

**OWNER/DEVELOPER:**  
 HENDERSON DEVELOPMENT  
 2969 BEAL ROAD  
 FRANKLIN, OH 45005  
 PHONE: (937) 604-4269  
 CONTACT: TODD HENDERSON

**ENGINEER:**  
 CESO, INC.  
 3601 RIGBY ROAD, SUITE 300  
 MIAMISBURG, OH 45342  
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 CONTACT: JUSTIN ELAM, P.E.

**SURVEY PROVIDED BY:**  
 CESO, INC.  
 3601 RIGBY ROAD, SUITE 300  
 MIAMISBURG, OH 45342  
 PHONE: (937) 435-8584  
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CONTRACTOR TO VERIFY EXISTING  
 CONDITIONS PRIOR TO BID AND  
 CONSTRUCTION.

**GOVERNING AGENCIES AND UTILITY COMPANIES:**

**WATER & SEWER:**  
 CITY OF FRANKLIN  
 1 BENJAMIN FRANKLIN WAY,  
 FRANKLIN, OH 45005  
 PHONE: (937) 746-9921

**GAS SERVICE:**  
 DUKE ENERGY  
 139 E 4TH ST, CINCINNATI, OH 45202  
 PHONE: (800) 544-6900

**ZONING:**  
 CITY OF FRANKLIN  
 1 BENJAMIN FRANKLIN WAY,  
 FRANKLIN, OH 45005  
 PHONE: (937) 746-9921

**PHONE SERVICES:**  
 AT&T  
 1535 GENNTOWN DR A1,  
 LEBANON, OH 45036  
 PHONE: (613) 228-2111

**ELECTRIC:**  
 DUKE ENERGY  
 139 E 4TH ST, CINCINNATI, OH 45202  
 PHONE: (866) 874-2389

**SPECTRUM**  
 4352 YOUNGSTOWN RD SE  
 WARREN, OH 44484  
 PHONE: (866) 874-2389

**ALTAFIBER**  
 221 E 4TH STREET  
 CINCINNATI, OH 45202  
 PHONE: (613) 565-2210

**SITE DATA:**  
 ZONING: PUD OVERLAY

TOTAL ACREAGE: 47.282 AC  
 LOT COUNT: 113 LOTS  
 PROPOSED DENSITY: 2.39 DUA  
 OPEN SPACE: 18.27 AC (39%)  
 RIGHT-OF-WAY AREA: 5.41 AC

**BUILDING SETBACKS:**  
 FRONT: 25' MINIMUM  
 SIDE: 5' MINIMUM  
 REAR: 25' MINIMUM (15' LOTS 44-52 & 93-95)

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**BENCHMARKS (NAD83):**

**BM "A":**  
 CNS ON HYDRANT BOLT; NORTHWEST SIDE OF HYDRANT BETWEEN  
 190 & 200 PLEASANT HILL BOULEVARD.  
 ELEV=783.15'

**BM "B":**  
 CNS ON CURB INLET; EAST SIDE OF CURB INLET BETWEEN  
 191 & 171 PLEASANT HILL BOULEVARD.  
 ELEV=781.69'

**BM "C":**  
 CNS ON HYDRANT BOLT; NORTHWEST SIDE OF HYDRANT; HYDRANT LOCATED  
 DIRECTLY WEST OF 220 PLEASANT HILL BOULEVARD.  
 ELEV=782.84'

**FEMA FLOODPLAIN:**

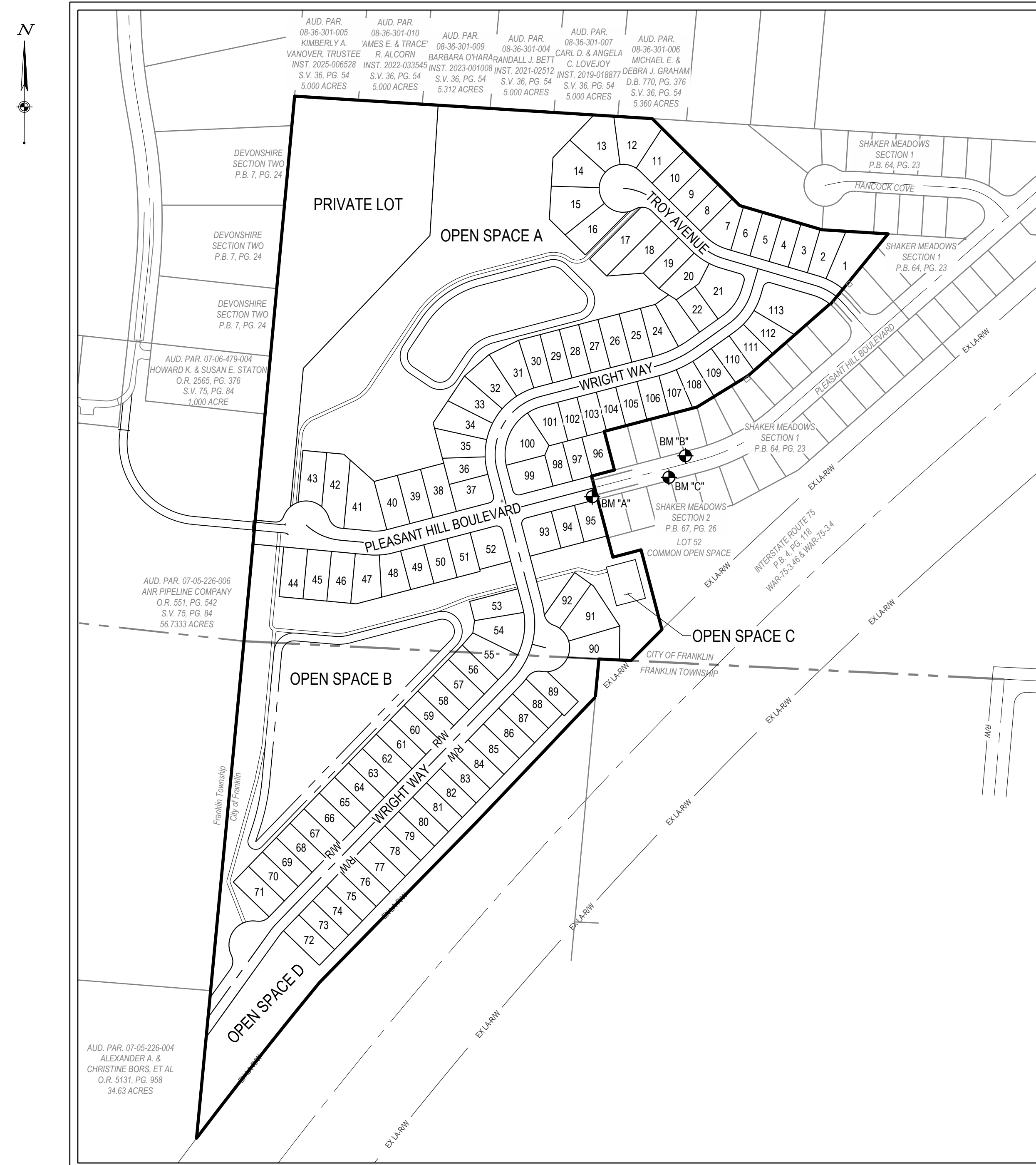
THE FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA) SHOWS THAT THE SUBJECT PROPERTY IS  
 LOCATED WITHIN AN AREA DESIGNATED AS ZONE X. ZONE X IS DEFINED AS: AREAS DETERMINED TO  
 BE MINIMAL FLOOD HAZARD AS SHOWN ON FLOOD INSURANCE RATE MAP (FIRM), WARREN COUNTY,  
 OHIO, 39165C00126, 39165C00166, AND 39165C00156 EFFECTIVE DATE: APRIL 23, 2025.

# FINAL DEVELOPMENT PLAN

# SHAKER MEADOWS

NOVEMBER 2025

STATE OF OHIO, COUNTY OF WARREN, CITY OF FRANKLIN



INDEX MAP  
 SCALE: 1"=200'



VICINITY MAP  
 N.T.S.

CITY OF FRANKLIN \_\_\_\_\_ DATE \_\_\_\_\_

JUSTIN ELAM, P.E. \_\_\_\_\_ DATE \_\_\_\_\_  
 OHIO LICENSE NO. E-76298



THIS INFORMATION ON THIS  
 DOCUMENT IS PRELIMINARY OR  
 INCOMPLETE. DO NOT FOR  
 CONSTRUCTION OR RECORDING  
 PURPOSES OR REPLICATION.

HENDERSON DEVELOPMENT

SHAKER MEADOWS  
 PLEASANT HILL BLVD  
 FRANKLIN, OH

Revisions / Submissions

ID	Description	Date

© 2025 CESO, INC.  
 Project Number: 764699  
 Scale: AS SHOWN  
 Drawn By: BMM  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**COVER SHEET**

FORTY-EIGHT (48) HOURS BEFORE DIGGING IS TO  
 COMMENCE, THE CONTRACTORS SHALL NOTIFY THE  
 FOLLOWING AGENCIES: STATE UTILITIES PROTECTION  
 SERVICE AT 811 OR 1-800-362-2764 AND ALL OTHER  
 AGENCIES WHICH MIGHT HAVE UNDERGROUND  
 UTILITIES INVOLVING THIS PROJECT AND ARE  
 NONMEMBERS OF OHIO UTILITIES PROTECTION SERVICE



C:\DC\ACC\DC\CESO\Henderson Shaker Meadows\Project Files\CESO\03-CIVIL\3-FINAL\PLAN\764699\_COVER SHEET.dwg - 11/19/2025 - Brock Michaleis

CITY OF FRANKLIN GENERAL SPECIFICATIONS

1.0 GENERAL NOTES
ALL CONSTRUCTION WITHIN THE CITY OF FRANKLIN SHALL COMPLY WITH THE CITY OF FRANKLIN'S UDO, CITY OF FRANKLIN STANDARD CONSTRUCTION DETAILS AND SPECIFICATIONS, WARREN COUNTY REQUIREMENTS, AND ODOT. WHERE CONFLICT OCCURS BETWEEN REQUIREMENTS, THE MOST STRINGENT OF THESE SHALL APPLY.

1.0 PRESSURE PIPE PIPE MATERIAL SPECIFICATIONS

1.1 PIPE MATERIAL
PVC PIPE SHALL CONFORM TO ANSIAWWA C-900, DR 18, PRESSURE CLASS 200.

1.1.1 JOINTS
MECHANICAL JOINTS, BELL AND SPIGOT JOINTS AND FLANGED JOINT FOR DUCTILE IRON PIPE IN SIZES FROM TWO INCHES (2") THROUGH FORTY-EIGHT INCHES (48") IN DIAMETER SHALL CONFORM TO ALL OF THE DIMENSIONS, SHAPES, AND REQUIREMENTS OF ANSI A21.10 (AWWA C110), "CAST IRON FITTINGS, 2 INCHES THROUGH 48 INCHES FOR WATER AND OTHER LIQUIDS;" THE MECHANICAL JOINT SHALL ALSO CONFORM IN ALL RESPECTS TO ANSI A21.11 (AWWA C111), "RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE AND FITTINGS;"

PUSH-ON JOINT SHALL BE A SINGLE RUBBER GASKET JOINT DESIGNED TO BE ASSEMBLED BY THE POSITIONING OF A CONTINUOUS, MOLDED RUBBER RING GASKET IN AN ANNULAR RECESS IN THE PIPE AND FORCING OF THE FLANGE END OF THE ENTERING PIPE INTO THE SOCKET, THEREBY COMPRESSING THE GASKET RADially TO THE PIPE TO FORM A POSITIVE SEAL. THE GASKET AND THE ANNULAR RECESS SHALL BE SO DESIGNED AND SHAPED THAT THE GASKET IS LOCKED IN PLACE AGAINST DISPLACEMENT AS THE JOINT IS ASSEMBLED. THE PUSH-ON TYPE JOINT SHALL CONFORM TO THE REQUIREMENTS OF ANSI A21.10 (AWWA C110) AND ANSI A21.11 (AWWA C111) WHERE APPLICABLE.

WHERE DUCTILE IRON PIPE WITH BELL AND SOCKET-TYPE JOINTS ARE SPECIFIED, THEY SHALL BE OF THE MECHANICAL GLAND OR PUSH-ON JOINT TYPE. PROVISIONS SHALL BE MADE FOR LONGITUDINAL EXPANSION AND CONTRACTION WITH A POSITIVE STOP AGAINST DISENGAGEMENT OF THE JOINT. UP TO FIFTEEN DEGREES (15°) ANGULAR DEFLECTION SHALL BE ACCOMMODATED WITHOUT LEAKAGE AND WITHOUT DECREASE IN FULL DIAMETER OF PIPE.

1.1.2 FITTINGS
CAST IRON OR DUCTILE IRON FITTINGS IN SIZES 2-INCHES THROUGH 48-INCHES FOR MECHANICAL JOINTS, BELL AND SPIGOT JOINTS AND FLANGE JOINTS SHALL CONFORM TO ALL THE REQUIREMENTS OF ANSI A21.10 (AWWA C110), "CAST IRON FITTINGS 2-INCHES THROUGH 48-INCHES; FOR WATER AND OTHER LIQUIDS;" AND TO THE REQUIREMENTS OF ANSI A21.11 (AWWA C111), "RUBBER GASKET JOINTS FOR CAST IRON PRESSURE PIPE FITTINGS;" FOR MECHANICAL JOINTS AND PUSH-ON TYPE JOINTS. PUSH-ON JOINTS FOR CAST IRON FITTINGS SHALL BE AS DESCRIBED IN 1.1.1 OF THIS SPECIFICATION.

THE FITTINGS FOR USE ON DUCTILE IRON PIPE MAY BE EITHER CAST IRON OR DUCTILE IRON. THE FITTINGS LARGER THAN 12-INCHES SHALL HAVE A MINIMUM PRESSURE RATING OF 200 P.S.I., UNLESS OTHERWISE SHOWN ON THE CONSTRUCTION DRAWINGS.

1.1.3 COATING FOR DUCTILE IRON PIPE AND FITTINGS
THE DUCTILE IRON PIPE AND CAST IRON OR DUCTILE IRON FITTINGS SHALL BE FURNISHED WITH CEMENT MORTAR LINING IN ACCORDANCE WITH ANSI SPECIFICATION A21.4 (AWWA C104), "CEMENT MORTAR LINING FOR CAST IRON PIPE FITTINGS;" THE LINING WILL BE ONE-SIXTEENTH (1/16) INCH THICK FOR PIPE SIZES FOUR INCHES (4") THROUGH TWELVE INCHES (12") IN DIAMETER AND THREE THIRTY-SECONDS (3/32) INCH THICK FOR SIZES FOURTEEN INCHES (14") THROUGH TWENTY-FOUR INCHES (24") IN DIAMETER. A BITUMINOUS SEAL COAT SHALL BE APPLIED TO THE LINING SURFACE IMMEDIATELY FOLLOWING THE LINING OPERATION TO PREVENT LOSS OF MOISTURE AND ENSURE PROPER CURING OF THE CEMENT MORTAR. THE OUTSIDE OF THE IRON PIPE SHALL BE FURNISHED WITH A PROTECTIVE BITUMINOUS COATING.

1.1.4 ANCHORING
SPECIAL ANCHORING MAY BE REQUIRED AT PLACES ALONG THE PIPE LINES, WHERE THE CONSTRUCTION DRAWINGS CALL FOR SPECIAL ANCHORING. IT SHALL INCLUDE THE USE OF MECHANICAL JOINT ANCHORING FITTINGS, COUPLINGS AND PIPE OR POSITIVELY RESTRAINED PUSH-ON JOINT-TYPE PIPE AND FITTINGS WHICH ALLOW FOR DEFLECTION AT THE JOINT AFTER INSTALLATION. EBAA IRON WORKS, "MEGALUG," OR APPROVED EQUAL.

2.0 GRAVITY PIPE

2.1 REINFORCED CONCRETE PIPE STORM SEWER

2.1.1 GENERAL
REINFORCED CONCRETE PIPE SHALL CONFORM TO ALL RESPECTS TO THE REQUIREMENTS OF ASTM C76, "REINFORCED CONCRETE CULVERT, STORM DRAIN AND SEWER PIPE," WALL "B" THICKNESS DESIGNS SHALL BE SUPPLIED.

TABLE V OF ASTM C76 SHALL BE MODIFIED AS SPECIFIED IN ODOT 706.02.

CLASS FOR THE REINFORCED CONCRETE PIPE SHALL BE AS SHOWN ON THE CONSTRUCTION DRAWINGS, BUT NO LESS THAN CLASS IV.

2.1.2 JOINTS
BITUMINOUS PLASTIC CEMENT, WHICH MEETS WITH THE REQUIREMENTS OF ODOT SPECIFICATION 706.10, AND WHICH IS APPLIED IN CONFORMANCE WITH THE REQUIREMENT OF ODOT SPECIFICATION 603.06, WILL BE ACCEPTED AS A JOINTING MATERIAL. (STORM SEWER ONLY) SANITARY SEWER JOINTS SHALL CONFORM TO ASTM C491, "JOINTS FOR CIRCULAR CONCRETE AND CIRCULAR PIPE, USING FLEXIBLE WATER-TIGHT RUBBER GASKETS;" LUBRICANTS AND/OR ADHESIVES SHALL BE USED AS RECOMMENDED BY THE MANUFACTURER OF THE PIPE AND SHALL BE SUPPLIED IN QUANTITIES SUFFICIENT TO ASSEMBLE ALL OF THE CONCRETE SEWER PIPE JOINTS.

2.1.3 SERVICE CONNECTIONS
SERVICE CONNECTIONS TO A NON-REINFORCED CONCRETE SEWER SHALL BE THROUGH A WYE PIPE SADDLE. EACH WYE SHALL BE FURNISHED WITH A STOPPER, WHICH SHALL BE SEALED AND BANDED INTO THE BRANCH OPENING UNTIL THE SERVICE LINE IS INSTALLED. THE STOPPER JOINT SHALL BE SUITABLE TO WITHSTAND AN INTERNAL PRESSURE OF FIVE (5) PSI WITHOUT LEAKING.

2.2 ABS DOUBLE WALL PIPE STORM SEWER

2.2.1 GENERAL
THE THERMOPLASTIC MATERIAL UTILIZED FOR THE MANUFACTURER OF THE PIPE WALLS SHALL BE VIRGIN, RIGID ACRYLONITRICE-BUTADIENE-STYRENE (ABS). THE MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF TYPE ONE, GRADE ONE OR TWO, OR TYPE FOUR, GRADE ONE, ASTM D-1788, EXCEPT THAT THE MINIMUM HEAT DEFLECTION TEMPERATURE ASTM D648 SHALL BE 180 DEGREES FAHRENHEIT.

2.2.2 COMPOSITE PIPE
COMPOSITE PIPE CONSISTING OF TWO (2) ABS TUBES INTEGRALLY BRACED ACROSS THE ANNULUS WITH ABS WEBBING AND WITH THE RESULTANT ANNULAR SPACE FILLED WITH AN INERT FILLER TO THE EQUAL OF PORTLAND CEMENT PERLITE CONCRETE. SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-2680, EXCEPT AS SPECIFICALLY MODIFIED HEREIN. THE ENDS OF MANUFACTURED SECTIONS OF PIPE SHALL BE SQUARE AND SMOOTHLY FINISHED TO PREVENT THE RUPTURE AND/OR LOSS OF THE CONCRETE FILLER MATERIAL.

EIGHT-INCH (8") THRU FIFTEEN INCH (15") NOMINAL INSIDE DIAMETER PIPE SHALL CONFORM TO THE DIMENSIONS AND TOLERANCES GIVEN IN TABLE 1, "PIPE DIMENSIONS" OF ASTM D-2680.

2.2.3 SOLID WALL PIPE
SOLID WALL PIPE OF ABS MATERIAL SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-2751. WALL THICKNESS, HOWEVER, SHALL NOT BE LESS THAN 0.180 INCHES FOR FOUR-INCH (4") DIAMETER PIPE OR 0.265 INCH FOR SIX-INCH (6") DIAMETER PIPE.

2.2.4 JOINTS
THE SECTIONS OF PIPE SHALL BE JOINED BY CHEMICALLY-WELDED COUPLINGS. COUPLINGS SHALL BE SOLID WALL, MOLDED OF THE SAME MATERIAL AS THE PIPE. PRIMER FOR CHEMICAL WELDING SHALL BE METHYL-ETHYL-KEYSTONE (MEK). CEMENT SHALL BE MEK CONTAINING A MINIMUM OF TWENTY (20) PERCENT DISSOLVED ABS. PRIMER AND CEMENT SHALL BE PROVIDED BY THE MANUFACTURER OF THE ABS PIPE.

2.2.5 SERVICE CONNECTIONS
THE SERVICE LATERAL CONNECTIONS TO THE MAIN LINE SHALL BE MADE BY USE OF SADDLES WITH STAINLESS STEEL BANDS. THE FITTINGS SHALL BE MOLDED FROM THE SAME MATERIAL AS THE PIPE. THE SERVICE CONNECTION SHALL INCLUDE SUCH ADAPTERS AS MAY BE APPROVED BY THE CITY ENGINEER TO PROVIDE CONNECTION TO THE SERVICE LINE.

EACH SERVICE SHALL BE FURNISHED WITH A SPIGOT END CAP, WHICH SHALL BE CHEMICALLY WELDED ONTO THE BRANCH OPENING UNTIL THE SERVICE LINE IS INSTALLED. THE JOINT SHALL BE SUITABLE TO WITHSTAND AN INTERNAL PRESSURE OF FIVE (5) PSI WITHOUT LEAKING.

2.3 PVC PIPE SANITARY SEWER

2.3.1 GENERAL
THE MATERIAL USED FOR UNPLASTICIZED POLYVINYL CHLORIDE (PVC) PLASTIC PIPE SHALL BE CLEAN, VIRGIN TYPE 1, GRADE 1 PVC COMPOUND CONFORMING TO ASTM D-1784. ALL PVC PLASTIC USED IN THE MANUFACTURE OF PIPE FOR THIS PROJECT SHALL BE ALL NEW MATERIAL AND SHALL NOT INCLUDE ANY REWORK OR SCRAP PVC MATERIAL FROM PREVIOUS MANUFACTURING PROCESSES.

RUBBER COMPOUNDS FOR THE JOINT SEALING RING SHALL CONFORM TO THE REQUIREMENTS OF ASTM D-1869.

2.3.2 PIPE
SOLID WALL PVC PLASTIC PIPE AND FITTINGS FOR GRAVITY SEWER INSTALLATION SHALL CONFORM TO ASTM D-3034, SDR 35 FOR PIPES BURIED AT A DEPTH LESS THAN 12 FEET AND D-3034, SDR 26 FOR PIPES BURIED AT A DEPTH GREATER THAN 12 FEET.

4-INCH DIAMETER 0.125-INCH MINIMUM WALL THICKNESS
6-INCH DIAMETER 0.180-INCH MINIMUM WALL THICKNESS
8-INCH DIAMETER 0.240-INCH MINIMUM WALL THICKNESS
10-INCH DIAMETER 0.300-INCH MINIMUM WALL THICKNESS
12-INCH DIAMETER 0.360-INCH MINIMUM WALL THICKNESS
15-INCH DIAMETER 0.437-INCH MINIMUM WALL THICKNESS

FOR PIPE LARGER THAN 15", MATERIAL AND SPECIFICATIONS SHALL BE APPROVED BY CITY ENGINEER.

2.3.3 JOINTS
PIPE SHALL BE BELL AND SPIGOT, THE BELLS BEING FORMED INTEGRALLY WITH THE PIPE. THE BELLS SHALL CONTAIN TWO (2) PVC RETAINER RINGS, WHICH ACCURATELY AND SECURELY CONTAIN THE SOLID RUBBER JOINT SEALING RING. JOINT DESIGN SHALL PERMIT EXPANSION AND CONTRACTION OF THE PIPELINE AS WELL AS FLEXIBILITY AT THE JOINT.

2.3.4 SERVICE CONNECTIONS
THE SERVICE LATERAL CONNECTIONS TO THE MAIN LINE SHALL BE MADE BY USE OF WYES OR SADDLES. FITTINGS SHALL BE MANUFACTURED OF THE SAME MATERIAL AS THE MAIN LINE PIPE AND HAVE SIMILAR STYLE JOINTS. THE SERVICE CONNECTION SHALL INCLUDE SUCH ADAPTERS AS MAY BE APPROVED BY THE CITY ENGINEER TO PROVIDE CONNECTION TO THE SERVICE LINE. FACTORY-MOLDED FITTINGS SHALL BE REQUIRED.

EACH BRANCH OR TEE SHALL BE FURNISHED WITH A SUITABLE STOPPER WHICH SHALL BE SEALED INTO THE BRANCH OPENING UNTIL THE SERVICE LINE IS INSTALLED. THE STOPPER JOINT SHALL BE SUITABLE TO WITHSTAND AN INTERNAL PRESSURE OF FIVE (5) PSI WITHOUT LEAKING.

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

2.4 SANITARY SEWER PUMP STATION
SANITARY LIFT STATION SHALL BE ALUMINUM, NO VAULT TYPE PUMP STATION WITH APPROPRIATELY SIZED CHOPPER PUMPS, SUCH AS EXCEL FLUID GROUP, LLC, EX-ALM2 OR APPROVED EQUAL.

CONSTRUCTION SPECIFICATIONS

1.0 PRESSURE PIPELINES

1.1 TRENCH EXCAVATION

1.1.1 GENERAL
TRENCHES FOR BURIED PRESSURE PIPELINES SHALL BE EXCAVATED SO THAT THE PIPES AND APPURTENANCES MAY BE INSTALLED AND JOINED TO THE ALIGNMENTS AND GRADES REQUIRED.

1.1.2 TRENCH DEPTH
THE DEPTH OF PRESSURE PIPELINE TRENCHES SHALL BE A MINIMUM OF FOUR (4) FEET PLUS THE OUTSIDE DIAMETER OF THE PIPELINES MEASURED FROM THE EXISTING STREET GRADE OR THE PROPOSED STREET GRADE, IF SHOWN ON THE CONSTRUCTION DRAWINGS. EXCAVATION FOR DEPTHS GREATER OR LESS THAN THE MINIMUM ARE SHOWN ON PROFILE ON THE CONSTRUCTION DRAWINGS.

PRESSURE PIPELINE TRENCHES SHALL BE EXCAVATED IN A MANNER THAT WILL PROVIDE A UNIFORM AND CONTINUOUS BEARING AND SUPPORT FOR THE BARRELS OF PIPE ON SOLID AND UNDISTURBED GROUND AT EVERY POINT BETWEEN BELLHOLES, EXCEPT FOR THAT AREA NEAR THE MID-SECTION OF THE PIPE DISTURBED BY THE WITHDRAWAL OF PIPE SLINGS OR OTHER LIFTING TACKLE. BELLHOLES WILL BE PROVIDED AT EACH JOINT TO PERMIT THE JOINTING TO BE MADE PROPERLY. ROCK, IF PRESENT IN THE TRENCH BOTTOM, SHALL BE EXCAVATED TO A MINIMUM DEPTH FOUR (4) INCHES BELOW THE OUTERMOST DIMENSION OF THE PIPELINE. EXCAVATED ROCK SHALL BE DISPOSED OF BY THE CONTRACTOR AND NOT USED FOR BACKFILLING.

1.2 INSTALLING PRESSURE PIPELINES
THE SPECIFICATIONS FOR THE INSTALLATION OF PRESSURE PIPELINES ARE INTENDED TO CONFORM WITH AWWA SPECIFICATION C600. THE CITY SHALL REQUIRE COMPLIANCE WITH THE SPECIFICATION CONTAINED IN AWWA C600, THE SAME AS IF THEY WERE TOTALLY INCORPORATED HEREIN, EXCEPT WHERE THESE SPECIFICATIONS DIRECT OTHERWISE.

PRESSURE PIPELINES SHALL BE LAID AND MAINTAINED TO THE REQUIRED LINES AND GRADES WITH FITTINGS AND VALVES SET AT THE REQUIRED LOCATIONS. SPIGOTS, CENTERS, AND BELLS, AND ALL VALVES AND HYDRANT STEMS PLUMB. ALL PIPE AND FITTINGS SHALL BE CAREFULLY EXAMINED FOR CRACKS AND OTHER DEFECTS WHILE SUPPORTING ABOVE THE TRENCH IMMEDIATELY PRIOR TO INSTALLATION IN FINAL POSITION. SPIGOT ENDS SHALL BE EXAMINED WITH PARTICULAR CARE. DEFECTIVE PIPE OR FITTINGS SHALL BE REMOVED FROM THE CONSTRUCTION SITE.

AS EACH LENGTH OF PIPE IS PLACED IN THE TRENCH, THE SPIGOT END SHALL BE CENTERED ACCURATELY IN THE BELL AND THE PIPE FORCED HOME AND BOURN TO CORRECT LINE AND GRADE. PRECAUTIONS SHALL BE TAKEN TO PREVENT DIRT FROM ENTERING THE ANNULAR JOINT SPACE.

AT TIMES WHEN PIPE LAYING IS NOT IN PROGRESS, THE OPEN ENDS OF THE PIPE SHALL BE CLOSED BY A WATER-TIGHT PLUG OR OTHER MEANS APPROVED BY THE CITY INSPECTOR. IF GROUND WATER RISES IN THE TRENCH, SUCH A SEAL SHALL REMAIN IN PLACE UNTIL THE TRENCH IS PUMPED COMPLETELY DRY, READY FOR CONTINUED PIPE LAYING OPERATIONS. THE CUTTING OF THE PIPE FOR THE INSERTION OF VALVES, FITTINGS, OR GLOBE PIECES SHALL BE DONE IN A NEAT AND WORKMANLIKE MANNER WITHOUT DAMAGE TO THE PIPE OR LINING SO AS TO LEAVE A SMOOTH END CUT AT RIGHT ANGLES TO MAIN AXIS OF THE PIPE.

PIPE SHALL BE LAID WITH BELL ENDS FACING IN THE DIRECTION OF LAYING, UNLESS DIRECTED OTHERWISE BY THE CITY INSPECTOR. WHERE PIPE IS LAID ON A GRADE OF TEN PERCENT (10%), OR GREATER, THE LAYING SHALL START AT THE BOTTOM AND SHALL PROCEED UPWARDS WITH THE BELL ENDS OF THE PIPES UPGRADE.

1.3 DEFLECTION OF DUCTILE IRON PIPE

WHENEVER THE CONSTRUCTION DRAWINGS REQUIRE THE DEFLECTION OF MECHANICAL JOINT OR PUSH-ON JOINT PIPE IN ORDER TO FORM A LONG RADIUS CURVE, THE AMOUNT OF THE DEFLECTION SHALL NOT EXCEED THE MAXIMUM LIMITS SPECIFIED IN TABLE 1, MECHANICAL JOINT PIPE, AND TABLE 2, PUSH-ON JOINT PIPE, CONTAINED IN AWWA C600.

1.4 PIPELINE FITTINGS

PIPELINE FITTINGS, PLUGS, AND CAPS OF THE REQUIRED SIZE AND TYPE SHALL BE FURNISHED AND INSTALLED AT THE LOCATIONS SHOWN ON THE CONSTRUCTION DRAWINGS OR AS DIRECTED BY THE CITY INSPECTOR. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FURNISH AND INSTALL ALL PROPER SIZE FITTINGS FOR BOTH HORIZONTAL AND VERTICAL DEFLECTIONS, WHICH ARE REQUIRED TO CONSTRUCT THE PRESSURE MAIN TO THE LINE AND GRADE SHOWN ON THE CONSTRUCTION DRAWINGS, OR AS ESTABLISHED IN THE FIELD BY THE CITY INSPECTOR. THE FITTINGS, PLUGS, AND CAPS SHALL BE SET AND JOINED TO THE PIPE IN THE MANNER HERETOFORE SPECIFIED FOR INSTALLATION.

1.5 TESTING

THE CONTRACTOR SHALL SUBJECT THE COMPLETED PRESSURE PIPELINE TO A LEAKAGE TEST. THE TEST SHALL BE PERFORMED ON ALL NEWLY-LAID PIPE IN LENGTHS NOT TO EXCEED 1000 FEET. THE LENGTH OF THE TEST SECTION SHALL NOT EXCEED THE SPECIFIED MAXIMUM WITHOUT EXPLOIT APPROVAL OF THE DIRECTOR OF PUBLIC WORKS. THE TEST MAY BE CONDUCTED AFTER THE TRENCH HAS BEEN BACKFILLED, BUT MUST BE COMPLETED BEFORE REPLACEMENT OF PAVEMENT AND FINAL RESTORATION. ALL TESTING SHALL BE DONE IN THE PRESENCE OF THE CITY INSPECTOR.

1.6 FLUSHING AND CLEANING

THE COMPLETED PIPELINE SHALL BE FLUSHED WITH CLEAN WATER UNTIL ALL DIRT HAS BEEN WASHED FREE. SUFFICIENT PRESSURE AND VOLUME OF WATER SHALL BE FURNISHED BY THE CONTRACTOR TO ENSURE THAT A THOROUGH CLEANING JOB HAS BEEN ACCOMPLISHED.

1.7 LEAKAGE TEST

THE CONTRACTOR SHALL FURNISH THE PUMP, PIPE CONNECTION, TEMPORARY TESTING PLUGS AND CAPS, AND ALL NECESSARY APPARATUS, INCLUDING PRESSURE GAUGES, METERS, AND A SUPPLY OF APPROVED WATER. THE CONTRACTOR SHALL MAKE ALL NECESSARY TAPS INTO THE PRESSURE PIPELINES. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL LABOR AND EQUIPMENT NECESSARY TO CONDUCT THE TESTS, INCLUDING EXCAVATING AND BACKFILLING THE TEST PIT AT THE LOCATION SELECTED BY THE DIRECTOR OF PUBLIC WORKS.

THE COMPLETED PIPELINE SHALL BE SLOWLY FILLED WITH WATER. ALL AIR SHALL BE EXPELLED FROM THE PIPE AT HIGH POINTS BY MEANS OF TEST PLUG IN VALVE BONNETS, FIRE HYDRANTS, OR THROUGH CORPORATION STOPS INSTALLED BY THE CONTRACTOR FOR THIS PURPOSE. AFTER ALL AIR HAS BEEN EXPELLED, THE OPENING SHALL BE CLOSED AND THE TEST PRESSURE APPLIED BY MEANS OF A TEST PUMP CONNECT TO THE PIPE IN A MANNER SATISFACTORY TO THE DIRECTOR OF PUBLIC WORKS.

TEST PRESSURE FOR THE LEAKAGE TESTS SHALL BE 1.5 TIMES THE NORMAL OPERATING PRESSURE AT THE LOWEST POINT IN THE SECTION OF LINE UNDER TEST, AS CORRECTED TO THE ELEVATION OF THE TEST GAUGE. THE DURATION OF EACH LEAKAGE TEST SHALL BE TWO (2) HOURS. MINIMUM TEST PRESSURE 100 PSI.

THE EXPOSED PIPING AND/OR SURFACE OF THE BACKFILLED TRENCH SHALL BE CAREFULLY INSPECTED DURING THE TEST FOR ANY SIGNS OF LEAKAGE. ANY CRACKED OR DEFECTIVE PIPE, FITTINGS, VALVES, HYDRANTS, JOINTS, ETC. DISCOVERED IN CONSEQUENCE OF THE LEAKAGE TESTS, SHALL BE REMOVED AND REPLACED BY THE CONTRACTOR WITH SOUND MATERIAL, AND THE TEST REPEATED UNTIL SATISFACTORY RESULTS ARE OBTAINED. THE CONTRACTOR IS RESPONSIBLE FOR THE LOCATION, EXCAVATION, AND BACKFILLING OF A PRESSURE PIPELINE TRENCH AT NO COST TO THE OWNER. IN ADDITION TO REPLACING THE DEFECTIVE MATERIAL, IF THE LEAKAGE TEST IS CONDUCTED ON A BACKFILLED PRESSURE PIPELINE, AT ALL TIMES DURING THE LEAKAGE TEST, THE CONTRACTOR SHALL MAINTAIN THE SPECIFIED HYDROSTATIC PRESSURE THROUGH HIS TEST PUMP. MAXIMUM VARIATION IN PRESSURE DURING THE TEST IS 5 PSI.

LEAKAGE SHALL BE DEFINED AS THE QUANTITY OF WATER THAT MUST BE SUPPLIED INTO THE NEWLY LAID PIPE OR ANY VALVED SECTION THEREOF TO MAINTAIN PRESSURE WITHIN 5 PSI OF THE SPECIFIED TEST PRESSURE AFTER THE PIPE HAS BEEN FILLED WITH WATER AND THE AIR HAS BEEN EXPELLED. LEAKAGE SHALL NOT BE MEASURED BY A DROP IN PRESSURE IN A TEST SECTION OVER A PERIOD OF TIME. NO PIPE INSTALLATION WILL BE ACCEPTED IF THE LEAKAGE IS GREATER THAN THE VALUES IN TABLE 3.

1.8 BACKFILLING

THE CONSTRUCTION DRAWINGS INDICATE TRENCHES WHICH SHALL BE COMPLETELY BACKFILLED PER STANDARD DRAWINGS 400-4 AND 400-5. IN THESE CASES, THE EXCAVATED MATERIAL FROM THE TRENCH SHALL BE DISPOSED OF DIRECTLY FROM THE EQUIPMENT EXCAVATING THE TRENCH INTO APPROPRIATE TYPE CARRIERS FOR REMOVAL FROM THE CONSTRUCTION SITE. WHERE GRANULAR TRENCH BACKFILL IS INDICATED ON THE CONSTRUCTION DRAWINGS, ALL OF THE MATERIAL USED TO BACKFILL THE TRENCH, EXCLUDING THE PIPE BEDDING AND COVER MATERIAL, SHALL BE OF THE GRAVEL TYPE MATERIAL. CONTROLLED DENSITY FLOWABLE FILL IS TO BE USED FOR TRENCHES IN EXISTING STREET SECTIONS.

1.9 BEDDING (SAND)

ALL TRENCHES SHALL BE BACKFILLED BY HAND FROM THE BOTTOM OF THE TRENCH TO THE CENTERLINE OF THE PIPE WITH MATERIAL PLACED IN THREE (3) INCH LAYERS AND COMPACTED BY TAMPING IN A MANNER WHICH SHALL NOT DISTURB THE ALIGNMENT OF THE PIPE OR FITTINGS. THE BEDDING SHALL BE CONSTRUCTED OF SELECT BEDDING SAND FREE FROM STONES, REFUSE OR ORGANIC MATERIAL. EACH INDIVIDUAL LENGTH OF PIPE SHALL BE BEDDED AFTER INSTALLATION AND PRIOR TO THE CONNECTION OF AN ADDITIONAL LENGTH OF PIPE.

1.10 INITIAL BACKFILL (SAND)

THE TRENCH SHALL BE BACKFILLED BY HAND OR APPROVED MECHANICAL METHODS FROM THE CENTERLINE OF THE PIPE TO A HEIGHT ONE (1) FOOT ABOVE THE TOP OF THE PIPE. THE MATERIAL USED SHALL BE THE EQUAL OF THE SAND SPECIFIED FOR BEDDING. THE CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL SO AS TO AVOID INJURING OR DISPLACING THE PIPELINE. MECHANIZED EQUIPMENT, SUCH AS BULLDOZERS, FRONT-END LOADERS, ETC., SHALL, UNDER NO CONDITION, BE USED TO PUSH EXCAVATED MATERIAL DIRECTLY INTO THE OPEN TRENCH AS BACKFILL BETWEEN THE BOTTOM OF THE TRENCH AND A POINT ONE (1) FOOT ABOVE THE TOP OF THE PIPE.

1.11 BALANCE OF BACKFILL (GRANULAR)

WHERE GRANULAR TRENCH BACKFILL IS SPECIFIED, THE BACKFILL MATERIAL FROM ONE (1) FOOT ABOVE THE PIPE TO THE STREET OR SHOULDER GRADE (OR SUBGRADE OF PAVEMENT) SHALL CONSIST OF GRAVEL THAT SHALL BE PULDED WITH HOSE AND PIPE NOZZLE AFTER THE TRENCH IS BACKFILLED. THE CONTRACTOR SHALL FURNISH THE NECESSARY TRUCKS, WATER PUMPS, AND ALL EQUIPMENT REQUIRED TO SETTLE THE GRAVEL. BACKFILL BY THE PULDING METHOD.

WHERE GRANULAR WITH EXCAVATED MATERIAL IS INDICATED ON THE CONSTRUCTION DRAWINGS, THE CONTRACTOR MAY BACKFILL THE TRENCH FROM ONE (1) FOOT ABOVE THE TOP OF THE PIPE TO THE STREET OR SHOULDER GRADE (OR SUBGRADE OF PAVEMENT) WITH SAND OR OTHER MATERIAL OF THE SAME GRADE AS THE GRANULAR. SAND OR OTHER MATERIAL SHALL BE IN THE OPINION OF THE DIRECTOR OF PUBLIC WORKS, ARE SUITABLE FOR BACKFILLING. CARE SHOULD BE TAKEN TO CARRY THE BACKFILL UP EVENLY IN THE TRENCH. BACKFILL SHALL BE NEATLY ROUNDED OVER THE TOP OF THE TRENCH TO A SUFFICIENT HEIGHT TO ALLOW FOR SETTLEMENT TO GRADE AFTER CONSOLIDATION.

1.12 ANCHORAGE

THE CONTRACTOR SHALL ANCHOR ALL DEFLECTIONS IN EXCESS OF TEN (10) DEGREES BY USE OF RESTRAINED JOINTS OR CONCRETE BLOCKING TO PREVENT MOVEMENT OF ANY PORTION OF THE PIPE DUE TO INTERNAL PRESSURE.

THE LENGTH OF PIPE WITH RESTRAINED JOINTS CALLED FOR ON THE CONSTRUCTION DRAWINGS SHALL BE CONSIDERED AS A MINIMUM FOR THE STATED TEST PRESSURE AND STATED MINIMUM COMPACTED BACKFILL OVER THE PIPE.

IF THE PIPELINE IS TESTED AT A HIGHER THAN STATED INTERNAL PRESSURE AND/OR WITHOUT THE STATED MINIMUM COMPACTED PIPE COVER, ADDITIONAL RESTRAINED JOINTS WILL BE REQUIRED AND SHALL BE FURNISHED AND INSTALLED.

1.13 WATER SERVICE LINE POLE

THE CONTRACTOR SHALL INSTALL A 2" X 4" WOODEN POLE AT THE END OF ALL WATER SERVICE LINES. THE POLE SHALL BE PAINTED BLUE.

2.0 GRAVITY PIPELINES

2.1 TRENCH EXCAVATION

2.1.1 GENERAL
TRENCHES FOR UNDERGROUND GRAVITY PIPELINES SHALL BE EXCAVATED SO THAT THE PIPES AND APPURTENANCES CAN BE INSTALLED TO THE ALIGNMENTS AND GRADES REQUIRED. THE TRENCHES SHALL BE EXCAVATED TO A MINIMUM DEPTH OF FOUR (4) INCHES BELOW THE OUTERMOST DIMENSION OF THE PIPE BARREL OR PIPE BELL TO BE INSTALLED THEREIN. ROCK, IF PRESENT IN THE TRENCH BOTTOM, SHALL BE EXCAVATED TO A MINIMUM DEPTH FIVE (5) INCHES BELOW THE OUTERMOST DIMENSIONS OF THE PIPELINE.

SPECIAL INSTALLATION INSTRUCTIONS, ISSUED BY THE MANUFACTURER OF THE PIPE, RELATIVE TO MAKING PIPE JOINTS SHALL BE ADHERED TO BY THE CONTRACTOR.

2.1.2 TRENCH DEPTH
THE TRENCH SHALL BE EXCAVATED TO A MINIMUM DEPTH OF FOUR (4) INCHES BELOW THE OUTERMOST DIMENSION OF THE PIPE BARREL OR PIPE BELL TO BE INSTALLED THEREIN. ROCK, IF PRESENT IN THE TRENCH BOTTOM, SHALL BE EXCAVATED TO A MINIMUM DEPTH FIVE (5) INCHES BELOW THE OUTERMOST DIMENSIONS OF THE PIPELINE.

THE TRENCH FOR LATERAL SERVICE GRAVITY PIPELINES SHALL BE EXCAVATED TO A MINIMUM DEPTH OF FOUR (4) INCHES BELOW THE OUTERMOST DIMENSION OF THE PIPE BARREL OR PIPE BELL TO BE INSTALLED THEREIN. ROCK, IF PRESENT IN THE LATERAL SERVICE GRAVITY PIPELINE TRENCH BOTTOM, SHALL BE EXCAVATED TO A MINIMUM DEPTH FOUR (4) INCHES BELOW THE OUTERMOST DIMENSIONS OF THE PIPELINE.

2.2 INSTALLING GRAVITY PIPELINES

THE GRAVITY PIPELINES SHALL BE LAID IN A FINISHED TRENCH COMMENCING AT THE LOW POINT WITH THE SPIGOT ENDS POINTING IN THE DIRECTION OF FLOW. ALL GRAVITY PIPE, INCLUDING SERVICE LATERALS, SHALL BE PLACED ON A DRY, STABLE BEDDING SAND SHAPED TO RECEIVE THE BARREL SUPPORT FOR THE FULL LENGTH OF THE PIPE, AND FORM A STRAIGHT GRAVITY PIPELINE WITH A UNIFORM GRADE TRUE TO THE ESTABLISHED LINE AND GRADE. IF THE OPEN END OF THE PIPE SECTION IS LOW, THE INDIVIDUAL PIPE MUST BE REMOVED AND THE BED PREPARED TO THE PROPER GRADE.

LINE AND GRADE FOR THE GRAVITY PIPELINE MAY BE ESTABLISHED BY THE CONTRACTOR USING BATTER BOARDS, GRADE STRINGS, PLUMB LINES AND GRADE RODS. THE BATTER BOARDS SHALL BE PLACED AT EACH GRADE STAKE. THREE (3) CONSECUTIVE BATTER BOARDS SHALL BE IN PLACE AT ALL TIES UNLESS OTHERWISE APPROVED BY THE DIRECTOR OF PUBLIC WORKS. DISTANCE BETWEEN GRADE STAKES SHALL NOT EXCEED TWENTY-FIVE (25) FEET OR BY THE USE OF A LASER BEAM, WITH A MINIMUM OF STAKES PLACED AT EACH MANHOLE AND 100 FEET UPSTREAM OF EACH BRANCH.

2.3 BEDDING

2.3.1 PIPE BEDDING - ALL PIPE (BEDDING SAND)
A CRADLE PIPE BEDDING SAND SHALL BE FURNISHED FOR ALL GRAVITY PIPELINES. THE BEDDING SAND SHALL BE THOROUGHLY COMPACTED BY HAND-PLACING UNDER THE PIPELINE AND HAND-TAMPING TO PRODUCE A DENSE CRADLE FREE FROM VOIDS TO COMPLETELY SUPPORT THE PIPELINE THROUGHOUT ITS ENTIRE LENGTH. THERE SHALL BE A MINIMUM OF FOUR (4) INCHES OF BEDDING BETWEEN THE OUTERMOST DIMENSION OF THE PIPE AND THE BOTTOM OF THE EXCAVATION AREAS FOR NORMAL EXCAVATION. THERE SHALL BE A MINIMUM OF FIVE (5) INCHES OF BEDDING SAND BETWEEN THE OUTERMOST DIMENSION OF THE PIPE AND THE BOTTOM OF THE EXCAVATION IN AREAS OF ROCK EXCAVATION.

AS SOON AS POSSIBLE AFTER JOINT IS MADE, THE BALANCE OF THE BEDDING SAND SHALL BE PLACED UP TO THE SPRING LINE OF THE PIPE TO OFFSET CONDITIONS THAT MIGHT TEND TO MOVE THE PIPE OFF FROM LINE OR GRADE. DISTURBING THE PIPE IN ANY MANNER AFTER THE JOINTS HAVE BEEN MADE SHALL NOT BE PERMITTED. THE BALANCE OF THE BEDDING SAND SHALL BE THOROUGHLY COMPACTED BY HAND-PLACING AND HAND-TAMPING TO PRODUCE A DENSE FILL AROUND THE PIPELINE. THE PIPE BEDDING SHALL EXTEND LATERALLY TO THE OUTERMOST LIMITS OF THE TRENCH.

2.3.1 INITIAL BACKFILL (SAND)

THE TRENCH SHALL BE BACKFILLED BY HAND OR APPROVED MECHANICAL METHODS FROM THE SPRING LINE OF THE PIPE TO A HEIGHT ONE (1) FOOT ABOVE THE TOP OF THE PIPE. THE MATERIAL USED SHALL BE THE EQUAL OF THE SAND SPECIFIED FOR BEDDING. THE CONTRACTOR SHALL USE SPECIAL CARE IN PLACING THIS PORTION OF THE BACKFILL SO AS TO AVOID INJURING OR DISPLACING THE PIPELINE. MECHANIZED EQUIPMENT, SUCH AS BULLDOZERS, FRONT-END LOADERS, ETC., SHALL, UNDER NO CONDITION, BE USED TO PUSH EXCAVATED MATERIAL DIRECTLY INTO THE OPEN TRENCH AS BACKFILL BETWEEN THE BOTTOM OF THE TRENCH AND A POINT ONE (1) FOOT ABOVE THE TOP OF THE PIPE.

2.4 INSTALLING GRAVITY SERVICE LINES

GRAVITY SERVICE LINES SHALL TERMINATE AT A POINT ONE (1) FOOT BEHIND THE UTILITY EASEMENT ON THE PROPERTY TO BE SERVED, UNLESS OTHERWISE INDICATED BY THE DIRECTOR OF PUBLIC WORKS. GRAVITY SERVICE LINES WILL BE FITTED WITH A STOPPER INTO THE UPPER END. THE SLOPE OF SERVICE LINE FROM UPPER END TOWARD THE MAIN LINE GRAVITY PIPELINE SHALL BE TWO (2) FEET PER 100 LINEAR FEET OF SERVICE LINE, UNLESS OTHERWISE AUTHORIZED OR APPROVED BY THE CITY ENGINEER. THE SERVICE LINES SHALL BE LAID ON A STRAIGHT GRADE UNLESS OTHERWISE DIRECTED OR APPROVED BY THE CITY ENGINEER. NO SEWER LINE MAY BE CUT OR BROKEN IN THE FIELD TO PERMIT THE INSTALLATION OF A SERVICE WYE.

2.4.2 INSTALLATION

APPROPRIATE SECTIONS OF THIS SPECIFICATION FOR TRENCH EXCAVATION, PIPELINE INSTALLATION, FLUSHING, CLEANING AND TESTING, PIPE BEDDING, INITIAL BACKFILL AND BALANCE OF BACKFILL SHALL APPLY TO THE INSTALLATION OF THE SPECIFIC TYPE OF MATERIAL USED FOR THE GRAVITY SERVICE LINES. THE BALANCE OF BACKFILL MATERIAL SHALL BE GRAVEL FOR ALL GRAVITY SERVICE LINES INSTALLED WITHIN THE STREET ROADWAY.

2.4.3 SERVICE LINE POLE

THE CONTRACTOR SHALL INSTALL A 2" X 4" WOODEN POLE AT THE INTERMEDIATE UPPER END OF ALL GRAVITY SERVICE LINES. THE POLE SHALL BE INSTALLED IN A VERTICAL PLANE EXTENDING FROM THE BOTTOM OF THE SERVICE PIPE TO A POINT TWELVE (12) INCHES ABOVE GROUND ELEVATION. THE POLE SHALL BE PAINTED GREEN. CARE SHOULD BE EXERCISED TO KEEP THE POLE PLUMB DURING BACKFILLING OPERATIONS AND TO PRESERVE THE ABOVE-GROUND EXTENSION DURING CLEAN UP AND RESTORATION OPERATIONS.

2.5 CLEANING AND ALIGNMENT CHECK

THE CONTRACTOR SHALL CLEAN OUT THE COMPLETED GRAVITY PIPELINE OF ALL SAND, GRAVEL, STONES, OR OTHER DEBRIS BY PROPER FLUSHING. OTHER METHODS MAY BE USED IF APPROVED BY THE DIRECTOR OF PUBLIC WORKS. PARTICULAR CARE SHALL BE TAKEN AT THE LOCATION WHERE A CONNECTION IS MADE TO AN EXISTING SYSTEM TO PREVENT ANY FOREIGN MATERIALS FROM ENTERING AN OPERATING PIPELINE. THE OUTLET FOR A NEW GRAVITY PIPELINE SHALL BE BULKHEAD AT THE EXISTING MANHOLE AND BULKHEAD SHALL NOT BE REMOVED UNTIL THE PROJECT IS COMPLETED.

THE CONTRACTOR AND THE DIRECTOR OF PUBLIC WORKS WILL THEN CHECK THE PIPELINE BETWEEN MANHOLES FOR ALIGNMENT BY MEANS OF MANDREL TESTINGS. IF THE TEST SHOWS ANY MISALIGNMENT, DISPLACED PIPE, OR ANY OTHER DEFECTS, THE DEFECTS DESIGNATED BY THE DIRECTOR OF PUBLIC WORKS SHALL BE REMEDIED BY THE CONTRACTOR.

2.6 TESTING

2.6.1 LEAKAGE

THE CONTRACTOR SHALL FURNISH ALL LABOR, EQUIPMENT, AND MATERIALS WHICH ARE REQUIRED TO TEST THE SECTIONS OF THE GRAVITY PIPELINE AND MANHOLES FOR TIGHTNESS. EITHER THE INFILTRATION TEST OR THE HYDROSTATIC TEST WILL BE ORDERED BY THE DIRECTOR OF PUBLIC WORKS. ALL TESTS SHALL BE CONDUCTED UNDER THE SUPERVISION OF THE CITY.

THE CONTRACTOR SHALL DETERMINE THE LOCATIONS WHERE EXCESS WATER IS ENTERING OR LEAVING THE PIPELINE. IF THE AMOUNT OF LEAKAGE EXCEEDS THE ALLOWABLE, THE GRAVITY PIPELINE AND/OR MANHOLES SHALL BE REPAIRED AND RETESTED UNTIL THE LEAKAGE OF THE SYSTEM IS WITHIN THE ALLOWABLE LIMITS AS SPECIFIED. THE TESTS FOR LEAKAGE SHALL INCLUDE PORTIONS OF THE SERVICE LINES TO BE INSTALLED BY THE CONTRACTOR.

ALL VISIBLE LEAKS SHALL BE REPAIRED BY THE CONTRACTOR WHETHER AMOUNT OF LEAKAGE EXCEEDS THE ALLOWABLE OR NOT.

2.6.2 INFILTRATION TEST

THE INFILTRATION TEST WILL BE CONDUCTED ON THAT PORTION OF THE PIPELINE WHERE THE TOP OF THE PIPE AT THE UPPER MANHOLE IS A MINIMUM OF ONE (1) FOOT BELOW THE LEVEL OF THE GROUND WATER TABLE.

THE INFILTRATION TEST SHALL BE MADE BY INSTALLING A WEIR OR OTHER MEASURING DEVICE APPROVED BY THE DIRECTOR OF PUBLIC WORKS IN THE LOWER END OF THE PIPELINE SECTION TO BE TESTED. THE INCOMING PIPE OR PIPES IN THE UPPER END OF THE TEST SECTION SHALL BE SECURELY SEALED.

THE QUANTITY OF GROUND WATER INFILTRATING INTO THE TEST SECTION SHALL BE MEASURED. THE ALLOWABLE LEAKAGE FOR GRAVITY PIPELINES SHALL NOT EXCEED ONE-HUNDRED (100) GALLONS PER DAY PER MILE OF PIPE PER INCH OF PIPE DIAMETER.

THE FOLLOWING FORMULAE ARE GIVEN FOR THE EASE OF CALCULATIONS:

GALLONS PER MINUTE ALLOWED = 0.000131"L/D
CUBIC FEET PER SECOND ALLOWED = 0.00016"L/D
WHERE L = LENGTH OF 100-FOOT STATIONS OF SEWER BEING TESTED AND
D = NOMINAL DIAMETER IN INCHES OF SEWER BEING TESTED

EACH SIZE OF MAIN SEWER PIPE SHALL BE TESTED SEPARATELY. EACH TEST SECTION SHALL NOT EXCEED 1,000 FEET OF SEWER PIPE.



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HENDERSON DEVELOPMENT

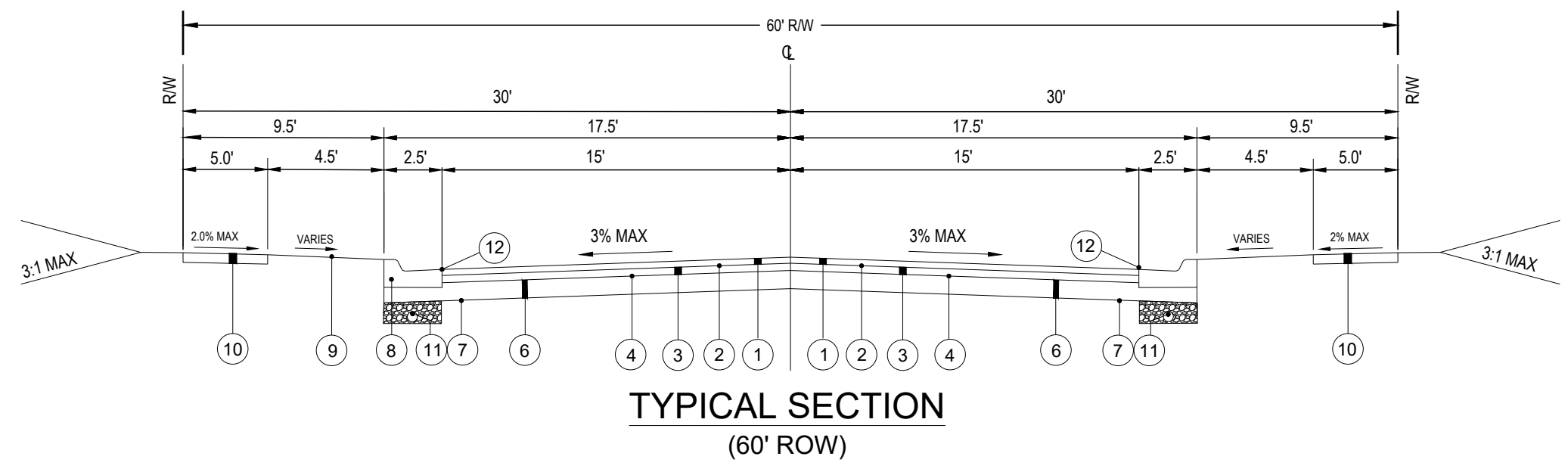
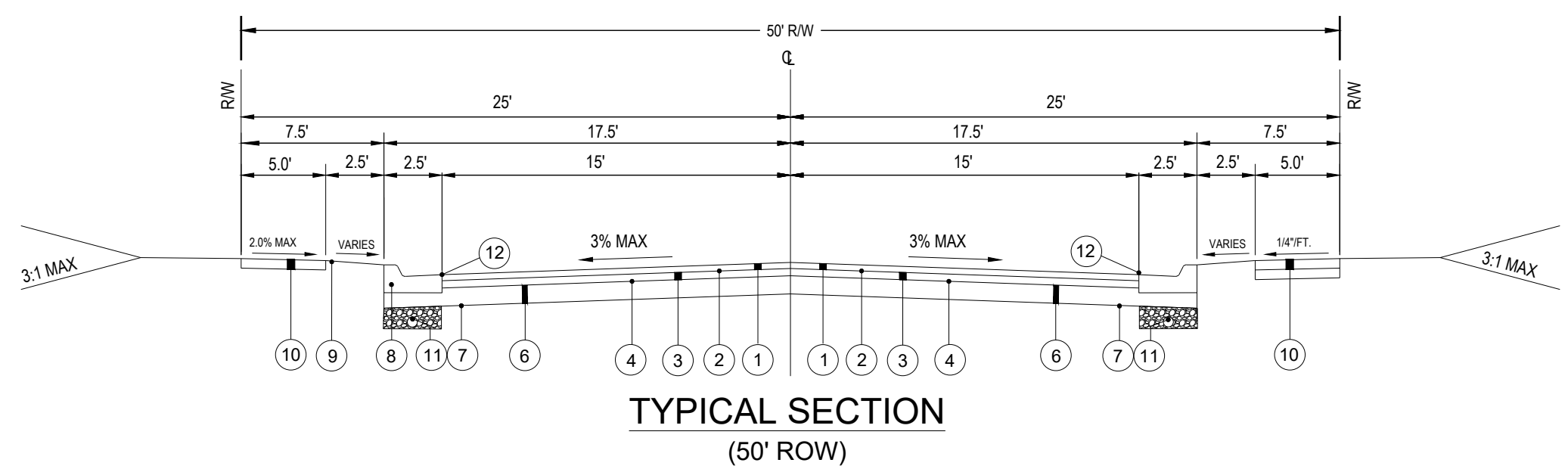
SHAKER MEADOWS  
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Revisions / Submissions

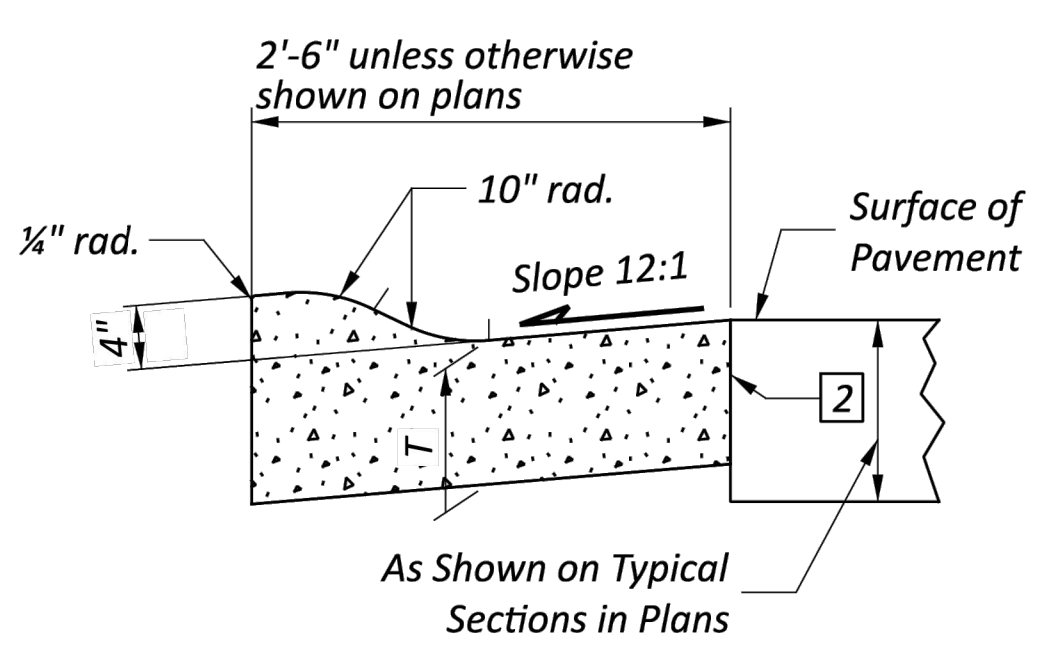
ID Description Date

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Project Number: 764699  
Scale: AS SHOWN  
Drawn By: BBM  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

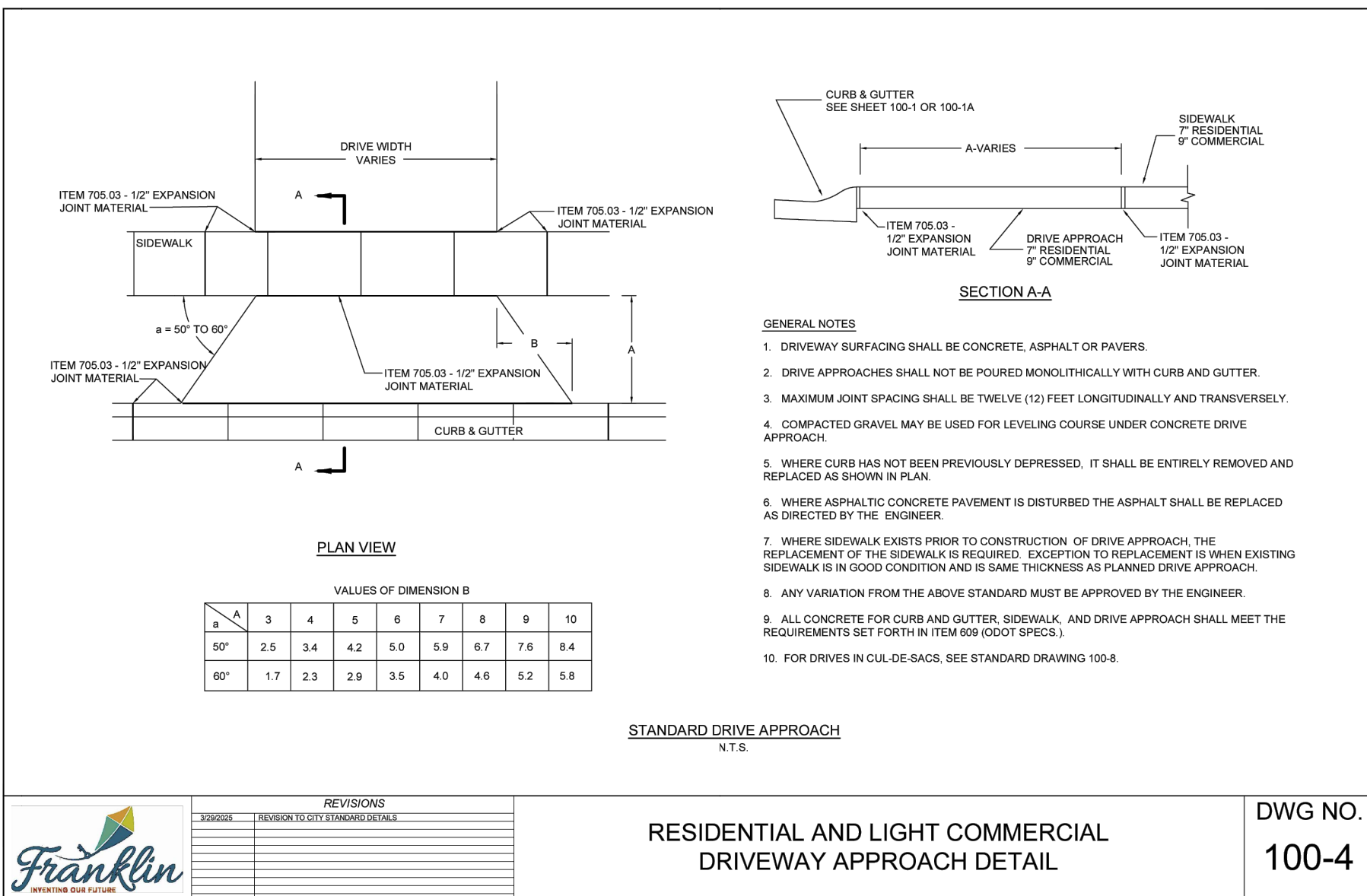
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TYPICAL SECTIONS & DETAILS



- 1 ITEM 204 - SUBGRADE COMPACTION (INCIDENTAL TO ITEM 608)
- 2 ITEM SPL - WOVEN GEOTEXTILE, MORAFI 600X OR EQUIVALENT, ALL OVERLAPS TO BE 18"
- 3 ITEM 304 - CRUSHED AGGREGATE BASE (10" MIN), ADJUST FOR DESIGN
- 4 ITEM 441 - ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE 2 (2")
- 5 ITEM 441 - ASPHALT CONCRETE SURFACE COURSE, TYPE 1 (1.5")
- 6 ITEM 407 - ASPHALT TACK COAT @0.1 GAL/.S.Y.
- 7 ITEM 203 - GRANULAR MATERIAL
- 8 ITEM 605 - 6" RIGID PVC PERFORATED PIPE UNDERDRAIN
- 9 ITEM 609 - COMBINATION CURB AND GUTTER, ODOT TYPE 3
- 10 ITEM 659 - 6" TOPSOIL PLACED, SEEDING (80% FESCUE, 20% RYE) AND MULCHING
- 11 ITEM SPL - 3" WIDE HOT JOINT SEALER WHERE ASPHALT MEETS CURB PER ODOT MATERIAL SPEC 705.04
- 12 ITEM 608 - 5" CONCRETE WALK, AS PER PLAN (7" AT DRIVES AND RAMP FOR RESIDENTIAL)

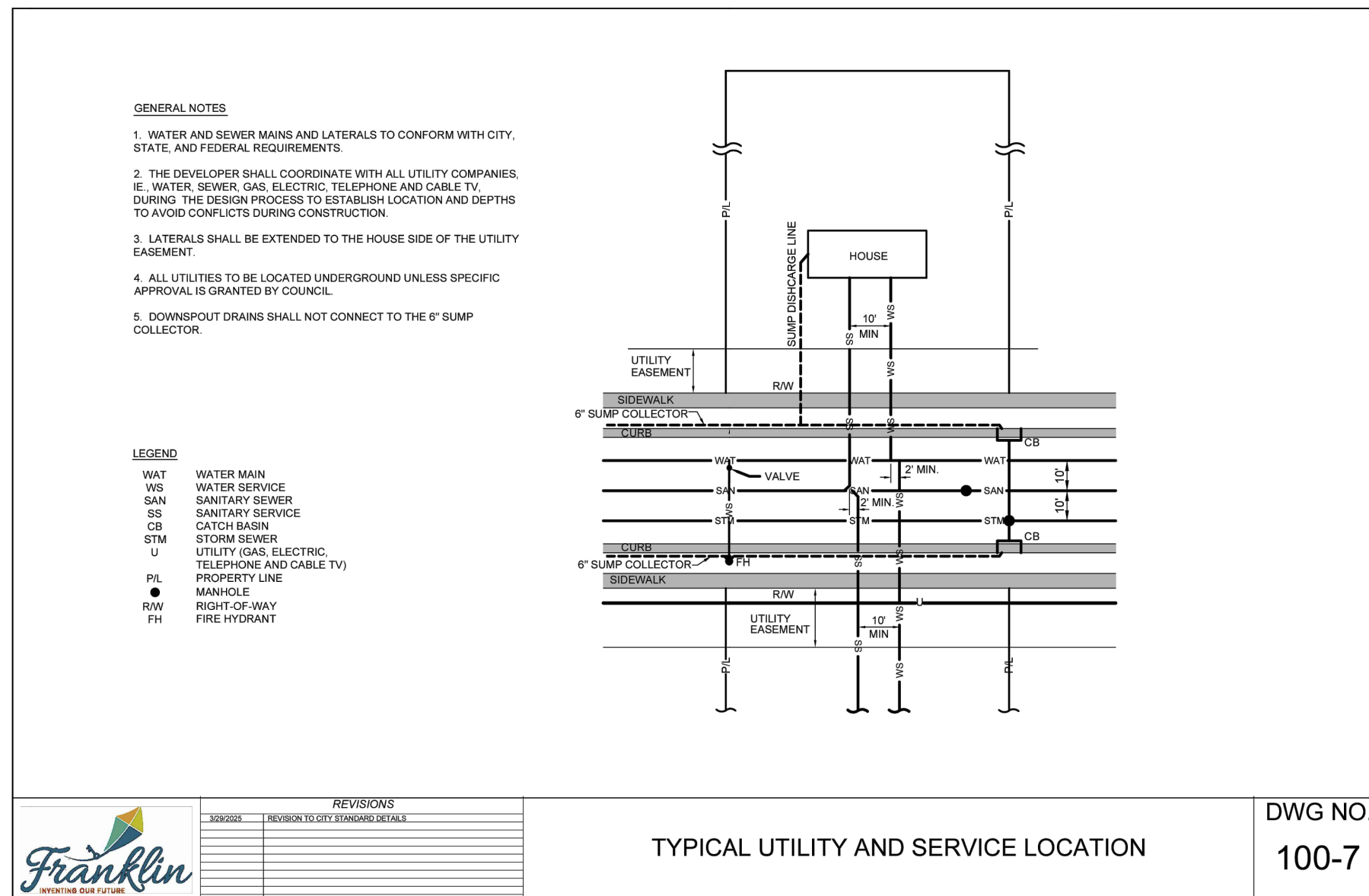


TYPE 3



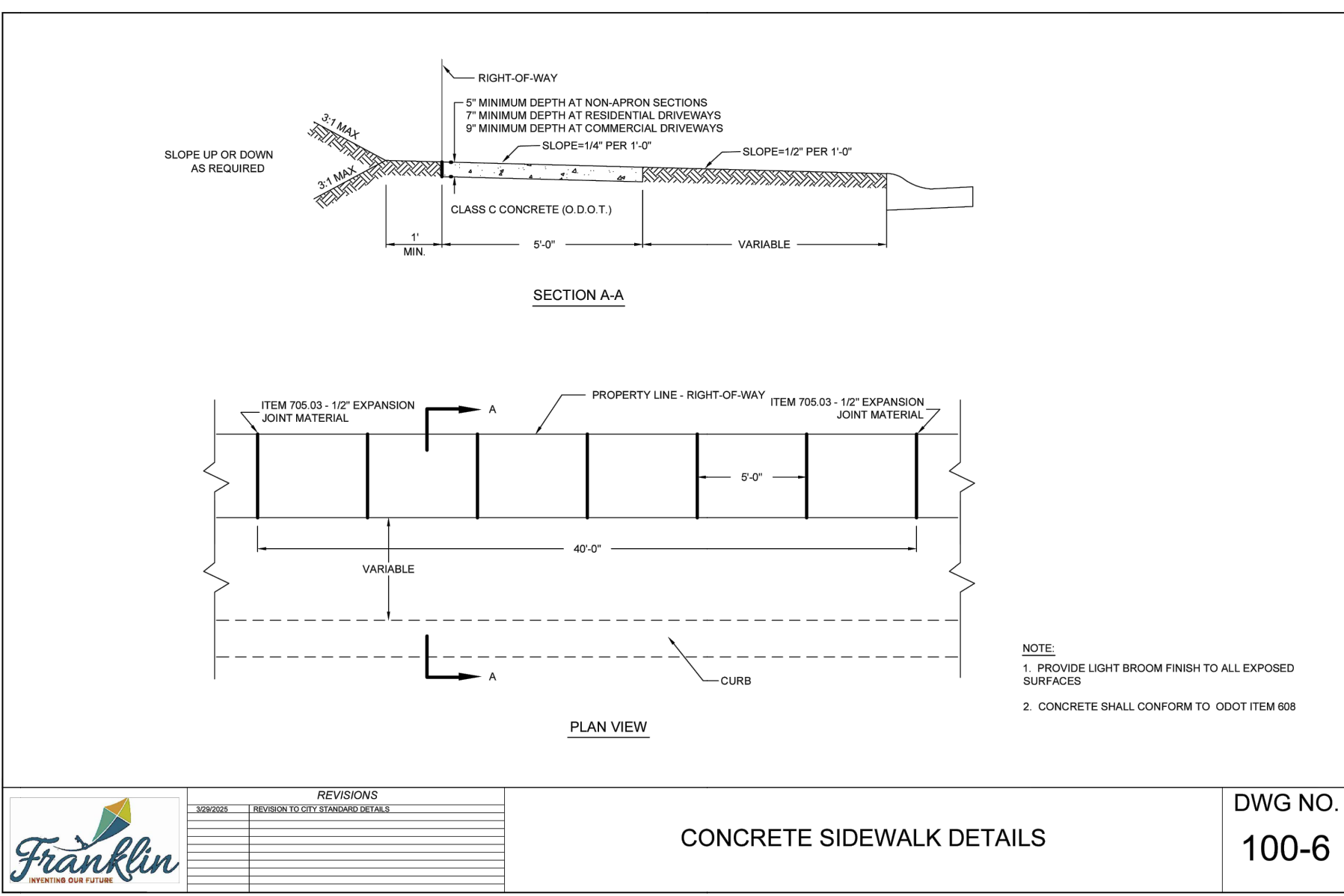
RESIDENTIAL AND LIGHT COMMERCIAL DRIVEWAY APPROACH DETAIL

DWG NO. 100-4



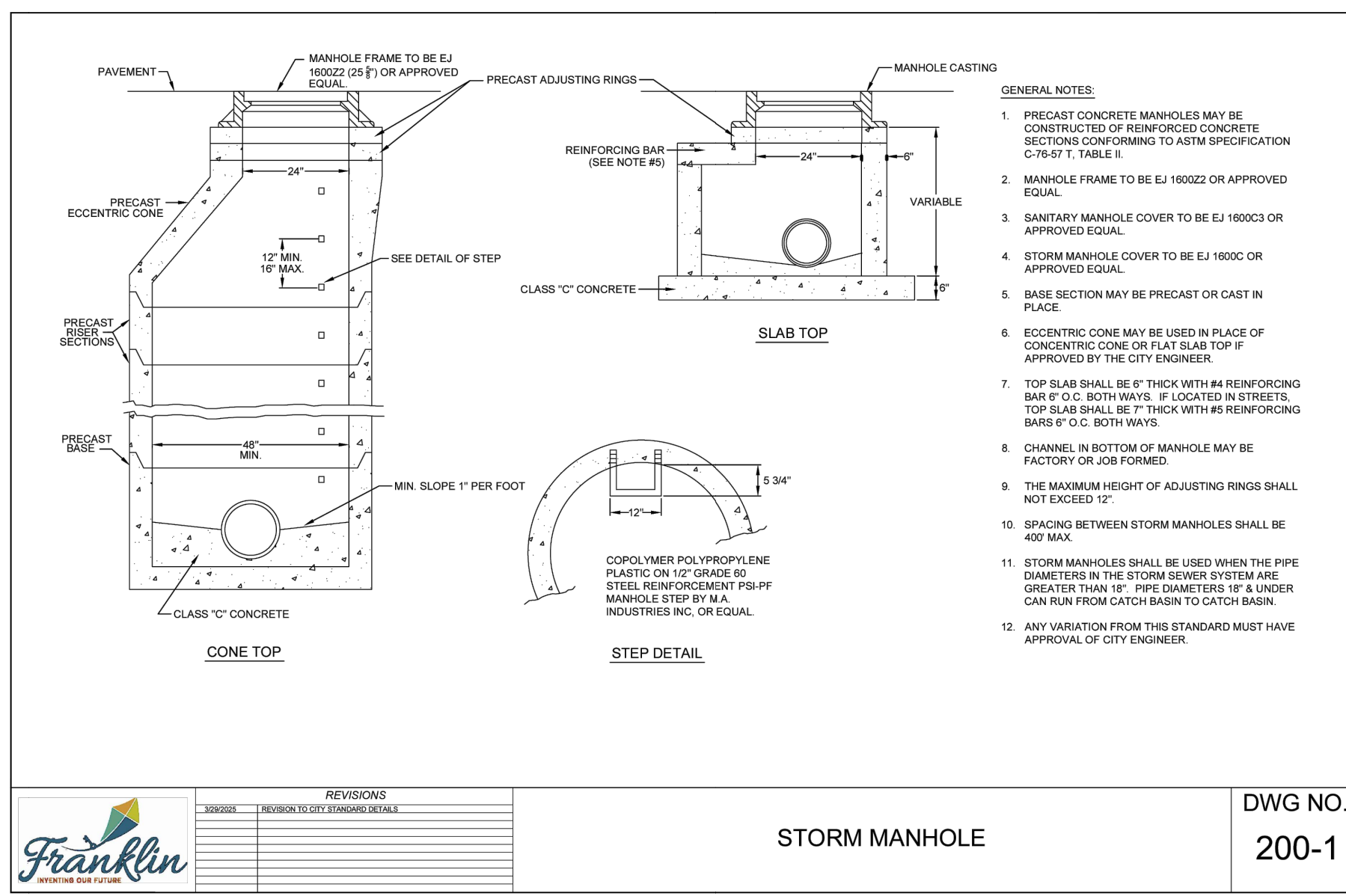
TYPICAL UTILITY AND SERVICE LOCATION

DWG NO. 100-7



CONCRETE SIDEWALK DETAILS

DWG NO. 100-6



STORM MANHOLE

DWG NO. 200-1

FORTY-EIGHT (48) HOURS BEFORE DIGGING IS TO COMMENCE, THE CONTRACTORS SHALL NOTIFY THE FOLLOWING AGENCIES: STATE UTILITIES PROTECTION SERVICE AT 611 OR 1-800-362-2764 AND ALL OTHER AGENCIES WHICH MIGHT HAVE UNDERGROUND UTILITIES INVOLVING THIS PROJECT AND ARE NONMEMBERS OF OHIO UTILITIES PROTECTION SERVICE



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**ACCEPTABLE FIRE HYDRANT BRANDS**

- KENNEDY GUARDIAN 4" x 8" STORZ CONNECTION
- AMERICAN DARNING 4" x 8" STORZ CONNECTION

**FIRE HYDRANT DETAILS**

- DA - MAIN VALVE OPENING: 4" x 4"
- DA - PUMPER CONNECTION: 1/2" x 1/2" O.D. x 3/4" I.D.
- DA - HOSE CONNECTIONS: 1/2" x 1/2"
- THREAD TYPE: NATIONAL STANDARD; NO THREAD EXPOSED TO WATER
- DIMENSIONS: OPERATING NUT: TOP 1/8" BOTTOM 1/8"
- SHAPE: CAPS & OPERATING NUT: PENTAGON
- COLOR TO BE PAINTED: RED
- DIRECTION OF OPENING: RIGHT (CLOCKWISE)
- VALVE SEAT: MACHINED BRONZE
- BASE: TWO PIECES WITH BREAK AWAY FEATURE
- TOP: DR
- BEARING: ANTI-FRICTION THRUST BEARING
- SPACING BETWEEN HYDRANTS: 300' MAX. (400' MAX. FOR RESIDENTIAL)

**BLOWOFF DETAIL**

CONCRETE BLOCKING FOR VERTICAL BENDS (CU FT)

SIZE (11 1/4" x 22 1/2" x 22 1/2")	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"
6"	4	8	11
8"	7	14	20
10"	11	21	30
12"	15	30	44

**CONCRETE BLOCKING FOR HORIZONTAL BENDS**

SIZE OF PIPE	DEGREE OF BEND	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"
3" x 4"	15°	1	1	1
4"	15°	1	1	1
6"	15°	1	1	1
8"	15°	1	1	1
10"	15°	1	1	1
12"	15°	1	1	1
15"	15°	1	1	1

**TEES**

RUN	BRANCH	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"	11 1/4" x 22 1/2"
3" x 4"	1/2"	1	1	1
4"	1/2"	1	1	1
6"	1/2"	1	1	1
8"	1/2"	1	1	1
10"	1/2"	1	1	1
12"	1/2"	1	1	1
15"	1/2"	1	1	1

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 300-1**

**CONCRETE BLOCKING FOR VERTICAL BENDS**

**CONCRETE BLOCKING FOR HORIZONTAL BENDS**

**TEES**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 300-2**

**RESIDENTIAL WATER MAIN AND SERVICE CONNECTIONS**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 300-3**

**RESIDENTIAL METER PIT DETAILS**

METER SIZE	ANGLE VALVE	CHECK VALVE	METER PIT & COVER	CORP STOP	COUPLINGS
3/4"	FORD BA43-332-NL	FORD HA34-332-NL	METER PIT 20" X 30" SIEMA RMP0300-SW-W ROUND STRAIGHT WALL COVER FORD METER BOX COVER FC3 TRUMBULL LIDS PART #667-5810	FORD FB10003-NL	FORD CA4-33-NL
1"	FORD BA43-444-NL	FORD HA34-444-NL	METER PIT 20" X 30" SIEMA RMP0300-SW-W ROUND STRAIGHT WALL COVER FORD METER BOX COVER FC3 TRUMBULL LIDS PART #667-5810	FORD FB10004-NL	FORD CA4-44-NL

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 300-4**

**SANITARY SEWER MANHOLE**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 400-1**

**DEEP CONNECTOR AND HOUSE CONNECTION**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 400-2**

**BUILDING SEWERS**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 400-3**

**BACKFILL REQUIREMENTS FOR NEW STREETS**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 400-4**

**BACKFILL REQUIREMENTS FOR EXISTING STREETS**

**REVISIONS**

NO.	DESCRIPTION	DATE

**DWG NO. 400-5**



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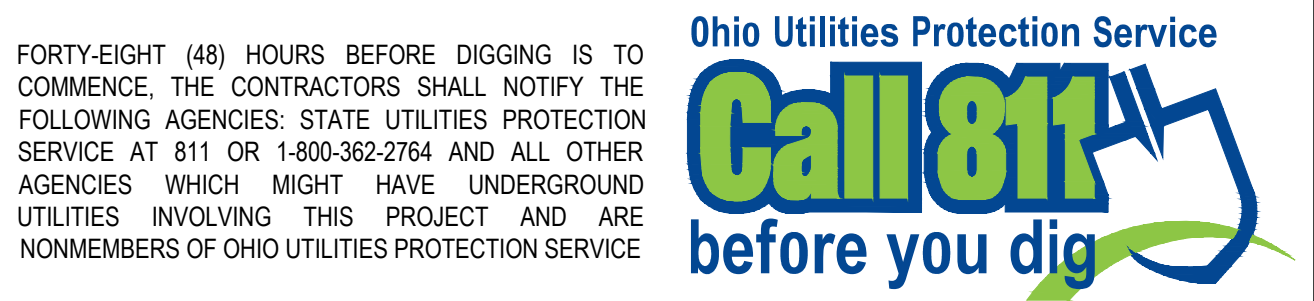
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Project Number: 764699  
Scale: AS SHOWN  
Drawn By: BBM  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

Drawing Title: UTILITY DETAILS





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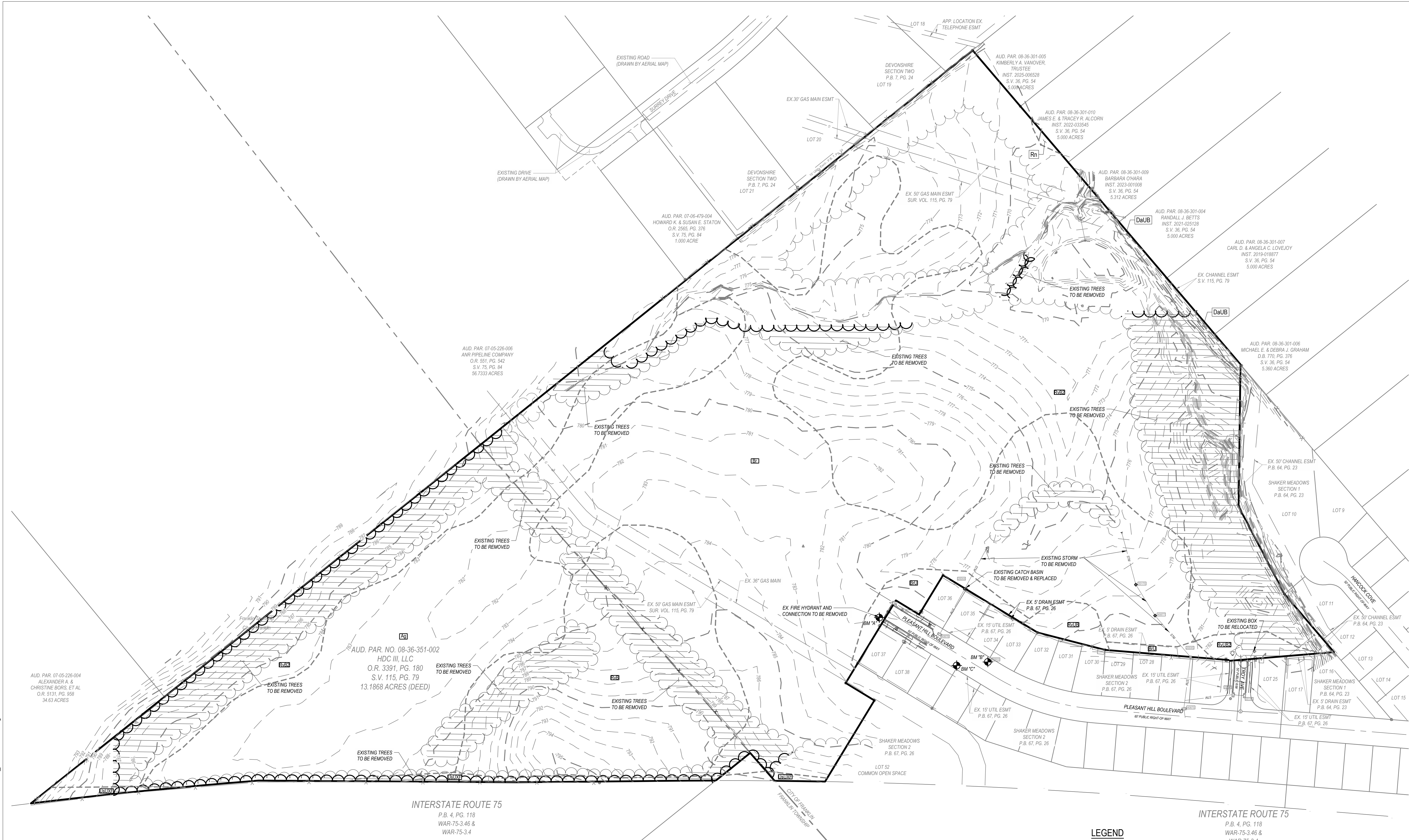
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**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
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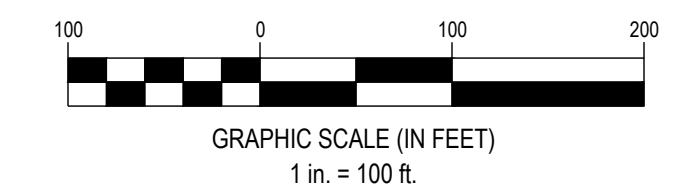
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Drawing Title:  
**EXISTING CONDITIONS**



**LEGEND**

- SUBJECT BOUNDARY
- - - EXISTING SOIL BOUNDARY
- - - EXISTING PROPERTY LINE
- - - EXISTING RW
- - - EXISTING CENTERLINE
- - - EXISTING FACE OF CURB
- - - EXISTING BACK OF CURB
- - - EXISTING STORM SEWER
- - - EXISTING SANITARY SEWER
- - - EXISTING WATER MAIN
- - - EXISTING STORM STRUCTURE
- - - EXISTING SANITARY SEWER
- - - EXISTING WATER MAIN
- - - EXISTING INDEX CONTOUR
- - - EXISTING INTERMEDIATE CONTOUR
- - - EXISTING STREAM (TO REMAIN)

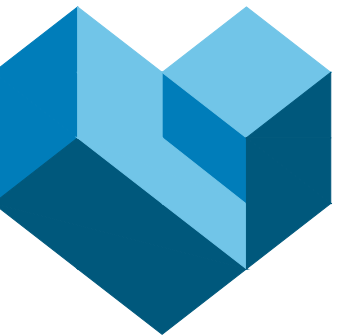


**SOIL INFORMATION:**

Ag: ALGIERS SILT LOAM, HYDROLOGIC SOIL GROUP C/D  
 Bf: BROOKSTON SILTY CLAY LOAM, FINE-SILTY, 0-2% SLOPES, HYDROLOGIC SOIL GROUP B/D  
 BU: BROOKSTON FINE-SILTY URBAN LAND COMPLEX, 0-2% SLOPES, HYDROLOGIC SOIL GROUP B/D  
 DAUB: DANNA-URBAN LAND COMPLEX, 2-6% SLOPES, HYDROLOGIC SOIL GROUP C  
 Rf: ROSS LOAM, 0-2% SLOPES, OCCASIONALLY FLOODED, HYDROLOGIC SOIL GROUP B  
 RWB: RUSSELL-MIAMIAN SILT LOAMS, 2-6% SLOPES, MODERATELY ERODED, HYDROLOGIC SOIL GROUP C  
 RWB2: RUSSELL-MIAMIAN SILT LOAMS, 2-6% SLOPES, MODERATELY ERODED, HYDROLOGIC SOIL GROUP C  
 RWUB: RUSSELL-MIAMIAN-URBAN LAND COMPLEX, 2-6% SLOPES, HYDROLOGIC SOIL GROUP C  
 RWUB2: RUSSELL-MIAMIAN-URBAN LAND COMPLEX, 2-6% SLOPES, MODERATELY ERODED, HYDROLOGIC SOIL GROUP C  
 UUXF: URBAN LAND-UDORTMENTS COMPLEX, SMOOTHED, 0-50% SLOPES

STORM SCHEDULE		SANITARY SCHEDULE	
CATCH BASIN 20044 RIM=777.78' BOTTOM OF STRUCTURE=774.30' TOP OF DIRT/MUD=775.34' TOP OF WATER=776.19'	CATCH BASIN 20175 RIM=778.36' 24" CPP(NW)=774.91' 24" CPP(SE)=775.16'	SANITARY MANHOLE 20114 RIM=781.21' 8" PVC(SW)=773.17' 8" PVC(NE)=773.06'	SANITARY MANHOLE 20140 RIM=782.35' 8" PVC(SW)=770.05' 8" PVC(NW)=770.03' 8" PVC(NE)=770.00'
CATCH BASIN 20045 RIM=780.06' 24" CPP(NW)=775.71' 18" CPP(SE)=776.12'	CURB INLET 40875 T/C=781.23' 18" CPP(NW)=777.41' 15" CPP(SE)=777.98'		
CURB INLET 20141 T/C=781.62' 12" CPP(NE)=778.41' 12" CPP(SW)=778.52'	CURB INLET 40876 T/C=779.57' 24" CPP(NW)=775.53'		
CURB INLET 20145 T/C=781.64' 12" CPP(SW)=778.73'	CATCH BASIN 40877 RIM=779.60' 24" CPP(NW)=775.25' 24" CPP(SE)=775.28'		

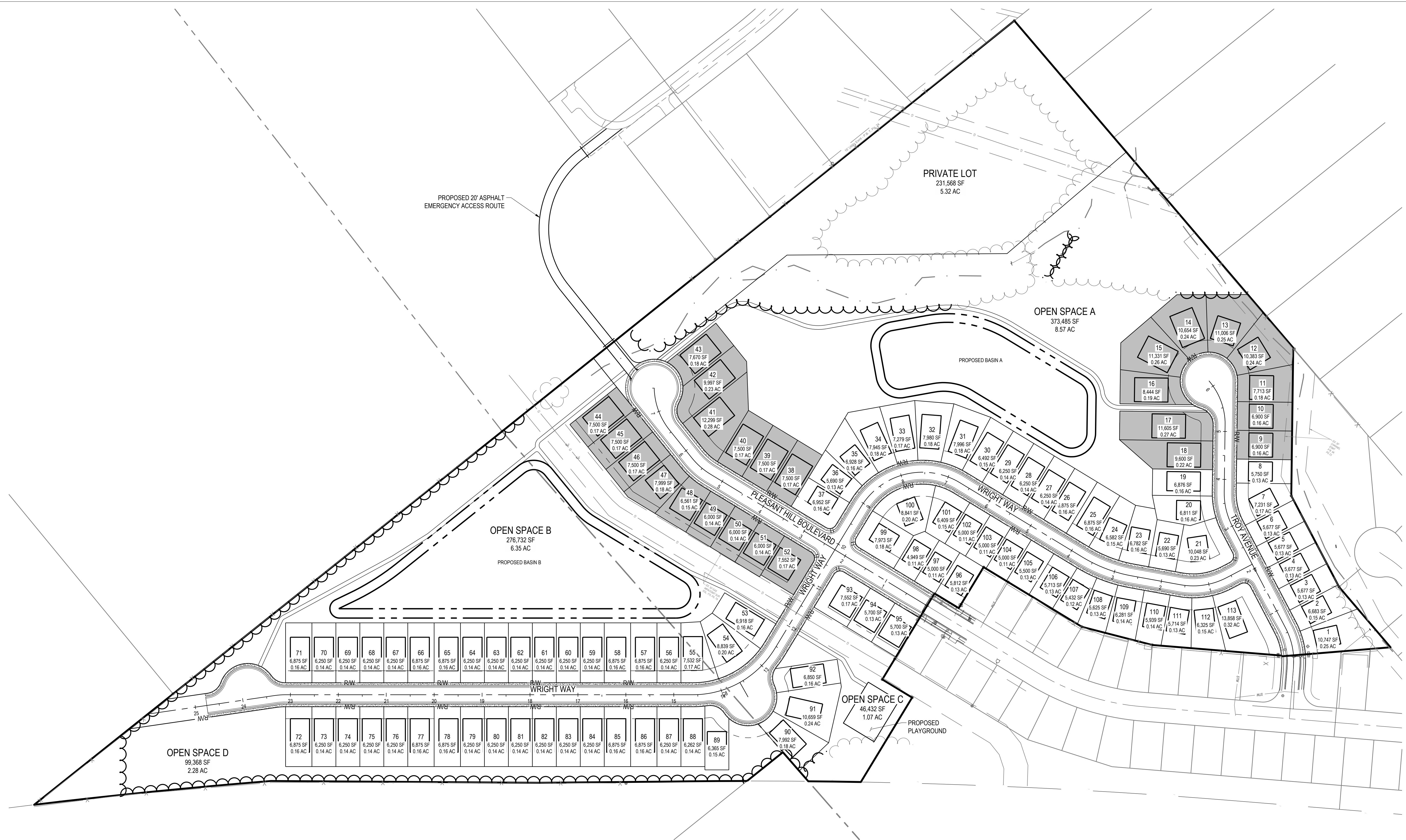
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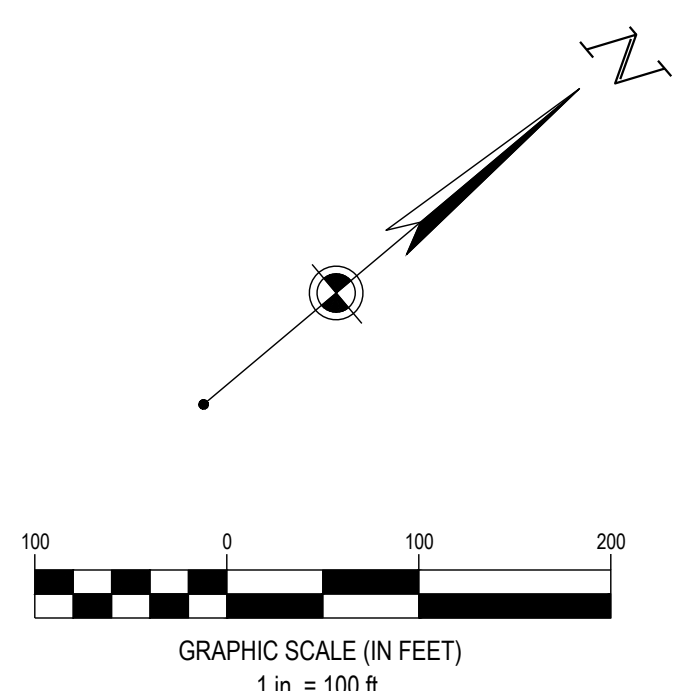
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Phone: 937.435.8584 Fax: 888.208.4826

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**LEGEND**

- SUBJECT BOUNDARY
- EXISTING PROPERTY LINE
- EXISTING RW
- EXISTING CENTERLINE
- EXISTING FACE OF CURB
- EXISTING BACK OF CURB
- PROPOSED RIGHT-OF-WAY
- EXISTING STREAM (TO REMAIN)
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED BASIN
- PROPOSED CENTERLINE
- PROPOSED CURB & GUTTER
- 60' WIDE LOTS
- 50' WIDE LOTS



HENDERSON DEVELOPMENT

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

ID	Description	Date

Drawing Title:  
**OVERALL SITE PLAN**

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 Project Number: 764699  
 Scale: 1"=100'  
 Drawn By: MMH  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

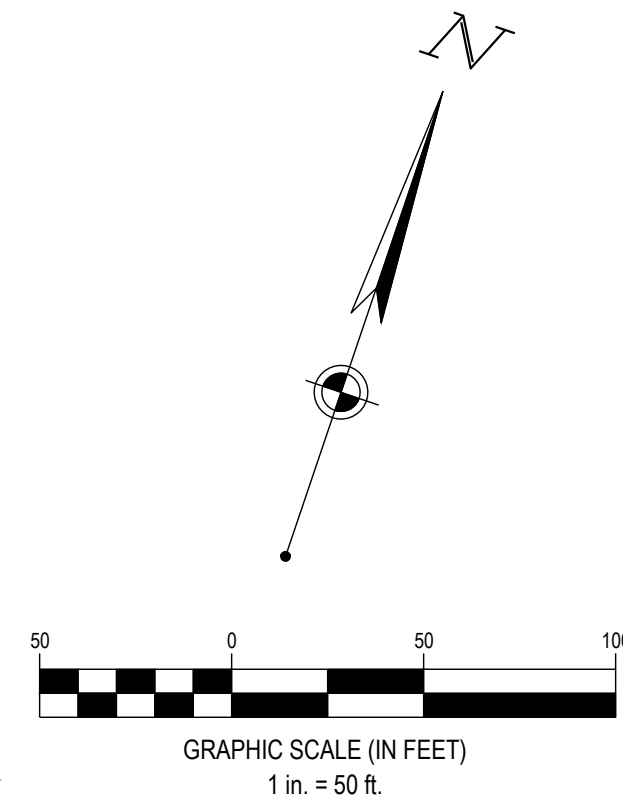
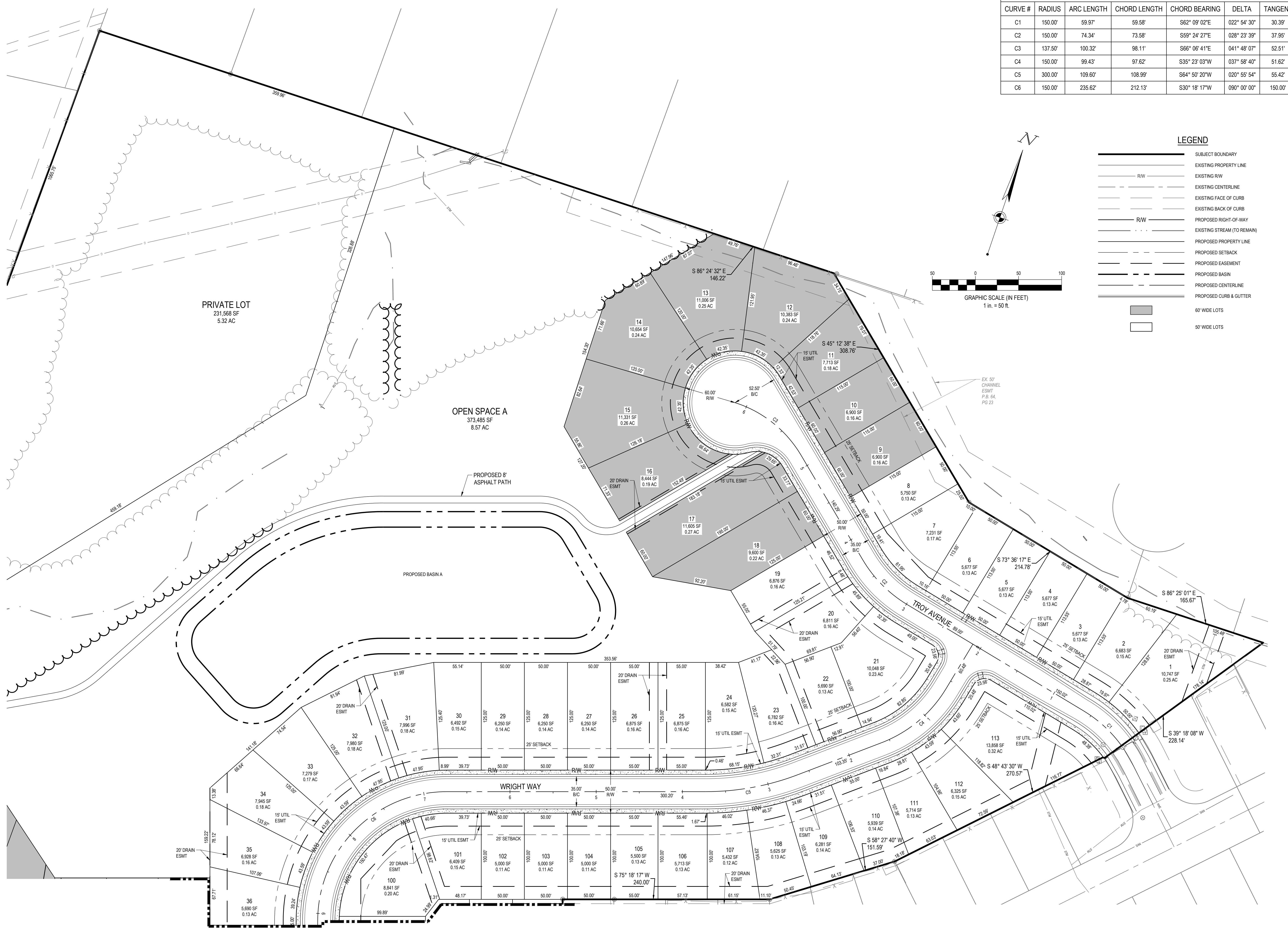
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CENTERLINE CURVE TABLE						
CURVE #	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA	TANGENT
C1	150.00'	59.97'	59.58'	S62° 09' 02"E	022° 54' 30"	30.39'
C2	150.00'	74.34'	73.58'	S59° 24' 27"E	028° 23' 39"	37.95'
C3	137.50'	100.32'	98.11'	S66° 06' 41"E	041° 48' 07"	52.51'
C4	150.00'	99.43'	97.62'	S35° 23' 03"W	037° 58' 40"	51.62'
C5	300.00'	109.60'	108.99'	S64° 50' 20"W	020° 55' 54"	55.42'
C6	150.00'	235.62'	212.13'	S30° 18' 17"W	090° 00' 00"	150.00'



**LEGEND**

	SUBJECT BOUNDARY
	EXISTING PROPERTY LINE
	EXISTING RW
	EXISTING CENTERLINE
	EXISTING FACE OF CURB
	EXISTING BACK OF CURB
	PROPOSED RIGHT-OF-WAY
	EXISTING STREAM (TO REMAIN)
	PROPOSED PROPERTY LINE
	PROPOSED SETBACK
	PROPOSED EASEMENT
	PROPOSED BASIN
	PROPOSED CENTERLINE
	PROPOSED CURB & GUTTER
	60' WIDE LOTS
	50' WIDE LOTS

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**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

ID	Description	Date

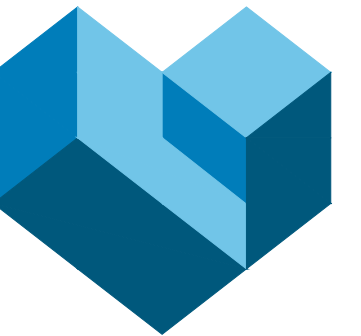
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 Drawn By: MMH  
 Checked By: JEE  
 Date: NOVEMBER 2025  
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Drawing Title:  
**SITE PLAN**

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MATCHLINE, SEE SHEET 8

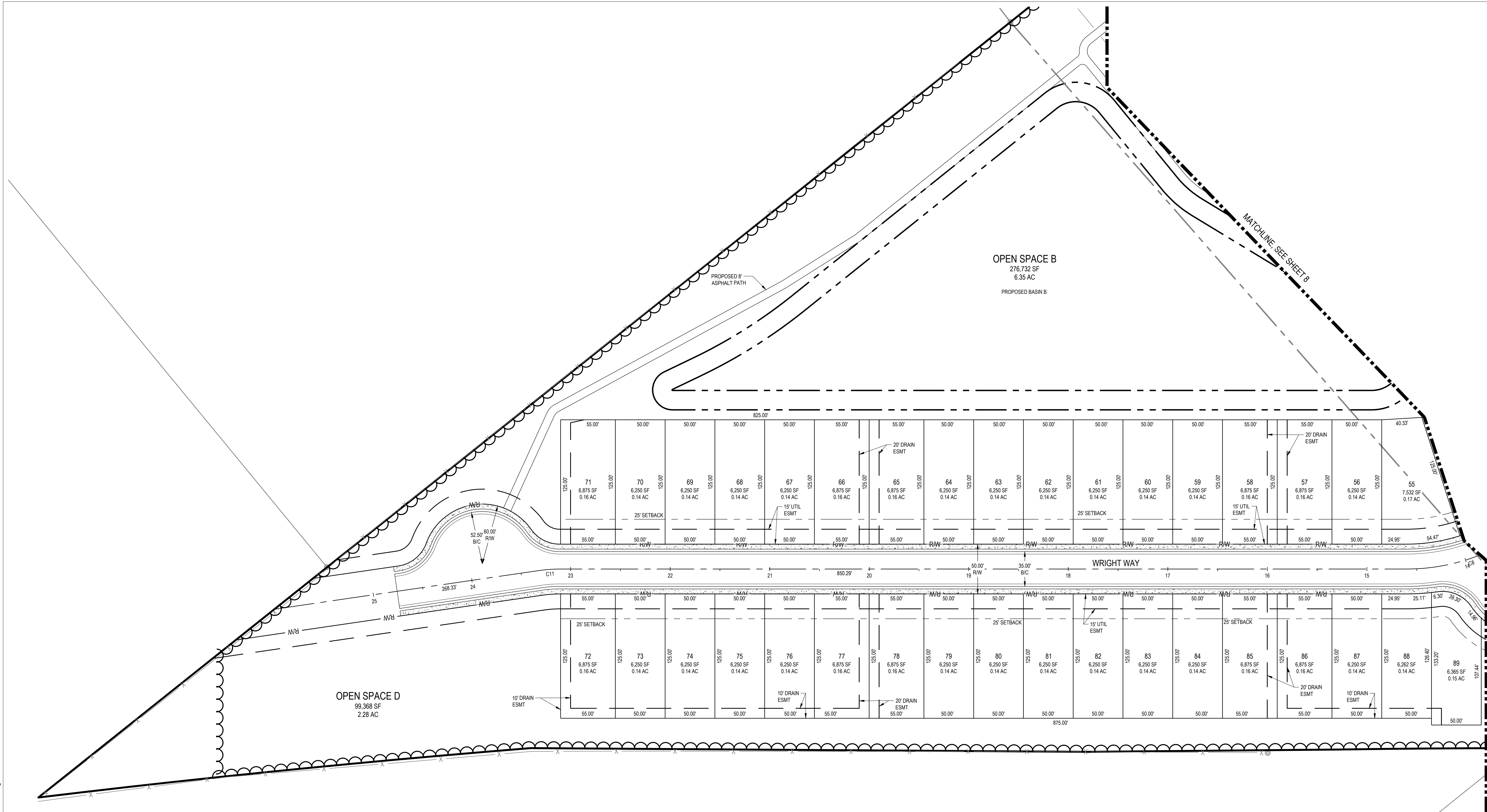




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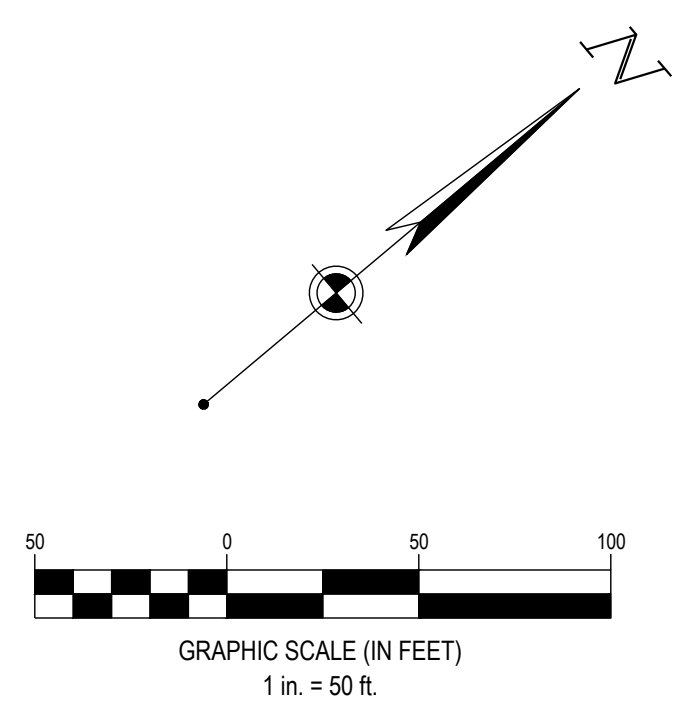
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CENTERLINE CURVE TABLE						
CURVE #	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA	TANGENT
C8	200.00'	102.51'	101.39'	S29° 21' 12"W	029° 21' 56"	52.40'
C11	150.00'	21.78'	21.76'	S39° 52' 37"W	008° 19' 06"	10.91'

LEGEND	
	SUBJECT BOUNDARY
	EXISTING PROPERTY LINE
	EXISTING RW
	EXISTING CENTERLINE
	EXISTING FACE OF CURB
	EXISTING BACK OF CURB
	PROPOSED RIGHT-OF-WAY
	EXISTING STREAM (TO REMAIN)
	PROPOSED PROPERTY LINE
	PROPOSED SETBACK
	PROPOSED EASEMENT
	PROPOSED BASIN
	PROPOSED CENTERLINE
	PROPOSED CURB & GUTTER
	60' WIDE LOTS
	50' WIDE LOTS



HENDERSON DEVELOPMENT

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

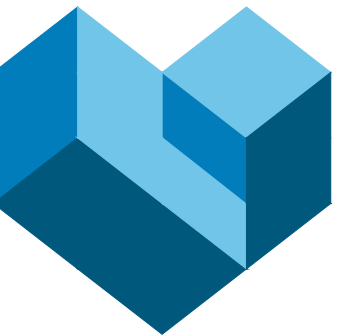
Revisions / Submissions

ID	Description	Date

Drawing Title:  
**SITE PLAN**

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Project Number: 764699  
Scale: 1"=50'  
Drawn By: MMH  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

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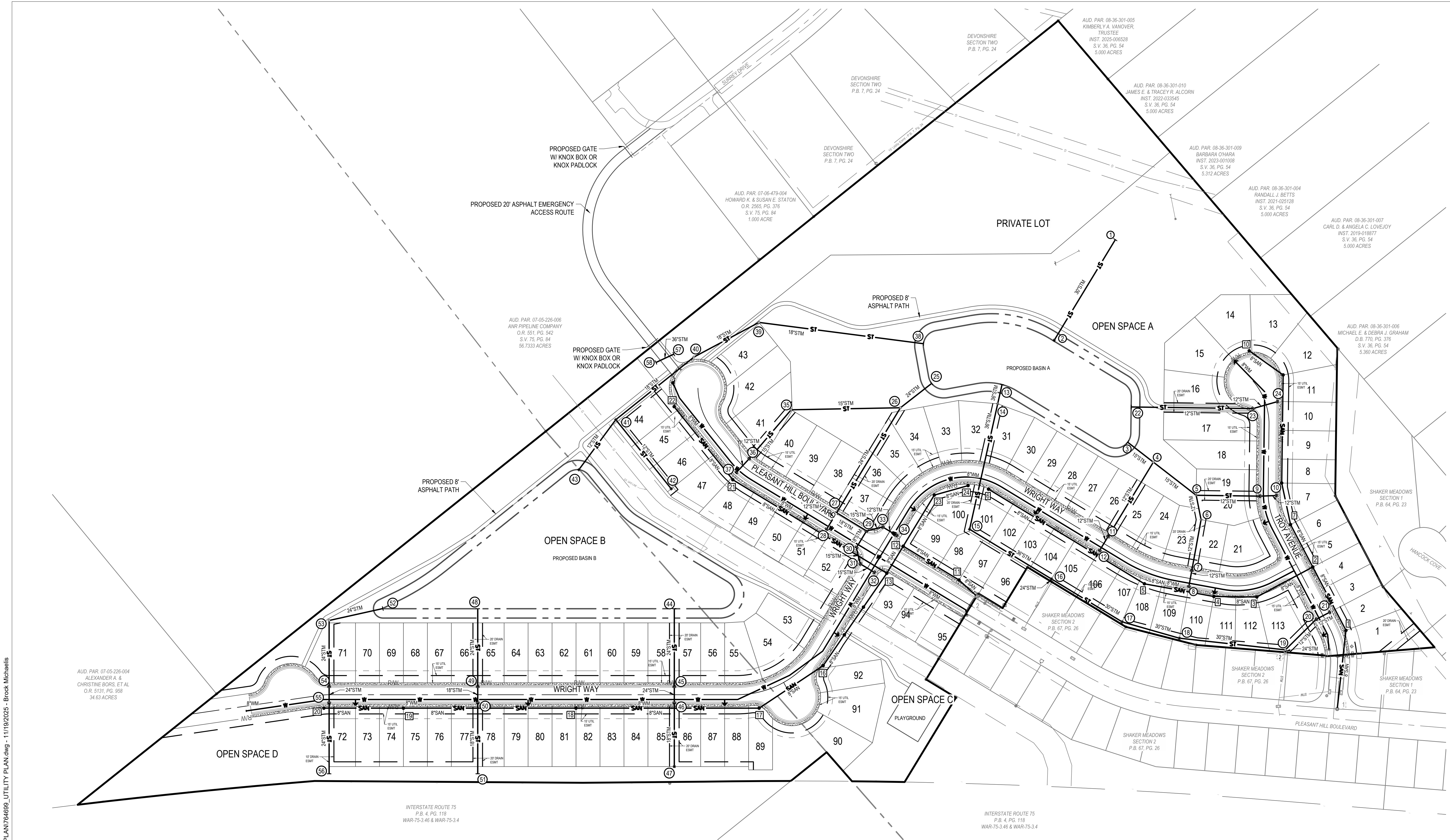
HENDERSON DEVELOPMENT

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

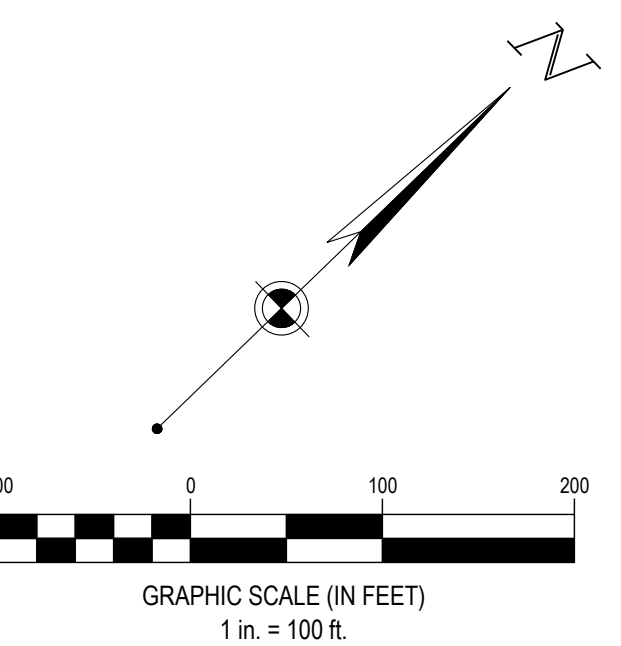
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 Scale: 1" = 100'  
 Drawn By: BMM  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**OVERALL UTILITY PLAN**

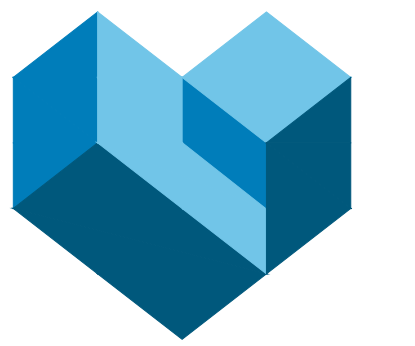


**LEGEND**

	SUBJECT BOUNDARY		PROPOSED SETBACK
	EXISTING PROPERTY LINE		PROPOSED EASEMENT
	EXISTING RW		PROPOSED BASIN
	EXISTING CENTERLINE		PROPOSED CENTERLINE
	EXISTING FACE OF CURB		PROPOSED CURB & GUTTER
	EXISTING BACK OF CURB		PROPOSED STORM SEWER
	EXISTING STORM SEWER		PROPOSED STORM STRUCTURES
	EXISTING SANITARY SEWER		PROPOSED SANITARY SEWER
	EXISTING WATER MAIN		PROPOSED SANITARY MANHOLE
	EXISTING STORM STRUCTURES		PROPOSED WATER MAIN
	EXISTING SANITARY STRUCTURE		PROPOSED HYDRANT/VALVE
	EXISTING WATER STRUCTURES		
	PROPOSED RIGHT-OF-WAY		
	PROPOSED PROPERTY LINE		



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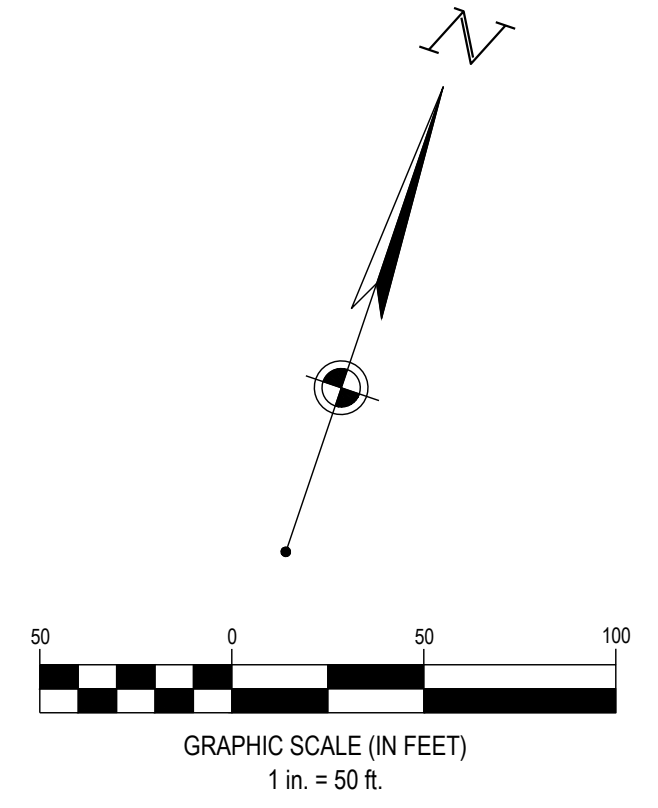
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LEGEND

- SUBJECT BOUNDARY
EXISTING PROPERTY LINE
EXISTING RW
EXISTING CENTERLINE
EXISTING FACE OF CURB
EXISTING BACK OF CURB
EXISTING STORM SEWER
EXISTING SANITARY SEWER
EXISTING WATER MAIN
EXISTING STORM STRUCTURES
EXISTING SANITARY STRUCTURE
EXISTING WATER STRUCTURES
EXISTING INTERMITTENT STREAM
PROPOSED RIGHT-OF-WAY
PROPOSED PROPERTY LINE
PROPOSED SETBACK
PROPOSED EASEMENT
EXISTING FACE OF CURB
PROPOSED CENTERLINE
PROPOSED CURB & GUTTER
PROPOSED STORM SEWER
PROPOSED SANITARY SEWER
PROPOSED STORM STRUCTURES
PROPOSED SANITARY MANHOLE
PROPOSED WATER MAIN
PROPOSED HYDRANT/VALVE

NOTES:

- 1. SANITARY SERVICE STATIONS IN THIS SHEET ARE REFERENCING SANITARY ALIGNMENT



LATERAL SERVICE SCHEDULE table with columns: MH, LOT NUMBER, WYE STATION, LENGTH OF SERVICE, LENGTH OF RISER, MIN. SLOPE, EOS INV ELEVATION, FINISHED GRADE. Includes rows for MH 10, 9, 8, 7, 2.

LATERAL SERVICE SCHEDULE table with columns: MH, LOT NUMBER, WYE STATION, LENGTH OF SERVICE, LENGTH OF RISER, MIN. SLOPE, EOS INV ELEVATION, FINISHED GRADE. Includes rows for MH 6, 5, 4.

LATERAL SERVICE SCHEDULE table with columns: MH, LOT NUMBER, WYE STATION, LENGTH OF SERVICE, LENGTH OF RISER, MIN. SLOPE, EOS INV ELEVATION, FINISHED GRADE. Includes rows for MH 3, 2, 1.

LATERAL SERVICE SCHEDULE table with columns: MH, LOT NUMBER, WYE STATION, LENGTH OF SERVICE, LENGTH OF RISER, MIN. SLOPE, EOS INV ELEVATION, FINISHED GRADE. Includes rows for MH 24, 23, 12.

HENDERSON DEVELOPMENT

SHAKER MEADOWS  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions  
ID Description Date

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Project Number: 764699  
Scale: 1"=50'  
Drawn By: MMH  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
UTILITY PLAN

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HENDERSON DEVELOPMENT

SHAKER MEADOWS  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

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Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
UTILITY PLAN

MH	LOT NUMBER	WYE STATION	LENGTH OF SERVICE	LENGTH OF RISER	MIN. SLOPE	EOS INV ELEVATION	FINISHED GRADE
17							
	90	5+51.00	89	3	2.08%	786.44	791.10
	54	5+47.00	56	4	2.08%	786.72	791.50
	91	5+24.00	64	3	2.08%	785.82	790.60
16							
	92	4+81.00	89	4	2.08%	785.44	789.90
	53	4+29.00	56	0	2.08%	782.54	788.30
15							
14							
13							
12							
	93	1+56.00	78	3	2.08%	778.96	784.00
	99	1+51.00	12	4	2.08%	778.54	783.00
	94	+93.00	78	4	2.08%	779.68	784.00
	98	-61.00	12	4	2.08%	778.18	783.00
11							
	95	+33.00	75	3	2.08%	778.30	783.40
	97	-22.00	17	4	2.08%	778.03	782.60
EX2							
	96	-12.00	22	4	2.08%	777.90	782.20

MH	LOT NUMBER	WYE STATION	LENGTH OF SERVICE	LENGTH OF RISER	MIN. SLOPE	EOS INV ELEVATION	FINISHED GRADE
22							
	44	5+66.00	13	3	2.08%	780.56	784.90
	43	5+51.00	135	0	2.08%	780.10	784.80
	45	5+15.00	12	2	2.08%	779.36	784.50
	42	4+91.00	80	0	2.08%	778.72	784.50
	46	4+55.00	12	2	2.08%	779.12	784.10
	41	4+31.00	78	0	2.08%	778.44	784.10
	47	3+92.00	11	2	2.08%	778.64	783.70
21							
	48	3+70.00	10	3	2.08%	779.62	784.10
	40	3+17.00	78	0	2.08%	777.88	783.30
	49	2+97.00	12	3	2.08%	779.36	783.90
	39	2+40.00	78	0	2.08%	777.57	783.10
	50	2+20.00	12	3	2.08%	779.06	783.50
	38	1+87.00	78	0	2.08%	777.36	782.70
	51	1+60.00	12	3	2.08%	778.82	783.10
	52	1+02.00	12	2	2.08%	777.61	782.70
13							

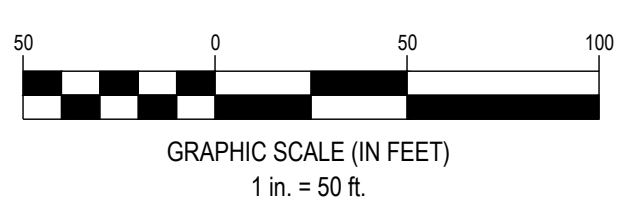
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	EXISTING STORM SEWER
	EXISTING SANITARY SEWER
	EXISTING WATER MAIN
	EXISTING STORM STRUCTURES
	EXISTING SANITARY STRUCTURES
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	PROPOSED STORM STRUCTURES
	PROPOSED SANITARY SEWER
	PROPOSED SANITARY MANHOLE
	PROPOSED WATER MAIN
	PROPOSED HYDRANT/VALVE



AUD. PAR. 07-06-479-004  
HOWARD K. & SUSAN E. STATON  
O.R. 2665, PG. 376  
S.V. 75, PG. 84  
1.000 ACRE

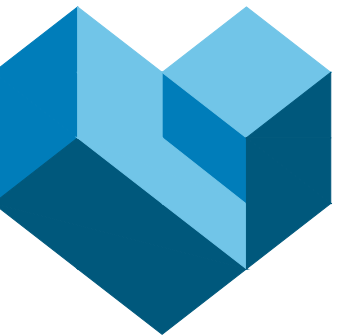
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ANR PIPELINE COMPANY  
O.R. 551, PG. 542  
S.V. 75, PG. 84  
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INTERSTATE ROUTE 75  
P.B. 4, PG. 118  
WAR-75-346 & WAR-75-34



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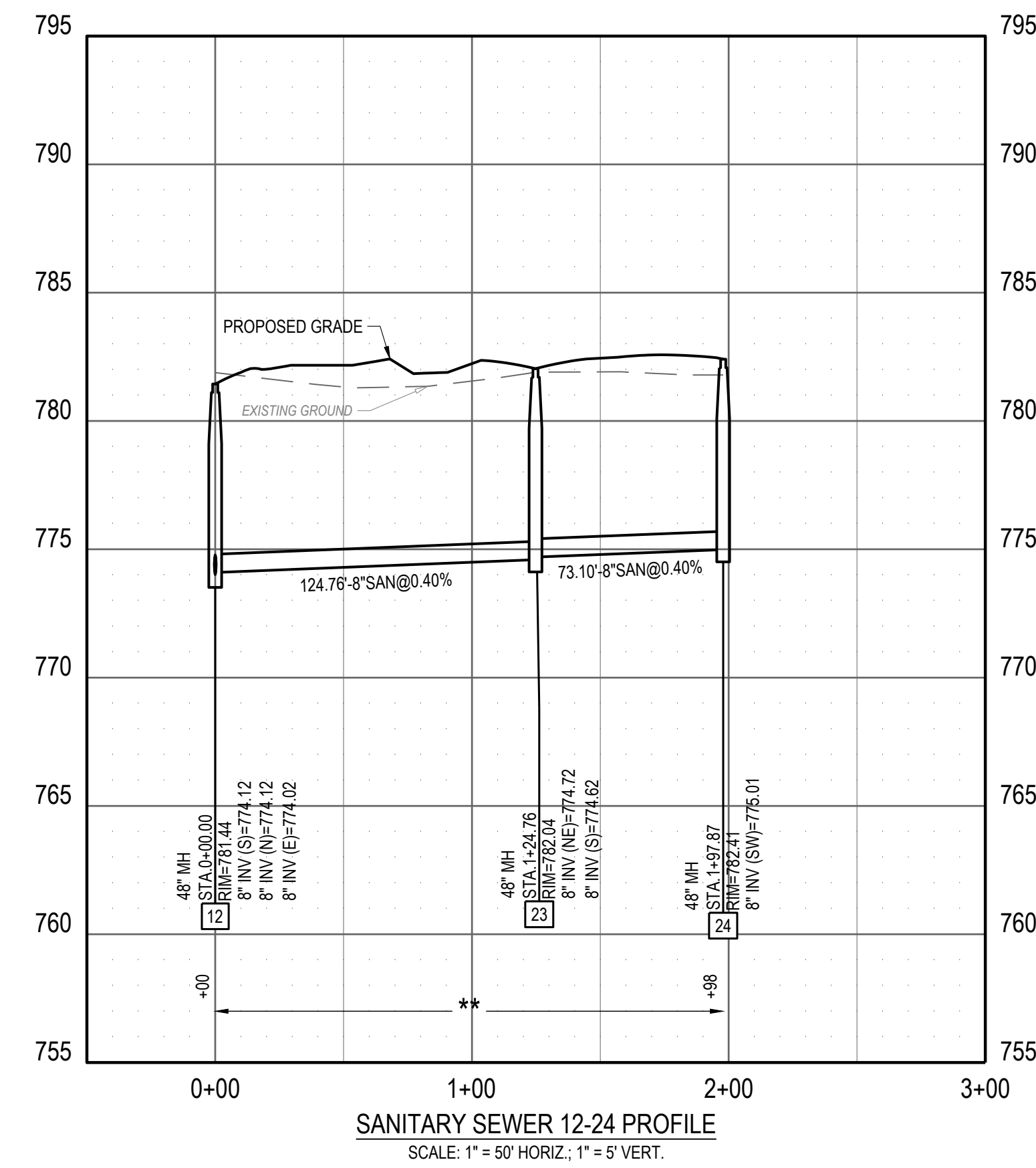
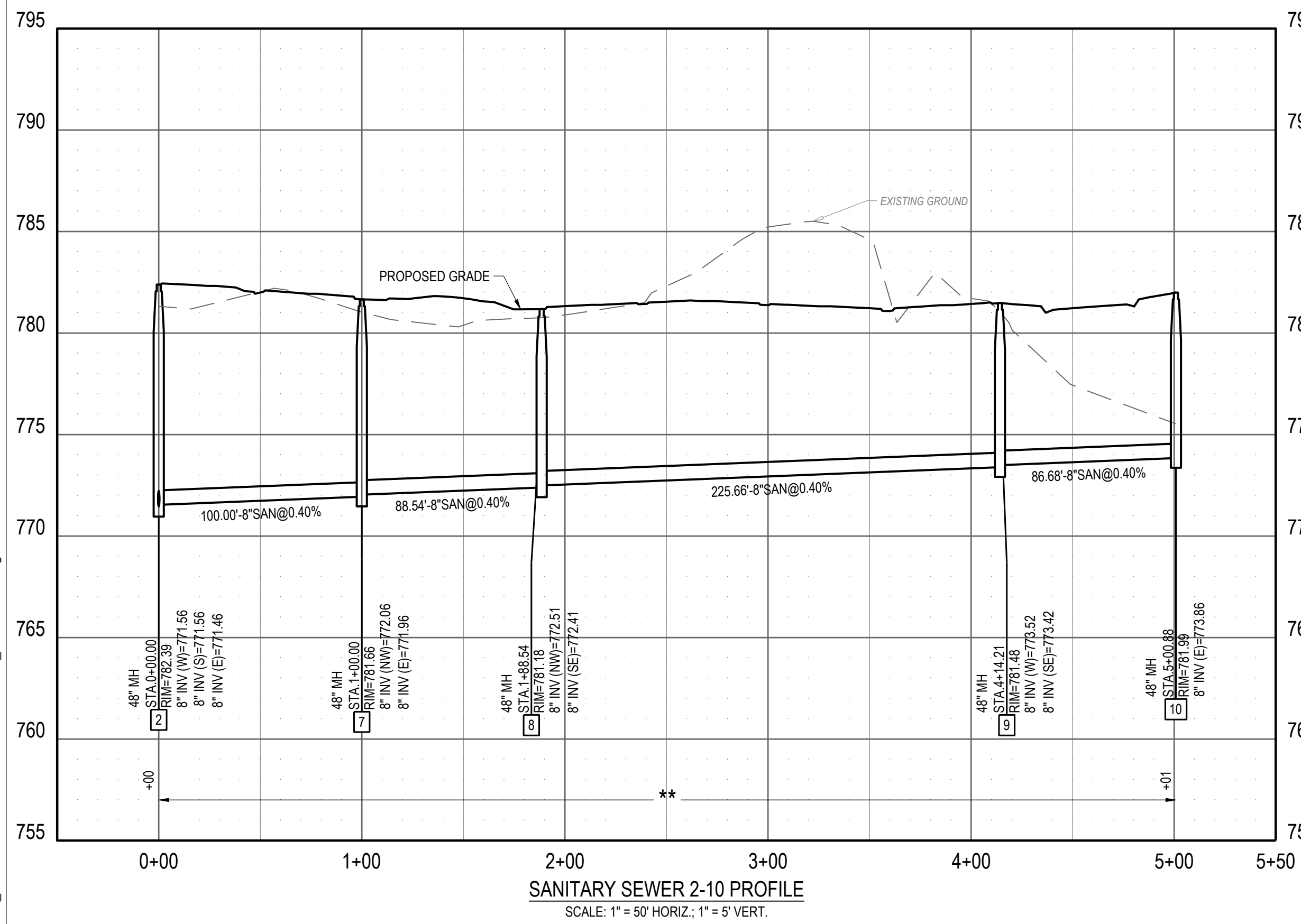
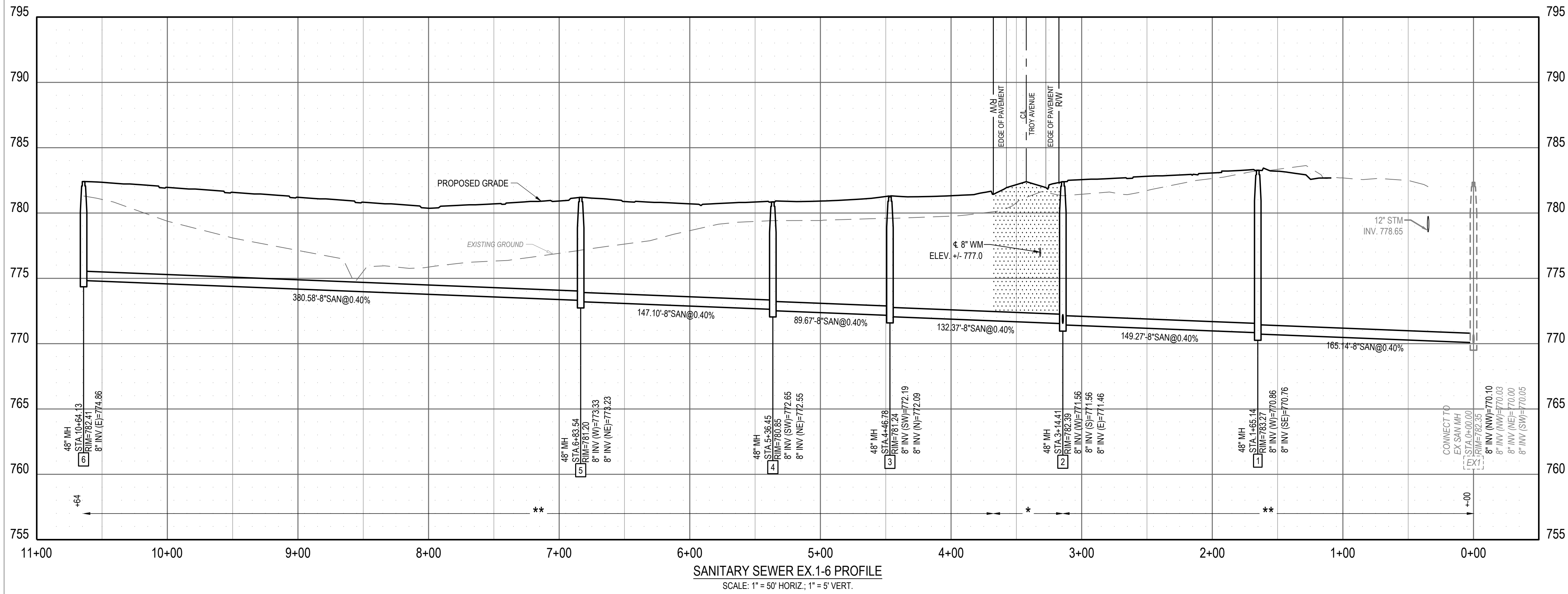




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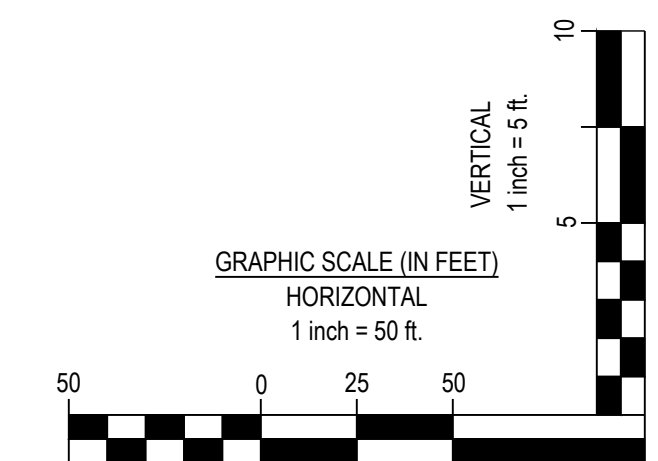
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**NOTES:**

- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO START OF CONSTRUCTION.
- 18" MINIMUM VERTICAL CLEARANCE AND 10' HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN ALL SANITARY, STORM, AND WATER LINES.
- LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
- ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.

COMPACTED GRANULAR BACKFILL UNDER PAVEMENT OR WITHIN INFLUENCE LINE OF PAVEMENT PER CITY OF FRANKLIN STD DWG 400-4.  
 COMPACTED NATIVE BACKFILL PER CITY OF FRANKLIN STD DWG 400-4.



HENDERSON DEVELOPMENT

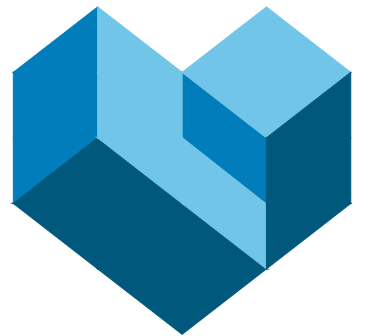
SHAKER MEADOWS

PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

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 Scale: 1"=50'  
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Drawing Title:  
**SANITARY SEWER PROFILES**



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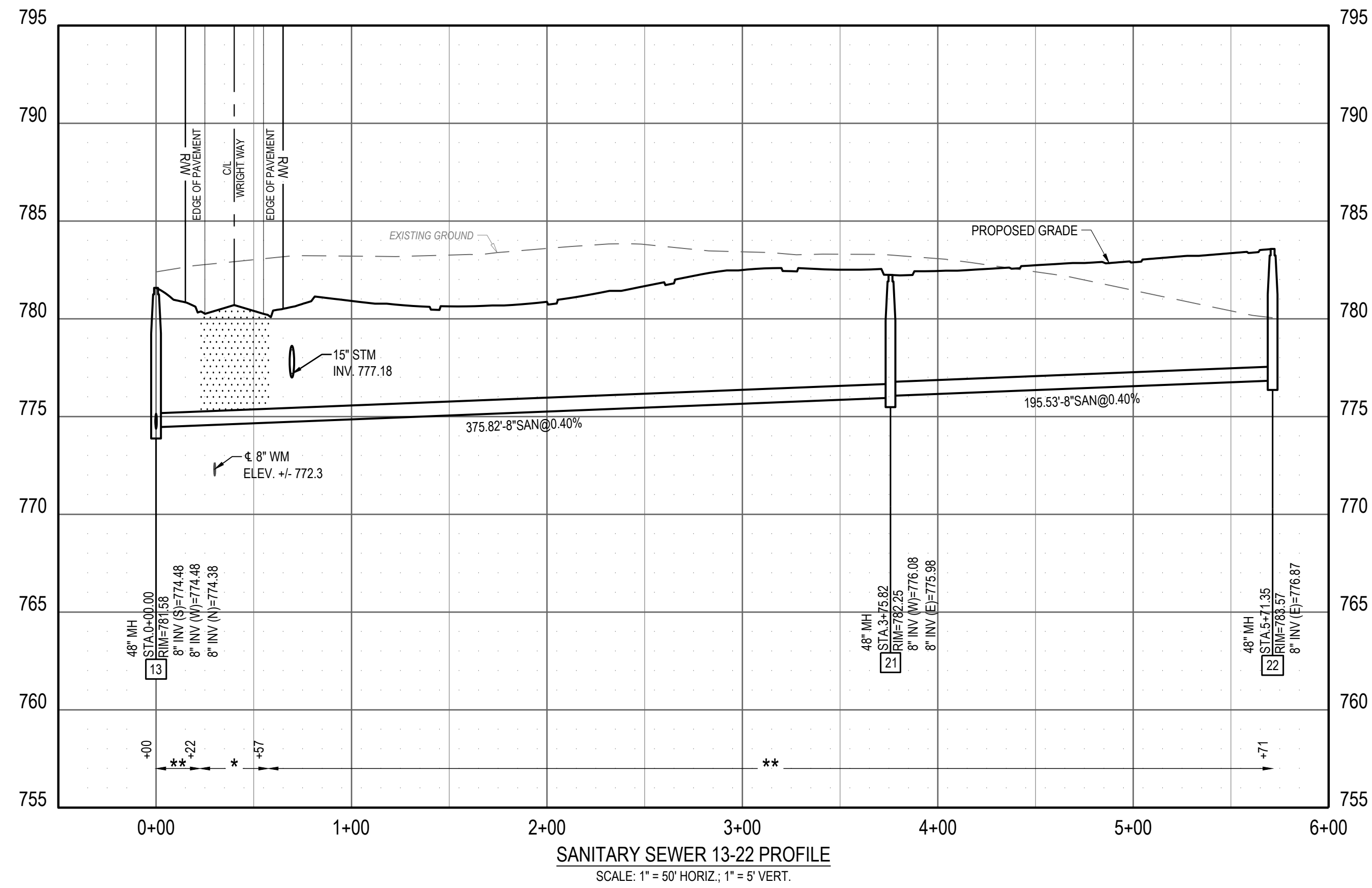
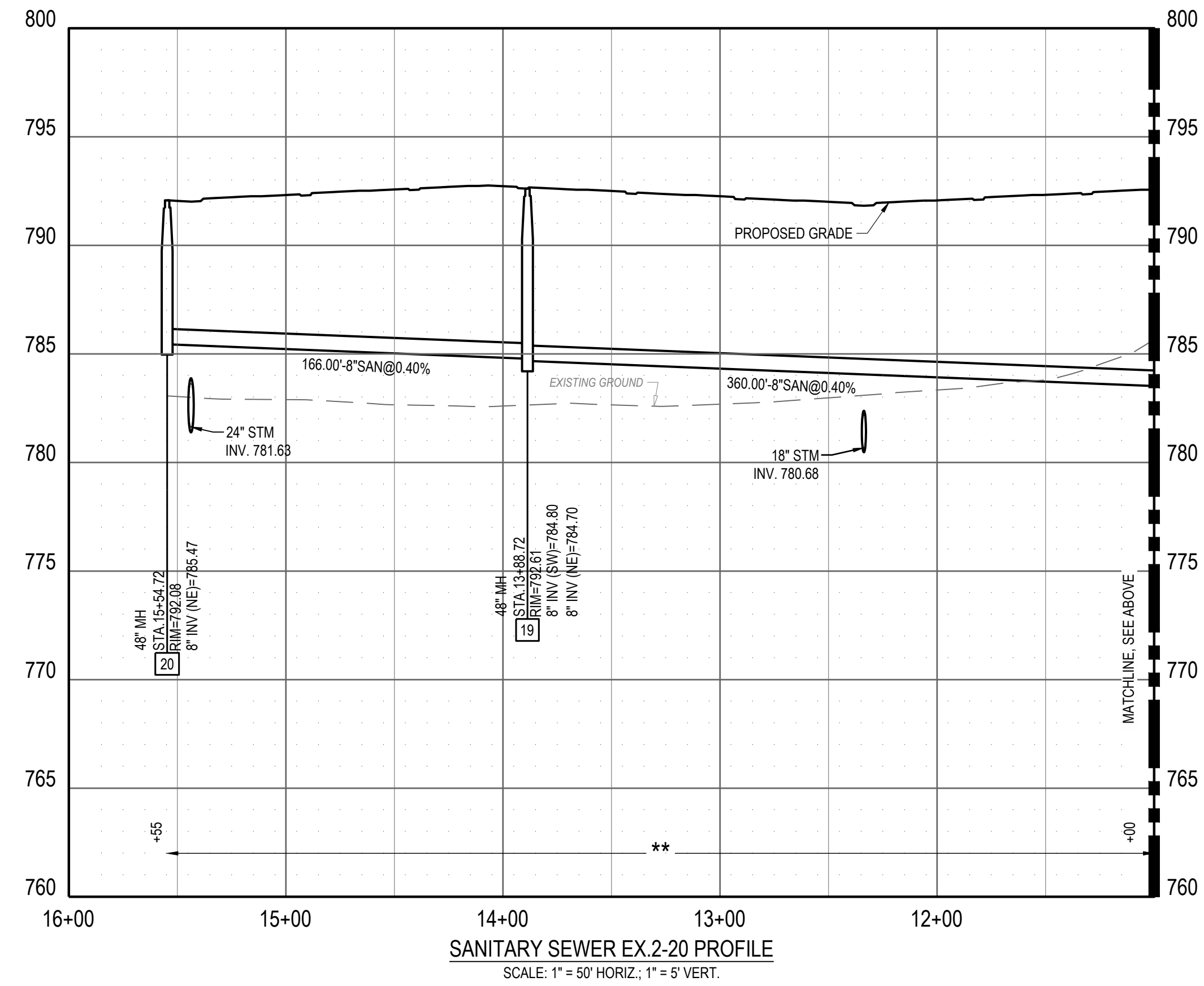
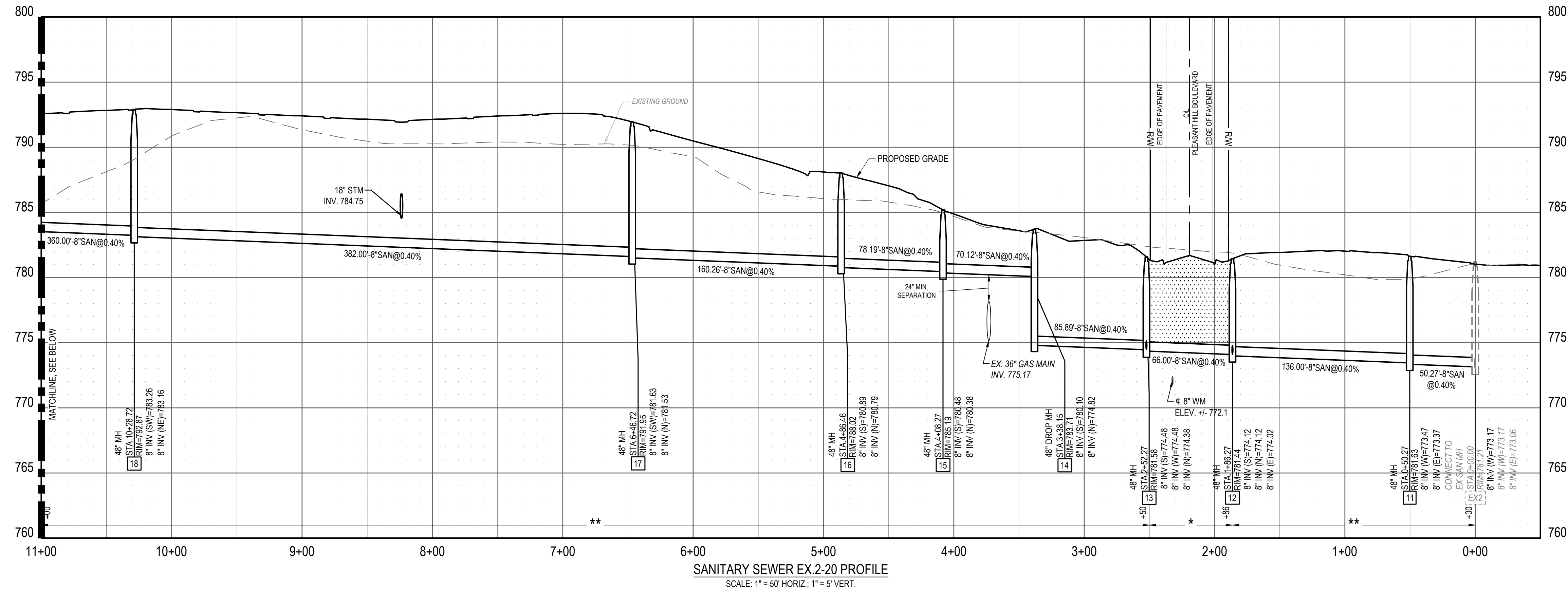
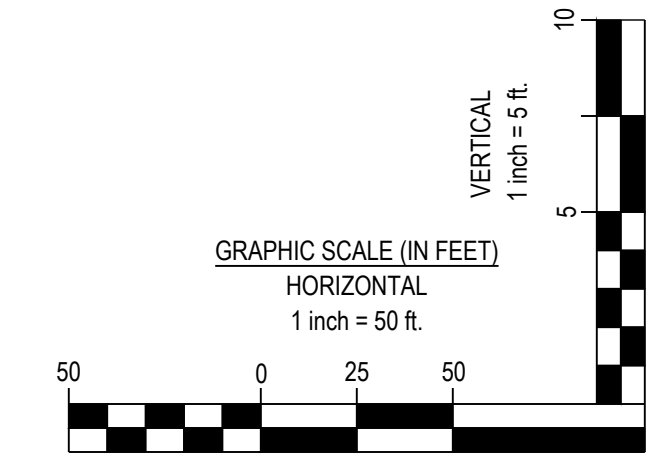
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Mansfield, OH 43342  
Phone: 937.435.8584 Fax: 888.208.4826

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**NOTES:**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO START OF CONSTRUCTION.
2. 18" MINIMUM VERTICAL CLEARANCE AND 10' HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN ALL SANITARY, STORM, AND WATER LINES.
3. LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
4. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.

- COMPACTED GRANULAR BACKFILL UNDER PAVEMENT OR WITHIN INFLUENCE LINE OF PAVEMENT PER CITY OF FRANKLIN STD DWG 400-4.
- COMPACTED NATIVE BACKFILL PER CITY OF FRANKLIN STD DWG 400-4.



HENDERSON DEVELOPMENT

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

© 2025 CESO, INC.  
 Project Number: 764699  
 Scale: 1"=50'  
 Drawn By: MMH  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**SANITARY SEWER PROFILES**





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HENDERSON DEVELOPMENT

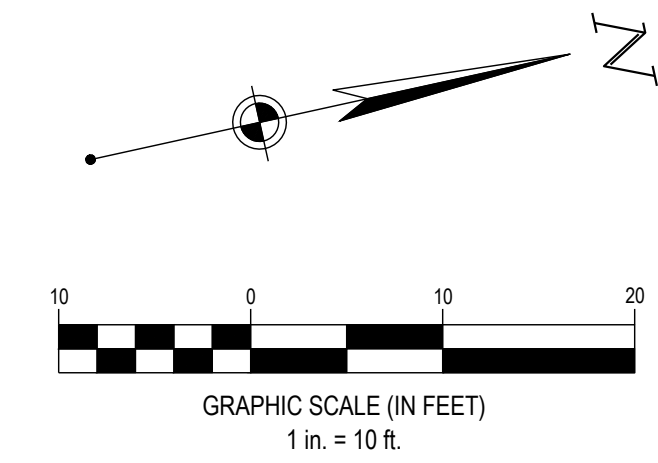
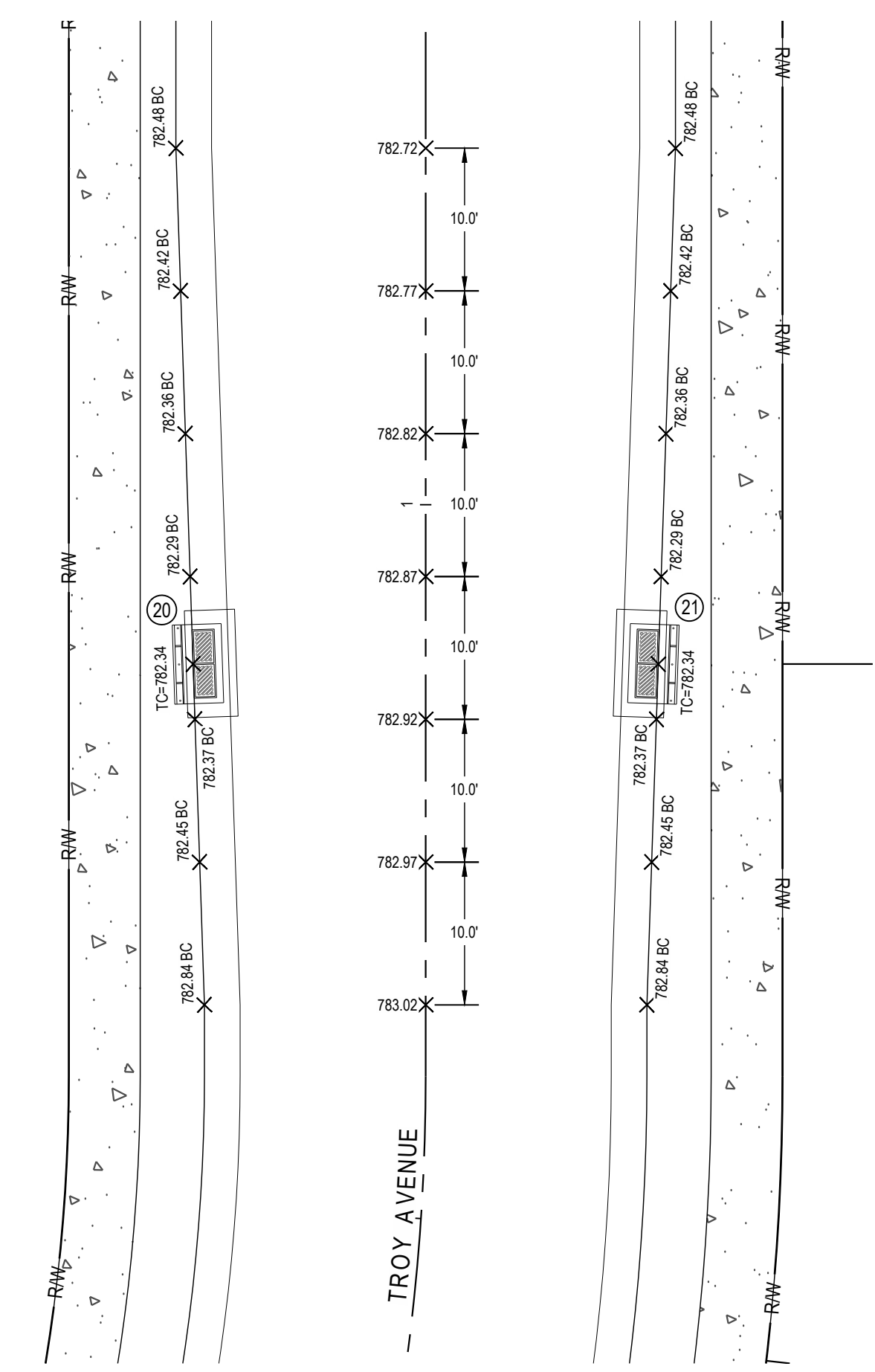
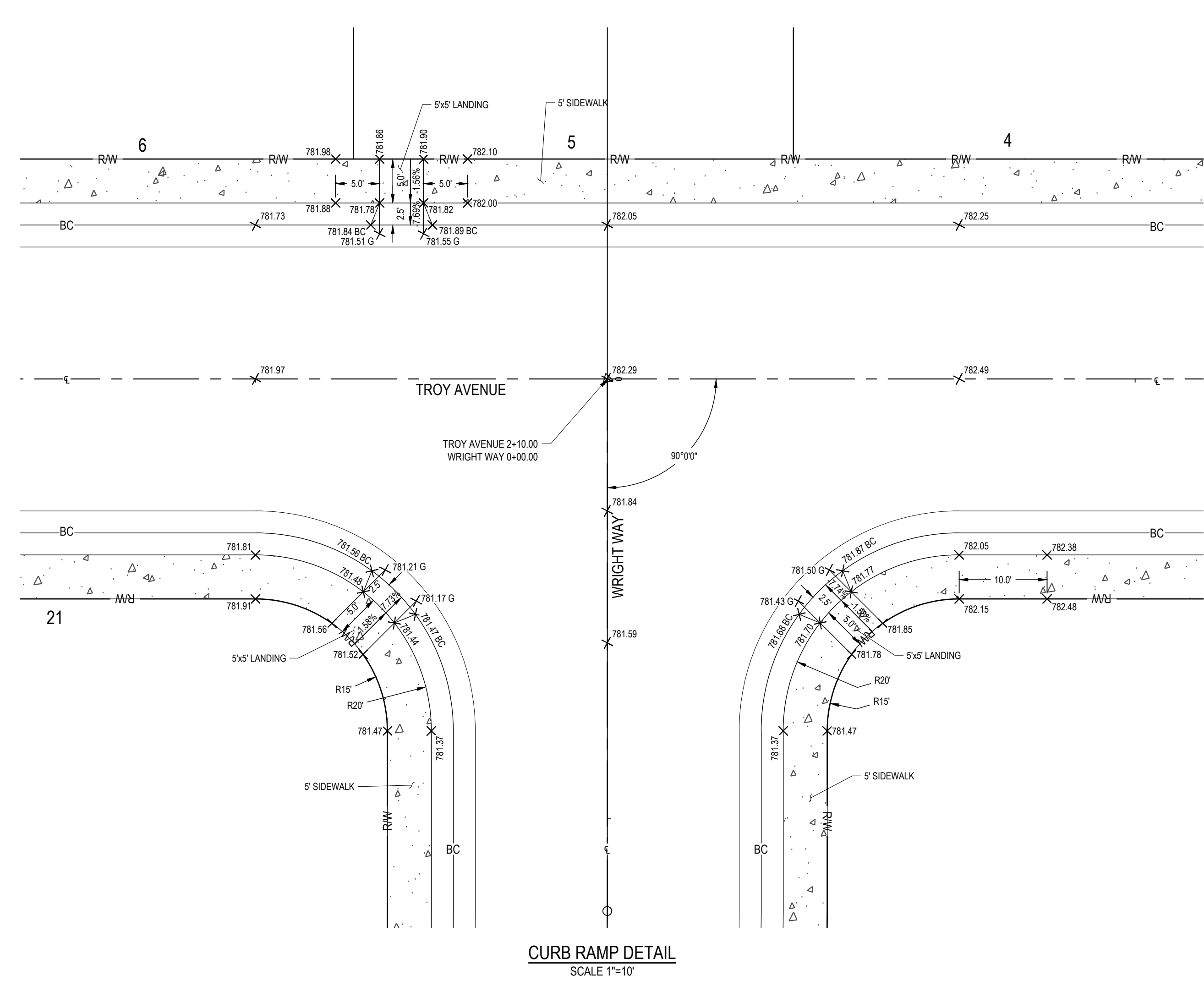
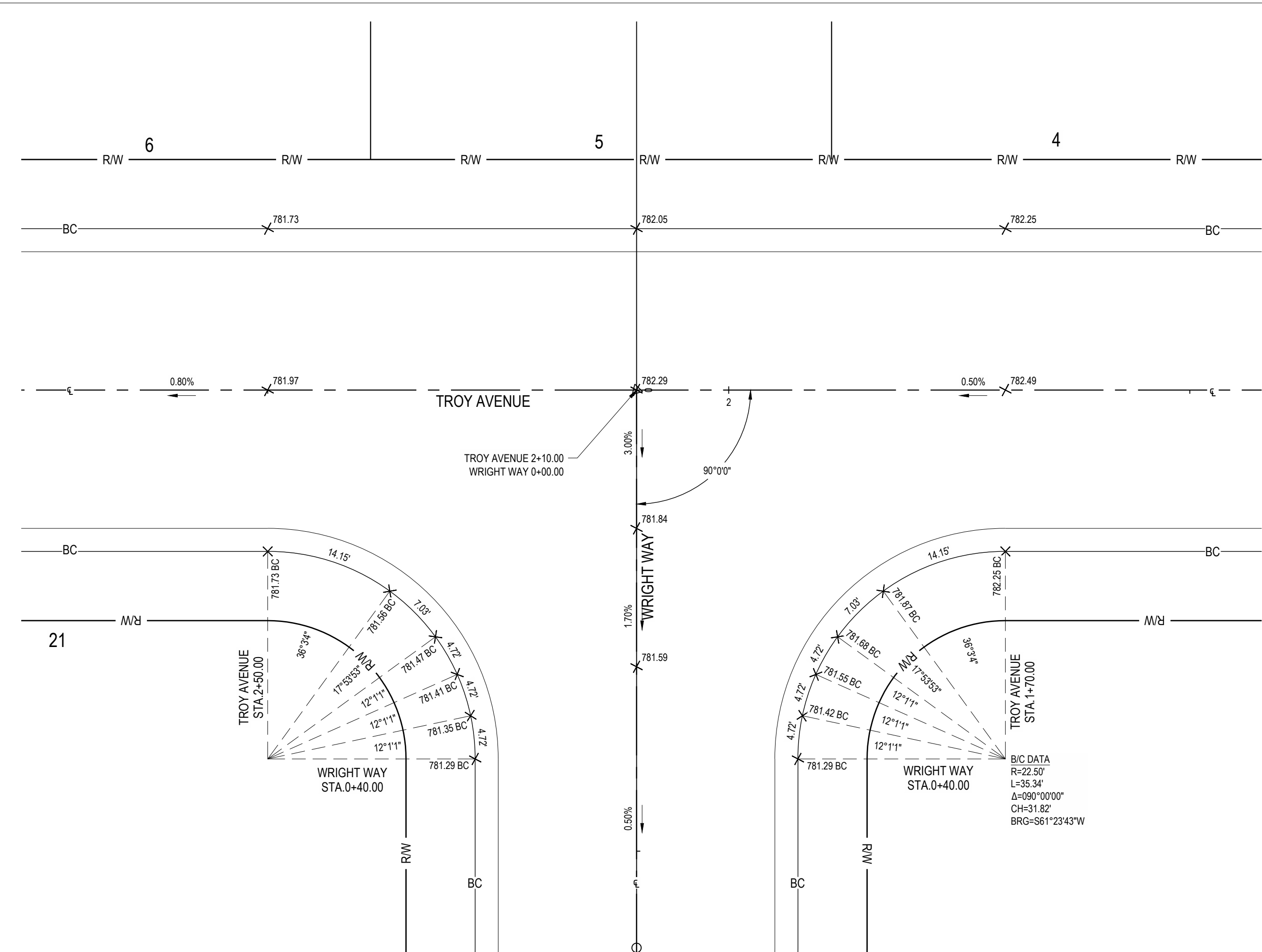
SHAKER MEADOWS  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

ID	Description	Date

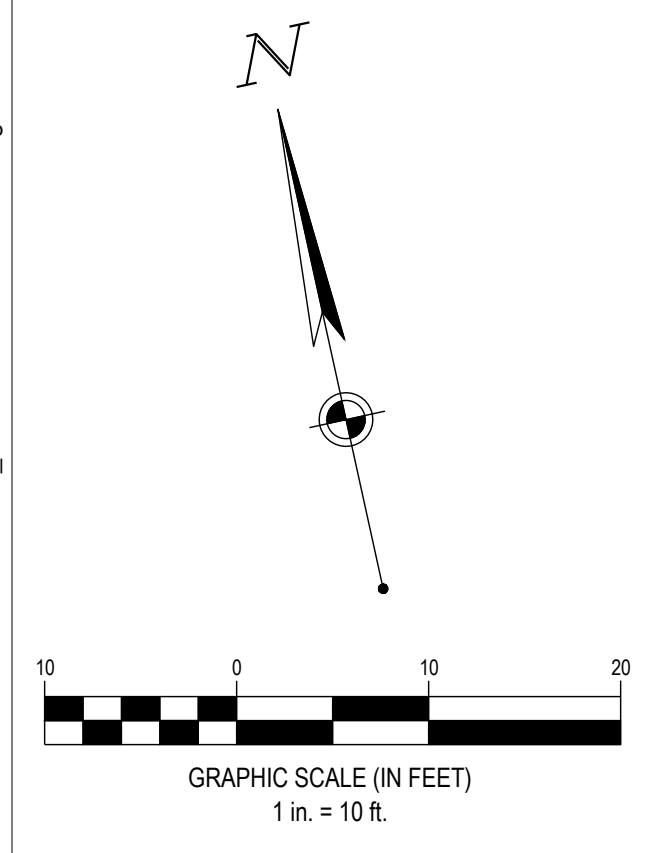
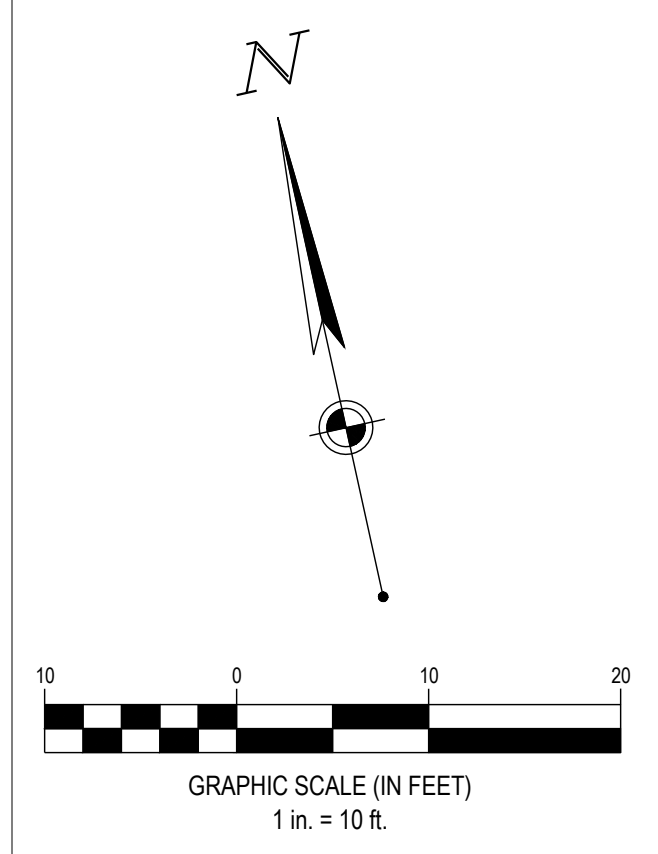
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 Scale: 1"=10'  
 Drawn By: MMH  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**INTERSECTION  
 DETAILS**

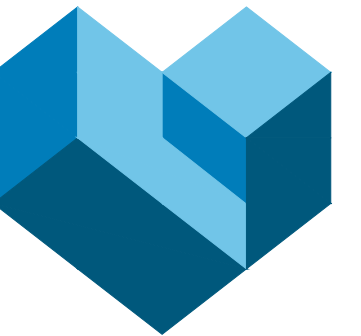


**LEGEND**

BC	BACK OF CURB
EP	EDGE OF PAVEMENT
RW	RIGHT-OF-WAY
VC	VERTICAL CURVE
TC	TOP OF CASTING
HP	HIGH POINT
→	PROPOSED SLOPE
1.00%	PROPOSED SLOPE
X 910.27	PROPOSED SPOT ELEVATION
X 910.21 BC	PROPOSED BACK OF CURB ELEVATION
X 910.16 G	PROPOSED GUTTER ELEVATION
X 910.12 EP	PROPOSED EDGE OF PAVEMENT ELEVATION
[Pattern]	PROPOSED DETECTABLE WARNING MAT



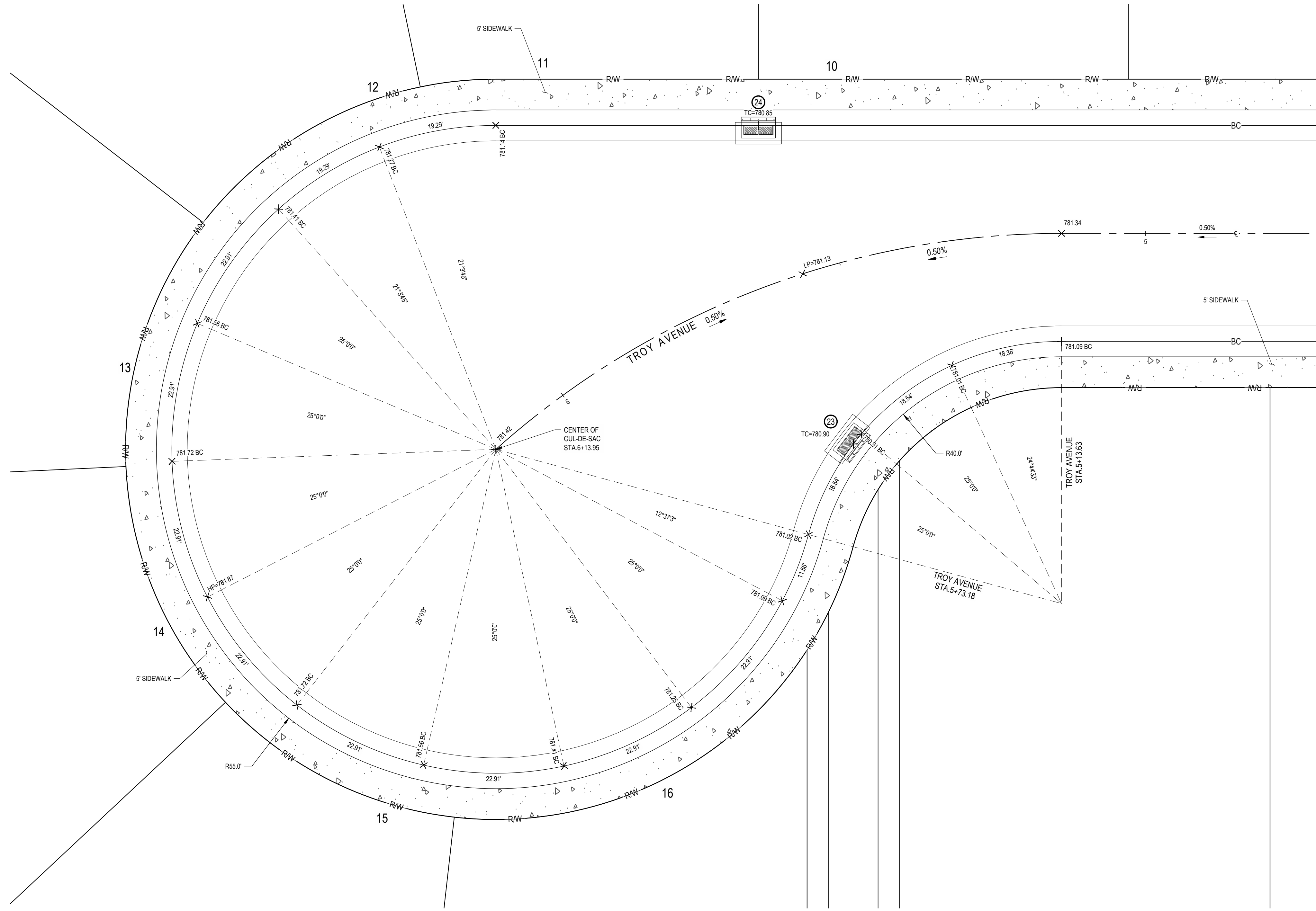
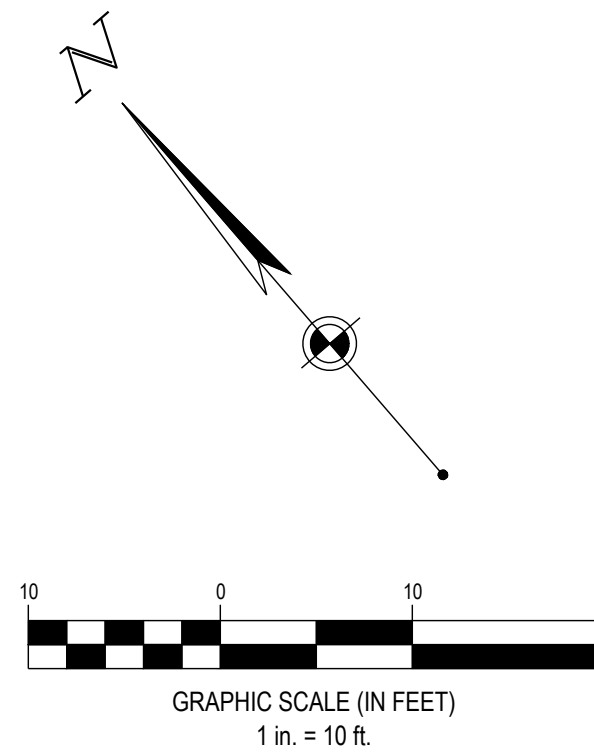
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INTERSECTION DETAIL  
SCALE 1"=10'

**LEGEND**

BC	BACK OF CURB
EP	EDGE OF PAVEMENT
RW	RIGHT-OF-WAY
VC	VERTICAL CURVE
TC	TOP OF CASTING
HP	HIGH POINT
1.00%	PROPOSED SLOPE
X 910.27	PROPOSED SPOT ELEVATION
X 910.21 BC	PROPOSED BACK OF CURB ELEVATION
X 910.16 G	PROPOSED GUTTER ELEVATION
X 910.12 EP	PROPOSED EDGE OF PAVEMENT ELEVATION
[Pattern]	PROPOSED DETECTABLE WARNING MAT

**HENDERSON DEVELOPMENT**

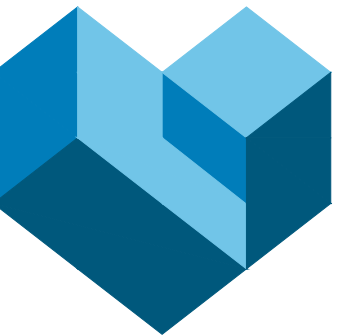
**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

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 Project Number: 764699  
 Scale: 1"=10'  
 Drawn By: MMH  
 Checked By: JEE  
 Date: NOVEMBER 2025  
 Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**CUL DE SAC DETAILS**

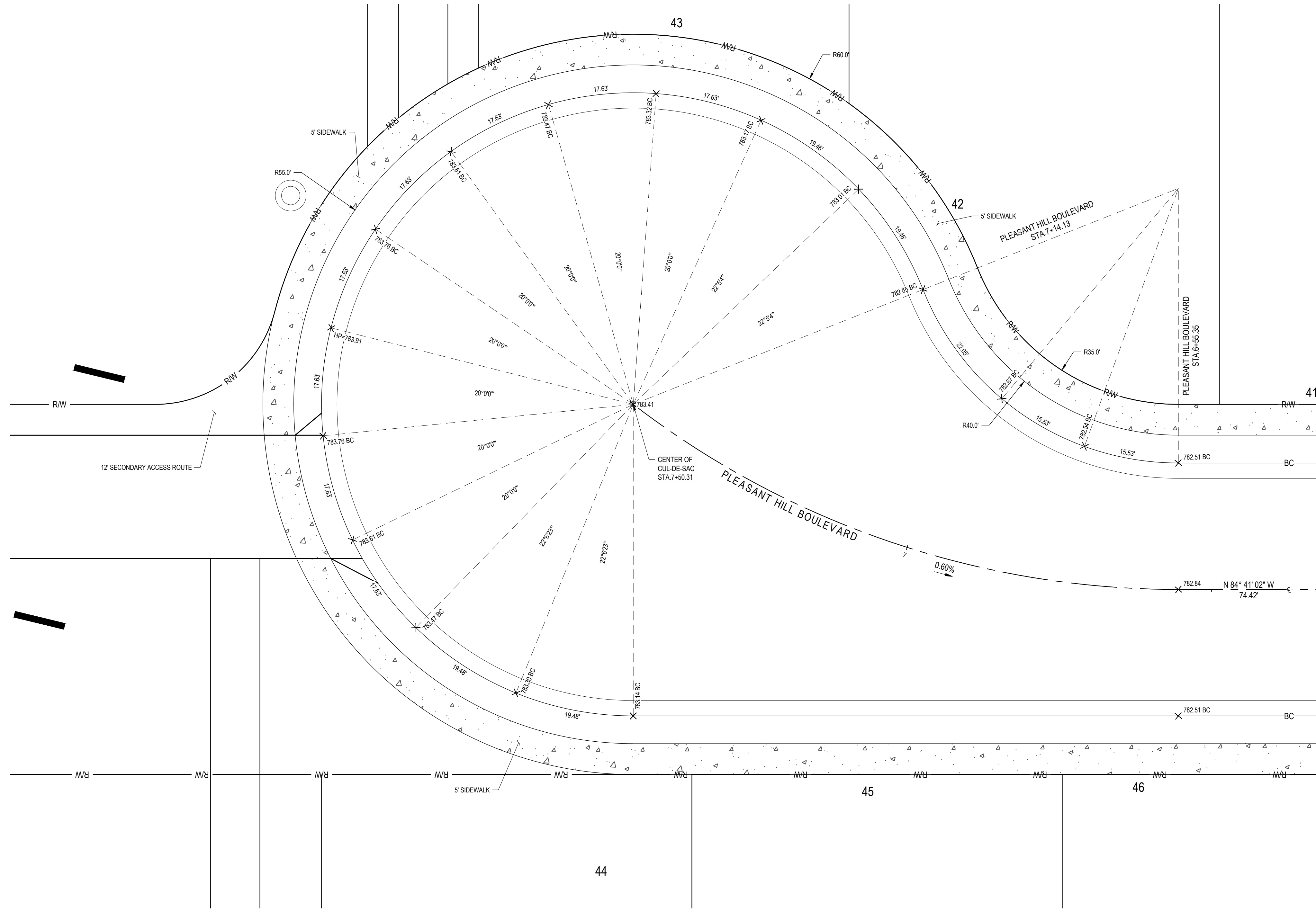
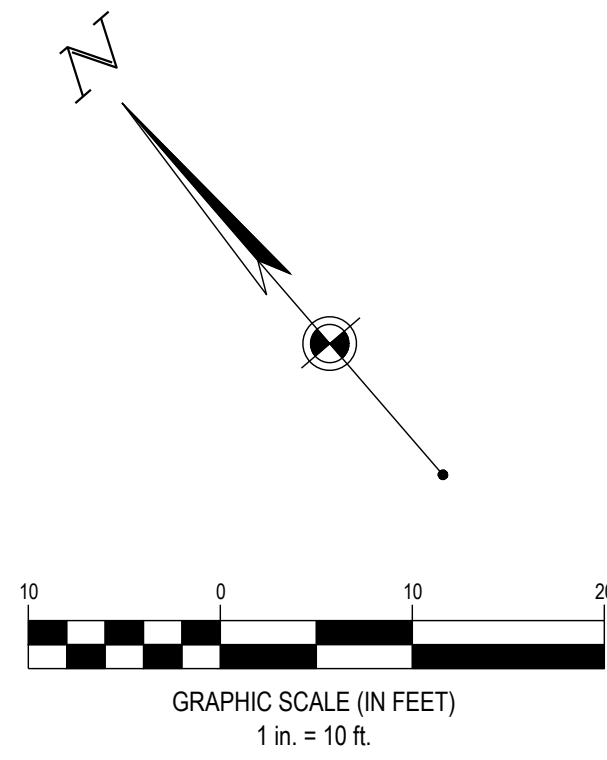
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**INTERSECTION DETAIL**  
SCALE 1"=10'

**LEGEND**

BC	BACK OF CURB
EP	EDGE OF PAVEMENT
RW	RIGHT-OF-WAY
VC	VERTICAL CURVE
TC	TOP OF CASTING
HP	HIGH POINT
1.00%	PROPOSED SLOPE
X 910.27	PROPOSED SPOT ELEVATION
X 910.21 BC	PROPOSED BACK OF CURB ELEVATION
X 910.16 G	PROPOSED GUTTER ELEVATION
X 910.12 EP	PROPOSED EDGE OF PAVEMENT ELEVATION
[Pattern]	PROPOSED DETECTABLE WARNING MAT

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**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

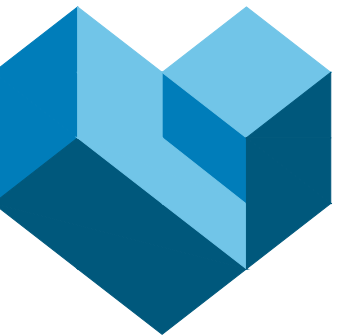
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ID	Description	Date

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 Scale: 1"=10'  
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 Checked By: JEE  
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Drawing Title:  
**CUL DE SAC DETAILS**





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**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**

PLEASANT HILL BLVD  
FRANKLIN, OH

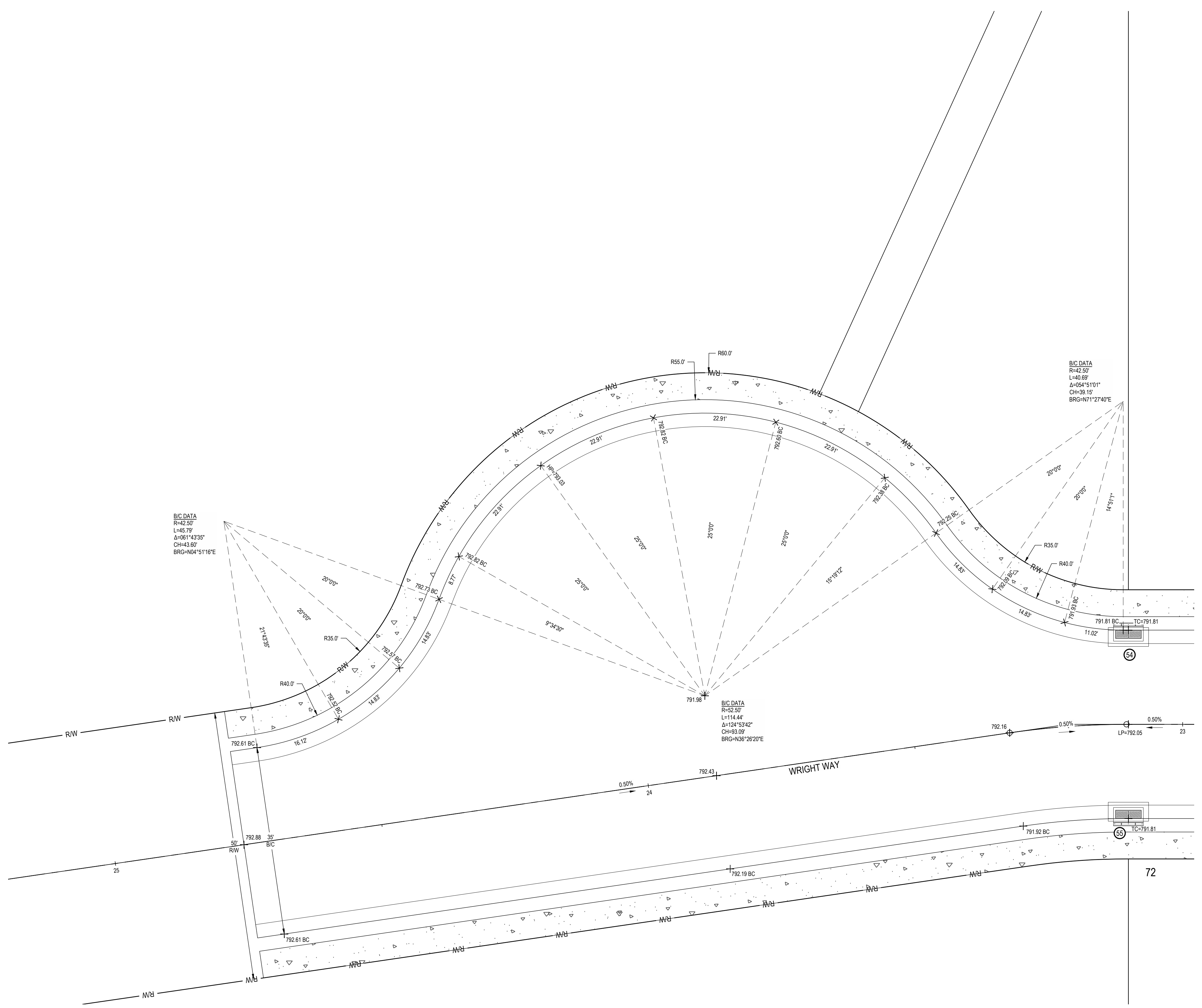
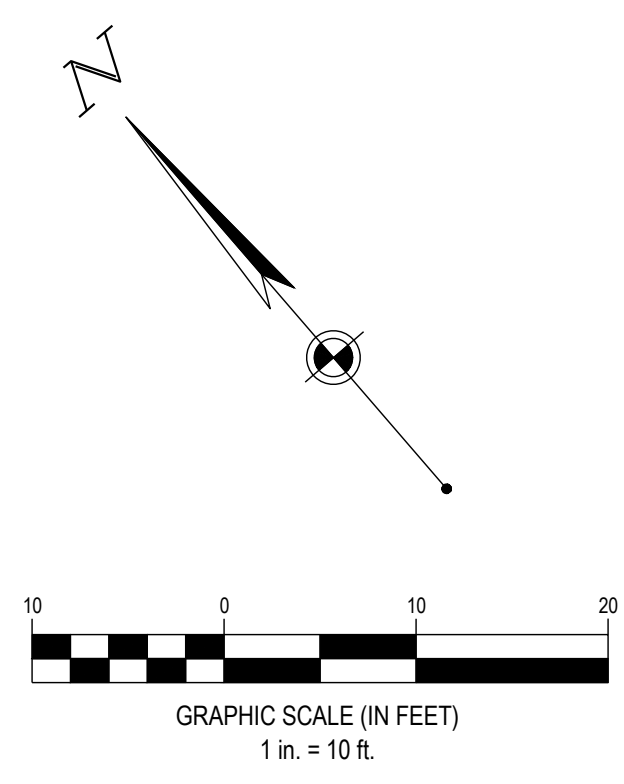
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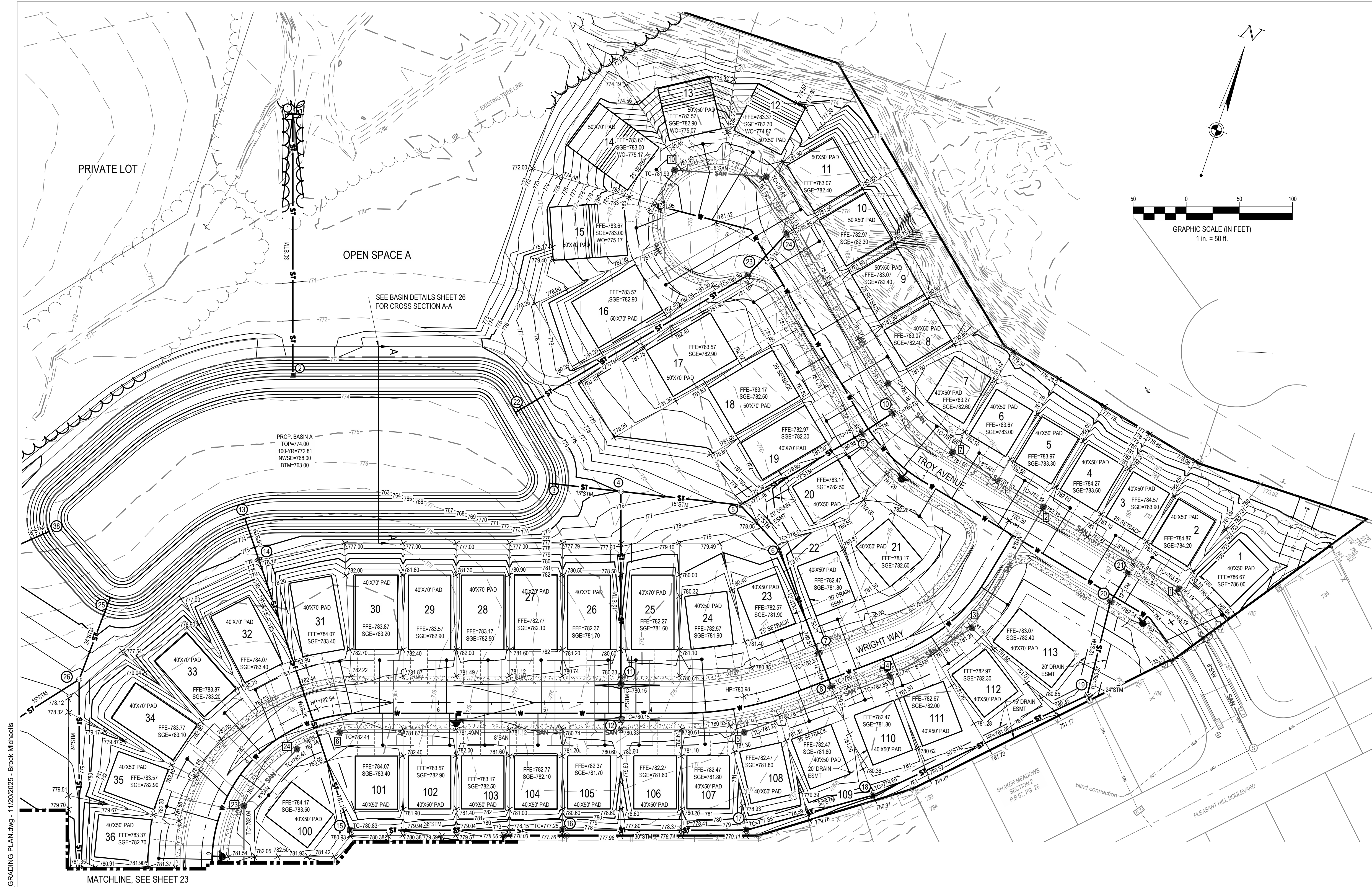
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 Date: NOVEMBER 2025  
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Drawing Title:

**ELBOW DETAILS**





**LEGEND**

---	EXISTING INDEX CONTOUR
---	EXISTING INTERMEDIATE CONTOUR
---	SUBJECT BOUNDARY LINE
---	EXISTING PROPERTY LINE
---	EXISTING RW
---	EXISTING CENTERLINE
---	EXISTING TREE LINE
---	EXISTING INTERMITTENT STREAM
---	EXISTING EASEMENT
---	EXISTING EDGE OF PAVEMENT
---	EXISTING FACE OF CURB
---	EXISTING BACK OF CURB
---	EXISTING STORM SEWER
---	EXISTING SANITARY SEWER
---	EXISTING WATER MAIN
---	EXISTING STORM STRUCTURES
---	EXISTING SANITARY SEWER MANHOLE
---	EXISTING WATER STRUCTURES
---	EXISTING CABLE BOX
---	PROPOSED INDEX CONTOUR
---	PROPOSED INTERMEDIATE CONTOUR
---	PROPOSED PHASE LINE
---	PROPOSED RIGHT-OF-WAY
---	PROPOSED PROPERTY LINE
---	PROPOSED SETBACK
---	PROPOSED EASEMENT
---	PROPOSED BASIN
---	PROPOSED CENTERLINE
---	PROPOSED CURB & GUTTER
---	PROPOSED STORM SEWER
---	PROPOSED STORM STRUCTURES
---	PROPOSED SANITARY SEWER
---	PROPOSED SANITARY SEWER MANHOLE
---	PROPOSED WATER LINE
---	PROPOSED WATER HYDRANT/VALVE
---	SIDEWALK
---	FLOOD ROUTING
---	BUILDERS SWALE
---	PROPOSED TOP OF CASTING
---	PROPOSED SPOT ELEVATION
---	PROPOSED LOW POINT
---	PROPOSED HIGH POINT



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HENDERSON DEVELOPMENT

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

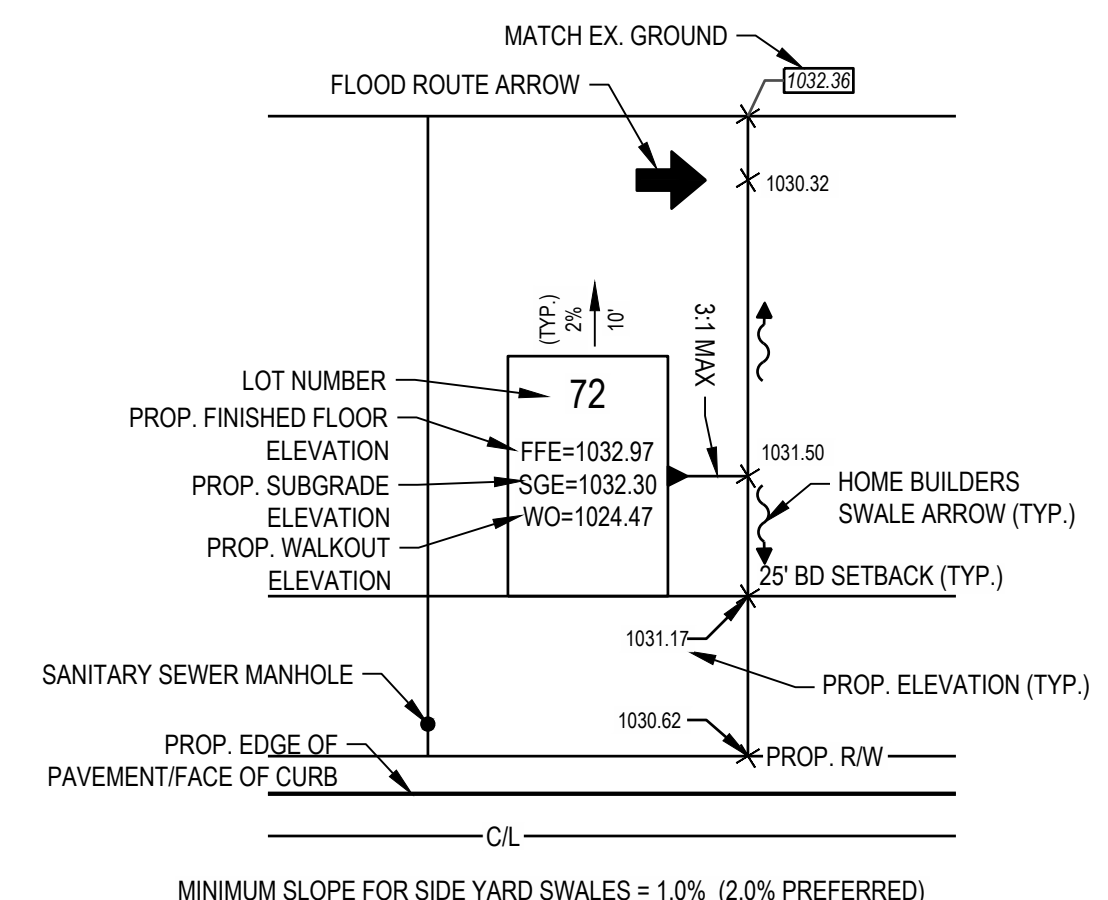
Revisions / Submissions

ID	Description	Date

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Project Number: 764699  
Scale: 1"=50'  
Drawn By: MMH  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

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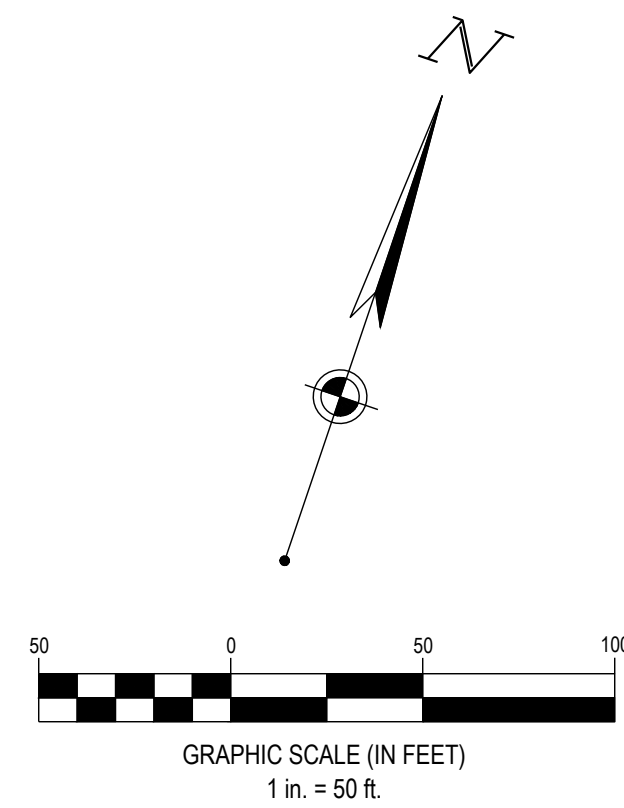
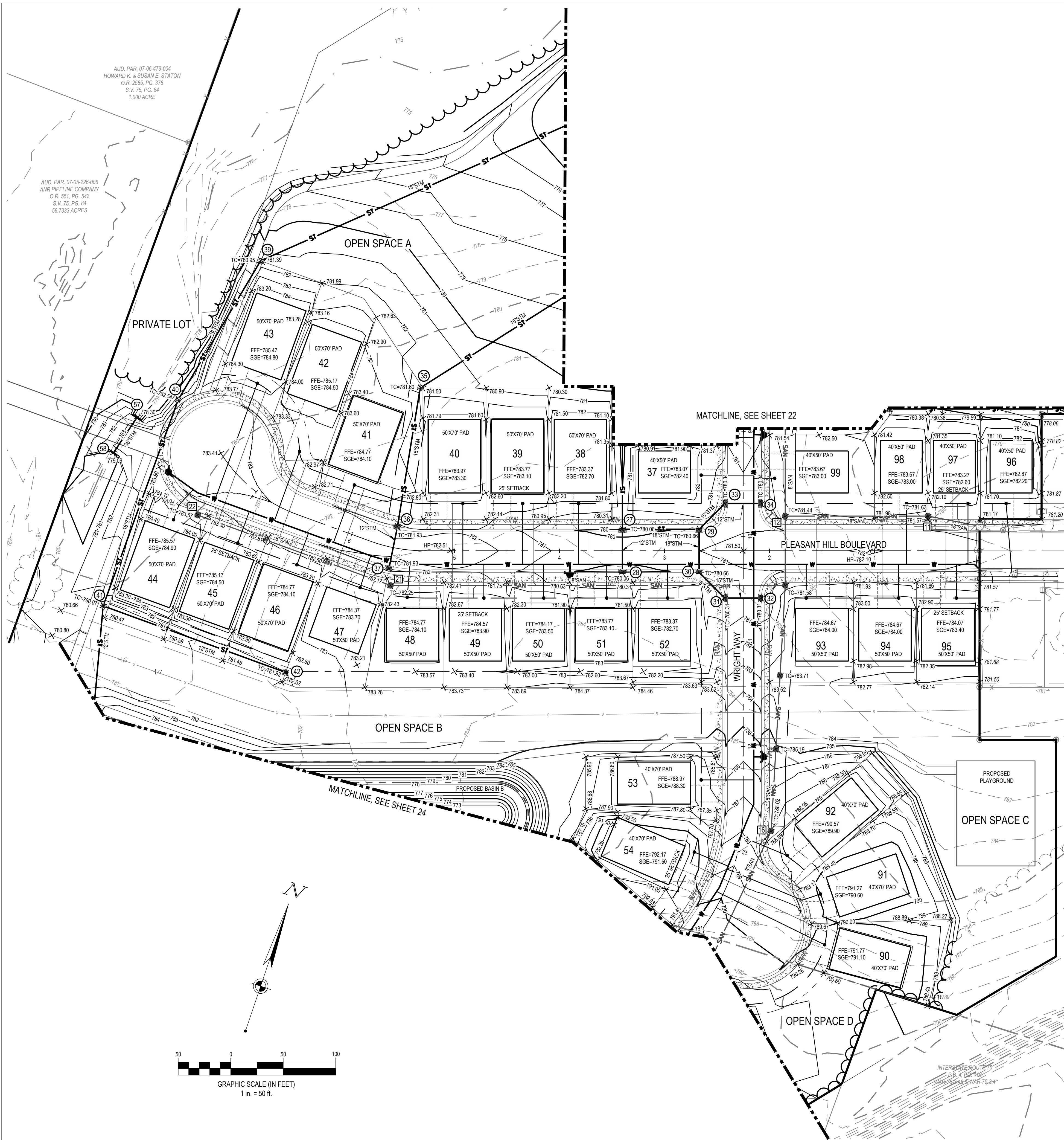
MATCHLINE, SEE SHEET 23



**NOTES**

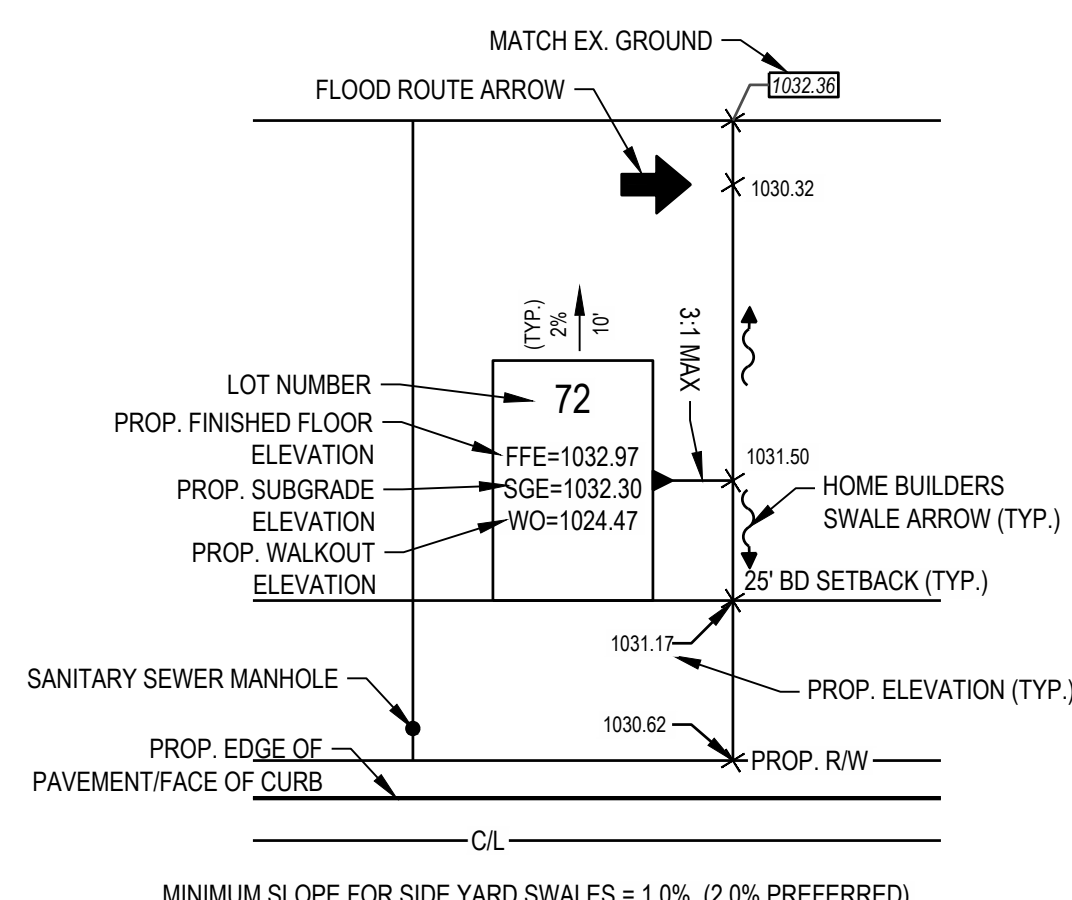
1. THE FINISHED GROUND ELEVATION HAS BEEN ESTABLISHED AS THE MINIMUM GRADE AROUND THE FINISHED STRUCTURE TO ENSURE PROPER DRAINAGE.
2. MAXIMUM SLOPE AWAY FROM THE HOUSE IS 3:1.
3. EROSION CONTROL PRACTICES SHALL BE INSTALLED BEFORE ANY MAJOR SOIL DISTURBANCE.
4. ESTABLISH VEGETATION IN ALL BARE AREAS AS PER OEPA N.P.D.E.S. REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR N.P.D.E.S. INSPECTION DURING CONSTRUCTION PERIOD.
5. SPOTS SHOWN AT CURB ARE TOP OF CURB ELEVATIONS UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.

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**LEGEND**

- 940 EXISTING INDEX CONTOUR
- 941 EXISTING INTERMEDIATE CONTOUR
- SUBJECT BOUNDARY LINE
- EXISTING PROPERTY LINE
- EXISTING R/W
- EXISTING CENTERLINE
- EXISTING TREE LINE
- EXISTING INTERMITTENT STREAM
- EXISTING EASEMENT
- EXISTING EDGE OF PAVEMENT
- EXISTING FACE OF CURB
- EXISTING BACK OF CURB
- STM EXISTING STORM SEWER
- SAN EXISTING SANITARY SEWER
- W EXISTING WATER MAIN
- EXISTING STORM STRUCTURES
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER STRUCTURES
- EXISTING CABLE BOX
- 950 PROPOSED INDEX CONTOUR
- 951 PROPOSED INTERMEDIATE CONTOUR
- PROPOSED RIGHT-OF-WAY
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED BASIN
- PROPOSED CENTERLINE
- PROPOSED CURB & GUTTER
- ST PROPOSED STORM SEWER
- PROPOSED STORM STRUCTURES
- SAN PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER MANHOLE
- W PROPOSED WATER LINE
- PROPOSED WATER HYDRANT/VALVE
- SIDEWALK
- FLOOD ROUTING
- BUILDERS SWALE
- X TC=902.75 PROPOSED TOP OF CASTING
- X 905.25 PROPOSED SPOT ELEVATION
- X LP=903.58 PROPOSED LOW POINT
- X HP=912.17 PROPOSED HIGH POINT



**TYPICAL LOT LEGEND**  
N.T.S.

**NOTES**

1. THE FINISHED GROUND ELEVATION HAS BEEN ESTABLISHED AS THE MINIMUM GRADE AROUND THE FINISHED STRUCTURE TO ENSURE PROPER DRAINAGE.
2. MAXIMUM SLOPE AWAY FROM THE HOUSE IS 3:1.
3. EROSION CONTROL PRACTICES SHALL BE INSTALLED BEFORE ANY MAJOR SOIL DISTURBANCE.
4. ESTABLISH VEGETATION IN ALL BARE AREAS AS PER OEPA N.P.D.E.S. REGULATIONS. CONTRACTOR IS RESPONSIBLE FOR N.P.D.E.S. INSPECTION DURING CONSTRUCTION PERIOD.
5. SPOTS SHOWN AT CURB ARE TOP OF CURB ELEVATIONS UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.



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HENDERSON DEVELOPMENT
SHAKER MEADOWS

PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

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Project Number: 764699

Scale: 1"=50'

Drawn By: MMH

Checked By: JEE

Date: NOVEMBER 2025

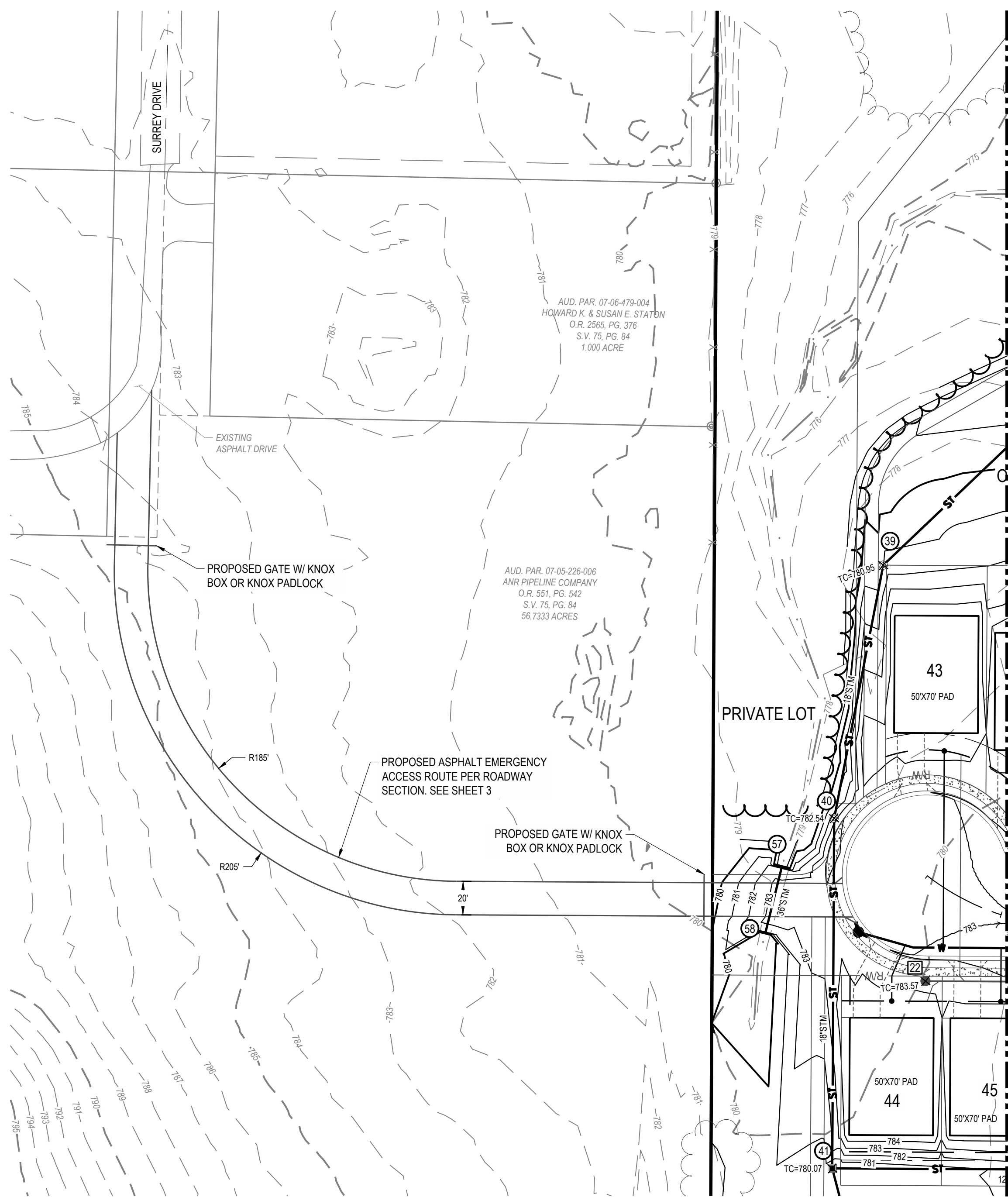
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**GRADING PLAN**

23



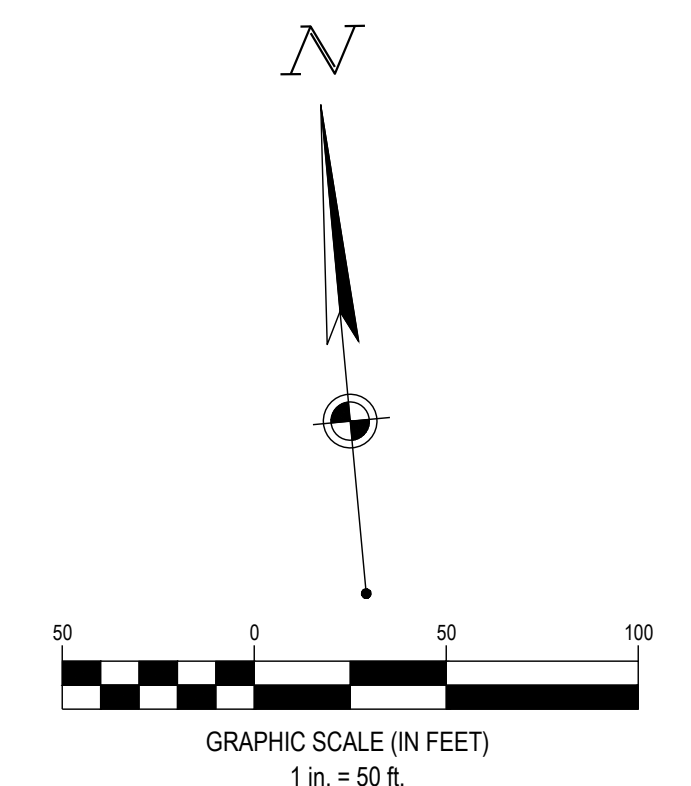
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SEE SHEET 23 FOR FURTHER DETAILS

**LEGEND**

- 940 EXISTING INDEX CONTOUR
- 941 EXISTING INTERMEDIATE CONTOUR
- SUBJECT BOUNDARY LINE
- EXISTING PROPERTY LINE
- EXISTING RW
- EXISTING CENTERLINE
- EXISTING TREE LINE
- EXISTING INTERMITTENT STREAM
- EXISTING EASEMENT
- EXISTING EDGE OF PAVEMENT
- EXISTING FACE OF CURB
- EXISTING BACK OF CURB
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATER MAIN
- EXISTING STORM STRUCTURES
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER STRUCTURES
- EXISTING CABLE BOX
- 950 PROPOSED INDEX CONTOUR
- 951 PROPOSED INTERMEDIATE CONTOUR
- PROPOSED RIGHT-OF-WAY
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
- PROPOSED BASIN
- PROPOSED CENTERLINE
- PROPOSED CURB & GUTTER
- PROPOSED STORM SEWER
- PROPOSED STORM STRUCTURES
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED WATER LINE
- PROPOSED WATER HYDRANT/VALVE
- SIDEWALK



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**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

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Project Number: 764699  
Scale: 1" = 50'  
Drawn By: BBM  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**EMERGENCY ACCESS ROUTE PLAN**

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HENDERSON DEVELOPMENT

SHAKER MEADOWS

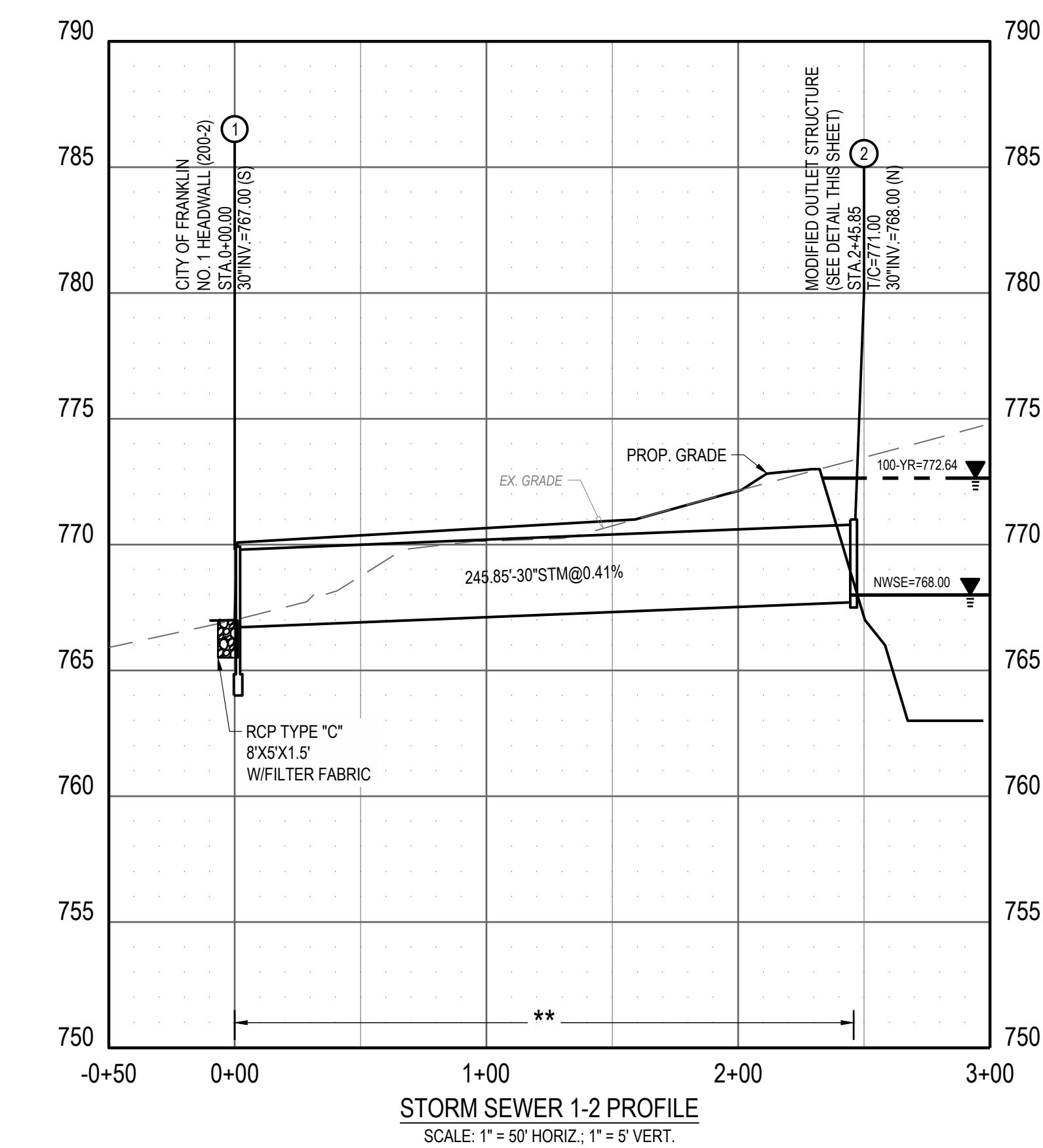
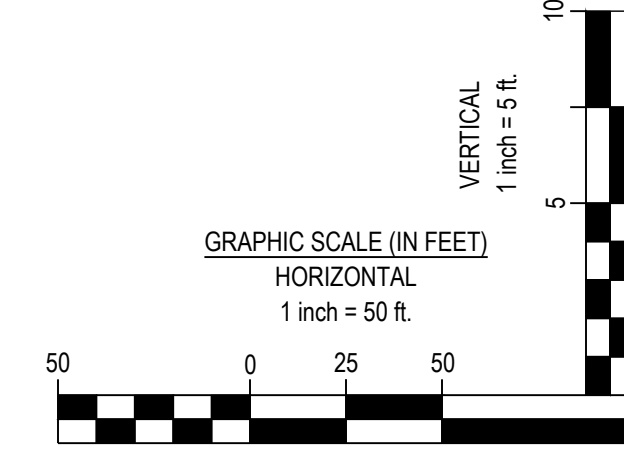
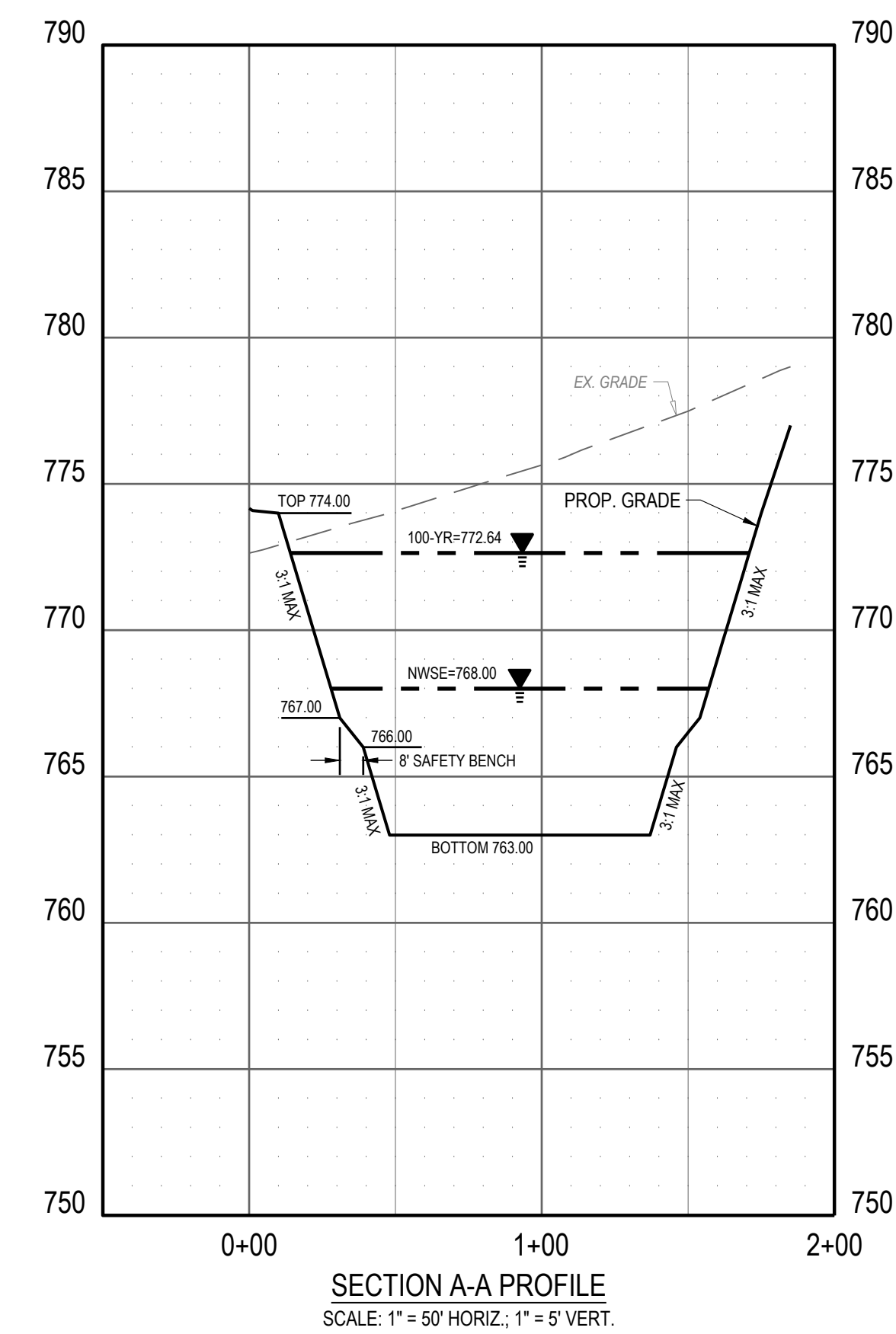
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

ID	Description	Date

Project Number: 764699  
Scale: 1" = 50'  
Drawn By: BMM  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

Drawing Title: **BASIN DETAILS**

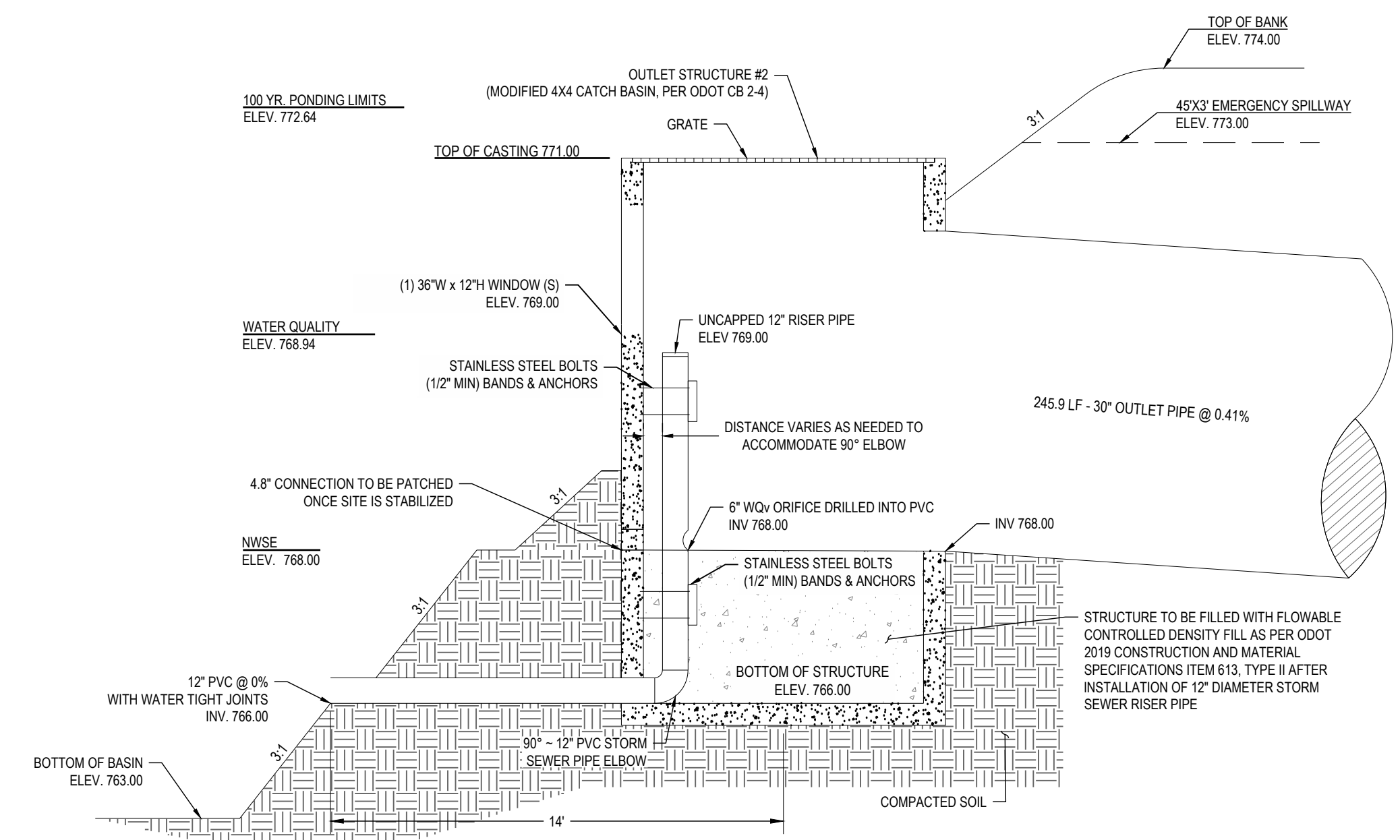


**LEGEND**

- \* COMPACTED GRANULAR BACKFILL
- \*\* COMPACTED NATIVE BACKFILL

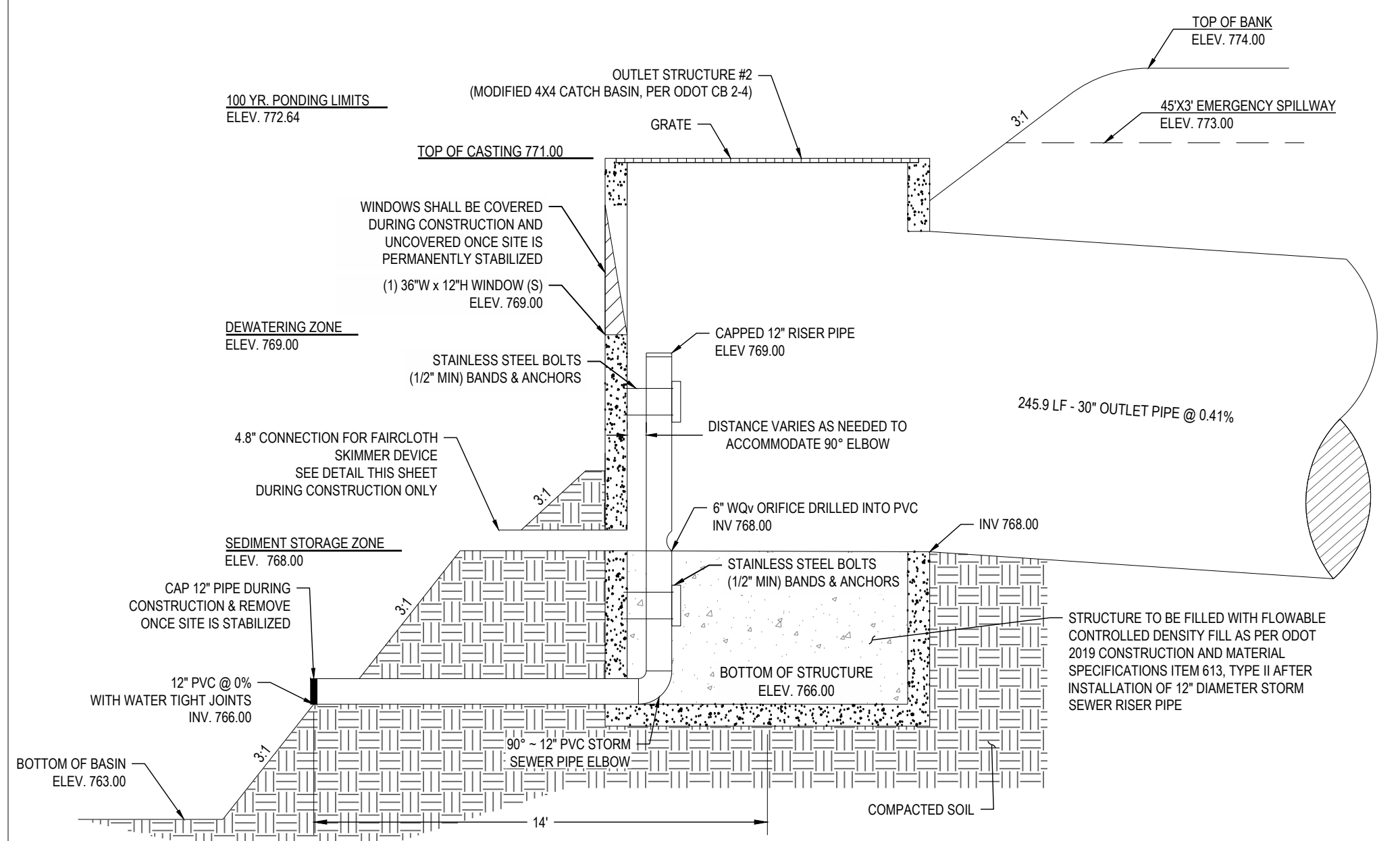
**NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO START OF CONSTRUCTION.
2. 18" MINIMUM VERTICAL CLEARANCE AND 10' HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN ALL SANITARY, STORM, AND WATER LINES.
3. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
4. ALL EXISTING INFORMATION IS PER PLAN, UNLESS OTHERWISE NOTED.
5. ALL BACKFILL SHALL BE COMPACTED TO THE DENSITY OF THE EXISTING GROUND UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL ENSURE THAT ALL PIPES ARE NOT DAMAGED DURING CONSTRUCTION.



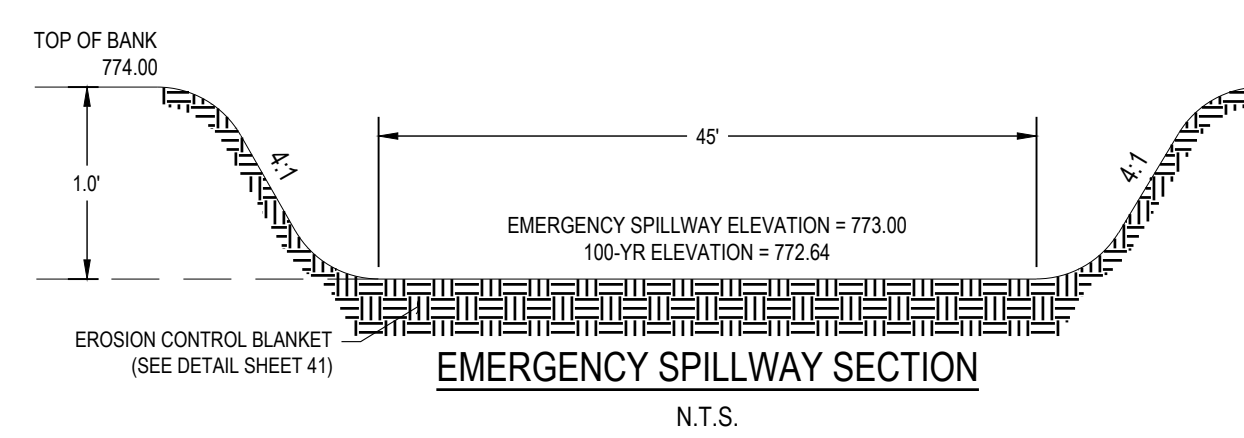
NOTE:  
1. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DISCRETION OF CITY OF FRANKLIN'S ENGINEER OFFICE AND/OR THE EPA

**OUTLET STRUCTURE DETAIL  
STRUCTURE #2  
POST CONSTRUCTION**  
MODIFIED 4X4 CATCH BASIN, PER ODOT CB 2-4  
N.T.S.

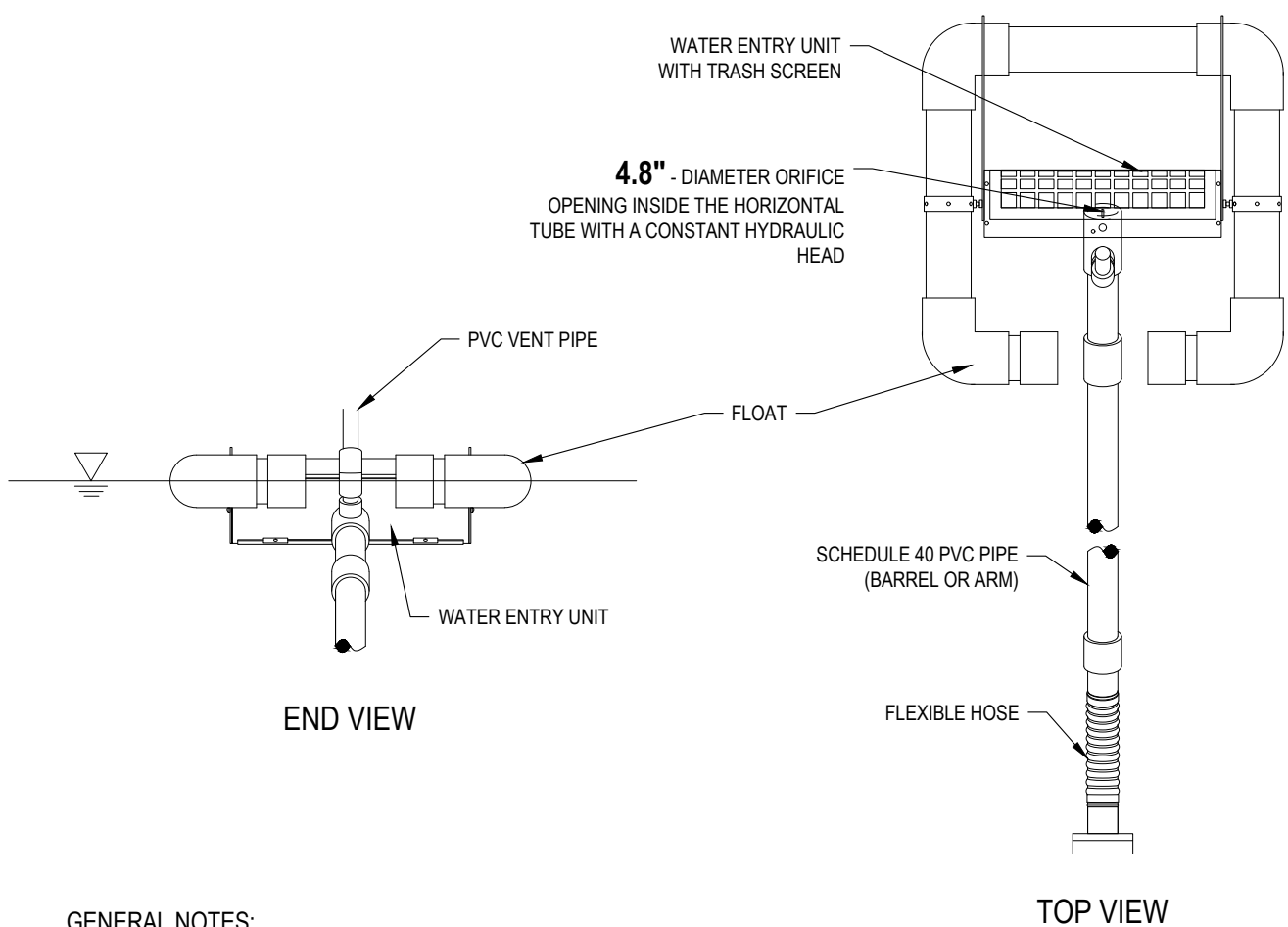


NOTE:  
1. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DISCRETION OF CITY OF FRANKLIN'S ENGINEER OFFICE AND/OR THE EPA

**OUTLET STRUCTURE DETAIL  
STRUCTURE #2  
DURING CONSTRUCTION**  
MODIFIED 4X4 CATCH BASIN, PER ODOT CB 2-4  
N.T.S.



**EMERGENCY SPILLWAY SECTION**  
N.T.S.



- GENERAL NOTES:**
1. PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
  2. PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
  3. EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
  4. EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
  5. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
  6. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
  7. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

**5" FAIRCLOTH SKIMMER DISCHARGE SYSTEM WITH OUTLET STRUCTURE**  
N.T.S.

**SEDIMENT CONTROL VOLUMES - EXTENDED WET DETENTION BASIN**

POND	DRAINAGE AREA (AC)	DISTURBED AREA (AC)	REQUIRED DEWATERING ZONE VOLUME (CF)	REQUIRED SEDIMENT ZONE VOLUME (CF)	PROVIDED DEWATERING ZONE VOLUME (CF)	PROVIDED SEDIMENT ZONE VOLUME (CF)	DEWATERING ZONE (FT)	SEDIMENT STORAGE ZONE (FT)
EXT WET DETENTION BASIN A	29.68	29.6800	53,424	29,680	60,176	232,427	768.00-769.00	763.00-768.00

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HENDERSON DEVELOPMENT

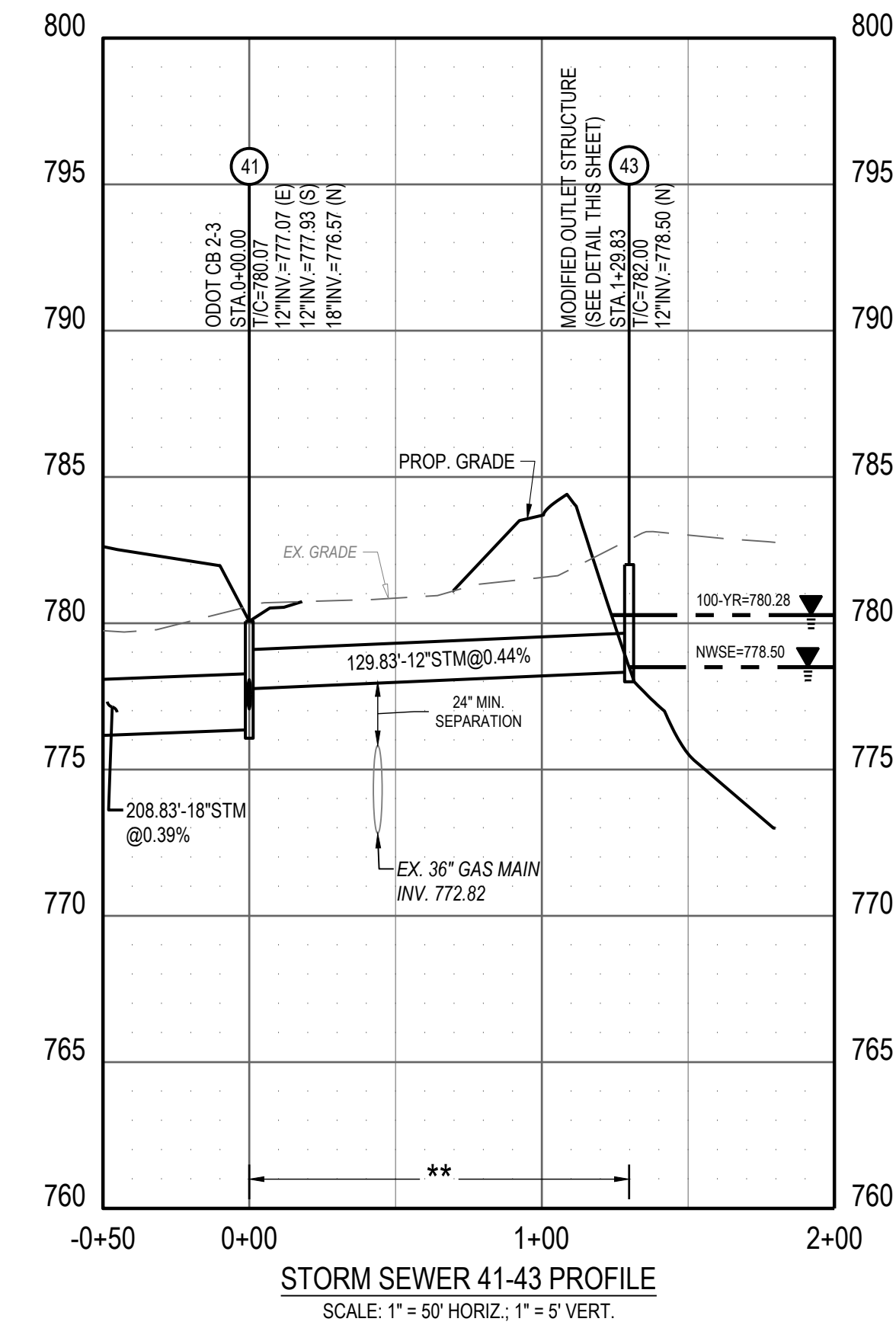
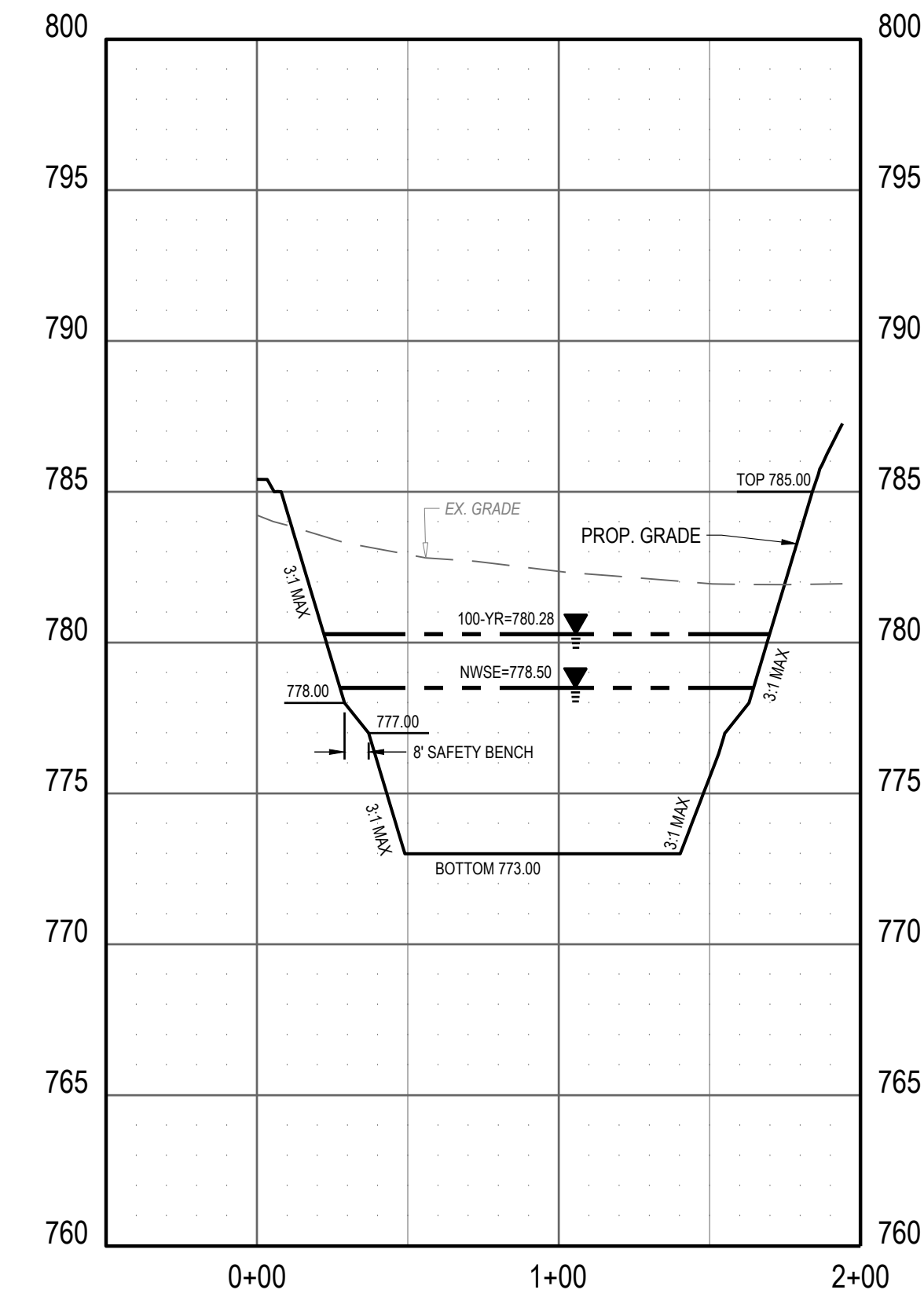
SHAKER MEADOWS

PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

Project Number: 764699  
Scale: 1" = 50'  
Drawn By: BBM  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**BASIN DETAILS**

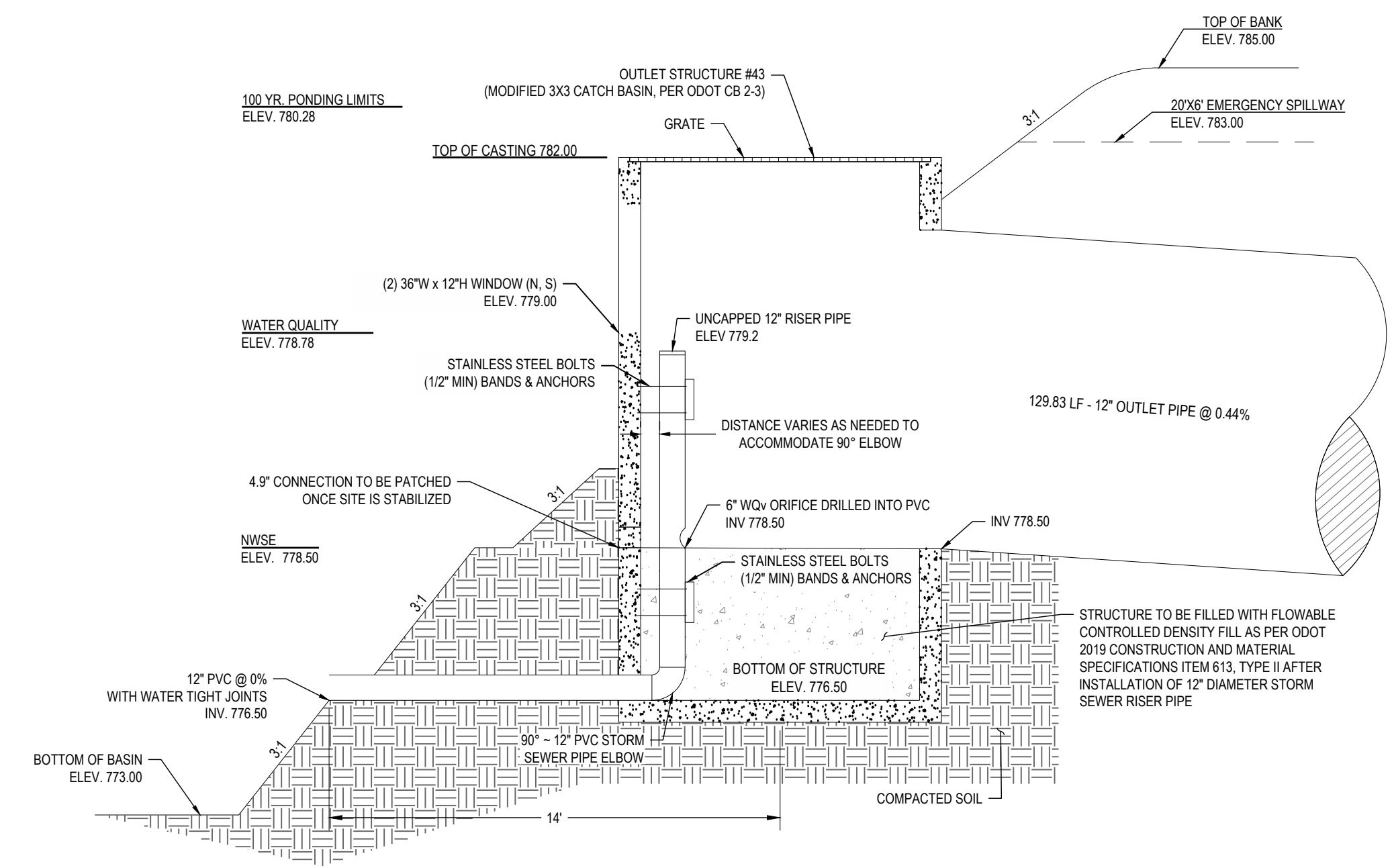


**LEGEND**

- \* COMPACTED GRANULAR BACKFILL
- \*\* COMPACTED NATIVE BACKFILL

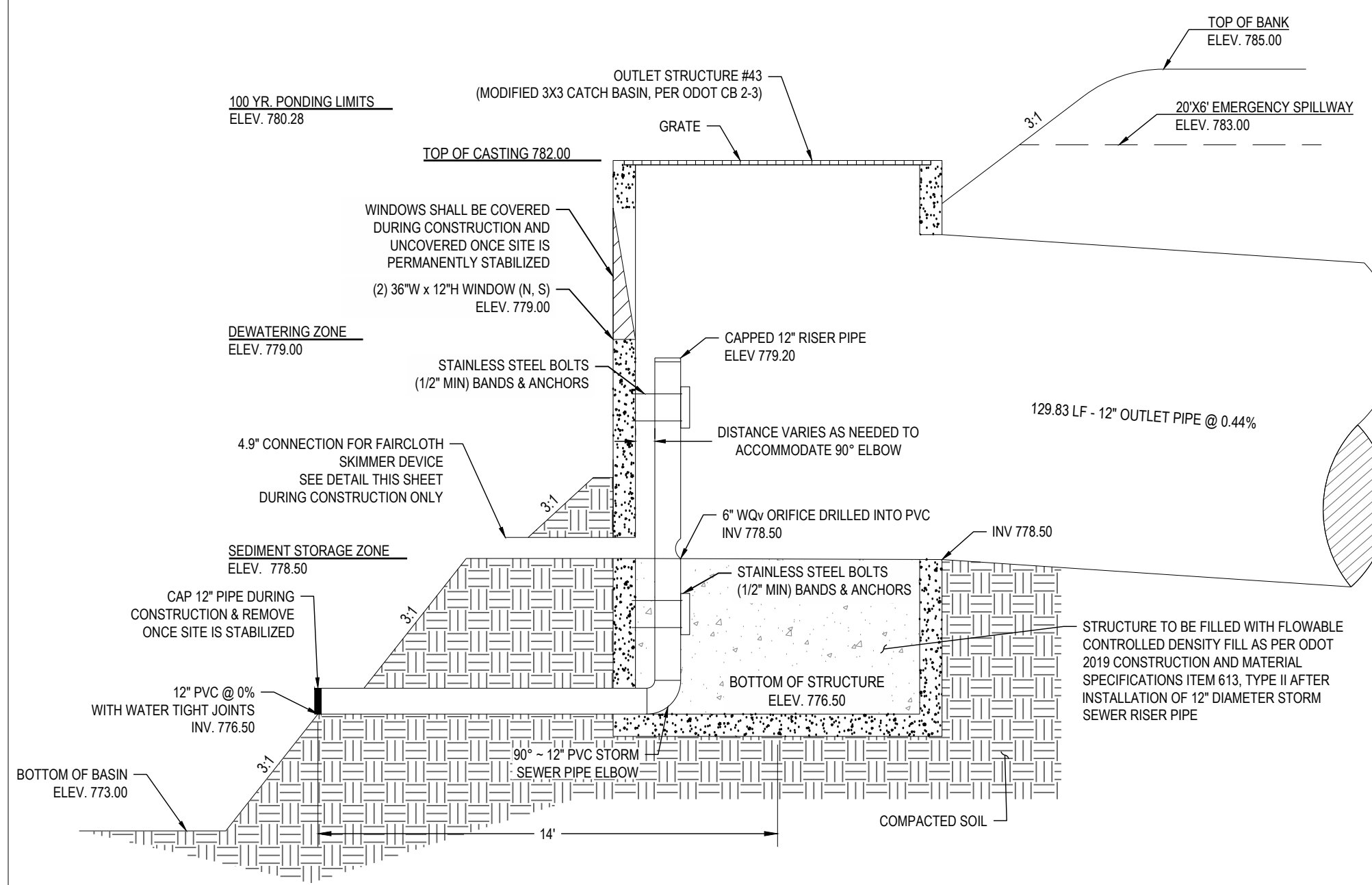
**NOTES**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO START OF CONSTRUCTION.
2. 18" MINIMUM VERTICAL CLEARANCE AND 10' HORIZONTAL CLEARANCE SHALL BE MAINTAINED BETWEEN ALL SANITARY, STORM, AND WATER LINES.
3. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
4. ALL EXISTING INFORMATION IS PER PLAN, UNLESS OTHERWISE NOTED.
5. ALL BACKFILL SHALL BE COMPACTED TO THE DENSITY OF THE EXISTING GROUND UNLESS OTHERWISE NOTED.
6. CONTRACTOR SHALL ENSURE THAT ALL PIPES ARE NOT DAMAGED DURING CONSTRUCTION.



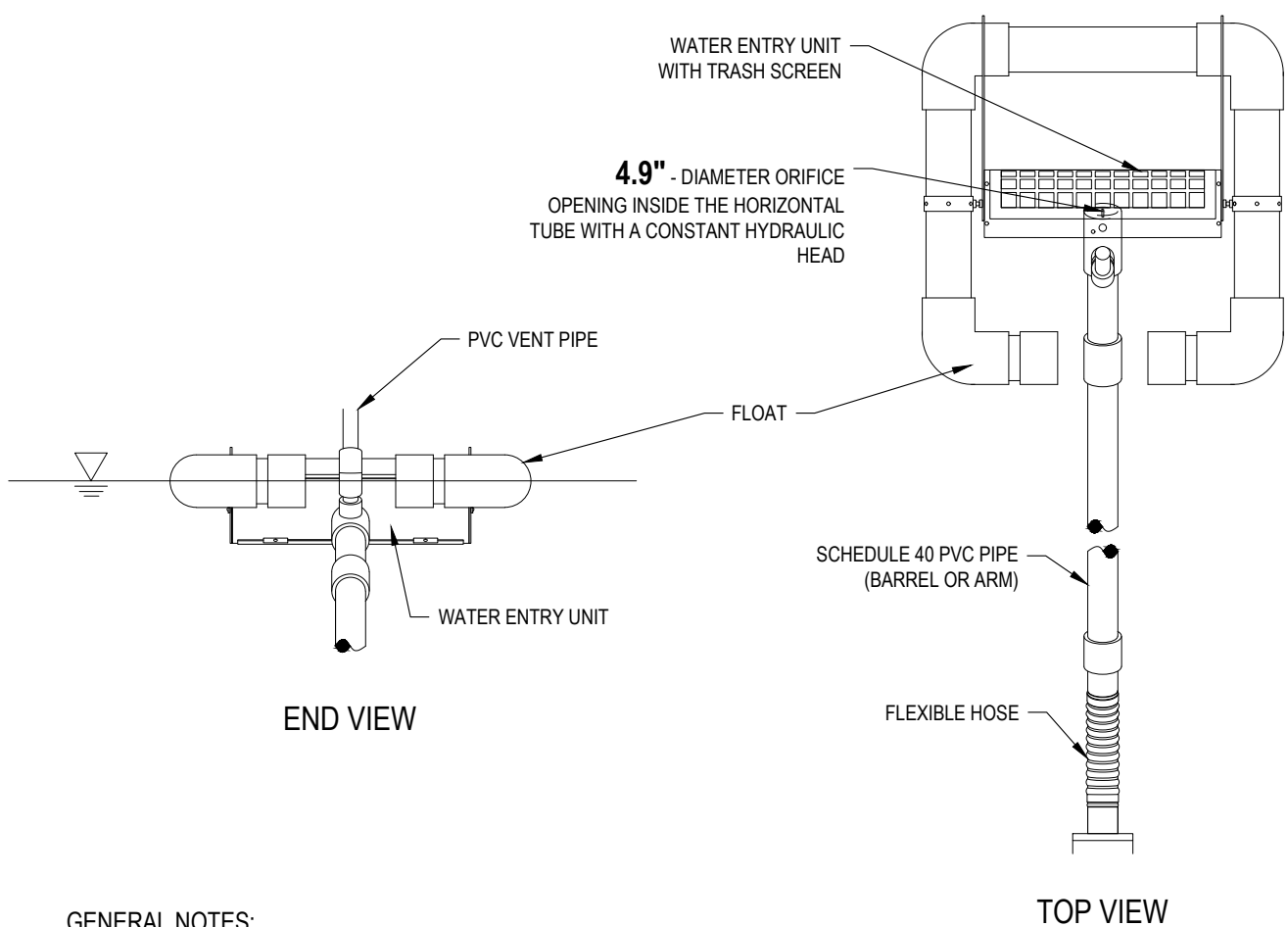
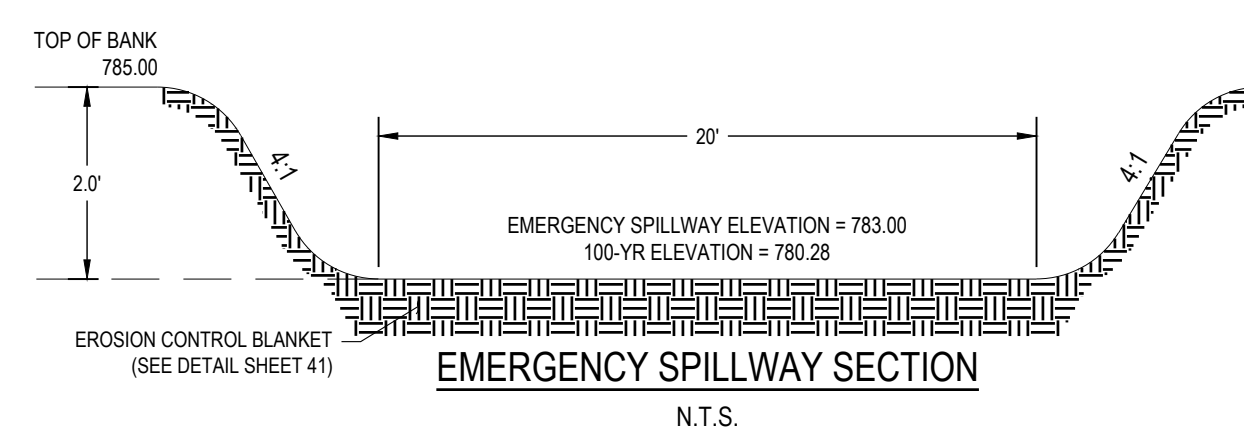
NOTE:  
1. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DISCRETION OF CITY OF FRANKLIN'S ENGINEER OFFICE AND/OR THE EPA

OUTLET STRUCTURE DETAIL  
STRUCTURE #43  
DURING CONSTRUCTION  
MODIFIED 3X3 CATCH BASIN, PER ODOT CB 2-3  
N.T.S.



NOTE:  
1. ALL EROSION AND SEDIMENT CONTROL PRACTICES ARE SUBJECT TO FIELD MODIFICATION AT THE DISCRETION OF CITY OF FRANKLIN'S ENGINEER OFFICE AND/OR THE EPA

OUTLET STRUCTURE DETAIL  
STRUCTURE #43  
DURING CONSTRUCTION  
MODIFIED 3X3 CATCH BASIN, PER ODOT CB 2-3  
N.T.S.



- GENERAL NOTES:
1. PROPER DESIGN MUST BE COMPLETED TO MINIMIZE PIPING AROUND DISCHARGE PIPE.
  2. PROPER ORIFICE OPENING MUST BE SELECTED TO ENSURE POND DRAINS IN CORRECT AMOUNT OF TIME. MODIFICATIONS MAY BE REQUIRED IF FIELD CONDITIONS WARRANT A CHANGE.
  3. EMBANKMENT MUST BE COMPACTED TO DESIGN SPECIFICATIONS.
  4. EMERGENCY SPILLWAY MUST BE CORRECTLY SIZED AND EROSION PROTECTION INSTALLED.
  5. EROSION PROTECTION MUST BE INSTALLED ALONG THE EMBANKMENT AND AT THE DISCHARGE END OF THE PIPE.
  6. INSPECT SYSTEM REGULARLY TO ENSURE IT IS FUNCTIONING IN A CORRECT MANNER.
  7. EIGHT SIZES OF SKIMMERS ARE AVAILABLE, REFER TO THE FLOW SHEET, CUT SHEET, AND INSTRUCTIONS ON WEB SITE FOR EACH SIZE.

5" FAIRCLOTH SKIMMER DISCHARGE SYSTEM WITH OUTLET STRUCTURE  
N.T.S.

SEDIMENT CONTROL VOLUMES - EXTENDED WET DETENTION BASIN

POND	DRAINAGE AREA (AC)	DISTURBED AREA (AC)	REQUIRED DEWATERING ZONE VOLUME (CF)	REQUIRED SEDIMENT ZONE VOLUME (CF)	PROVIDED DEWATERING ZONE VOLUME (CF)	PROVIDED SEDIMENT ZONE VOLUME (CF)	DEWATERING ZONE (FT)	SEDIMENT STORAGE ZONE (FT)
EXT WET DETENTION BASIN A	15.28	15.28	27,504	15,200	62,025	561,169	781.00-782.00	776.00-781.50

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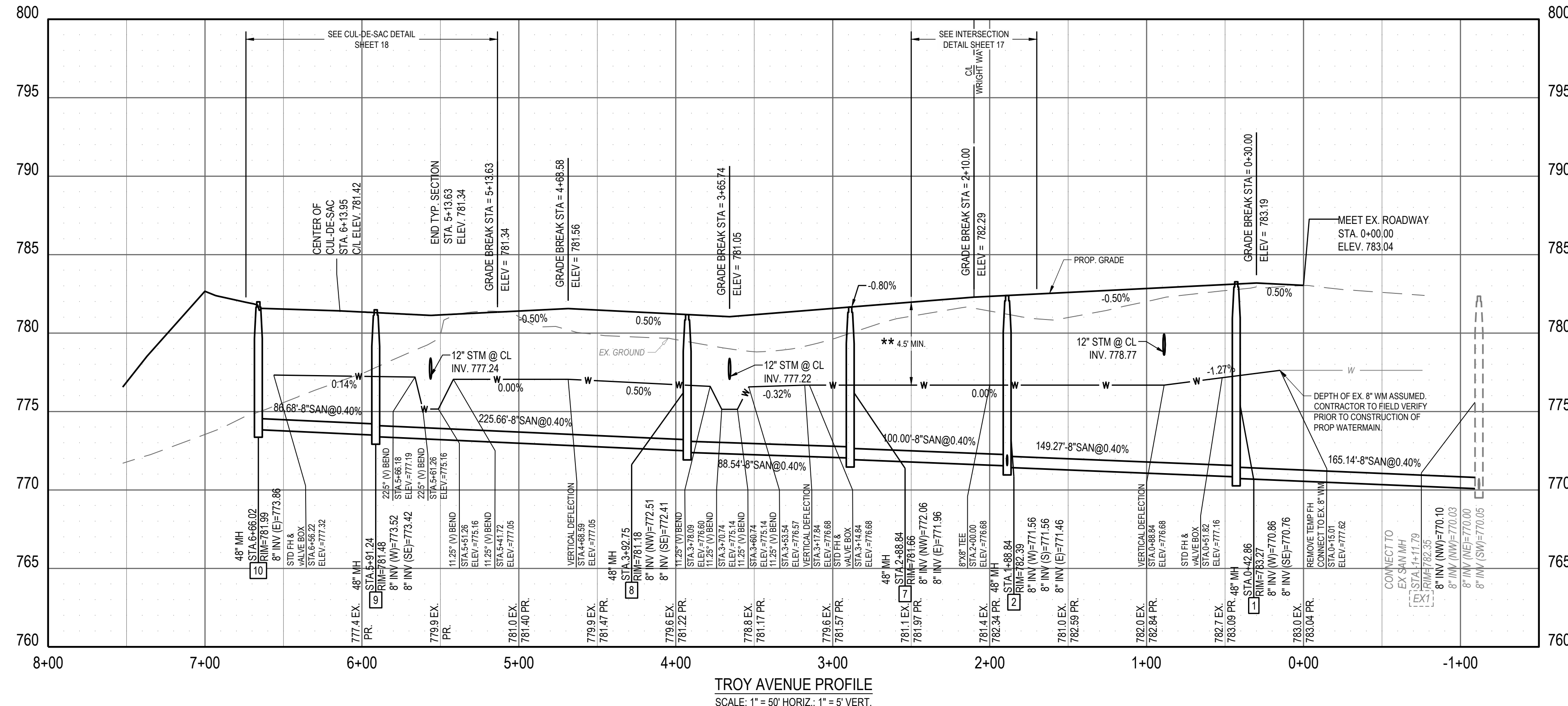
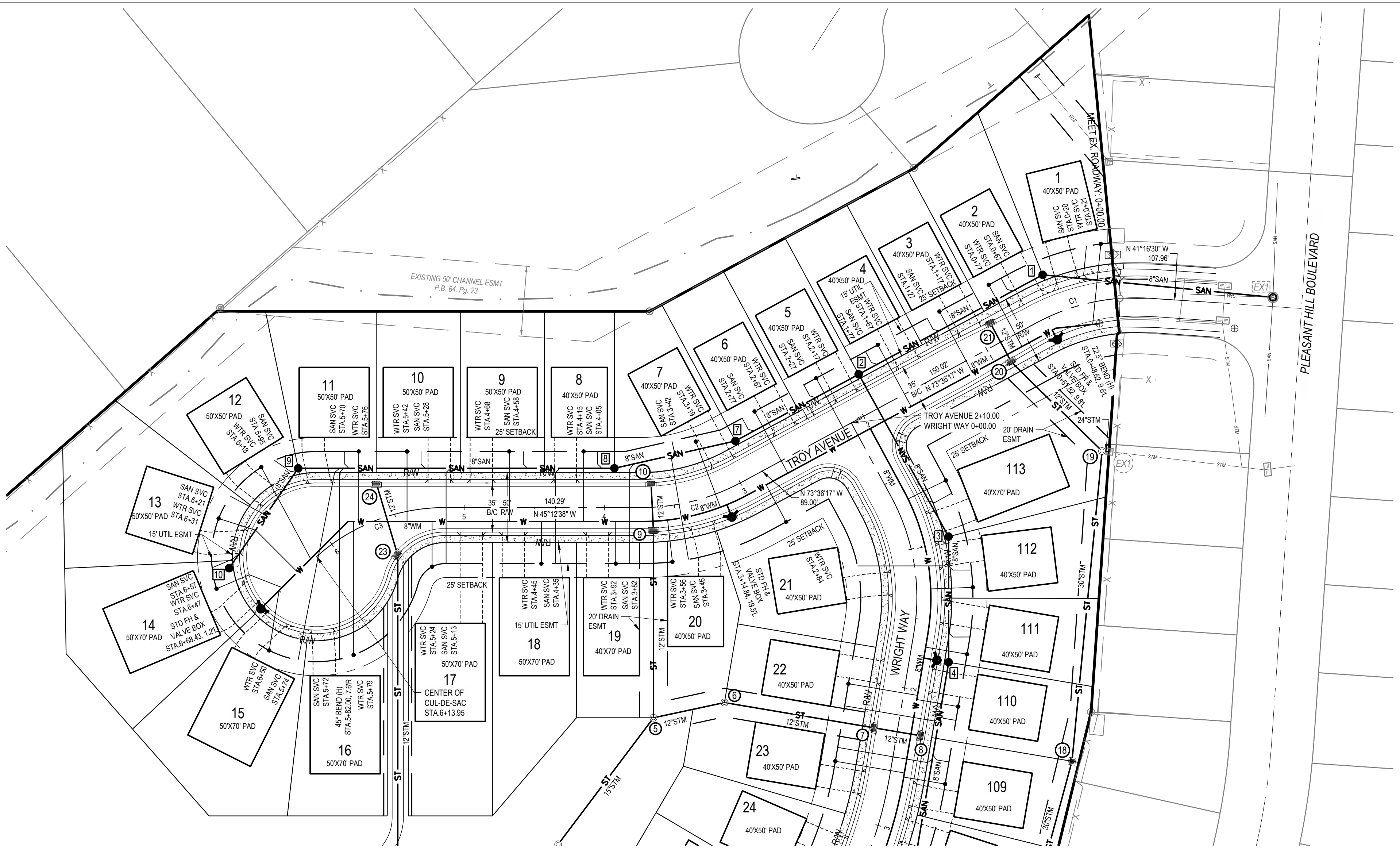
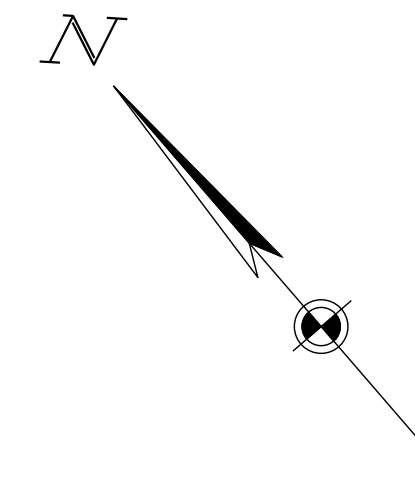


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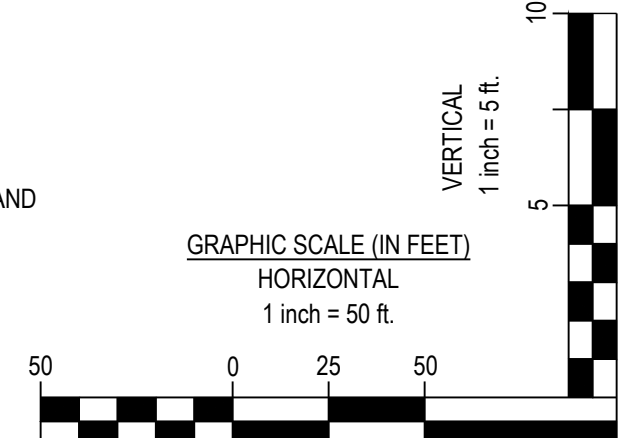
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EXISTING CENTERLINE
EXISTING TREE LINE
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EXISTING EASEMENT
EXISTING EDGE OF PAVEMENT
EXISTING FACE OF CURB
EXISTING BACK OF CURB
EXISTING STORM SEWER
EXISTING SANITARY SEWER
EXISTING WATER MAIN
EXISTING STORM STRUCTURES
EXISTING SANITARY SEWER MANHOLE
EXISTING WATER STRUCTURES
EXISTING CABLE BOX
PROPOSED PHASE LINE
PROPOSED RIGHT-OF-WAY
PROPOSED PROPERTY LINE
PROPOSED SETBACK
PROPOSED EASEMENT
PROPOSED BASIN
PROPOSED CENTERLINE
PROPOSED CURB & GUTTER
PROPOSED STORM SEWER
PROPOSED STORM STRUCTURES
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER MANHOLE
PROPOSED WATER LINE
PROPOSED WATER HYDRANT/VALVE
PROPOSED SIDEWALK



C/L CURVE TABLE
CURVE RADIUS ARC LENGTH CHORD LENGTH CHORD BEARING DELTA ANGLE TANGENT
C1 150.00' 59.97' 59.58' N62° 09' 02"W 022° 54' 30" 30.39'
C2 150.00' 74.34' 73.58' N59° 24' 27"W 028° 23' 39" 37.95'
C3 137.50' 100.32' 98.11' N66° 06' 41"W 041° 48' 07" 52.51'

NOTES:

- 1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.
2. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
3. ALL EXISTING ELEVATIONS ARE PER SURVEY PERFORMED BY CESO, INC. UNLESS OTHERWISE NOTED.
4. ALL FITTINGS SHALL BE LEAD FREE.
5. ALL WATERLINE, STORM, AND SANITARY SEWERS UNDER PAVEMENT SHALL HAVE COMPACTED GRANULAR BACKFILL.
6. WATERLINE SHALL BE BACKFILLED WITH 4.5' OF COVER PRIOR TO TESTING.
7. ALL EXISTING TOPSOIL IN THE RIGHT-OF-WAY TO BE REMOVED. ALL FILLS SHALL BE PLACED WITH APPROVED MATERIAL PRIOR TO THE INSTALLATION OF ANY UTILITIES.
8. LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
9. WATER SERVICES TO LOTS SHALL BE 3/4".
10. SANITARY SERVICES TO LOTS SHALL BE 4".
11. ALL SERVICE STATIONS IN THIS SHEET ARE REFERENCING CENTERLINE ALIGNMENT
\* 18" MINIMUM VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN ALL STORM, SANITARY, AND WATERLINES.
\*\* MINIMUM COVER OVER THE WATERLINE IS TO BE MEASURED BETWEEN THE PROPOSED PROFILE GRADE AND THE OUTSIDE TOP OF PIPE.



HENDERSON DEVELOPMENT

SHAKER MEADOWS

PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions table with columns for ID, Description, and Date.

Drawing Title: TROY AVENUE PLAN AND PROFILE

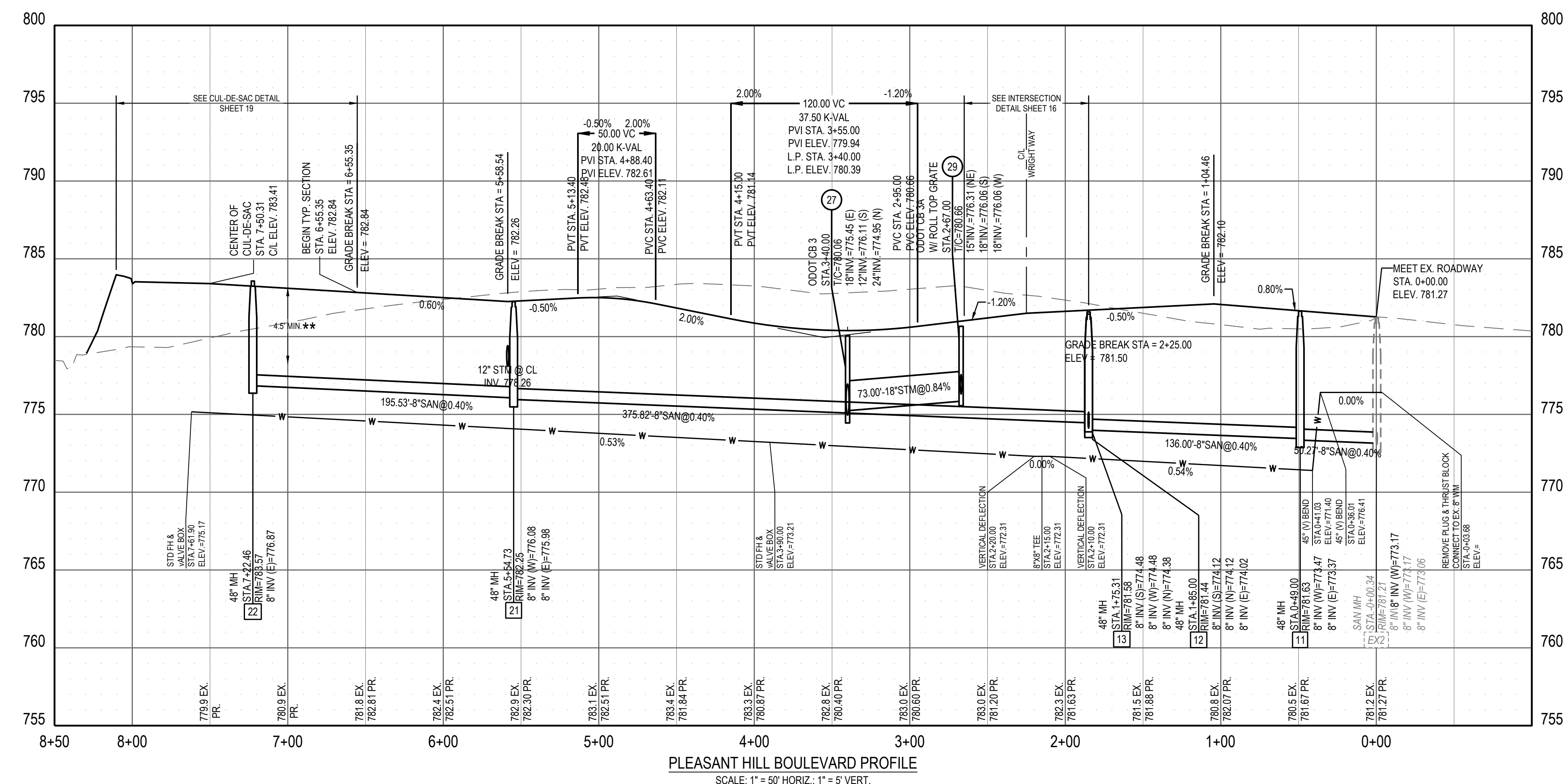
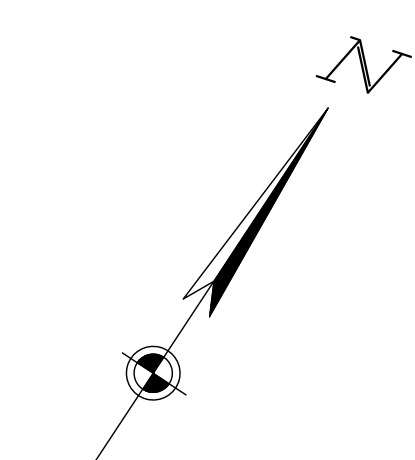
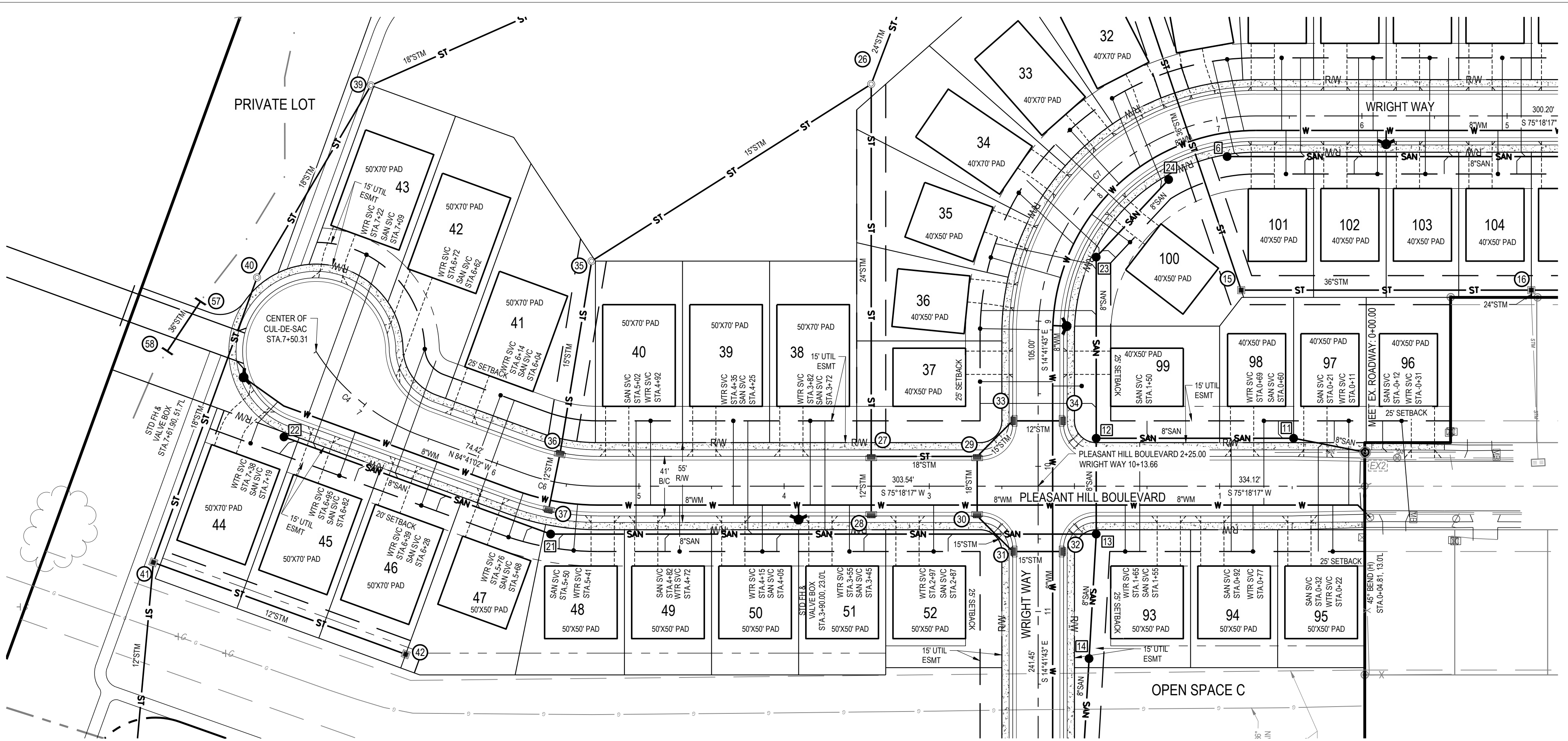


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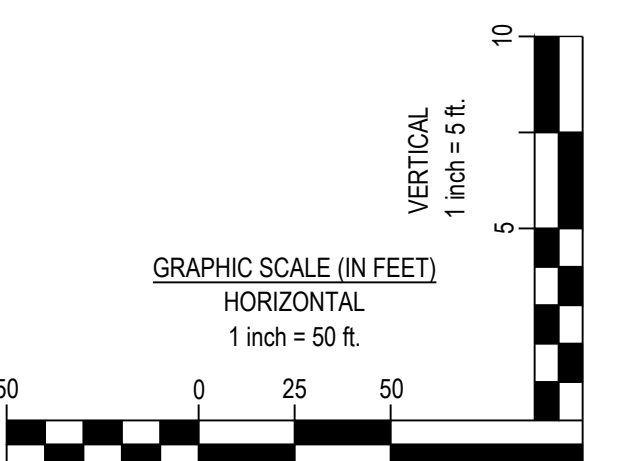
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EXISTING EDGE OF PAVEMENT
EXISTING FACE OF CURB
EXISTING BACK OF CURB
EXISTING STORM SEWER
EXISTING SANITARY SEWER
EXISTING WATER MAIN
EXISTING STORM STRUCTURES
EXISTING SANITARY SEWER MANHOLE
EXISTING WATER STRUCTURES
PROPOSED PHASE LINE
PROPOSED RIGHT-OF-WAY
PROPOSED PROPERTY LINE
PROPOSED SETBACK
PROPOSED EASEMENT
PROPOSED BASIN
PROPOSED CENTERLINE
PROPOSED CURB & GUTTER
PROPOSED STORM SEWER
PROPOSED STORM STRUCTURES
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER MANHOLE
PROPOSED WATER LINE
PROPOSED WATER HYDRANT/VALVE
PROPOSED SIDEWALK



C/L CURVE TABLE
CURVE C4 RADIUS 145.00' ARC LENGTH 94.96' CHORD LENGTH 93.27' CHORD BEARING N65° 55' 20"W DELTA ANGLE 037° 31' 25" TANGENT 49.25'

NOTES:

- 1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.
2. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
3. ALL EXISTING ELEVATIONS ARE PER SURVEY PERFORMED BY CESO, INC. UNLESS OTHERWISE NOTED.
4. ALL FITTINGS SHALL BE LEAD FREE.
5. ALL WATERLINE, STORM, AND SANITARY SEWERS UNDER PAVEMENT SHALL HAVE COMPACTED GRANULAR BACKFILL.
6. WATERLINE SHALL BE BACKFILLED WITH 4.5' OF COVER PRIOR TO TESTING.
7. ALL EXISTING TOPSOIL IN THE RIGHT-OF-WAY TO BE REMOVED. ALL FILLS SHALL BE PLACED WITH APPROVED MATERIAL PRIOR TO THE INSTALLATION OF ANY UTILITIES.
8. LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
9. WATER SERVICES TO LOTS SHALL BE 3/4".
10. SANITARY SERVICES TO LOTS SHALL BE 4".
11. ALL SERVICE STATIONS IN THIS SHEET ARE REFERENCING CENTERLINE ALIGNMENT
\* 18" MINIMUM VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN ALL STORM, SANITARY, AND WATERLINES.
\*\* MINIMUM COVER OVER THE WATERLINE IS TO BE MEASURED BETWEEN THE PROPOSED PROFILE GRADE AND THE OUTSIDE TOP OF PIPE.



HENDERSON DEVELOPMENT

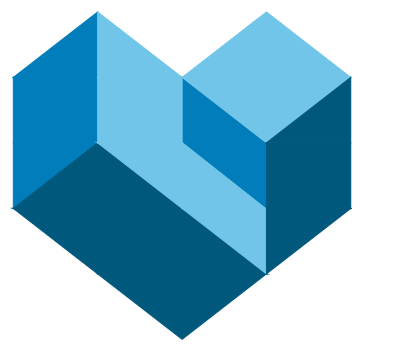
SHAKER MEADOWS
PLEASANT HILL BLVD
FRANKLIN, OH

Revisions / Submissions table with columns for ID, Description, and Date. Includes project number 764699, scale 1"=50', and issue date NOVEMBER 2025.

Project Number: 764699
Scale: 1"=50'
Drawn By: MMH
Checked By: JEE
Date: NOVEMBER 2025
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:
PLEASANT HILL
BOULEVARD PLAN
AND PROFILE

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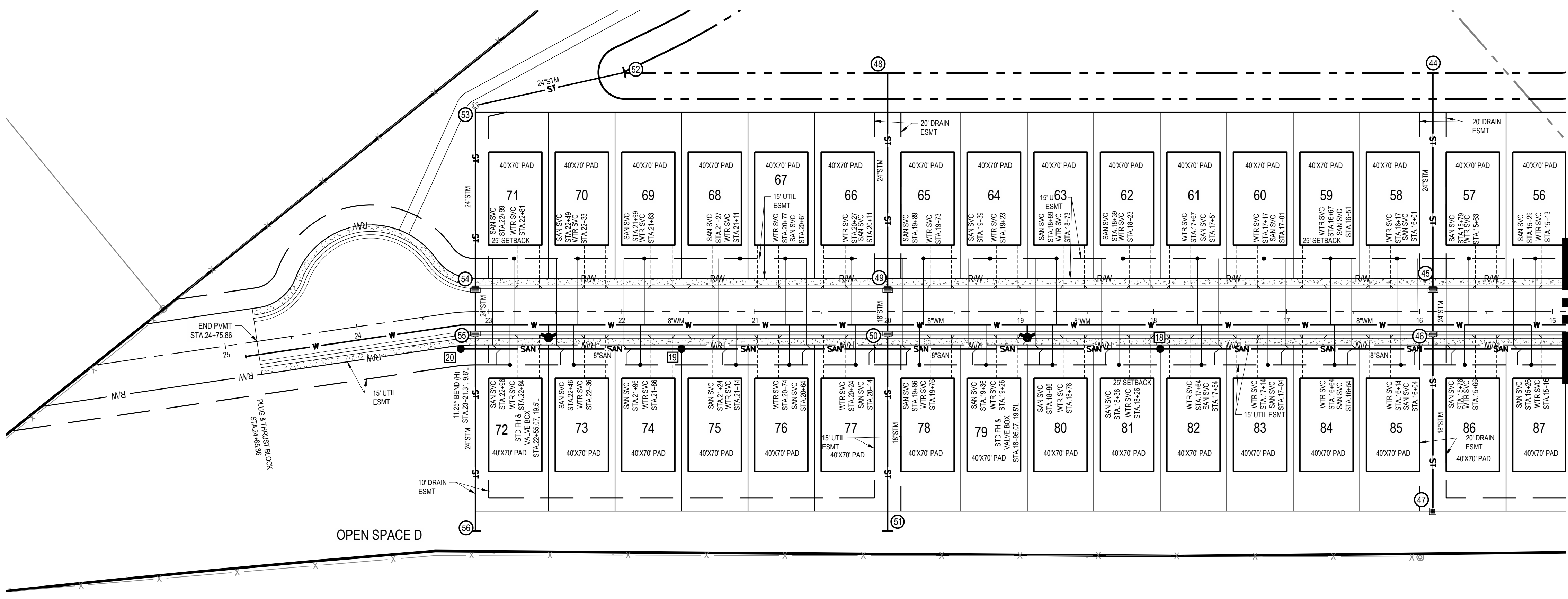
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Mansfield, OH 43342  
Phone: 937.435.8584 Fax: 888.208.4826

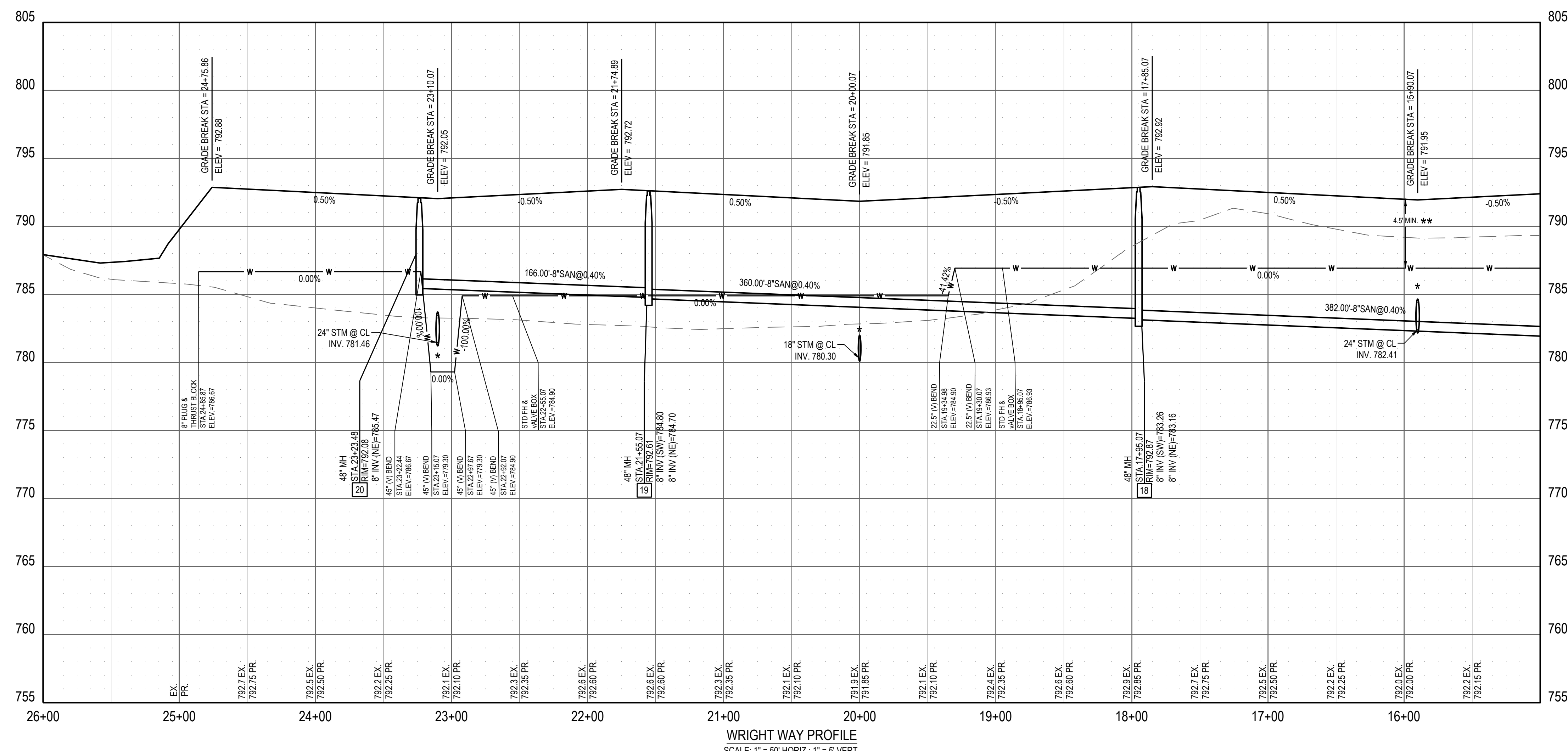
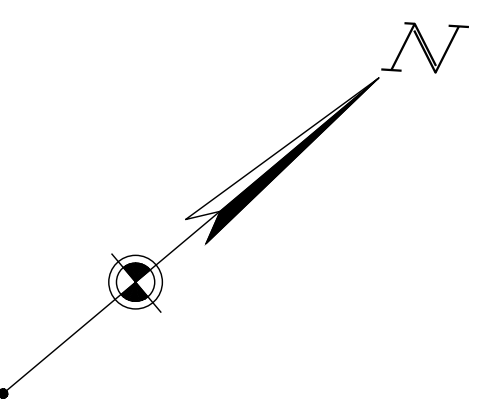
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**LEGEND**

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- EXISTING PROPERTY LINE
- EXISTING RW
- EXISTING CENTERLINE
- EXISTING TREE LINE
- EXISTING INTERMITTENT STREAM
- EXISTING EASEMENT
- EXISTING EDGE OF PAVEMENT
- EXISTING FACE OF CURB
- EXISTING BACK OF CURB
- EXISTING STORM SEWER
- EXISTING SANITARY SEWER
- EXISTING WATER MAIN
- EXISTING STORM STRUCTURES
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WATER STRUCTURES
- PROPOSED PHASE LINE
- PROPOSED RIGHT-OF-WAY
- PROPOSED PROPERTY LINE
- PROPOSED SETBACK
- PROPOSED EASEMENT
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- PROPOSED CURB & GUTTER
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- PROPOSED WATER HYDRANT/VALVE
- PROPOSED SIDEWALK

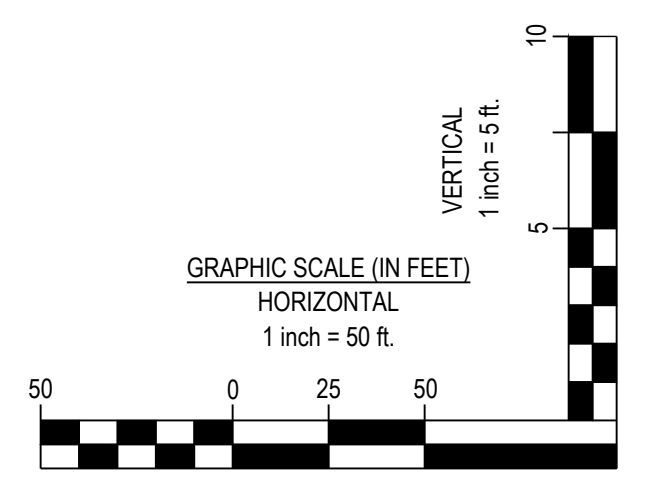


SEE SHEET 31



**NOTES:**

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.
  2. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
  3. ALL EXISTING ELEVATIONS ARE PER SURVEY PERFORMED BY CESO, INC. UNLESS OTHERWISE NOTED.
  4. ALL FITTINGS SHALL BE LEAD FREE.
  5. ALL WATERLINE, STORM, AND SANITARY SEWERS UNDER PAVEMENT SHALL HAVE COMPACTED GRANULAR BACKFILL.
  6. WATERLINE SHALL BE BACKFILLED WITH 4.5" OF COVER PRIOR TO TESTING.
  7. ALL EXISTING TOPSOIL IN THE RIGHT-OF-WAY TO BE REMOVED. ALL FILLS SHALL BE PLACED WITH APPROVED MATERIAL PRIOR TO THE INSTALLATION OF ANY UTILITIES.
  8. LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
  9. WATER SERVICES TO LOTS SHALL BE 34".
  10. SANITARY SERVICES TO LOTS SHALL BE 4"
  11. ALL SERVICE STATIONS IN THIS SHEET ARE REFERENCING CENTERLINE ALIGNMENT
- \* 18" MINIMUM VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN ALL STORM, SANITARY, AND WATERLINES.
- \*\* MINIMUM COVER OVER THE WATERLINE IS TO BE MEASURED BETWEEN THE PROPOSED PROFILE GRADE AND THE OUTSIDE TOP OF PIPE.



**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date

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Project Number: 764699  
Scale: 1"=50'  
Drawn By: MMH  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

**Drawing Title:**  
**WRIGHT WAY PLAN AND PROFILE**

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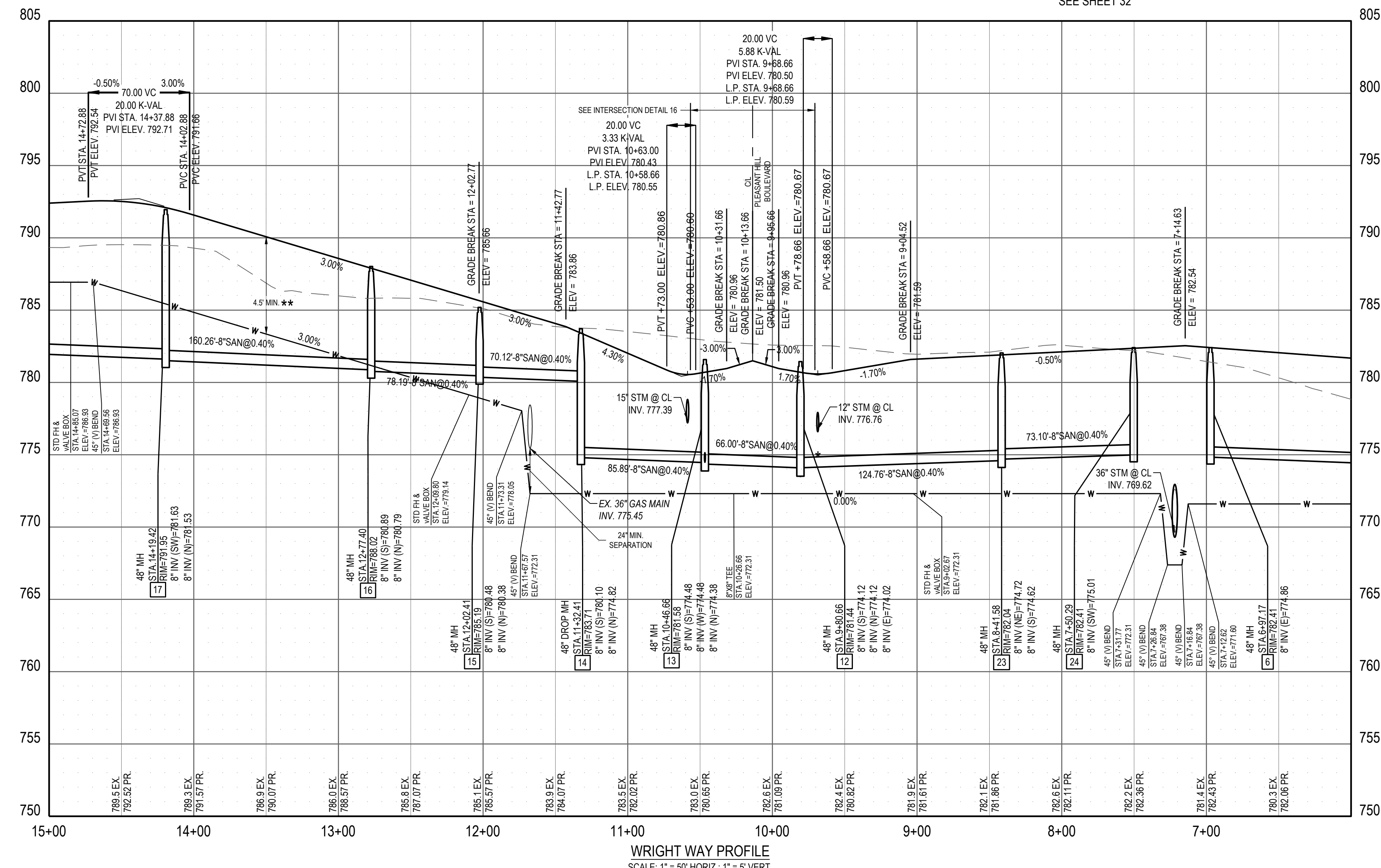
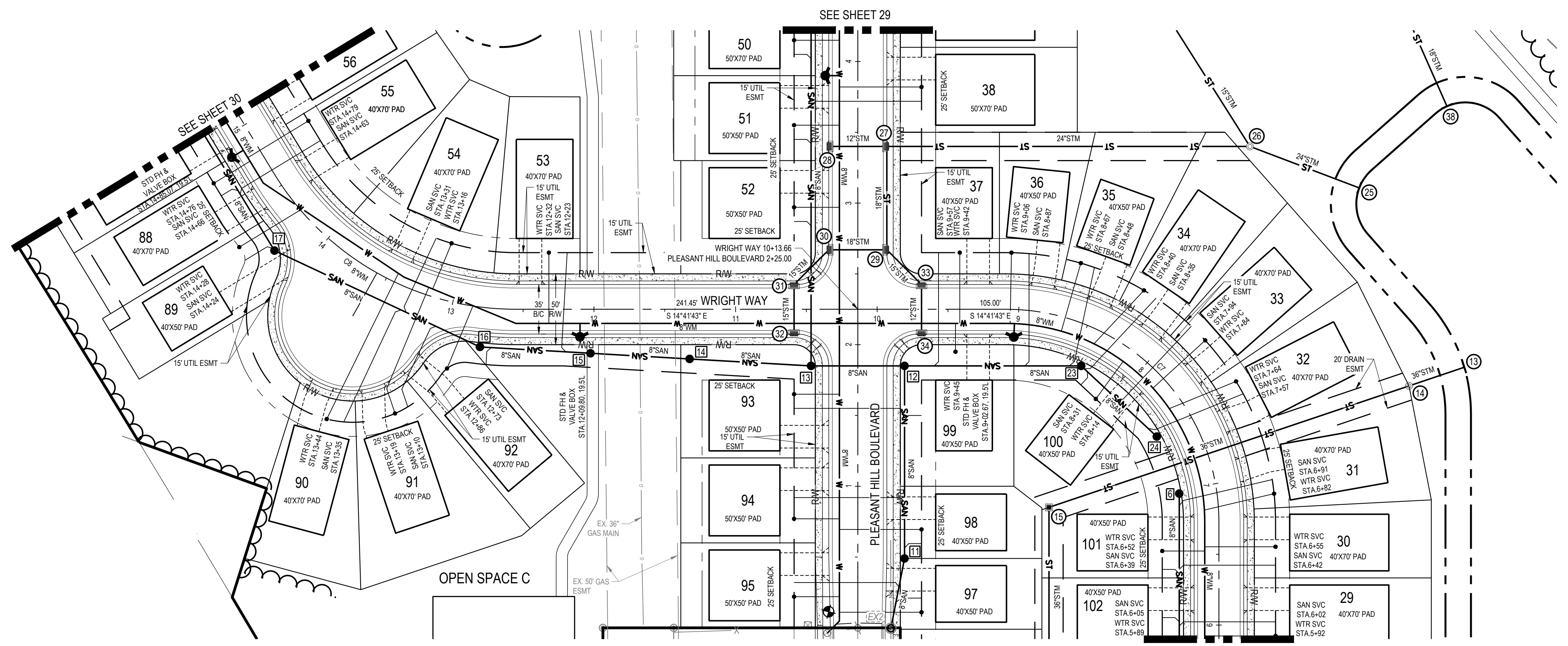
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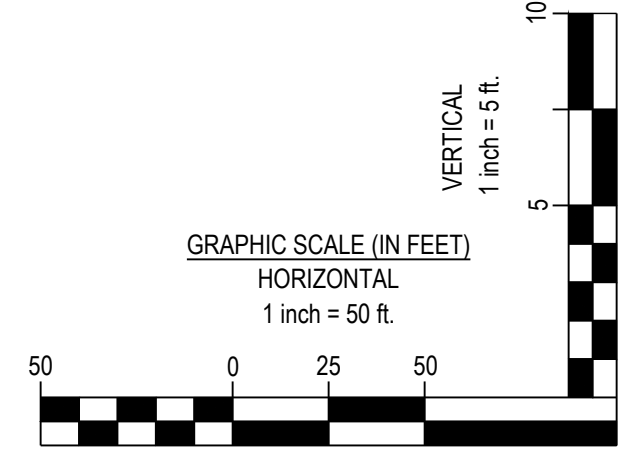
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EXISTING FACE OF CURB
EXISTING BACK OF CURB
EXISTING STORM SEWER
EXISTING SANITARY SEWER
EXISTING WATER MAIN
EXISTING STORM STRUCTURES
EXISTING SANITARY SEWER MANHOLE
EXISTING WATER STRUCTURES
PROPOSED PHASE LINE
PROPOSED RIGHT-OF-WAY
PROPOSED PROPERTY LINE
PROPOSED SETBACK
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PROPOSED BASIN
PROPOSED CENTERLINE
PROPOSED CURB & GUTTER
PROPOSED STORM SEWER
PROPOSED STORM STRUCTURES
PROPOSED SANITARY SEWER
PROPOSED SANITARY SEWER MANHOLE
PROPOSED WATER LINE
PROPOSED WATER HYDRANT/VALVE
PROPOSED SIDEWALK



C/L CURVE TABLE
CURVE RADIUS ARC LENGTH CHORD LENGTH CHORD BEARING DELTA ANGLE TANGENT
C7 150.00' 235.62' 212.13' S30° 18' 17"W 090° 00' 00" 150.00'
C8 200.00' 205.01' 196.15' S14° 40' 13"W 058° 43' 52" 112.54'

NOTES:

- 1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.
2. ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
3. ALL EXISTING ELEVATIONS ARE PER SURVEY PERFORMED BY CESO, INC. UNLESS OTHERWISE NOTED.
4. ALL FITTINGS SHALL BE LEAD FREE.
5. ALL WATERLINE, STORM, AND SANITARY SEWERS UNDER PAVEMENT SHALL HAVE COMPACTED GRANULAR BACKFILL.
6. WATERLINE SHALL BE BACKFILLED WITH 4.5' OF COVER PRIOR TO TESTING.
7. ALL EXISTING TOPSOIL IN THE RIGHT-OF-WAY TO BE REMOVED. ALL FILLS SHALL BE PLACED WITH APPROVED MATERIAL PRIOR TO THE INSTALLATION OF ANY UTILITIES.
8. LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
9. WATER SERVICES TO LOTS SHALL BE 34".
10. SANITARY SERVICES TO LOTS SHALL BE 4".
11. ALL SERVICE STATIONS IN THIS SHEET ARE REFERENCING CENTERLINE ALIGNMENT
\* 18" MINIMUM VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN ALL STORM, SANITARY, AND WATERLINES.
\*\* MINIMUM COVER OVER THE WATERLINE IS TO BE MEASURED BETWEEN THE PROPOSED PROFILE GRADE AND THE OUTSIDE TOP OF PIPE.



HENDERSON DEVELOPMENT
SHAKER MEADOWS
PLEASANT HILL BLVD
FRANKLIN, OH

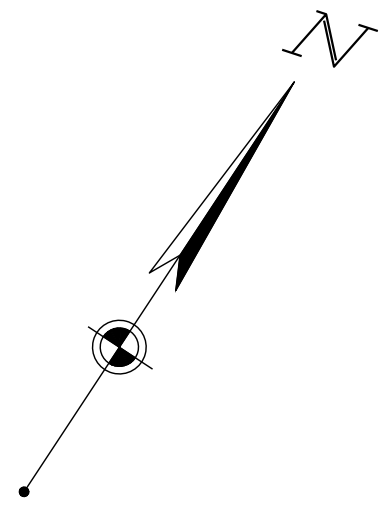
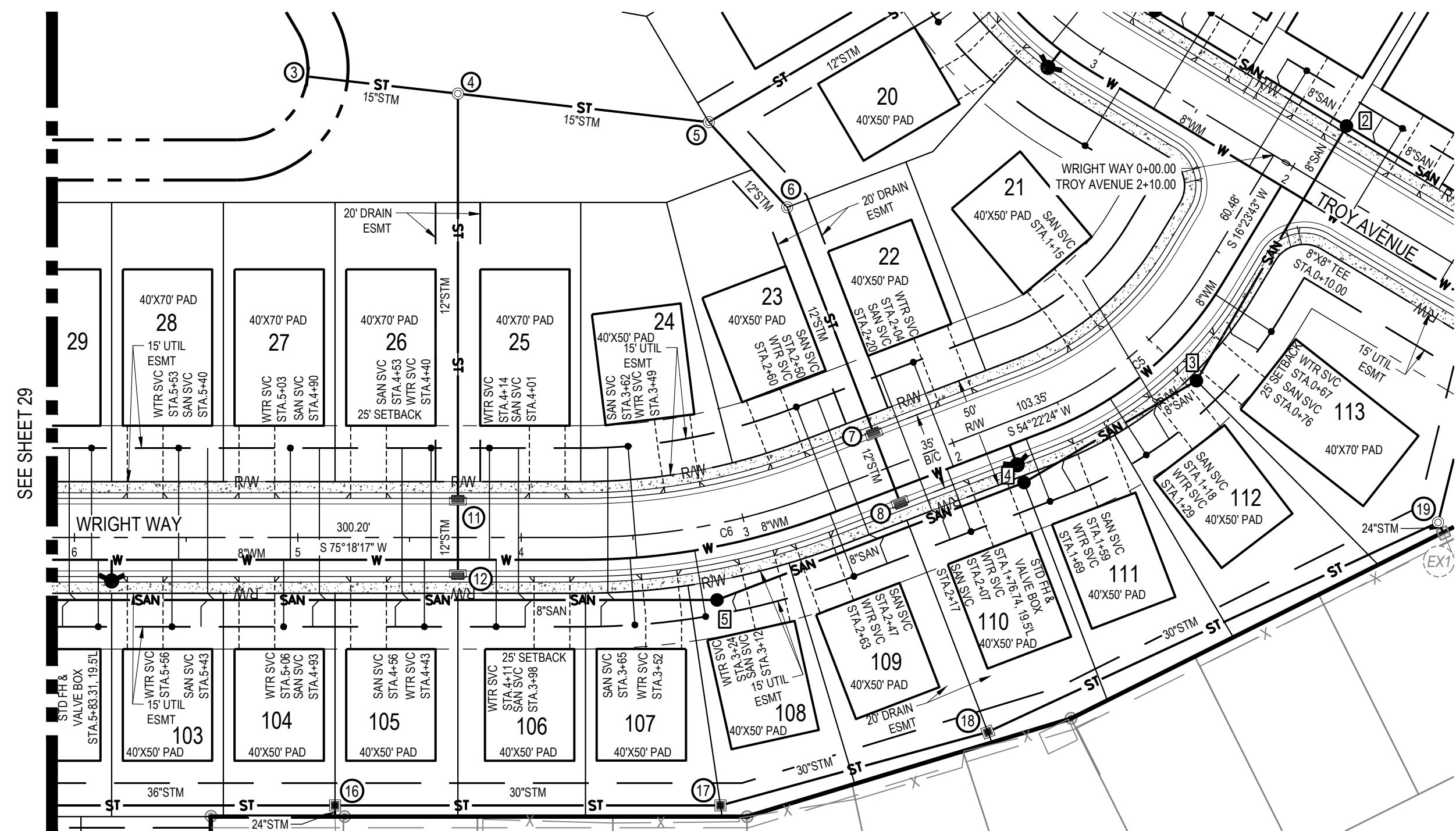
Revisions / Submissions table with columns for ID, Description, and Date.

Project Number: 764699
Scale: 1"=50'
Drawn By: MMH
Checked By: JEE
Date: NOVEMBER 2025
Issue: FINAL DEVELOPMENT PLAN

Drawing Title:
WRIGHT WAY PLAN
AND PROFILE
31

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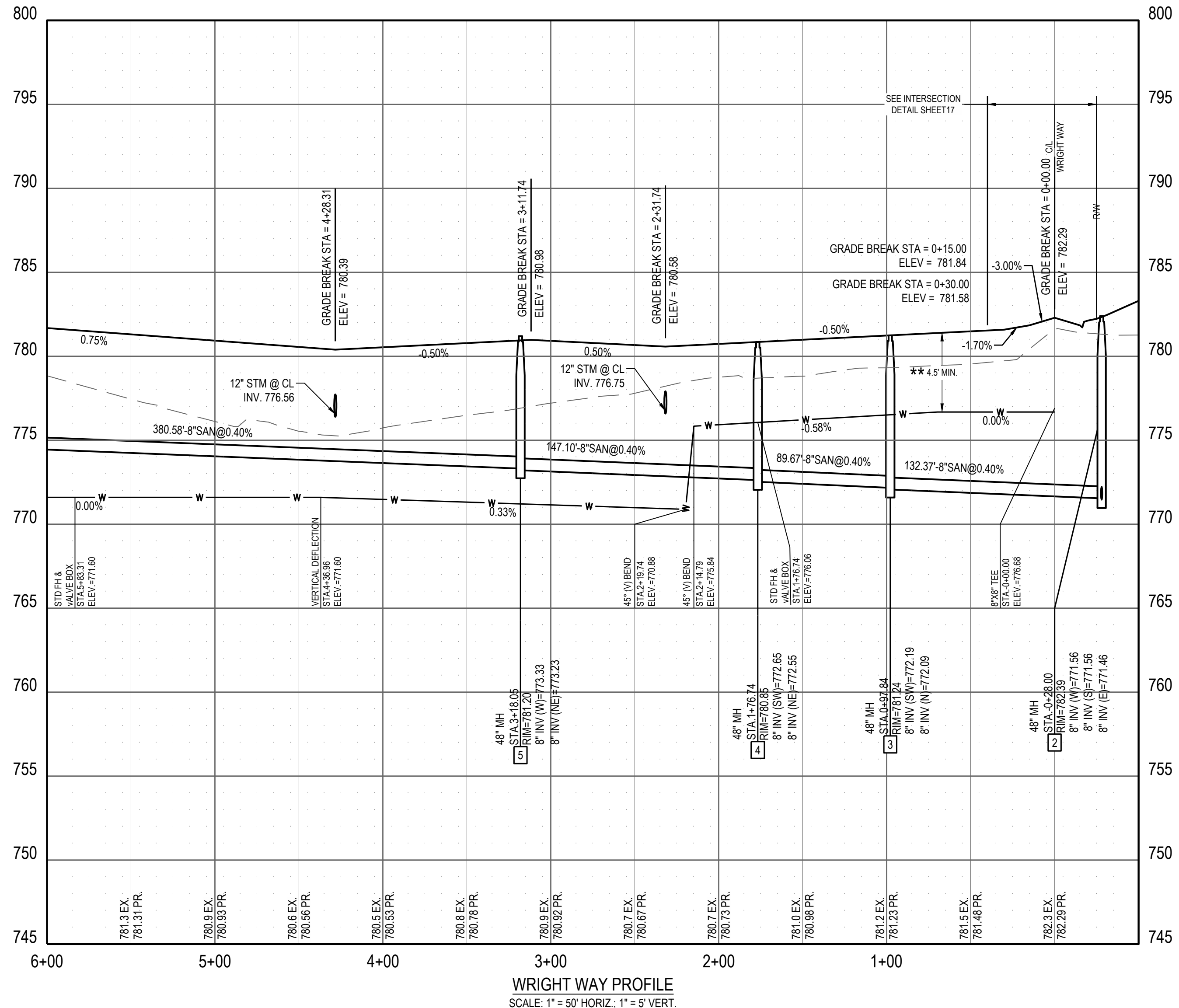


**LEGEND**

	SUBJECT BOUNDARY LINE
	EXISTING PROPERTY LINE
	EXISTING RW
	EXISTING CENTERLINE
	EXISTING TREE LINE
	EXISTING INTERMITTENT STREAM
	EXISTING EASEMENT
	EXISTING EDGE OF PAVEMENT
	EXISTING FACE OF CURB
	EXISTING BACK OF CURB
	EXISTING STORM SEWER
	EXISTING SANITARY SEWER
	EXISTING WATER MAIN
	EXISTING STORM STRUCTURES
	EXISTING SANITARY SEWER MANHOLE
	EXISTING WATER STRUCTURES
	PROPOSED PHASE LINE
	PROPOSED RIGHT-OF-WAY
	PROPOSED PROPERTY LINE
	PROPOSED SETBACK
	PROPOSED EASEMENT
	PROPOSED BASIN
	PROPOSED CENTERLINE
	PROPOSED CURB & GUTTER
	PROPOSED STORM SEWER
	PROPOSED STORM STRUCTURES
	PROPOSED SANITARY SEWER
	PROPOSED SANITARY SEWER MANHOLE
	PROPOSED WATER LINE
	PROPOSED WATER HYDRANT/VALVE
	PROPOSED SIDEWALK



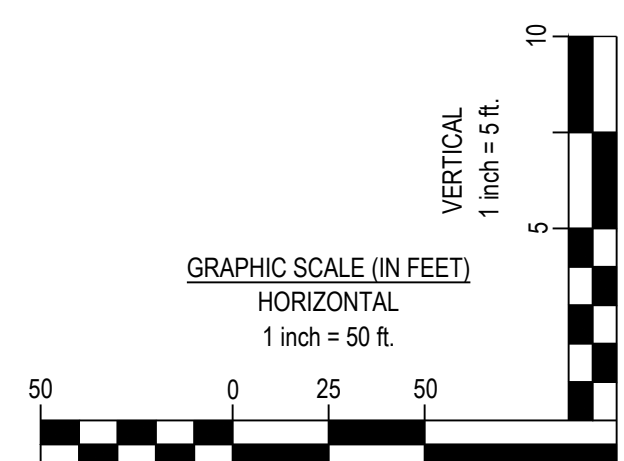
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**C/L CURVE TABLE**

CURVE	RADIUS	ARC LENGTH	CHORD LENGTH	CHORD BEARING	DELTA ANGLE	TANGENT
C5	150.00'	99.43'	97.62'	S35° 23' 03"W	037° 58' 40"	51.62'
C6	300.00'	109.60'	108.99'	S64° 50' 20"W	020° 55' 54"	55.42'

- NOTES:**
- CONTRACTOR SHALL FIELD VERIFY ALL EXISTING ELEVATIONS AND INVERTS PRIOR TO THE START OF CONSTRUCTION.
  - ALL ELEVATIONS SHOWN ON THIS PLAN ARE NAVD 88.
  - ALL EXISTING ELEVATIONS ARE PER SURVEY PERFORMED BY CESO, INC. UNLESS OTHERWISE NOTED.
  - ALL FITTINGS SHALL BE LEAD FREE.
  - ALL WATERLINE, STORM, AND SANITARY SEWERS UNDER PAVEMENT SHALL HAVE COMPACTED GRANULAR BACKFILL.
  - WATERLINE SHALL BE BACKFILLED WITH 4.5' OF COVER PRIOR TO TESTING.
  - ALL EXISTING TOPSOIL IN THE RIGHT-OF-WAY TO BE REMOVED. ALL FILLS SHALL BE PLACED WITH APPROVED MATERIAL PRIOR TO THE INSTALLATION OF ANY UTILITIES.
  - LENGTH OF SANITARY SERVICE LATERAL REPRESENTS THE 2-DIMENSIONAL DISTANCE BETWEEN END OF SERVICE AND MAINLINE SEWER OR TOP OF RISER IF APPLICABLE.
  - WATER SERVICES TO LOTS SHALL BE 3/4".
  - SANITARY SERVICES TO LOTS SHALL BE 4".
  - ALL SERVICE STATIONS IN THIS SHEET ARE REFERENCING CENTERLINE ALIGNMENT
  - 18" MINIMUM VERTICAL CLEARANCE MUST BE MAINTAINED BETWEEN ALL STORM, SANITARY, AND WATERLINES.
  - MINIMUM COVER OVER THE WATERLINE IS TO BE MEASURED BETWEEN THE PROPOSED PROFILE GRADE AND THE OUTSIDE TOP OF PIPE.



**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

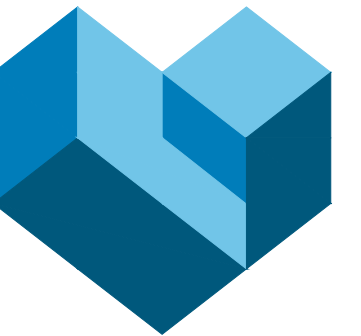
Revisions / Submissions

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Drawn By: MMH  
Checked By: JEE  
Date: NOVEMBER 2025  
Issue: FINAL DEVELOPMENT PLAN

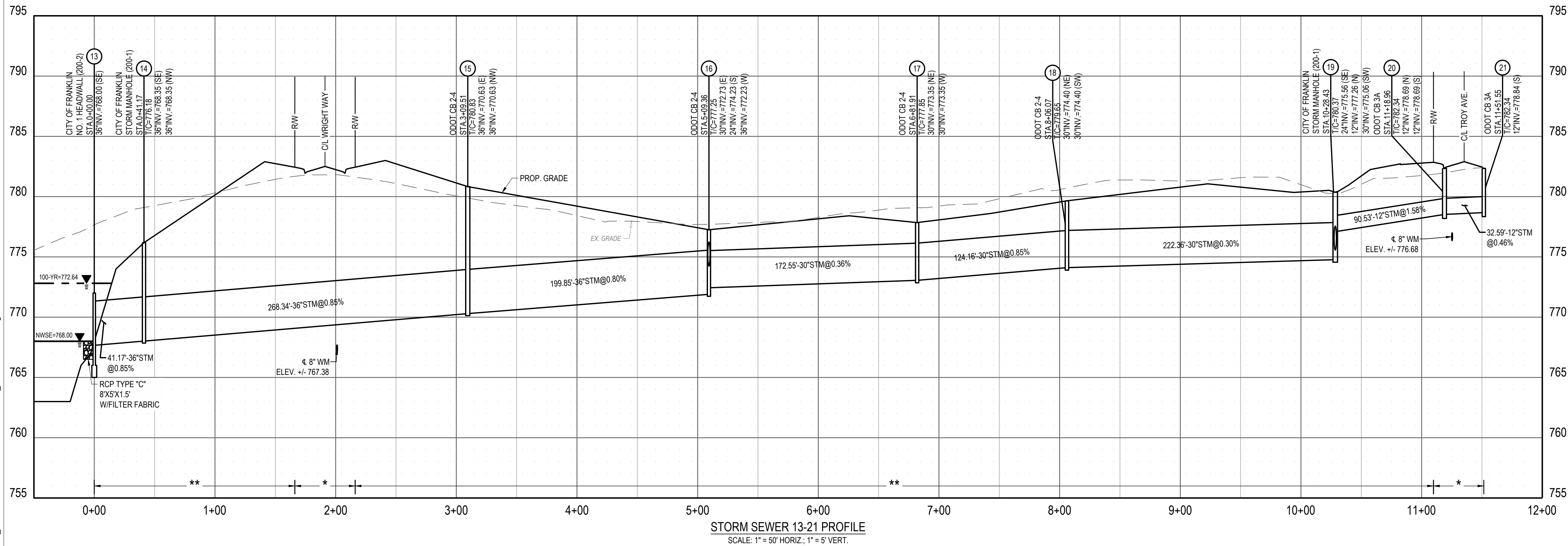
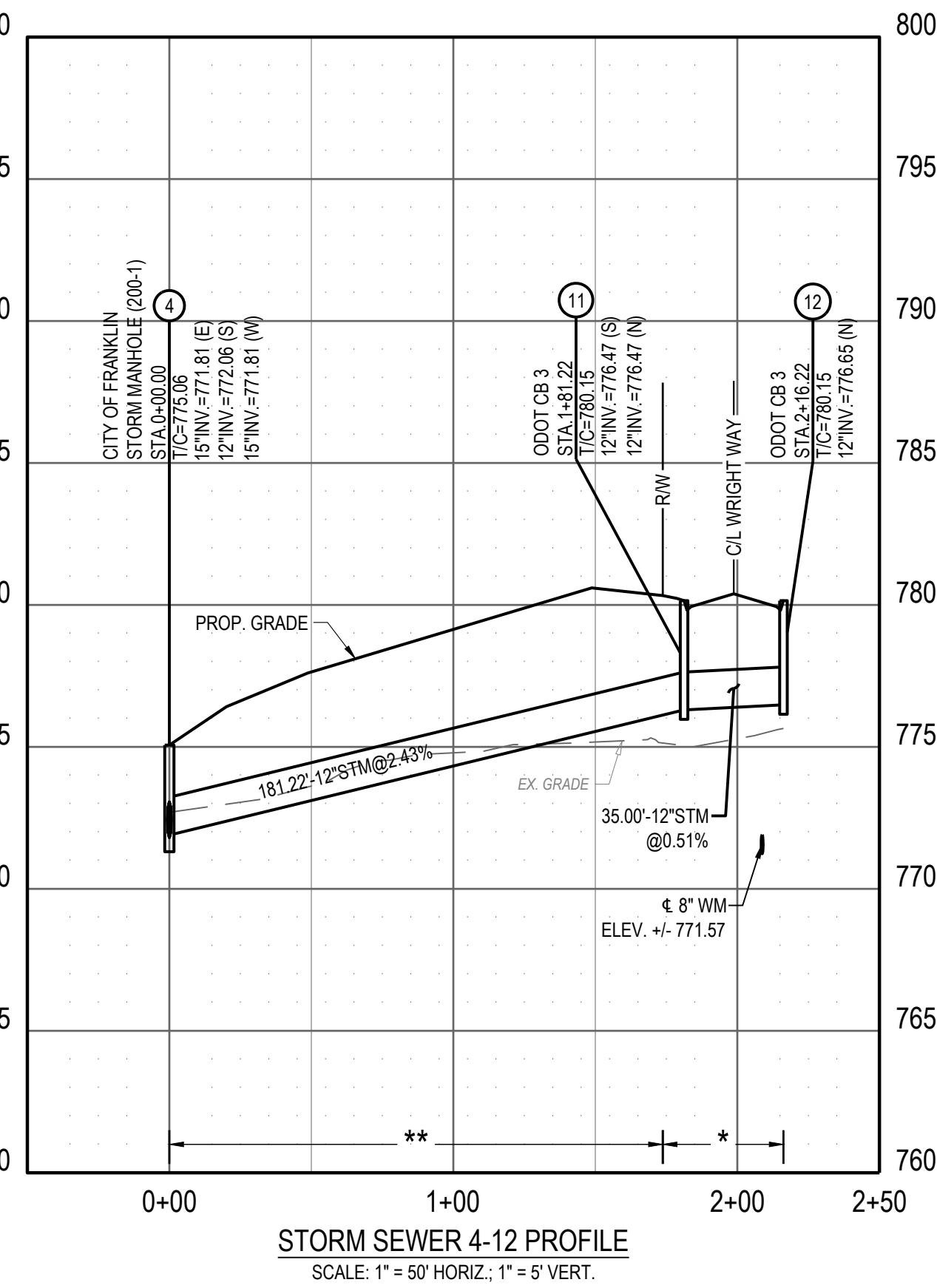
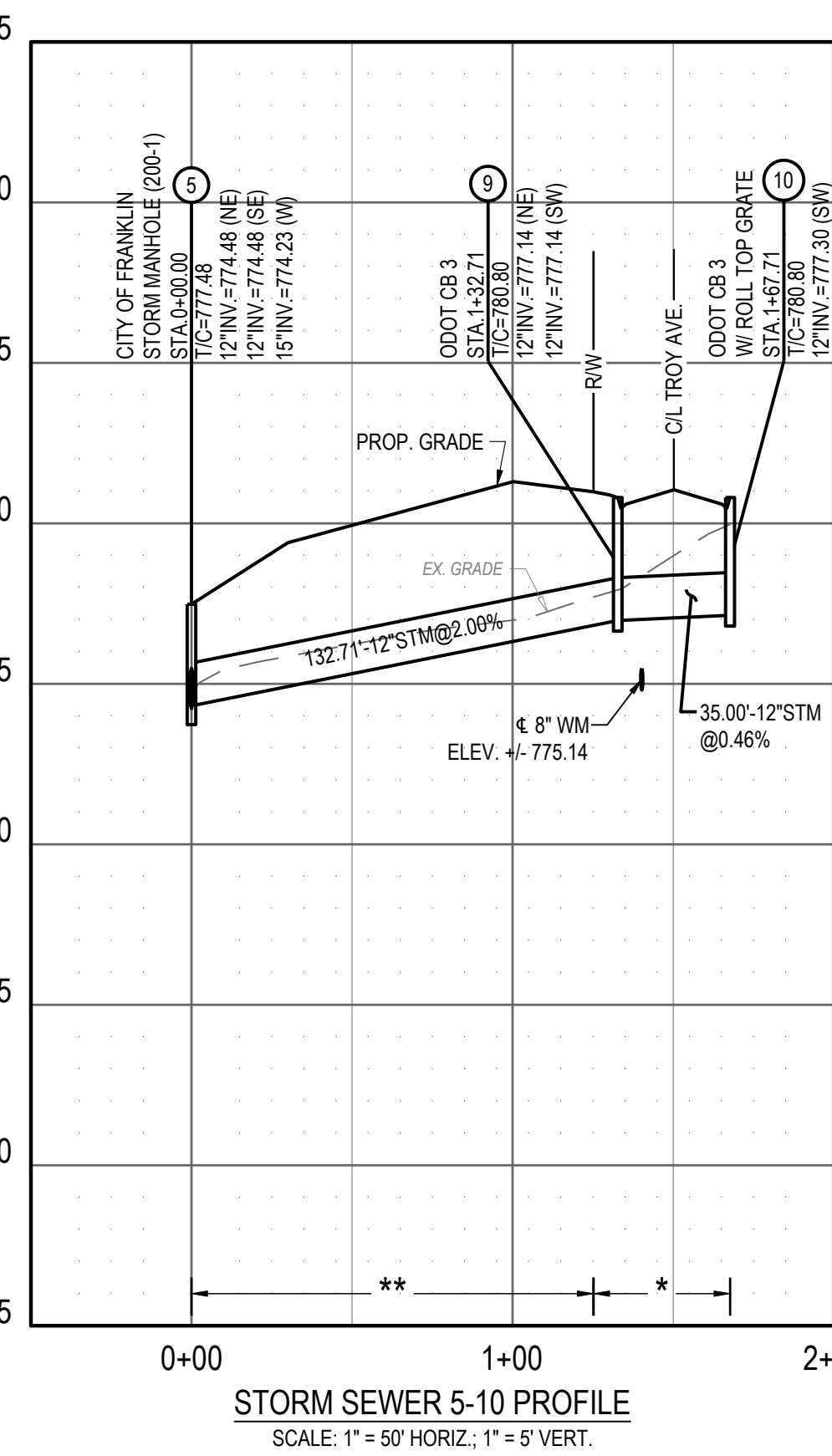
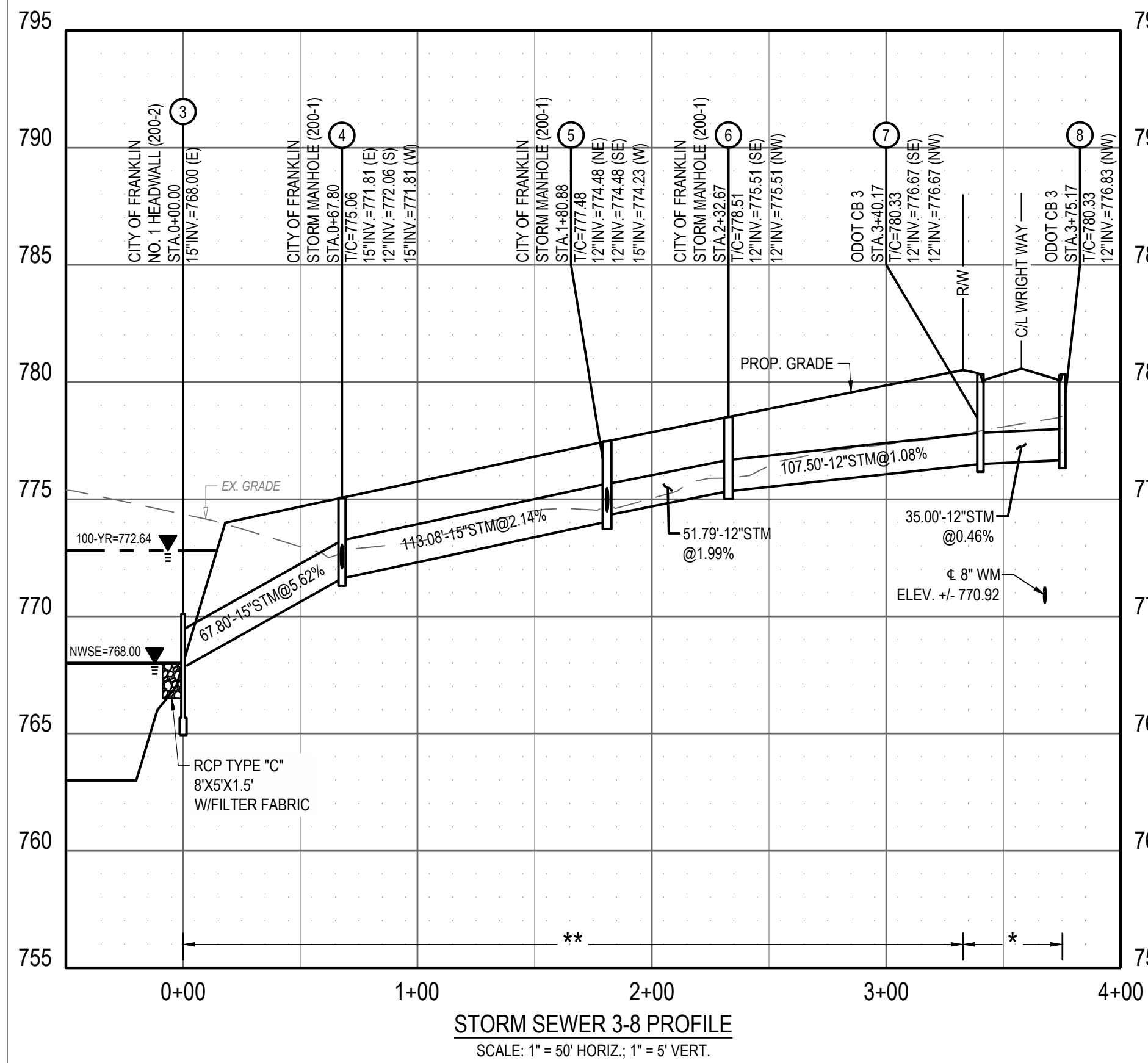
Drawing Title:  
**WRIGHT WAY PLAN AND PROFILE**



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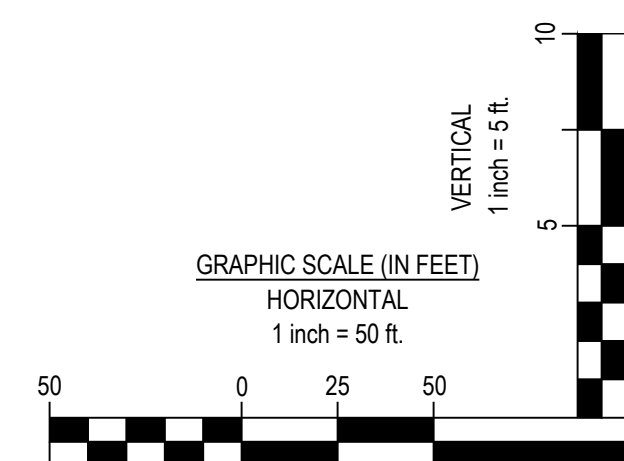
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**LEGEND**

	PROVIDE 30" COMPACT FILL ABOVE TOP OF PIPE PRIOR TO STORM SEWER INSTALLATION	*	COMPACTED GRANULAR BACKFILL
	LIMITS OF COMPACTED GRANULAR BACKFILL PER CITY OF FRANKLIN STD DWG 400-4	**	COMPACTED NATIVE BACKFILL



HENDERSON DEVELOPMENT

SHAKER MEADOWS  
PLEASANT HILL BLVD  
FRANKLIN, OH

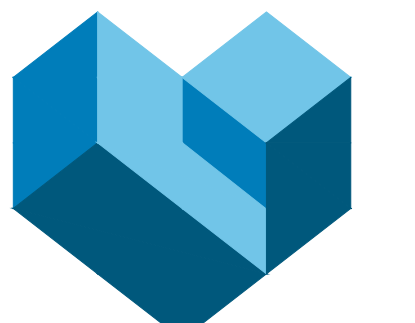
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Drawing Title:  
**STORM SEWER PROFILES**

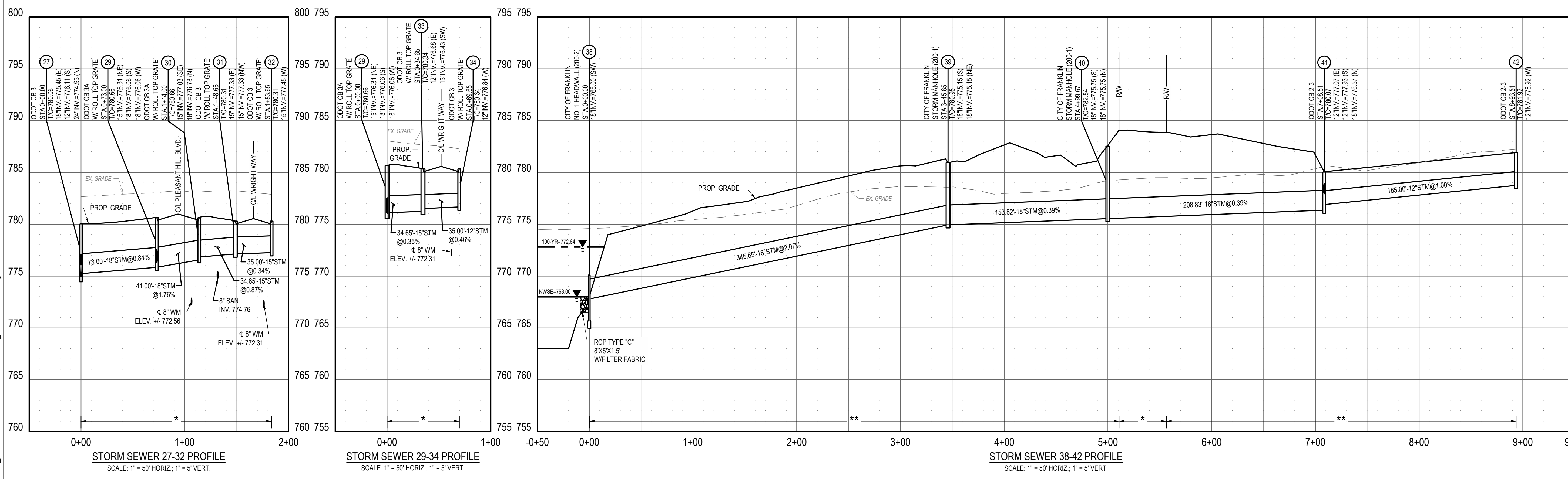
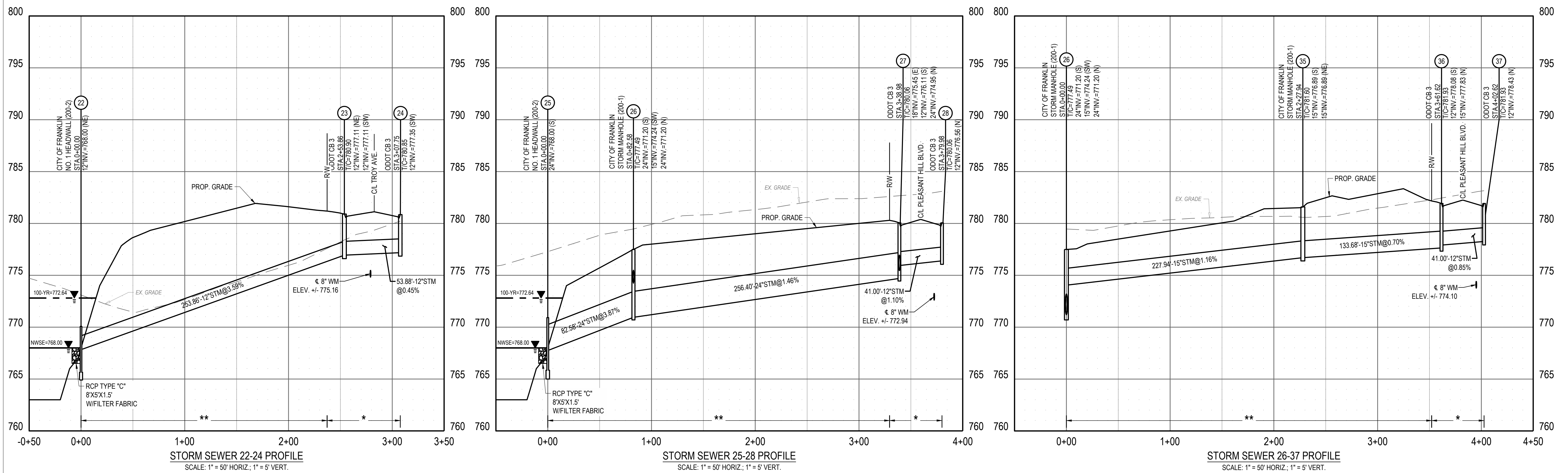
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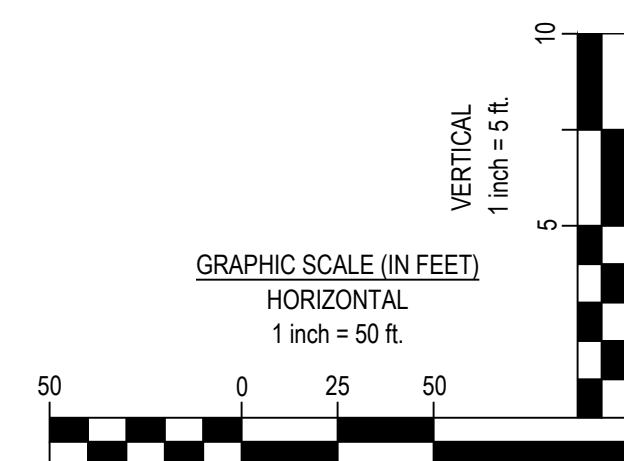
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- PROVIDE 30" COMPACT FILL ABOVE TOP OF PIPE PRIOR TO STORM SEWER INSTALLATION \*
  - LIMITS OF COMPACTED GRANULAR BACKFILL PER CITY OF FRANKLIN STD DWG 400-4 \*\*
  - COMPACTED GRANULAR BACKFILL
  - COMPACTED NATIVE BACKFILL



**HENDERSON DEVELOPMENT**  
**SHAKER MEADOWS**  
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**STORM SEWER PROFILES**

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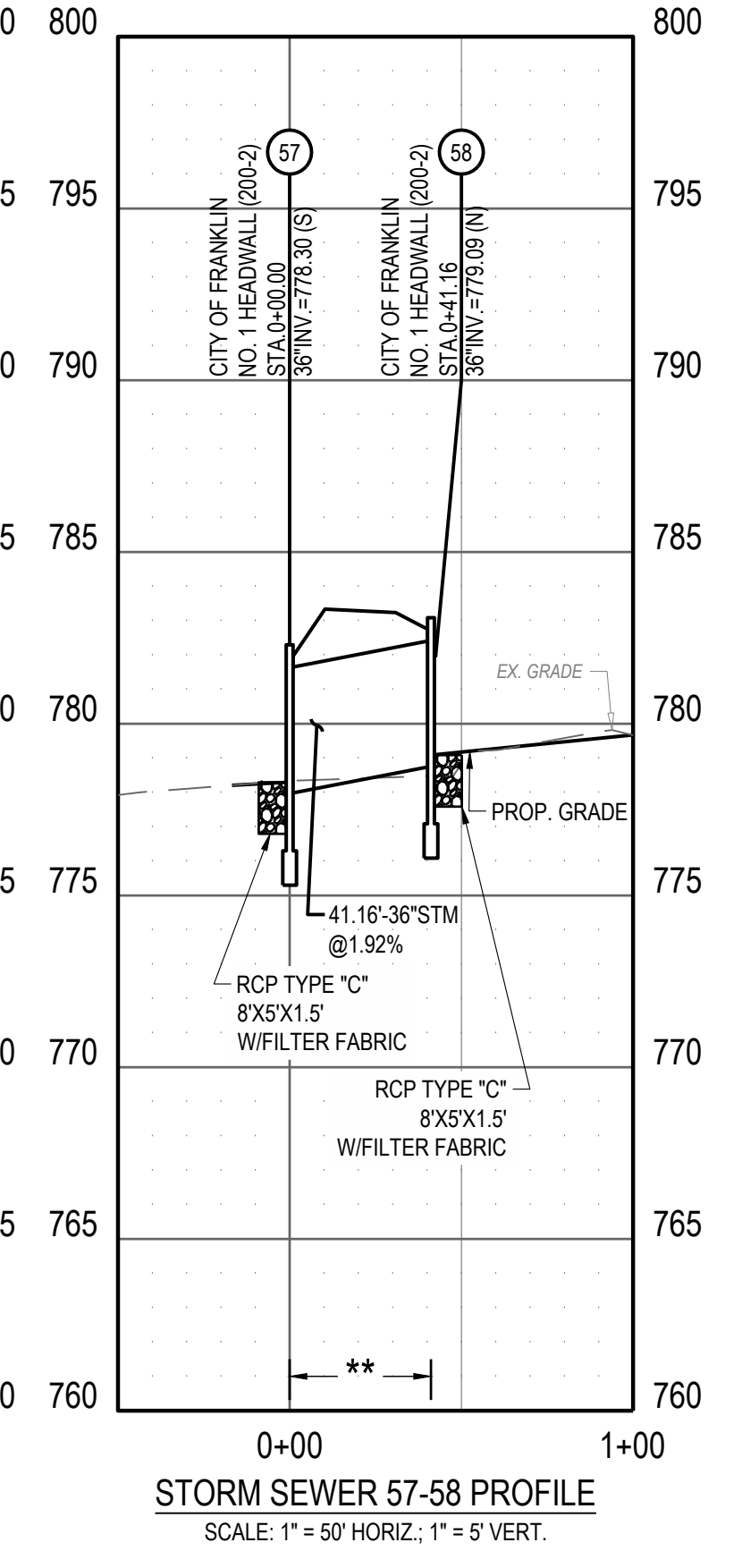
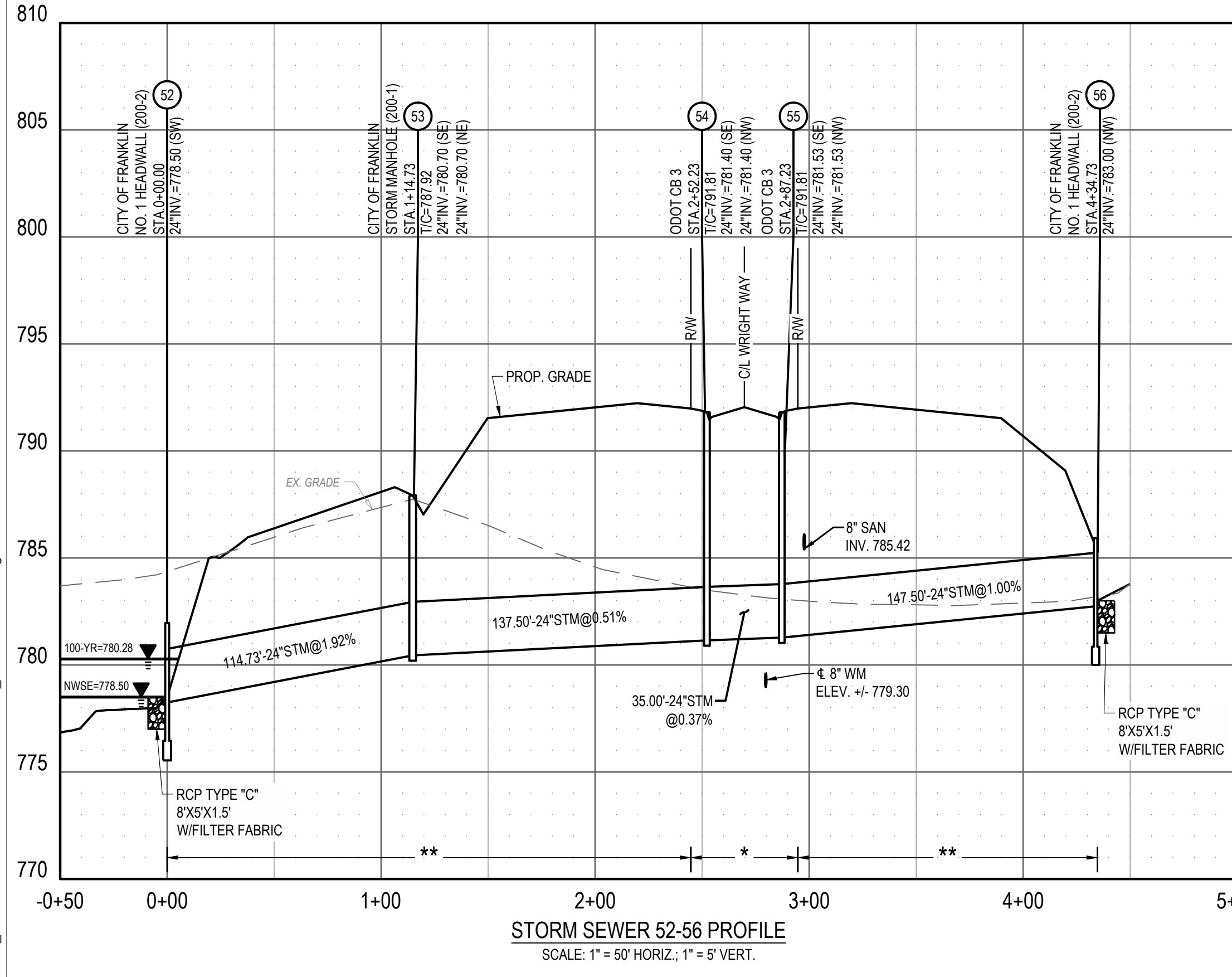
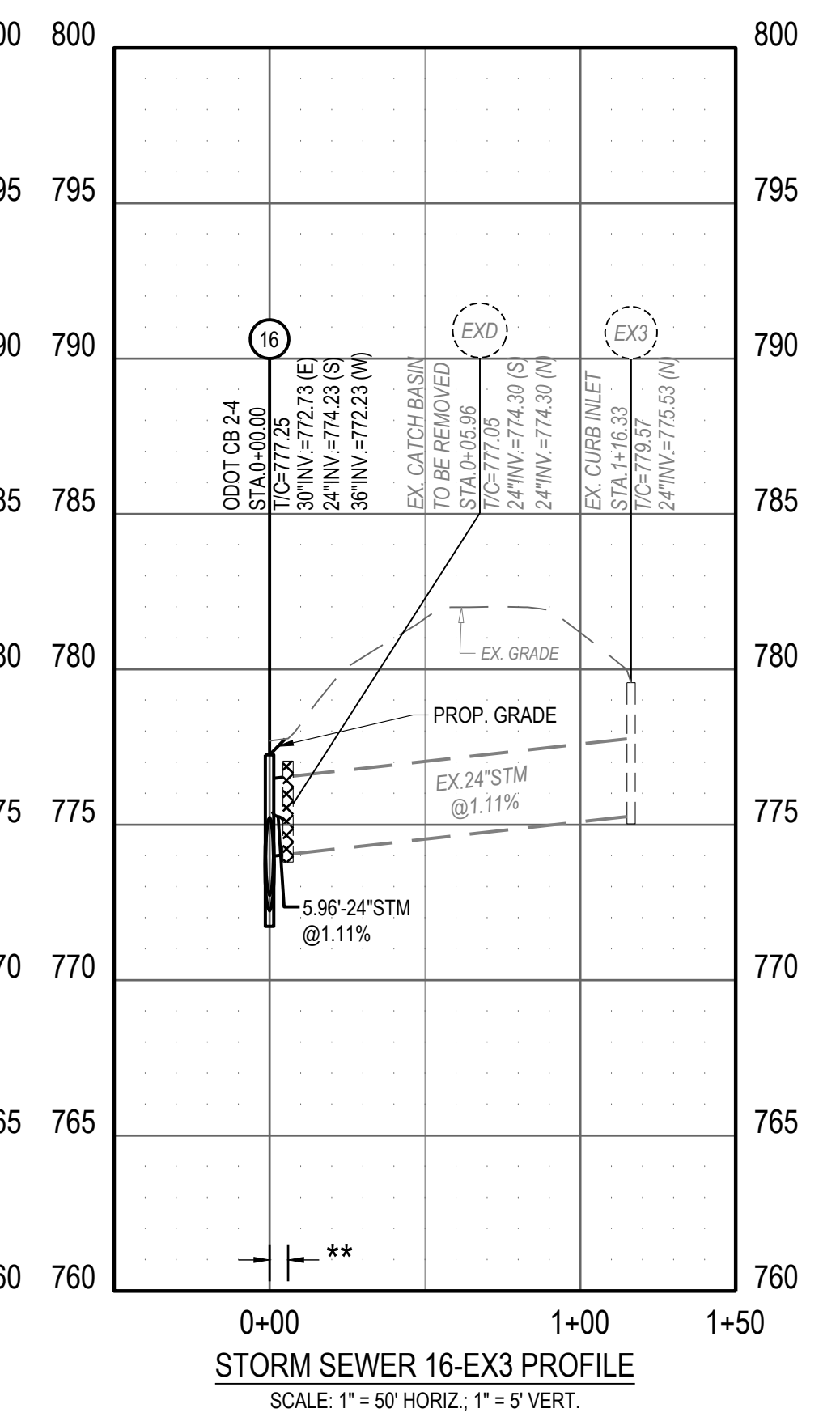
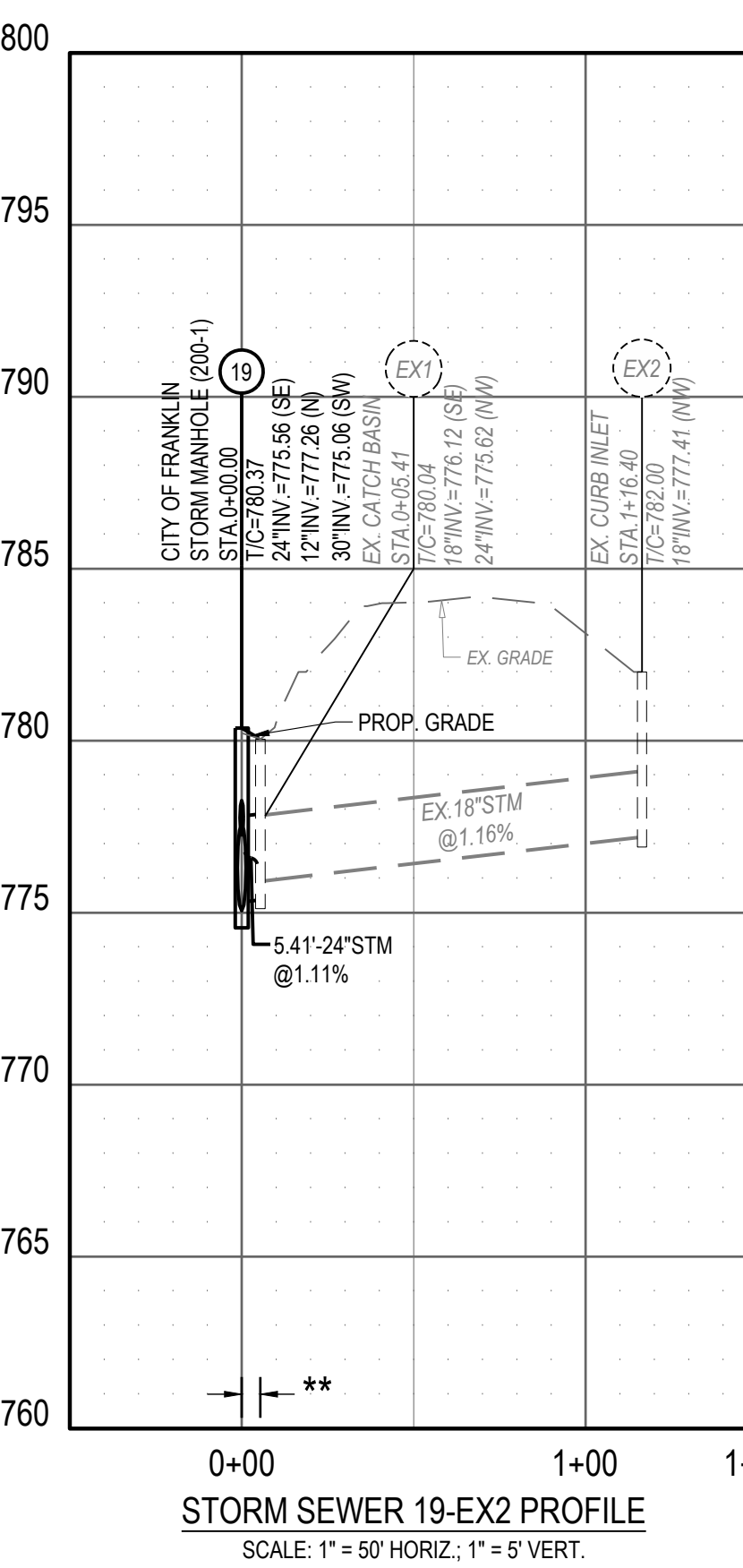
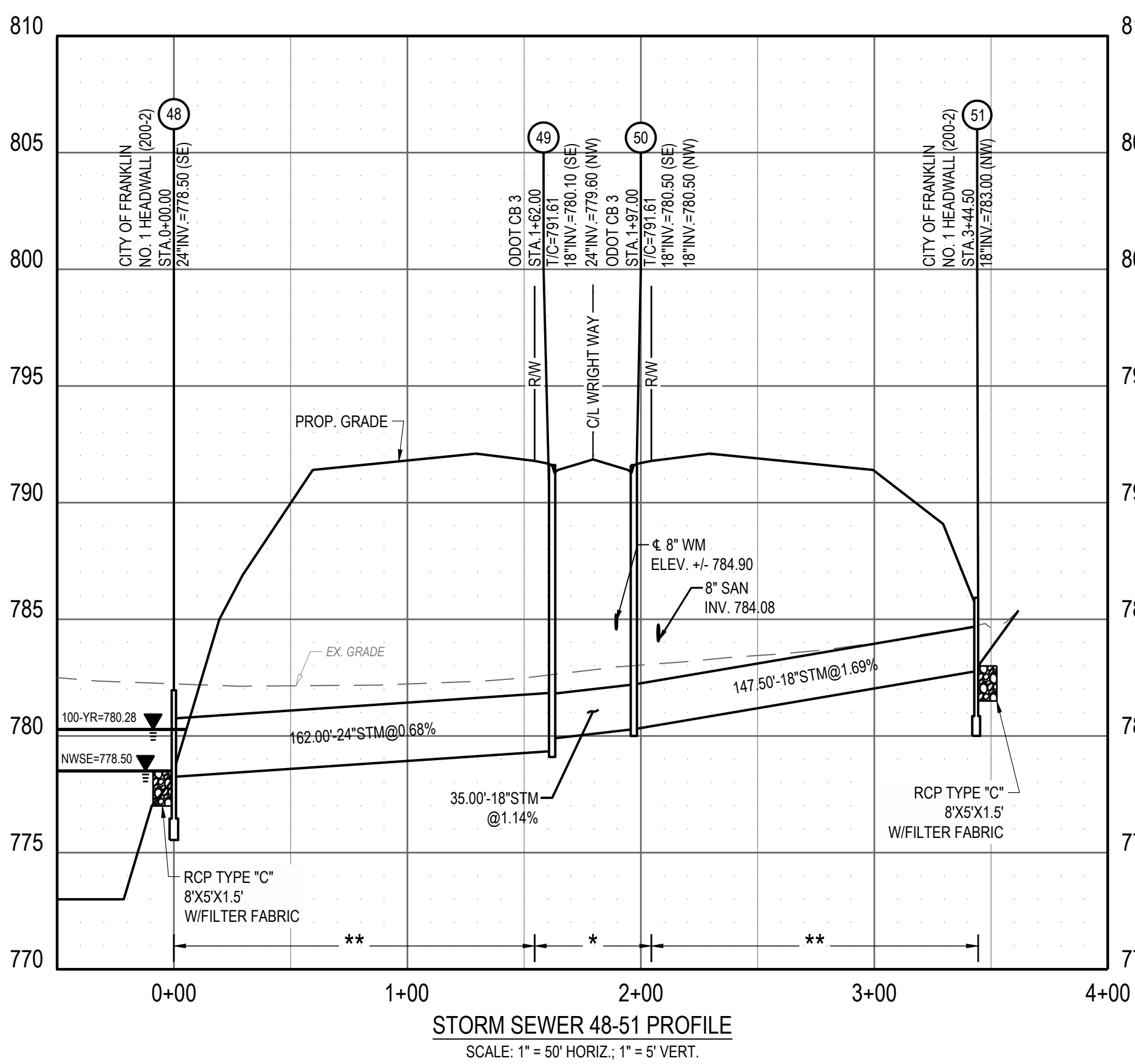
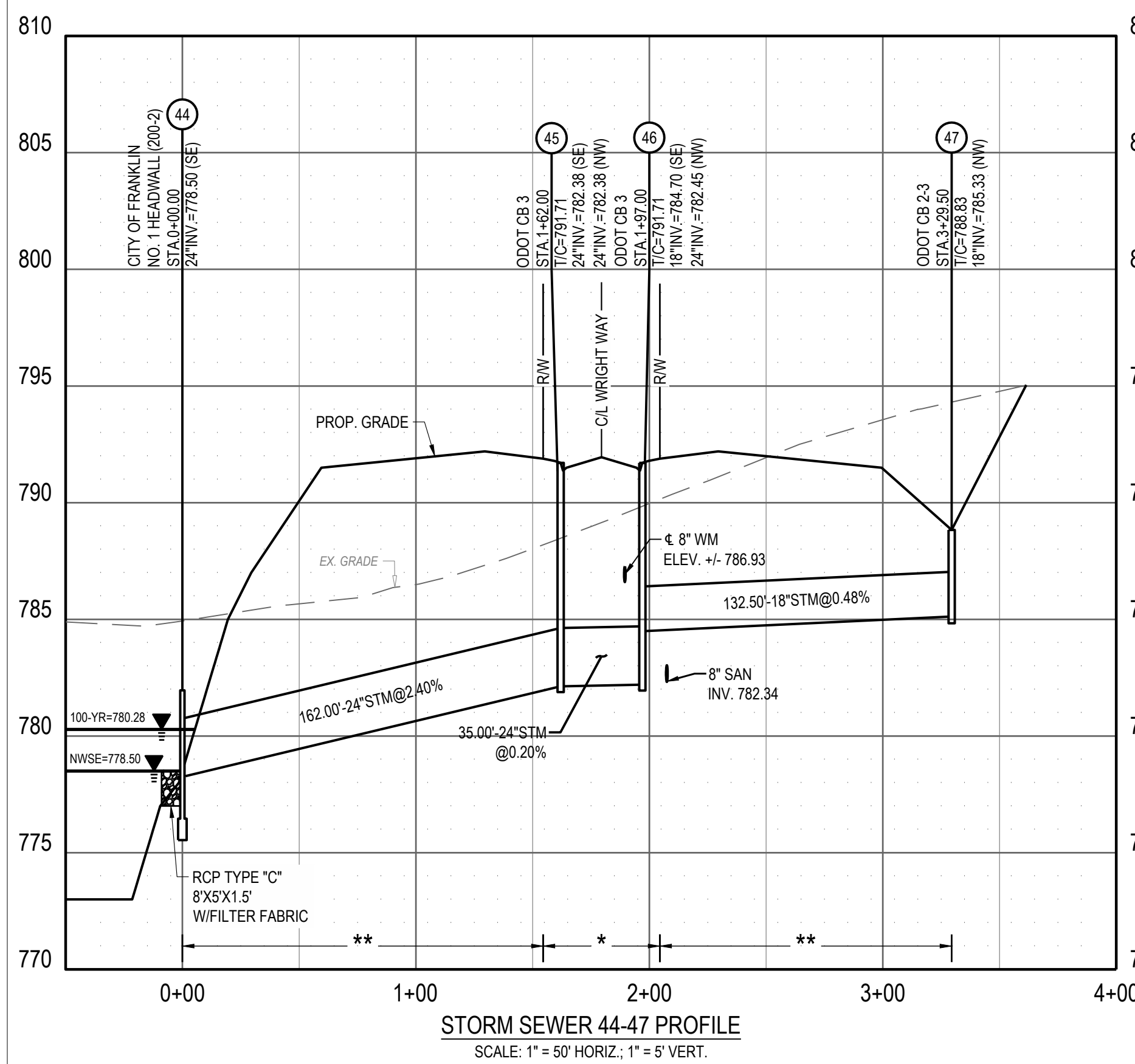
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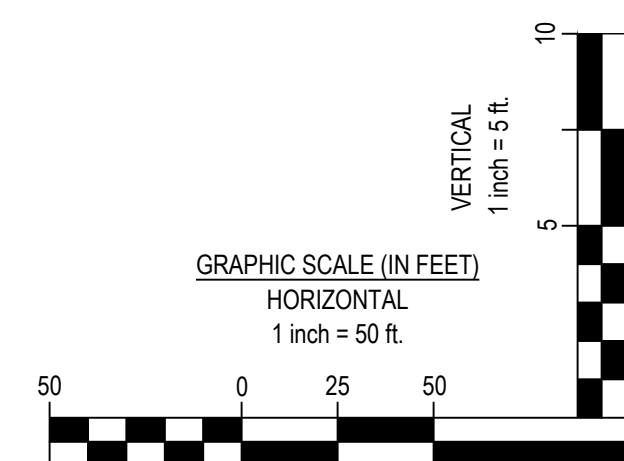
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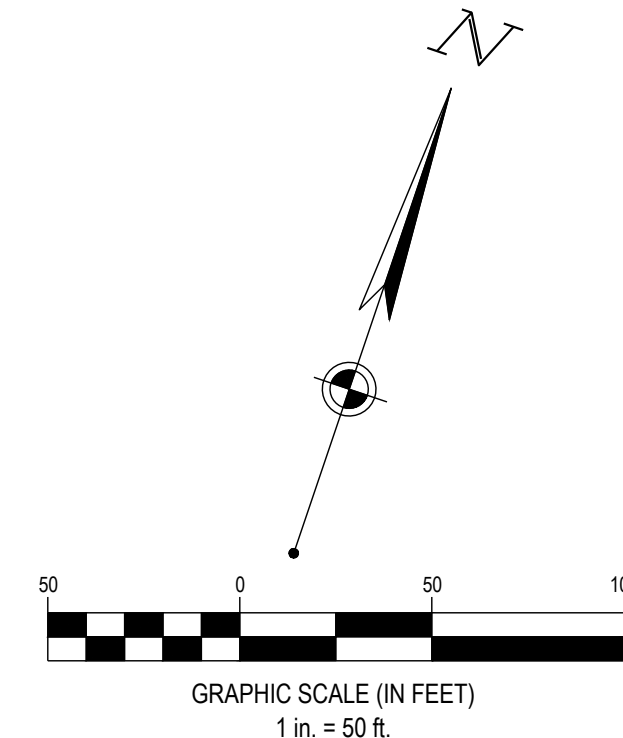
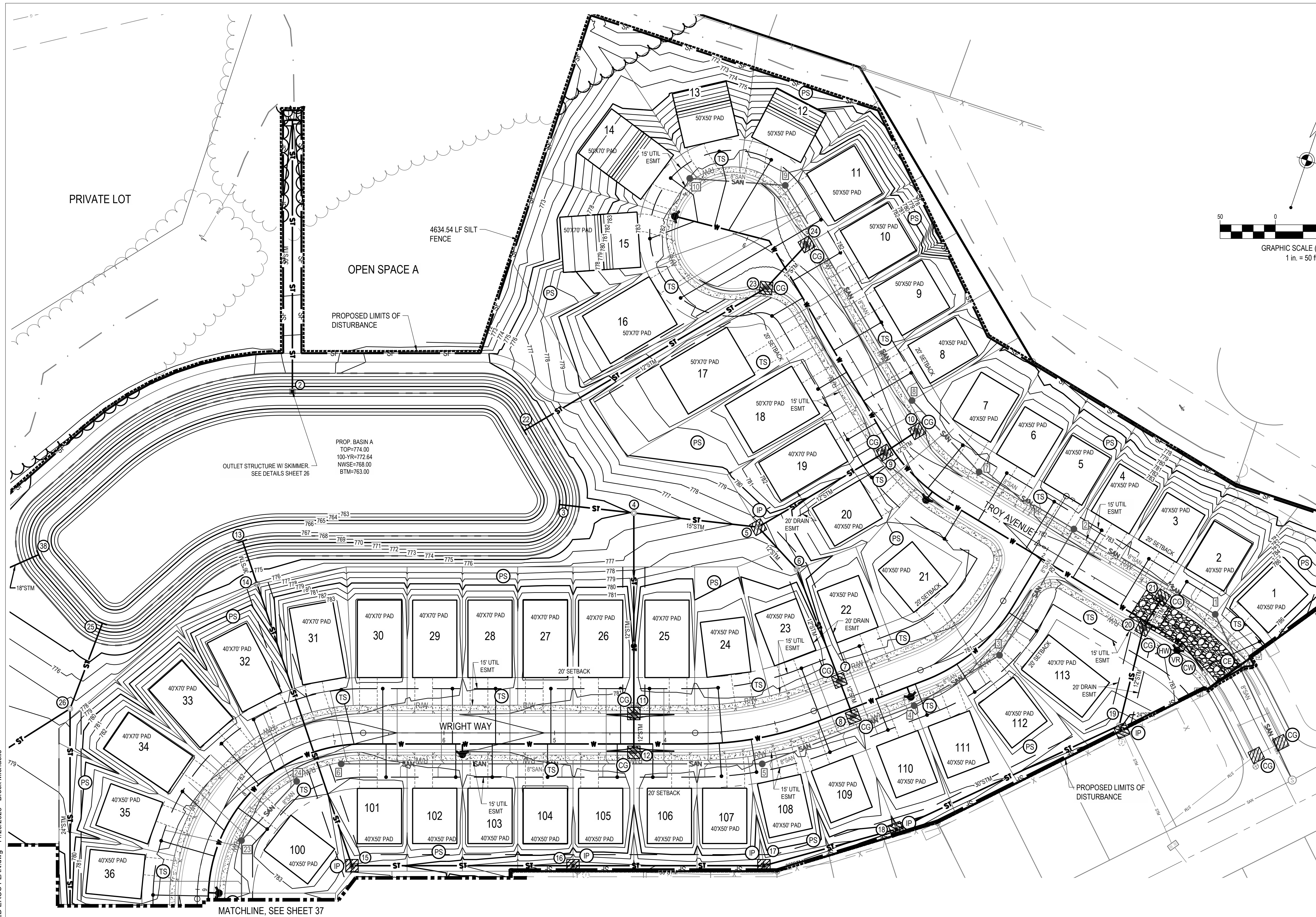
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**LEGEND**

--- 940 ---	EXISTING INDEX CONTOUR
--- 941 ---	EXISTING INTERMEDIATE CONTOUR
---	SUBJECT BOUNDARY LINE
---	EXISTING PROPERTY LINE
---	EXISTING R/W
---	EXISTING CENTERLINE
---	EXISTING TREE LINE
---	EXISTING INTERMITTENT STREAM
---	EXISTING EASEMENT
---	EXISTING SIDEWALK
---	EXISTING EDGE OF PAVEMENT
---	EXISTING FACE OF CURB
---	EXISTING BACK OF CURB
---	EXISTING STORM SEWER
---	EXISTING SANITARY SEWER
---	EXISTING WATER MAIN
---	EXISTING STORM STRUCTURES
---	EXISTING SANITARY SEWER MANHOLE
---	EXISTING WATER STRUCTURES
---	EXISTING CABLE BOX
---	PROPOSED INDEX CONTOUR
---	PROPOSED INTERMEDIATE CONTOUR
---	STABILIZED CONSTRUCTION ENTRANCE
---	LIMITS OF DISTURBANCE
---	SILT FENCE
PS	PERMANENT SEEDING
TS	TEMPORARY SEEDING
VR	VEHICLE REFUELING
HW	HAZARDOUS WASTE AREA
CW	CONCRETE WASHOUT AREA
IP	INLET PROTECTION
CG	CURB AND GUTTER INLET PROTECTION
CE	STABILIZED CONSTRUCTION ENTRANCE



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**HENDERSON DEVELOPMENT**

**SHAKER MEADOWS**  
PLEASANT HILL BLVD  
FRANKLIN, OH

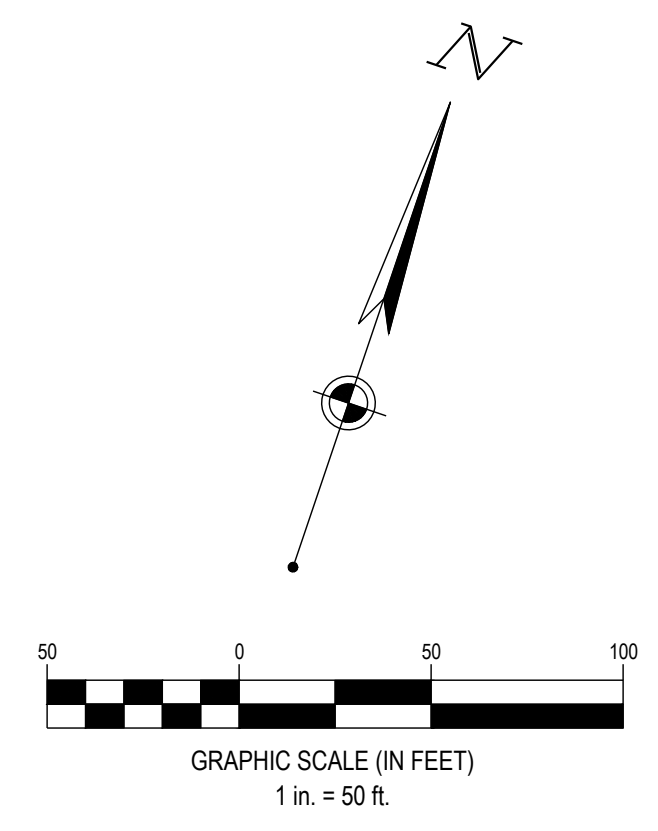
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Issue: FINAL DEVELOPMENT PLAN

Drawing Title:  
**SEDIMENT AND EROSION CONTROL PLAN**

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**LEGEND**

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---	941	EXISTING INTERMEDIATE CONTOUR
---		SUBJECT BOUNDARY LINE
---	R/W	EXISTING PROPERTY LINE
---		EXISTING RW
---		EXISTING CENTERLINE
---		EXISTING TREE LINE
---		EXISTING INTERMITTENT STREAM
---		EXISTING EASEMENT
---		EXISTING SIDEWALK
---		EXISTING EDGE OF PAVEMENT
---		EXISTING FACE OF CURB
---		EXISTING BACK OF CURB
---	STM	EXISTING STORM SEWER
---	SAN	EXISTING SANITARY SEWER
---	W	EXISTING WATER MAIN
⊙		EXISTING STORM STRUCTURES
⊙		EXISTING SANITARY SEWER MANHOLE
⊙		EXISTING WATER STRUCTURES
⊙		EXISTING CABLE BOX
---	950	PROPOSED INDEX CONTOUR
---	951	PROPOSED INTERMEDIATE CONTOUR
---		STABILIZED CONSTRUCTION ENTRANCE
---		LIMITS OF DISTURBANCE
---	SF	SILT FENCE
⊙	PS	PERMANENT SEEDING
⊙	TS	TEMPORARY SEEDING
⊙	VR	VEHICLE REFUELING
⊙	HW	HAZARDOUS WASTE AREA
⊙	CW	CONCRETE WASHOUT AREA
⊙	IP	INLET PROTECTION
⊙	CG	CURB AND GUTTER INLET PROTECTION
⊙	CE	STABILIZED CONSTRUCTION ENTRANCE



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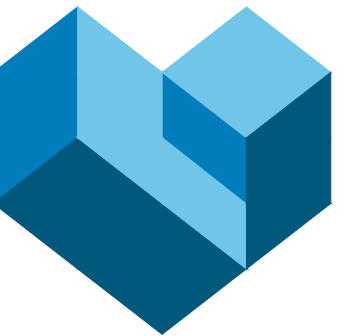
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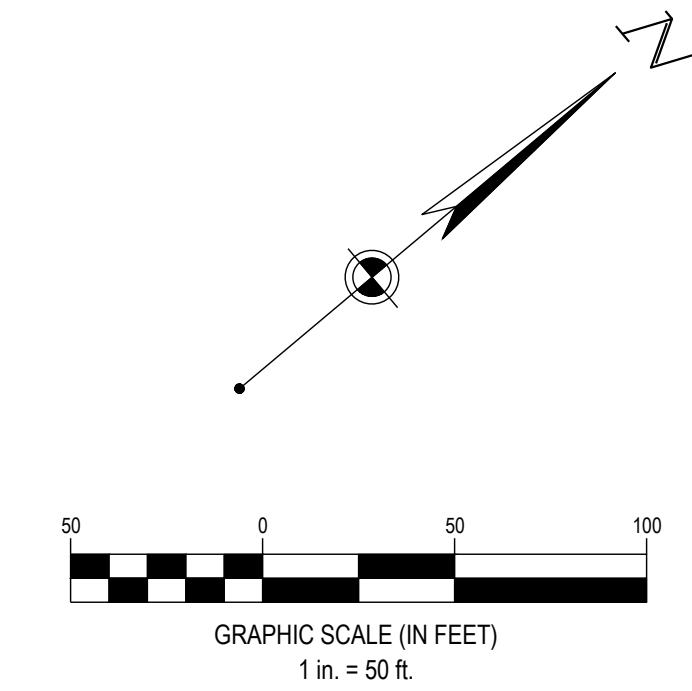
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Drawing Title:  
**SEDIMENT AND  
EROSION CONTROL  
PLAN**

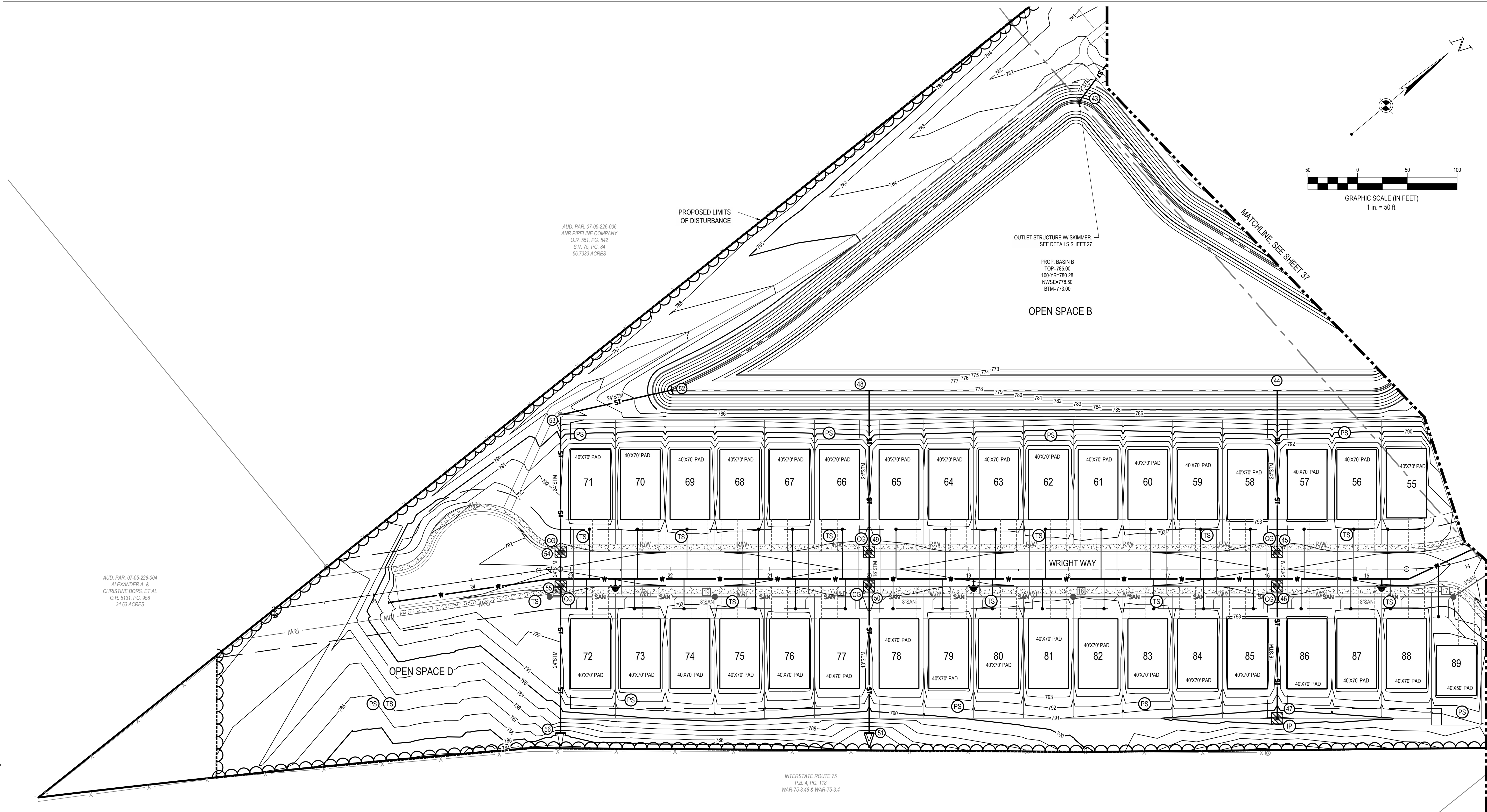


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  - EXISTING CENTERLINE
  - ~ ~ ~ EXISTING TREE LINE
  - EXISTING EASEMENT
  - 950 — PROPOSED INDEX CONTOUR
  - 951 — PROPOSED INTERMEDIATE CONTOUR
  - - - - LIMITS OF DISTURBANCE
  - SF — SILT FENCE
  - ⊙ PS PERMANENT SEEDING
  - ⊙ TS TEMPORARY SEEDING
  - ⊙ HW HAZARDOUS WASTE STORAGE AREA
  - ⊙ CW CONCRETE WASHOUT AREA
  - ⊙ IP INLET PROTECTION
  - ⊙ CG CURB AND GUTTER INLET PROTECTION
  - ⊙ CE STABILIZED CONSTRUCTION ENTRANCE
  - ⊙ VR VEHICLE REFUELING

**SEDIMENT AND EROSION CONTROL PLAN**

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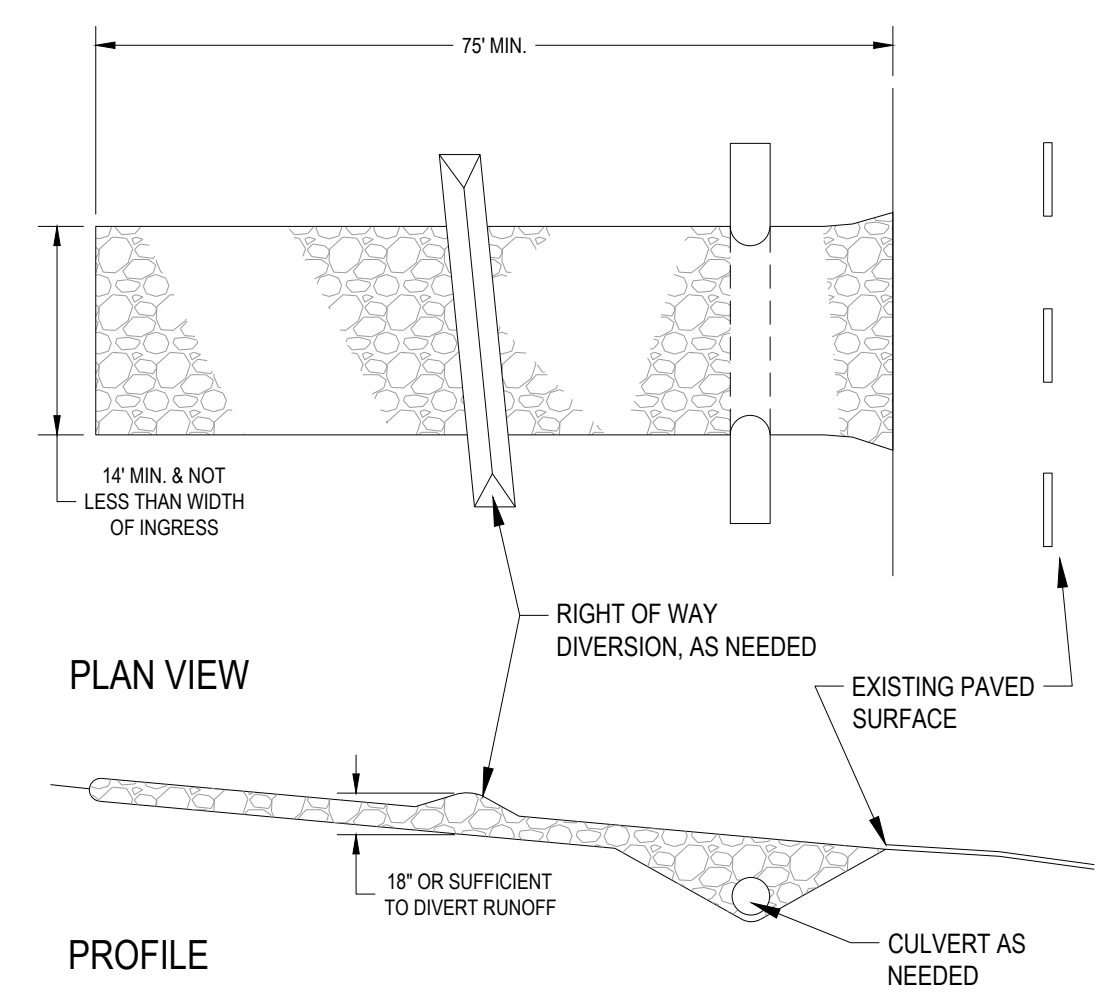
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**SEDIMENT AND EROSION CONTROL DETAILS**

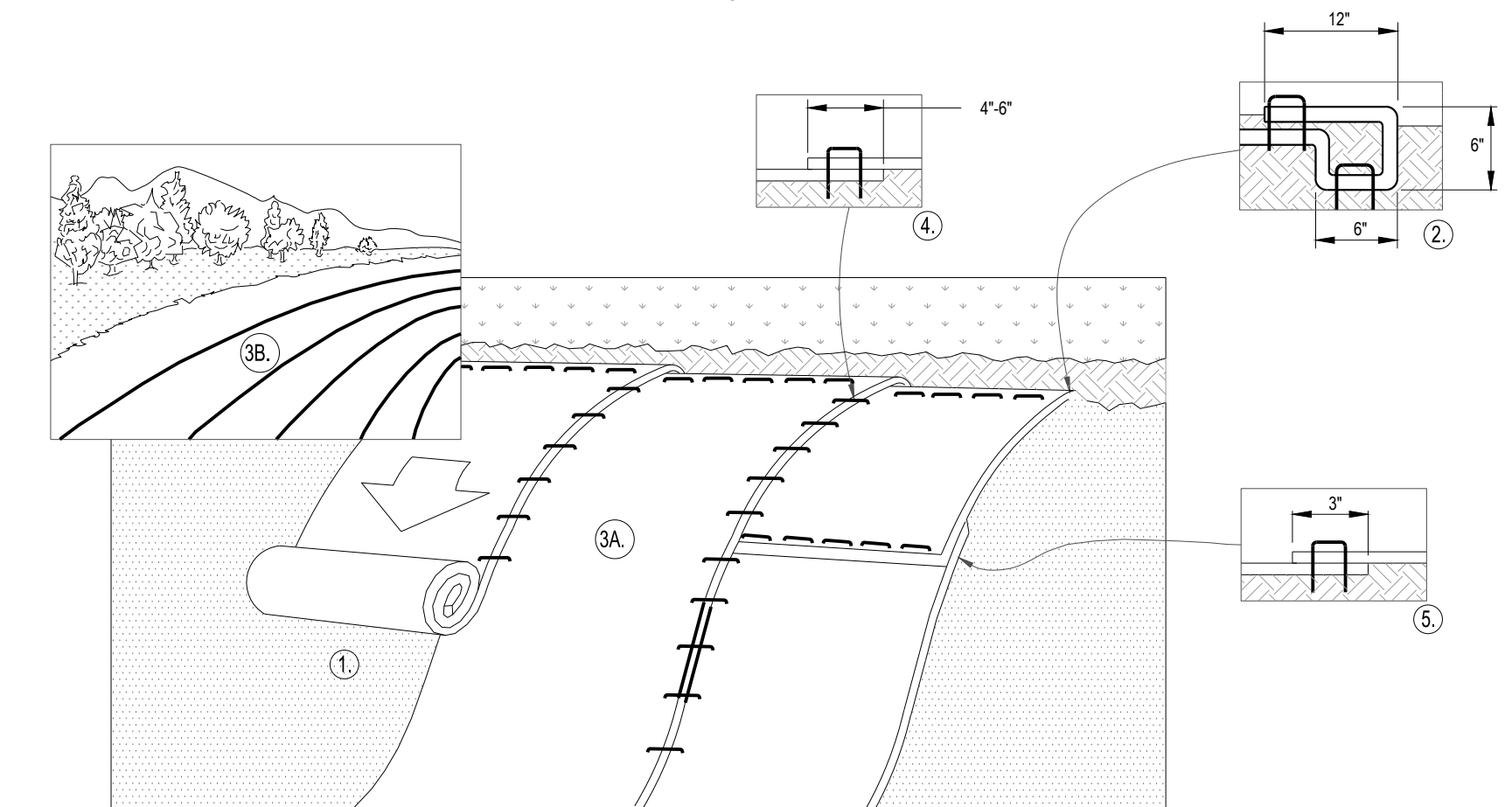


- STONE SIZE - ODOT #2 (1.5-2.5 INCH) STONE SHALL BE USED, OR RECYCLED CONCRETE EQUIVALENT.
- LENGTH - THE CONSTRUCTION ENTRANCE SHALL BE AS LONG AS REQUIRED TO STABILIZE HIGH TRAFFIC AREAS BUT NOT LESS THAN 70 FT. (EXCEPTION: APPLY 30 FT. MINIMUM TO SINGLE RESIDENCE LOTS.
- THICKNESS - THE STONE LAYER SHALL BE AT LEAST 6 INCHES THICK FOR LIGHT DUTY ENTRANCES OR AT LEAST 10 INCHES FOR HEAVY DUTY USE.
- WIDTH - THE ENTRANCE SHALL BE AT LEAST 14 FEET WIDE, BUT NOT LESS THAN THE FULL WIDTH AT POINTS WHERE INGRESS OR EGRESS OCCURS.
- GEOTEXTILE - A GEOTEXTILE SHALL BE LAID OVER THE ENTIRE AREA PRIOR TO PLACING STONE. IT SHALL BE COMPOSED OF STRONG ROT-PROOF POLYMERIC FIBERS AND MEET THE FOLLOWING SPECIFICATIONS:
- TIMING - THE CONSTRUCTION ENTRANCE SHALL BE INSTALLED AS SOON AS IS PRACTICAL BEFORE MAJOR GRADING ACTIVITIES.
- CULVERT - A PIPE OR CULVERT SHALL BE CONSTRUCTED UNDER THE ENTRANCE IF NEEDED TO PREVENT SURFACE WATER FROM FLOWING ACROSS THE ENTRANCE OR TO PREVENT RUNOFF FROM BEING DIRECTED OUT ONTO PAVED SURFACES.
- WATER BAR - A WATER BAR SHALL BE CONSTRUCTED AS PART OF THE CONSTRUCTION ENTRANCE IF NEEDED TO PREVENT SURFACE RUNOFF FROM FLOWING THE LENGTH OF THE CONSTRUCTION ENTRANCE AND OUT ONTO PAVED SURFACES.
- MAINTENANCE - TOP DRESSING OF ADDITIONAL STONE SHALL BE APPLIED AS CONDITIONS DEMAND. MUD SPILLED, DROPPED, WASHED OR TRACKED ONTO PUBLIC ROADS, OR ANY SURFACE WHERE RUNOFF IS NOT CHECKED BY SEDIMENT CONTROLS, SHALL BE REMOVED IMMEDIATELY. REMOVAL SHALL BE ACCOMPLISHED BY SCRAPING OR SWEEPING.
- CONSTRUCTION ENTRANCES SHALL NOT BE RELIED UPON TO REMOVE MUD FROM VEHICLES AND PREVENT OFF-SITE TRACKING. VEHICLES THAT ENTER AND LEAVE THE CONSTRUCTION-SITE SHALL BE RESTRICTED FROM MUDDY AREAS.
- REMOVAL - THE ENTRANCE SHALL REMAIN IN PLACE UNTIL THE DISTURBED AREA IS STABILIZED OR REPLACED WITH A PERMANENT ROADWAY OR ENTRANCE.

GEOTEXTILE SPECIFICATION FOR CONSTRUCTION ENTRANCE	
MINIMUM TENSILE STRENGTH	200 lbs.
MINIMUM PUNCTURE STRENGTH	80 psi.
MINIMUM TEAR STRENGTH	50 lbs.
MINIMUM BURST STRENGTH	320 psi.
MINIMUM ELONGATION	20%
EQUIVALENT OPENING SIZE	EOS < 0.6 mm.
PERMITTIVITY	1x10 <sup>-3</sup> cm <sup>2</sup> /sec.

**STABILIZED CONSTRUCTION ENTRANCE**

N.T.S.



- PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING ANY NECESSARY APPLICATION OF LIME, FERTILIZER, AND SEED.
- BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH AS SHOWN IN DETAIL 2. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
- ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. BLANKETS WILL UNROLL WITH APPROPRIATE SIDE AGAINST THE SOIL SURFACE. ALL BLANKETS MUST BE SECURELY FASTENED TO SOIL SURFACE BY PLACING STAPLES/STAKES IN APPROPRIATE LOCATIONS AS PER MANUFACTURER'S RECOMMENDATION.
- THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH MINIMUM 6" OVERLAP. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
- CONSECUTIVE BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
- PLACE STAPLES/STAKES PER MANUFACTURER'S RECOMMENDATION FOR THE APPROPRIATE SLOPE BEING APPLIED.

EROSION CONTROL BLANKET	MANUFACTURER	NUMBER	NOTE:
THE FOLLOWING BLANKET MANUFACTURER AND NUMBER OR APPROVED EQUAL MAY BE USED FOR 4:1 TO 3:1 SLOPES.	NORTH AMERICAN GREEN OR APPROVED EQUAL	S75 SC250 C125 BN	ALL SLOPES 3:1 OR GREATER SHALL BE FERTILIZED, SEEDED, AND EROSION BLANKETS INSTALLED

**EROSION CONTROL BLANKET**

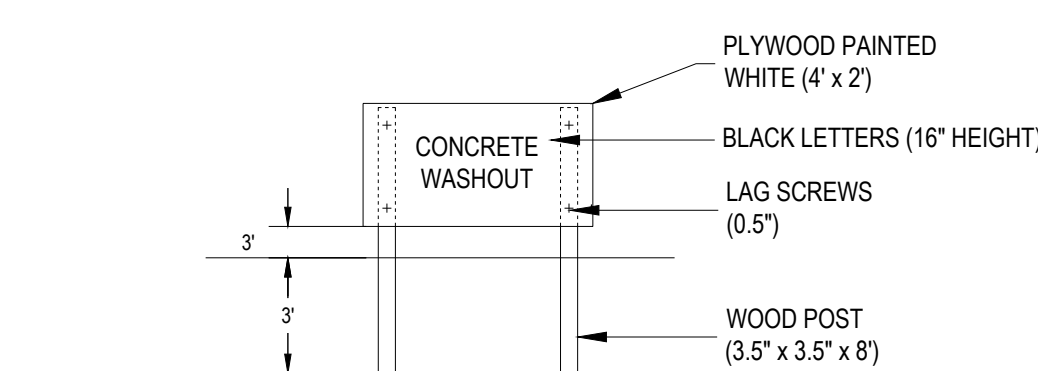
N.T.S.

- STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SUCH AS DIVERSIONS AND SEDIMENT TRAPS SHALL BE INSTALLED AND STABILIZED WITH TEMPORARY SEEDING PRIOR TO GRADING THE REST OF THE CONSTRUCTION SITE.
- TEMPORARY SEED SHALL BE APPLIED BETWEEN CONSTRUCTION OPERATIONS ON SOIL THAT WILL NOT BE GRADED OR REWORKED FOR 21 DAYS OR GREATER. THESE IDLE AREAS SHALL BE SEEDED WITHIN 7 DAYS AFTER GRADING.
- THE SEEDBED SHOULD BE PULVERIZED AND LOOSE TO ENSURE THE SUCCESS OF ESTABLISHING VEGETATION. TEMPORARY SEEDING SHOULD NOT BE POSTPONED IF IDEAL SEEDBED PREPARATION IS NOT POSSIBLE.
- SOIL AMENDMENTS - TEMPORARY VEGETATION SEEDING RATES SHALL ESTABLISH ADEQUATE STANDS OF VEGETATION, WHICH MAY REQUIRE THE USE OF SOIL AMENDMENTS. BASE RATES FOR LIME AND FERTILIZER SHALL BE USED.
- SEEDING METHOD - SEED SHALL BE APPLIED UNIFORMLY WITH A CYCLONE SPREADER, DRILL, CULTIPACKER SEEDER, OR HYDROSEEDER. WHEN FEASIBLE, SEE THAT HAS BEEN BROADCAST SHALL BE COVERED BY RAKING OR DRAGGING AND THEN LIGHTLY TAMPED INTO PLACE USING A ROLLER OR CULTIPACKER. IF HYDROSEEDING IS USED, THE SEED AND FERTILIZER WILL BE MIXED ON-SITE AND THE SEEDING SHALL BE DONE IMMEDIATELY AND WITHOUT INTERRUPTION.

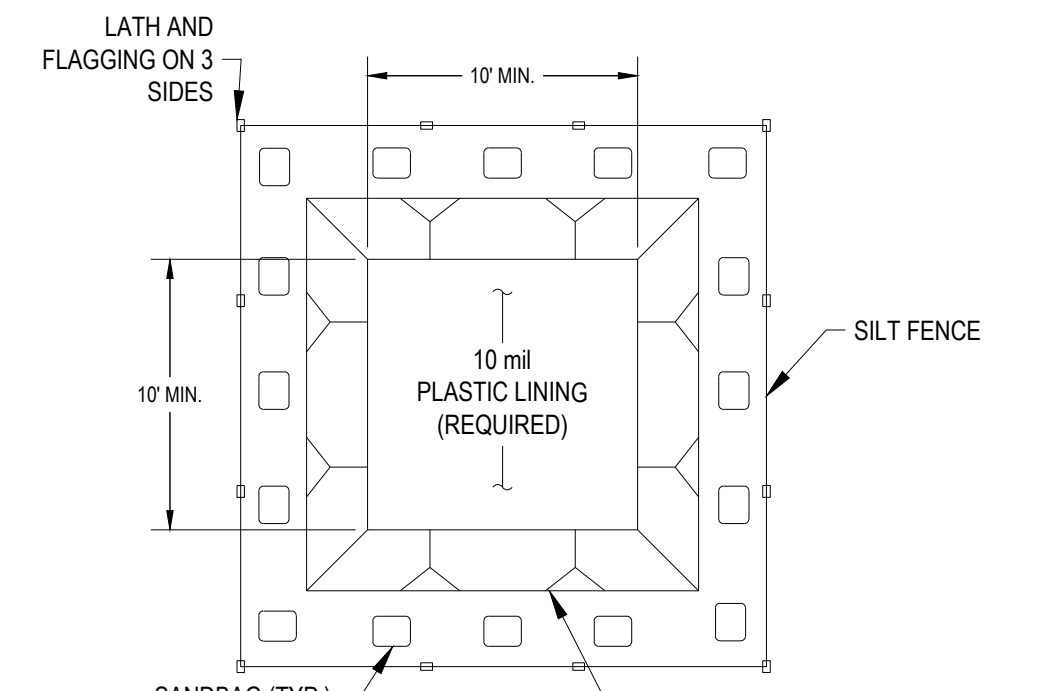
SEEDING DATES	SPECIES	LB./100 FT <sup>2</sup>	LB./ACRE	
MARCH 1ST TO AUGUST 15TH	OATS	3	128 (4 BUSHELL)	
	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	PERENNIAL RYEGRASS	1	40	
	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	PERENNIAL RYEGRASS	1.25	55	
	PERENNIAL RYEGRASS	3.25	142	
	CREeping RED FESCUE	0.40	17	
	KENTUCKY BLUEGRASS	0.40	1	
AUGUST 16TH TO NOVEMBER 1ST	OATS	3	128 (3 BUSHELL)	
	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	RYE	3	112 (2 BUSHELL)	
	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	WHEAT	3	120 (2 BUSHELL)	
	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	PERENNIAL RYEGRASS	1	40	
NOVEMBER 1ST TO FEBRUARY 29TH	TALL FESCUE	1	40	
	ANNUAL RYEGRASS	1	40	
	ANNUAL RYEGRASS	1.25	40	
	PERENNIAL RYEGRASS	3.25	40	
	CREeping RED FESCUE	0.40	40	
	KENTUCKY BLUEGRASS	0.40	40	
	USE MULCH ONLY OR DORMANT SEEDING			

NOTE: OTHER APPROVED SPECIES MAY BE SUBMITTED

**TEMPORARY SEEDING**



**CONCRETE WASHOUT SIGN DETAIL**



- NOTE:
- ACTUAL LAYOUT DETERMINED IN THE FIELD.
  - THE CONCRETE WASHOUT SIGN SHALL BE INSTALLED WITHIN 30' OF THE TEMPORARY CONCRETE WASHOUT FACILITY.
  - THE WASHOUT MUST HAVE SUFFICIENT VOLUME TO CONTAIN ALL LIQUID AND CONCRETE WASTE GENERATED BY WASHOUT OPERATIONS INCLUDING, BUT NOT LIMITED TO, OPERATIONS ASSOCIATED WITH GROUT AND MORTAR. (MINIMUM DEPTH OF 6 INCHES)

**CONCRETE WASHOUT**

N.T.S.

**SITE PREPARATION**

- SUBSOILER, PLOW, OR OTHER IMPLEMENT SHALL BE USED TO REDUCE SOIL COMPACTION AND ALLOW MAXIMUM INFILTRATION. (MAXIMIZING INFILTRATION WILL HELP CONTROL BOTH RUNOFF RATE AND WATER QUALITY.) SUBSOILING SHOULD BE DONE WHEN THE SOIL MOISTURE IS LOW ENOUGH TO ALLOW THE SOIL TO CRACK OR FRACTURE. SUBSOILING SHALL NOT BE DONE ON SLIP-PRONE AREAS WHERE SOIL PREPARATION SHOULD BE LIMITED TO WHAT IS NECESSARY FOR ESTABLISHING VEGETATION.
- THE SITE SHALL BE GRADED AS NEEDED TO PERMIT THE USE OF CONVENTIONAL EQUIPMENT FOR SEEDBED PREPARATION AND SEEDING.
- TOPSOIL SHALL BE APPLIED WHERE NEEDED TO ESTABLISH VEGETATION.

**SEEDBED PREPARATION**

- LIME-AGRICULTURAL GROUND LIMESTONE SHALL BE APPLIED TO ACID SOIL AS RECOMMENDED BY A SOIL TEST. IN LIEU OF A SOIL TEST, LIME SHALL BE APPLIED AT THE RATE OF 100 POUNDS PER 1,000-SQ. FT. OR 2 TONS PER ACRE.
- FERTILIZER-FERTILIZER SHALL BE APPLIED AS RECOMMENDED BY A SOIL TEST. IN PLACE OF A SOIL TEST, FERTILIZER SHALL BE APPLIED AT A RATE OF 25 POUNDS PER 1,000-SQ. FT. OR 1000 POUNDS PER ACRE OF A 10-10-10 OR 12-12-12 ANALYSES.
- THE LIME AND FERTILIZER SHALL BE WORKED INTO THE SOIL WITH A DISK HARROW, SPRING-TOOTH HARROW, OR OTHER SUITABLE FIELD IMPLEMENT TO A DEPTH OF 3 INCHES. ON SLOPING LAND, THE SOIL SHALL BE WORKED ON THE CONTOUR.

**SEEDING DATES AND SOIL CONDITIONS**

- SEEDING SHOULD BE DONE MARCH 1 TO MAY 31 OR AUGUST 1 TO SEPTEMBER 30. IF SEEDING OCCURS OUTSIDE OF THE ABOVE SPECIFIED DATES, ADDITIONAL MULCH AND IRRIGATION MAY BE REQUIRED TO ENSURE A MINIMUM OF 80% GERMINATION. TILLAGE FOR SEEDBED PREPARATION SHOULD BE DONE WHEN THE SOIL IS DRY ENOUGH TO CRUMBLE AND NOT FORM RIBBONS WHEN COMPRESSED BY HAND. FOR WINTER SEEDING, SEE THE FOLLOWING SECTION ON DORMANT SEEDING.

**DORMANT SEEDINGS**

- SEEDINGS SHOULD NOT BE MADE FROM OCTOBER 1 THROUGH NOVEMBER 20. DURING THIS PERIOD, THE SEEDS ARE LIKELY TO GERMINATE BUT PROBABLY WILL NOT BE ABLE TO SURVIVE THE WINTER.
- THE FOLLOWING METHODS MAY BE USED FOR "DORMANT SEEDING":
  - FROM OCTOBER 1 THROUGH NOVEMBER 20, PREPARE THE SEEDBED. ADD THE REQUIRED AMOUNTS OF LIME AND FERTILIZER, THEN MULCH AND ANCHOR. AFTER NOVEMBER 20, AND BEFORE MARCH 15, BROADCAST THE SELECTED SEED MIXTURE. INCREASE THE SEEDING RATES BY 50% FOR THIS TYPE OF SEEDING.
  - FROM NOVEMBER 20 THROUGH MARCH 15, WHEN SOIL CONDITIONS PERMIT, PREPARE THE SEEDBED, LIME AND FERTILIZE. APPLY THE SELECTED SEED MIXTURE, MULCH AND ANCHOR. INCREASE THE SEEDING RATES BY 50% FOR THIS TYPE OF SEEDING.
  - APPLY SEED UNIFORMLY WITH A CYCLONE SEEDER, DRILL, CULTIPACKER SEEDER, OR HYDRO-SEEDER (SLURRY MAY INCLUDE SEED AND FERTILIZER) ON A FIRM, MOIST SEEDBED.
  - WHERE FEASIBLE, EXCEPT WHEN A CULTIPACKER TYPE SEEDER IS USED, THE SEEDBED SHOULD BE FIRMED FOLLOWING SEEDING OPERATIONS WITH A CULTIPACKER, ROLLER, OR LIGHT DRAG. ON SLOPING LAND, SEEDING OPERATIONS SHOULD BE ON THE CONTOUR WHERE FEASIBLE.

**MULCHING**

- MULCH MATERIAL SHALL BE APPLIED IMMEDIATELY AFTER SEEDING. DORMANT SEEDING SHALL BE MULCHED. 100% OF THE GROUND SURFACE SHALL BE COVERED WITH AN APPROVED MATERIAL.
- MATERIALS
  - STRAW-IF STRAW IS USED IT SHALL BE UNROTTED SMALL-GRAIN STRAW APPLIED AT THE RATE OF 2 TONS PER ACRE OR 90 POUNDS (TWO TO THREE BALES) PER 1,000-SQ. FT. THE MULCH SHALL BE SPREAD UNIFORMLY BY HAND OR MECHANICALLY APPLIED SO THE SOIL SURFACE IS COVERED. FOR UNIFORM DISTRIBUTION OF HAND-SPREAD MULCH, DIVIDE AREA INTO APPROXIMATELY 1,000-SQ.-FT. SECTIONS AND SPREAD TWO 45-LB. BALES OF STRAW IN EACH SECTION.
  - HYDROSEEDERS-IF WOOD CELLULOSE FIBER IS USED, IT SHALL BE APPLIED AT 2,000 LB./AC. OR 46 LB./1,000 SQ. FT.
  - OTHER-OTHER ACCEPTABLE MULCHES INCLUDE ROLLED EROSION CONTROL MATTINGS OR BLANKETS APPLIED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS OR WOOD CHIPS APPLIED AT 6 TONS PER ACRE.
- STRAW AND MULCH ANCHORING METHODS
  - STRAW MULCH SHALL BE ANCHORED IMMEDIATELY TO MINIMIZE LOSS BY WIND OR WATER.
  - MECHANICAL-A DISK, CRIMPER, OR SIMILAR TYPE TOOL SHALL BE SET STRAIGHT TO PUNCH OR ANCHOR THE MULCH MATERIAL INTO THE SOIL. STRAW MECHANICALLY ANCHORED SHALL NOT BE FINELY CHOPPED BUT, GENERALLY, BE LEFT LONGER THAN 6 INCHES.
  - MULCH NETTING-NETTING SHALL BE USED ACCORDING TO THE MANUFACTURER'S RECOMMENDATIONS. NETTING MAY BE NECESSARY TO HOLD MULCH IN PLACE IN AREAS OF CONCENTRATED RUNOFF AND ON CRITICAL SLOPES.
  - ASPHALT EMULSION-ASPHALT SHALL BE APPLIED AS RECOMMENDED BY THE MANUFACTURER OR AT THE RATE OF 160 GALLONS PER ACRE.
  - SYNTHETIC BINDERS-SYNTHETIC BINDERS SUCH AS ACRYLIC DLR (AGRI-TAC), DCA-70, PETROSET, TERRA TACK OR EQUIVALENT MAY BE USED AT RATES SPECIFIED BY THE MANUFACTURER.
  - WOOD CELLULOSE FIBER-WOOD CELLULOSE FIBER SHALL BE APPLIED AT A NET DRY WEIGHT OF 750 POUNDS PER ACRE. THE WOOD CELLULOSE FIBER SHALL BE MIXED WITH WATER WITH THE MIXTURE CONTAINING A MAXIMUM OF 50 POUNDS CELLULOSE PER 100 GALLONS OF WATER.

**IRRIGATION**

- PERMANENT SEEDING SHALL INCLUDE IRRIGATION TO ESTABLISH VEGETATION DURING DRY WEATHER OR ON ADVERSE SITE CONDITIONS, WHICH REQUIRE ADEQUATE MOISTURE FOR SEED GERMINATION AND PLANT GROWTH.
- IRRIGATION RATES SHALL BE MONITORED TO PREVENT EROSION AND DAMAGE TO SEEDED AREAS FROM EXCESSIVE RUNOFF.

SEED MIX	SEEDING RATE		NOTES:
	LB. / ACRE	LB. / 1,000 SF	
GENERAL USE			
CREeping RED FESCUE	20-40	1/2-1	FOR CLOSE MOWING & FOR WATERWAYS WITH <2.0
DOMESTIC RYEGRASS	10-20	1/4-1/2	
KENTUCKY BLUEGRASS	20-40	1/2-1	
TALL FESCUE	40-50	1-1 1/4	
TURF-TYPE FESCUE	90	2 1/4	
STEEP BANKS OR CUT SLOPES			
TALL FESCUE	40-50	1-1 1/4	
CROWN VETCH	10-20	1/4-1/2	DO NOT SEED LATER THAN AUGUST
TALL FESCUE	20-30	1/2-3/4	
FLAT PEA	20-25	1/2-3/4	DO NOT SEED LATER THAN AUGUST
TALL FESCUE	20-30	1/2-3/4	
ROAD DITCHES AND SWALES			
TALL FESCUE 40-501-11	40-50	1-1 1/4	
LAWNS			
TURF-TYPE (DWARF) FESCUE	90	2 1/4	
KENTUCKY BLUEGRASS	5	0.1000	
PERMANENT SEEDING			
KENTUCKY BLUEGRASS	100-200	2	
PERENNIAL RYEGRASS		2	
KENTUCKY BLUEGRASS	100-200	2	FOR SHADED AREAS
CREeping RED FESCUE		1-1 1/2	



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THE INFORMATION ON THIS DOCUMENT IS PREPARED FOR CONSTRUCTION AND NOT FOR PURPOSES OF REGULATION.

HENDERSON DEVELOPMENT

SHAKER MEADOWS  
PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions

ID Description Date

Table with 3 columns: ID, Description, Date. Contains 4 revision entries.

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Project Number: 764699

Scale: AS SHOWN

Drawn By: MMH

Checked By: JEE

Date: NOVEMBER 2025

Issue: FINAL DEVELOPMENT PLAN

Drawing Title:

SEDIMENT AND EROSION CONTROL DETAILS

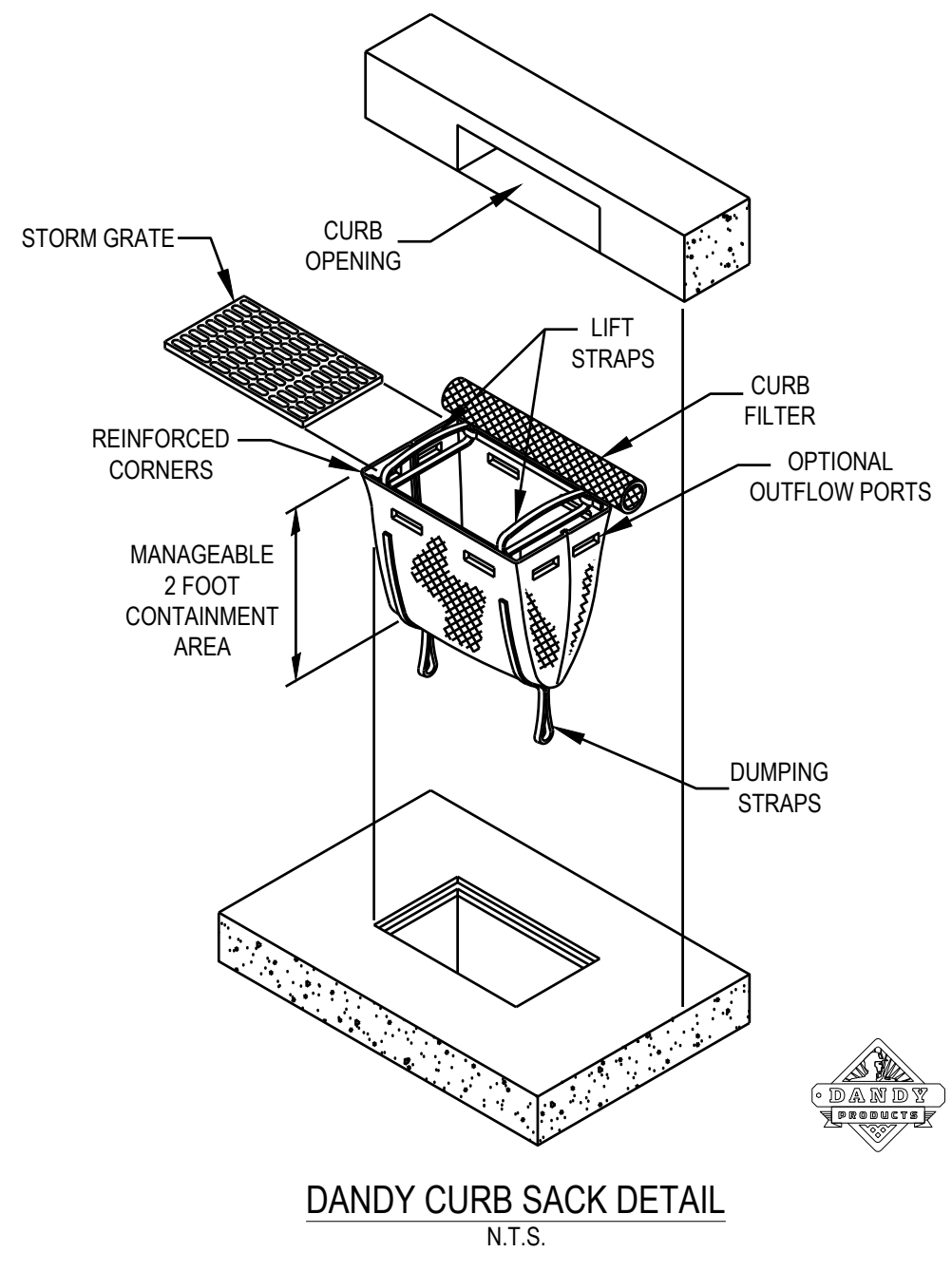
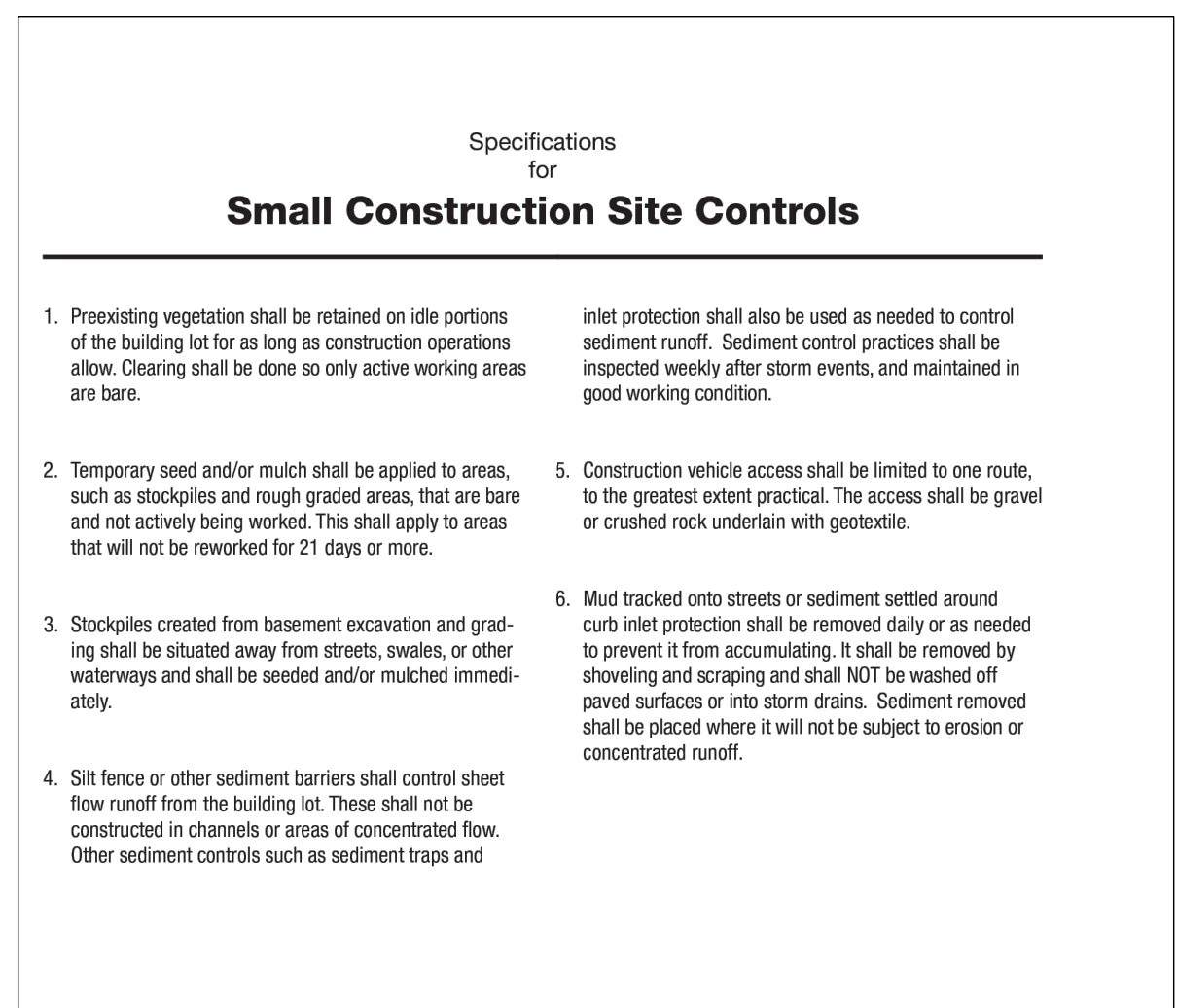
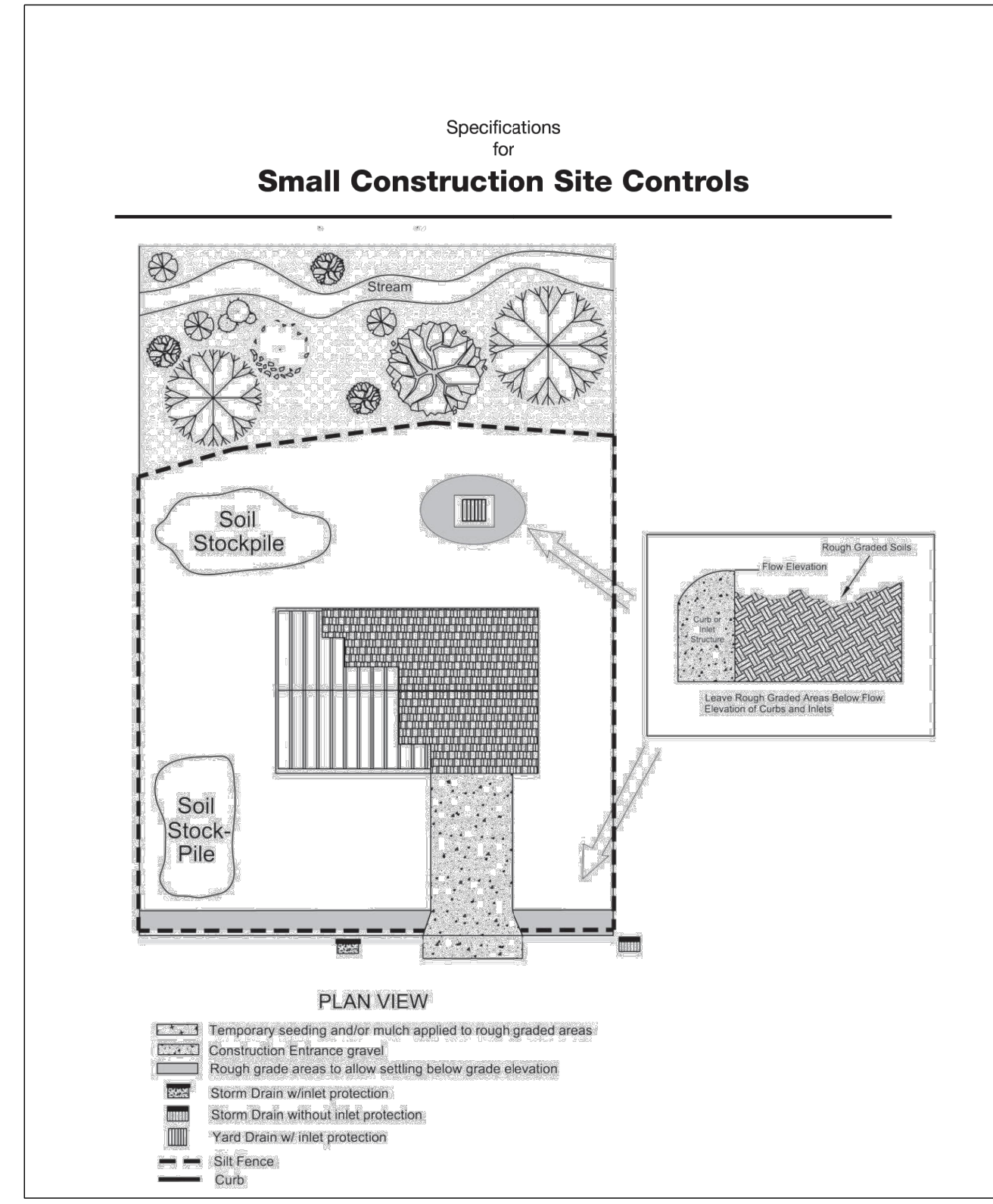
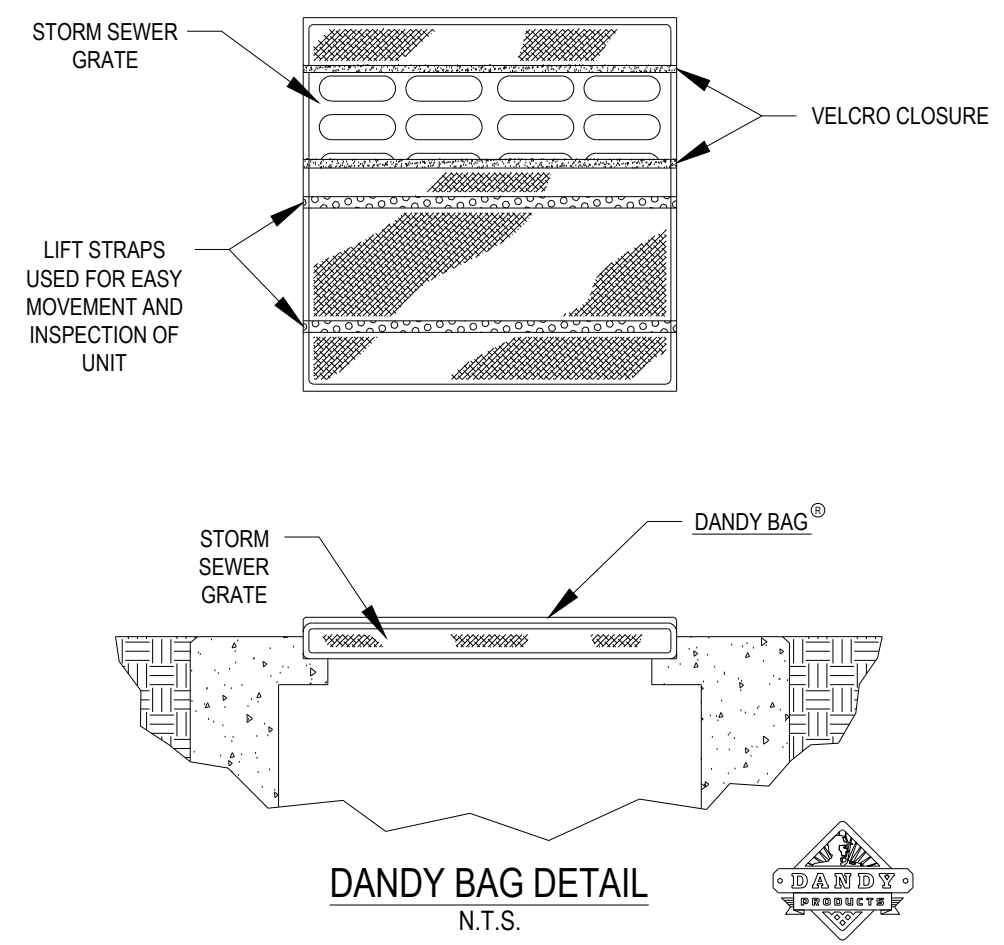


Table with 4 columns: MECHANICAL PROPERTIES, TEST METHOD, UNITS, MARV. Lists specifications for Regular Flow Dandy Curb Sack.

Table with 4 columns: MECHANICAL PROPERTIES, TEST METHOD, UNITS, MARV. Lists specifications for Hi-Flow Dandy Curb Sack.

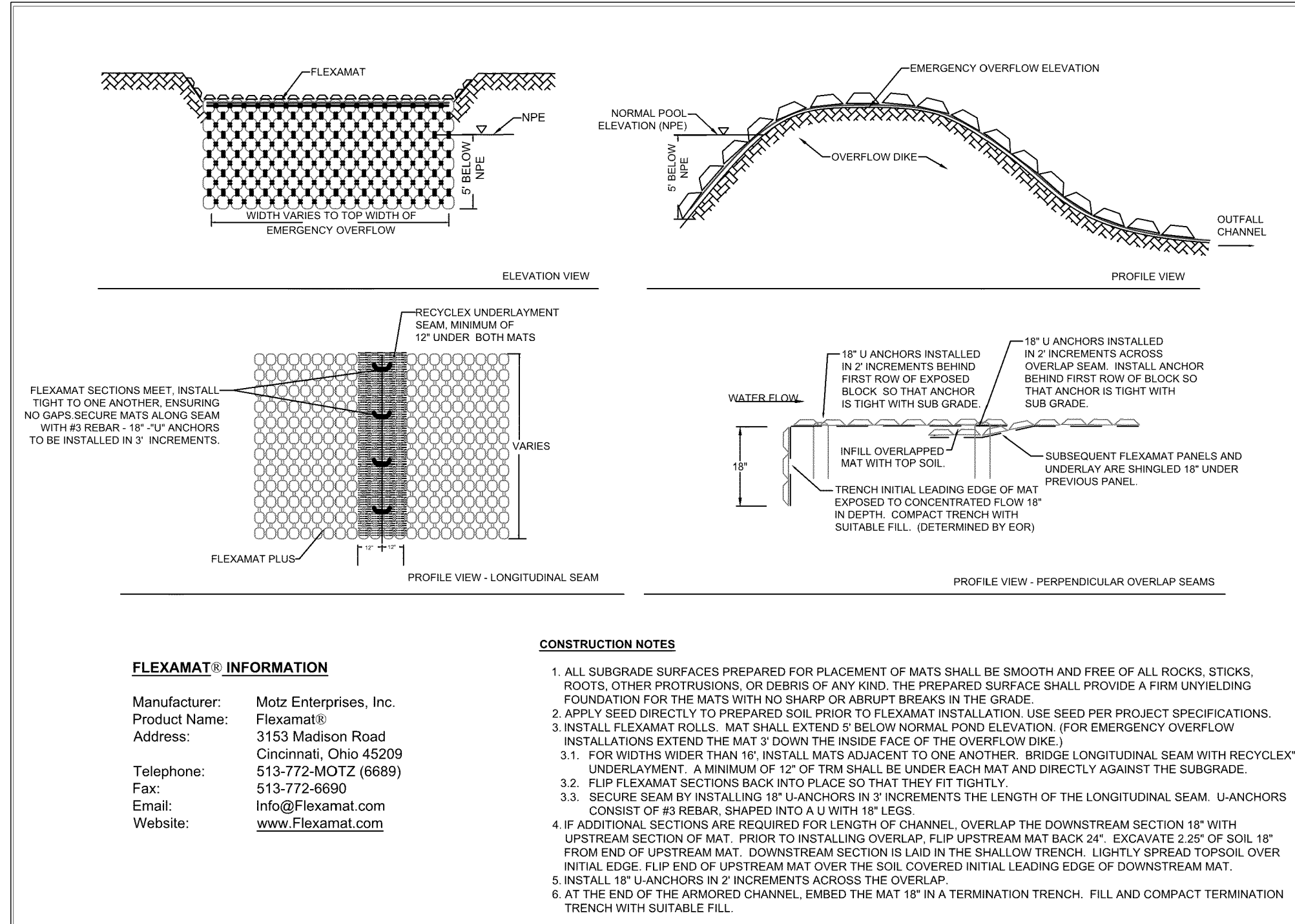
DANDY CURB SACK SPECIFICATIONS. NOTE: THE DANDY CURB SACK WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:



NOTE: THE DANDY BAG WILL BE MANUFACTURED IN THE U.S.A. FROM A WOVEN MONOFILAMENT FABRIC THAT MEETS OR EXCEEDS THE FOLLOWING SPECIFICATIONS:

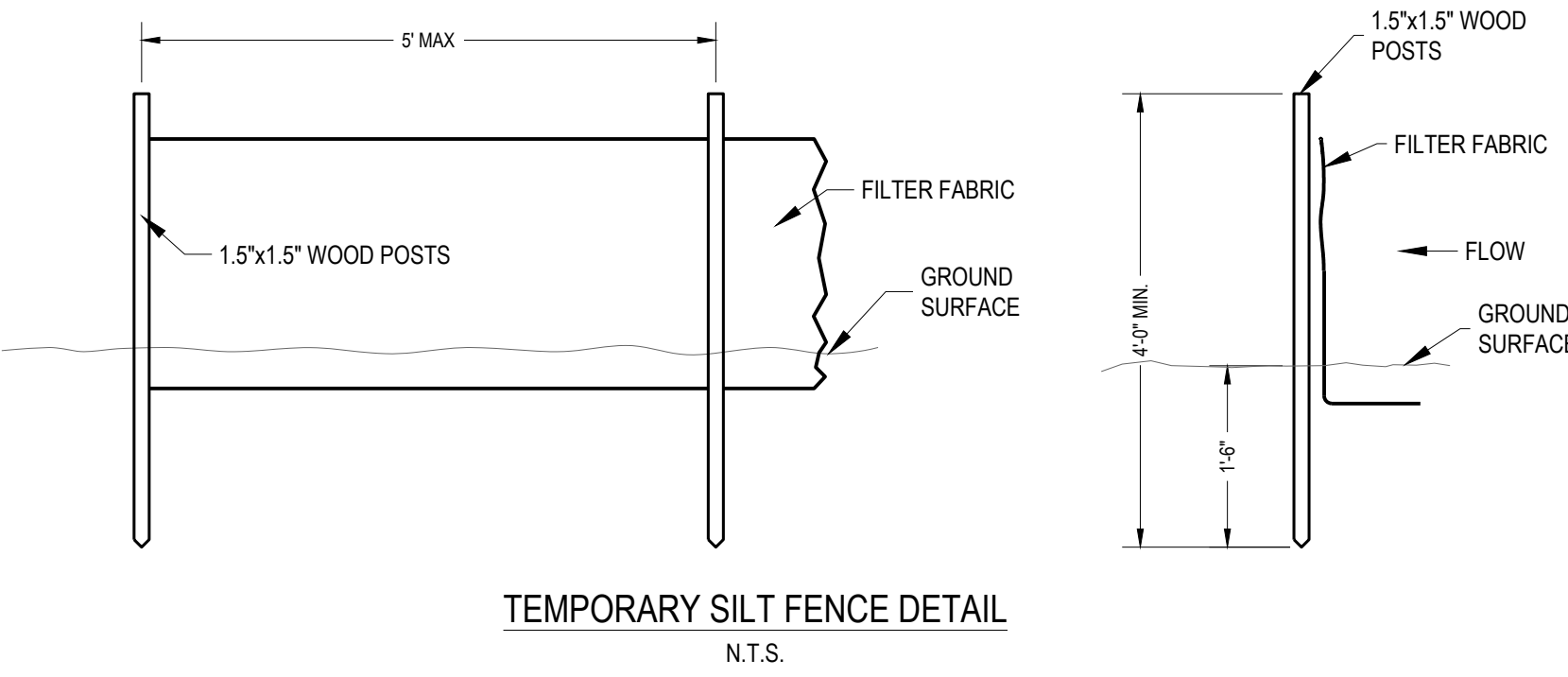
Table with 4 columns: MECHANICAL PROPERTIES, TEST METHOD, UNITS, MARV. Lists specifications for Hi-Flow Dandy Bag.

\*NOTE: ALL DANDY BAGS CAN BE ORDERED WITH OUR OPTIONAL OIL ABSORBENT PILLOWS



NOTE: THE ABOVE DETAIL IS A FLEXAMAT® PRODUCT. CONTRACTOR TO USE THIS PRODUCT OR APPROVED EQUAL.

TIED CONCRETE MAT DETAIL N.T.S.



SILT FENCE NOTES:

FILTER FABRIC SHALL BE SELECTED USING MATERIAL SPECIFICATION 592 GEOTEXTILE.

WOOD POSTS SHALL BE OF SOUND QUALITY WOOD WITH A NOMINAL CROSS SECTIONAL AREA OF 1.5 X 1.5 INCHES.

STEEL POST SHALL BE STANDARD T AND U SECTIONS WEIGHING NOT LESS THAN 1.33 POUNDS PER LINEAR FOOT OR OTHER STEEL POSTS HAVING EQUIVALENT STRENGTH AND BENDING RESISTANCE.

THE MAXIMUM SPACING SHALL BE 5 FEET. WHEN WIRE OR OTHER FORMS OF APPROVED BACKING ARE USED, THE MAXIMUM SPACING MAY BE INCREASED TO 10 FEET.

THE POSTS SHALL BE DRIVEN A MINIMUM OF 18 INCHES INTO THE GROUND OR AS APPROVED BY THE ENGINEER.

WIRE FENCE SHALL BE A MINIMUM OF 1-GAUGE WIRE WITH A MAXIMUM 6-INCH MESH OPENING. THE FILTER FABRIC SHALL BE FURNISHED IN A CONTINUOUS ROLL CUT TO THE LENGTH OF THE WIRE FENCE NEEDED TO AVOID SPLICES.

WHEN SPLICES ARE NECESSARY, THE FABRIC SHALL BE SPLICED AT A SUPPORT POST AND POSTS TWISTED TOGETHER PER DRAWING IUM-620BW SO SILT-LADEN WATER CANNOT ESCAPE AROUND OR BENEATH THE FENCE.

THE HEIGHT OF A SILT FENCE SHALL BE A MINIMUM OF 24 INCHES ABOVE THE ORIGINAL GROUND SURFACE. THE SILT FENCE SHALL BE ENTRENCHED TO A MINIMUM DEPTH OF 6 INCHES, WITH AN ADDITIONAL 6 INCHES EXTENDING ALONG THE BOTTOM OF THE TRENCH IN THE UPSLOPE DIRECTION. THE SIX INCH EXTENSION OF FABRIC ALONG THE BOTTOM MAY NEED TO BE CUT WHERE TWO FENCES ARE SPLICED PER THE METHOD MENTIONED ABOVE.

THE POSTS SHALL BE INSTALLED, TRENCH BACKFILLED, AND THE SOIL COMPACTED OVER THE FABRIC TO 95%. THE WIRE MESH DOES NOT GET BURIED AND COMPACTED IN THE ANCHOR TRENCH; IT STOPS AT GROUND LEVEL.

THE SILT FENCE MAY ALSO BE ENTRENCHED BY STATIC SLICING. STATIC SLICING CONSISTS OF THE INSERTION OF A NARROW CUSTOM SHAPED BLADE APPROXIMATELY 8 INCHES INTO THE GROUND, WHILE SIMULTANEOUSLY PULLING THE SILT FENCE FABRIC INTO THE OPENING CREATED AS THE BLADE IS PULLED THROUGH THE GROUND. THE BLADE IMPARTS NO VIBRATION OR OSCILLATORY MOTION. THE TIP OF THE BLADE IS DESIGNED TO SLIGHTLY DISRUPT THE SOIL UPWARD, PREVENTING HORIZONTAL COMPACTION OF THE SOIL AND CREATING OPTIMUM SOIL CONDITIONS FOR MECHANICAL COMPACTION. COMPACT (2 PASSES TYPICALLY) USING A TIRE ON THE TRACTOR. POST-SETTING AND DRIVING, FOLLOWED WITH TYING OR STAPLING THE FABRIC TO THE POST, FINALIZES THE INSTALLATION.

THE FILTER FABRIC AND WIRE SUPPORT, IF USED, MUST BE SECURELY FASTENED TO THE UPSLOPE SIDE OF THE POSTS USING HEAVY DUTY WIRE STAPLES AT LEAST ONE INCH LONG OR IN ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS. THE FABRIC SHALL BE ATTACHED TO THE WIRE SUPPORT TO PREVENT SAGGING OF THE FABRIC.

IF THE SILT FENCE MUST CROSS CONTOURS, WITH THE EXCEPTION OF THE ENDS OF THE FENCE, GRAVEL CHECK DAMS PLACED PERPENDICULAR TO THE BACK OF THE FENCE SHALL BE USED TO MINIMIZE CONCENTRATED FLOW AND EROSION ALONG THE BACK OF THE FENCE. THE GRAVEL CHECK DAMS SHALL BE APPROXIMATELY 1 FOOT HIGH AT THE BACK OF THE FENCE AND BE CONTINUED PERPENDICULAR TO THE FENCE AT THE SAME ELEVATION UNTIL THE TOP OF THE CHECK DAM INTERCEPTS THE GROUND SURFACE BEHIND THE FENCE. THE GRAVEL CHECK DAMS SHALL CONSIST OF APPROPRIATELY SIZED AND SPECIFIED ROCK FOR THE FENCE LINE GRADE AND CONTRIBUTING DRAINAGE AREA. THE GRAVEL CHECK DAMS SHALL BE LOCATED EVERY 10 FEET ALONG THE FENCE WHERE THE FENCE MUST CROSS CONTOURS. J-HOOKS SHALL BE USED AT THE ENDS OF RUNS LONGER THAN 200 FEET AND AT INTERVALS AS DEEMED NECESSARY BY THE DESIGNER AND ACCORDING TO SITE CONDITIONS.

SILT FENCE SHALL BE USED PRIOR TO THE ESTABLISHMENT OF EROSION CONTROLS AND INSTALLED PRIOR TO THE CLEARING OF EXISTING VEGETATION AND GRADING WORK. WHEN DEEMED NECESSARY ADDITIONAL ROWS OF SILT FENCE SHALL BE SPACED ACCORDING TO SITE CONDITIONS AND IN KEEPING WITH MAXIMUM ACREAGE REQUIREMENTS DISCUSSED IN THE TABLE ABOVE.

MAINTENANCE: SILT FENCE SHALL BE REMOVED ONCE UPSLOPE AREAS HAVE BEEN PERMANENTLY STABILIZED.

SILT FENCE SHALL BE INSPECTED NO LESS FREQUENTLY THAN EVERY WEEK DURING CONSTRUCTION. SHOULD THE FABRIC DECOMPOSE OR BECOME INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USABLE LIFE AND THE FENCE STILL IS NECESSARY, THE FABRIC OR THE ENTIRE SYSTEM SHALL BE REPLACED PROMPTLY.

SEDIMENT DEPOSITS MUST BE REMOVED WHEN THE LEVEL OF DEPOSITION REACHES APPROXIMATELY ONE-HALF THE HEIGHT OF THE SILT FENCE.

ANY SEDIMENT DEPOSITS REMAINING IN PLACE AFTER THE SILT FENCE IS NO LONGER REQUIRED SHALL BE DRESSED TO CONFORM TO THE EXISTING GRADE, A SEEDBED PREPARED AND THE SITE VEGETATED.

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## SITE DATA

**OWNER/DEVELOPER:** HENDERSON DEVELOPMENT  
2969 BEAL ROAD  
FRANKLIN, OH 45005  
PHONE: (937) 604-4269  
CONTACT: TODD HENDERSON

**PLAN DESIGNER:** CESO, INC.  
3601 RIGBY ROAD, STE 300  
MIAMISBURG, OHIO 45342

### DEVELOPMENT NAME AND DESCRIPTION:

SHAKER MEADOWS WILL BE A SINGLE FAMILY DEVELOPMENT WITH 117 LOTS.

### SITE ACREAGE:

OVERALL ACREAGE - 47.28 AC  
DISTURBED ACREAGE - 36.84 AC

### RUNOFF COEFFICIENT:

PRE-CONSTRUCTION RUNOFF COEFFICIENT, CN=81  
POST-CONSTRUCTION OF PROPOSED WATERSHED A1 RUNOFF COEFFICIENT, CN=91  
POST-CONSTRUCTION OF PROPOSED WATERSHED A3 RUNOFF COEFFICIENT, CN=92  
POST-CONSTRUCTION OF PROPOSED WATERSHED A3 RUNOFF COEFFICIENT, CN=92

### IMPERVIOUS AREA:

PRE-CONSTRUCTION - 3.34 ACRE, 7.07%  
POST-CONSTRUCTION - 28.31 ACRE, 3.95%

### PRIOR LAND USE

THE SITE WAS PREVIOUSLY OCCUPIED BY A COMBINATION OF CROP FIELDS, WOODED AREAS AND AN EXISTING RESIDENTIAL DEVELOPMENT.

### SOIL TYPES:

Ag: ALGIERS SILT LOAM, HYDROLOGIC SOIL GROUP C/D  
Br: BROOKSTON SILTY CLAY LOAM, FINE-SILTY, 0-2% SLOPES, HYDROLOGIC SOIL GROUP B/D  
BrU: BROOKSTON, FINE-SILTY-URBAN LAND COMPLEX, 0-2% SLOPES, HYDROLOGIC SOIL GROUP B/D  
DaUB: DANNA-URBAN LAND COMPLEX, 2-6% SLOPES, HYDROLOGIC SOIL GROUP C  
Rn: ROSS LOAM, 0-2% SLOPES, OCCASIONALLY FLOODED, HYDROLOGIC SOIL GROUP B  
RvB: RUSSELL-MIAMIAN SILT LOAMS, 2-6% SLOPES, HYDROLOGIC SOIL GROUP C  
RvB2: RUSSELL-MIAMIAN SILT LOAMS, 2-6% SLOPES, MODERATELY ERODED, HYDROLOGIC SOIL GROUP C  
RvUB: RUSSELL-MIAMIAN-URBAN LAND COMPLEX, 2-6% SLOPES, HYDROLOGIC SOIL GROUP C  
RvUB2: RUSSELL-MIAMIAN-URBAN LAND COMPLEX, 2-6% SLOPES, MODERATELY ERODED, HYDROLOGIC SOIL GROUP C  
UsUXF: URBAN LAND-UDORTHTENS COMPLEX, SMOOTHED, 0-50% SLOPES

### ADJACENT AREAS:

THE SITE IS BOUND TO THE NORTH AND WEST BY RESIDENTIAL DEVELOPED. THE SITE IS BOUND TO THE EAST BY SHAKER MEADOWS SECTION 1 AND SECTION 2. THE SOUTH EAST OF THE SITE IS BOUND BY INTERSTATE ROUTE 75.

### STORM WATER MANAGEMENT:

THE SITE DRAINS INTO TWO PROPOSED WET EXTENDED DETENTION BASINS WEST, THAT OUTLETS INTO THE EXISTING DITCH IN THE NORTHWEST CORNER OF THE PROPERTY.

## SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE, HAZARDOUS WASTE STORAGE AREA, VEHICLE REFUELING AREA, AND CONCRETE WASHOUT PIT.
2. INSTALL TEMPORARY EROSION CONTROL PRACTICES TO CONTAIN SEDIMENT ON SITE.
3. CLEAR AND GRUB THE SITE. CONSTRUCT TEMPORARY SWALES ALONG THE PERIMETER TO DIRECT STORMWATER TO THE BASIN.
4. CONSTRUCT BASINS. THE BASINS MUST BE COMPLETE, WITH SKIMMER, IN FINAL FUNCTIONAL CONDITION PRIOR TO FURTHER GRADING.
5. ROUGH GRADE SITE.
6. CONSTRUCT SANITARY, DISTURBING TRENCH AREA ONLY.
7. INSTALL STORM SEWER & WATERLINE, PLACING INLET PROTECTION AS INLETS ARE CONSTRUCTED.
8. GRADE STREETS, FIXING INLET PROTECTION AS NEEDED.
9. PAVE STREETS.
10. FINAL GRADE LOTS.
11. SEED & MULCH ALL DISTURBED AREAS.
12. REMOVE ALL EROSION CONTROL PRACTICES ONCE SITE HAS BEEN STABILIZED.
13. CONSTRUCT PRIMARY SPILLWAYS FOR THE BASINS. REFER TO GRADING PLANS AND BASIN DETAIL SHEETS.

## GENERAL LAND CONSERVATION NOTES

NO DISTURBED AREA WILL BE DENUDED FOR MORE THAN 30 DAYS IF IT IS TO REMAIN DORMANT FOR MORE THAN 45 DAYS UNLESS AUTHORIZED BY THE STATE GOVERNING JURISDICTION'S INSPECTOR. PERMANENT OR TEMPORARY SOIL STABILIZATION SHALL BE APPLIED TO DISTURBED AREAS WITHIN 14 DAYS AFTER FINAL GRADE IS REACHED ON ANY PORTION OF THE SITE.

ALL STRUCTURAL EROSION AND SEDIMENT CONTROL PRACTICES SHALL BE PLACED PRIOR TO OR AS THE FIRST STEP IN GRADING FOR ALL SITES.

ALL STORM SEWER, SANITARY SEWER, WATER MAIN AND SERVICE TRENCHES SHALL BE MULCHED AND SEEDED WITHIN 14 DAYS AFTER BACK FILL IF INSTALLATION IS THROUGH STABILIZED AREAS. NO MORE THAN 500 FEET OF TRENCH WILL BE OPEN AT ANY ONE TIME.

ELECTRIC POWER, TELEPHONE, CATV AND GAS SUPPLY TRENCHES SHALL BE COMPACTED SEEDED AND MULCHED WITHIN 14 DAYS AFTER BACK FILL, IF INSTALLATION IS THROUGH STABILIZED AREAS.

ALL TEMPORARY DIVERSIONS, SEDIMENT BASIN EMBANKMENTS AND EARTH STOCKPILES SHALL BE SEEDED AND MULCHED FOR TEMPORARY VEGETATIVE COVER WITHIN 7 DAYS AFTER GRADING. STRAW, HAY MULCH OR EQUIVALENT IS REQUIRED.

ALL STORM SEWER INLETS SHALL BE PROTECTED BY SEDIMENT TRAPS (INLET PROTECTION) WHICH WILL BE MAINTAINED AND MODIFIED AS REQUIRED AS CONSTRUCTION PROGRESSES.

ANY DISTURBED AREA NOT STABILIZED WITH SEEDING, SODDING, PAVING OR BUILT UPON BY NOVEMBER 1ST, OR AREAS DISTURBED AFTER THAT DATE, SHALL BE MULCHED IMMEDIATELY WITH HAY OR STRAW AT THE RATE OF 2 TONS PER ACRE AND OVER-SEEDED BY APRIL 15TH.

AT THE COMPLETION OF CONSTRUCTION, ALL TEMPORARY SEDIMENT CONTROLS SHALL BE REMOVED AND ALL DENUDED AREAS SHALL BE STABILIZED.

HOA SHALL MAINTAIN AND KEEP RECORD OF ANY MAINTENANCE/INSPECTIONS OF COMMON AREAS.

## SWPPP NOTES

1. ALL EROSION AND SEDIMENTATION CONTROL SHALL BE PERFORMED ACCORDING TO: SWPPP AND DETAIL PLANS, ACCORDING TO THE LATEST OHIO EPA AUTHORIZATION FOR CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES), ANY AND ALL REQUIRED PERMITS, REPORTS, AND RELATED DOCUMENTS. SEE OHIO EPA PERMIT NO. OHC000005 FOR SWPPP RULES AND REGULATIONS. ALL CONTRACTORS AND SUBCONTRACTORS MUST BECOME FAMILIAR WITH ALL OF THE ABOVE.
2. CONTRACTOR SHALL IMPLEMENT BEST MANAGEMENT PRACTICES AS REQUIRED BY THE SWPPP. ADDITIONAL BEST MANAGEMENT PRACTICES SHALL BE IMPLEMENTED AS DICTATED BY CONDITIONS AND GRADE CHANGES TO THE SITE AT NO ADDITIONAL COST TO OWNER THROUGHOUT ALL PHASES OF CONSTRUCTION.
3. CONTRACTOR SHALL MINIMIZE CLEARING AND DISTURBANCE TO THE ENVIRONMENT TO THE MAXIMUM EXTENT POSSIBLE OR AS REQUIRED BY THE GENERAL PERMIT. EVERY EFFORT SHALL BE MADE TO PRESERVE THE NATURAL RIPARIAN SETBACK ADJACENT TO STREAMS OR OTHER SURFACE WATER BODIES.
4. SEDIMENT STRUCTURE AND PERIMETER SEDIMENT BARRIERS SHALL BE IMPLEMENTED AS THE FIRST STEP OF GRADING WITHIN SEVEN (7) DAYS FROM THE START OF CLEARING AND GRUBBING, AND SHALL CONTINUE TO FUNCTION UNTIL THE SLOPE DEVELOPMENT AREA IS RESTABILIZED. SEDIMENT CONTROL DEVICES SHALL BE IMPLEMENTED FOR ALL AREAS REMAINING DISTURBED FOR OVER 14 DAYS.
5. TEMPORARY SOIL STABILIZATION OF DISTURBED AREAS BY MEANS OF TEMPORARY VEGETATION, MULCHING, GEOTEXTILES, PRESERVATION OF EXISTING VEGETATION, AND OTHER APPROVED TECHNIQUES TO BE APPLIED AS FOLLOWS:  
WITHIN TWO (2) DAYS OF ANY AREA WITHIN 50 FEET OF A STREAM NOT AT FINAL GRADE REMAINING DORMANT FOR OVER FOURTEEN (14) DAYS.  
WITHIN SEVEN (7) DAYS OF ANY AREA THAT WILL BE DORMANT FOR MORE THAN FOURTEEN (14) DAYS.  
PRIOR TO THE ONSET OF WINTER WEATHER FOR AREAS THAT WILL BE IDLE OVER WINTER. FOR RESIDENTIAL SUBDIVISIONS, DISTURBED AREAS MUST BE STABILIZED AT LEAST SEVEN (7) DAYS PRIOR TO TRANSFER OF PERMIT COVERAGE FOR INDIVIDUALS.
6. PERMANENT SOIL STABILIZATION OF DISTURBED AREAS BY MEANS OF VEGETATION, LANDSCAPE TYPE MULCHING, MATTING, SOD, RIP RAP, AND OTHER APPROVED LANDSCAPING TECHNIQUES TO BE APPLIED AS FOLLOWS:  
WITHIN SEVEN (7) DAYS OF ANY AREA THAT WILL BE DORMANT FOR ONE (1) YEAR OR MORE.  
WITHIN TWO (2) DAYS OF ANY AREA WITHIN 50 FEET OF A STREAM AT FINAL GRADE.  
WITHIN SEVEN (7) DAYS FOR ANY OTHER AREA AT FINAL GRADE.
7. TEMPORARY SEEDING, MULCHING, AND FERTILIZER SPECIFICATIONS:  
**SEEDING:** ANNUAL RYEGRASS AT 2.02 #/1,000 S.F.  
**MULCHING:** STRAW MATERIAL SHALL BE UNROTTED SMALL GRAIN STRAW APPLIED AT A RATE OF TWO (2) TON/ACRE, OR 80-100 POUNDS PER 1,000 S.F. MULCH MATERIALS SHALL BE RELATIVELY FREE OF ALL KINDS OF WEEDS AND SHALL BE FREE OF PROHIBITIVE NOXIOUS WEEDS. MULCH SHALL BE SPREAD UNIFORMLY BY HAND OR MECHANICAL MEANS. FROM NOVEMBER 01 THRU MARCH 15 INCREASE THE RATE OF STRAW MULCH TO THREE (3) TON/ACRE.  
**FERTILIZER:** APPLY FERTILIZER AT HALF THE RATE OF PERMANENT APPLICATION AND AS PER STATE DOT SPECIFICATIONS. IF PROJECT CONDITIONS PREVENT FERTILIZING THE SOIL, THEN THIS ITEM MAY BE WAIVED.
8. PERMANENT SEEDING SHALL BE IN ACCORDANCE WITH ODOT STANDARD SPECIFICATIONS.
9. SLOPES SHALL BE LEFT IN A ROUGHENED CONDITION DURING THE GRADING PHASE TO REDUCE RUNOFF VELOCITIES AND EROSION. ALL SLOPES 3:1 OR GREATER THAN 3:1 SHALL BE FERTILIZED, SEEDED, AND CURLEX BLANKETS BY AMERICAN EXCELSIOR COMPANY, NORTH AMERICAN GREEN, INC. OR AN APPROVED EQUIVALENT AS SPECIFIED IN THE PLANS SHALL BE INSTALLED ON THE SLOPES.
10. OHIO EPA SWPPP REGULATIONS REQUIRES THAT A SEDIMENT TRAP OR POND BE SIZED TO PROVIDE AT LEAST 104 CUBIC YARDS (67 CY FOR DEWATERING AND 37 CY FOR SEDIMENT STORAGE) OF STORAGE PER ACRE OF TOTAL CONTRIBUTING AREA. MAXIMUM DEPTH OF SEDIMENT SETTLING POND SHALL BE EQUAL OR LESS THAN 5-FEET WITH A LENGTH TO WIDTH RATIO GREATER THAN OR EQUAL TO 2:1)
11. OUTLET STRUCTURES IN SEDIMENTATION BASINS SHALL BE MAINTAINED IN OPERATIONAL CONDITIONS AT ALL TIMES. SEDIMENT MUST BE REMOVED FROM BASINS AND OR TRAPS WHEN THE DESIGN CAPACITY HAS BEEN REDUCED BY 40% (APPROXIMATELY ONE-HALF OF POND DEPTH).
12. NO SOLID (OTHER THAN SEDIMENT) OR LIQUID WASTE, INCLUDING BUILDING MATERIALS, SHALL BE DISCHARGED IN STORM WATER RUNOFF.
13. ALL TOXIC WASTES, HAZARDOUS WASTES AND NON-SEDIMENT POLLUTANTS MUST BE DISPOSED OF IN ACCORDANCE WITH LOCAL, STATE, AND FEDERAL GUIDELINES. WASH OUT OF CEMENT TRUCKS SHOULD OCCUR IN DESIGNATED PIT OR DIKED AREAS, WHERE WASHINGS CAN BE REMOVED AND PROPERLY DISPOSED OFF-SITE WHEN THEY HARDEN. STORAGE TANKS SHOULD ALSO BE LOCATED IN PIT OR DIKED AREAS. IN ADDITION, SUFFICIENT OIL AND GREASE ABSORBING MATERIALS AND FLOTATION BOOMS TO CLEAN AND CONTAIN FUEL AND CHEMICAL SPILLS MUST BE KEPT ON SITE. NO TOXIC OR HAZARDOUS WASTES SHALL BE DISPOSED INTO STORM DRAINS, SEPTIC TANKS OR BY BURYING, BURNING OR MIXING THE WASTES.
14. CONTAINERS SHALL BE AVAILABLE FOR DISPOSAL OF DEBRIS, TRASH, HAZARDOUS OR PETROLEUM WASTES. ALL CONTAINERS MUST BE COVERED AND LEAK-PROOF. ALL WASTE MATERIAL SHALL BE DISPOSED OF AT FACILITIES APPROVED FOR THE PERTINENT MATERIAL.
15. RUBBISH, TRASH, GARBAGE, LITTER, OR OTHER SUCH MATERIALS SHALL BE DISPOSED INTO SEALED CONTAINERS. MATERIALS SHALL BE PREVENTED FROM LEAVING THE SITE THROUGH THE ACTION OF WIND OR STORM WATER DISCHARGE INTO DRAINAGE DITCHES OR WATERS OF THE STATE.
16. BRICKS, HARDENING CONCRETE AND SOIL WASTE SHALL BE FREE FROM CONTAMINATION WHICH MAY LEACH CONSTITUENTS TO WATERS OF THE STATE.
17. CLEAN CONSTRUCTION WASTES THAT WILL BE DISPOSED INTO THE PROPERTY SHALL BE SUBJECT TO ANY LOCAL PROHIBITIONS FROM THIS TYPE OF DISPOSAL.
18. ALL CONSTRUCTION AND DEMOLITION DEBRIS (C&DD) WASTE SHALL BE DISPOSED OF IN AN OHIO EPA APPROVED C&DD LANDFILL AS REQUIRED BY OHIO REVISED CODE 3714. CONSTRUCTION DEBRIS MAY BE DISPOSED OF ON-SITE, BUT DEMOLITION DEBRIS MUST BE DISPOSED IN AN OHIO EPA APPROVED LANDFILL. ALSO, MATERIALS WHICH CONTAIN ASBESTOS MUST COMPLY WITH AIR POLLUTION REGULATIONS (SEE OHIO ADMINISTRATIVE CODE 3745-20).
19. AREA SHALL BE DESIGNATED FOR MIXING OR STORAGE OF COMPOUNDS SUCH AS FERTILIZERS, LIME ASPHALT, OR CONCRETE, THESE DESIGNATED AREAS SHALL BE LOCATED AWAY FROM WATERCOURSES, DRAINAGE DITCHES, FIELD DRAINS, OR OTHER STORMWATER DRAINAGE AREA.
20. EQUIPMENT FUELING & MAINTENANCE SHALL BE IN DESIGNATED AREAS ONLY. THESE DESIGNATED AREAS SHALL BE LOCATED AWAY FROM WATERCOURSES, DRAINAGE DITCHES, FIELD DRAINS, OR OTHER STORMWATER DRAINAGE AREA.
21. A SPILL PREVENTION CONTROL AND COUNTERMEASURE (SPCC) PLAN MUST BE DEVELOPED FOR SITES WITH ONE ABOVE-GROUND STORAGE TANK OF 660 GALLONS OR MORE, TOTAL ABOVE-GROUND STORAGE OF 1,330 GALLONS OR BELOW-GROUND STORAGE OF 4,200 GALLONS OF FUEL.
22. ALL DESIGNATED CONCRETE CHUTE OR WASHOUT AREAS SHALL BE LOCATED AWAY FROM WATERCOURSES, DRAINAGE DITCHES, FIELD DRAINS OR OTHER STORMWATER DRAINAGE AREAS.
23. THERE IS A POTENTIAL FOR HIGH GROUND WATER AT THIS SITE. CONTRACTOR IS RESPONSIBLE FOR DESIGNING AND IMPLEMENTING A PLAN TO CONTROL BOTH SURFACE AND GROUND WATER DURING THE COURSE OF CONSTRUCTION.
24. DISCHARGE OF WATER WITH POTENTIAL SEDIMENT FROM THE SITE SHALL BE THROUGH A FILTER BAG, SUMP PIT OR OTHER SEDIMENT REMOVAL DEVICE.
25. ALL CONTAMINATED SOIL MUST BE TREATED AND/OR DISPOSED IN AN OHIO EPA APPROVED SOLID WASTE MANAGEMENT FACILITY OR HAZARDOUS WASTE TREATMENT, STORAGE OR DISPOSAL FACILITIES (TSDFs).
26. IF THE SITE CONTAINS CONTAMINATED SOIL, THE FOLLOWING SHALL BE USED TO PREVENT CONTAMINATION FROM BEING RELEASED:
  1. BERMS, TRENCHES AND PITS TO COLLECT CONTAMINATED RUNOFF AND PREVENT DISCHARGES.
  2. PUMPING RUNOFF INTO A SANITARY SEWER (WITH PRIOR APPROVAL OF THE SANITARY SYSTEM OPERATOR) OR INTO A CONTAINER FOR TRANSPORT TO AN APPROPRIATE TREATMENT/DISPOSAL FACILITY.
  3. COVERING AREAS OF CONTAMINATION WITH TARPS OR OTHER METHODS THAT PREVENT STORM WATER FROM COMING INTO CONTACT WITH THE MATERIAL.

## SWPPP NOTES (CONT.)

27. IN THE EVENT OF AN ACCIDENTAL SPILL, IMMEDIATE ACTION WILL BE UNDERTAKEN BY THE GENERAL CONTRACTOR TO CONTAIN AND REMOVE THE SPILLED MATERIAL. ALL HAZARDOUS MATERIALS, INCLUDING CONTAMINATED SOIL AND LIQUID CONCRETE WASTE, WILL BE DISPOSED OF BY THE CONTRACTOR IN THE MANNER SPECIFIED BY FEDERAL, STATE AND LOCAL REGULATIONS AND BY THE MANUFACTURER OF SUCH PRODUCTS. AS SOON AS POSSIBLE, THE SPILL WILL BE REPORTED TO THE APPROPRIATE AGENCIES. AS REQUIRED UNDER THE PROVISIONS OF THE CLEAN WATER ACT, ANY SPILL OR DISCHARGE ENTERING WATERS OF THE UNITED STATES WILL BE PROPERLY REPORTED. THE GENERAL CONTRACTOR WILL PREPARE A WRITTEN RECORD OF ANY SPILL AND ASSOCIATED CLEAN-UP ACTIVITIES OF PETROLEUM PRODUCTS OR HAZARDOUS MATERIALS IN EXCESS OF 1 GALLON OR REPORTABLE QUANTITIES, WHICH EVER IS LESS.
28. THE CONTRACTOR SHALL CONTACT THE OHIO EPA AT 800.282.9378, THE LOCAL FIRE DEPARTMENT AND THE LOCAL EMERGENCY PLANNING COMMITTEE IN THE EVENT OF A PETROLEUM SPILL (>25 GALLONS) OR THE PRESENCE OF SHEEN.
29. OPEN BURNING IS NOT PERMITTED ON THE SITE.
30. DUST CONTROL USING APPROVED MATERIALS MUST BE PERFORMED AT ALL TIMES. DUST SUPPRESSANTS SHALL NOT BE APPLIED NEAR CATCH BASINS FOR STORM SEWERS OR OTHER DRAINAGE WAYS. THE USE OF MOTOR OILS AND OTHER PETROLEUM BASED OR TOXIC LIQUIDS FOR DUST SUPPRESSION IS PROHIBITED.
31. APPROPRIATE MEASURES MUST BE TAKEN TO ENSURE THAT ALL PROPER AIR POLLUTION PERMITS ARE OBTAINED.
32. PROCESS WASTEWATERS (EQUIPMENT WASHING, LEACHATE ASSOCIATED WITH ON-SITE WASTE DISPOSAL AND CONCRETE WASH-OUTS) SHALL BE COLLECTED AND DISPOSED OF PROPERLY.
33. SANITARY AND WATER PTI FORMS SHALL BE FILED WITH THE OHIO EPA AS REQUIRED.
34. PROTECTED STORAGE AREAS SHALL BE USED FOR INDUSTRIAL AND CONSTRUCTION MATERIALS IN ORDER TO MINIMIZE THE EXPOSURE OF SUCH MATERIALS TO STORMWATER.
35. ALL CONTROL MEASURES STATED IN THE SWPPP SHALL BE MAINTAINED IN FULLY FUNCTIONAL CONDITION UNTIL TEMPORARY OR PERMANENT STABILIZATION OF THE SITE IS ACHIEVED. ALL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE INSPECTED BY A QUALIFIED PERSON IN ACCORDANCE TO THE CONTRACT DOCUMENTS OR THE APPLICABLE PERMIT, WHICHEVER IS MORE STRINGENT, AND REPAIRED ACCORDING TO THE FOLLOWING:
36. INSPECTIONS OF BMPS SHALL BE PERFORMED BY QUALIFIED PERSONS PROVIDED BY THE PERMITTEE AND THE INSPECTION LOGS ARE TO BECOME A PART OF THIS PLAN. INSPECTIONS RECORDS SHALL BE SIGNED BY THE INSPECTOR AND WILL BE KEPT FOR 3 YEARS AFTER THE NOTICE OF TERMINATION IS SUBMITTED.
37. INSPECTIONS SHALL BE CONDUCTED AT LEAST ONCE IN EVERY 7 CALENDAR DAYS AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.5 INCHES OF RAIN PER 24 HOUR PERIOD, FROM THE BEGINNING OF CONSTRUCTION THROUGH THE FINAL INSPECTION PRIOR TO THE NOTICE OF TERMINATION.
38. NON-SEDIMENT POND BMPS TO BE REPAIRED WITHIN 3 DAYS OF INSPECTION AND SEDIMENT POND BMPS WITHIN 10 DAYS OF INSPECTION. BMPS NOT MEETING THE INTENDED FUNCTION SHALL BE REPLACED WITHIN 10 DAYS OF INSPECTION. MISSING BMPS SHALL BE INSTALLED WITHIN 10 DAYS OF INSPECTION.
39. IF THE SITE IS STABILIZED AND WILL BE DORMANT FOR A LONG PERIOD OF TIME, LESS FREQUENT INSPECTIONS MAY BE REQUESTED OF THE OEPA VIA A WAIVER REQUEST.
40. INLET PROTECTION DEVICES AND CONTROLS SHALL BE REPAIRED OR REPLACED WHEN THEY SHOW SIGNS OF UNDERMINING AND OR DETERIORATION.
41. ALL SEEDED AREAS SHALL BE CHECKED REGULARLY TO ENSURE THAT A GOOD STANDING OF GRASS IS MAINTAINED. AREAS SHOULD BE FERTILIZED, WATERED, AND RESEEDED AS NEEDED.
42. SILT FENCES, INLET PROTECTION, SILT DIKES AND PEROVIOUS LOGS SHALL BE REPAIRED TO THEIR ORIGINAL CONDITION IF DAMAGED. SEDIMENT ACCUMULATION MUST BE REMOVED WHEN SEDIMENT HEIGHT REACHES ONE-HALF THE HEIGHT OF THE SILT FENCE, INLET PROTECTION, SILT DIKE AND PEROVIOUS LOG.
43. MINIMIZE OFF-SITE SEDIMENT TRACKING OF VEHICLES BY THE USE OF STONE MATERIAL IN ALL CONSTRUCTION ENTRANCES, ALONG WITH REGULARLY SCHEDULED SWEEPING/GOOD HOUSEKEEPING. STABILIZED CONSTRUCTION ENTRANCES TO BE PROPERLY MAINTAINED AND IN GOOD WORKING ORDER AT ALL TIMES; THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE STONE AS CONDITIONS DEMAND.
44. IF THE ACTION OF VEHICLES TRAVELING OVER THE STABILIZED CONSTRUCTION ENTRANCE DOES NOT SUFFICIENTLY REMOVE MOST OF THE DIRT AND MUD, THEN THE TIRES MUST BE WASHED BEFORE VEHICLES ENTER A PUBLIC ROAD. PROVISIONS MUST BE MADE TO INTERCEPT THE WATER AND TRAP THE SEDIMENT BEFORE IT IS CARRIED OFF THE SITE.
45. ALL MATERIALS SPILLED, DROPPED, WASHED, OR TRACKED ONTO THE ROADWAYS OR INTO THE STORM SEWERS MUST BE REMOVED IMMEDIATELY.
46. THE TEMPORARY PARKING AND STORAGE AREA SHALL BE KEPT IN GOOD CONDITION (SUITABLE FOR PARKING AND STORAGE). THIS MAY REQUIRE PERIODIC TOP DRESSING OF THE TEMPORARY PARKING AS CONDITIONS DEMAND.
47. CONTRACTORS AND SUBCONTRACTORS WILL BE RESPONSIBLE FOR REMOVING ALL SEDIMENT FROM THE SITE, INCLUDING DETENTION PONDS, AND STORM SEWER SYSTEMS. SEDIMENT DEPOSITION DURING SITE STABILIZATION MUST ALSO BE REMOVED.
48. ALL RIP RAP MUST BE PLACED OVER GEOTEXTILE FILTER.
49. STONE CONSTRUCTION ENTRANCE TO BE MAINTAINED BY CONTRACTOR UNTIL SITE HAS BEEN PAVED OR IS NO LONGER REQUIRED.
50. ALL CATCH BASIN GRATES ARE TO BE PROTECTED WITH INLET BAGS AFTER THEY ARE INSTALLED. THEY SHOULD BE ROUTINELY CLEANED AND MAINTAINED.
51. ROCK CHECK DAMS SHOULD BE ROUTINELY CLEANED ONCE SEDIMENT BEGINS TO APPEAR ON THE UPSTREAM SIDE OF THE ROCK.
52. ON-SITE AND OFF-SITE STOCKPILE AND BORROW AREAS SHALL BE PROTECTED FROM EROSION AND SEDIMENTATION BY THE USE OF BEST MANAGEMENT PRACTICES. THESE AREAS MUST BE SHOWN IN THE SITE MAP AND PERMITTED IN ACCORDANCE WITH GENERAL PERMIT REQUIREMENTS.
53. CONTRACTOR TO DELINEATE STOCK PILE LOCATION ON PLANS TO BE KEPT ON SITE DURING CONSTRUCTION.
54. CONSTRUCT STOCKPILES IN ACCESSIBLE LOCATIONS THAT DO NOT INTERFERE WITH NATURAL DRAINAGE. INSTALL APPROPRIATE SEDIMENT CONTROLS TO TRAP SEDIMENT SUCH AS SILT FENCE IMMEDIATELY ADJACENT TO THE STOCKPILE OR SEDIMENT TRAPS OR BASINS DOWNSTREAM OF STOCKPILE. STOCKPILE SIDE SLOPES SHALL NOT EXCEED A RATIO OF 2:1.
55. IF STOCKPILE IS STORED FOR MORE THAN 14 DAYS, IT SHOULD BE TEMPORARY SEEDED, OR COVERED WITH A TARP.
56. ALL CONSTRUCTION SHALL BE STABILIZED AT THE END OF EACH DAY; THIS INCLUDES BACKFILLING OF TRENCHES FOR UTILITY CONSTRUCTION AND PLACEMENT OF GRAVEL OR ASPHALT FOR ROAD CONSTRUCTION.
57. THE LAST LAYER OF SOIL, INCLUDING TOP SOIL SHOULD BE COMPACTED TO 80% - 85% OF THE MAXIMUM STANDARD PROCTOR DENSITY, IN AREAS OUTSIDE THE PARKING LOT THAT WILL RECEIVE VEGETATION. THIS IS PARTICULARLY IMPORTANT IN CUT SLOPE AND EMBANKMENT AREAS. IN PAVEMENT AND ISLAND AREAS, IT IS RECOMMENDED THAT THE SOIL BE COMPACTED TO 98% AND 98% OF THE MAXIMUM STANDARD PROCTOR DENSITY RESPECTIVELY; THE LAST COMPACTED LAYER MAY BE SCARIFIED TO IMPROVE THE SOIL GROWTH CHARACTERISTICS.
58. THE POST CONSTRUCTION WATER QUALITY REQUIREMENTS OF OHIO EPA PERMIT OHC000005 SHALL BE MET BY THE EXISTING WATER QUALITY BASIN.
59. ALL WATER FROM DEWATERING ACTIVITIES SHALL BE PROCESSED THROUGH A BMP PRIOR TO LEAVING THE SITE.

## GOOD HOUSEKEEPING

THE FOLLOWING GOOD HOUSEKEEPING PRACTICES WILL BE FOLLOWED ONSITE DURING THE CONSTRUCTION PROJECT:

AN EFFORT WILL BE MADE TO STORE ONLY ENOUGH PRODUCT REQUIRED TO DO THE JOB.

ALL MATERIALS STORED ONSITE WILL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR APPROPRIATE CONTAINERS, AND IF POSSIBLE, UNDER A ROOF OR OTHER ENCLOSURE.

PRODUCTS WILL BE KEPT IN THEIR ORIGINAL CONTAINERS WITH THE ORIGINAL MANUFACTURER'S LABEL.

SUBSTANCES WILL NOT BE MIXED WITH ONE ANOTHER UNLESS RECOMMENDED BY THE MANUFACTURER.

WHENEVER POSSIBLE, ALL OF A PRODUCT WILL BE USED UP BEFORE DISPOSING OF THE CONTAINER.

MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL WILL BE FOLLOWED.

THE SITE SUPERINTENDENT WILL INSPECT DAILY TO ENSURE PROPER USE AND DISPOSAL OF MATERIALS ONSITE.

## STRUCTURAL BMP LONG-TERM MAINTENANCE (GENERAL NOTES)

1. THE OWNER AGREES TO MAINTAIN IN PERPETUITY THE STORM WATER MANAGEMENT PRACTICES IN ACCORDANCE WITH APPROVED MAINTENANCE PLANS LISTED IN #2 BELOW AND IN A MANNER THAT WILL PERMIT THE STORM WATER MANAGEMENT PRACTICES TO PERFORM THE PURPOSES FOR WHICH THEY WERE DESIGNED AND CONSTRUCTED. THIS INCLUDES ALL PIPES, STRUCTURES, IMPROVEMENTS, AND VEGETATION PROVIDED TO CONTROL THE QUANTITY OF THE STORM WATER.
2. NO ALTERATIONS TO THE WATER QUALITY/DETENTION BASINS WITHOUT APPROVAL FROM THE JURISDICTIONAL REVIEWING AUTHORITY.
3. THE OWNER SHALL PROVIDE A MAINTENANCE PLAN FOR EACH STORM WATER MANAGEMENT PRACTICE. THE MAINTENANCE PLANS SHALL INCLUDE A SCHEDULE FOR MONTHLY AND ANNUAL MAINTENANCE. THE OWNER SHALL MAINTAIN, UPDATE AND STORE THE MAINTENANCE RECORDS FOR THE STORM WATER MANAGEMENT PRACTICES. THE SPECIFIC MAINTENANCE PLANS FOR EACH STORM WATER MANAGEMENT PRACTICE ARE AS FOLLOWS.

### MAINTENANCE TO BE COMPLETED EVERY 3 MONTHS

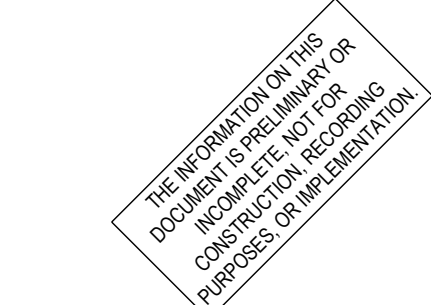
- REMOVE TRASH AND/OR ACCUMULATED SEDIMENT FROM POND AREA.
- REMOVE OBSTRUCTIONS IN ORIFICES AND/OR OUTLETS WITHIN POND.
- REMOVE DEBRIS AND SEDIMENT FROM INLET PIPES, OUTLET PIPES AND STRUCTURES.

### MAINTENANCE TO BE COMPLETED YEARLY

- REPAIR EROSION TO OUTFALL OR SPILLWAY OF THE POND
- REPAIR AND/OR REPLACE DAMAGED STRUCTURES, SUCH AS CATCH BASINS, RISERS, PIPES AND HEADWALLS.
- MOW EMBANKMENTS AND REMOVE WOODY VEGETATION ON EMBANKMENTS

### YEARLY REPORT REQUIREMENTS

SKETCH SHOWING GENERAL AREA OF BMP'S, SUMMARY OF ALL MAINTENANCE ACTIVITIES SINCE LAST ANNUAL INSPECTION. PHOTOS AND DESCRIPTION OF ALL BMP DESIGN FEATURES, INDICATION OF ANY DEVIATION FROM APPROVED PLAN FOR BMP. IDENTIFICATION OF IMPROVEMENTS NECESSARY TO RESTORE ORIGINAL DESIGN FUNCTION, MAINTENANCE ACTIVITIES REQUIRED IN THE NEXT 6 MONTHS, IDENTIFICATION AND CONTACT INFORMATION OF ENTITY RESPONSIBLE FOR BMP, AND IDENTIFICATION AND CONTACT INFORMATION FOR ENGINEER PREPARING THE REPORT INCLUDING SIGNATURE AND SEAL.



HENDERSON DEVELOPMENT

SHAKER MEADOWS

PLEASANT HILL BLVD  
FRANKLIN, OH

Revisions / Submissions		
ID	Description	Date
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Project Number:	764699	
Scale:	AS SHOWN	
Drawn By:	MMH	
Checked By:	JEE	
Date:	NOVEMBER 2025	
Issue:	FINAL DEVELOPMENT PLAN	

Drawing Title:

**SEDIMENT AND  
EROSION CONTROL  
NOTES**