALL FURNISH A CERTIFICATION BY A REGISTERED SURVEYOR THAT THE MONUMENTS HAVE BEEN RESTORED.

(O) ELEVATION DATUM:

ALL ELEVATIONS ARE BASED ON THE **NAVD 1988 DATUM**.

(P) DEWATERING OPERATIONS:

WHEN DEEMED NECESSARY, THE DEVELOPER/CONTRACTOR MAY INSTALL DEWATERING EQUIPMENT PRIOR TO THE COMMENCEMENT OF CONSTRUCTION.

THE PROPOSED LOCATION OF WELL POINTS, HEADER PIPE, ELECTRICAL DISTRIBUTION, GENERATORS AND DISCHARGE PIPES, ETC. SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR.

THE DEVELOPER/CONTRACTOR SHALL BE RESPONSIBLE FOR ALL PERMITS FOR THE INSTALLATION AND SUBSEQUENT REMOVAL OF DEWATERING EQUIPMENT AS WELL AS PROPER WATER DISCHARGE PROCEDURES AS MAY BE REQUIRED PER STATE AND LOCAL GOVERNING AGENCIES.

INSTALLATION OF ALL ELECTRICAL EQUIPMENT, INCLUDING GROUNDING AND PROTECTION SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR.

DEVELOPER/CONTRACTOR SHALL PROVIDE ALL COMBUSTIBLE ENGINE DRIVEN GENERATORS WITH "HOSPITAL GRADE" MUFFLERS. MUFFLERS SHALL BE RATED, AT A MAXIMUM OF 67 dB AT 23 FEET AWAY RUNNING FULL LOAD.

(Q) INSPECTION:

FOLLOWING THE PRE-CONSTRUCTION MEETING(S) AND ESTABLISHMENT OF AN APPROVED SCHEDULE, THE CONTRACTOR SHALL GIVE A MINIMUM 48 HOUR NOTICE BEFORE STARTING ANY WORK ON THIS PROJECT AND SHALL KEEP THE CITY INFORMED OF HIS/HER CONSTRUCTION SCHEDULE. ALL WORK REQUIRED FOR THIS IMPROVEMENT SHALL BE SUBJECT TO INSPECTION BY THE CITY OF CANTON OR THEIR DESIGNATED REPRESENTATIVE. NO WORK SHALL BE PERFORMED WITHOUT AN AUTHORIZED INSPECTOR PRESENT, UNLESS OTHERWISE APPROVED.

(R) FIELD OFFICE:

IF A PAY ITEM IS PROVIDED, THE DEVELOPER/CONTRACTOR SHALL PROVIDE A FIELD OFFICE IN ACCORDANCE WITH ODOT 619. THE FIELD OFFICE SHALL BE TYPE 'A', UNLESS OTHERWISE SPECIFIED.

**III. EARTHWORK / SITE WORK**

(A) EASEMENTS AND RIGHT-OF-WAY:

THE DEVELOPER/CONTRACTOR SHALL STAY WITHIN THE DESIGNATED PROPERTIES, EASEMENTS, AND/OR RIGHT-OF-WAY PROVIDED FOR THE PROJECT AT ALL TIMES. NO MATERIAL SHALL BE STORED NOR ANY WORK PERFORMED ON PRIVATE PROPERTY UNLESS OTHERWISE APPROVED. DISTURBANCE OF EXISTING FEATURES AND/OR IMPROVEMENTS SHALL BE KEPT TO AN ABSOLUTE MINIMUM AND AS APPROVED BY THE CITY ENGINEER/PROPERTY OWNER.

(B) SUITABILITY OF SITE:

THE CITY OF CANTON SHALL NOT BE RESPONSIBLE FOR THE TYPE AND/OR SUITABILITY OF THE MATERIAL UNDERLYING THE PROJECT SITE. THE DEVELOPER/CONTRACTOR MUST APPRAISE THEMSELVES OF ANY EXISTING SITE CONDITIONS WHICH MAY AFFECT THEIR BID OR THE PERFORMANCE OF THE REQUIRED WORK. THE DEVELOPER/CONTRACTOR SHALL PERFORM ANY INVESTIGATIONS AND/OR TESTING NECESSARY TO ADEQUATELY DETERMINE/ESTIMATE TO THEIR SATISFACTION ALL SITE CONDITIONS WHICH COULD AFFECT THE PERFORMANCE OF THE PROPOSED IMPROVEMENTS. THIS COULD INCLUDE, BUT NOT BE LIMITED TO, UNSUITABLE AND/OR UNSTABLE SOIL/SUBSURFACE CONDITIONS, ROCK, WATER (PERCHED OR FREE), SPRINGS, ETC.

REFER TO CITY STANDARD DRAWING NO. 19 FOR ADDITIONAL DETAILS.

(C) REMOVAL/REPLACEMENT OF UNSUITABLE MATERIAL:

THE DEVELOPER/CONTRACTOR SHALL UNDERCUT AND REPLACE UNSUITABLE MATERIAL ENCOUNTERED DURING INSTALLATION OF THE PROPOSED UTILITIES AND ROADWAY IN ACCORDANCE WITH CITY STANDARD DRAWING NO. 19.

**IV. ROADWAY / DRIVE APPROACHES / WALK / CURB**

(A) PAVEMENT STANDARDS:

PAVEMENTS ARE TO BE CONSTRUCTED IN ACCORDANCE WITH APPLICABLE CITY STANDARD DRAWINGS AND SPECIFICATIONS (LISTED BELOW) AND ODOT SPECIFICATIONS, UNLESS SPECIFIED OTHERWISE ON THE PLANS.

CITY STANDARD DRAWING NO.:

- DRIVEWAYS, CURBS, AND PAVEMENT**
- 27 "DRIVE APPROACH WITH LAWNSTRIP BETWEEN SIDEWALK & CURB"
- 28 "DRIVE APPROACH WITH SIDEWALK AGAINST CURB"
- 29 "COMBINED CURB & WALK"
- 30 "CONCRETE CURB AND COMBINED CURB & GUTTER"
- 31 "BRICK PAVEMENT REPAIR & REPLACEMENT OVER TRENCHES/ALONG CURB"
- 32 "TYPICAL SECTION - LOCAL STREET"
- 33 "WHEELCHAIR RAMP"
- 34 "PAVEMENT TRANSITION, BRICK-ASPHALT"

**CITY STREETScape**

- 40 "TYPICAL STREETScape CORRIDOR"
- 41 "ROADWAY BRICK & CROSSWALK PAVEMENT DETAILS"
- 42 "STREETScape CONCRETE WALK PAVEMENT DETAILS"
- 44 "CONCRETE WALK OVER VAULT CONSTRUCTION DETAILS"
- 45 "BRICK WALK OVER VAULT CONSTRUCTION DETAILS"

CITY SPECIFICATIONS:

"CITY OF CANTON SPECIFICATIONS FOR THE CONSTRUCTION, REPAIR, AND REPLACEMENT OF SIDEWALKS, CURBS, AND DRIVEWAYS"

(B) RESTRICTED WORK SCHEDULE:

NO CONCRETE FINISH WORK OR PERMANENT ASPHALT SHALL BE PLACED FROM NOVEMBER 15TH TO APRIL 15TH UNLESS WRITTEN APPROVAL IS GRANTED BY THE CITY ENGINEER.

(C) ASPHALT/CONCRETE:

IT SHALL BE THE RESPONSIBILITY OF THE DEVELOPER/CONTRACTOR TO NOTIFY THE ENGINEER 48 HOURS IN ADVANCE OF BEGINNING WORK WHICH REQUIRES COMPACTION TESTING AND/OR PRE-POUR INSPECTION PRIOR TO PLACEMENT OF ASPHALT OR CONCRETE. WORK SHALL NOT PROCEED UNTIL TESTING AND/OR INSPECTION HAS BEEN COMPLETED AND APPROVED BY THE CITY ENGINEER.

**V. SANITARY SEWERS / STORM SEWERS**

(A) SEWER STANDARDS:

ALL SANITARY/STORM SEWER CONDUITS AND APPURTENANCES SHALL BE CONSTRUCTED ACCORDING TO APPLICABLE CITY STANDARD DRAWINGS AND SPECIFICATIONS (LISTED BELOW) AND ODOT SPECIFICATIONS EFFECTIVE AT THE TIME OF CONSTRUCTION, UNLESS SPECIFIED OTHERWISE ON THE PLANS.

CITY STANDARD DRAWING NO.:

- CATCH BASINS**
- 1 "CURB INLET CATCH BASIN"
- 2 "CURB INLET WATER QUALITY CATCH BASIN"
- 3 "HILLSIDE CURB INLET CATCH BASIN"
- 4 "SQUARE-TOP CATCH BASIN"
- 5 "SQUARE-TOP WATER QUALITY CATCH BASIN"

**MANHOLES**

- 10 "PRECAST STORM OR SANITARY MANHOLE"
- 11 "OUTSIDE DROP CONNECTION FOR SANITARY MANHOLE"
- 12 "MANHOLE COVER"

**CONDUITS AND TRENCHES**

- 18 "HOUSE CONNECTION STACK"
- 19 "UTILITY TRENCH REQUIREMENTS"
- 20 "SANITARY SEWERS AND LATERALS"
- 21 "CONCRETE ENCASEMENT DETAIL"
- 22 "DOWNSPOUT OUTLET (NON-CURBED STREET)"
- 23 "DOWNSPOUT OUTLET (CURBED STREET)"
- 24 "GROUNDWATER DRAIN LINE CONNECTION"

**DRIVEWAYS, CURBS, AND PAVEMENT**

- 32 "TYPICAL SECTION - LOCAL STREET"

**VI. STORM WATER POLLUTION PREVENTION:**

(A) FOR PROJECTS ONE (1) ACRE OR MORE OF TOTAL LAND-DISTURBANCE:

THE OWNER/DEVELOPER SHALL APPLY FOR AND OBTAIN AN OHIO EPA NPDES PERMIT FOR STORM WATER DISCHARGES ASSOCIATED WITH CONSTRUCTION ACTIVITY. SAID PERMIT REQUIRES THE PREPARATION AND IMPLEMENTATION OF A STORM WATER POLLUTION PREVENTION PLAN (SWP3) TO ADDRESS CONSTRUCTION SITE STORM WATER RUNOFF AS WELL AS POST-CONSTRUCTION STORM WATER MANAGEMENT. THE SWP3 MUST BE REVIEWED AND APPROVED BY THE STARK COUNTY SOIL & WATER CONSERVATION DISTRICT (SWCD).

THE OWNER/DEVELOPER AND HIS REPRESENTATIVES SHALL COMPLY WITH ALL APPLICABLE REQUIREMENTS OF THE PERMIT AS WELL AS THE SWP3. ALL ACTIVITIES AND PRACTICES SHALL ALSO COMPLY WITH THE CURRENT EDITIONS OF THE CITY OF CANTON STORM WATER MANAGEMENT MANUAL AND THE OHIO DEPARTMENT OF NATURAL RESOURCES' RAINWATER AND LAND DEVELOPMENT MANUAL, AS APPLICABLE. SUCH PROJECTS ARE ALSO SUBJECT TO INSPECTION BY THE CITY OF CANTON AND/OR ITS AUTHORIZED REPRESENTATIVES (I.E. STARK SWCD) TO ENSURE COMPLIANCE WITH PERMIT AND SWP3 REQUIREMENTS AND LOCAL STORM WATER QUALITY REGULATIONS.

A PRE-CONSTRUCTION MEETING INITIATED BY THE DEVELOPER/CONTRACTOR IS REQUIRED ON-SITE WITH THE STARK SWCD PRIOR TO ANY LAND-DISTURBING ACTIVITIES. THE DEVELOPER/CONTRACTOR SHALL ABIDE BY ALL ORDERS ISSUED BY THE CITY AND/OR STARK SWCD PURSUANT TO INSPECTION OF THE PROJECT SITE.

IT IS THE CONTRACTOR'S RESPONSIBILITY TO SUBMIT CO-PERMITTEE APPLICATION TO OHIO EPA PRIOR TO BEGINNING WORK ON THE PROJECT. AS APPLICABLE, THE CONTRACTOR SHALL OBTAIN A COPY OF THE SWP3 AND FAMILIARIZE HIMSELF WITH IT, IMPLEMENTING ALL ITEMS AND ABIDING BY ALL PERMIT REQUIREMENTS AND REGULATIONS.

(B) FOR PROJECTS LESS THAN ONE (1) ACRE OF TOTAL LAND-DISTURBANCE:

AN EPA NPDES CONSTRUCTION STORM WATER PERMIT AND SWP3 IS NOT REQUIRED. HOWEVER, THE DEVELOPER/CONTRACTOR SHALL STILL ENSURE THAT APPROPRIATE PRACTICES ARE IN PLACE TO PROVIDE CONSTRUCTION RUNOFF AND EROSION AND SEDIMENT CONTROLS WITHIN THE PROJECT LIMITS. SUCH PRACTICES MAY INCLUDE THE USE OF SILT FENCE, STORM DRAIN INLET PROTECTION, JUTE MATTING, TEMPORARY SEEDING, MULCHING, CHECK DAMS, CONSTRUCTION ENTRANCES, CONCRETE WASHOUT AREAS, ETC. ALL PRACTICES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE CURRENT EDITION OF THE OHIO DEPARTMENT OF NATURAL RESOURCES' RAINWATER AND LAND DEVELOPMENT MANUAL, AS APPLICABLE.

EROSION AND SEDIMENT CONTROL PRACTICES MUST BE INSTALLED PRIOR TO BEGINNING CONSTRUCTION ACTIVITY. THE CONTRACTOR SHALL BE RESPONSIBLE FOR CONTINUED INSPECTION AND MAINTENANCE OF ALL PRACTICES AND WILL BE HELD RESPONSIBLE FOR ADDRESSING ANY ON- OR OFF-SITE EROSION/SEDIMENT ISSUES RELATED TO THE PROJECT. THE OWNER/DEVELOPER/CONTRACTOR SHALL ABIDE BY ALL ORDERS ISSUED BY THE CITY PURSUANT TO INSPECTION OF THE PROJECT SITE.

**VII. TRAFFIC:**

(A) MAINTAINING TRAFFIC:

THE CONTRACTOR SHALL MAINTAIN TRAFFIC ADJACENT TO AND THROUGH THE PROJECT AS DESCRIBED BELOW AND IN ACCORDANCE WITH THE REQUIREMENTS OF THE OHIO DEPARTMENT OF TRANSPORTATION MANUAL OF CONSTRUCTION AND MATERIALS SPECIFICATIONS ITEM 614 MAINTAINING TRAFFIC. THE CONTRACTOR SHALL FURNISH, MAINTAIN, AND REMOVE ALL SIGNS, FLAGS, FLAGMEN, WATCHMEN, BARRICADES, SIGN SUPPORTS, CONES, BARRELS, AND INCIDENTALS IN CONFORMANCE WITH THE MOST RECENT REVISIONS OF THE CURRENT EDITION OF THE OHIO MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES FOR STREETS AND HIGHWAYS. INTERFERENCE WITH VEHICULAR TRAFFIC SHALL BE KEPT TO A MINIMUM AT ALL TIMES. ALL OPEN TRENCHES AND EXCAVATIONS SHALL BE PROTECTED WITH DRUMS, BARRICADES, OR BARRIERS. ACCESS SHALL BE MAINTAINED AT ALL TIMES FOR EMERGENCY AND FIRE DEPARTMENT VEHICLES.

**ANY TEMPORARY ROADWAY CLOSING MUST BE APPROVED IN WRITING BY THE CITY TRAFFIC ENGINEER AND ANY OTHER PUBLIC AGENCY HAVING JURISDICTION. THE CONTRACTOR SHALL NOTIFY THE TRAFFIC ENGINEER AT LEAST 72 HOURS IN ADVANCE OF ANY SUCH CLOSINGS FOR PUBLICATION AND EMERGENCY AGENCY NOTIFICATION.**

(B) RESIDENTIAL AND BUSINESS AREAS:

THE CONTRACTOR SHALL MAINTAIN ACCESS TO LOCAL RESIDENCES AND BUSINESSES DURING CONSTRUCTION. IN THE EVENT A DRIVE ACCESS NEEDS TO BE CLOSED, THE CONTRACTOR SHALL GIVE NOTICE OF CLOSURE AND DURATION TO THE PROPERTY OWNER 24 HOURS IN ADVANCE. CONTRACTOR SHALL ARRANGE FOR ALTERNATE PARKING AND REASONABLE ACCESS FOR THOSE PROPERTY OWNERS AFFECTED BY DRIVE CLOSURES.

(C) EXISTING STREET NAME AND TRAFFIC CONTROL SIGNS:

WHERE WORK REQUIRES THE MOVEMENT OF EXISTING SIGNS (STOP SIGNS, SPEED LIMIT SIGNS, NO PARKING SIGNS, ETC.), THE CONTRACTOR IS REQUIRED TO MAINTAIN THE FUNCTION OF ALL TRAFFIC CONTROL SIGNS. ALL SIGNS REMOVED BY THE CONTRACTOR SHALL BE STORED ON SITE AND REINSTALLED BY THE CONTRACTOR.

(D) NEW STREET NAME & TRAFFIC CONTROL SIGNS:

ALL STREET NAME AND TRAFFIC CONTROL SIGNS SHALL COME COMPLETE AND BE MADE IN ACCORDANCE WITH THE CITY OF CANTON SIGN AND PAINT DEPARTMENT SPECIFICATIONS. GENERALLY, ALL SIGNS SHALL HAVE HI-INTENSITY SHEETING AND BE MADE WITH .080 50/52 ALUMINUM. STREET NAME SIGNS SHALL BE MADE WITH WHITE UPPER AND LOWER CASE LETTERING ON GREEN BACKGROUND USING 9" BLANKS, BE DOUBLED SIDED W/RADIUS CORNERS AND HAVE 6" NAME AND 3" SUFFIXES. ALL SIGN RELATED HARDWARE IS TO BE INCLUDED, SUCH AS 6" HEAVY DUTY U-CHANNEL CAPS AND STREET NAME CROSSES.

FOR SUBDIVISION DEVELOPMENTS, ALL PERMANENT STREET NAME SIGNS AND TRAFFIC CONTROL SIGNS SHALL BE FURNISHED AND INSTALLED BY THE DEVELOPER/CONTRACTOR.

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NOTES  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

**VII. TRAFFIC (continued)**

**(E) EXISTING TRAFFIC SIGNALS:**

WHERE WORK REQUIRES INTERFERENCE WITH EXISTING SIGNALIZATION IN THE INTERSECTIONS, ALL WORK SHALL BE COORDINATED THROUGH THE CITY ENGINEER. THE CONTRACTOR SHALL NOT ALTER ANY SIGNALIZATION WITHOUT THE CITY ENGINEER'S AUTHORIZATION.

**(F) NEW TRAFFIC SIGNALIZATION:**

ALL NEW OR MODIFIED TRAFFIC SIGNALIZATION AT INTERSECTIONS SHALL BE IN ACCORDANCE WITH CITY TRAFFIC ENGINEERING TRAFFIC CONTROL GENERAL NOTES AND ODOT SPECIFICATIONS, WITH SPECIAL EMPHASIS ON ODOT ITEMS 625, 632, 633, 732, AND 733 WHICH DEALS WITH TRAFFIC CONTROL.

**(G) TRAFFIC CONTROL PLAN:**

THE DEVELOPER/CONTRACTOR SHALL SUBMIT TO THE CITY ENGINEER A TRAFFIC CONTROL PLAN IN ACCORDANCE WITH CITY SUPPLEMENTAL SPECIFICATION 01-00. DETOURS, IF NECESSARY, SHALL BE APPROVED BY THE CITY ENGINEER PRIOR TO PLAN SUBMISSION.

**VIII. WATER MAIN / SERVICES:**

**(A) WATER MAINS/SERVICES:**

ALL WATER MAINS, SERVICES AND APPURTENANCES SHALL BE DESIGNED AND CONSTRUCTED ACCORDING TO THE CITY OF CANTON WATER DEPARTMENT REQUIREMENTS AND SPECIFICATIONS IN EFFECT AT THE TIME OF CONSTRUCTION. ANY DEVIATION FROM THE PLANS AFFECTING THE WATER SYSTEM MUST BE APPROVED BY THE CANTON WATER DEPARTMENT.

FOR NEW DEVELOPMENTS INSIDE THE CITY, ALL WATER MAIN PIPE MATERIAL FITTINGS, BENDS, VALVES, VALVE BOXES, MEGALUGS, GASKETS AND HYDRANTS WILL BE SUPPLIED BY THE CITY OF CANTON. THE CONTRACTOR WILL BE RESPONSIBLE FOR TRANSPORTING MATERIALS TO THE PROJECT SITE. BACKFILL, BEDDING, THRUST BLOCKING, ETC. AND ASSOCIATED LABOR IS THE RESPONSIBILITY OF THE CONTRACTOR.

WATER MAINS SHALL BE CLASS 53 (12" AND UNDER) OR CLASS 54 (OVER 12") DUCTILE IRON MEETING AWWA C-151 WITH PUSH JOINTS. THE MINIMUM COVER OVER WATER MAINS SHALL BE 4'-6" FROM GROUND SURFACE TO THE BARREL OF THE PIPE. THE OUTSIDE SURFACE OF ALL DUCTILE IRON PIPE, FITTINGS, AND APPURTENANCES SHALL BE SHOP COATED WITH EITHER A COAL TAR OR ASPHALT BASE BITUMINOUS MATERIAL. IF THE COATING MATERIAL IS FOUND TO BE DAMAGED PRIOR TO THE PIPE TRENCH BEING BACKFILLED, THE CONTRACTOR SHALL PROVIDE AN ADDITIONAL APPROVED MATERIAL AS REQUIRED TO REPAIR THE DAMAGES. THE CONTRACTOR SHALL HAVE SUFFICIENT COATING MATERIAL AVAILABLE AT THE JOB SITE PRIOR TO LAYING THE PIPE. THE INTERIOR OF ALL PIPES AND FITTINGS SHALL BE LINED WITH DOUBLE CEMENT MORTAR AND SEAL COATED IN COMPLETE CONFORMANCE WITH AWWA C-104, OR THE LATEST REVISION. FITTINGS SHALL BE RATED FOR 250 PSI WORKING PRESSURE IN ACCORDANCE WITH AWWA C-153. PIPE LENGTHS MAY BE DEFLECTED AT THE JOINT IF REQUIRED, AT ONE-HALF THE DEGREE RECOMMENDED BY THE MANUFACTURER. WATER SERVICES WILL BE INSTALLED BY THE CITY OF CANTON AND PAID FOR BY THE OWNER/DEVELOPER. DISINFECTION OF WATER MAINS SHALL BE IN ACCORDANCE WITH AWWA C-651. ALL WATER LINE PRESSURE TESTING SHALL CONFORM TO AWWA C-600.

WATER MAINS SHALL BE INSTALLED AND BACKFILLED PER O.D.O.T. ITEM 638. WATERLINES LOCATED WITHIN THE LIMITS OF OR WITHIN A 1/2 TO 1 SLOPE OF EXISTING AND/OR PROPOSED ROADWAYS, PARKING AREAS, BUILDINGS, BUILDINGS, SIDEWALKS, AND/OR DRIVES SHALL BE INSTALLED AS TYPE B CONDUITS. ALL OTHER WATER MAINS MAY BE INSTALLED AS TYPE C CONDUITS. BEDDING SHALL BE AS SPECIFIED, EXCEPT THAT SLAG WILL NOT BE PERMITTED.

ALL BENDS, FITTINGS, TEES, VALVES, DEAD ENDS, ETC. SHALL BE SECURED EQUAL. POURED-IN-PLACED CONCRETE THRUST BLOCKS SHALL ALSO BE PROVIDED AT/FOR EACH BEND, FITTINGS, TEE, DEAD END, ETC. THIS BLOCKING SHALL BE CAREFULLY PLACED TO ENSURE IT IS POSITIONED PROPERLY TO WITHSTAND THE RESULTANT FORCES AT EACH BEND, FITTING, ETC. AND SHALL BEAR ON STABLE UNDISTURBED GROUND CAPABLE OF WITHSTANDING THE POTENTIAL LOADING.

IN ADDITION TO THE RESTRAINT OF ALL BENDS, FITTINGS, TEES, VALVES, DEAD END, ETC. THE CONTRACTOR SHALL ALSO SECURE/RESTRAIN ALL JOINTS FOR AT LEAST THREE (3) PIPE JOINTS (50 LF MIN.) ON BOTH SIDES OF EACH DEAD END, BEND, FITTING, VALVE, TEE, ETC. UTILIZING MEGALUGS, FIELD LOK GASKETS, OR APPROVED EQUAL.

THE CONTRACTOR SHALL PROVIDE 18" VERTICAL CLEARANCE BETWEEN PROPOSED WATERLINES AND ANY SANITARY SEWERS. WHEN 18" CLEARANCE BETWEEN A WATERLINE AND SANITARY SEWER CANNOT BE OBTAINED THE CONTRACTOR SHALL PROVIDE CONCRETE ENCASMENT AS DIRECTED BY THE ENGINEER. THE CONTRACTOR SHALL PROVIDE 12" MINIMUM CLEARANCE BETWEEN WATERLINE AND STORM SEWER. THE CONTRACTOR SHALL MAINTAIN TEN (10) FOOT HORIZONTAL CLEARANCE BETWEEN WATERLINES/SERVICES AND SANITARY SEWERS AND FOUR (4) FOOT HORIZONTAL CLEARANCE BETWEEN WATERLINES/SERVICES AND STORM SEWERS.

THE FIRE HYDRANT SETTING SHALL INCLUDE THE HYDRANT, ANCHOR TEE, VALVE, VALVE BOX, 6 INCH PIPING AND ALL FITTINGS NEEDED FOR PROPER INSTALLATION. FIRE HYDRANTS SHALL BE MUELLER A423 MEETING THE CITY OF CANTON WATER DEPARTMENT STANDARDS AND REQUIREMENTS. ALL COSTS FOR THE 6" PIPING ASSOCIATED WITH THE INSTALLATION OF FIRE HYDRANTS SHALL BE INCLUDED WITH THE FIRE HYDRANT PAY ITEM. ALL HYDRANTS WILL BE INSTALLED WITH THE PUMPER NOZZLE FACING THE STREET.

ALL WATER SERVICES MUST BE INSTALLED BEFORE ANY PAVEMENT FOR THE PROPOSED ROADWAYS HAS BEEN PLACED. CONTRACTOR IS NOT TO MAKE ANY SERVICE TAPS ON THE WATER MAIN. THE CANTON WATER DEPARTMENT WILL MAKE ALL SERVICE TAPS.

THE PROPOSED FACILITIES WILL MAINTAIN A MINIMUM 35 PSI PRESSURE DELIVERED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS.

BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.

ALL DUCTILE IRON PIPE, INCLUDING FITTINGS AND APPURTENANCES BURIED UNDERGROUND, SHALL BE ENCASED WITH 8 MIL POLYETHYLENE FILM CONFORMING TO AWWA C105.

POLYETHYLENE WATER MAIN AND SERVICE TUBING 2" AND UNDER SHALL BE COPPER TUBE SIZE AND MEET STANDARDS ASTM-D2737 PE3408 AND AWWA C906. THE ONLY ACCEPTED TUBING IS CP CHEM PERFORMANCE PIPE DRISCOPLEX 5100-ULTRA-LINE.

THE CONTRACTOR SHALL TAKE ANY AND ALL NECESSARY PRECAUTIONS TO PROTECT AND MAINTAIN IN SERVICE, ANY EXISTING WATER MAINS EXPOSED DURING CONSTRUCTION.

ANY WATER SERVICE LINE THAT IS BROKEN, CUT OR OTHERWISE DAMAGED, SHALL BE REPLACED FROM THE CORPORATION STOP TO THE CURB STOP WITH A SINGLE PIECE OF PLASTIC SERVICE LINE (DRISCOPLEX). NO SPLICING OF THE SERVICE LINE WILL BE PERMITTED.

SERVICE BRANCHES WILL BE INSTALLED AS PER O.D.O.T ITEM 638.16 WITH THE FOLLOWING EXCEPTIONS:  
1. WHEN A SERVICE BRANCH IS DISTURBED FOR LOWERING, RAISING, EXTENDING OR SHORTENING ON THE PROPERTY SIDE ON THE SERVICE STOP, IT SHALL BE REPLACED WITH NEW MATERIALS FROM THE CORPORATION STOP TO THE SERVICE STOP.

IN A STREET IMPROVEMENT, NO EXISTING WATER CURB BOX WILL BE LEFT IN THE PAVEMENT, CURB AND GUTTER OR SIDEWALK. THE CURB BOX WILL BE MOVED TO A SUITABLE LOCATION DETERMINED BY THE CANTON WATER DEPARTMENT. WHEN THE CURB BOX IS MOVED ALL NEW MATERIAL WILL BE USED FROM THE CORPORATION STOP TO THE CURB STOP WHICH IS A SINGLE PIECE OF PLASTIC SERVICE LINE (DRISCOPLEX). NO SPLICING OF THE SERVICE LINE WILL BE PERMITTED. A NEW TAP (CORPORATION STOP) AND CURB STOP AND BOX MAY ALSO BE REQUIRED. THE DETERMINATION WILL BE MADE BY THE CANTON WATER DEPARTMENT.

ALL WATER MAINS WILL BE INSTALLED UNDER THE PAVEMENT WITH A MINIMUM OF 3 FEET FROM THE EDGE OF PAVEMENT OR THE CURB AND/OR CUTTER. IN EXISTING STREETS, A SAW CUT WILL BE MADE TO ENSURE A CLEAN EDGE.

WHEN AN EXISTING WATER MAIN MUST BE SHUT DOWN TO PERFORM REQUIRED WORK, THE PROPERTIES TO BE EFFECTED SHALL BE GIVEN A MINIMUM 24 HOUR NOTICE OF SAID SHUT DOWN. THE WORK WILL BE SCHEDULED AND COORDINATED TO MINIMIZE THE TIME THE MAIN IS OUT OF SERVICE.

THE CONTRACTOR SHALL NOTIFY THE CITY 48 HOURS IN ADVANCE OF ANY SHUT DOWN OF AN EXISTING WATER MAIN. THE CONTRACTOR WILL NOT OPERATE ANY VALVES. VALVES WILL BE OPERATED BY CANTON WATER DEPARTMENT PERSONNEL ONLY. VALVES DAMAGED BY THE CONTRACTOR'S OPERATION WILL BE REPLACED AT THE CONTRACTOR'S EXPENSE.

ALL VALVE BOXES WILL BE ADJUSTED TO FINAL GRADE OF THE PAVEMENT WHEN THE PROJECT IS COMPLETED.

ANY COMMERCIAL OR INDUSTRIAL WATER SERVICE MUST HAVE SITE AND PLUMBING PLANS SUBMITTED TO THE CANTON WATER DEPARTMENT ENGINEERING OFFICE FOR APPROVAL. THE CANTON WATER DEPARTMENT WILL REVIEW THE PLANS AND MAKE COMMENTS. CORRECTIONS MUST BE MADE AND RESUBMITTED. PRICE ESTIMATES WILL NOT BE ISSUED AND SERVICE TAPS WILL NOT BE MADE UNTIL THE PLANS HAVE BEEN APPROVED BY THE CANTON WATER DEPARTMENT.

**IX. POST CONSTRUCTION INCIDENTALS**

**(A) AS-BUILT DRAWINGS:**

AS-BUILT REPRODUCIBLE MYLARS SHALL BE PROVIDED TO THE CITY OF CANTON BY THE DESIGN ENGINEER AT THE COMPLETION OF THE PROJECT. AS-BUILT INFORMATION CONSISTS OF POST-CONSTRUCTION FIELD SURVEY DATA OF THE LOCATION, FLOWLINE ELEVATIONS, AND TOP OF-GRATE/RIM ELEVATIONS FOR ALL STORM AND SANITARY STRUCTURES CONSTRUCTED AND/OR IMPACTED BY THE PROJECT.

FOR PRIVATE PROJECTS, THE CONSTRUCTION BOND WILL NOT BE RELEASED UNTIL THE AS-BUILT DRAWINGS HAVE BEEN ACCEPTED.

**(B) PROPOSED MONUMENTATION:**

THE DEVELOPER'S/CONTRACTOR'S SURVEYOR SHALL NOTIFY THE CITY ENGINEER IN WRITING UPON THE COMPLETION OF MONUMENTS BEING SET AS PER PLAN OR RECORD PLAT.

**(C) RELEASE OF RETAINER/BONDS:**

PRIOR TO THE RELEASE OF RETAINER/CONSTRUCTION BOND BY THE CITY OF CANTON, THE CONTRACTOR SHALL HAVE COMPLETED THE ENGINEER'S PROJECT PUNCHLIST AND SUBMIT FINAL WAIVER OF LIEN, IN ACCORDANCE WITH CITY SS 01-00.

**EXTRA CONSTRUCTION NOTES:**

SHOP DRAWINGS - THE CITY WILL PERFORM REVIEW OF A CONTRACTOR'S SHOP DRAWING SUBMITTAL WITHIN 10 WORKING DAYS.

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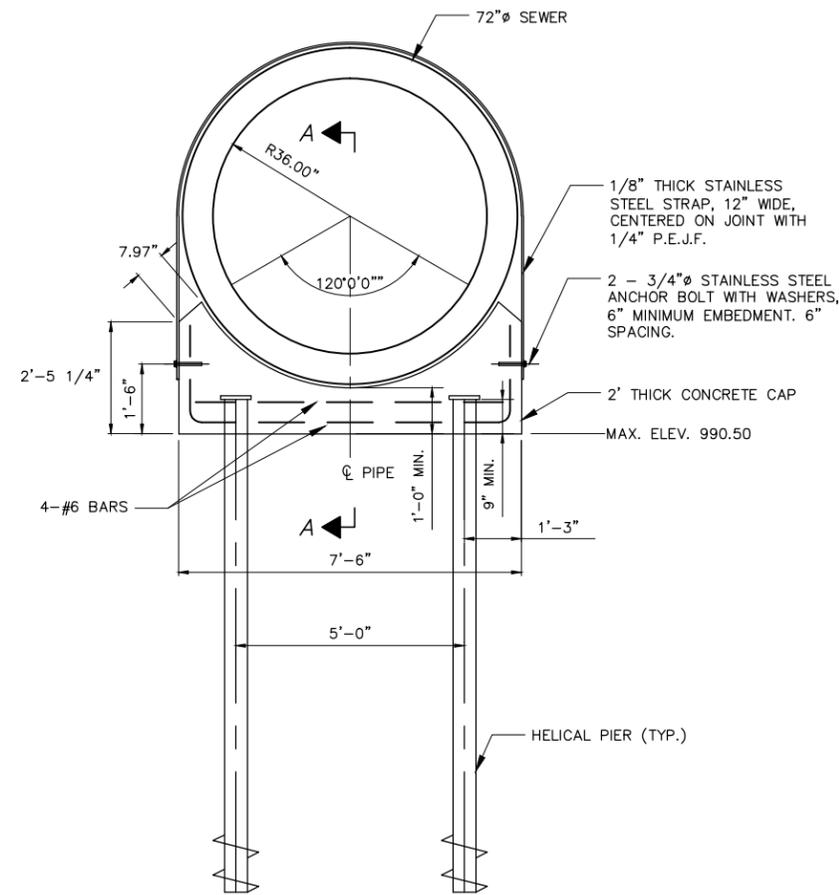
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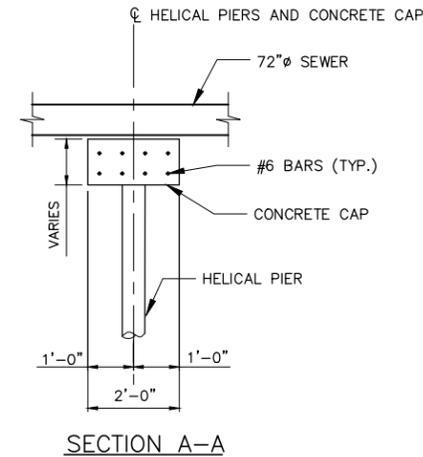
NOTES  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO







PIPE SUPPORT DETAIL (SECTION VIEW)  
 (FOR NEW PIPE SECTION BETWEEN NEW MANHOLES)  
 N.T.S.



SECTION A-A

**LEGEND:**

P.E.J.F. - PREFORMED EXPANSION JOINT FILLER

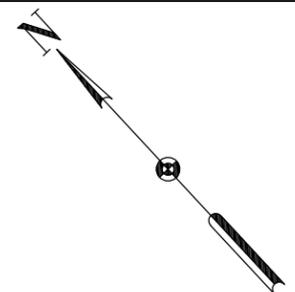
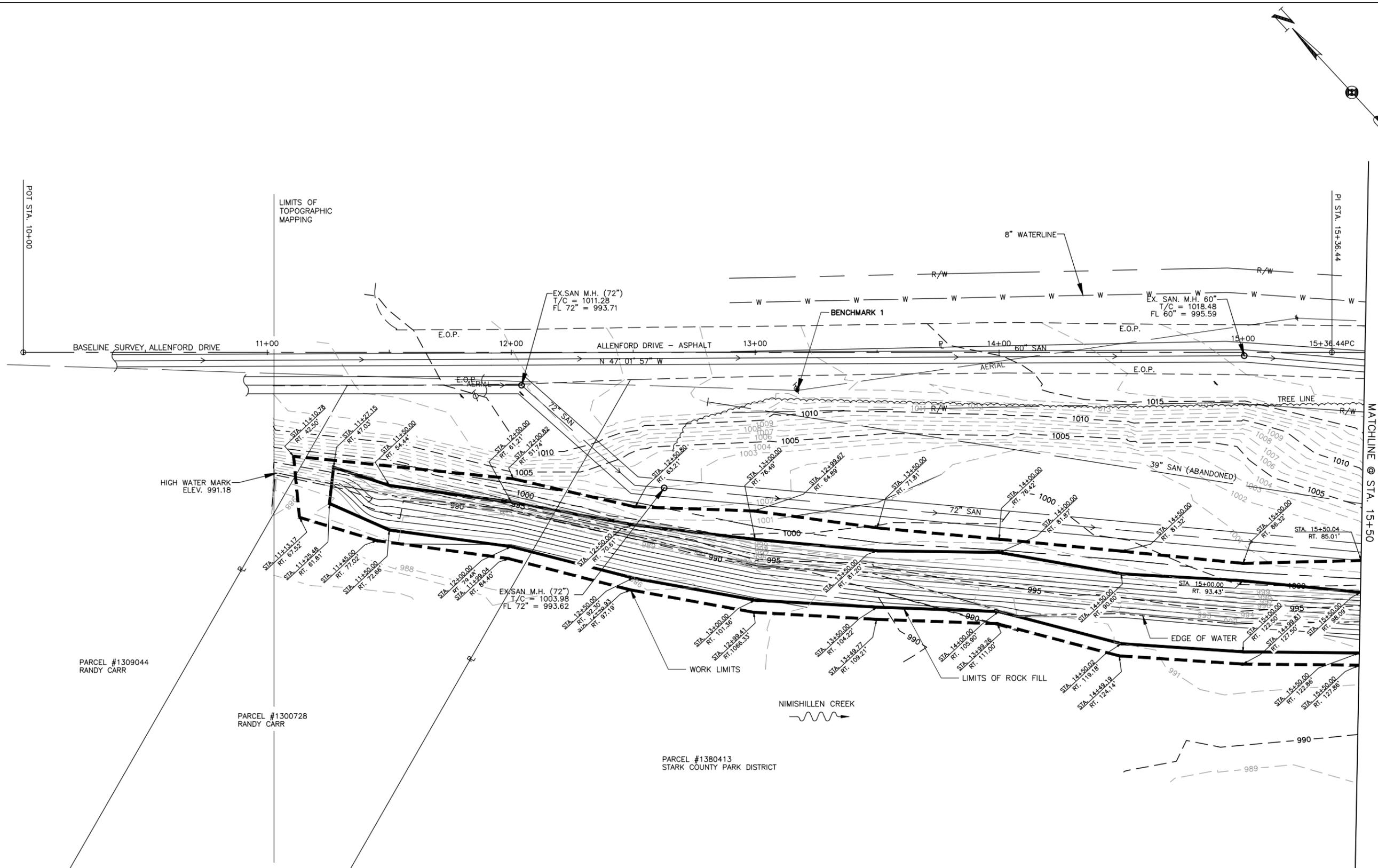
**NOTES:**

1. THE DESIGN LOAD ON EACH HELICAL PIER SHALL BE 50 KIPS.
2. HELICAL PIERS, CAPS AND SANITARY SEWER WORK WILL BE DONE AFTER THE SLOPE REINFORCEMENT WORK IS COMPLETE.
3. CONCRETE CAPS SHALL BE PLACED 8'-0" ON CENTERS UNDER PIPE JOINTS.
4. CONTRACTOR SHALL SUBMIT HIS DESIGN FOR SHORING THE EXCAVATION REQUIRED FOR SEWER AND HELICAL PIER INSTALLATION, SEALED BY A PROFESSIONAL ENGINEER IN THE STATE OF OHIO, TO THE CITY FOR APPROVAL. EXCAVATION SHALL BE LIMITED TO APPROXIMATELY 20 AT ANY ONE TIME.
5. GROUT SHALL BE PLACED BETWEEN PIPE AND CONCRETE CAP TO ENSURE COMPLETE BEARING.
6. HELICAL PIERS SHALL ALSO BE PLACED TO SUPPORT THE PROPOSED PRECAST CONCRETE MANHOLES.
7. CONTRACTOR SHALL BASE HIS DESIGN OF THE PIERS ON EXISTING SOIL BORINGS OR OBTAIN HIS OWN AS A PART OF THE COST FOR THE HELICAL PIERS.
8. ALL MATERIALS AND LABOR NECESSARY TO ATTACH THE PIPE TO THE CONCRETE CAP, INCLUDING STRAPS AND HARDWARE TO BE INCLUDED WITH ITEM 511, CLASS C CONCRETE, PIER CAP FOR PAYMENT.
9. SEE SECTION 31 66 13 OF THE TECHNICAL SPECIFICATIONS FOR INFORMATION ON THE HELICAL PIERS.

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PIPE SUPPORT DETAILS  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO



NOTE: IN-STREAM WORK SHALL BE CONDUCTED DURING LOW FLOW CONDITIONS WHENEVER PRACTICABLE TO MINIMIZE ADVERSE IMPACTS TO WATER QUALITY AWAY FROM THE PROJECT SITE, EXCEPT IN EMERGENCY SITUATIONS THAT THREATEN HUMAN LIFE OR PROPERTY.

NOTE: 100 YEAR FLOOD ELEVATION IS 1001.00

NOTE: WEIGHT LIMIT ON ALLENFORD ROAD FROM MILL STREET EXTENDING SOUTH TO THE SOUTHERLY LIMITS OF THE FOAM BLOCK IS 15 TONS.

NOTE: ALLENFORD DRIVE HAS A 25% LOAD REDUCTION DURING WINTER MONTHS FROM MILL STREET TO CENTRAL AVENUE.

THE CONTRACTOR SHALL CONDUCT ANY OPERATIONS IN A MANNER THAT MINIMIZES LOAD ON THE EXISTING 72" Ø SANITARY SEWER. THE MEANS AND METHODS FOR PERFORMING THE WORK SHALL BE SUBMITTED TO THE CITY OF CANTON FOR APPROVAL. CONTRACTOR'S PLAN FOR PROTECTING THE PIPE SHALL BE DESIGNED AND STAMPED BY A REGISTERED ENGINEER IN THE STATE OF OHIO.

ALLENFORD ROAD MAY BE CLOSED TO THROUGH TRAFFIC FOR THE CONSTRUCTION OF THIS PROJECT IN ACCORDANCE WITH THE GENERAL NOTES.

NOTE: ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED

BENCHMARK #1 (SV10301)  
 16 CUT NAIL 1' UP WEST SIDE TELEPHONE POLE 42/7,  
 STA. 13+17.25, 15.60' RT., WEST SIDE OF ALLENFORD DRIVE.  
 ELEV. 1014.12

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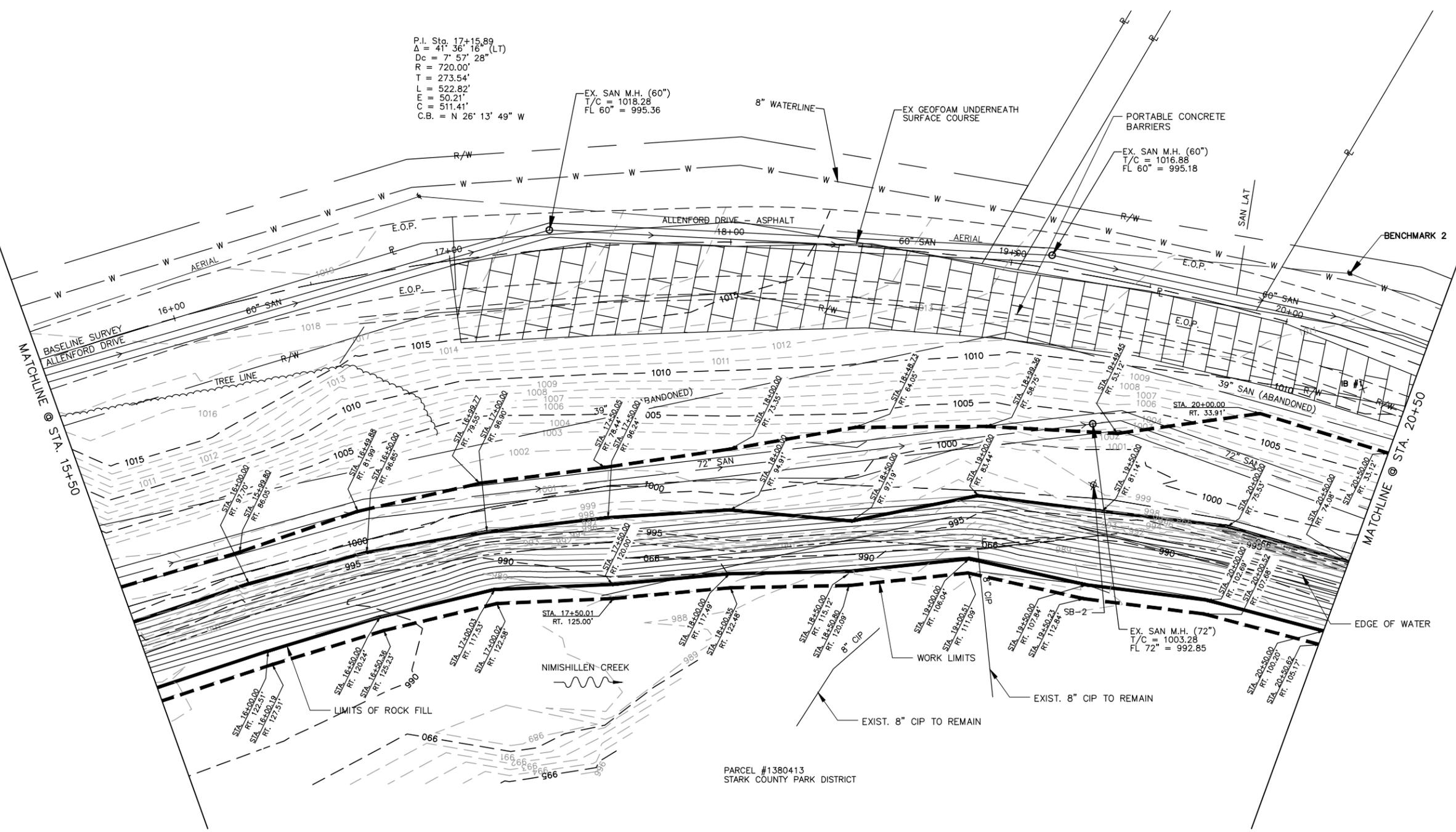
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SCALE:  
 HORIZ: 1" = 20'  
 VERT: 1" = 20'  
 CONTOUR INT: 1'

PLAN STA. 10+00 TO STA. 15+50  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO



P.I. Sta. 17+15.89  
 $\Delta = 41^{\circ} 56' 16''$  (LT)  
 $D_c = 7' 57' 28''$   
 $R = 720.00'$   
 $T = 273.54'$   
 $L = 522.82'$   
 $E = 50.21'$   
 $C = 511.41'$   
 $C.B. = N 26^{\circ} 13' 49'' W$



REFERENCE POINTS

| IRON BAR | NORTHING  | EASTING    | ELEVATION | STATION  | OFFSET (RT.') |
|----------|-----------|------------|-----------|----------|---------------|
| #1       | 402730.11 | 2279521.80 | 1010.30   | 20+33.36 | 14.57         |

NOTE: 100 YEAR FLOOD ELEVATION IS 1001.00

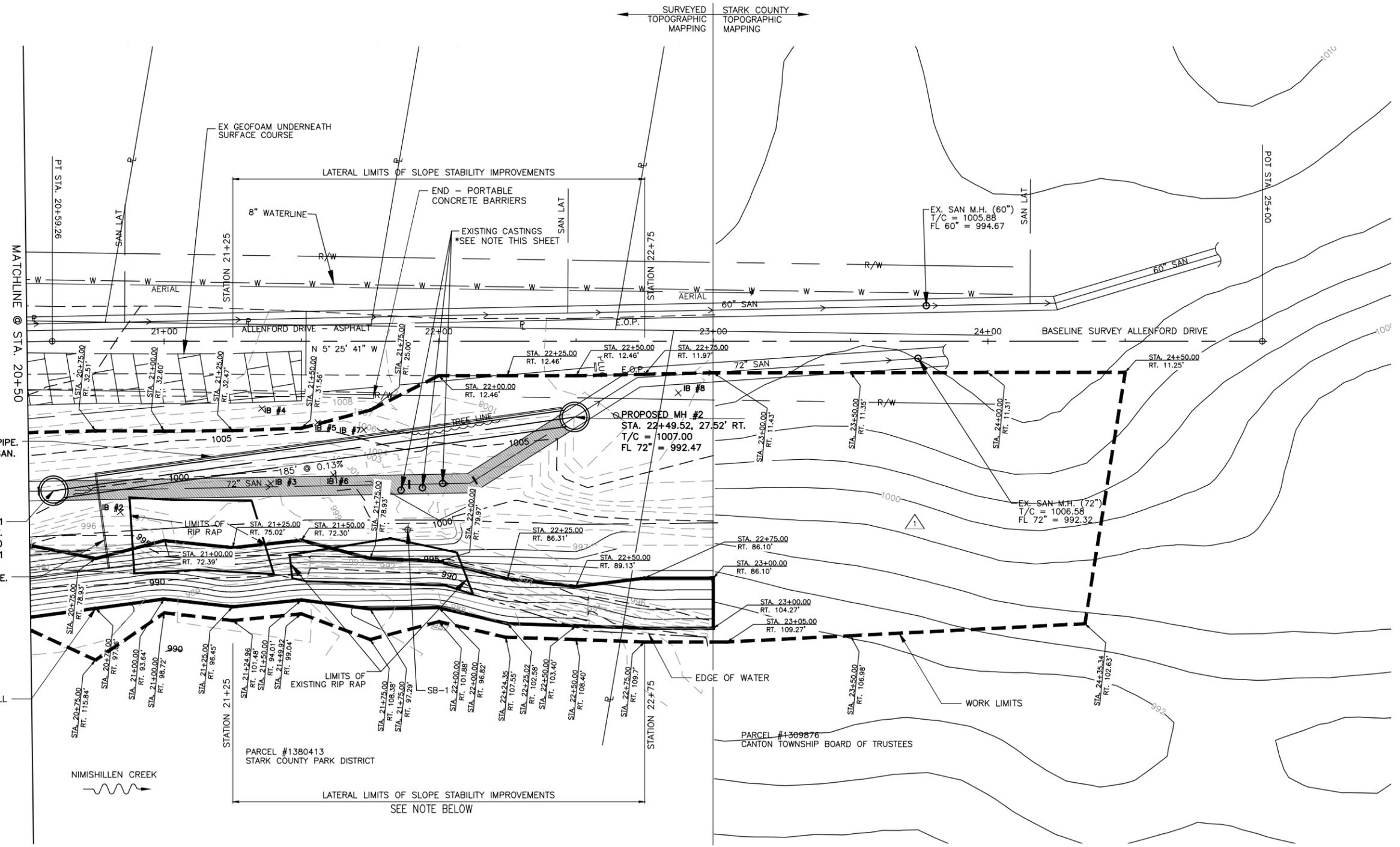
NOTE: WEIGHT LIMIT ON ALLENFORD ROAD FROM MILL STREET EXTENDING SOUTH TO THE SOUTHERLY LIMITS OF THE FOAM BLOCK IS 15 TONS.

BENCHMARK #2 (SV10045)  
 60d NAIL 1' UP WEST SIDE TELEPHONE POLE STA. 20+16.41,  
 22.8' LT. BASELINE ALLENFORD DRIVE  
 ELEV. 1011.52

| DESC.:     | DESC.:   | DESC.:   | DESC.:   | DESC.:   | DESC.:   |
|------------|----------|----------|----------|----------|----------|
| DATE:      | DATE:    | DATE:    | DATE:    | DATE:    | DATE:    |
| REV. BY:   | REV. BY: | REV. BY: | REV. BY: | REV. BY: | REV. BY: |
| FLD BK:    | BK PG:   | CRW CHF: | CPYRGT:  | TAB:     |          |
| DESIGN BY: | DRWN BY: | CHKD BY: | RWMD BY: | DATE:    |          |
| IRP        | MCC      | IRP      | IRP      | 07/03/12 |          |
| 578        | 44       | MTZ      | 2012     | P-2      |          |

PLAN STA. 15+50 TO STA. 21+50  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO

\* THE 3 EXISTING CASTINGS SHOWN ON THE EXISTING 72" PIPE SHALL BE MOVED TO 3 NEW LOCATIONS OVER THE PROPOSED 72" SEWER AT LOCATIONS TO BE DETERMINED BY THE OWNER. THE CASTINGS SHALL BE INSTALLED WITH PIPE TO ALLOW A ACCESS TO THE TOP OF THE 72" PIPE WITH A SURVEY ROD.



REFERENCE POINTS

| IRON BAR | NORTHING  | EASTING    | ELEVATION | STATION  | OFFSET (RT.) |
|----------|-----------|------------|-----------|----------|--------------|
| #2       | 402675.72 | 2279479.75 | 999.18    | 20+84.09 | 62.04        |
| #3       | 402622.24 | 2279495.23 | 998.16    | 21+38.75 | 51.69        |
| #4       | 402628.02 | 2279522.07 | 1007.49   | 21+35.53 | 24.44        |
| #5       | 402607.32 | 2279518.91 | 1006.02   | 21+55.85 | 29.53        |
| #6       | 402599.87 | 2279500.57 | 999.13    | 21+61.57 | 48.51        |
| #7       | 402590.34 | 2279517.86 | 1004.98   | 21+72.65 | 32.17        |
| #8       | 402477.54 | 2279542.07 | 1006.30   | 22+87.25 | 18.74        |

NOTE: 100 YEAR FLOOD ELEVATION IS 1001.00

NOTE: WEIGHT LIMIT ON ALLENFORD ROAD FROM MILL STREET EXTENDING SOUTH TO THE SOUTHERLY LIMITS OF THE FOAM BLOCK IS 15 TONS.

NOTE: SLOPE STABILITY IMPROVEMENTS FROM STATION 21+25 TO 22+75 SHALL CONSIST OF HELICAL ANCHORS OR OTHER INDUSTRY ACCEPTED STABILIZATION TECHNIQUES DESIGNED AND INSTALLED BY THE CONTRACTOR TO PROVIDE A MINIMUM FACTOR OF 1.5 FOR GLOBAL STABILITY. THE CONTRACTOR SHALL SUBMIT THE DESIGN OF HIS STABILIZATION TECHNIQUE TO THE CITY FOR APPROVAL.

▲ AREA FOR TEMPORARY ACCESS ROAD. CONTRACTOR SHALL SUBMIT PLAN FOR ROAD TO CITY FOR APPROVAL. AREA TO BE RESTORED AFTER CONSTRUCTION TO THE SATISFACTION OF THE CITY.

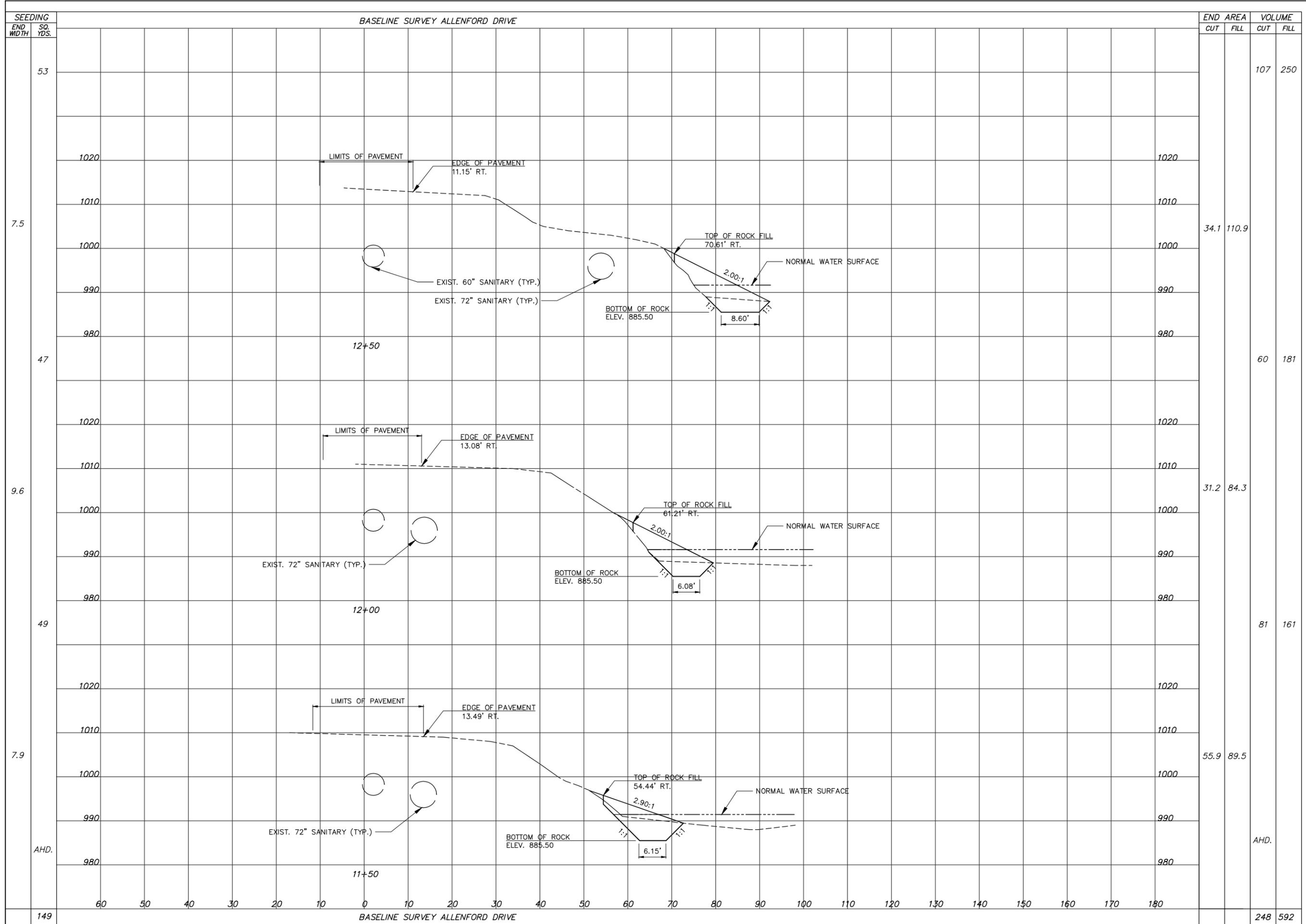
▨ 72" PIPE TO BE REMOVED

SEE SHEET 21 FOR THE PROFILE OF THE PROPOSED 72" SEWER

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|                |                |            |
|----------------|----------------|------------|
| DESIGN BY: TRP | DATE: 07/03/12 | DESC: 578  |
| DRWN BY: MCC   | REV. BY: 44    | DESC: 44   |
| CHKD BY: TRP   | REV. BY: MIZ   | DESC: MIZ  |
| RWMD BY: TRP   | REV. BY: 2012  | DESC: 2012 |
| DATE: 07/03/12 | REV. BY: P-2   | DESC: P-2  |
| FLD BK: 578    | DATE: 07/03/12 | DESC: 578  |
| BK PG: 44      | REV. BY: 44    | DESC: 44   |
| CRW CHG: MIZ   | REV. BY: MIZ   | DESC: MIZ  |
| CPYRGT: 2012   | REV. BY: 2012  | DESC: 2012 |
| TAB: P-2       | REV. BY: P-2   | DESC: P-2  |

PLAN STA. 20+50 TO STA. 25+00  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO



| SEEDING | END WIDTH | SQ. YDS. | BASELINE SURVEY ALLENFORD DRIVE |       | END AREA |      | VOLUME |     |
|---------|-----------|----------|---------------------------------|-------|----------|------|--------|-----|
|         |           |          | CUT                             | FILL  | CUT      | FILL |        |     |
| 5.3     |           |          |                                 |       |          |      | 107    | 250 |
| 7.5     |           |          | 34.1                            | 110.9 |          |      |        |     |
| 4.7     |           |          |                                 |       | 60       |      | 181    |     |
| 9.6     |           |          | 31.2                            | 84.3  |          |      |        |     |
| 4.9     |           |          |                                 |       | 81       |      | 161    |     |
| 7.9     |           |          | 55.9                            | 89.5  |          |      |        |     |
| AHD.    |           |          |                                 |       |          |      | AHD.   |     |
| 149     |           |          |                                 |       | 248      |      | 592    |     |

**BASELINE SURVEY ALLENFORD DRIVE**

CROSS SECTIONS STA. 11+50 TO 12+50  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

SCALE:  
HORIZ: 1" = 10'  
VERT: 1" = 5'  
CONTOUR INT: 0.5'

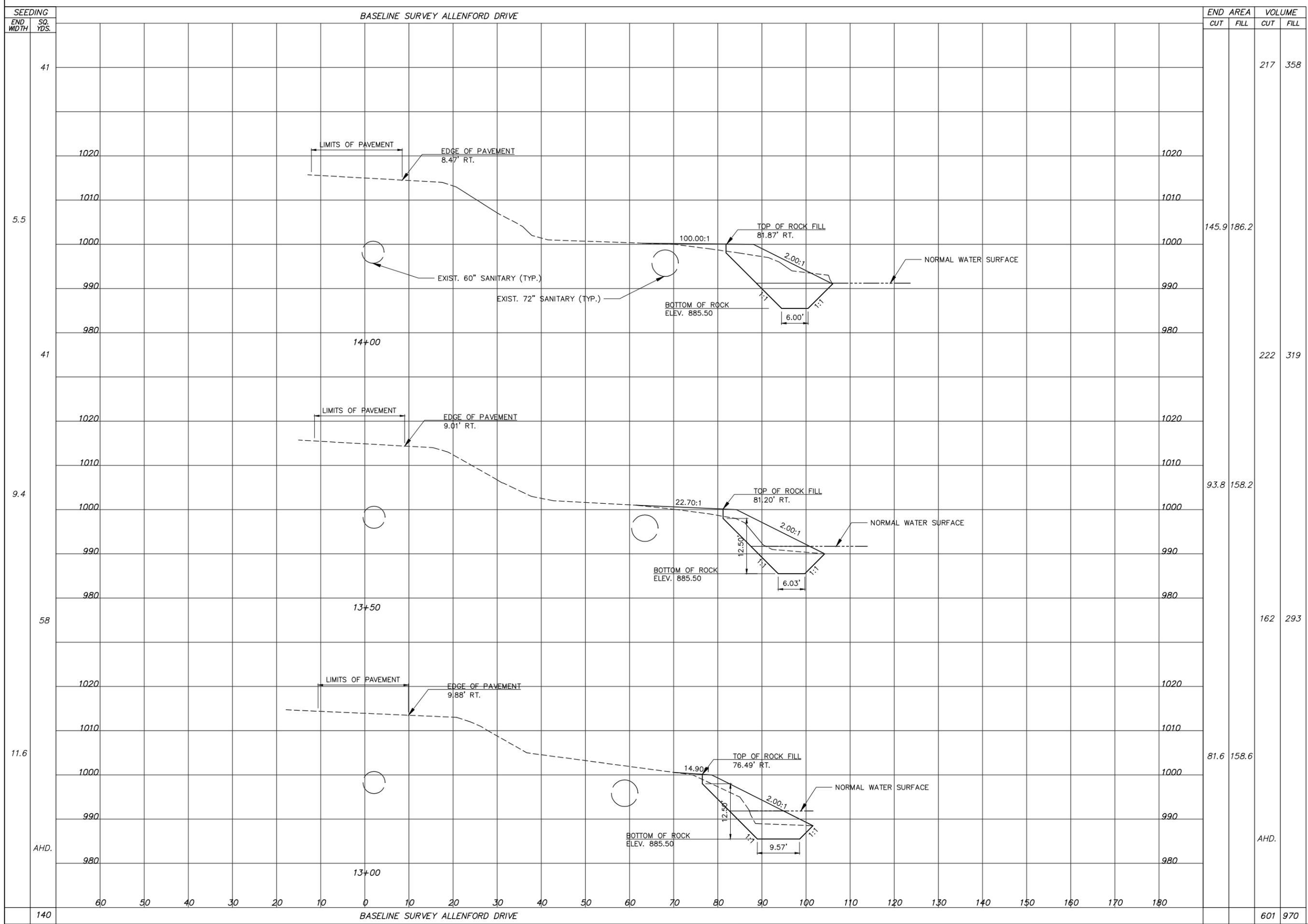
DESIGN BY: JRE  
DRAWN BY: MCG  
CHKD BY: JRE  
RWD BY: JRE  
DATE: 07/03/12

FLD BK: 578  
BK PG: 44  
CRW CH: MIZ  
C/PYRGT: 2012  
TAB: CS-1

REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_  
REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_

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| SEEDING | END WIDTH | SQ. YDS. | END AREA |       | VOLUME |      |
|---------|-----------|----------|----------|-------|--------|------|
|         |           |          | CUT      | FILL  | CUT    | FILL |
| 41      |           |          |          |       | 217    | 358  |
| 5.5     |           |          | 145.9    | 186.2 |        |      |
| 41      |           |          |          |       | 222    | 319  |
| 9.4     |           |          | 93.8     | 158.2 |        |      |
| 58      |           |          |          |       | 162    | 293  |
| 11.6    |           |          | 81.6     | 158.6 |        |      |
| AHD.    |           |          |          |       | AHD.   |      |
| 140     |           |          |          |       | 601    | 970  |

**BASELINE SURVEY ALLENFORD DRIVE**

CROSS SECTIONS STA. 13+00 TO 14+00  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

SCALE:  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 0'

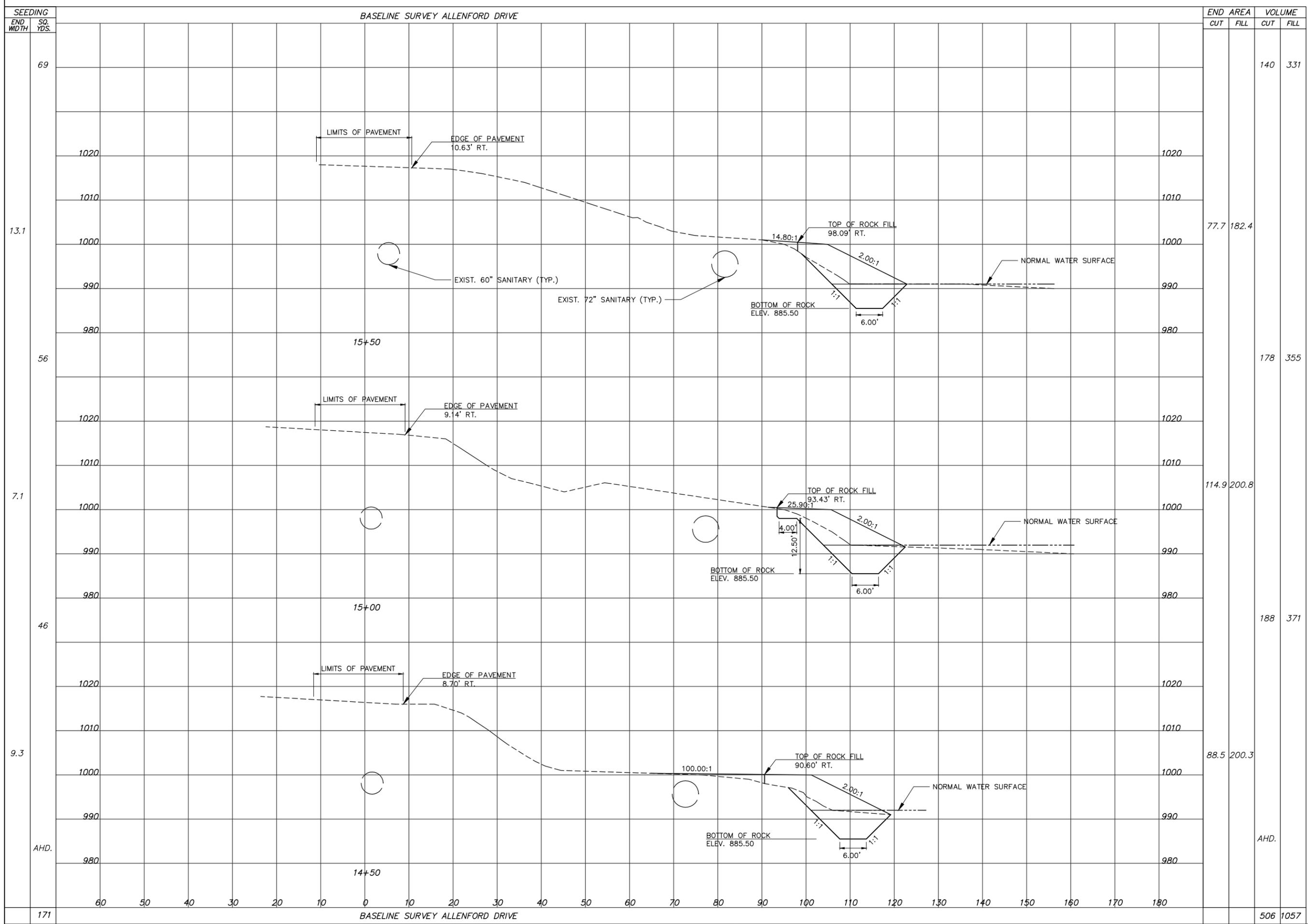
DESIGN BY: TRP  
DRAWN BY: MCG  
CHKD BY: TRP  
RWD BY: TRP  
DATE: 07/03/12

FLD BK: 578  
BK PG: 44  
CRW CHG: MIZ  
COPYRIGHT: 2012  
TAB: CS-2

REV. BY: DATE: \_\_\_\_\_  
REV. BY: DATE: \_\_\_\_\_  
REV. BY: DATE: \_\_\_\_\_  
REV. BY: DATE: \_\_\_\_\_  
REV. BY: DATE: \_\_\_\_\_

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| SEEDING<br>END WIDTH<br>SQ. YDS. | END AREA |      | VOLUME |       |
|----------------------------------|----------|------|--------|-------|
|                                  | CUT      | FILL | CUT    | FILL  |
| 69                               |          |      | 140    | 331   |
| 13.1                             |          |      | 77.7   | 182.4 |
| 56                               |          |      | 178    | 355   |
| 7.1                              |          |      | 114.9  | 200.8 |
| 46                               |          |      | 188    | 371   |
| 9.3                              |          |      | 88.5   | 200.3 |
| AHD.                             |          |      | AHD.   |       |
| 171                              |          |      | 506    | 1057  |

**BASELINE SURVEY ALLENFORD DRIVE**

CROSS SECTIONS STA. 14+50 TO 15+50  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

SCALE:  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 0'

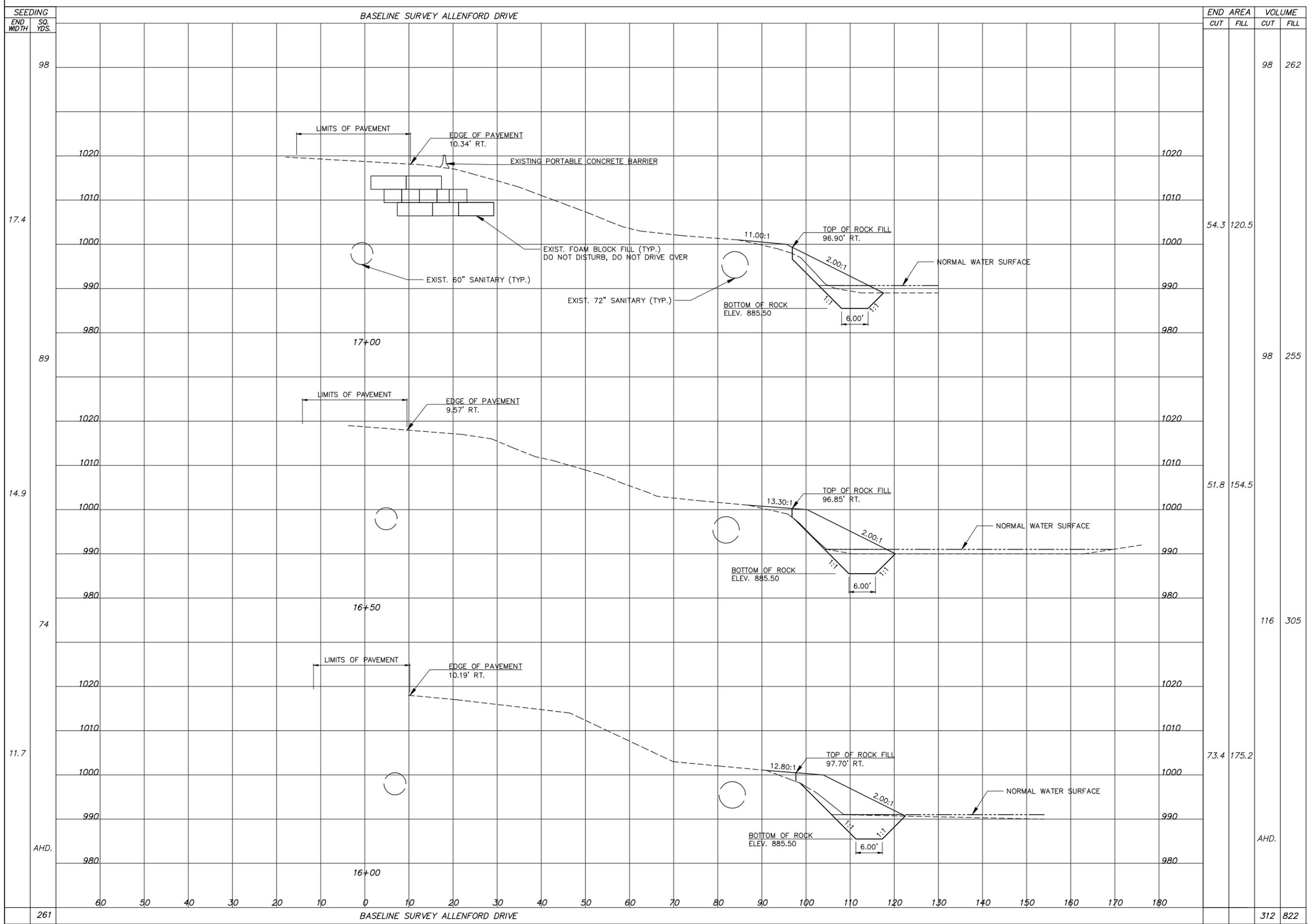
DESIGN BY: TRP  
DRAWN BY: MGC  
CHKD BY: TRP  
RWD BY: TRP  
DATE: 07/03/12

FLD BK: 578  
BK PG: 44  
CRW CHG: MIZ  
CPYRIGHT: 2012  
TAB: CS-3

REV. BY: 578  
REV. BY: 44  
REV. BY: MIZ  
REV. BY: MIZ  
DATE: 07/03/12

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26



| SEEDING<br>END<br>WIDTH | SQ.<br>YDS. | END AREA |       | VOLUME |      |
|-------------------------|-------------|----------|-------|--------|------|
|                         |             | CUT      | FILL  | CUT    | FILL |
| 98                      |             |          |       | 98     | 262  |
| 17.4                    |             | 54.3     | 120.5 |        |      |
| 89                      |             |          |       | 98     | 255  |
| 14.9                    |             | 51.8     | 154.5 |        |      |
| 74                      |             |          |       | 116    | 305  |
| 11.7                    |             | 73.4     | 175.2 |        |      |
| AHD.                    |             |          |       | AHD.   |      |
| 261                     |             |          |       | 312    | 822  |

BASELINE SURVEY ALLENFORD DRIVE

CROSS SECTIONS STA. 16+00 TO 17+00  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

14  
26

DESIGN BY: IRP  
DRAWN BY: MGC  
CHECKED BY: TRP  
REVISED BY: IRP  
DATE: 07/03/12

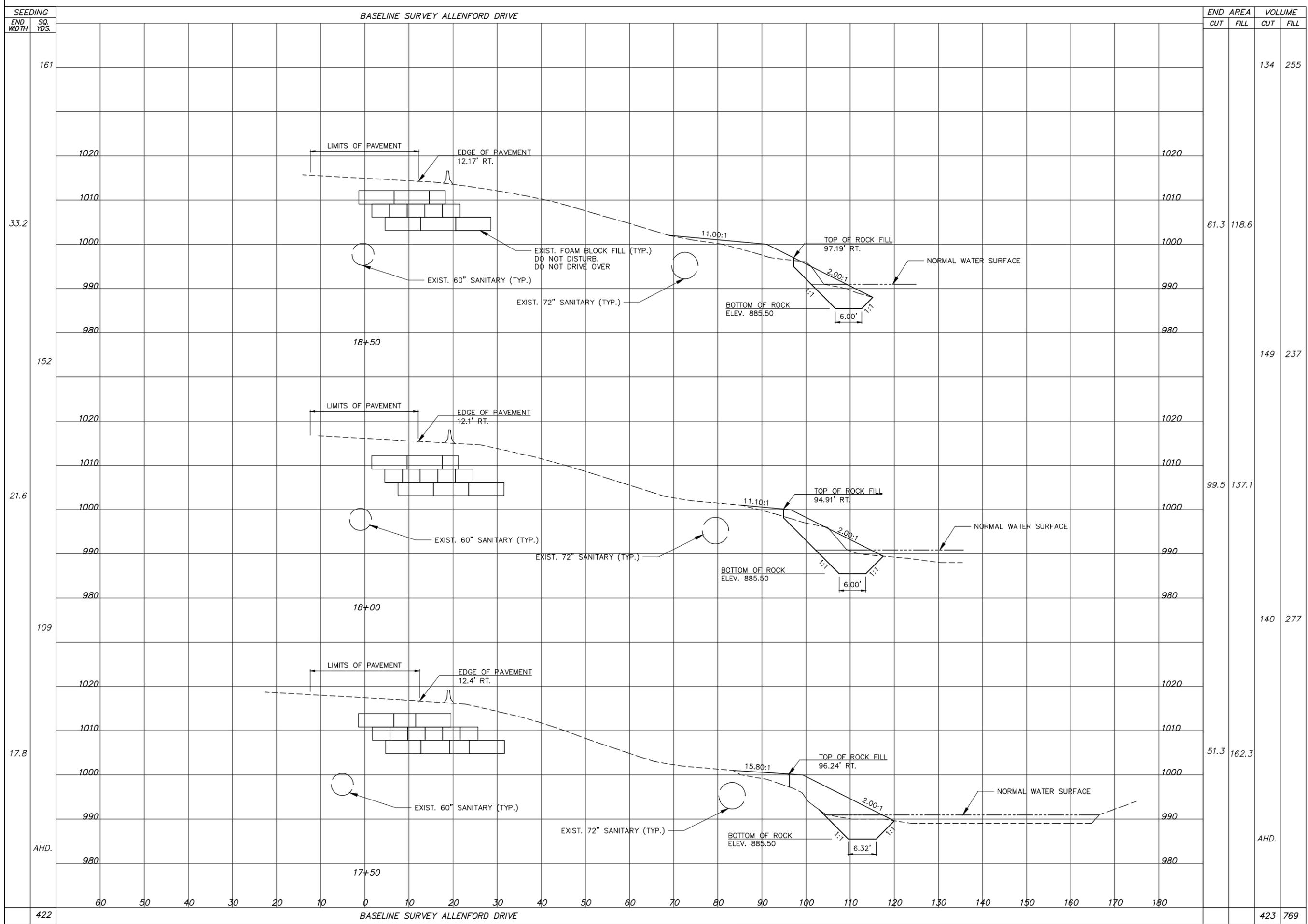
FLD BK: 578  
BK PG: 44  
CRW CHG: MIZ  
COPYRIGHT: 2012  
TAB: CS-4

REV. BY: 578  
REV. BY: 44  
REV. BY: MIZ  
REV. BY: 2012  
REV. BY: CS-4

DATE: 5/7/12  
DATE: 4/10/12  
DATE: 3/27/12  
DATE: 3/27/12  
DATE: 3/27/12

SCALE:  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 10'

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| SEEDING<br>END WIDTH<br>SQ. YDS. | END AREA |       | VOLUME |      |
|----------------------------------|----------|-------|--------|------|
|                                  | CUT      | FILL  | CUT    | FILL |
| 161                              |          |       | 134    | 255  |
| 33.2                             | 61.3     | 118.6 |        |      |
| 152                              |          |       | 149    | 237  |
| 21.6                             | 99.5     | 137.1 |        |      |
| 109                              |          |       | 140    | 277  |
| 17.8                             | 51.3     | 162.3 |        |      |
| AHD.                             |          |       | AHD.   |      |
| 422                              |          |       | 423    | 769  |

**HA**

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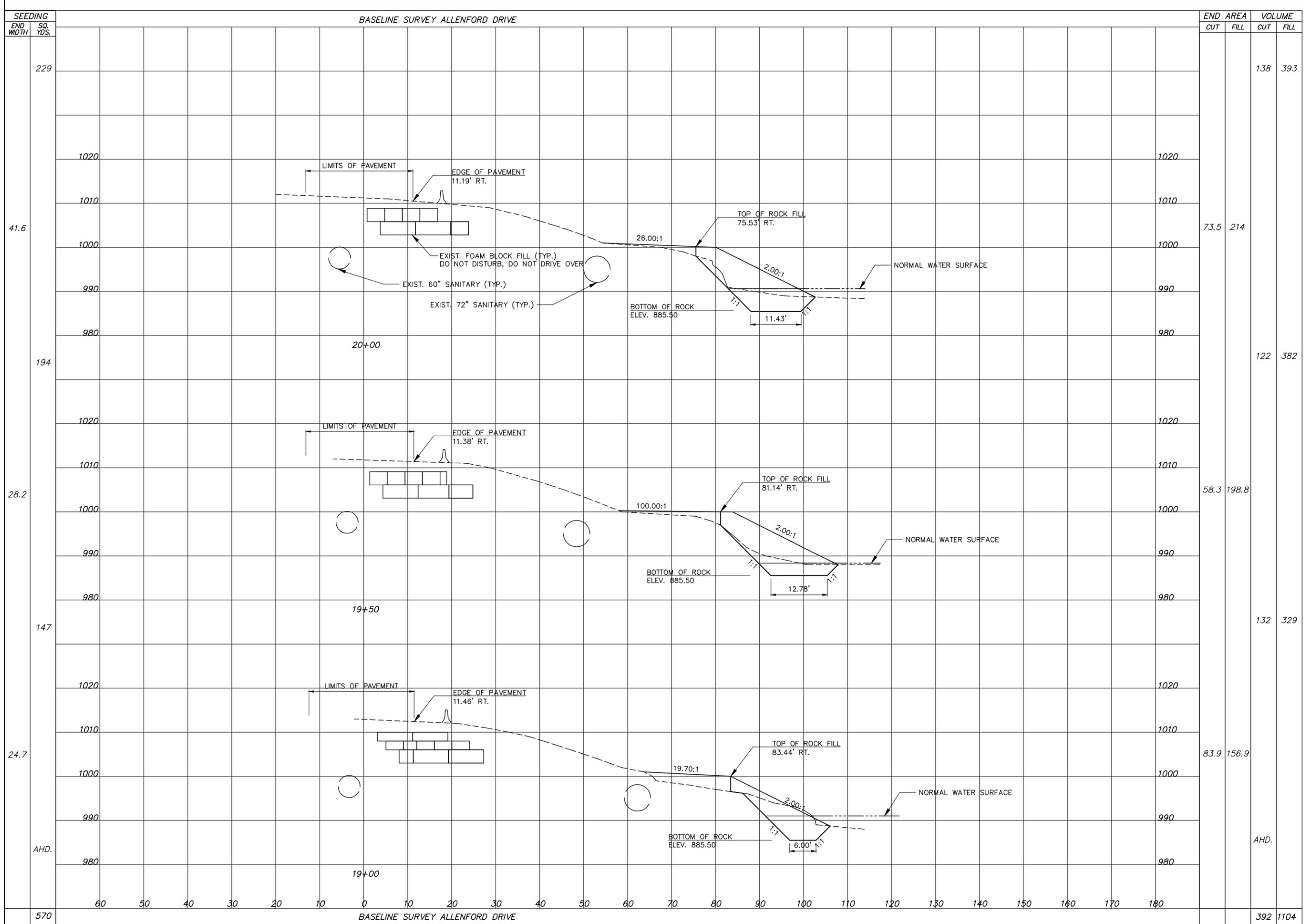
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|                |              |              |                |             |
|----------------|--------------|--------------|----------------|-------------|
| DESIGN BY: TRP | FLD BK: 578  | REV. BY: 578 | DATE: 07/03/12 | DESC.: CS-5 |
| DRWN BY: MGC   | BK PG: 44    | REV. BY: 44  | DATE: 07/03/12 | DESC.: CS-5 |
| CHKD BY: TRP   | CRW CHG: MIZ | REV. BY: MIZ | DATE: 07/03/12 | DESC.: CS-5 |
| RWMD BY: TRP   | CPYRGT: 2012 | REV. BY: TRP | DATE: 07/03/12 | DESC.: CS-5 |
| DATE: 07/03/12 | TAB: CS-5    | REV. BY: TRP | DATE: 07/03/12 | DESC.: CS-5 |

SCALES  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 0'

CROSS SECTIONS STA. 17+50 TO 18+50  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

15  
26



| SEEDING<br>END<br>WIDTH | SQ.<br>YDS. | END AREA |       | VOLUME |      |
|-------------------------|-------------|----------|-------|--------|------|
|                         |             | CUT      | FILL  | CUT    | FILL |
| 229                     |             |          |       | 138    | 393  |
| 41.6                    |             | 73.5     | 214   |        |      |
| 194                     |             | 122      | 382   |        |      |
| 28.2                    |             | 58.3     | 198.8 |        |      |
| 147                     |             | 132      | 329   |        |      |
| 24.7                    |             | 83.9     | 156.9 |        |      |
| AHD.                    |             |          | AHD.  |        |      |
| 570                     |             |          |       | 392    | 1104 |

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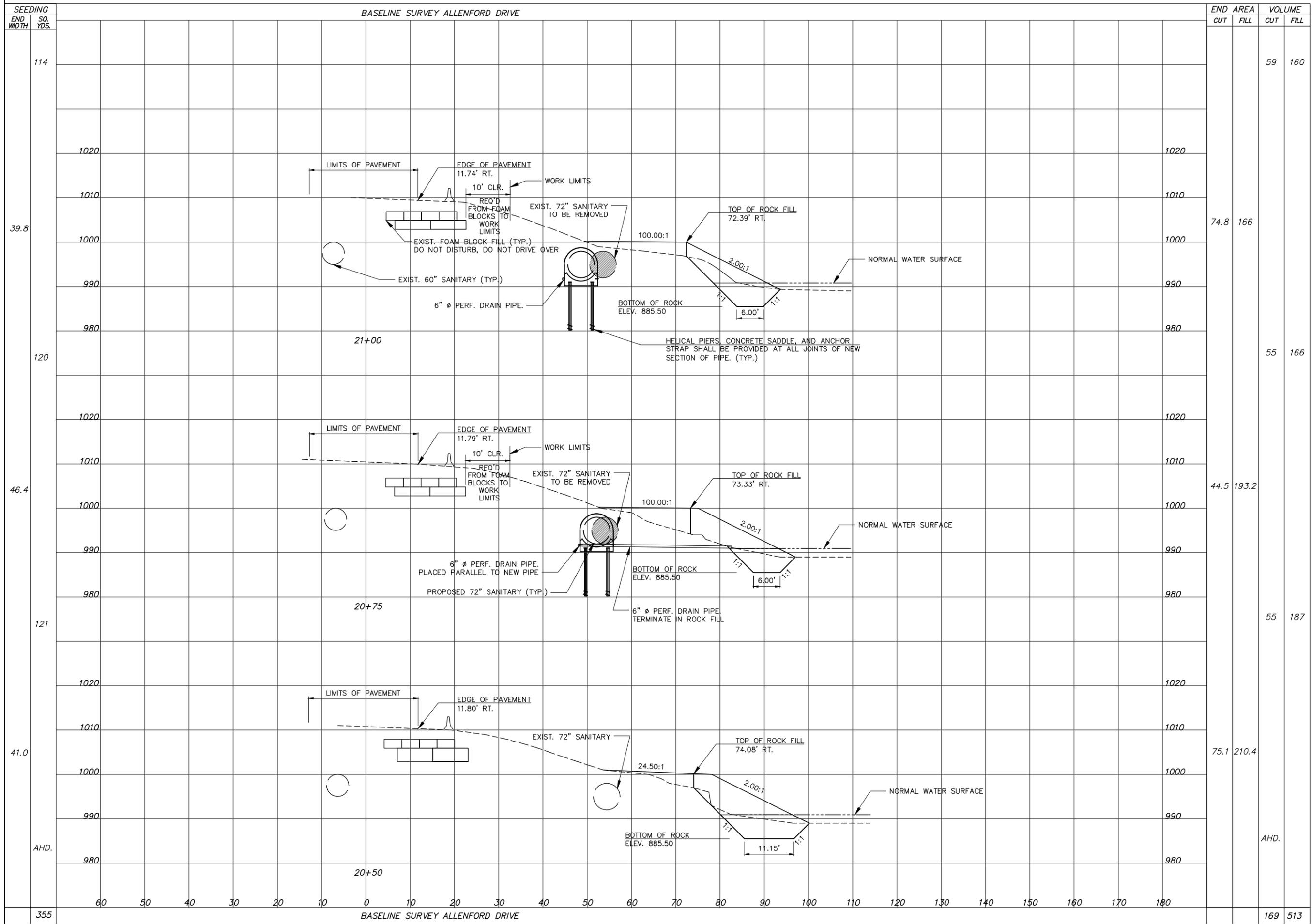
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|                |              |             |
|----------------|--------------|-------------|
| DESIGN BY: TRP | FLD BK: 578  | DESC: _____ |
| DRWN BY: MCG   | BK PG: 44    | DESC: _____ |
| CHKD BY: TRP   | CRW CHG: MIZ | DESC: _____ |
| RWMD BY: TRP   | CPYRGT: 2012 | DESC: _____ |
| DATE: 07/03/12 | TAB: CS-6    | DESC: _____ |

SCALES  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 0'

CROSS SECTIONS STA. 19+00 TO 20+00  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

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26



| SEEDING<br>END WIDTH<br>SQ. YDS. | END AREA |       | VOLUME |      |
|----------------------------------|----------|-------|--------|------|
|                                  | CUT      | FILL  | CUT    | FILL |
| 114                              |          |       | 59     | 160  |
| 39.8                             | 74.8     | 166   |        |      |
| 120                              |          |       | 55     | 166  |
| 46.4                             | 44.5     | 193.2 |        |      |
| 121                              |          |       | 55     | 187  |
| 41.0                             | 75.1     | 210.4 |        |      |
| AHD.                             |          |       | AHD.   |      |
| 355                              |          |       | 169    | 513  |

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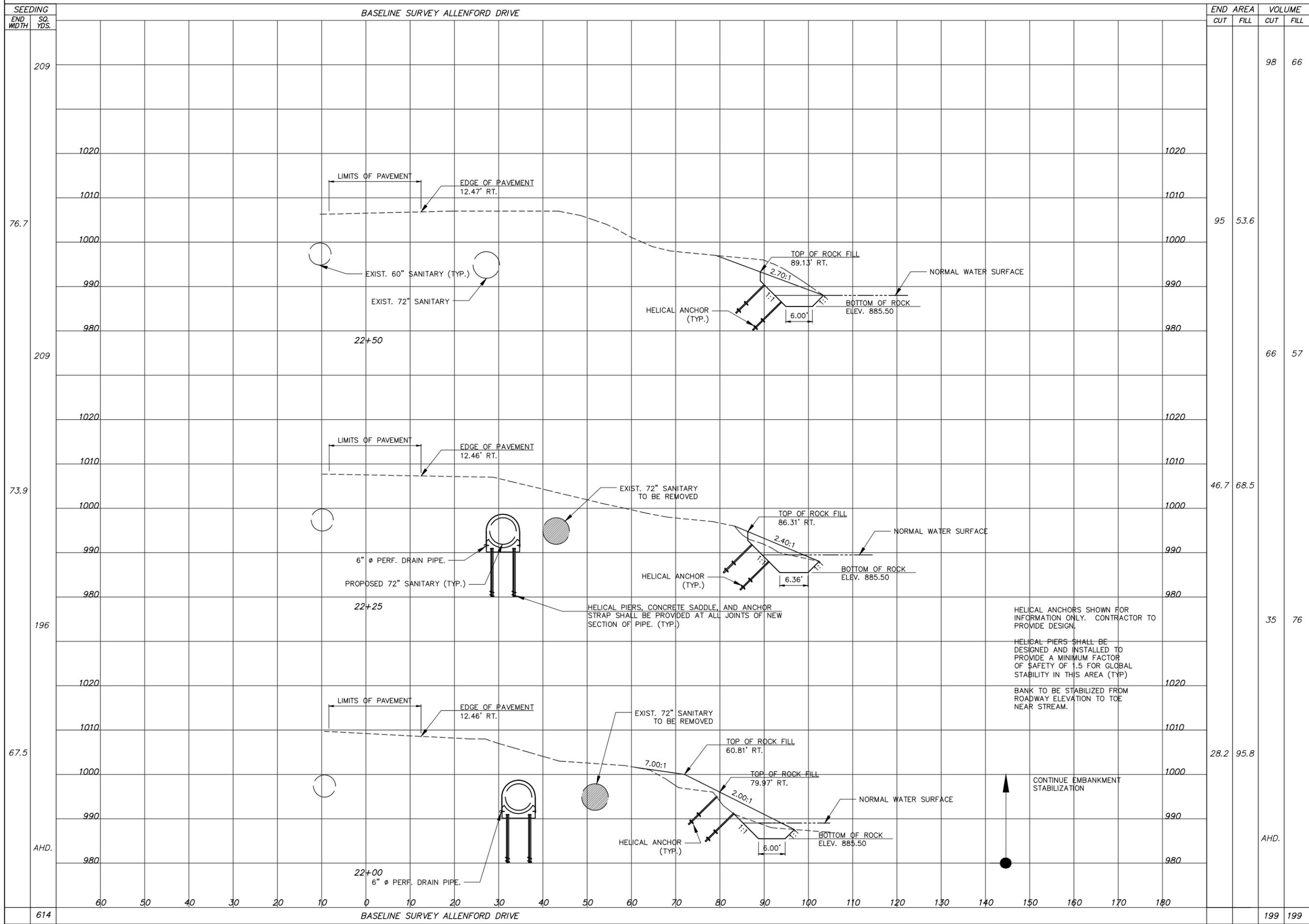
|                |                |                                |
|----------------|----------------|--------------------------------|
| DESIGN BY: TRP | DATE: 07/03/12 | DESC.: STREAM BANK RESTORATION |
| DRWN BY: MGC   | DATE: 07/03/12 | DESC.: STREAM BANK RESTORATION |
| CHKD BY: TRP   | DATE: 07/03/12 | DESC.: STREAM BANK RESTORATION |
| RWMD BY: TRP   | DATE: 07/03/12 | DESC.: STREAM BANK RESTORATION |

SCALES  
HORIZ: 1" = 10'  
VERT: 1" = 10'  
CONTOUR INT: 1'

CROSS SECTIONS STA. 20+50 TO 21+00  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

17  
26





| SEEDING | END WIDTH | SQ. YDS. | END AREA |      | VOLUME |      |
|---------|-----------|----------|----------|------|--------|------|
|         |           |          | CUT      | FILL | CUT    | FILL |
| 209     |           |          |          |      | 98     | 66   |
| 76.7    |           |          | 95       | 53.6 |        |      |
| 209     |           |          |          |      | 66     | 57   |
| 73.9    |           |          | 46.7     | 68.5 |        |      |
| 196     |           |          |          |      | 35     | 76   |
| 67.5    |           |          | 28.2     | 95.8 |        |      |
| AHD.    |           |          |          |      | AHD.   |      |
| 614     |           |          |          |      | 199    | 199  |

CROSS SECTIONS STA. 22+00 TO 22+50  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO

DESIGNED BY: TRP  
 DRAWN BY: MGC  
 CHECKED BY: TRP  
 REVISED BY: TRP  
 DATE: 07/03/12

FLD BK: 578  
 BK PG: 44  
 CRW CHG: MIZ  
 C/PYRIGHT: 2012  
 TAB: CS-9

REV. BY: DATE: DESC.:  
 REV. BY: DATE: DESC.:  
 REV. BY: DATE: DESC.:  
 REV. BY: DATE: DESC.:  
 REV. BY: DATE: DESC.:

SCALES  
 HORIZ: 1" = 10'  
 VERT: 1" = 10'  
 CONTOUR INT: 1'

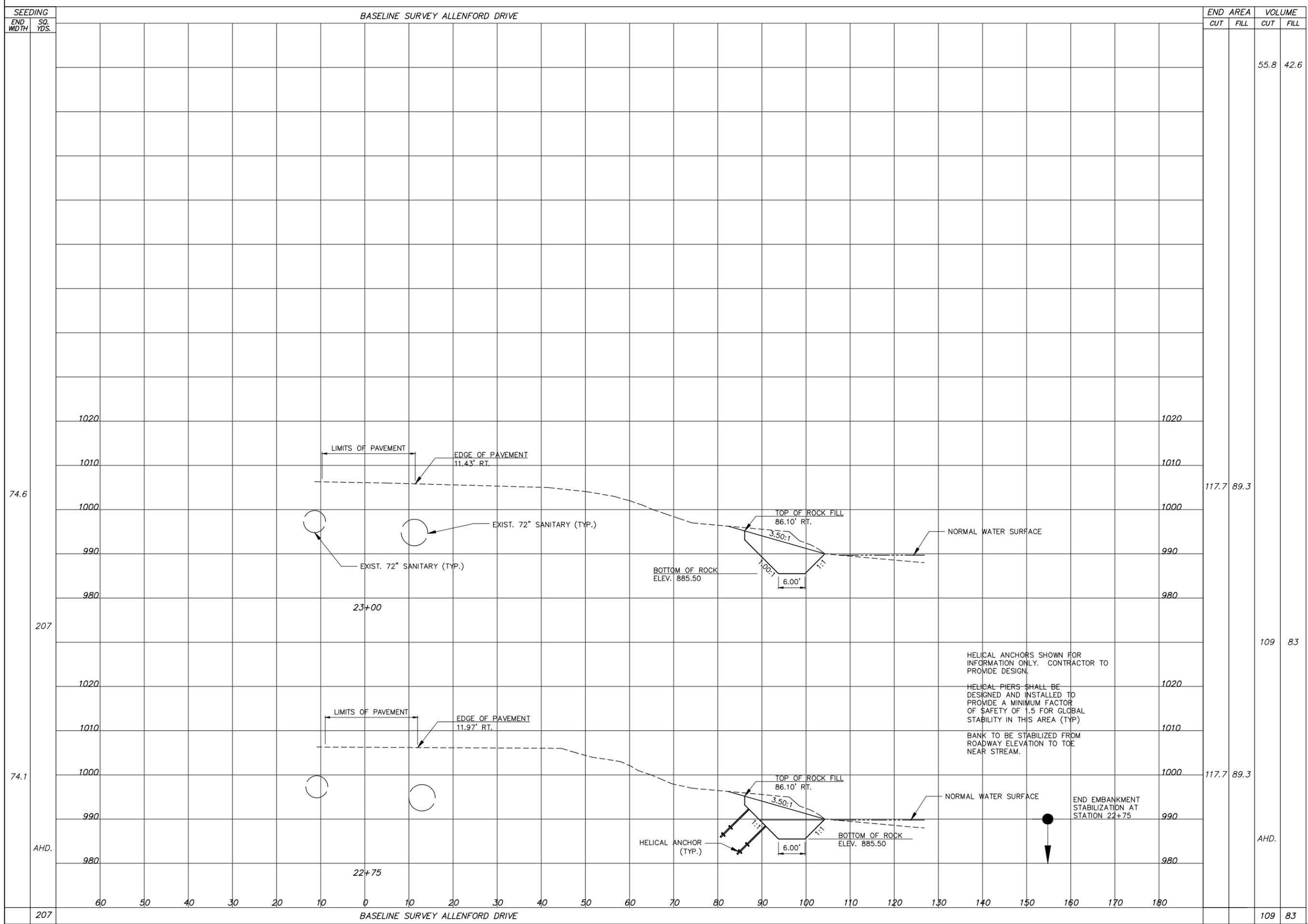
HELICAL ANCHORS SHOWN FOR INFORMATION ONLY. CONTRACTOR TO PROVIDE DESIGN.  
 HELICAL PIERS SHALL BE DESIGNED AND INSTALLED TO PROVIDE A MINIMUM FACTOR OF SAFETY OF 1.5 FOR GLOBAL STABILITY IN THIS AREA (TYP)  
 BANK TO BE STABILIZED FROM ROADWAY ELEVATION TO TOE NEAR STREAM.

HELICAL ANCHOR (TYP.)  
 HELICAL PIERS, CONCRETE SADDLE, AND ANCHOR STRAP SHALL BE PROVIDED AT ALL JOINTS OF NEW SECTION OF PIPE. (TYP.)

CONTINUE EMBANKMENT STABILIZATION

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| SEEDING | END AREA |      | VOLUME |      |
|---------|----------|------|--------|------|
|         | CUT      | FILL | CUT    | FILL |
| 74.6    | 117.7    | 89.3 | 55.8   | 42.6 |
| 207     | 109      | 83   |        |      |
| 74.1    | 117.7    | 89.3 |        |      |
| AHD.    |          |      | AHD.   |      |
| 207     | 109      | 83   |        |      |

HELICAL ANCHORS SHOWN FOR INFORMATION ONLY. CONTRACTOR TO PROVIDE DESIGN.

HELICAL PIERS SHALL BE DESIGNED AND INSTALLED TO PROVIDE A MINIMUM FACTOR OF SAFETY OF 1.5 FOR GLOBAL STABILITY IN THIS AREA (TYP)

BANK TO BE STABILIZED FROM ROADWAY ELEVATION TO TOE NEAR STREAM.

END EMBANKMENT STABILIZATION AT STATION 22+75

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DESIGN BY: TRP  
 DRAWN BY: MCG  
 CHECK BY: TRP  
 REVISED BY: TRP  
 DATE: 07/03/12

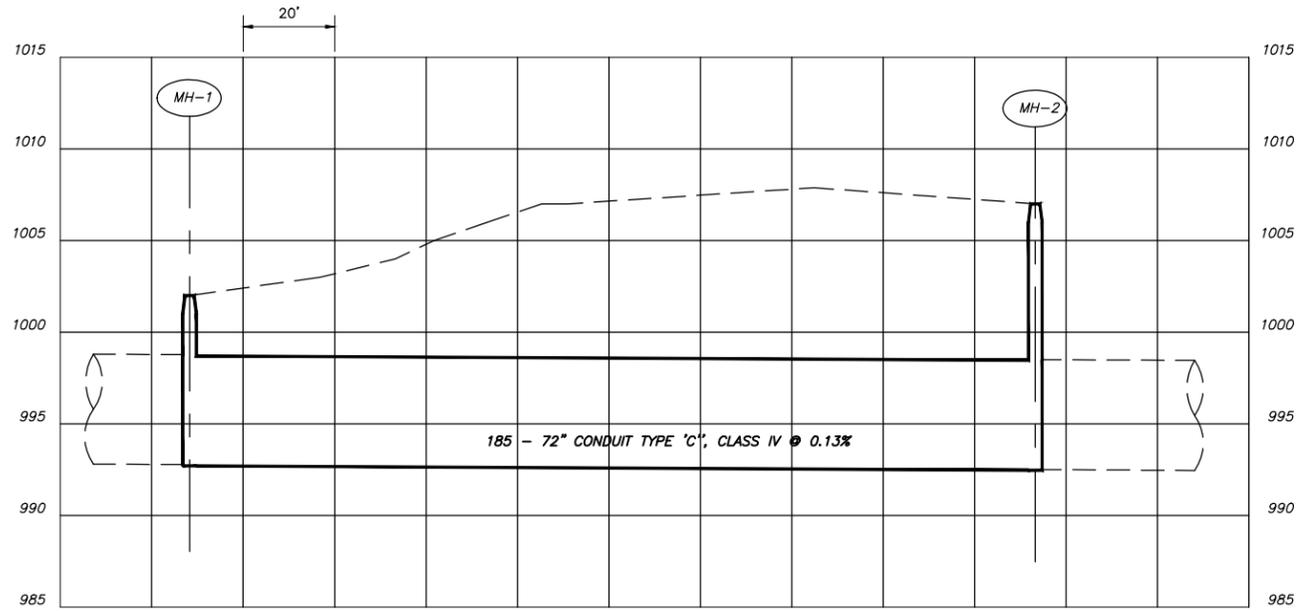
FLD BK: 578  
 BK PG: 44  
 CRW CHG: MTZ  
 C/PYRIGHT: 2012  
 TAB: CS-10

SCALES  
 HORIZ: 1" = 10'  
 VERT: 1" = 10'  
 CONTOUR INT: 10'

CROSS SECTIONS STA. 22+75 TO 23+00  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO

20  
26

PROPOSED 72" SANITARY SEWER PROFILE



**PROPOSED MH-1**  
 ITEM 604- MANHOLE, TYPE 3  
 STA. 20+59.65, 54.31' RT.  
 T/C ELEVATION: 1002.00  
 72" INV. (S): 992.71  
 EX. 72" INV. (N): 992.71±

**PROPOSED MH-2**  
 ITEM 604- MANHOLE, TYPE 3  
 STA. 22+49.52, 27.52' RT.  
 T/C ELEVATION: 1007.00  
 72" INV. (N): 992.47  
 EX. 72" INV. (S): 992.47±

PIPE MATERIAL TESTING NOTES:

1. RCP SEWER PIPE, CLASS IV; ASTM C-76
2. JOINTS (SEWER AND MANHOLES); ASTM C-443; JOINT TESTING (SEWER): ASTM C-1103
3. LEAKAGE TEST (SEWER); ASTM C-969
4. BEDDING: ASTM C-12

CONTRACTOR SHALL EXPOSE BOTH LOCATIONS OF NEW PIPE TIE INS TO VERIFY THE ELEVATIONS PRIOR TO INSTALLING NEW PIPE

SEE SHEET 10 FOR THE PLAN OF THE PROPOSED 72" SEWER

SEE SHEETS 22 AND 22A FOR MANHOLE DETAILS

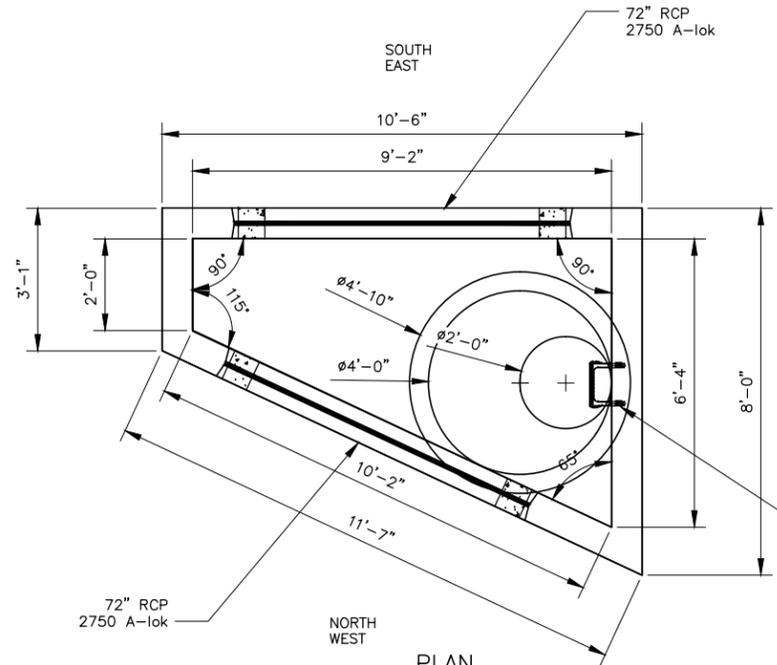
|          |       |        |
|----------|-------|--------|
| REV. BY: | DATE: | DESC.: |

|            |          |
|------------|----------|
| FLD BK:    | 578      |
| BK PG:     | 44       |
| CRW CHG:   | MTZ      |
| CPYRGT:    | 2012     |
| TAB:       | P-2      |
| DESIGN BY: | JRP      |
| DRWN BY:   | CJP      |
| CHKD BY:   | CJP      |
| RWMD BY:   | KJD      |
| DATE:      | 10/15/12 |

|              |          |
|--------------|----------|
| SCALES       |          |
| HORIZ:       | 1" = 20' |
| VERT:        | 1" = 5'  |
| CONTOUR INT: | 1'       |

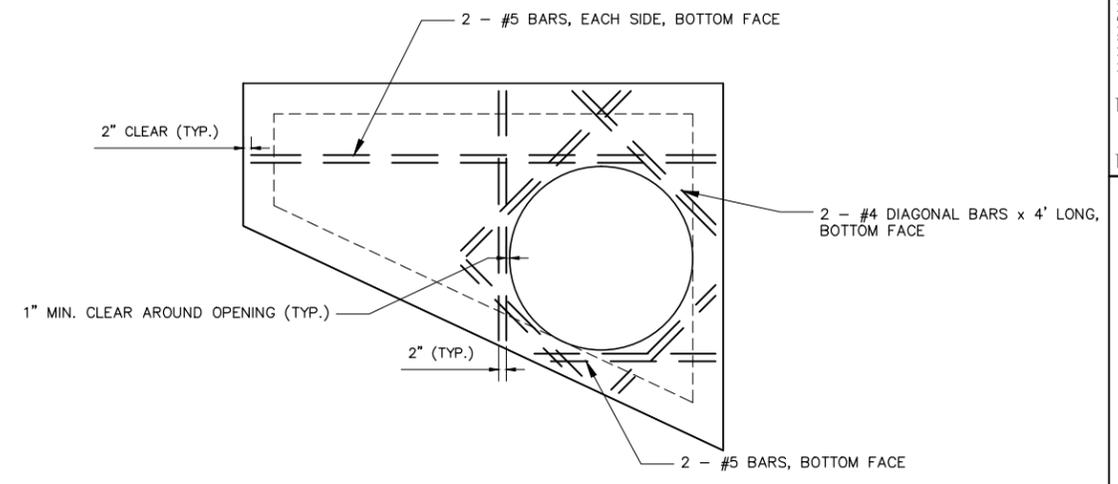
SANITARY SEWER PROFILE  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO



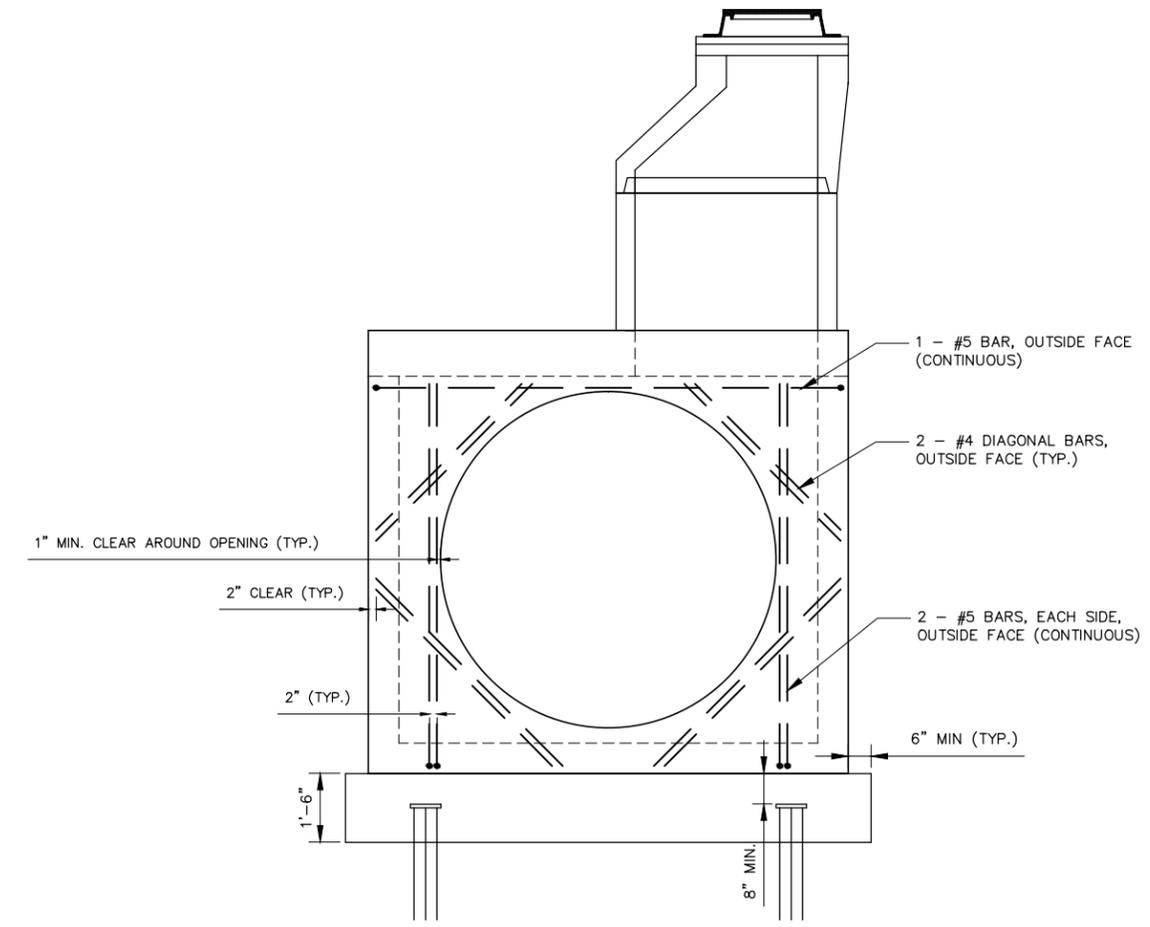
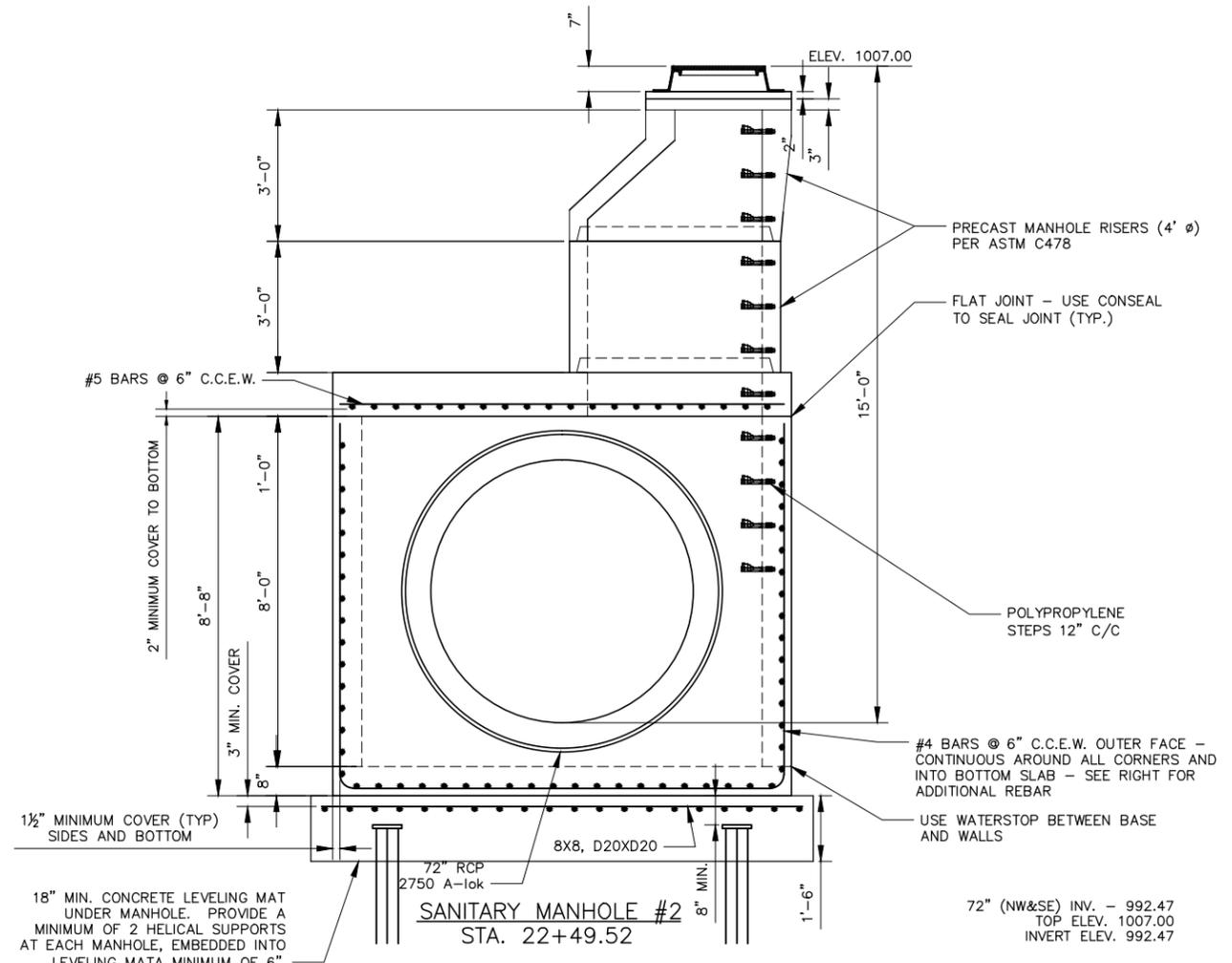


**MANHOLE #2 DIMENSIONS AND INFORMATION**

- NOTES:**
- 1.) MANHOLE BENCH AND CHANNEL SHALL BE CONSTRUCTED IN ACCORDANCE WITH CITY OF CANTON STANDARD DRAWING NO. 10.
  - 2.) SEE SECTION 02990 OF TECHNICAL SPECIFICATIONS FOR MANHOLE LINING.
  - 3.) FRAME AND COVER TO BE IN ACCORDANCE WITH CITY OF CANTON STANDARD DRAWING NO. 12.
  - 4.) PIPE CONNECTIONS TO BE IN ACCORDANCE WITH ASTM C923.
  - 5.) MANHOLE SHALL BE TESTED IN ACCORDANCE WITH ASTM C1244.
  - 6.) PAYMENT FOR LEVELING MAT SHALL BE INCLUDED IN ITEM 604.
  - 7.) MINIMUM ALLOWABLE CONCRETE COMPRESSIVE STRENGTH,  $f'_c=4000$  PSI AT 28 DAYS.



**ADDITIONAL REBAR DETAIL - PLAN**



**ADDITIONAL REBAR DETAIL - PROFILE**

| REV. | BY   | DATE | DESC. |
|------|------|------|-------|
| 578  | IRP  |      |       |
| 44   | MCC  |      |       |
| MIZ  | CRW  |      |       |
| 2012 | CPYR |      |       |
| 1(2) | DET  |      |       |



**LEGEND**

- CE CONSTRUCTION ENTRANCE
- LIMITS OF CONSTRUCTION
- SILT FENCE

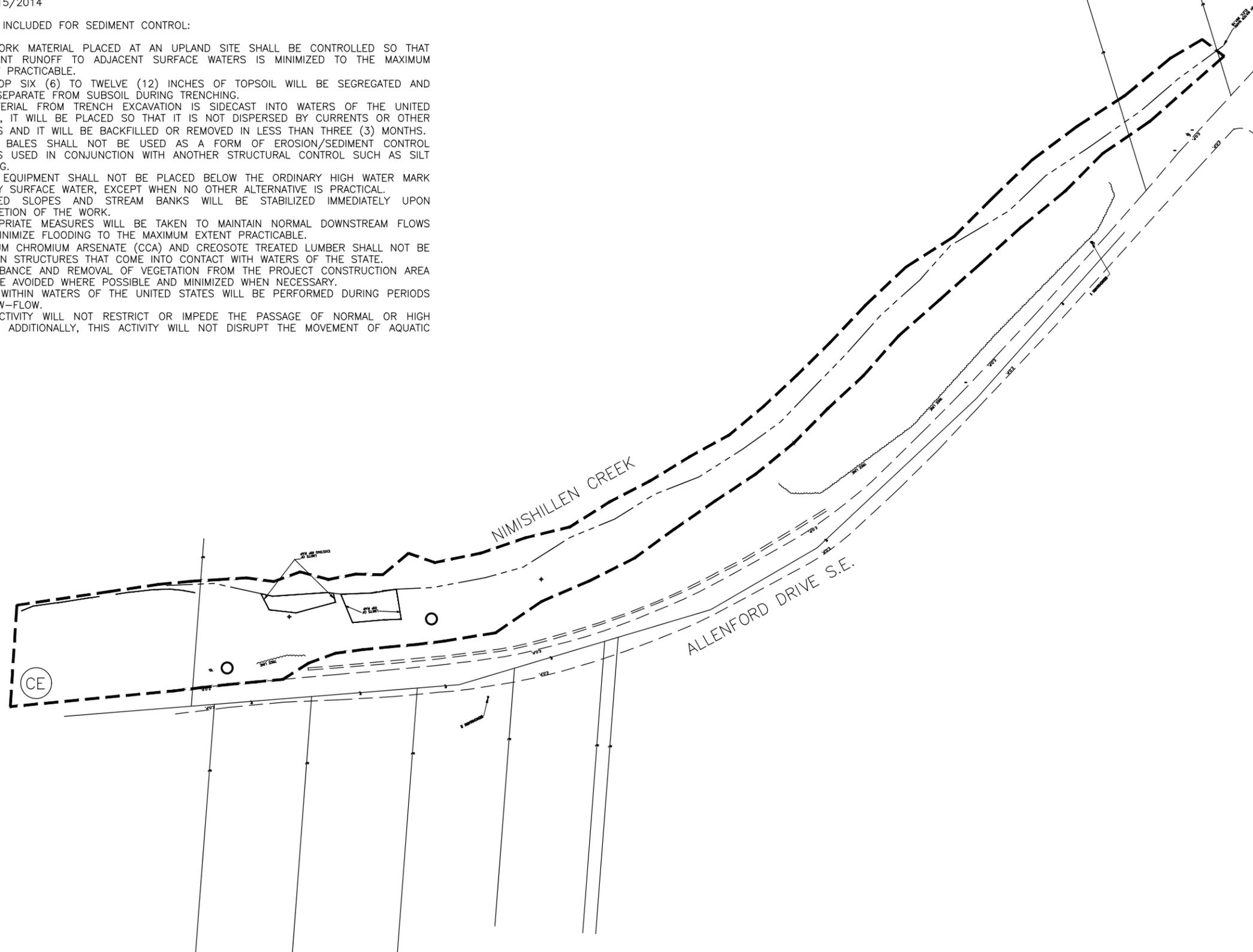
**NOTE:**  
PERMANENT SEEDING WILL BE NATIVE RIGHT-OF-WAY  
WOODS MIX WITH ANNUAL RYEGRASS.

US ARMY CORPS OF ENGINEERS--NATIONWIDE PERMIT 12

A. ISSUED: 1/15/2014

B. CONDITIONS INCLUDED FOR SEDIMENT CONTROL:

1. ALL WORK MATERIAL PLACED AT AN UPLAND SITE SHALL BE CONTROLLED SO THAT SEDIMENT RUNOFF TO ADJACENT SURFACE WATERS IS MINIMIZED TO THE MAXIMUM EXTENT PRACTICABLE.
2. THE TOP SIX (6) TO TWELVE (12) INCHES OF TOPSOIL WILL BE SEGREGATED AND KEPT SEPARATE FROM SUBSOIL DURING TRENCHING.
3. IF MATERIAL FROM TRENCH EXCAVATION IS SIDECAST INTO WATERS OF THE UNITED STATES, IT WILL BE PLACED SO THAT IT IS NOT DISPERSED BY CURRENTS OR OTHER FORCES AND IT WILL BE BACKFILLED OR REMOVED IN LESS THAN THREE (3) MONTHS.
4. STRAW BALES SHALL NOT BE USED AS A FORM OF EROSION/SEDIMENT CONTROL UNLESS USED IN CONJUNCTION WITH ANOTHER STRUCTURAL CONTROL SUCH AS SILT FENCING.
5. HEAVY EQUIPMENT SHALL NOT BE PLACED BELOW THE ORDINARY HIGH WATER MARK OF ANY SURFACE WATER, EXCEPT WHEN NO OTHER ALTERNATIVE IS PRACTICAL.
6. EXPOSED SLOPES AND STREAM BANKS WILL BE STABILIZED IMMEDIATELY UPON COMPLETION OF THE WORK.
7. APPROPRIATE MEASURES WILL BE TAKEN TO MAINTAIN NORMAL DOWNSTREAM FLOWS AND MINIMIZE FLOODING TO THE MAXIMUM EXTENT PRACTICABLE.
8. CADMIUM CHROMIUM ARSENATE (CCA) AND CREOSOTE TREATED LUMBER SHALL NOT BE USED IN STRUCTURES THAT COME INTO CONTACT WITH WATERS OF THE STATE.
9. DISTURBANCE AND REMOVAL OF VEGETATION FROM THE PROJECT CONSTRUCTION AREA WILL BE AVOIDED WHERE POSSIBLE AND MINIMIZED WHEN NECESSARY.
10. WORK WITHIN WATERS OF THE UNITED STATES WILL BE PERFORMED DURING PERIODS OF LOW-FLOW.
11. THE ACTIVITY WILL NOT RESTRICT OR IMPEDE THE PASSAGE OF NORMAL OR HIGH FLOWS. ADDITIONALLY, THIS ACTIVITY WILL NOT DISRUPT THE MOVEMENT OF AQUATIC LIFE.



**HAM**  
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 OH-PA-WY  
 5233 STONEHAM ROAD, NORTH CANTON, OHIO 44720  
 CANTON: (330)499-8817 AKRON: (330)633-7274  
 TOLL FREE: 1-800-394-8817 FAX: (330)499-0149  
 www.hammontree-engineers.com

| REV. BY: | DATE:      | DESC.:                     |
|----------|------------|----------------------------|
| 578      |            |                            |
| 44       |            |                            |
| MTZ      | 01/28/2014 | REVISE PER SCSWCD COMMENTS |
| ESON     | 11/25/2013 | UPDATE SWP3                |

FLD BK: 578  
 BK PG: 44  
 CRW CHG: MTZ  
 CPYRGT: 2012  
 TAB: ESON  
 DESN BY: TRP  
 DRWN BY: CLG  
 CHKD BY: TRP  
 RWD BY: TRP  
 DATE: 07/03/12

SCALES  
 HORIZ: 1" = 50'  
 VERT:  
 CONTOUR INT:

STORMWATER POLLUTION PREVENTION SITE PLAN  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR: CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO

24  
26





TEMPORARY BYPASS PUMPING PLAN  
ALLENFORD DRIVE STREAM BANK  
RESTORATION AND SEWER REPAIR  
FOR: CITY OF CANTON  
LOCATED IN CANTON TOWNSHIP  
STARK COUNTY, OHIO

| DESIGN BY: | IRE      | FLD BK:   | 578   | REV. BY: | DATE: | DESC.: |
|------------|----------|-----------|-------|----------|-------|--------|
| DRAWN BY:  | GRE      | BK PG:    | 44    | REV. BY: | DATE: | DESC.: |
| CHKD BY:   | IRE      | CRW CHG:  | MIZ   | REV. BY: | DATE: | DESC.: |
| RWD BY:    | KJQ      | OP/RIGHT: | 2012  | REV. BY: | DATE: | DESC.: |
| DATE:      | 07/03/12 | TAB:      | NOTES | REV. BY: | DATE: | DESC.: |

| SCALE: | HORIZ: | VERT: | CONTOUR INT: |
|--------|--------|-------|--------------|
|        |        |       |              |

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TOLL FREE: 1-800-394-8817 FAX: (330)499-0149  
www.hammontree-engineers.com

THE FOLLOWING SHEETS REPRESENT A CONCEPTUAL DESIGN FOR PROVIDING HELICAL ANCHORS FOR SLOPE STABILIZATION AND HELICAL PIERS FOR SANITARY SEWER SUPPORT. WHILE THE PLANS REFER TO PILE AND ANCHOR SYSTEM AS "HELICAL" THE OWNER RECOGNIZES THAT BASED ON THE CONTRACTORS APPROVED ANCHOR/PILE SYSTEM THE TERM "HELICAL" MAY OR MAY NOT APPLY. SLOPE STABILITY IMPROVEMENTS FROM STATION 21+25 TO 22+75 SHALL CONSIST OF HELICAL ANCHORS OR OTHER INDUSTRY ACCEPTED STABILIZATION TECHNIQUES DESIGNED AND INSTALLED BY THE CONTRACTOR TO PROVIDE A FACTOR OF SAFETY OF 1.5 FOR GLOBAL STABILITY. PILE PIPE SUPPORT DESIGN MUST ALSO ACHIEVE A FACTOR OF SAFETY OF 1.5. THE CONTRACTOR SHALL SUBMIT ITS DESIGN OF ITS STABILIZATION TECHNIQUE TO THE CITY FOR APPROVAL.



DIVIDER SHEET  
 ALLENFORD DRIVE STREAM BANK  
 RESTORATION AND SEWER REPAIR  
 FOR CITY OF CANTON  
 LOCATED IN CANTON TOWNSHIP  
 STARK COUNTY, OHIO

SCALE  
 HORIZONTAL  
 VERTICAL  
 CONTOUR INT:

DESN BY: \_\_\_\_\_  
 DRWN BY: \_\_\_\_\_  
 CHKD BY: \_\_\_\_\_  
 RWD BY: \_\_\_\_\_  
 DATE: \_\_\_\_\_

FLD BK: \_\_\_\_\_  
 BK PG: \_\_\_\_\_  
 CRW CHF: \_\_\_\_\_  
 CPYRGT: 2012  
 TAB: Divider

REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_ DESC.: \_\_\_\_\_  
 REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_ DESC.: \_\_\_\_\_  
 REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_ DESC.: \_\_\_\_\_  
 REV. BY: \_\_\_\_\_ DATE: \_\_\_\_\_ DESC.: \_\_\_\_\_  
BY STARK COUNTY/CANTON/ALLENFORD SEWER/DESIGN/10-12-2012

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 TOLL FREE: 1-800-394-8617 FAX: (330)499-0149  
 www.hammontree-engineers.com

PROJECT NAME:

ALLENFORD SEWER  
CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
Canton, Ohio 44705



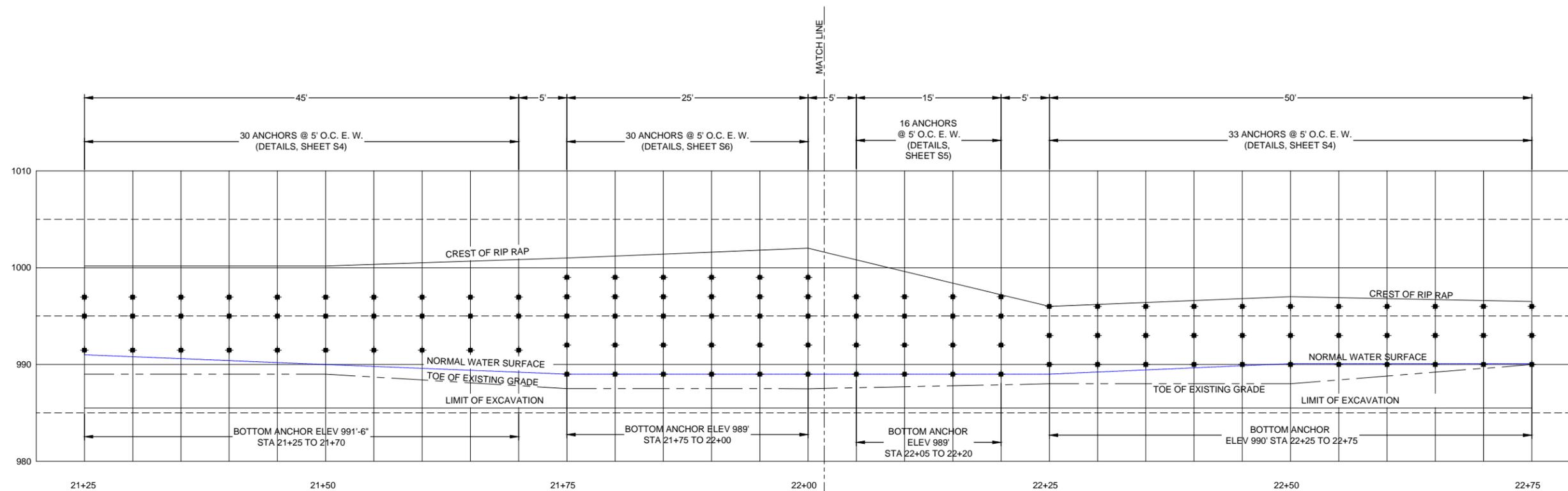
MAGNUM GEO-SOLUTIONS, LLC  
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FORT COLLINS, CO 80526  
513-275-2442  
800-822-7437  
WWW.MAGNUMPIERING.COM

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PLAN NOT VALID WITHOUT ORIGINAL  
WET STAMP



HELICAL SOIL NAIL WALL ELEVATION  
STA 21+25 TO STA 22+75

NTS

NOTES:  
CLEAR ALL SITE UTILITIES PRIOR TO  
EXCAVATION OR SOIL NAIL INSTALLATION.

TOP ANCHOR IN EACH ROW SHOULD BE  
GREATER THAN OR EQUAL TO 2 FT FROM THE  
CREST OF THE STABILIZED SLOPE.

NAILS SHALL BE SPACED APPROXIMATELY 5 FT  
ON CENTER, EACH DIRECTION. DISTANCE  
SHALL BE MEASURED PARALLEL TO THE  
SLOPE FACE.

USE TECCO SPIKE PLATES TO SECURE MESH  
TO CAPS PER MANUFACTURER  
RECOMMENDATIONS.

INSTALL NAILS AFTER EXCAVATION AND FILL.

RIP RAP AND/OR TECCO MESH CAN BE USED  
AS EMBANKMENT ARMOR ON THE FACE OF  
THE SLOPE. VERIFY EMBANKMENT ARMOR  
REQUIREMENTS WITH THE ENGINEER OF  
RECORD.

THESE PLANS WERE BASED ON MAGNUM  
PIERING PRODUCTS AND MAGNUM CERTIFIED  
INSTALLERS. SUBSTITUTION OF EQUAL  
PRODUCTS SHALL BE APPROVED BY  
ENGINEER.

| HELICAL SOIL NAIL WALL SCHEDULE |                                    |              |                        |                       |                                      |                                  |                                  |                                |  |
|---------------------------------|------------------------------------|--------------|------------------------|-----------------------|--------------------------------------|----------------------------------|----------------------------------|--------------------------------|--|
| MAGNUM<br>HELICAL SOIL<br>NAIL  | NUMBER OF<br>HELICAL<br>SOIL NAILS | HELICES      | MAGNUM<br>TIE-BACK CAP | MINIMUM<br>DEPTH (FT) | WORKING LOAD<br>COMPRESSION<br>(KIP) | WORKING LOAD<br>TENSION<br>(KIP) | WORKING LOAD<br>LATERAL<br>(KIP) | INSTALLATION<br>ANGLE<br>(DEG) | MIN<br>INSTALLATION<br>TORQUE (FT-LBS) |
| MH313BG                         | 109                                | 8D8D8D8D8D8D | MHC1080-386BG          | 21                    | N.S.                                 | 4                                | N.S.                             | 45-55                          | 1,000                                  |

NOTES: B=BOLTED CONNECTIONS, BR=BOLTED REINFORCED CONNECTIONS, EP=EPOXY COATED, G=GALVANIZED, NG=NON-GALVANIZED, P=PAINTED, N.S.=NOT SPECIFIED,  
S=SINGLE CUTTING HELIX, D=DUAL CUTTING HELIX (NUMBER PRECEDING D OR S INDICATES HELIX DIAMETER IN INCHES)

HELICAL SOIL NAIL LAYOUT

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
| 3   | 09/11/2014 | REVISED LOCATION OF SOIL NAILS      |

DESIGNED BY: MMB DATE: 03/12/13  
DRAWN BY: JGS SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

SHEET: S1

PROJECT NAME:

ALLENFORD SEWER  
CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
Canton, Ohio 44705



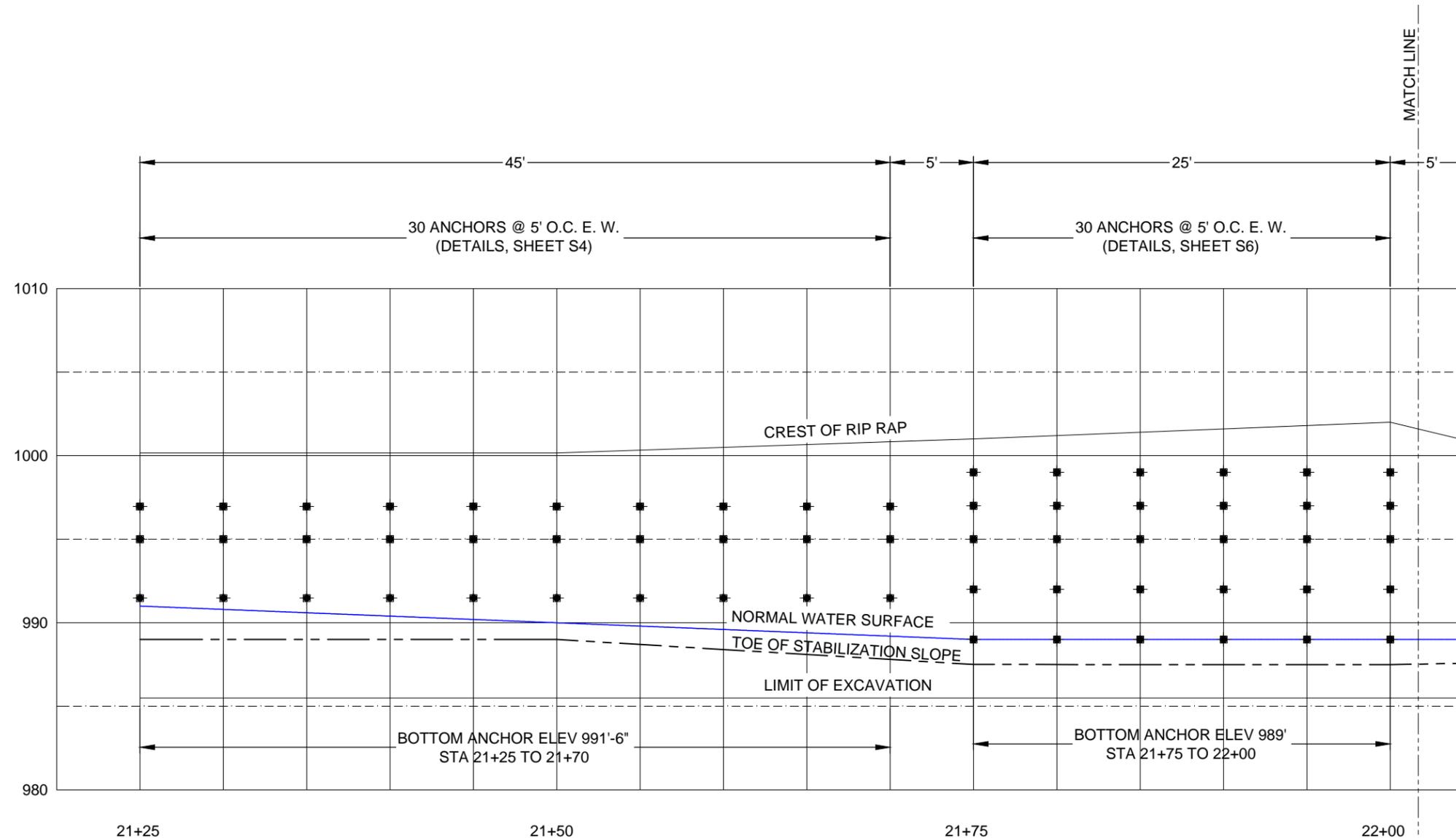
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PLAN NOT VALID WITHOUT ORIGINAL  
WET STAMP



ELEVATION VIEW  
STA 21+25 TO STA 22+00  
SCALE = 1/8" - 1'

HELICAL SOIL NAIL LAYOUT

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
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DESIGNED BY: MMB DATE: 03/12/13  
DRAWN BY: JGS SCALE: AS SHOWN  
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PROJECT No: 206-ALLENFORD

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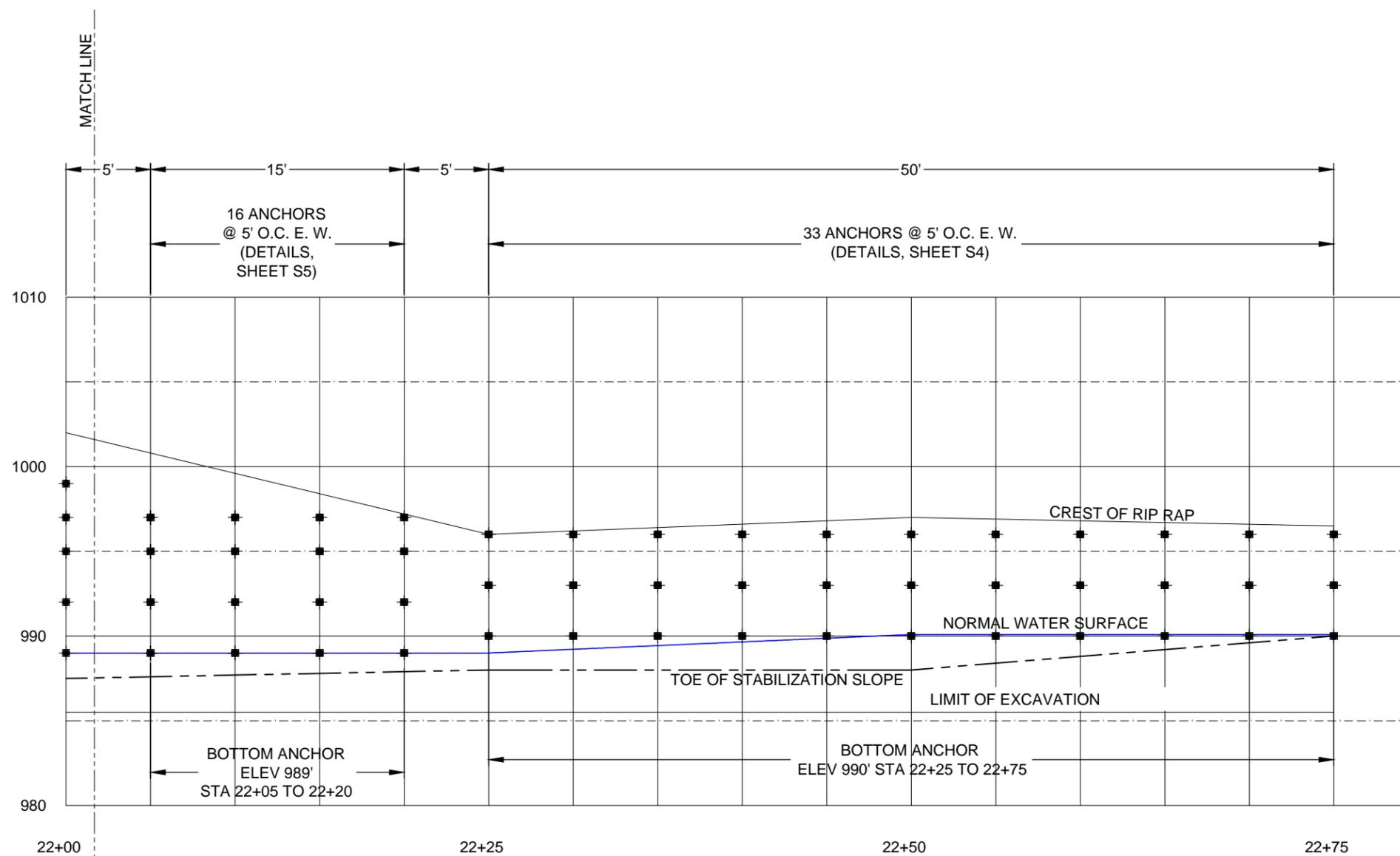
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ELEVATION VIEW  
STA 22+10 TO STA 22+75  
SCALE = 1/8" - 1'

HELICAL SOIL NAIL LAYOUT

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
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DESIGNED BY: MMB  
DRAWN BY: JGS  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

DATE: 03/12/13  
SCALE: AS SHOWN

PROJECT NAME:

ALLENFORD SEWER  
CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
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HELICAL SOIL NAIL DETAIL

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
| 3   | 09/11/2014 | REVISED LOCATION OF SOIL NAILS      |

DESIGNED BY: MMB DATE: 03/12/13  
DRAWN BY: JGS SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

SHEET: S4

ESTIMATED LIMIT OF SOIL EXCAVATION.  
REPLACE WITH RIP RAP WITH UNIT  
WEIGHT ≥ 110 PCF (BY OTHERS)

EXISTING GRADE

5' MAX.  
O.C.E.W.

5' MAX.  
O.C.E.W.

MAGNUM TIE-BACK CAP PER  
SCHEDULE (TYPICAL), OR EQUAL.  
ATTACH TO PILE WITH (1) 7/8" SAE  
J429 GRADE 5 ZINC COATED BOLT  
PER ASTM F1941

WATER SURFACE

EXISTING GRADE

MAGNUM COUPLING ATTACHED  
WITH (1) 7/8" SAE J429 GRADE 5  
THRU BOLT - ZINC COATED TO  
ASTM B695/F1941

21 FT (MIN.)

ESTIMATED LIMIT OF SOIL EXCAVATION.  
REPLACE WITH RIP RAP WITH UNIT  
WEIGHT ≥ 110 PCF (BY OTHERS)

45°-55°

MAGNUM HELICAL SOIL  
NAIL PER SCHEDULE  
(OR EQUAL)

MAGNUM HELICES PER  
SCHEDULE (TYPICAL)

TYPICAL 3 SERIES  
HELICAL SOIL NAIL DETAIL  
1/4" = 1'

PROJECT NAME:

ALLENFORD SEWER

CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
Canton, Ohio 44705



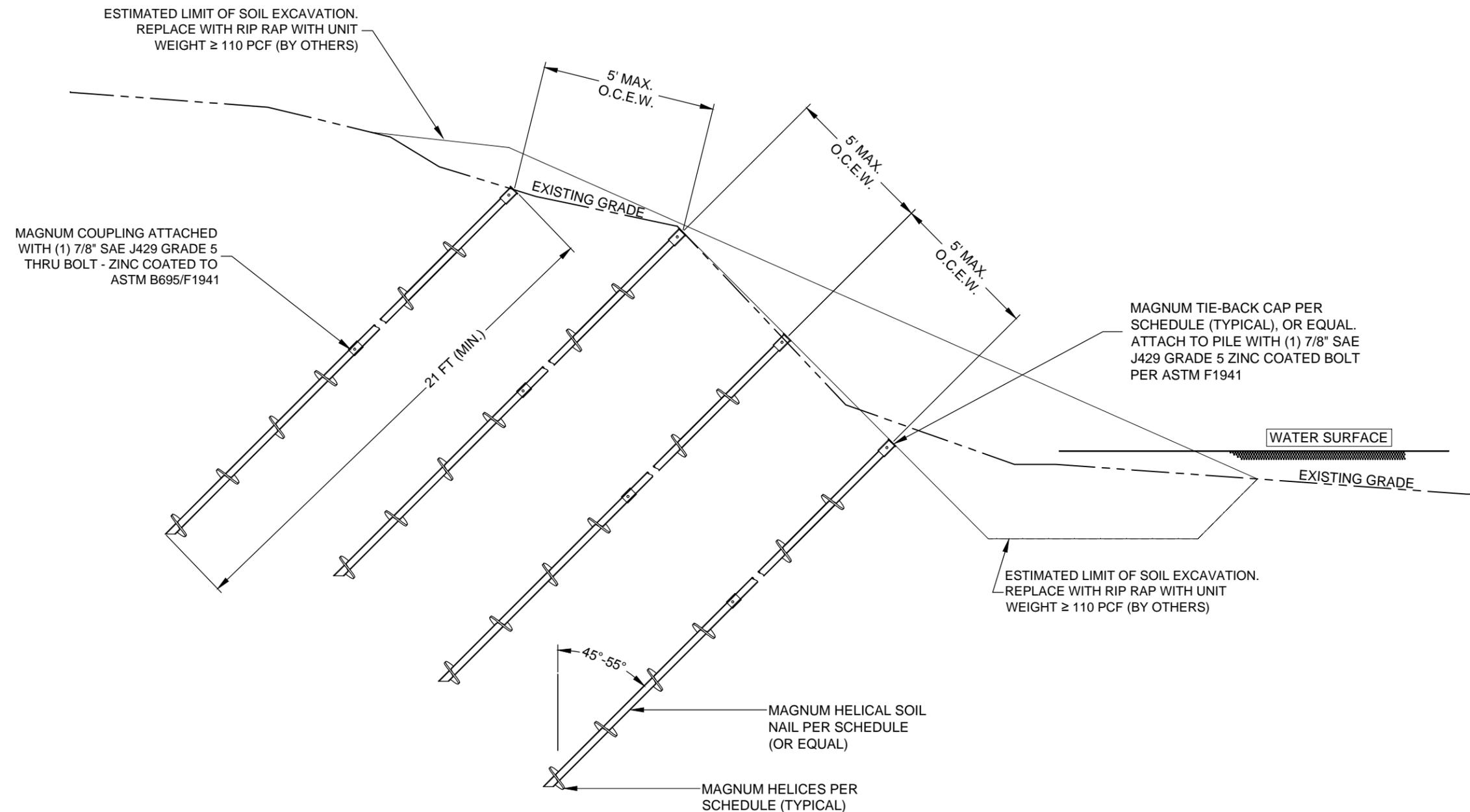
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PLAN NOT VALID WITHOUT ORIGINAL  
WET STAMP



TYPICAL 4 SERIES  
HELICAL SOIL NAIL DETAIL  
1/4" = 1'

HELICAL SOIL NAIL DETAIL

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
| 3   | 09/11/2014 | REVISED LOCATION OF SOIL NAILS      |

DESIGNED BY: MMB DATE: 03/12/13  
DRAWN BY: JGS SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

PROJECT NAME:

ALLENFORD SEWER

CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
Canton, Ohio 44705



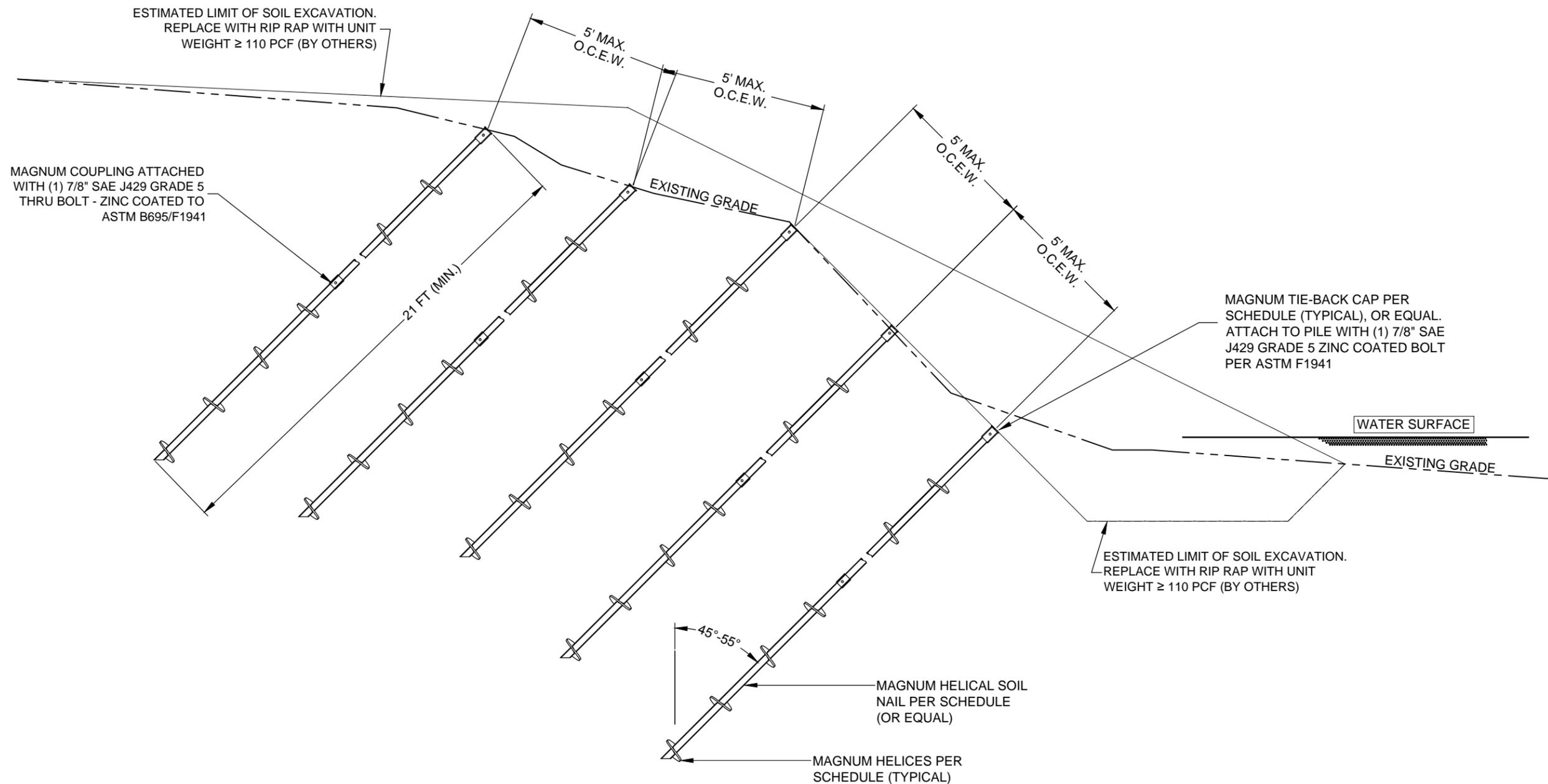
MAGNUM GEO-SOLUTIONS, LLC  
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TYPICAL 5 SERIES  
HELICAL SOIL NAIL DETAIL

1/4" = 1'

HELICAL SOIL NAIL DETAIL

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
| 3   | 09/11/2014 | REVISED LOCATION OF SOIL NAILS      |

DESIGNED BY: MMB  
DRAWN BY: JGS  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

DATE: 03/12/13  
SCALE: AS SHOWN

SHEET: S6

**Helical Foundation Notes**

**1. Codes**

This plan was prepared based on the 2010 Ohio Building Code, ACI 318, AISC 14th Edition, and ICC-ES AC308.

**2. Loads**

Project specific pile design loads were specified by Tetrattech Soil Nail Wall Modeling Report, dated 02/25/13. See Helical Soil Nail Wall Schedule for pile design loads.

**3. Subsurface Conditions**

Soils are assumed to be per the geotechnical investigation prepared by PSI, Inc. Report No. 0102342, dated 04/25/12.

**4. Materials**

This plan is based upon the following material properties (not all materials may be used in this plan). If there is a conflict between these specifications and plans by others, the more stringent criteria should be followed.

Helical Soil Nails: All helical soil nails and end caps shall be manufactured and supplied by Magnum Piering Inc, unless the EOR determines a suitable replacement.

**5. Installation**

Helical piles shall be furnished and installed at the locations, inclinations, and orientations shown on the plans and in accord with this procedure. Standard tolerance for positioning is ±3", for elevation is ± .125", and for angle is ±3 deg. Connect the lead section to the Torque Motor using the Drive Tool and Drive Pins. Position and align the lead section at the location and to the inclination shown on the drawings and crowd the pilot point into the soil. Advance the lead section and continue to add extension sections to achieve the Termination Criteria. All sections shall be advanced into the soil in a smooth, continuous manner at a rate of rotation between 10 and 40 revolutions per minute. Constant axial force (crowd) shall be applied while rotating the helical piles/anchors into the ground. The crowd applied shall be sufficient to ensure that the helical pile/anchor advances into the ground a distance equal to at least 80% of the blade pitch per revolution during normal advancement. The torsional strength rating of the helical pile/anchor shall not be exceeded during installation. Log installation depth and torque at 3-foot intervals during installation and record final depth and torque. Submit installation logs to MAGNUM for review prior to completion of the project.

**6. Termination Criteria:**

Helical piles/anchors shall be advanced until all of the following criteria are satisfied.

1. Final installation torque is achieved. Final installation torque is shown on the summary table or pile schedule.
2. Minimum depth is obtained. The minimum depth shall be as shown on the drawings, that which corresponds to the planned bearing stratum, or the depth at which the final installation torque is measured, whichever is greater.

If maximum torque has been reached or augering occurs prior to achieving the minimum depth, Contractor shall have the following options:

1. Reverse the direction of torque, back-out the helical pile/anchor a distance of 1 to 2 feet and attempt to reinstall by decreasing crowd and augering through the obstruction.
2. Terminate the installation at the depth obtained subject to the review and acceptance of the Engineer. Remove the helical pile/anchor and install a new one with fewer and/or smaller diameter helical bearing plates. The new helical configuration shall be subject to review and acceptance of the Engineer.
3. Remove the helical pile/anchor and pre-drill a 4-inch diameter pilot hole in the same location and reinstall the anchor/pile.
4. If the obstruction is shallow, remove the helical pile/anchor and remove the obstruction by surface excavation. Backfill and compact the resulting excavation and reinstall the pile/anchor.
5. Remove the helical pile/anchor and sever the uppermost helical bearing plate from the lead section if more than one helical bearing plate is in use, or reshape the helical bearing plates to create the patented Magnum dual cutting edge shape by cutting with a band saw. Reinstall the pile/anchor.

If the final installation torque is not achieved at the contract length, the Contractor shall have the following options:

1. Until the maximum depth is achieved, if any, install the helical pile/anchor deeper using additional extension sections.
2. Remove the helical pile/anchor and install a new one with additional and/or larger diameter helical bearing plates.
3. Decrease the rated load capacity of the helical pile/anchor and install additional helical piles/anchors. The rated capacity and additional unit location shall be subject to the review and acceptance of the Engineer.

**7. Limitations:**

This plan is based on loads, layout, and soil information by others. It is the general contractors responsibility to verify and coordinate all dimensions prior to construction. Any discrepancies or changes should be brought to the attention of the Engineer. Unknowns could exist regarding the construction of the structure and subsurface properties that could affect pile/anchor performance. This plan was prepared to the level of skill and care ordinarily practiced by other engineers in this area at this time. No warrantee is made by Engineer, express or implied.

This plan is based on products manufactured by Magnum Piering, Inc. and methods of installation practiced by Magnum Authorized Installers.

PROJECT NAME:

ALLENFORD SEWER

CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
2436 30th Street, N.E.  
Canton, Ohio 44705



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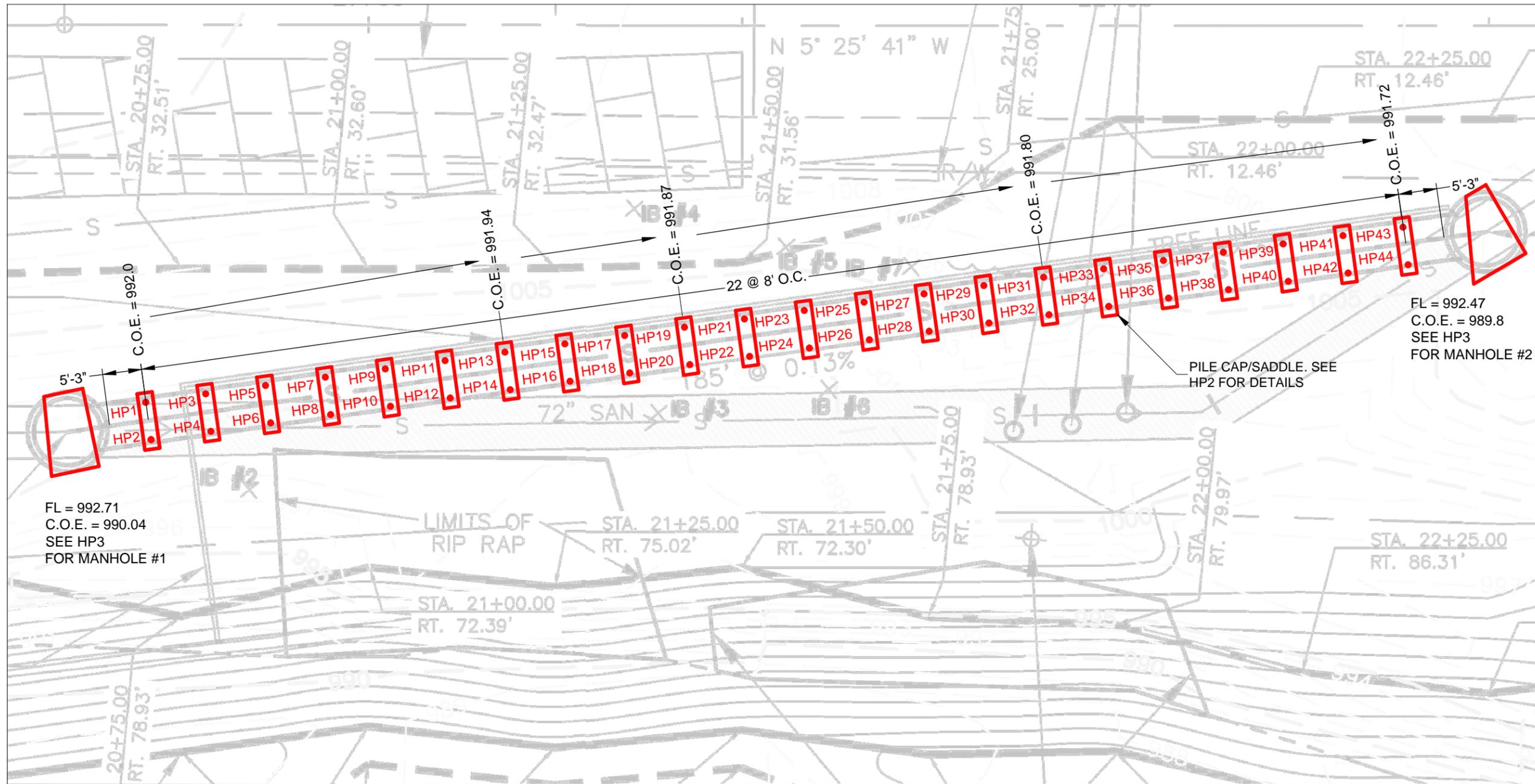
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HELICAL SOIL NAIL NOTES

| NO. | DATE       | REVISION/ISSUE                      |
|-----|------------|-------------------------------------|
| 1   | 08/26/2014 | PILE LAYOUT WITH ADDITIONAL DETAILS |
| 2   | 09/09/2014 | PROVIDED ADDITIONAL INFORMATION     |
| 3   | 09/11/2014 | REVISED LOCATION OF SOIL NAILS      |

DESIGNED BY: MMB      DATE: 03/12/13  
DRAWN BY: JGS      SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

SHEET: S7



FL = 992.71  
 C.O.E. = 990.04  
 SEE HP3  
 FOR MANHOLE #1

FL = 992.47  
 C.O.E. = 989.8  
 SEE HP3  
 FOR MANHOLE #2

PILE CAP/SADDLE. SEE  
 HP2 FOR DETAILS

NOTES:  
 CLEAR ALL SITE UTILITIES PRIOR TO  
 EXCAVATION OR SOIL NAIL INSTALLATION.

MANHOLE AND PILE CAP/SADDLE LAYOUT AND  
 ORIENTATION BASED ON DRAWINGS BY  
 OTHERS. VERIFY LOCATIONS AND  
 ORIENTATIONS PRIOR TO CONSTRUCTION.

C.O.E = CUT OFF ELEVATION

IF C.O.E NOT PROVIDED, PILES SHOULD BE  
 CUT OFF SUCH THAT A MINIMUM OF 9 INCHES  
 IS EMBEDDED IN THE CONCRETE CAP/SADDLE

**HELICAL PILE LAYOUT -  
 SEWER LINE SUPPORT**  
 SCALE: NTS

PROJECT NAME:

ALLENFORD SEWER  
 CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

CITY OF CANTON  
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 Canton, Ohio 44705



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PILE LAYOUT

| NO. | DATE    | REVISION/ISSUE                                  |
|-----|---------|---|
| 1   | 9/10/14 | REVISED PLANS BASED ON REDLINES FROM HAMMONTREE |
| 2   | 9/17/14 | CORRECTED GENERAL NOTES                         |

DESIGNED BY: MMB DATE: 03/12/13  
 DRAWN BY: JGS SCALE: AS SHOWN  
 CHECKED BY: MMB  
 PROJECT No: 206-ALLENFORD

PROJECT NAME:

ALLENFORD SEWER

CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

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2436 30th Street, N.E.  
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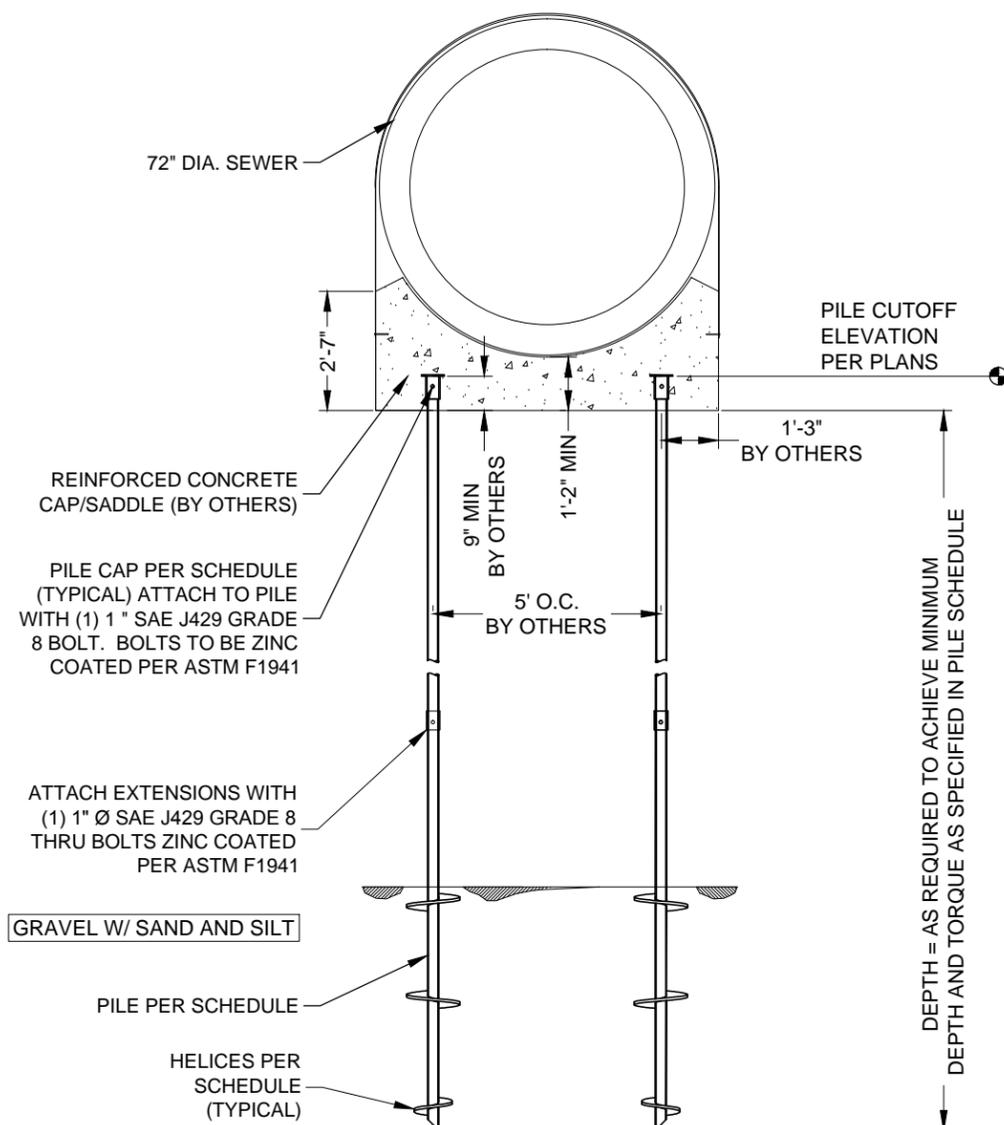
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HELICAL PILE DETAIL

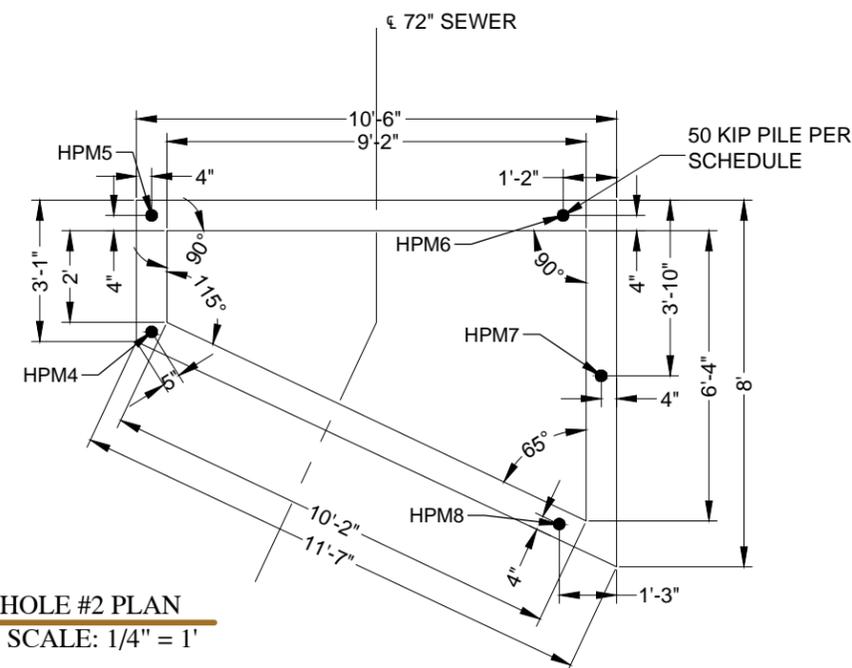
| NO. | DATE    | REVISION/ISSUE                                  |
|-----|---------|---|
| 1   | 9/10/14 | REVISED PLANS BASED ON REDLINES FROM HAMMONTREE |
| 2   | 9/17/14 | CORRECTED GENERAL NOTES                         |

DESIGNED BY: MMB DATE: 03/12/13  
DRAWN BY: JGS SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD

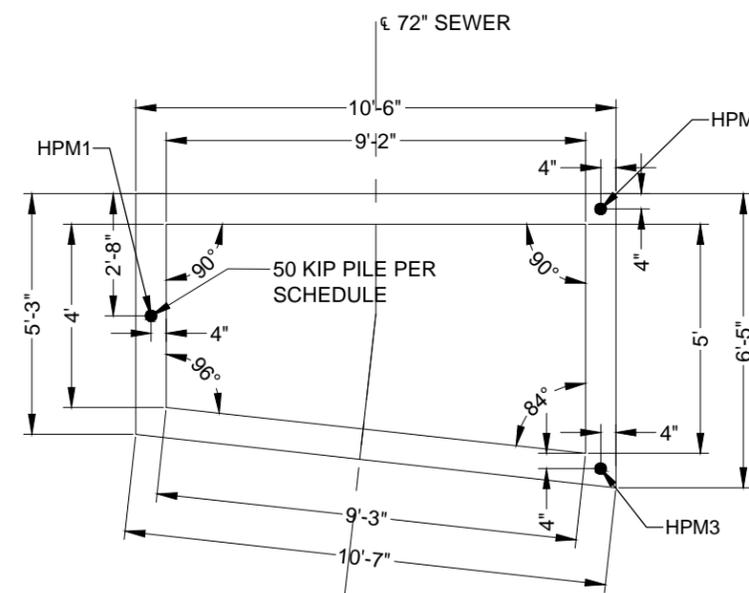
SHEET: HP2 of 3



TYPICAL PILE DETAIL  
SCALE: 1/4" = 1'



MANHOLE #2 PLAN  
SCALE: 1/4" = 1'



MANHOLE #1 PLAN  
SCALE: 1/4" = 1'

HELICAL PILE SCHEDULE

| DESCRIPTION | MAGNUM PILE SHAFT (OR EQUAL) | NUMBER OF PILES | HELICES   | PILE CAP        | BID LENGTH (FT) | WORKING LOAD COMPRESSION (KIP) | WORKING LOAD TENSION (KIP) | WORKING LOAD LATERAL (KIP) | MINIMUM INSTALLATION TORQUE (ft-lb) |
|-------------|------------------------------|-----------------|-----------|-----------------|-----------------|--------------------------------|----------------------------|----------------------------|-------------------------------------|
| SADDLES     | MH325BRG                     | 44              | 12S14S14S | MHC1300-3K66BR1 | 40              | 50                             | N.S.                       | N.S.                       | 12,500                              |
| MANHOLES    | MH325BRG                     | 8               | 12S14S14S | MHC1300-3K66BR1 | 36              | 50                             | N.S.                       | N.S.                       | 12,500                              |

NOTE: B=BOLTED R CONNECTIONS, G=GALVANIZED, S=SINGLE CUTTING HELIX (NUMBER PRECEDING S INDICATES HELIX DIAMETER IN INCHES), N.S.=NOT SPECIFIED

**Helical Foundation Notes**

1. Codes

This plan was prepared based on the 2010 Ohio Building Code, ACI 318, AISC 14th Edition, and ICC-ES AC308.

2. Loads

Project specific pile design loads were specified by Hammontree & Associates, Sheet 7/26, dated 07/03/12. See Helical Pile Schedule for pile design loads.

3. Subsurface Conditions

Soils are assumed to be per the geotechnical investigation prepared by PSI, Inc. Report No. 0102342, dated 04/25/12.

4. Materials

This plan is based upon the following material properties (Not all materials may be used in this plan). If there is a conflict between these specifications and plans by others, the more stringent criteria should be followed.

Helical Piles: All helical piles and end caps shall be manufactured and supplied by Magnum Piering Inc (or equal).

Foundation Concrete: Reinforced concrete with minimum f'c = 4,000 psi.

5. Installation

Helical piles shall be furnished and installed at the locations, inclinations, and orientations shown on the plans and in accord with this procedure. Standard tolerance for positioning is ±3", for elevation is ±.125", and for angle is ±3 deg. Connect the lead section to the Torque Motor using the Drive Tool and Drive Pins. Position and align the lead section at the location and to the inclination shown on the drawings and crowd the pilot point into the soil. Advance the lead section and continue to add extension sections to achieve the Termination Criteria. All sections shall be advanced into the soil in a smooth, continuous manner at a rate of rotation between 10 and 40 revolutions per minute. Constant axial force (crowd) shall be applied while rotating the helical piles/anchors into the ground. The crowd applied shall be sufficient to ensure that the helical pile/anchor advances into the ground a distance equal to at least 80% of the blade pitch per revolution during normal advancement. The torsional strength rating of the helical pile/anchor shall not be exceeded during installation. Log installation depth and torque at 3-foot intervals during installation and record final depth and torque. Submit installation logs to MAGNUM for review prior to completion of the project.

6. Termination Criteria:

Helical piles/anchors shall be advanced until all of the following criteria are satisfied.

1. Final installation torque is achieved. Final installation torque is shown on the summary table or pile schedule.
2. Minimum depth is obtained. The minimum depth shall be as shown on the drawings, that which corresponds to the planned bearing stratum, or the depth at which the final installation torque is measured, whichever is greater.

If maximum torque has been reached or augering occurs prior to achieving the minimum depth, Contractor shall have the following options:

1. Reverse the direction of torque, back-out the helical pile/anchor a distance of 1 to 2 feet and attempt to reinstall by decreasing crowd and augering through the obstruction.
2. Terminate the installation at the depth obtained subject to the review and acceptance of the Engineer. Remove the helical pile/anchor and install a new one with fewer and/or smaller diameter helical bearing plates. The new helical configuration shall be subject to review and acceptance of the Engineer.
3. Remove the helical pile/anchor and pre-drill a 4-inch diameter pilot hole in the same location and reinstall the anchor/pile.
4. If the obstruction is shallow, remove the helical pile/anchor and remove the obstruction by surface excavation. Backfill and compact the resulting excavation and reinstall the pile/anchor.
5. Remove the helical pile/anchor and sever the uppermost helical bearing plate from the lead section if more than one helical bearing plate is in use, or reshape the helical bearing plates to create the patented Magnum dual cutting edge shape by cutting with a band saw. Reinstall the pile/anchor.

If the final installation torque is not achieved at the contract length, the Contractor shall have the following options:

1. Until the maximum depth is achieved, if any, install the helical pile/anchor deeper using additional extension sections.
2. Remove the helical pile/anchor and install a new one with additional and/or larger diameter helical bearing plates.
3. Decrease the rated load capacity of the helical pile/anchor and install additional helical piles/anchors. The rated capacity and additional unit location shall be subject to the review and acceptance of the Engineer.

7. Limitations:

This Plan is only a helical pile shop drawing. This plan is based on loads, layout, and soil information by others. It is the general contractors responsibility to verify and coordinate all dimensions prior to construction. Any discrepancies or changes should be brought to the attention of the Engineer. Unknowns could exist regarding the construction of the structure and subsurface properties that could affect pile/anchor performance. This plan was prepared to the level of skill and care ordinarily practiced by other engineers in this area at this time. No warrantee is made by Engineer, express or implied.

This plan is based on products manufactured by Magnum Piering, Inc. and methods of installation practiced by Magnum Authorized Installers.

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ALLENFORD SEWER

CANTON TOWNSHIP, STARK COUNTY, OHIO

CLIENT:

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HELICAL PILE NOTES

| NO. | DATE    | REVISION/ISSUE                                  |
|-----|---------|---|
| 1   | 9/10/14 | REVISED PLANS BASED ON REDLINES FROM HAMMONTREE |
| 2   | 9/17/14 | CORRECTED GENERAL NOTES                         |

DESIGNED BY: MMB      DATE: 03/12/13  
DRAWN BY: JGS      SCALE: AS SHOWN  
CHECKED BY: MMB  
PROJECT No: 206-ALLENFORD