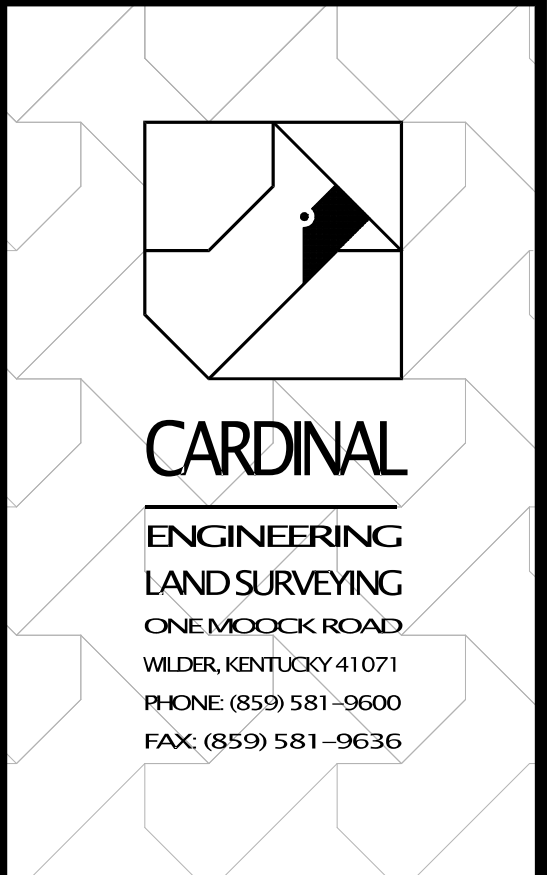


WESTFALL PRESERVE PHASES 1-5

IMPROVEMENT PLANS SECTION 11, TOWN 2, RANGE 2 WEST CHESTER TOWNSHIP, BUTLER COUNTY, OHIO

REVISIONS DATE	#	ITEM
03-24-20	1	REVISED PER BCWS
04-13-20	2	REVISED GRADING PER CLIENT
04-14-20	3	REVISED PER BCEO
04-16-20	4	REVISED PER BCEO
04-28-20	5	REVISED PER BCEO
05-07-20	6	REVISED PER CLIENT



WEBSITE: <http://www.cardinalengineering.net>

PROJECT: WESTFALL PRESERVE PHASES 1-5
 IMPROVEMENT PLANS
 CLIENT: GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018

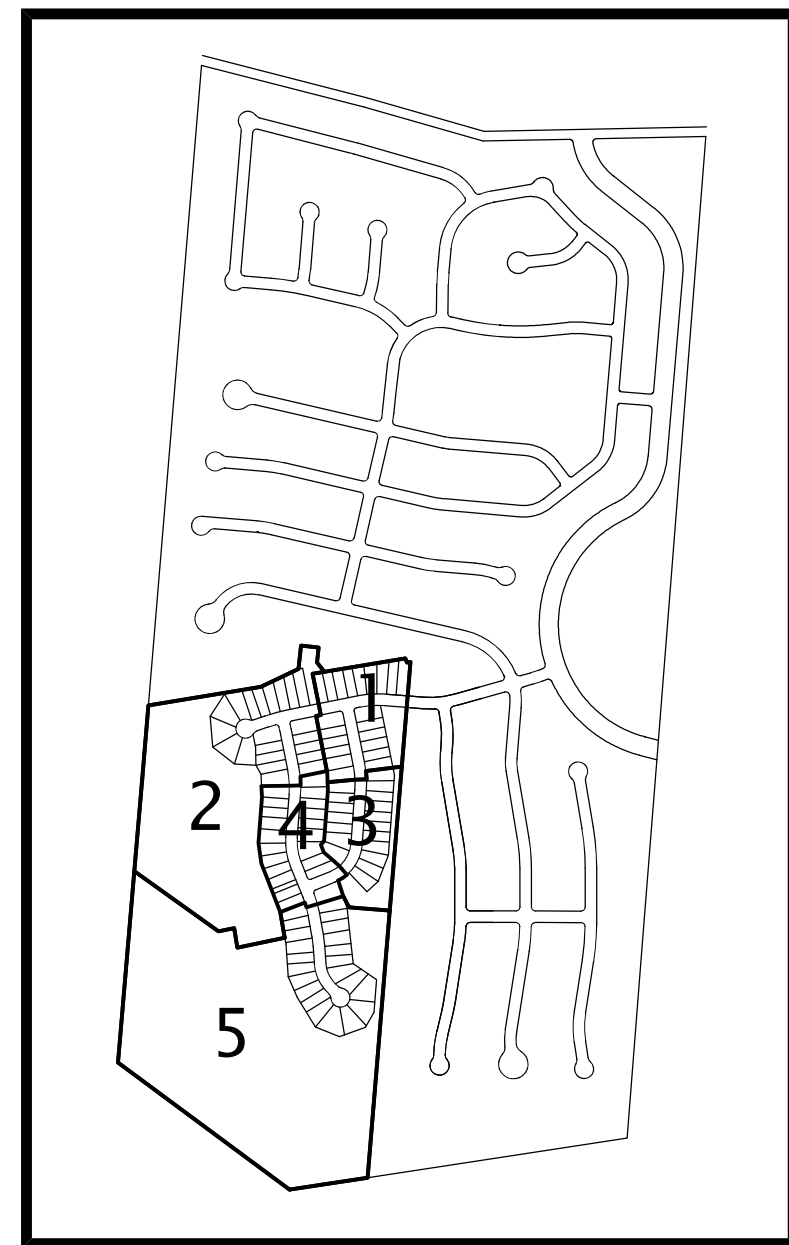
JOB LOG DATE	ITEM
03-05-20	BUTLER COUNTY SUBMITAL

DRAWN BY: TRC
 CHECKED BY: JJK
 PROJECT MANAGER: JJK

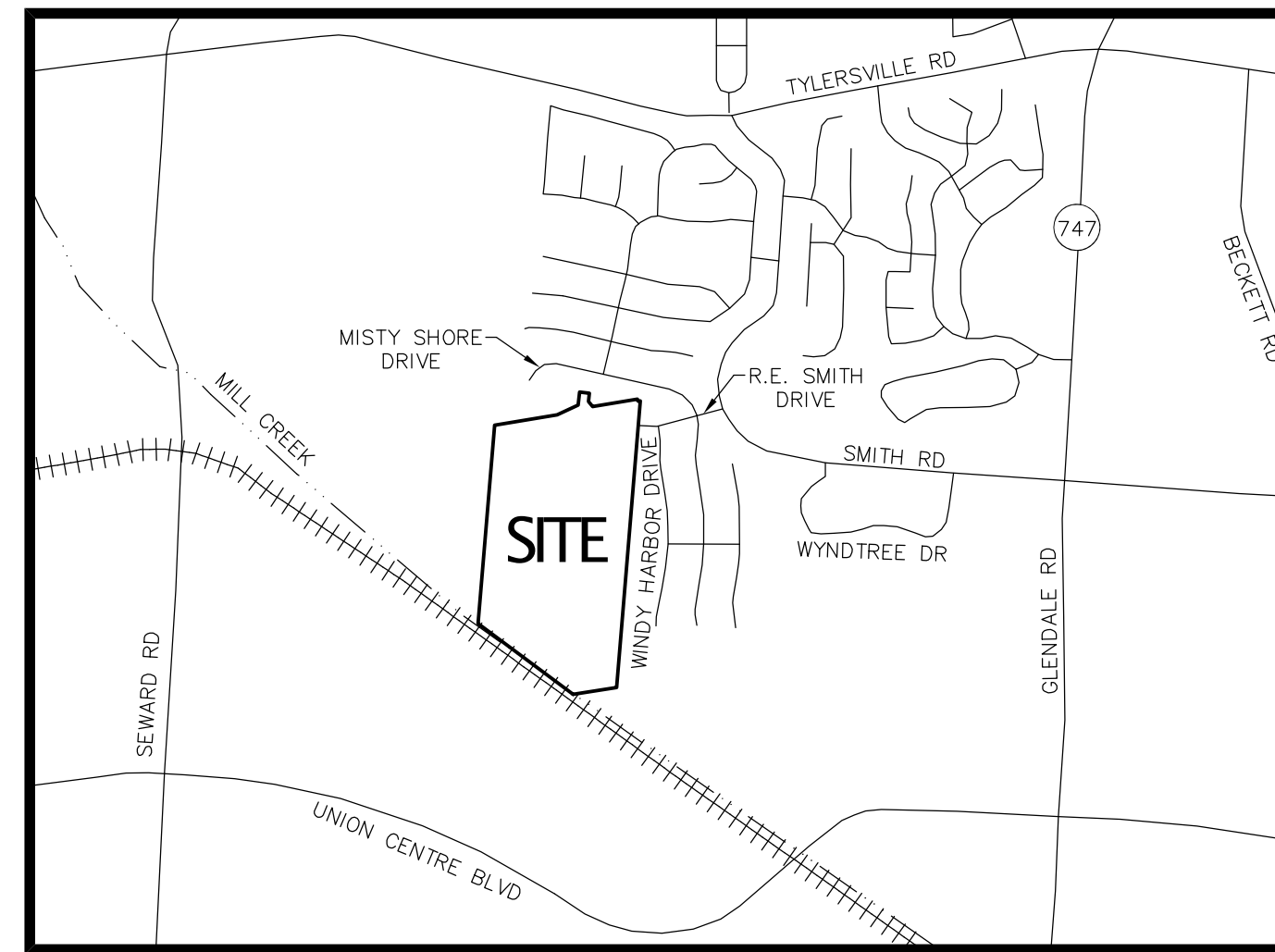
PROJECT NO. 19-096
 SCALE: AS NOTED
 DATE: 11-01-19

TITLE SHEET
 SHEET: C-TS-1.0

LEGEND	
—O—	OVERHEAD ELECTRIC
—U—	UNDERGROUND ELECTRIC
□	ELECTRIC BOX
⊙	ELECTRIC MANHOLE
⊙	ANCHOR POLE
⊙	LIGHT POLE
⊙	UTILITY POLE
⊙	GROUND LIGHT
—O—	OVERHEAD TELEPHONE
—U—	UNDERGROUND TELEPHONE
□	TELEPHONE BOX
⊙	TELEPHONE MANHOLE
⊙	SIGN
—W—	MAIL BOX
—W—	WATER LINE
—W—	WATER VALVE
—W—	FIRE HYDRANT
—W—	WATER METER
—W—	WATER VALVE BOX
—W—	WATER VALVE MANHOLE
—W—	POST INDICATOR VALVE
—G—	GAS LINE
—G—	GAS METER
—G—	GAS VALVE
—G—	GAS VALVE BOX
—G—	UTILITY MANHOLE
—S—	SEWER MANHOLE
—S—	STORM MANHOLE
—D—	DITCH OR CREEK
—X—	GUARDRAIL
—X—	FENCE LINE



SCALE: 1" = 1000'



VICINITY MAP
N.T.S.

- C-TS-1.0 TITLE SHEET
- C-SP-1.0 SPECIFICATIONS
- C-EX-1.0 EXISTING CONDITION PLAN
- C-DT-1.0 PAVEMENT AND WEIR DETAILS
- C-DT-1.1 EROSION & SEDIMENT CONTROL DETAILS
- C-DT-1.2 STORM SEWER DETAILS
- C-DT-1.3 SANITARY SEWER SPECIFICATIONS & DETAILS
- C-DT-1.4 WATERLINE DETAILS
- C-UT-1.0 UTILITY PLAN
- C-UT-1.1 UTILITY PLAN
- C-GR-1.0 GRADING PLAN
- C-GR-1.1 GRADING PLAN
- C-GR-1.2 GRADING PLAN FLOODPLAIN MITIGATION PRE
- C-GR-1.3 GRADING PLAN FLOODPLAIN MITIGATION POST
- C-GR-2.0 SWPP PLAN
- C-GR-2.1 SWPP PLAN
- C-LO-1.0 LAYOUT PLAN
- C-LO-1.1 LAYOUT PLAN
- C-LO-1.2 LAYOUT PLAN
- C-RD-1.0 INTERSECTION DETAILS
- C-RD-2.0 PROFILES
- C-RD-2.1 PROFILES

CONTACTS

BUTLER COUNTY PLANNING DEPARTMENT
 130 HIGH STREET
 HAMILTON, OHIO 45011
 (513) 887-3413

BUTLER COUNTY ENGINEER'S OFFICE
 1921 FAIRGROVE AVENUE
 HAMILTON, OHIO 45011-1965
 MANAGER: ERIC POTTENGER (513) 785-4121
 INSPECTOR: MATT HOMAN (513) 571-2548
 ESC INSPECTOR: ADRIENNE RICE (513) 571-7775

WATER & SEWER:
BUTLER COUNTY WATER & SEWER DEPARTMENT
 130 HIGH STREET
 HAMILTON, OHIO 45011
 (513) 887-3066

ELECTRIC:
DUKE ENERGY CUSTOMER PROJECTS
 5445 AUDRO DRIVE
 CINCINNATI, OHIO 45247
 STEVE GORMAN
 (513) 287-4794

GAS:
DUKE ENERGY CUSTOMER PROJECTS
 5445 AUDRO DRIVE
 CINCINNATI, OHIO 45247
 ROBBIE STUMPF
 (513) 287-1460

TELEPHONE:
CINCINNATI BELL TELEPHONE COMPANY
 201 EAST FOURTH STREET
 103-1175
 CINCINNATI, OHIO 45202
 ALLISON THOMAS
 (513) 565-7073

CABLE:
SPECTRUM
 11254 CORNELL PARK DRIVE, SUITE 400
 CINCINNATI OHIO 45242
 VANESSA MCINTOSH
 (513) 386-6332

OTHER UTILITIES:
UNITED UTILITIES PROTECTION
 (800) 362-2764

OWNER:
GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018
 (859) 341-4709

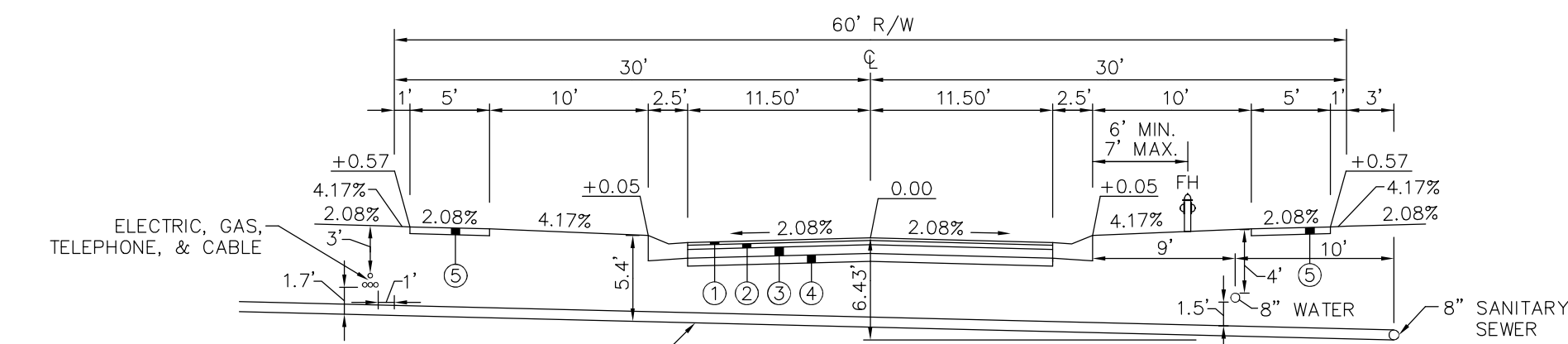
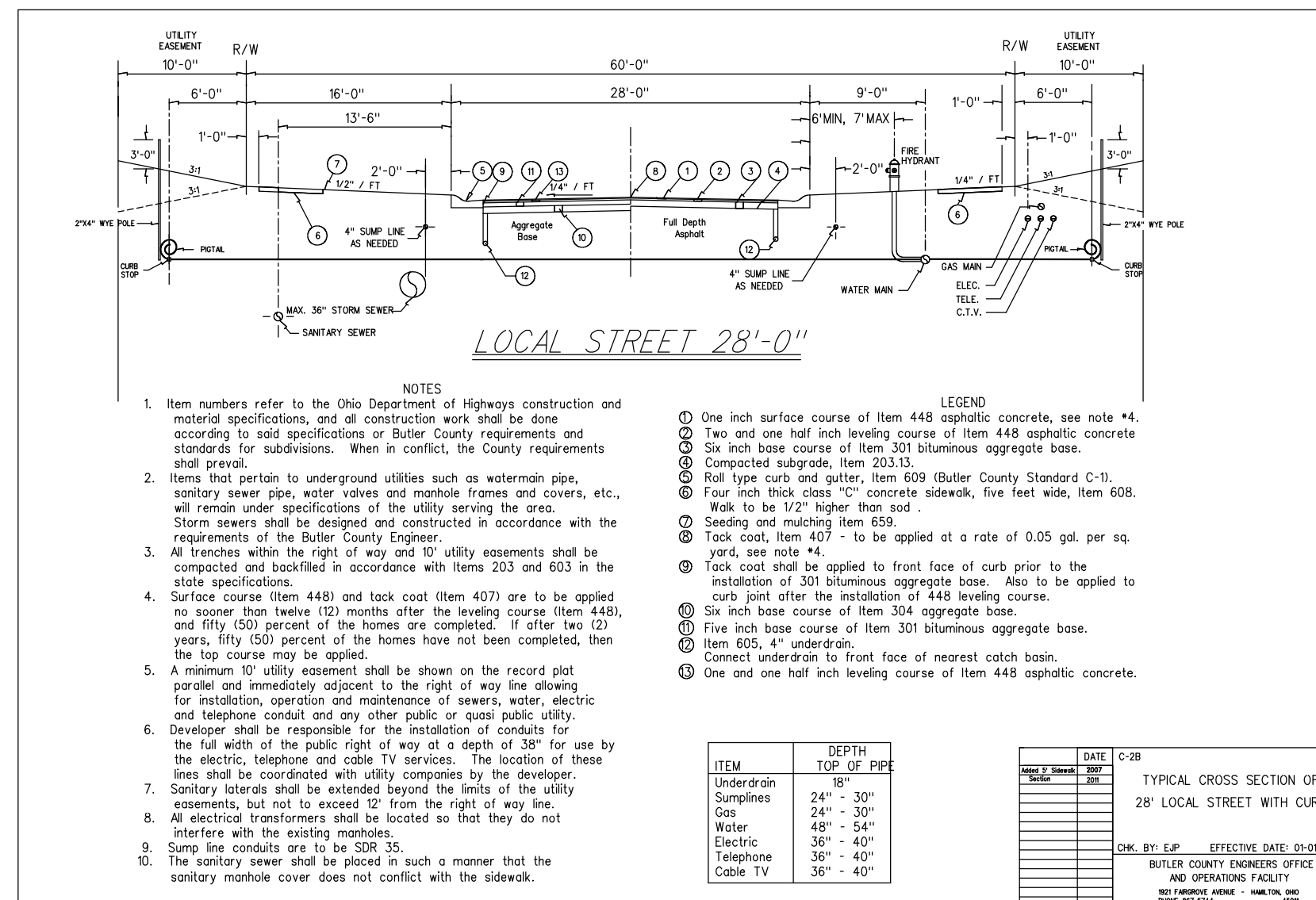
DEVELOPER:
GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018
 DAVE STROUP
 (859) 344-3131

GENERAL NOTES:

- ITEM NUMBERS REFER TO THE OHIO DEPARTMENT OF TRANSPORTATION CONSTRUCTION AND MATERIAL SPECIFICATIONS, AND ALL CONSTRUCTION WORK SHALL BE DONE ACCORDING TO SAID SPECIFICATIONS OF BUTLER COUNTY REQUIREMENTS AND STANDARDS FOR SUBDIVISIONS. WHEN IN CONFLICT, THE COUNTY REQUIREMENTS SHALL PREVAIL.
- ITEMS THAT PERTAIN TO UNDERGROUND UTILITIES SUCH AS WATER MAIN PIPE, SANITARY SEWER PIPE, WATER VALVES AND MANHOLE FRAMES AND COVERS, ETC., WILL REMAIN UNDER SPECIFICATIONS OF THE UTILITY SERVING THE AREA. STORM SEWERS SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE BUTLER COUNTY ENGINEER.
- ALL TRENCHES WITHIN THE RIGHT-OF-WAY AND 10' UTILITY EASEMENT SHALL BE COMPACTED AND BACKFILLED IN ACCORDANCE WITH ITEM 203 AND 603 IN THE STATE SPECIFICATIONS.
- SURFACE COURSE (ITEM 448) AND TACK COAT (ITEM 407) ARE TO BE APPLIED NO SOONER THAN NINE (9) MONTHS AFTER THE LEVELING COURSE, (ITEM 448), AND FIFTY (50) PERCENT OF THE HOMES ARE COMPLETED. IF AFTER TWO (2) YEARS FIFTY (50) PERCENT OF THE HOMES HAVE NOT BEEN COMPLETED, THEN THE TOP COURSE MAY BE APPLIED.
- A MINIMUM 10' UTILITY EASEMENT SHALL BE SHOWN ON THE RECORD PLAT PARALLEL AND IMMEDIATELY ADJACENT TO THE RIGHT-OF-WAY LINE ALLOWING FOR INSTALLATION, OPERATION AND MAINTENANCE OF SEWERS, WATER, ELECTRIC AND TELEPHONE CONDUITS AND ANY OTHER PUBLIC OR QUASI PUBLIC UTILITY.
- DEVELOPER SHALL BE RESPONSIBLE FOR THE INSTALLATION OF CONDUITS FOR THE FULL WIDTH OF THE PUBLIC RIGHT-OF-WAY AT A DEPTH OF 36" FOR USE BY THE ELECTRIC, TELEPHONE AND CABLE SERVICES. THE LOCATION OF THE LINES SHALL BE COORDINATED WITH UTILITY COMPANIES BY THE DEVELOPER.
- ALL ELECTRICAL TRANSFORMERS SHALL BE LOCATED SO THAT THEY DO NOT INTERFERE WITH THE EXISTING MANHOLES OR WATER MAIN APPURTENANCES.
- SUMP LINE CONDUITS ARE TO BE SDR 35, ARMCO 2000, OR EQUIVALENT.
- MINIMUM TEN (10) FOOT HORIZONTAL AND EIGHTEEN (18") INCH VERTICAL SEPARATION BETWEEN WATER MAIN AND SANITARY AND/OR STORM SEWER.
- ALL CATCH BASINS AND MANHOLES WITH A DEPTH GREATER THAN FOUR (4) FEET SHALL BE PROVIDED WITH STEPS.
- ALL DISTURBED AREAS CREATED DURING CONSTRUCTION ARE TO BE SEEDED AS SOON AS POSSIBLE TO LIMIT THE EROSION AND STABILIZE SOIL.
- BUTLER COUNTY WILL NOT BE RESPONSIBLE FOR ANY PAVEMENT OR STORM SEWER REPAIRS RESULTING FROM WATER MAIN AND SANITARY SEWER REPAIRS. BUTLER COUNTY ALSO WILL NOT BE RESPONSIBLE FOR ADJUSTING MANHOLES, VALVES, FIRE HYDRANTS, METER PITS, ETC. AS A RESULT OF GRADE CHANGES
- CONTACT BUTLER COUNTY ENGINEER'S OFFICE 24 HOURS BEFORE ANY CONSTRUCTION BEGINS AT 867-5746.

ZONE INFORMATION	
MINIMUM LOT AREA:	7,000 SQUARE FEET
MINIMUM LOT WIDTH:	FIFTY (50) FEET
MINIMUM FRONT YARD DEPTH:	TWENTY-FIVE (25) FEET
MINIMUM SIDE YARD WIDTH:	FIVE (5) FEET, TEN (10) FEET TOTAL
MINIMUM REAR YARD DEPTH:	TWENTY-FIVE (25) FEET
EXISTING ZONING DISTRICT:	R-PUD

SUMMARY	
PHASE 1	
LOTS	4,0607 Ac.
R/W AREA TO BE DEDICATED	1,1464 Ac.
OPEN SPACE AREA	0,6557 Ac.
TOTAL AREA:	5,8628 Ac.
PHASE 2	
LOTS	4,6773 Ac.
R/W AREA TO BE DEDICATED	1,1296 Ac.
OPEN SPACE AREA	15,3885 Ac.
TOTAL AREA:	21,1954 Ac.
PHASE 3	
LOTS	3,3029 Ac.
R/W AREA TO BE DEDICATED	0,6820 Ac.
OPEN SPACE AREA	1,3329 Ac.
TOTAL AREA:	5,3178 Ac.
PHASE 4	
LOTS	3,8062 Ac.
R/W AREA TO BE DEDICATED	1,1491 Ac.
OPEN SPACE AREA	0,2669 Ac.
TOTAL AREA:	5,2222 Ac.
PHASE 5	
LOTS	4,6712 Ac.
R/W AREA TO BE DEDICATED	0,8288 Ac.
OPEN SPACE AREA	31,7157 Ac.
TOTAL AREA:	37,2157 Ac.



- ① ITEM 448 SURFACE COURSE
- ② ITEM 448 LEVELING COURSE
- ③ ITEM 301 BITUMINOUS AGGREGATE BASE
- ④ AGGREGATE BASE
- ⑤ 5' MIN. SIDEWALK

TYPICAL SECTION
N.T.S.



CROSS NOTCH IN EXISTING CURB ON SOUTH SIDE OF R.E. SMITH DRIVE, APPROXIMATELY 30' EAST OF PROPERTY BOUNDARY LINE. ELEVATION = 603.81

NOTE: UNDERGROUND UTILITIES ARE SHOWN BASED ON ABOVE GROUND OBSERVATIONS AND CONSTRUCTION PLANS PROVIDED TO CARDINAL ENGINEERING AND MAY NOT BE COMPLETE OR ACCURATE.

CONTRACTOR TO VERIFY LOCATION AND USE CAUTION WHEN EXCAVATING IN AREAS OF SUSPECTED BURIED UTILITIES.

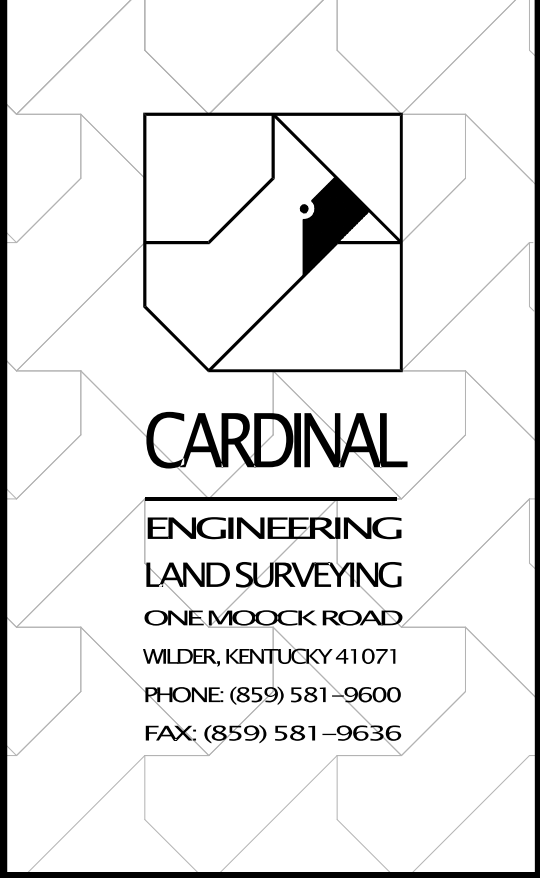
1. WATER MAIN
 - A. Water main materials, valves, fire hydrants, fittings and appurtenances and installation shall be per Butler County specifications, using class 53 Ductile Iron as per AWWA C-151 with minimum 4' cover.
 - B. All water main valves shall have a minimum depth of 2.5' and a maximum depth of 4' from proposed grade to the top of the Valve Operating Nut.
 - C. Minimum 10' horizontal, 18" vertical separation between water main and sanitary and/or storm sewer. D. If meter pits cannot be initially installed at the location shown on the typical section, a curb stop can be set up at this location.
2. SANITARY SEWER
 - A. Sanitary sewer materials and installation shall be per Butler County water and sewer (BCWS) specifications, using Section 3110 for PVC SDR-35 & 26 pipe; Section 3140 for ABS or PVC composite pipe; Section 3410 for manholes.
 - B. Crossings Whenever a sanitary sewer and water main must cross, the sewer shall be at such an elevation that the crown of the sewer is at least 18 inches measured between the outside pipe walls, below the bottom of the water main. If it is absolutely impossible to maintain the 18 inch vertical separation, the water main shall be relocated or the sewer shall be constructed as follows:
 1. A sewer passing over or under the water main shall be encased or constructed of materials that are equivalent to water main standards of construction for a minimum distance of 10 feet on each side of the water main.
 2. The sewer crossing shall be constructed so that the sewer joints will be equidistant and as far as possible from the water main joints.
 3. Where a water main passes under a sewer, adequate structural support shall be provided for the sewer to prevent damage to the water main.
 - C. Sanitary laterals shall be extended to at least ten (10) feet beyond the Property/Right-of-Way line or to the edge of the easement, whichever is greater.
 - D. Sanitary sewer laterals, which shall include all pipe and appurtenances from the building to the public sewer main, and the connection to the public sewer main shall be considered private and the responsibility of the property owner to maintain. The connection to the sewer main would be any piping that extends out from the main barrel of the sewer main.
 - E. All buildings to be served by the public sewer system shall be constructed so as to provide a minimum of four feet (4') of vertical separation between the public sanitary sewer, at the point of connection, and the lowest building level served by gravity sewer connection. In addition, said building level shall be at least one (1) foot above the lowest point of free-overflow (non-seated manhole cover) upstream of any treatment facility of wastewater pumping facility that receives the discharge from said building. Said minimum service levels shall be recorded on the "Record Drawing" plans for the development, which will be kept on file in the office of the Butler County Water & Sewer Department.
3. Butler County Water & Sewer Department does not accept any responsibility for the relocation, repair, or replacement of any other utility installed within five (5) feet of the center line of any sanitary sewer main or water main.

4. Private driveways, parking lots and other paved areas, earthen berms or structures should not be constructed over private water or sewer service lines within the public road right of way or within the easement areas for public utilities. Should this occur, the property owner shall be held responsible for the protection and repair and for providing access to any curb stops, meter pits, manholes, clean-outs, etc. installed in conjunction with these private service lines and for any damage or restoration of the paved surfaces or structures that may result from the future operation, maintenance, repair or replacement of said service lines and appurtenances.
5. STORM SEWER STORM SEWER A. Storm sewer pipe shall meet the requirements as follows:
 1. PVC pipe as per ODOT Specification 707.42 for all diameters
 2. HDPE pipe as per ODOT Specification 707.33
 3. Corrugated steel pipe as per ODOT Specification 707.01 or 707.02 for all diameters
 4. Reinforced concrete pipe as per ODOT Construction and Material Specification 706.02 for all diameters. Class shall be specified at the contractor's request. (Cincinnati Concrete Pipe, Duracrete or equal).
 5. Bituminous coated corrugated steel pipe as per ODOT Specification 707.05 or 707.07

Installation shall meet Butler County Specifications. All joints shall be soil seal joints unless specifically noted on the specifically noted on the plans.
- B. Deflection Testing for Storm Sewers and Culverts 15% of all storm sewers shall be tested for deflection within thirty days after they are complete. Butler County Engineer or his designated representative will determine what 15% shall be tested. If any storm sewer in the original 15% is found out of compliance, deflection tests will be required on 100% of the remaining storm sewer. A vertical ring deflection greater than 5% will not be allowed. This deflection is defined as 5% reduction in the vertical base or average inside diameter. The method of testing shall be subject to the approval of the engineer. If rigid balls or mandrels are used to test pipe deflection, no mechanical pulling devices shall be used. The deflection test may be conducted with a nine prong mandrel, a ball or a cylinder or another manner acceptable to the Butler County Engineer or his designated representative. The testing will be accomplished from manhole to manhole or catchbasin to catchbasin, following the complete flushing of the line. The contractor shall furnish all equipment required to complete the deflection testing. The deflection test shall be witnessed by the County Engineer or his designated representative. Any section of pipe that fails to meet the aforementioned requirements shall be rerounded by a procedure acceptable to the County or be excavated and either be relayed or replaced, and retested until the requirements are met.
- C. All catch basins and manholes with a depth greater than 4' shall be provided with steps. Steps shall meet the steps. Steps shall meet the requirements of ODOT STD. 604 and shall conform to the details as shown on Butler County Standard Drawing MH-1A.
- D. Headwall: HW-4A to be used with Corrugated Metal pipe or HW-4B to be used with Concrete Pipe.
6. Roof drains, foundation drains, and other clean water connections to the sanitary sewer system are prohibited.
7. Any detention basin on site should be constructed prior to the clearing of topsoil and grading of the site. All trees and vegetation shall be removed from all proposed detention basins regardless of maintenance responsibility.
8. SEDIMENTATION CONTROL SEDIMENTATION CONTROL The project has been designed to control erosion and prevent damage to other property. All stripping, earthwork, and regrading shall be performed to minimize erosion. Natural vegetation shall be retained wherever possible. The proposed plan will allow almost all eroded material to be retained on site. All areas disturbed by the construction of the roadways, ditches and sediment basins shall be seeded and strawed as soon as possible to limit the erosion and stabilize the soil. Payment will be by the number of square yards disturbed as per the grading plan. For additional sedimentation control details, see grading plan.
9. Butler County will not be responsible for any pavement or storm sewer repairs resulting from water main and sanitary sewer repairs. Butler County also will not be responsible for adjusting manholes, valves, fire hydrants, meter pits, etc. as a result of grade changes. The grantor shall be responsible for proper adjustment of manholes, valves, fire hydrants, meter pits, etc. to the satisfaction of Butler County, due to grade changes, paving, repairing, etc. initiated by the grantor.
10. A typical five (5) foot drainage easement is to be provided on both sides of every lot line.
11. Any roadway settlement greater than one inch will be required to be repaired with Item 613 Low Strength Mortar Backfill (Type 1).
12. Provide the Butler County Engineer's Office with a forty-eight (48) hour notice prior to the start of any construction, including sanitary installation.
Matt Homan (513) 785-2569 (office) (513) 571-2548 (cell).
13. Contractors to accept all Quantities as correct prior to beginning construction.
14. Contractor shall include the cost of County inspection and extension fees in unit price bid.

REVISIONS

DATE	#	ITEM
03-24-20	1	REVISED PER BCWS
04-14-20	3	REVISED PER BCWO



WEBSITE: <http://www.cardinalengineering.net>

PROJECT: WESTFALL PRESERVE PHASES 1-5 IMPROVEMENT PLANS

CLIENT: GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

DRAWN BY: TRC
CHECKED BY: JGK
PROJECT MANAGER: JGK

SEAL

PROJECT NO. 19-096
SCALE AS NOTED
DATE 11-01-19

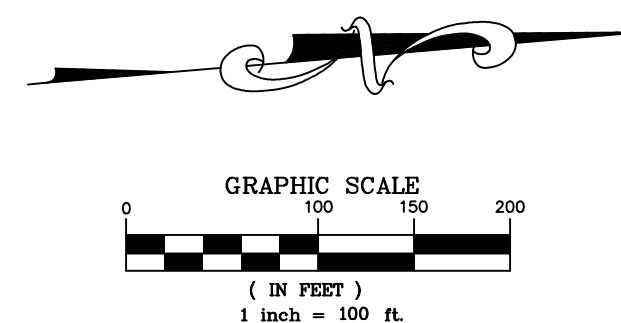
SPECIFICATIONS

SHEET C-SP-1.0

SURVEY NOTES

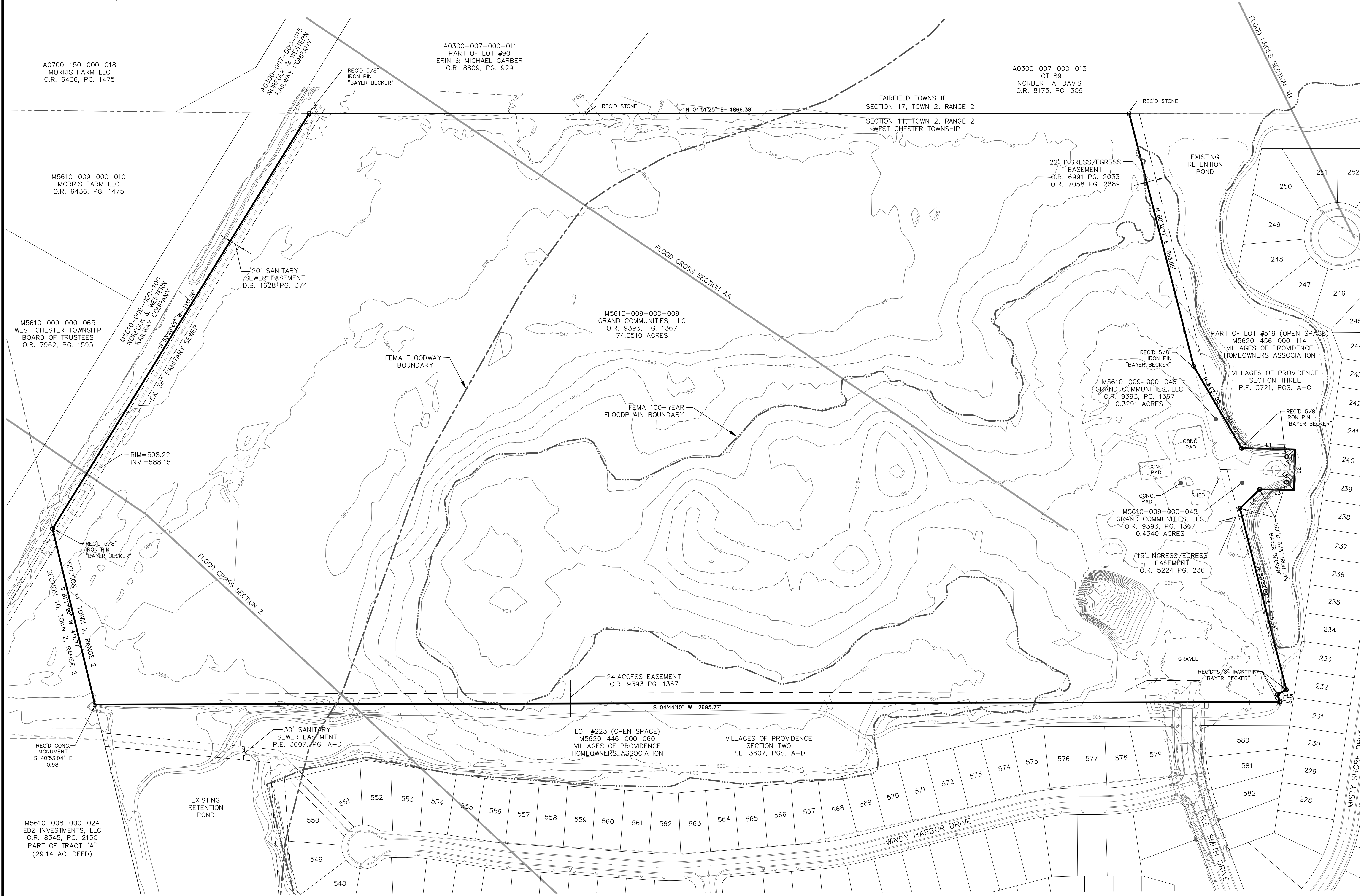
1. FLOOD ZONE INFORMATION TAKEN FROM FLOOD INSURANCE RATE MAPS FOR BUTLER COUNTY, OHIO MAP NUMBER 39017C0326F, MAP REVISED OCTOBER 19, 2018.
2. 100-YEAR FLOOD ELEVATION FOR THIS PROJECT WILL BE 602.5 BASED ON CROSS-SECTION AB
3. HORIZONTAL DATUM ESTABLISHED USING GPS AND IS BASED ON STATE PLANE COORDINATES, OHIO SOUTH SOUTH ZONE NAD 83
4. VERTICAL DATUM ESTABLISHED USING GPS AND IS BASED ON STATE PLANE COORDINATES, OHIO SOUTH SOUTH ZONE NAVD 88

SECTION 11, TOWN 2, RANGE 2 WEST CHESTER TOWNSHIP, BUTLER COUNTY, OHIO



LINE	BEARING	LENGTH
L1	N 08°11'46" E	121.99'
L2	S 83°39'57" E	92.50'
L3	S 08°37'06" W	77.99'
L4	S 38°57'29" E	62.84'
L5	S 23°39'57" E	22.69'
L6	N 80°39'11" E	18.03'
L7	S 36°07'13" E	23.00'
L8	S 51°04'16" W	25.00'

REVISIONS	DATE	#	ITEM



CARDINAL
ENGINEERING
LAND SURVEYING
ONE MOOCK ROAD
WILDER, KENTUCKY 41071
PHONE: (859) 581-9600
FAX: (859) 581-9636

WEBSITE: <http://www.cardinalengineering.net>

**WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS**

GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT:	TRC
DRAWN BY:	JGK
CHECKED BY:	JGK
PROJECT MANAGER:	JGK

PROJECT NO. 19-096
 SCALE 1" = 100'
 DATE 11-01-19

EXISTING CONDITION PLAN
 SHEET
C-EX-1.0

REVISIONS	DATE	#	ITEM
04-14-20		3	REVISED PER BCEO
04-16-20		6	REVISED PER BCEO

STRUCTURAL GENERAL NOTES

1. FOUNDATION SHALL BE CONSTRUCTED ON EXISTING GROUND SURFACE UNLESS OTHERWISE SHOWN ON PLANS.
2. FOUNDATION SHALL BE CONSTRUCTED WITH 12" MIN. CONCRETE ON 4" MIN. FINE AGGREGATE.
3. FOUNDATION SHALL BE CONSTRUCTED WITH 12" MIN. CONCRETE ON 4" MIN. FINE AGGREGATE.
4. FOUNDATION SHALL BE CONSTRUCTED WITH 12" MIN. CONCRETE ON 4" MIN. FINE AGGREGATE.
5. FOUNDATION SHALL BE CONSTRUCTED WITH 12" MIN. CONCRETE ON 4" MIN. FINE AGGREGATE.

CLIENT REVIEW NOT FOR CONSTRUCTION

CLIENT REVIEW NOT FOR CONSTRUCTION

PAVEMENT RESTORATION ROADWAY (TYP)

ITEMS:

1. EXISTING PAVEMENT.
2. 8" ITEM 301 BITUMINOUS AGGREGATE BASE (2"4" COURSES).
3. 2" ITEM 404 ASPHALT CONCRETE SURFACE COURSE.
4. ITEM 407 TACK COAT APPLIED AT 1 GAL/SY.
5. LOW STRENGTH MORTAR BACKFILL MATERIAL, CLASS LSM 50.
6. MIN. 6" GRANULAR PIPE BEDDING.
7. OPTION - GRANULAR BEDDING EXTENDED 12" ABOVE PIPE FOR THE FULL WIDTH OF THE TRENCH, ALSO SEE ITEM SPECIAL.

CLASS LSM - 50	
CEMENT	50 LBS.
FLY ASH	250 LBS.
SAND	290 LBS.
WATER (TARGET)	500 LBS.

ADJUSTMENTS OF THE PROPORTIONS MAY BE MADE BY THE ENGINEER PROVIDING THE TOTAL ABSOLUTE VOLUME OF THE MATERIALS IS MAINTAINED. THIS ITEM WILL BE INCLUDED IN THE STANDARD BIDDING INSULATION, THIS WILL NOT BE AN ADDITIONAL PAY ITEM, BUT REPLACEMENT FOR THE NORMAL BACKFILL.

REVISIONS	DATE

CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE, HARTSFLAT, KY 40351

CARDINAL
ENGINEERING
LAND SURVEYING
ONE MOOCK ROAD
WILDER, KENTUCKY 41071
PHONE: (859) 581-9600
FAX: (859) 581-9636

WEBSITE: <http://www.cardinalengineering.net>

WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS

PROJECT:
DRAWN BY: TRC
CHECKED BY: JJK
PROJECT MANAGER: JJK

PROJECT NO. 19-096
SCALE: AS NOTED
DATE: 11-01-19
PAVEMENT AND WER DETAILS
SHEET: C-DT-1.0

TYPICAL CROSS SECTION OF HIKER - BIKE PATH

ITEMS:

1. ITEM 301 - 4" ASPHALT CONCRETE BASE
2. ITEM 408 - 2" ASPHALT CONCRETE
3. ITEM 204 - SUBGRADE COMPACTION

CHK. BY: E.P. EFFECTIVE DATE: 01-01-2008
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351

CURB AND GUTTER STANDARD C-1

CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351

NOTES

GENERAL: This drawing shows the standard type of curb that should be used on most types of pavement. Typical section of project shows the type to be used, also the thickness of the edge of the pavement or the edge of the curb and gutter section.

JOINTS: One inch expansion joints shall extend up to top of the curb and shall be constructed in the curb and gutter section in such a manner that the joint seal will extend the full width of the gutter and into the curb face a sufficient distance to seal the joint to an elevation of at least two (2) inches above the flow line of the gutter section at expansion joints. All joints shall be constructed perpendicular to the edge of the curb and to the surface of the pavement. Transverse expansion joint material shall meet the requirements of 705.03. expansion material and joint sealer is not required when curb is adjacent to flexible type pavement.

PAVED GUTTERS TYPE 1-2

CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351

PERPENDICULAR CURB RAMPS

NOTES:

GENERAL: This drawing shows curb ramp types, details and placement examples for curb ramp construction, including the installation of detectable warnings.

PLACEMENT: Curb ramps shall be installed on all streets and alleys, regardless of whether they are paved or unpaved. Curb ramps shall be installed on all streets and alleys, regardless of whether they are paved or unpaved. Curb ramps shall be installed on all streets and alleys, regardless of whether they are paved or unpaved.

CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351

PARALLEL CURB RAMP DETAILS

NOTES:

The ramping slope of the ramp is preferred to be 3% or flatter, except on gravel surfaces where the steeper ramp slope is required for the construction of the ramp. The steeper ramp slope is not required for the construction of the ramp. The steeper ramp slope is not required for the construction of the ramp.

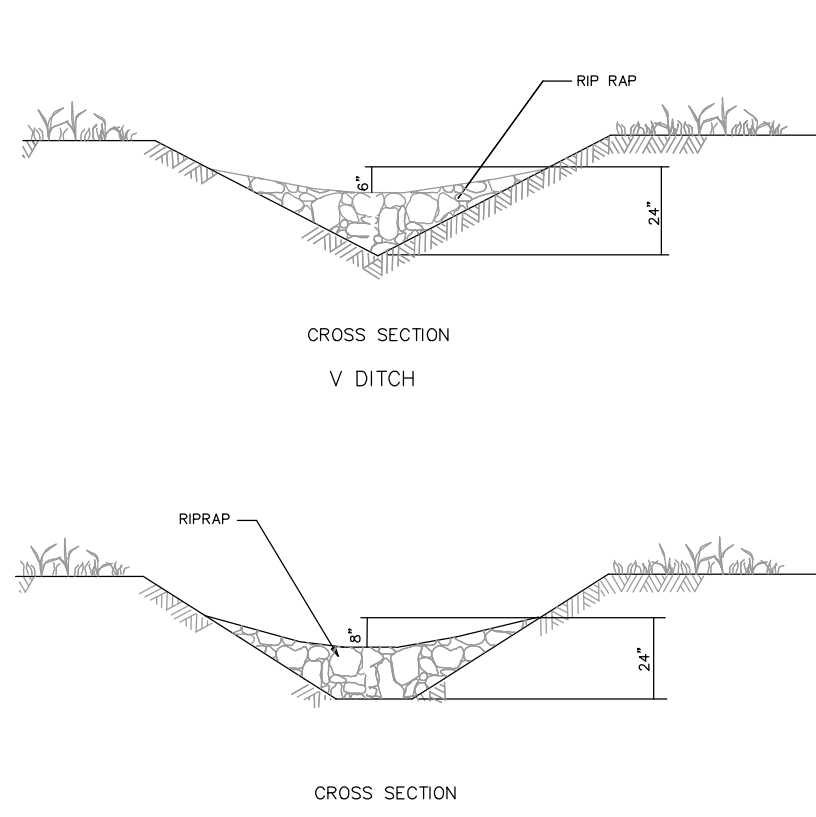
CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351

DETECTABLE WARNING ALIGNMENT

NOTES:

Detectable warnings are to be installed at any location where a transition in the surface of the pavement is required. Detectable warnings are to be installed at any location where a transition in the surface of the pavement is required.

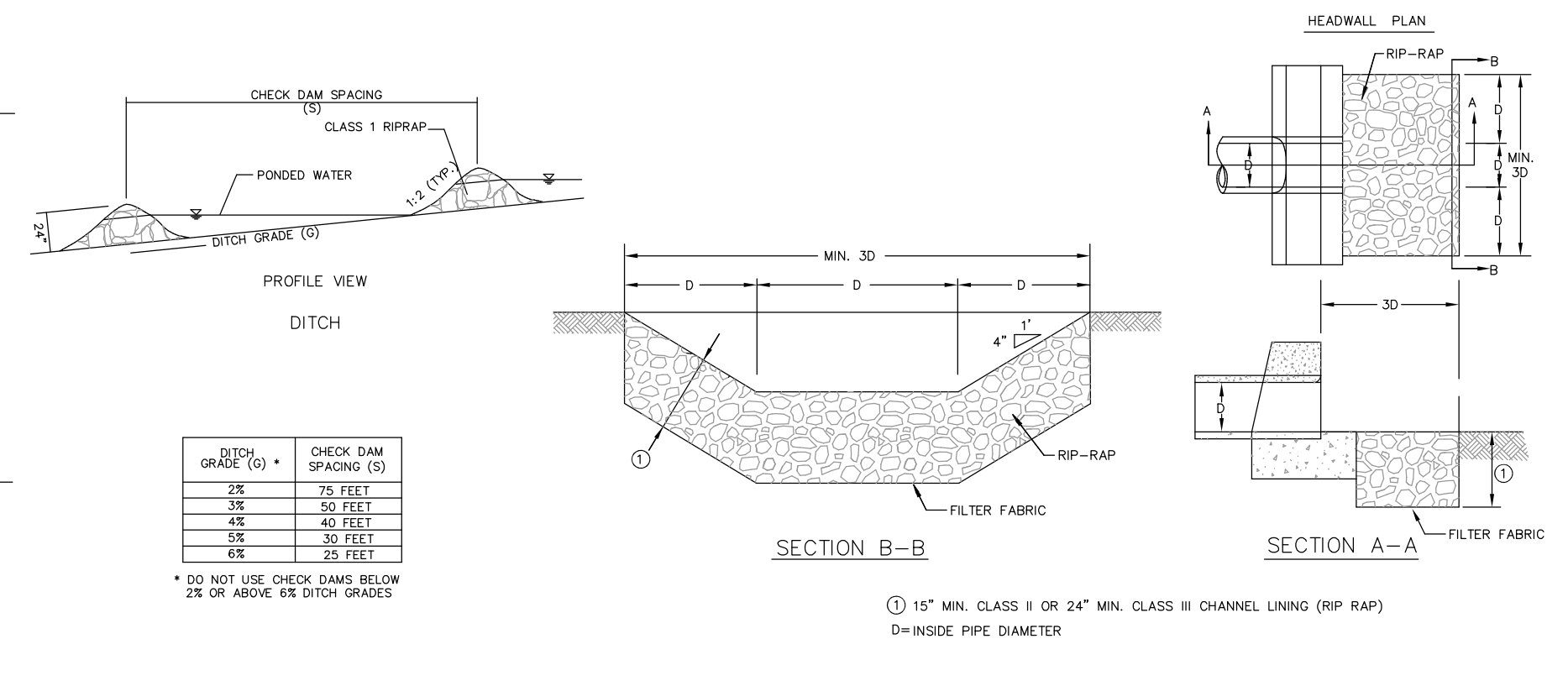
CHK. BY: G.J.W. EFFECTIVE DATE: 11-19-14
BUTLER COUNTY ENGINEERS OFFICE
AND OPERATIONS FACILITY
200 FARMERS AVENUE - HARTSFLAT, KY 40351



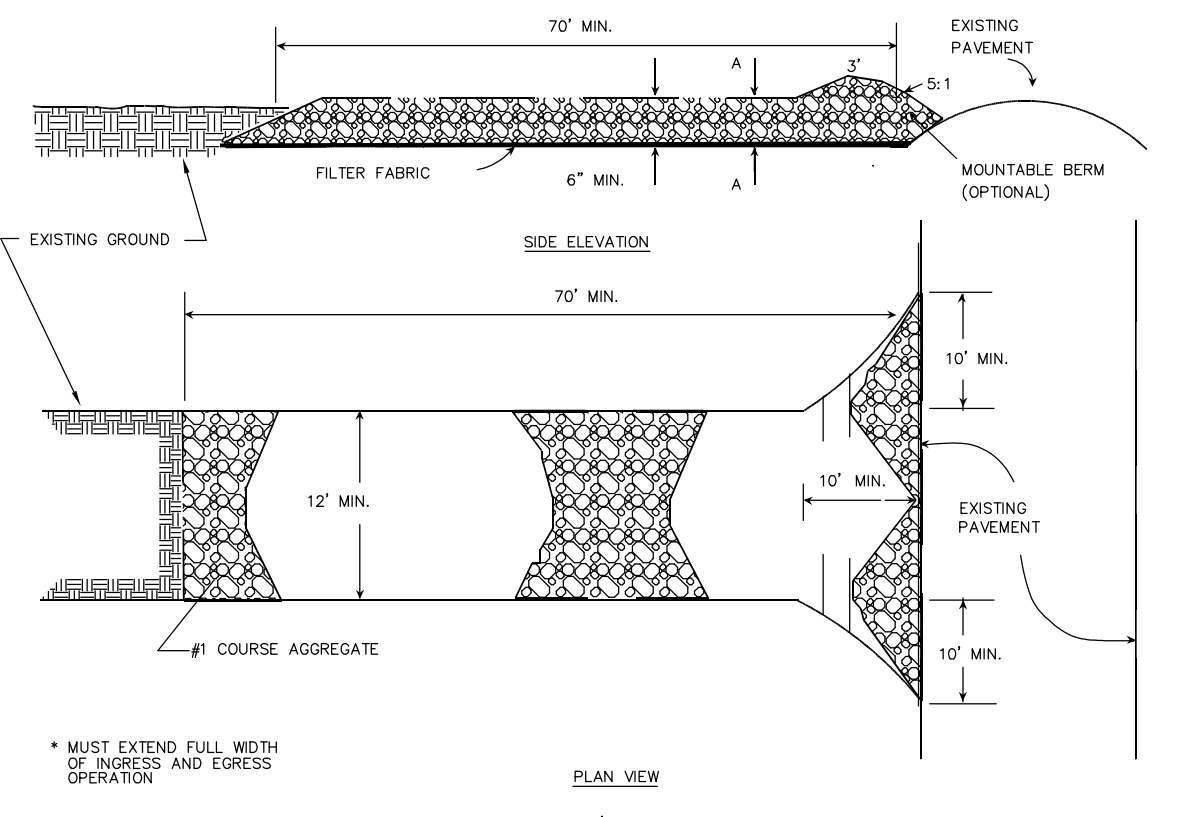
CHECK DAM
N.T.S.
(REFERENCE U.S. DEPT. OF TRANSPORTATION FHWA #157-6)

DITCH GRADE (%)	CHECK DAM SPACING (S)
3%	75 FEET
4%	50 FEET
5%	40 FEET
6%	30 FEET
7%	25 FEET

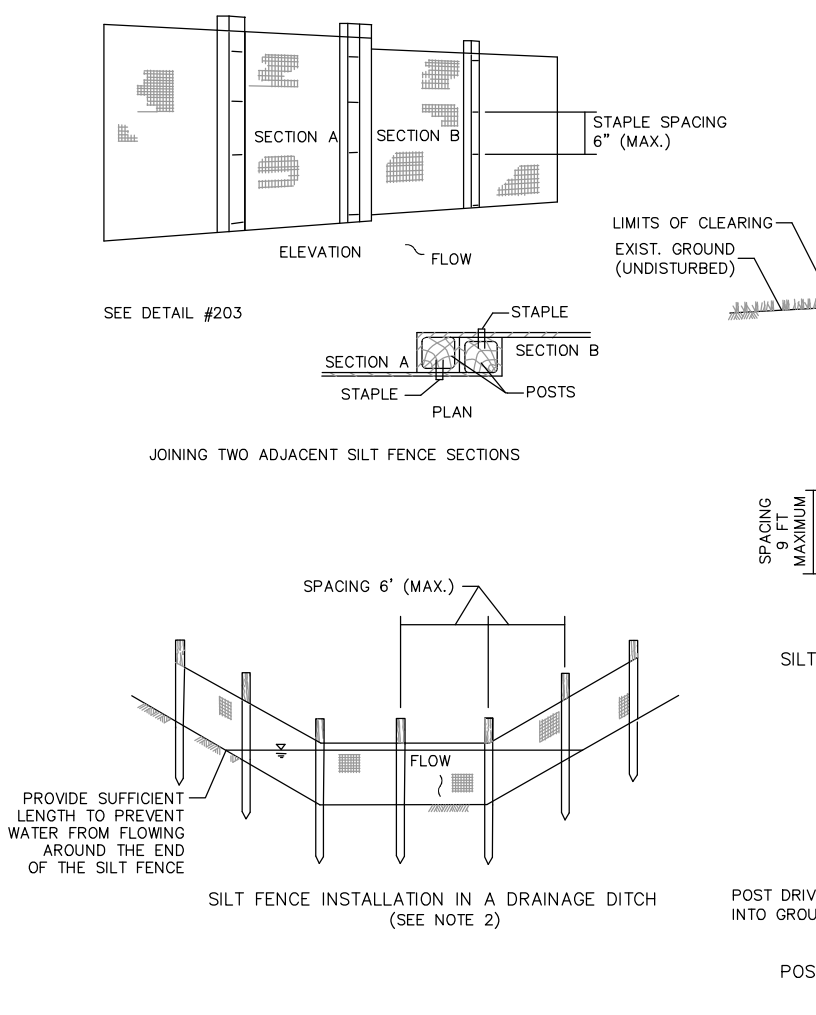
* DO NOT USE CHECK DAMS BELOW 2% OR ABOVE 6% DITCH GRADES



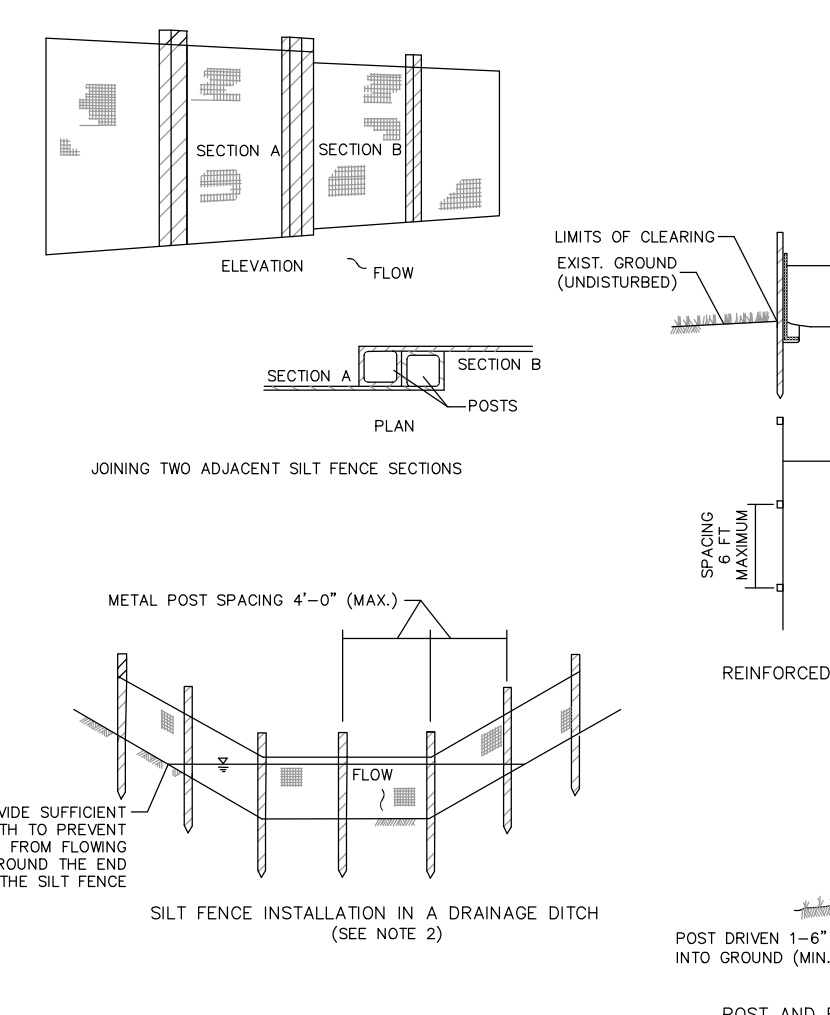
DISCHARGE AREA EROSION CONTROL DETAIL
N.T.S.
(REFERENCE ARMY CORP OF ENGINEERS DETAIL NO. D104401X & KYTC R20-040)



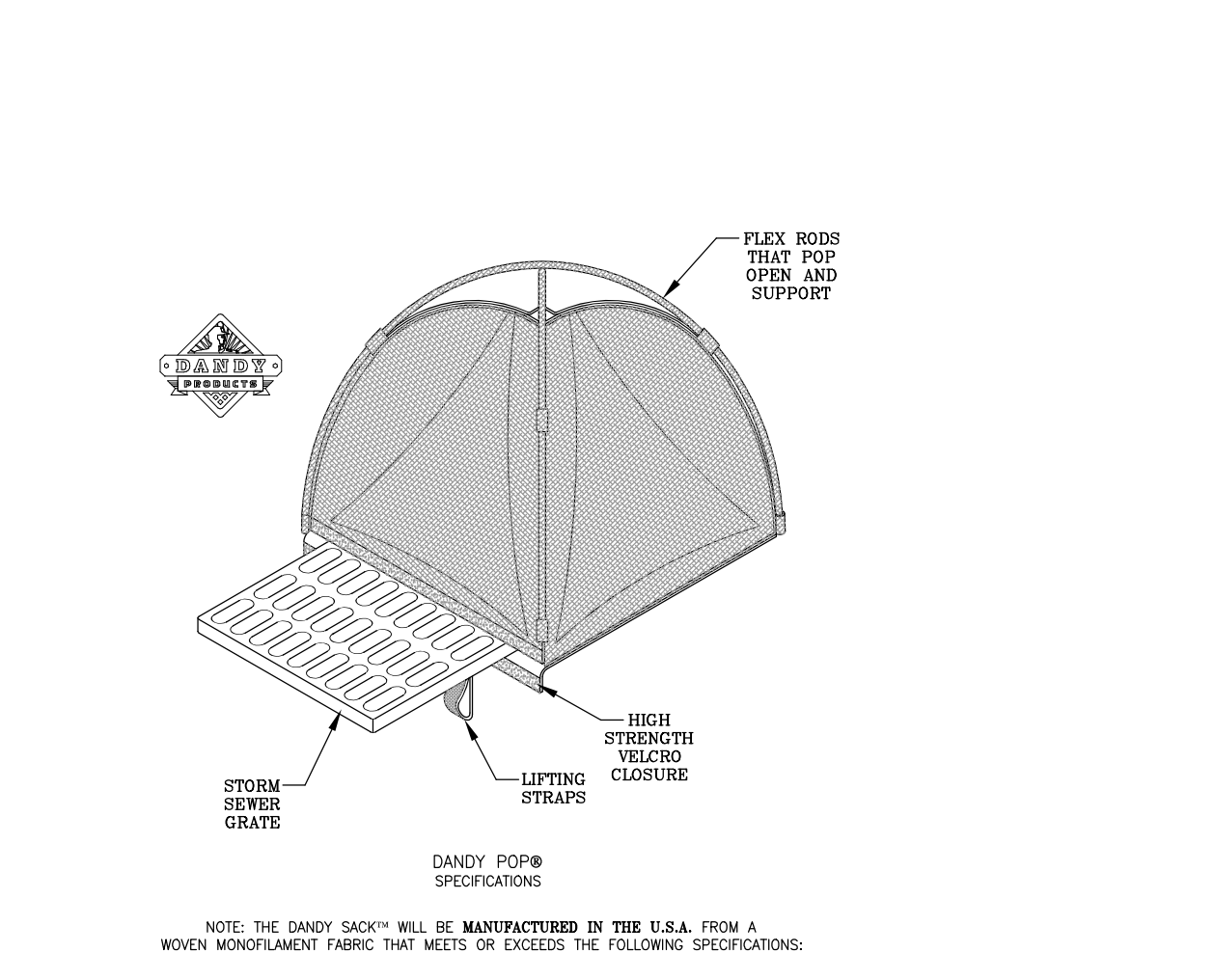
STONE CONSTRUCTION ENTRANCE
N.T.S.
(REF. VIRGINIA DSWC PLATE 3.02)



SILT FENCE (NON-REINFORCED)
N.T.S.
(REFERENCE U.S. DEPT. OF TRANSPORTATION FHWA # 157-1)



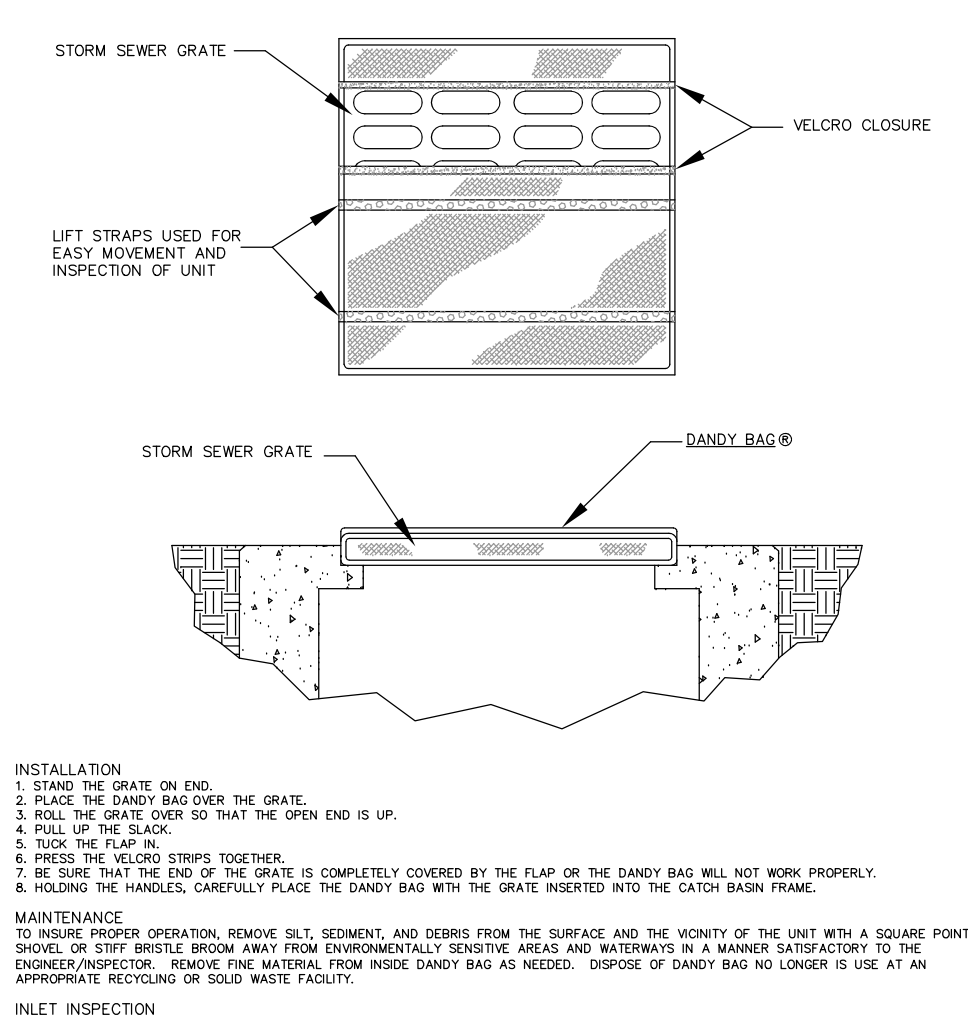
SILT FENCE (REINFORCED)
N.T.S.
(REFERENCE U.S. DEPT. OF TRANSPORTATION FHWA # 157-1)



DANDY POP® (BLACK & SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	LN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4632	LN (lbs)	0.42 (95)
Mullen Burst Strength	ASTM D 3786	LN (lbs)	3027 (450)
Trapezoidal Tear Strength	ASTM D 4533	LN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4491	mm (US Std Sieve)	0.425 (100)
Flow Rate	ASTM D 4491	1/min/ft² (gal/min/ft²)	2807 (145)
Permeability	ASTM D 4491	Sec	2.1

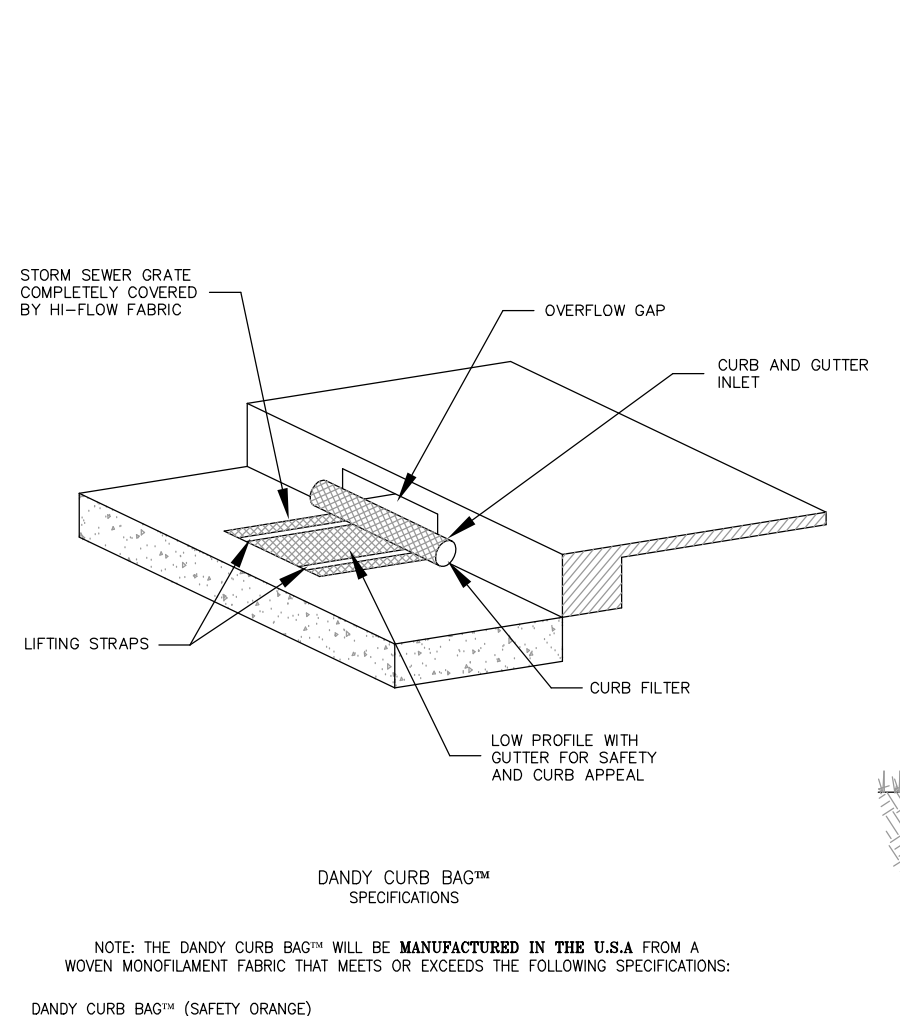
DANDY POP® INLET PROTECTION
N.T.S.



HI-FLOW DANDY BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	LN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4633	LN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	LN (lbs)	3027 (450)
Trapezoidal Tear Strength	ASTM D 4533	LN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4351	mm (US Std Sieve)	0.425 (100)
Flow Rate	ASTM D 4491	1/min/ft² (gal/min/ft²)	2807 (145)
Permeability	ASTM D 4491	Sec	2.1

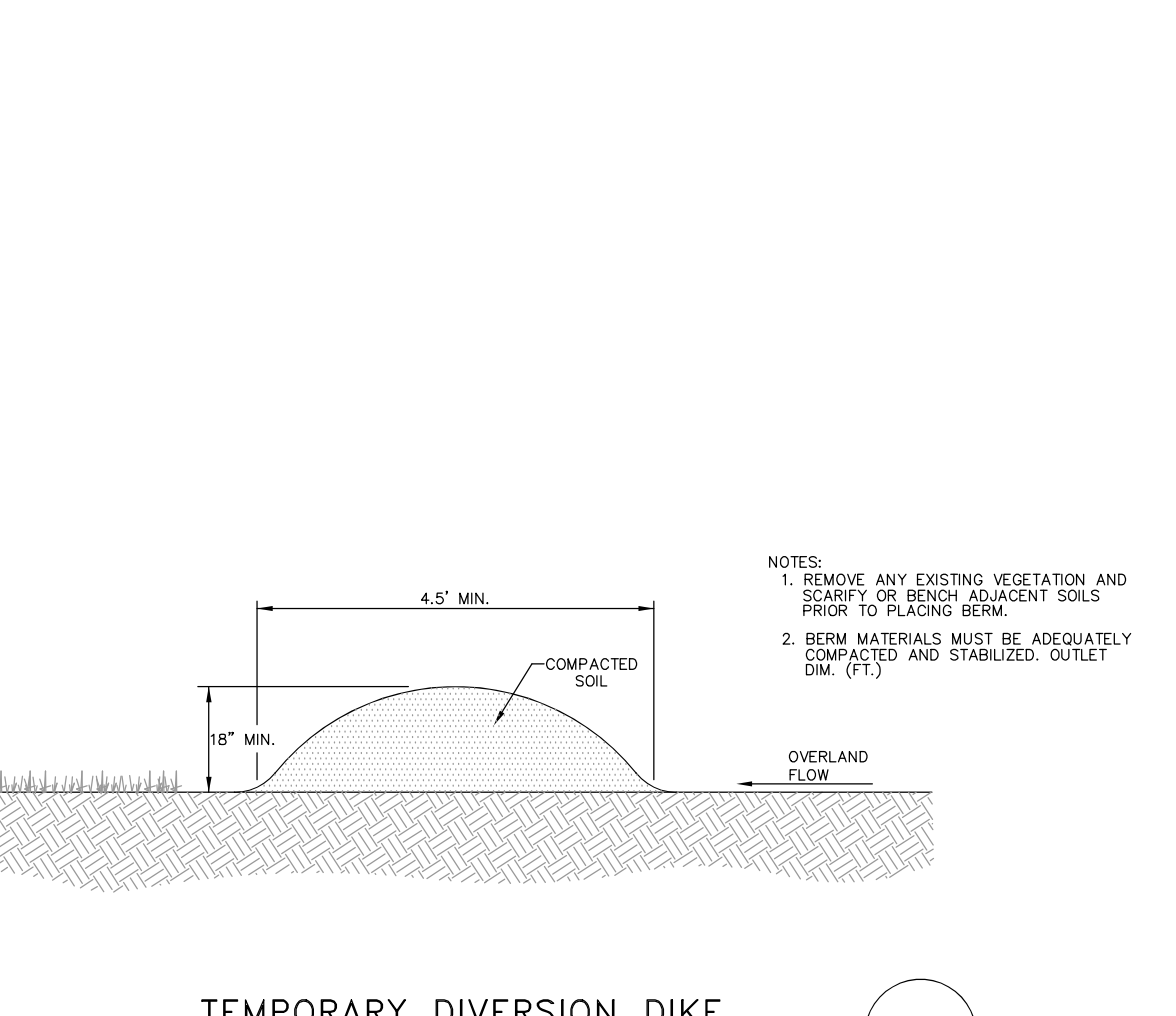
DANDY BAG (EPSC-00)
N.T.S.



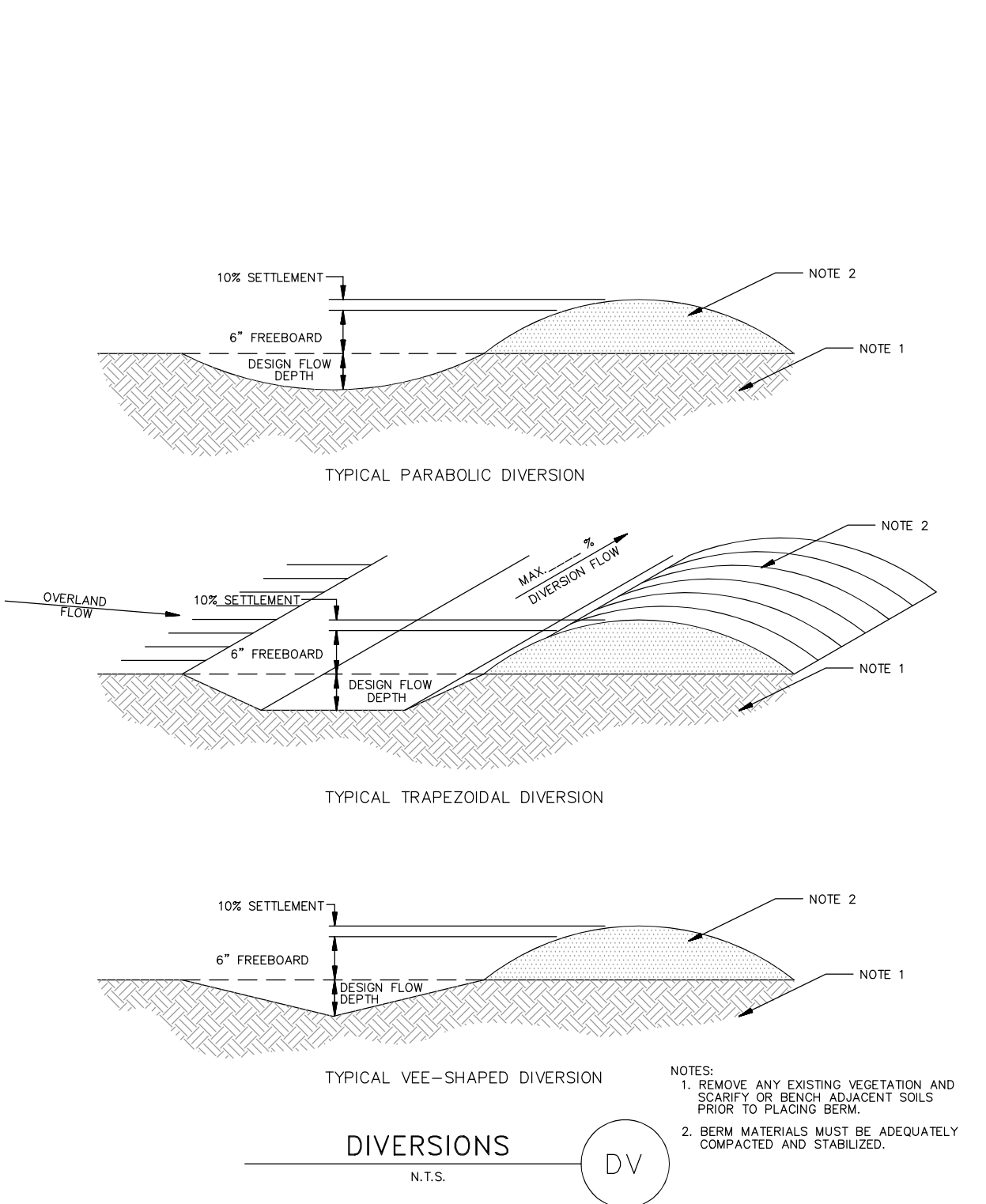
DANDY CURB BAG® (SAFETY ORANGE)

Mechanical Properties	Test Method	Units	MARV
Grab Tensile Strength	ASTM D 4632	LN (lbs)	1.62 (365) X 0.89 (200)
Grab Tensile Elongation	ASTM D 4632	%	24 X 10
Puncture Strength	ASTM D 4633	LN (lbs)	0.40 (90)
Mullen Burst Strength	ASTM D 3786	LN (lbs)	3027 (450)
Trapezoidal Tear Strength	ASTM D 4533	LN (lbs)	0.51 (115) X 0.33 (75)
UV Resistance	ASTM D 4355	%	90
Apparent Opening Size	ASTM D 4491	mm (US Std Sieve)	0.425 (100)
Flow Rate	ASTM D 4491	1/min/ft² (gal/min/ft²)	2807 (145)
Permeability	ASTM D 4491	Sec	2.1

DETAIL OF CURB INLET SEDIMENT CONTROL DEVICE WITH DANDY BAG® CURB FILTER (EPSC-00)
N.T.S.

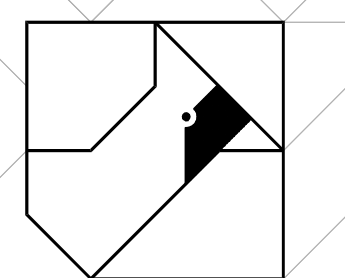


TEMPORARY DIVERSION DIKE
N.T.S.



DIVERSIONS
N.T.S.

REVISIONS DATE	#	ITEM
04-14-20	3	REVISED PER BCEO



CARDINAL
ENGINEERING
LAND SURVEYING
ONE MOOCK ROAD
WILDER, KENTUCKY 41071
PHONE: (859) 581-9600
FAX: (859) 581-9636

WEBSITE: <http://www.cardinalengineering.net>

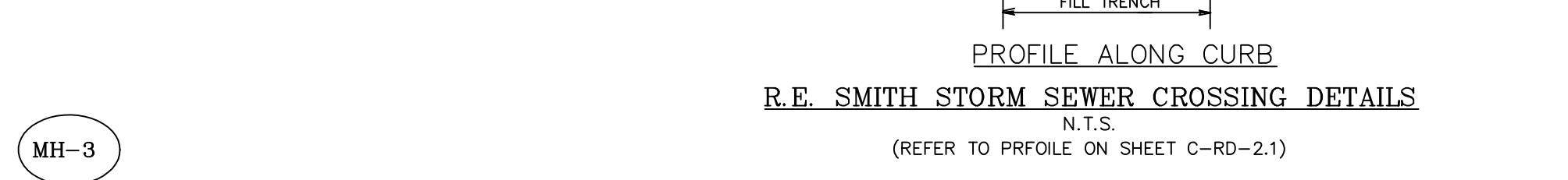
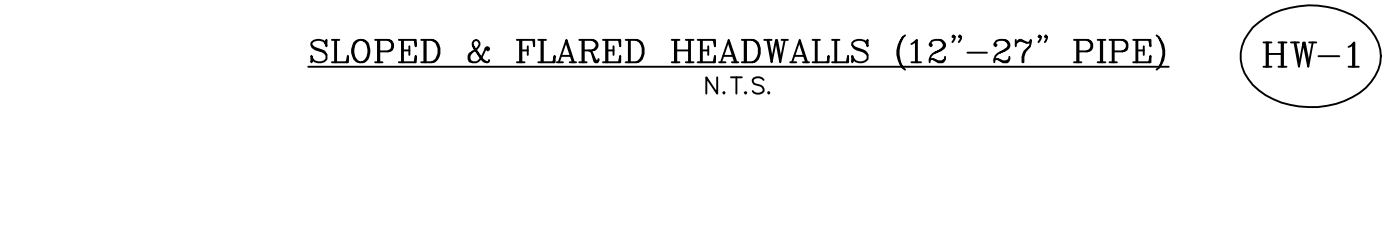
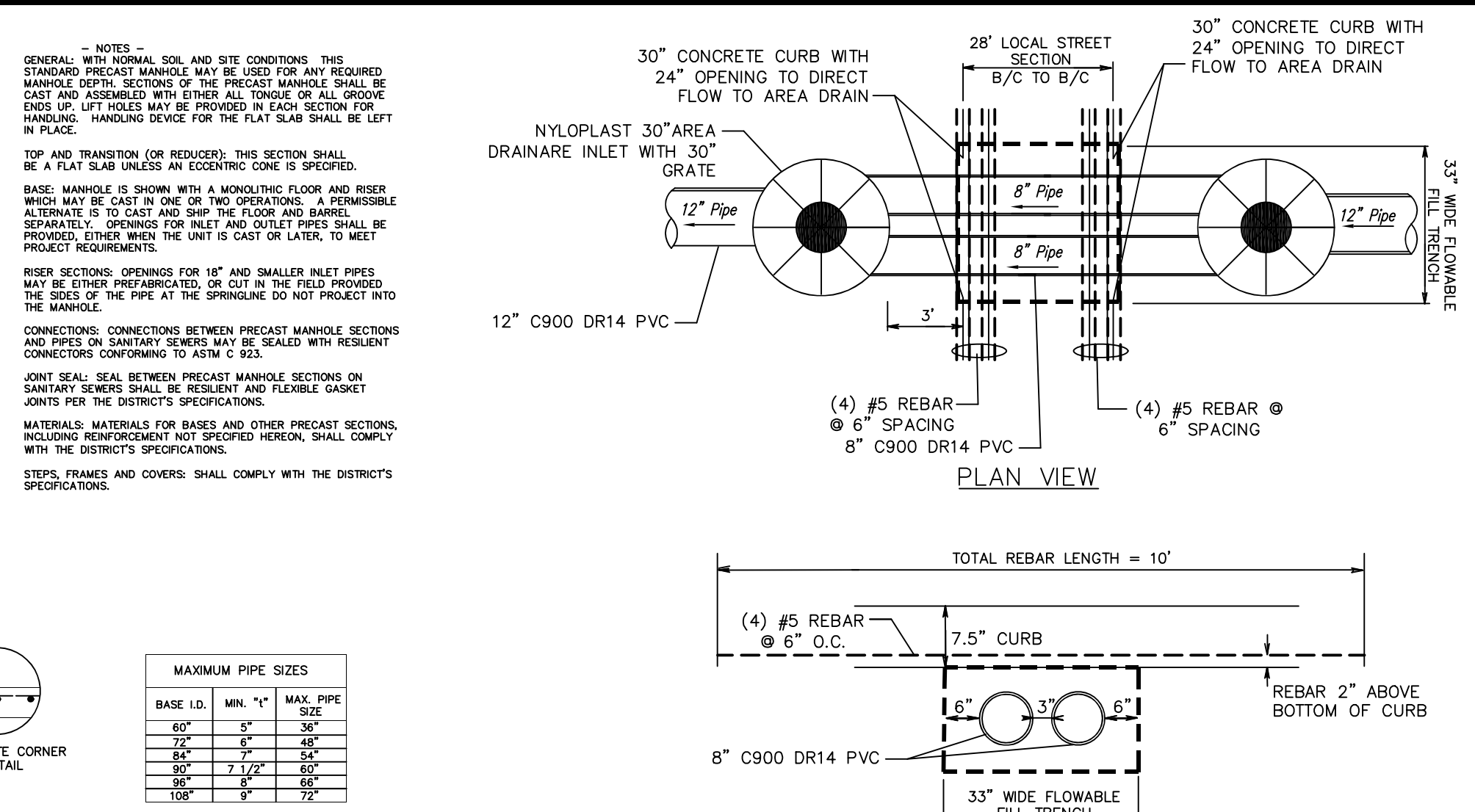
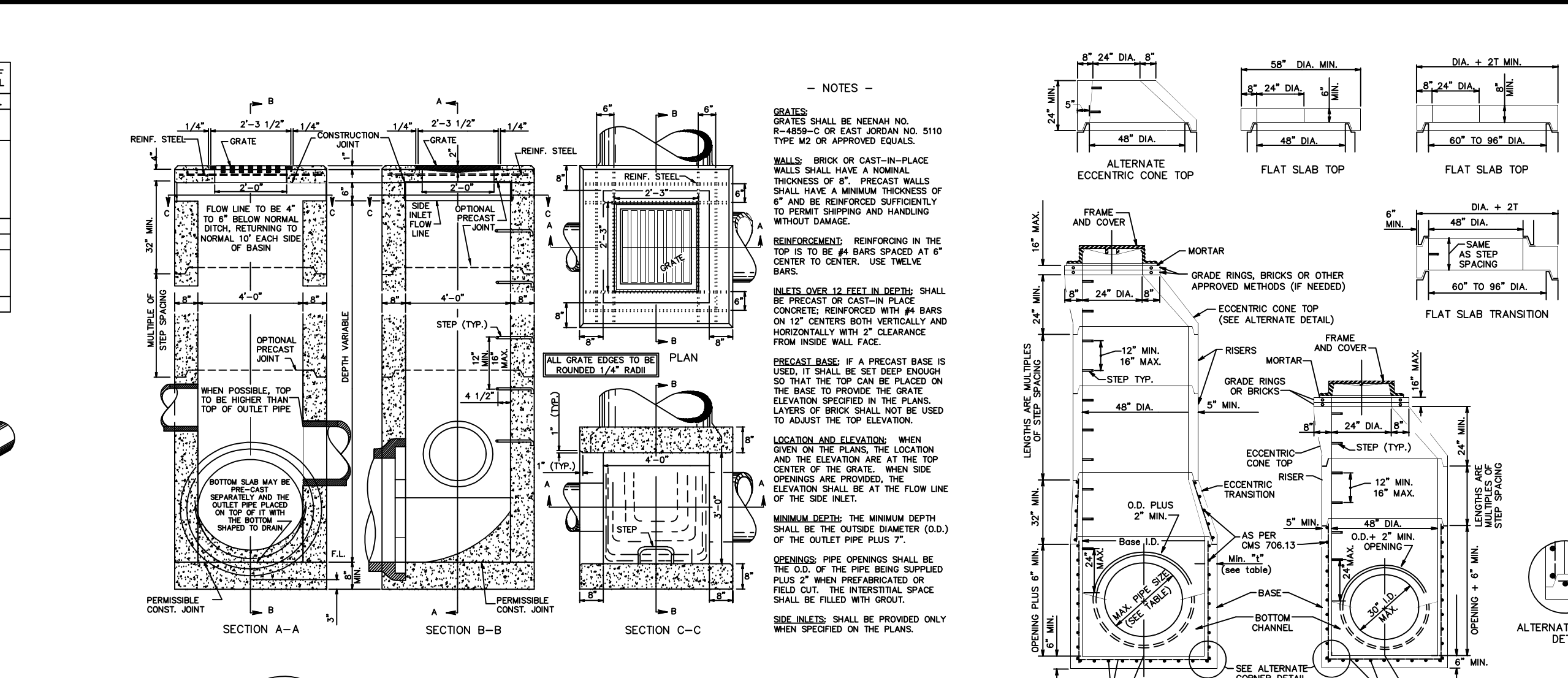
**WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS**

CLIENT:
GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

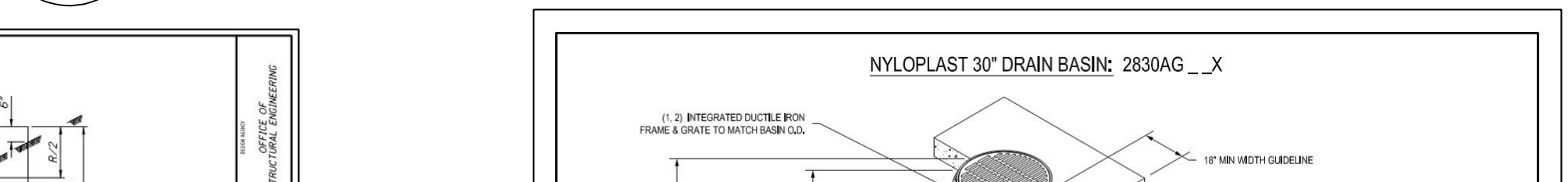
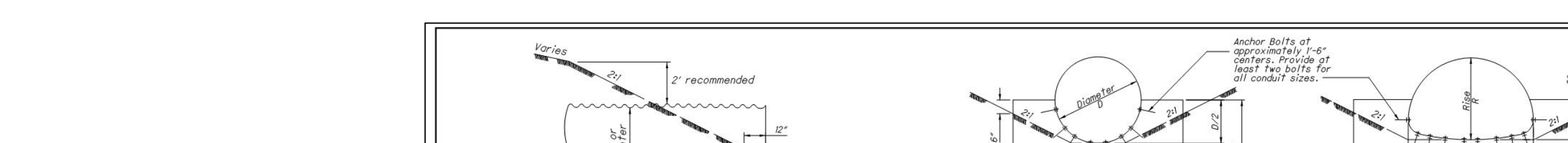
PROJECT: TRC
CHECKED BY: JGK
PROJECT MANAGER: JGK

PROJECT NO. 19-096
SCALE: AS NOTED
DATE: 11-01-19
EROSION & SEDIMENT CONTROL DETAILS
SHEET: C-DT-1.1

PIPE DIA. OR EQUIV. DIA.	SHAFT DIA.	C	E	F	L	W	T	CLASS CONC.	REF. STEEL
12"	12"	1'-0"	2'-0"	2'-3"	3'-6"	4'-0"	0.58	7	
15"	15"	1'-0"	2'-0"	2'-9"	4'-0"	4'-9"	0.75	7	
18"	18"	1'-0"	2'-0"	2'-9"	4'-0"	4'-9"	1.03	7	
21"	21"	2'-0"	3'-0"	3'-6"	4'-0"	5'-3"	1.27	8	
24"	24"	2'-0"	3'-0"	3'-6"	4'-0"	5'-3"	1.36	8	
27"	27"	2'-0"	3'-0"	3'-6"	4'-0"	5'-3"	1.57	9	
30"	30"	2'-0"	3'-0"	3'-6"	4'-0"	5'-3"	1.57	9	

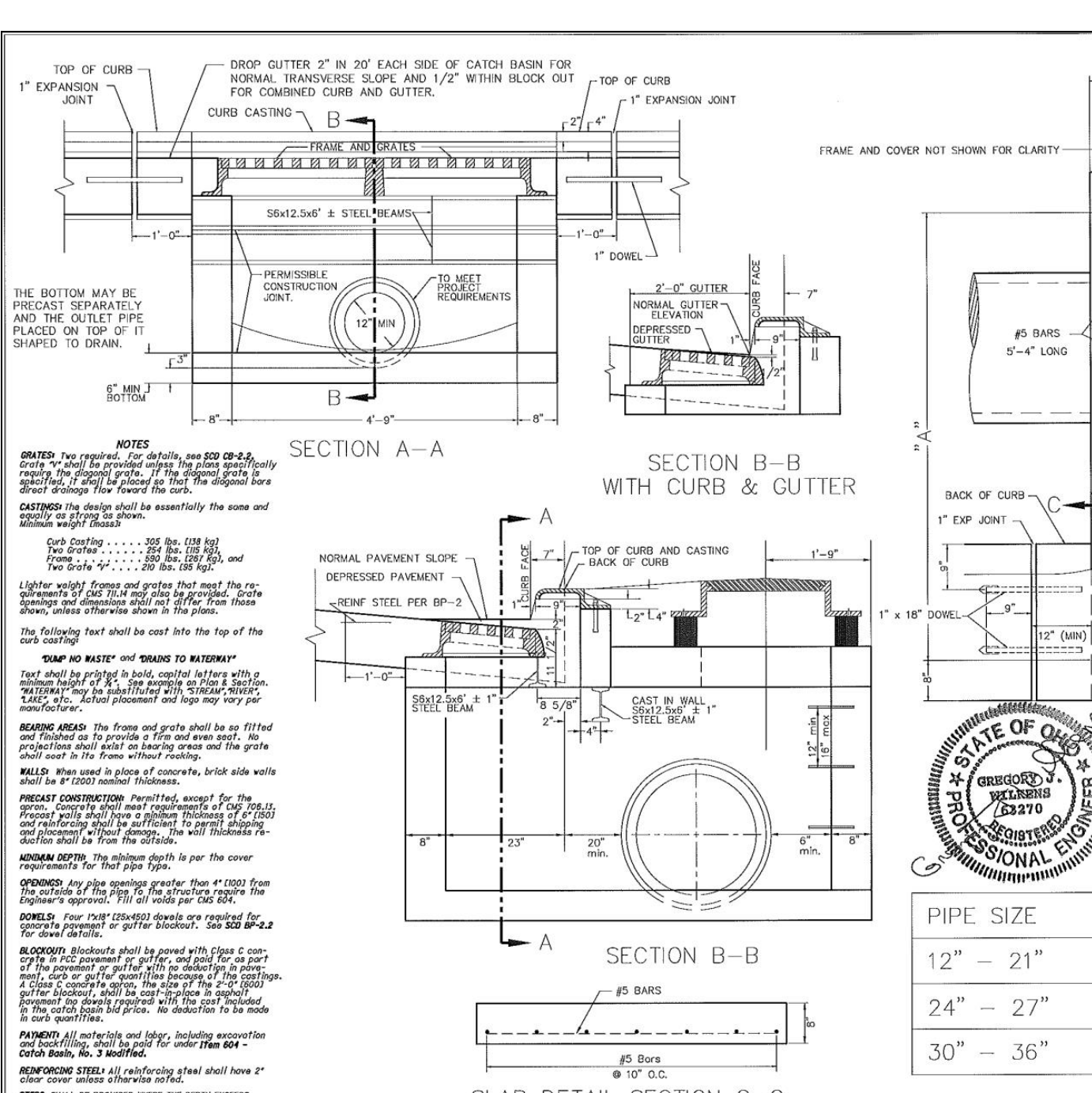


REVISIONS DATE #	ITEM
04-14-20	3 REVISED PER BCEO
04-16-20	4 REVISED PER BCEO
05-07-20	6 REVISED PER CLIENT

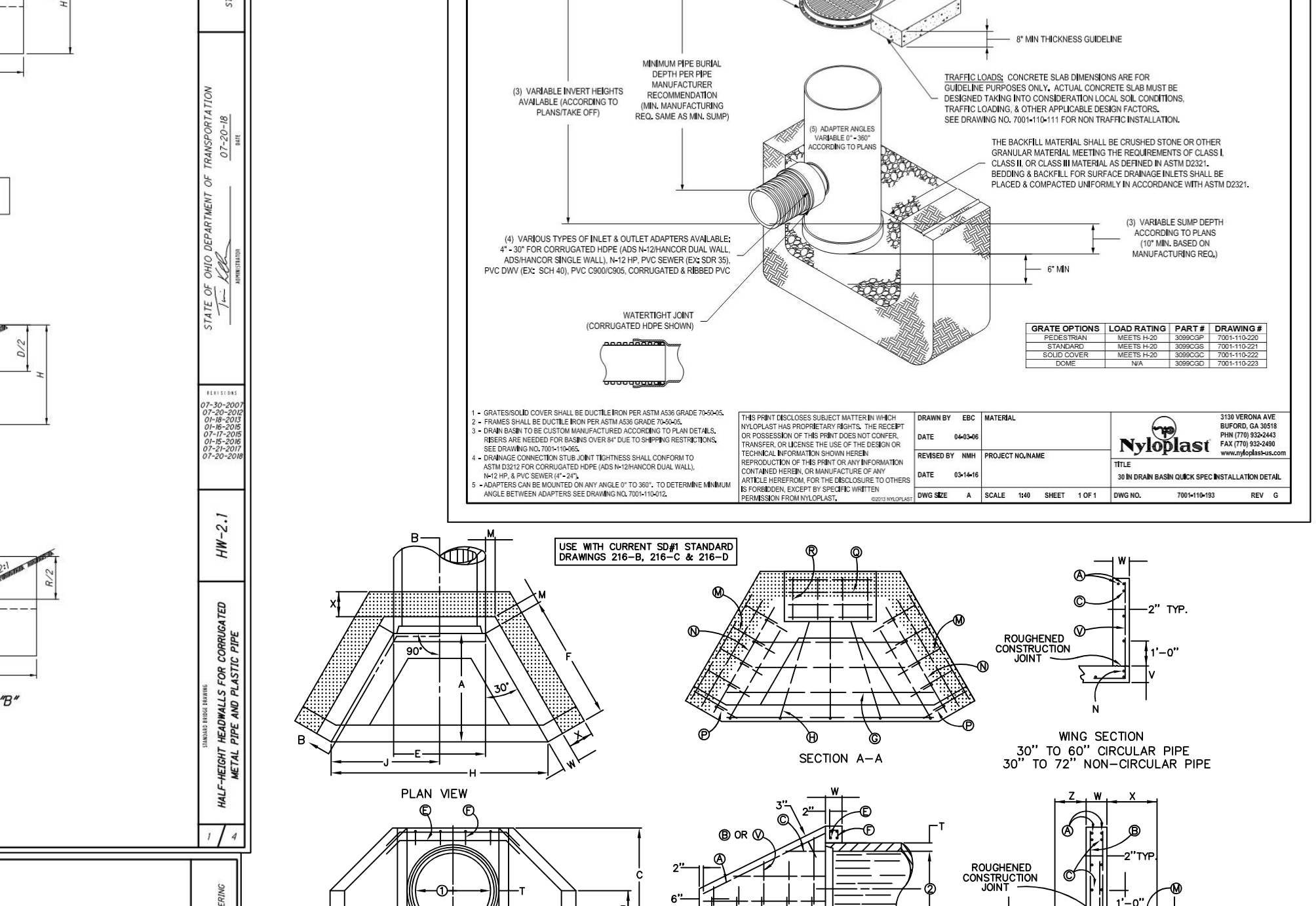


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CIRCULAR		PIPE ARCH		PIPE ARCH	
D	R	H	T	H	T
12"	12"	12"	12"	12"	12"
15"	15"	15"	15"	15"	15"
18"	18"	18"	18"	18"	18"
21"	21"	21"	21"	21"	21"
24"	24"	24"	24"	24"	24"
27"	27"	27"	27"	27"	27"
30"	30"	30"	30"	30"	30"



WESTFALL PRESERVE PHASES 1-5 IMPROVEMENT PLANS

GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT: **SEAL**

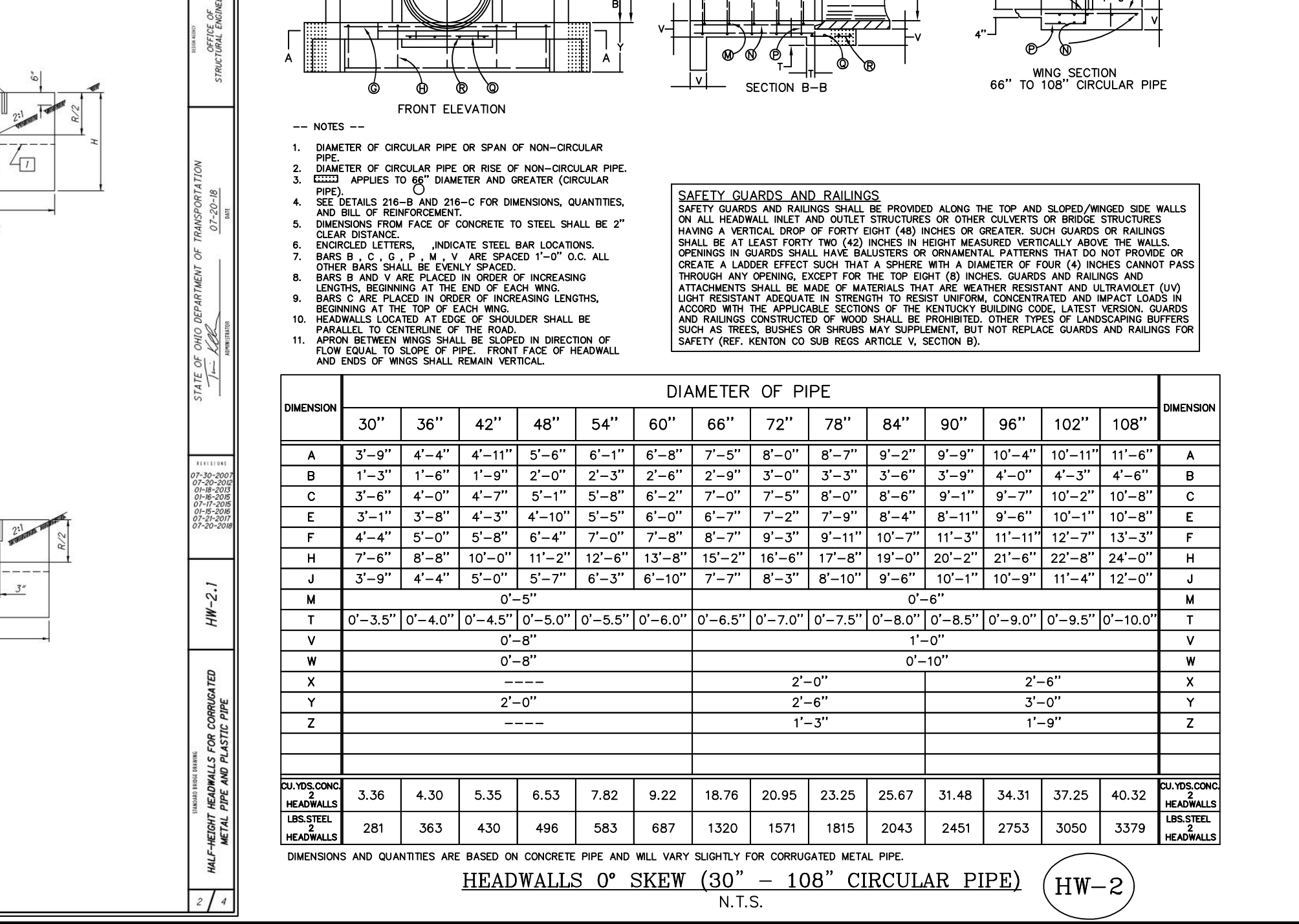
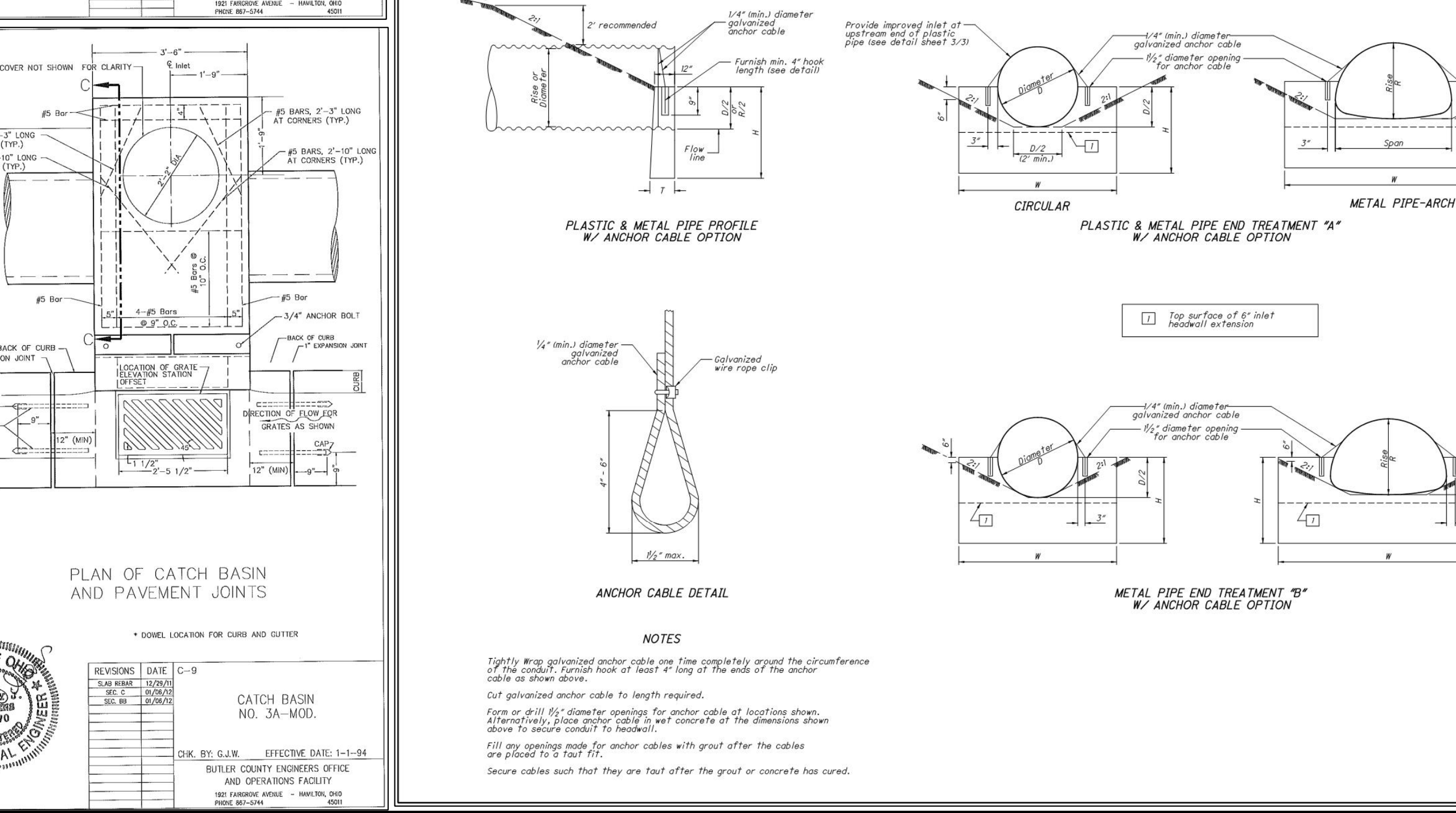
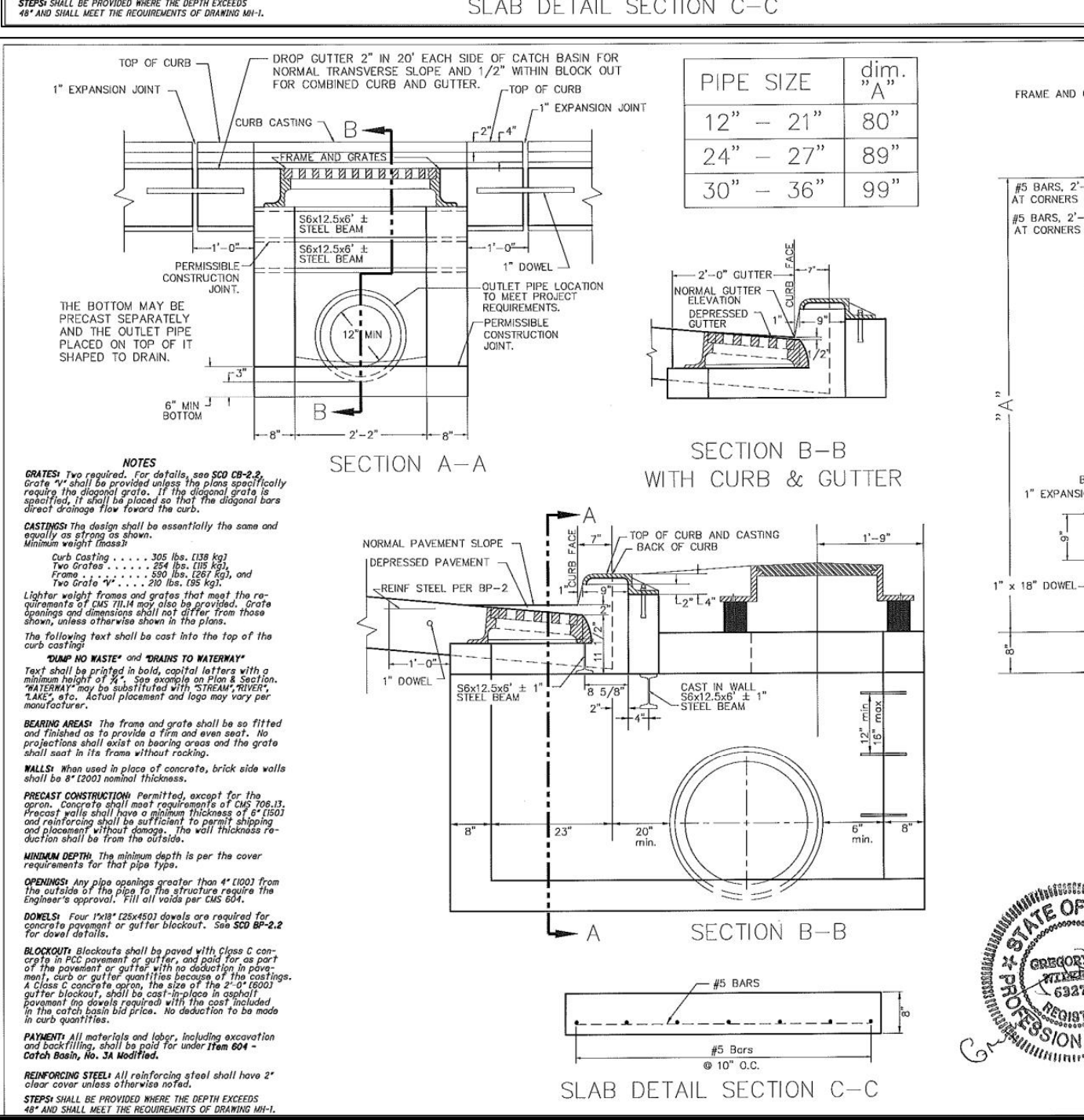
CHECKED BY: **JJK**

PROJECT MANAGER: **JJK**

PROJECT NO. 19-096
SCALE: AS NOTED
DATE: 11-01-19

STORM SEWER DETAILS

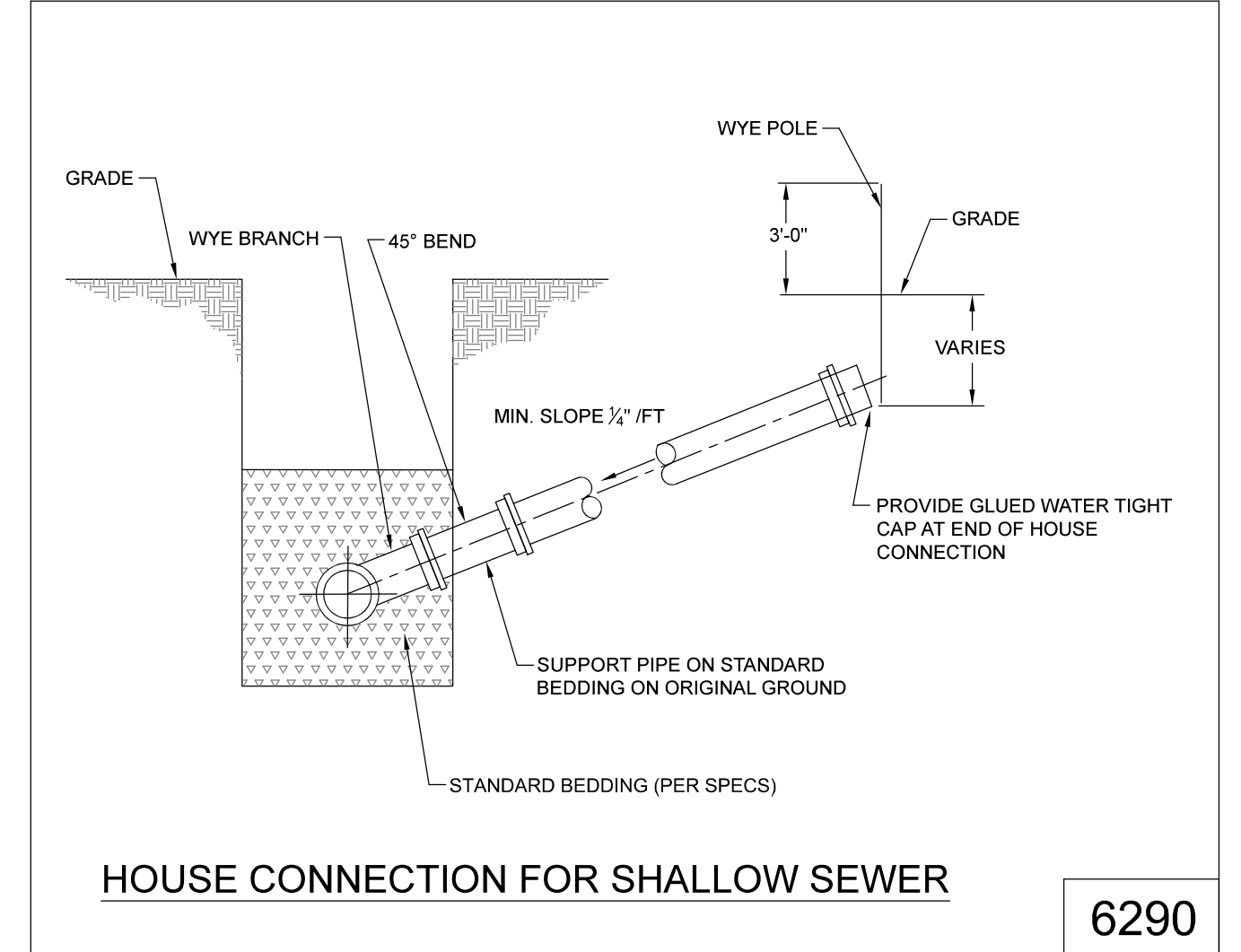
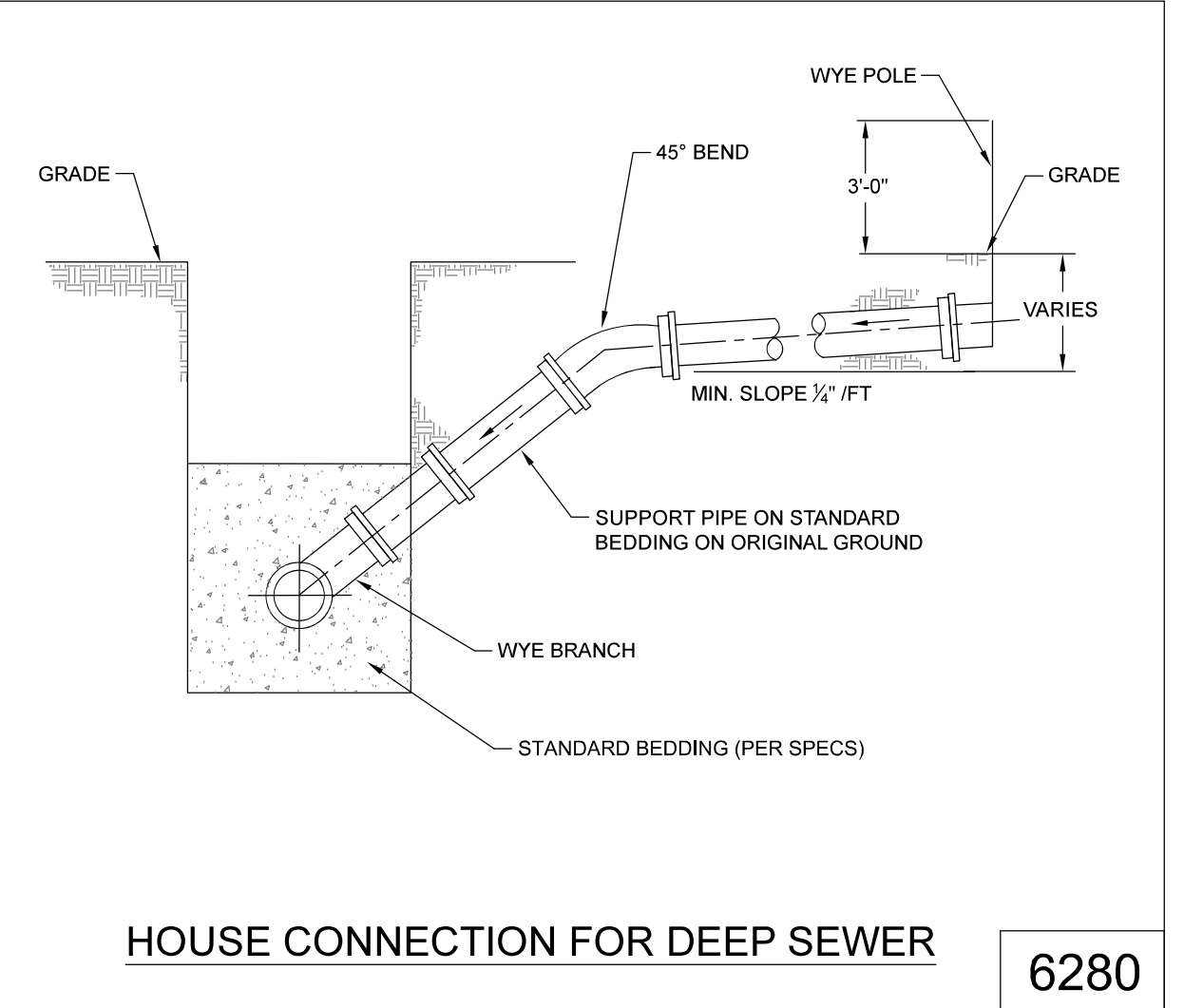
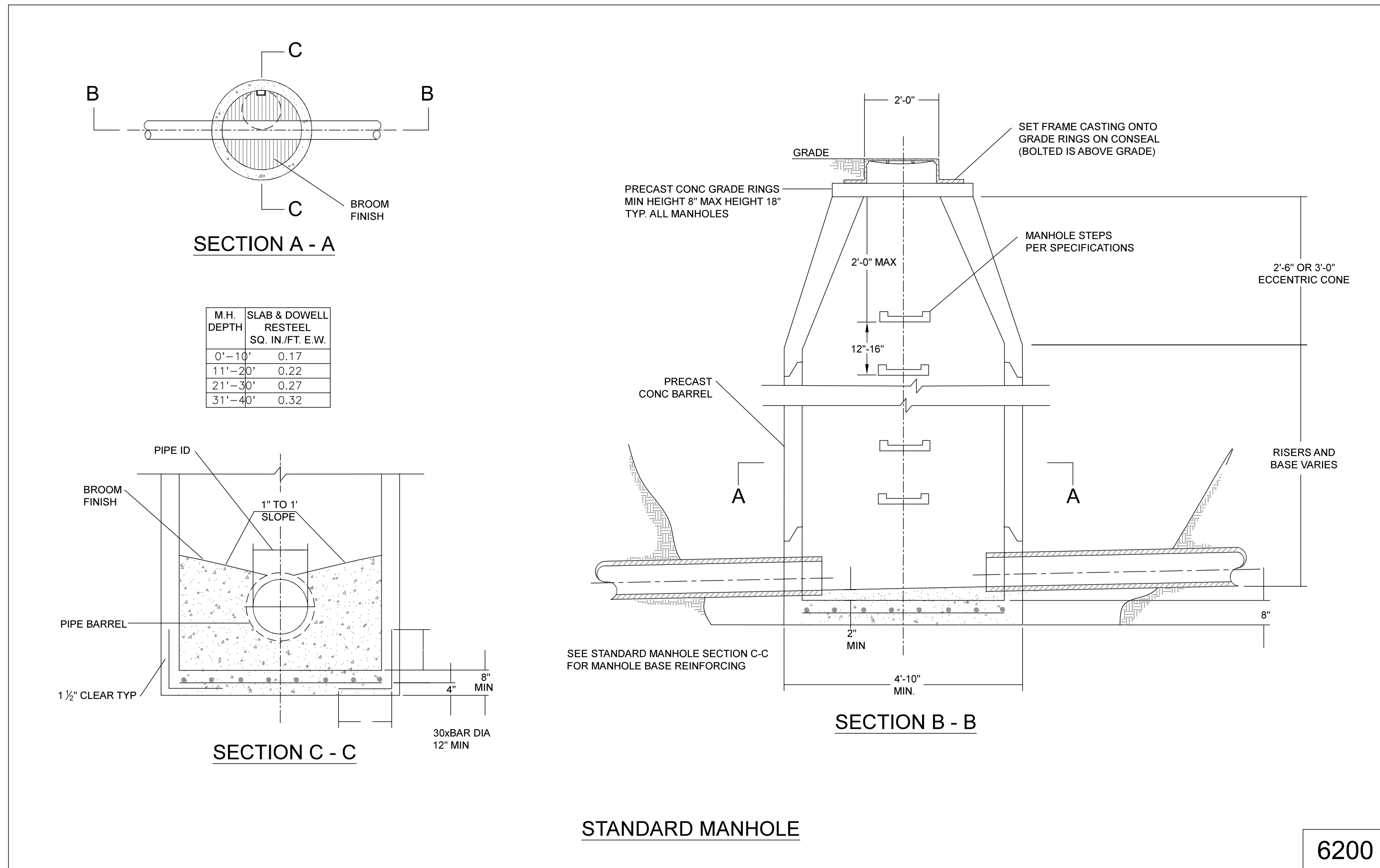
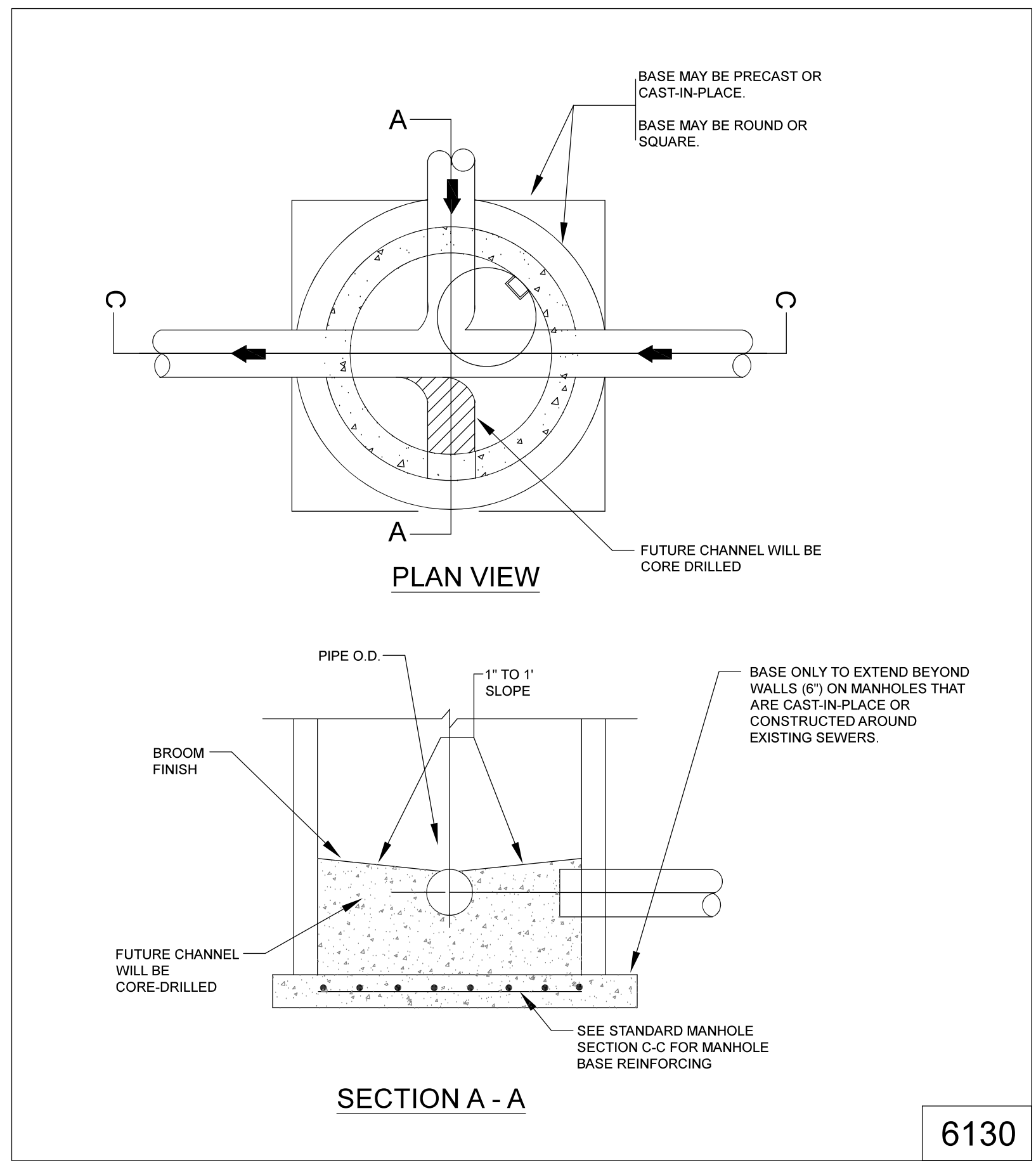
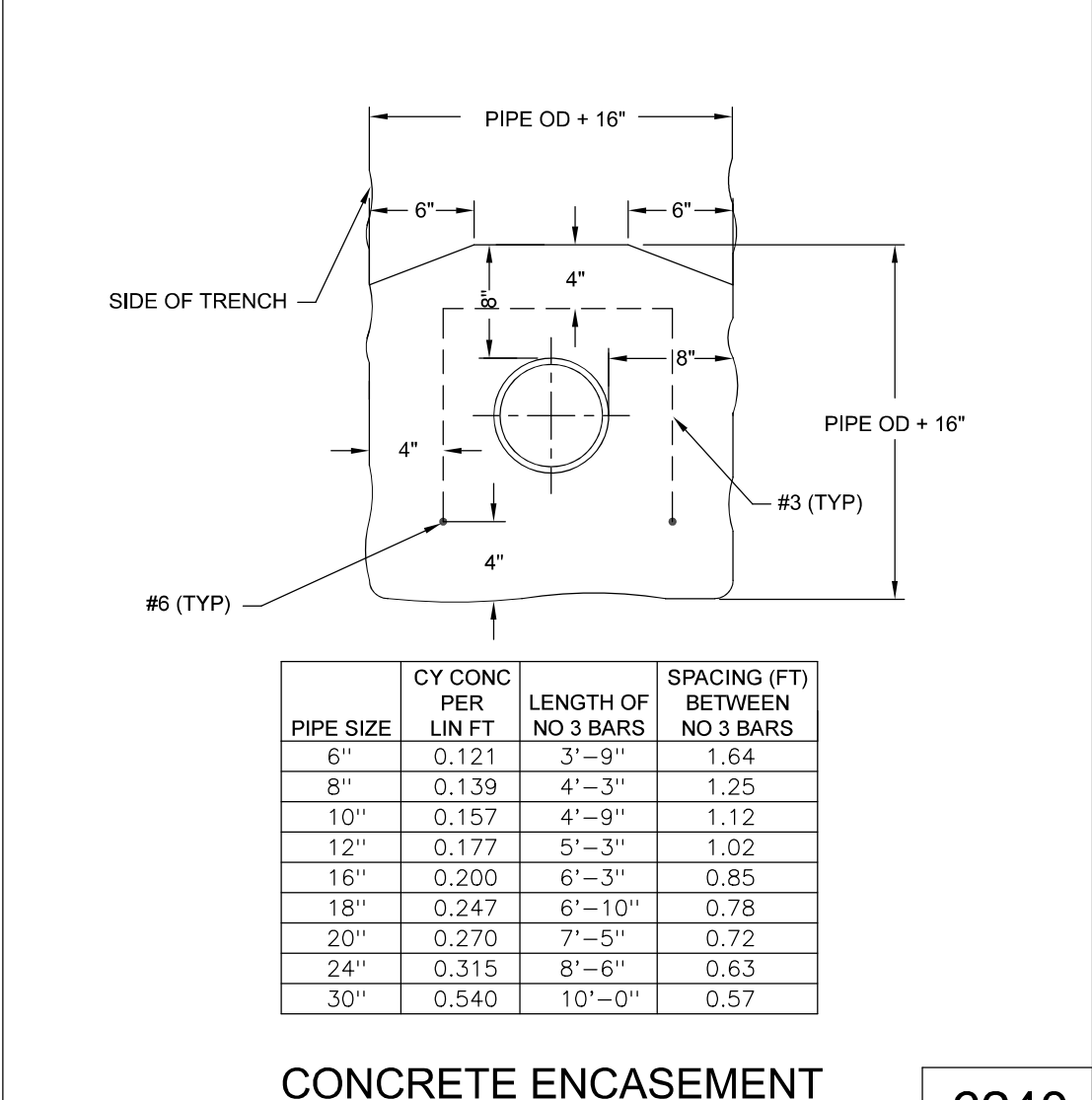
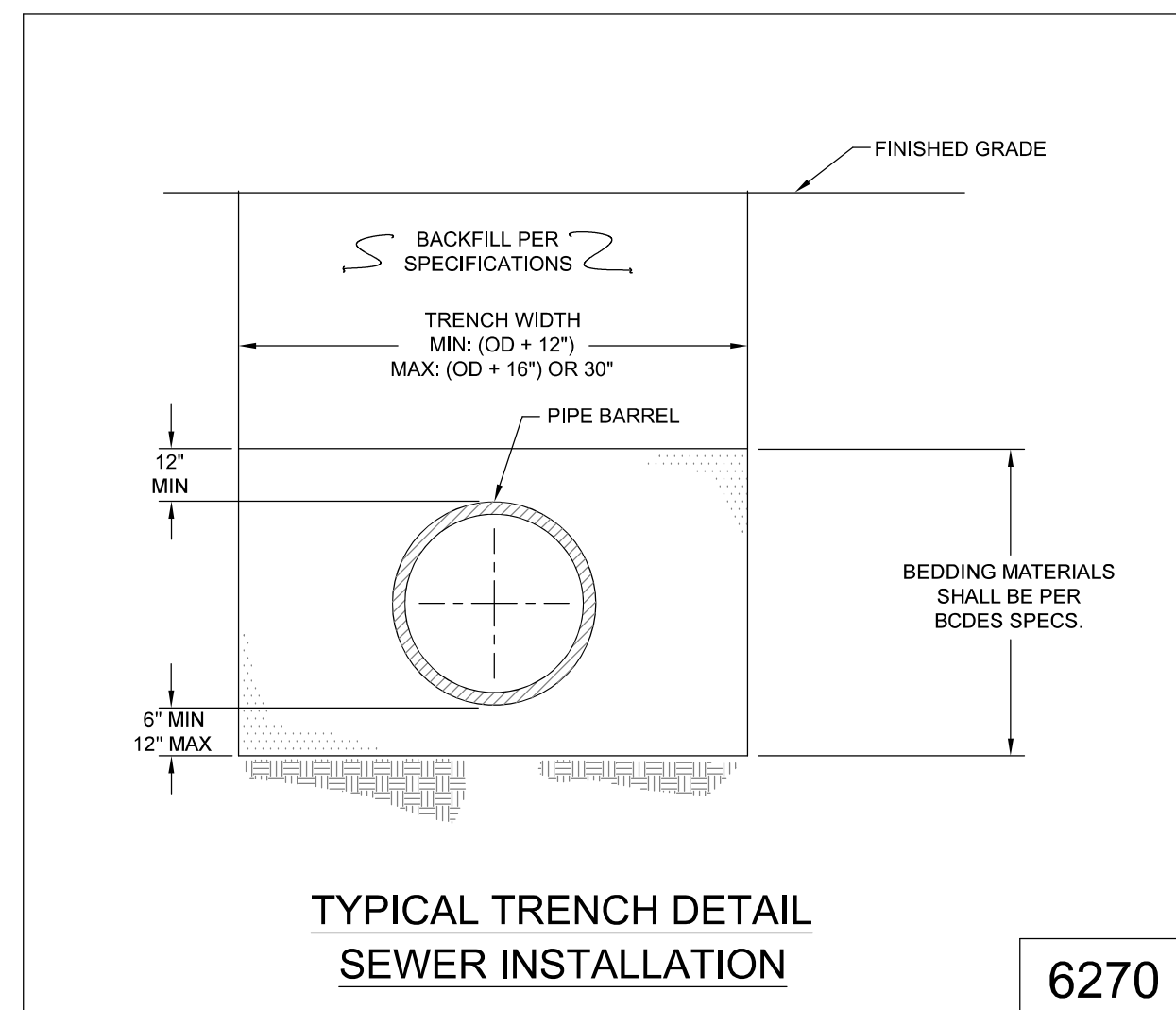
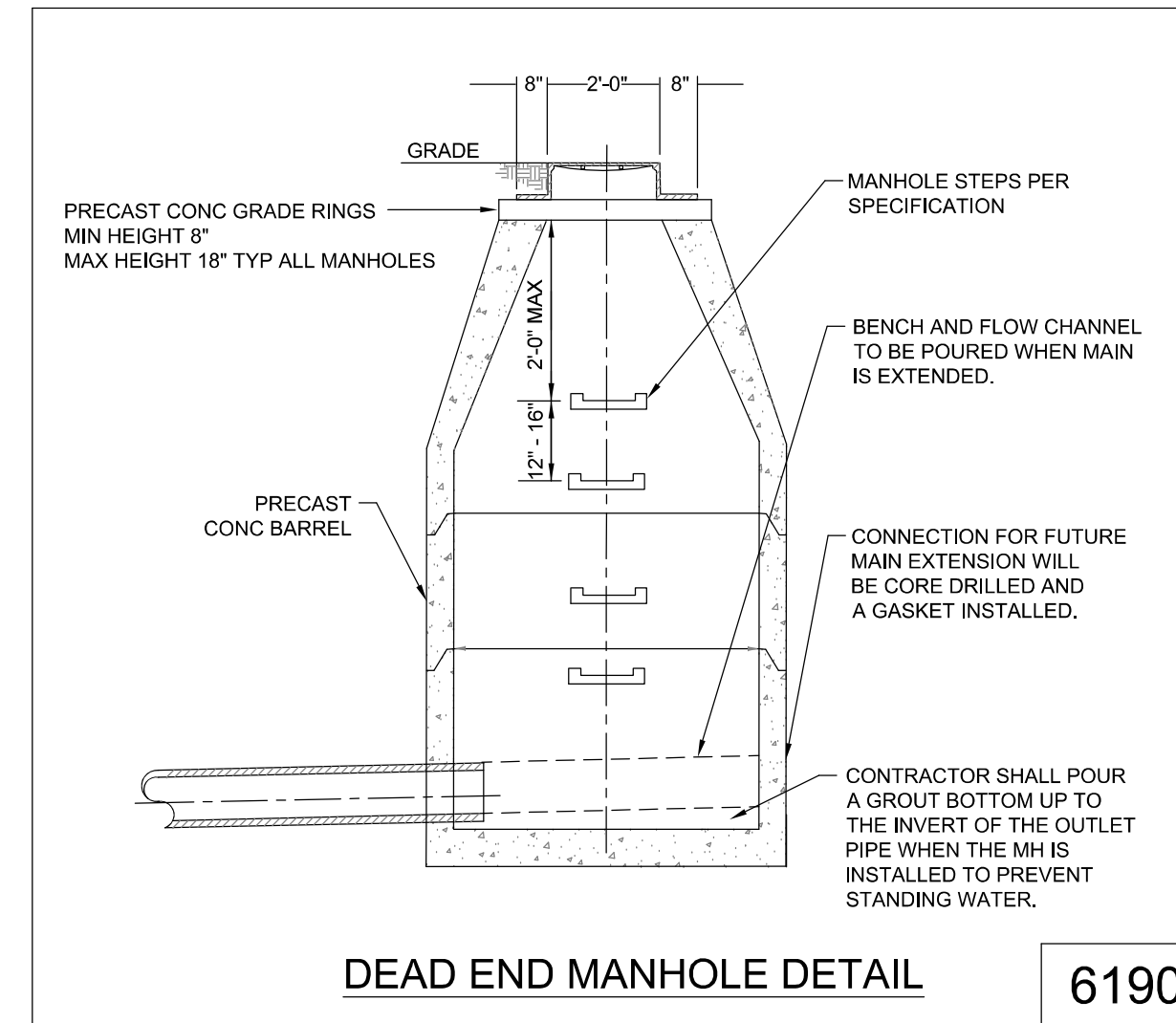
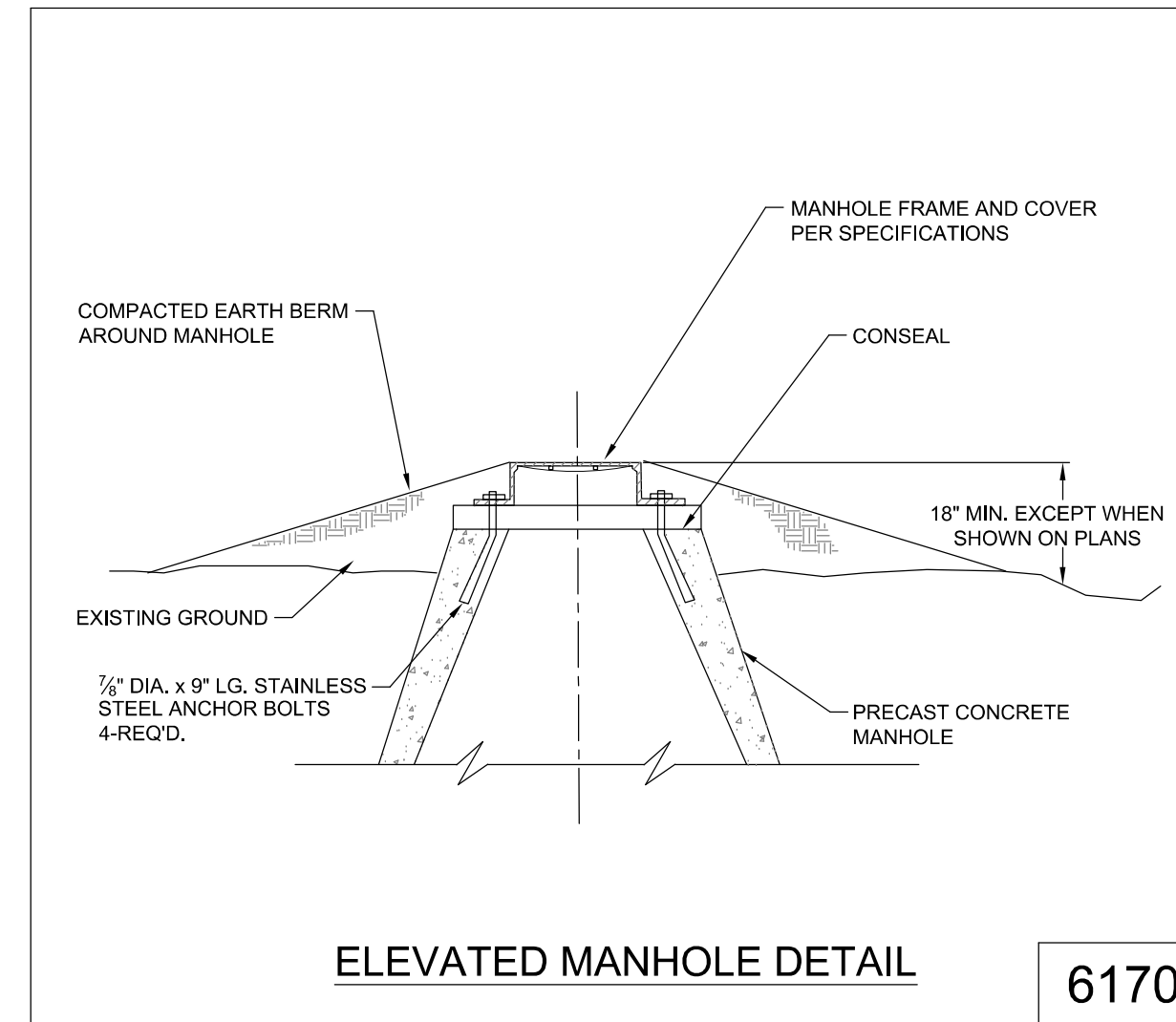
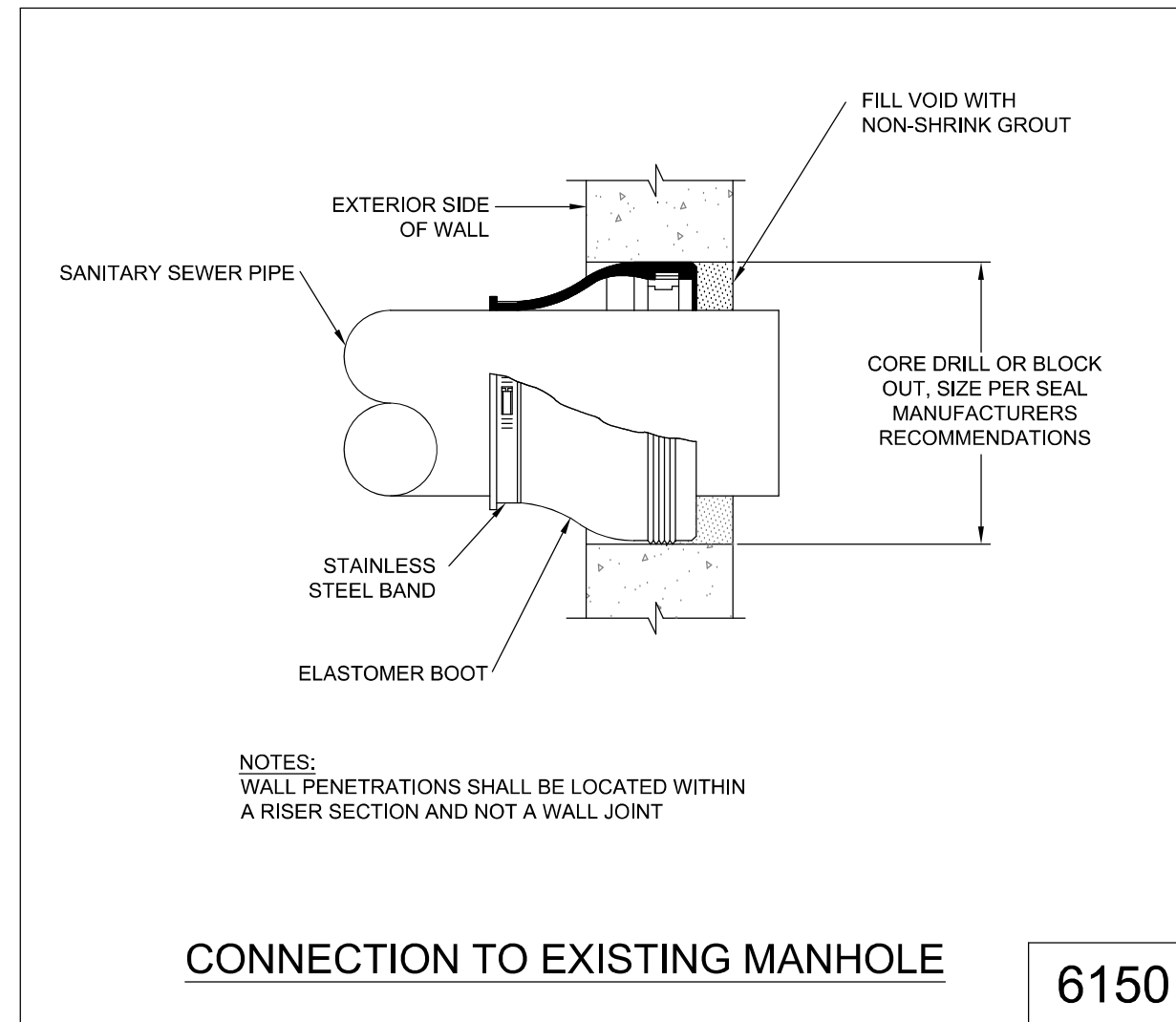
SHEET: **C-DT-1.2**



DIAMETER OF PIPE	30"	36"	42"	48"	54"	60"	66"	72"	78"	84"	90"	96"	102"	108"
A	3'-9"	4'-4"	4'-11"	5'-6"	6'-11"	6'-8"	7'-5"	8'-0"	8'-7"	9'-2"	9'-9"	10'-4"	10'-11"	11'-6"
B	1'-3"	1'-6"	1'-9"	2'-0"	2'-3"	2'-6"	2'-9"	3'-0"	3'-3"	3'-6"	3'-9"	4'-0"	4'-3"	4'-6"
C	3'-6"	4'-0"	4'-7"	5'-1"	5'-8"	6'-2"	7'-0"	7'-5"	8'-0"	8'-6"	9'-1"	9'-7"	10'-2"	10'-8"
D	3'-11"	3'-8"	4'-3"	4'-10"	5'-0"	6'-0"	6'-7"	7'-2"	7'-9"	8'-4"	8'-11"	9'-6"	10'-11"	10'-8"
E	4'-4"	5'-0"	5'-8"	6'-4"	7'-0"	7'-8"	8'-7"	9'-3"	9'-11"	10'-7"	11'-3"	11'-11"	12'-7"	13'-3"
F	4'-6"	5'-2"	6'-0"	6'-8"	7'-6"	8'-4"	9'-3"	10'-1"	10'-11"	11'-11"	12'-7"	13'-3"	13'-9"	14'-5"
G	4'-8"	5'-4"	6'-2"	7'-0"	7'-8"	8'-6"	9'-4"	10'-2"	11'-0"	11'-11"	12'-7"	13'-3"	13'-9"	14'-5"
H	5'-0"	5'-6"	6'-4"	7'-2"	8'-0"	8'-8"	9'-6"	10'-4"	11'-2"	12'-0"	12'-8"	13'-6"	14'-4"	15'-2"
I	5'-2"	5'-8"	6'-6"	7'-4"	8'-2"	9'-0"	9'-8"	10'-6"	11'-4"	12'-2"	13'-0"	13'-8"	14'-6"	15'-4"
J	5'-4"	6'-0"	6'-8"	7'-6"	8'-4"	9'-2"	10'-0"	10'-8"	11'-6"	12'-4"	13'-2"	14'-0"	14'-8"	15'-6"
K	5'-6"	6'-2"	7'-0"	7'-8"	8'-6"	9'-4"	10'-2"	11'-0"	11'-8"	12'-6"	13'-4"	14'-2"	15'-0"	15'-8"
L	5'-8"	6'-4"	7'-2"	8'-0"	8'-8"	9'-6"	10'-4"	11'-2"	12'-0"	12'-8"	13'-6"	14'-4"	15'-2"	16'-0"
M	6'-0"	6'-6"	7'-4"	8'-2"	9'-0"	9'-8"	10'-6"	11'-4"	12'-2"	13'-0"	13'-8"	14'-6"	15'-4"	16'-2"
N	6'-2"	6'-8"	7'-6"	8'-4"	9'-2"	10'-0"	10'-8"	11'-6"	12'-4"	13'-2"	14'-0"	14'-8"	15'-6"	16'-4"
O	6'-4"	7'-0"	7'-8"	8'-6"	9'-4"	10'-2"	11'-0"	11'-8"	12'-6"	13'-4"	14'-2"	15'-0"	15'-8"	16'-6"
P	6'-6"	7'-2"	8'-0"	8'-8"	9'-6"	10'-4"	11'-2"	12'-0"	12'-8"	13'-6"	14'-4"	15'-2"	16'-0"	16'-8"
Q	6'-8"	7'-4"	8'-2"	9'-0"	9'-8"	10'-6"	11'-4"	12'-2"	13'-0"	13'-8"	14'-6"	15'-4"	16'-2"	17'-0"
R	7'-0"	7'-6"	8'-4"	9'-2"	10'-0"	10'-8"	11'-6"	12'-4"	13'-2"	14'-0"	14'-8"	15'-6"	16'-4"	17'-2"
S	7'-2"	7'-8"	8'-6"	9'-4"	10'-2"	11'-0"	11'-8"	12'-6"	13'-4"	14'-2"	15'-0"	15'-8"	16'-6"	17'-4"
T	7'-4"	8'-0"	8'-8"	9'-6"	10'-4"	11'-2"	12'-0"	12'-8"	13'-6"	14'-4"	15'-2"	16'-0"	16'-8"	17'-6"
U	7'-6"	8'-2"	9'-0"	9'-8"	10'-6"	11'-4"	12'-2"	13'-0"	13'-8"	14'-6"	15'-4"	16'-2"	17'-0"	17'-8"
V	7'-8"	8'-4"	9'-2"	10'-0"	10'-8"	11'-6"	12'-4"	13'-2"	14'-0"	14'-8"	15'-6"	16'-4"	17'-2"	18'-0"
W	8'-0"	8'-6"	9'-4"	10'-2"	11'-0"	11'-8"	12'-6"	13'-4"	14'-2"	15'-0"	15'-8"	16'-6"	17'-4"	18'-2"
X	8'-2"	8'-8"	9'-6"	10'-4"	11'-2"	12'-0"	12'-8"	13'-6"	14'-4"	15'-2"	16'-0"	16'-8"	17'-6"	18'-4"
Y	8'-4"	9'-0"	9'-8"	10'-6"	11'-4"	12'-2"	13'-0"	13'-8"	14'-6"	15'-4"	16'-2"	17'-0"	17'-8"	18'-6"
Z	8'-6"	9'-2"	10'-0"	10'-8"	11'-6"	12'-4"	13'-2"	14'-0"	14'-8"	15'-6"	16'-4"	17'-2"	18'-0"	18'-8"

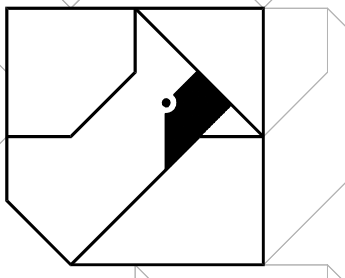
SANITARY SEWER NOTES

1. SANITARY LATERALS SHALL BE EXTENDED BEYOND THE LIMITS OF THE UTILITY EASEMENTS, BUT NOT TO EXCEED TWELVE (12) FEET FROM THE RIGHT-OF-WAY.
2. SANITARY SEWER MATERIALS AND INSTALLATION TO BE PER BUTLER COUNTY SPECIFICATIONS USING ABS 6" PIPE, AS PER ASTM D-2751 WITH JOINT SPECIFICATIONS AS PER ASTM D-3212 USING ABS COMPOSITE 8" PIPE, AS PER ASTM D-2680 WITH JOINT SPECIFICATIONS AS PER D-2235.
3. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER SYSTEM ARE PROHIBITED. ALL BUILDINGS TO BE SERVED BY THE PUBLIC SEWER SYSTEM SHALL BE CONSTRUCTED SO TO PROVIDE A MINIMUM OF FOUR (4) FEET OF VERTICAL SEPARATION BETWEEN THE PUBLIC SANITARY SEWER SYSTEM, AT THE POINT OF CONNECTION, AND THE LOWEST BUILDING LEVEL SERVED BY A GRAVITY SEWER CONNECTION. IN ADDITION, SAID BUILDING LEVEL SHALL BE AT LEAST ONE (1) FOOT ABOVE THE LOWEST POINT OF FREE-OVERFLOW (NON-SEALED MANHOLE COVER) UPSTREAM OF ANY TREATMENT FACILITY OR WASTEWATER PUMPING FACILITY THAT RECEIVES THE DISCHARGE FROM SAID BUILDING. SAID MINIMUM SERVICE LEVELS SHALL BE RECORDED ON THE "AS-BUILT" PLANS FOR THE DEVELOPMENT WHICH WILL BE KEPT ON FILE IN THE OFFICE OF THE BUTLER COUNTY SANITARY SEWER ENGINEER.
4. BUTLER COUNTY WATER AND SEWER DEPARTMENT DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE RELOCATION, REPAIR, OR REPLACEMENT OF ANY UTILITY INSTALLED WITHIN FIVE (5) FEET OF THE CENTER LINE OF ANY SANITARY SEWER MAIN OR WATER MAIN.
5. ALL SANITARY SEWERS LATERALS SHALL BE AT LEAST FOUR (4) FEET BELOW THE BASEMENT FLOOR ELEVATION AT THE POINT OF CONNECTION TO THE SEWER MAIN AND SHALL NOT EXCEED THE DEPTH OF TWELVE (12) FEET BELOW THE FINISHED GRADE AT THE END OF THE LATERAL AT THE RIGHT-OF-WAY UNLESS SPECIFICALLY AUTHORIZED BY THE COUNTY.



REVISIONS

DATE	#	ITEM
03-24-20	1	REVISED PER BCWS



CARDINAL
ENGINEERING
LAND SURVEYING
ONE MOOCK ROAD
WILDER, KENTUCKY 41071
PHONE: (859) 581-9600
FAX: (859) 581-9636

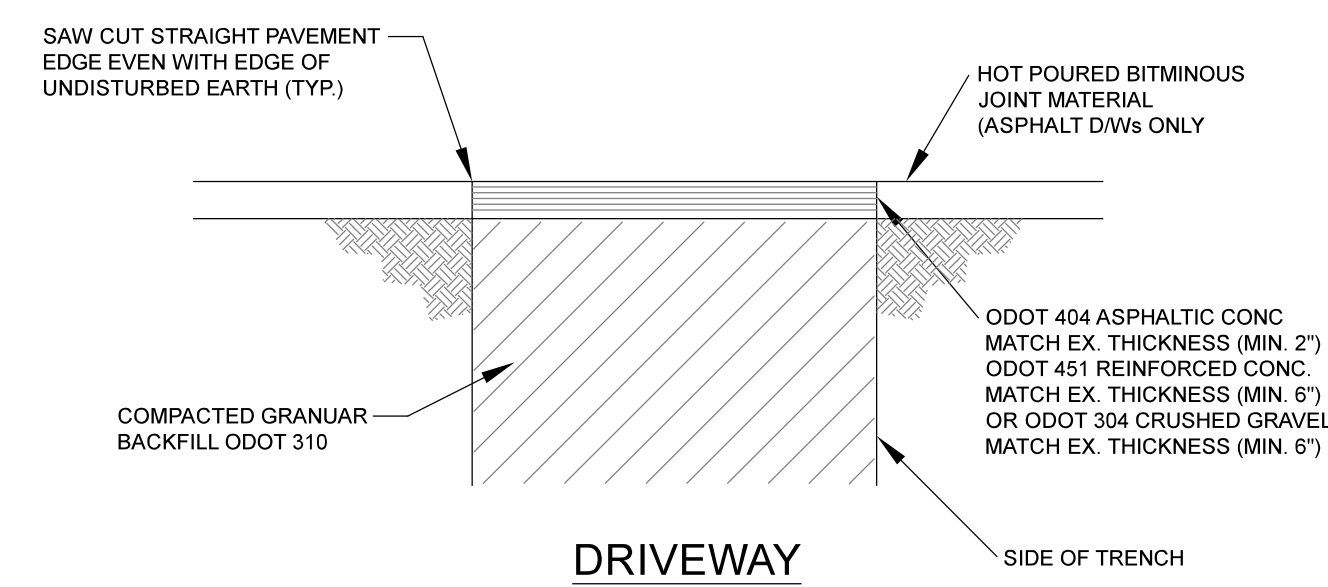
WEBSITE: <http://www.cardinalengineering.net>

WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS

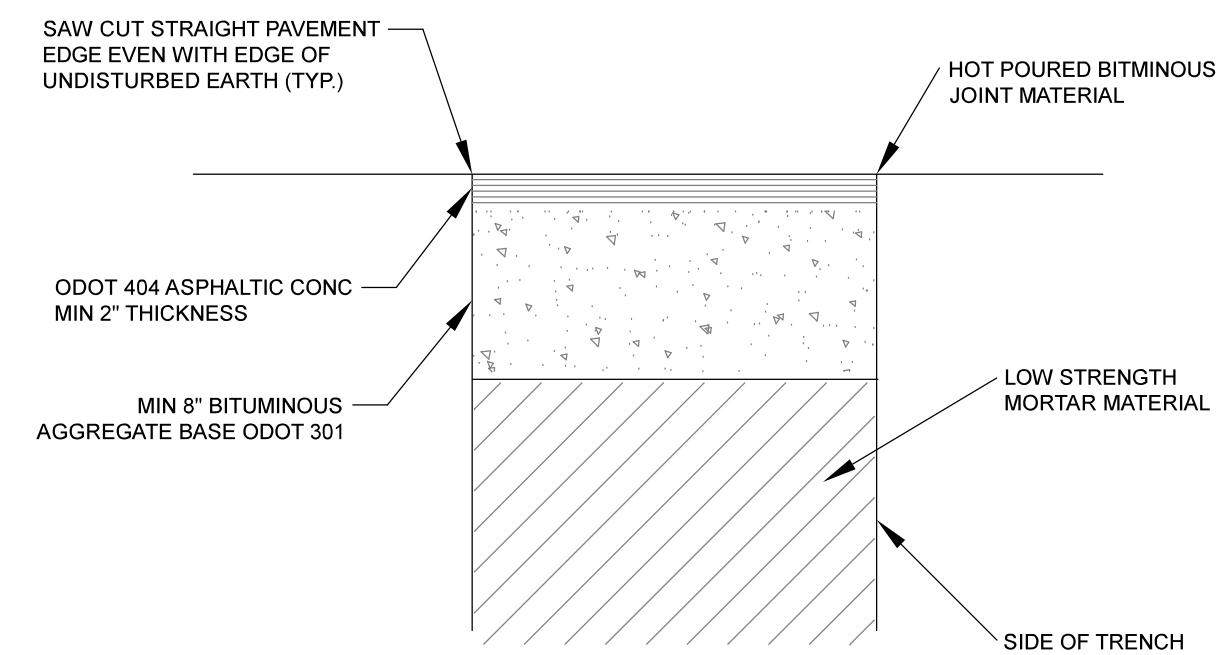
GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT:	SEAL
DRAWN BY:	TRC
CHECKED BY:	JGK
PROJECT MANAGER:	JGK
PROJECT NO.	19-096
SCALE	AS NOTED
DATE	11-01-19
SANITARY SEWER SPECIFICATIONS & DETAILS	
SHEET	

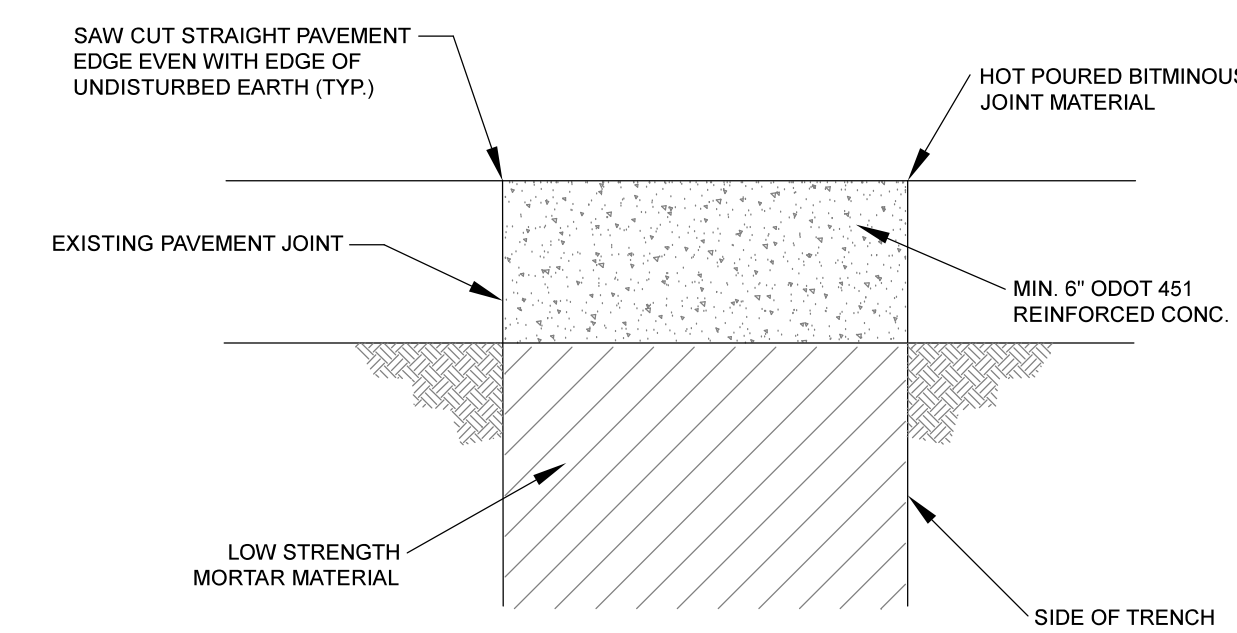
C-DT-1.3



DRIVEWAY

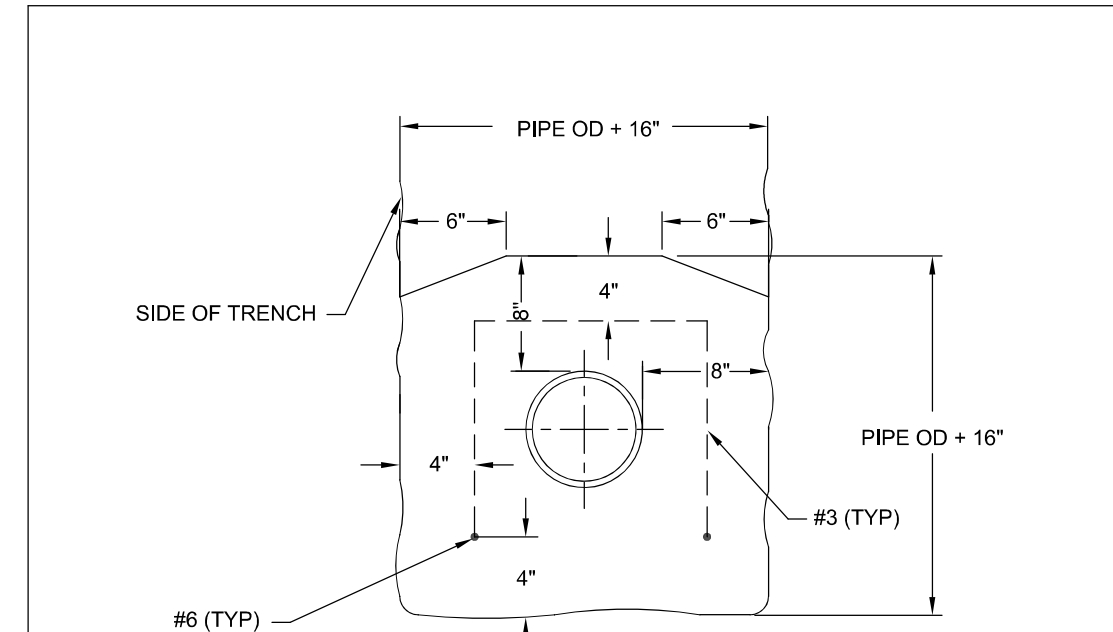


ASPHALT CONCRETE ROADWAY



CONCRETE ROADWAY

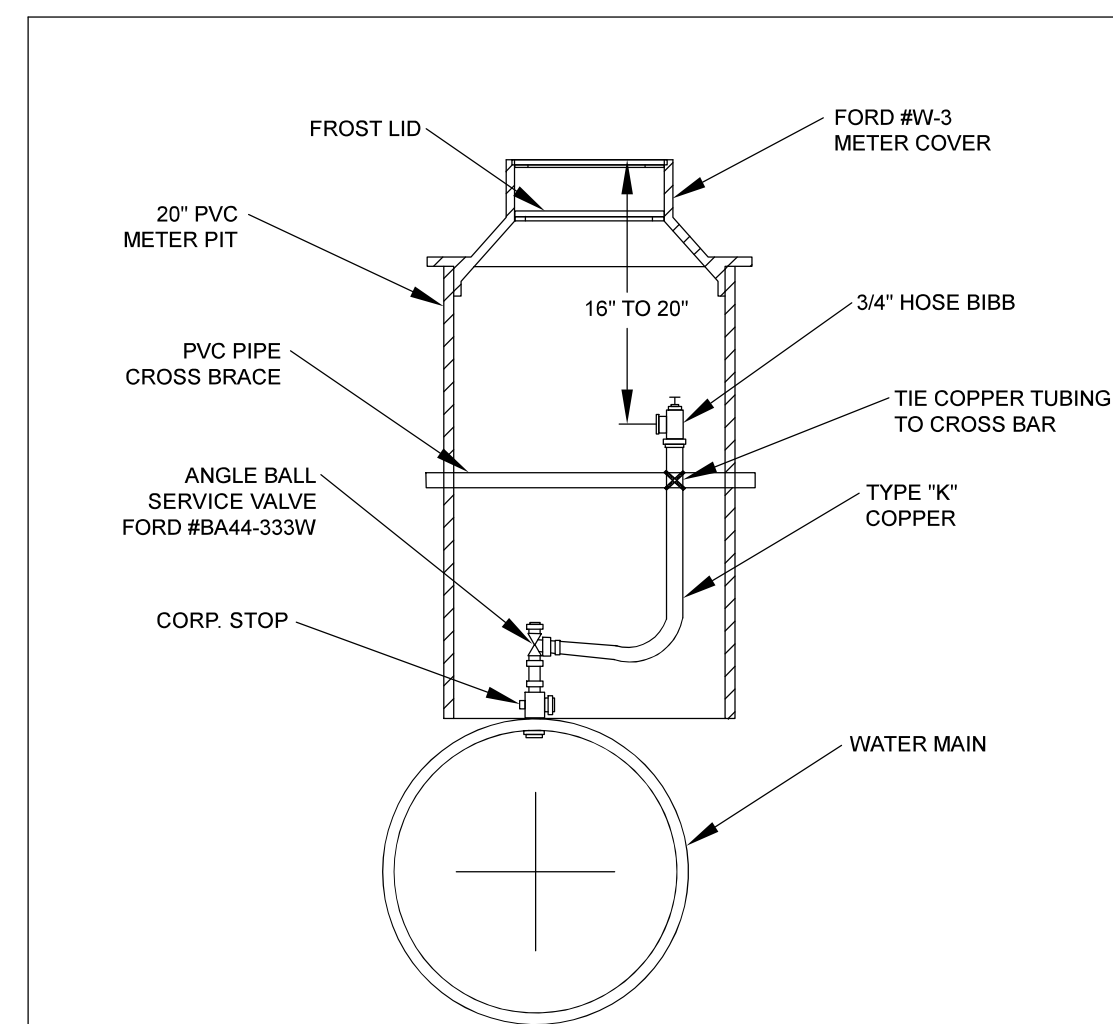
PAVEMENT REPLACEMENT DETAILS



PIPE SIZE	CY CONC PER LIN FT	LENGTH OF BETWEEN NO. 3 BARS	SPACING (FT)
6"	0.121	3'-9"	1.64
8"	0.139	4'-3"	1.25
10"	0.157	4'-9"	1.12
12"	0.177	5'-3"	1.02
16"	0.200	6'-3"	0.85
18"	0.247	6'-10"	0.78
20"	0.270	7'-5"	0.72
24"	0.315	8'-6"	0.63
30"	0.540	10'-0"	0.57

CONCRETE ENCASEMENT

6240



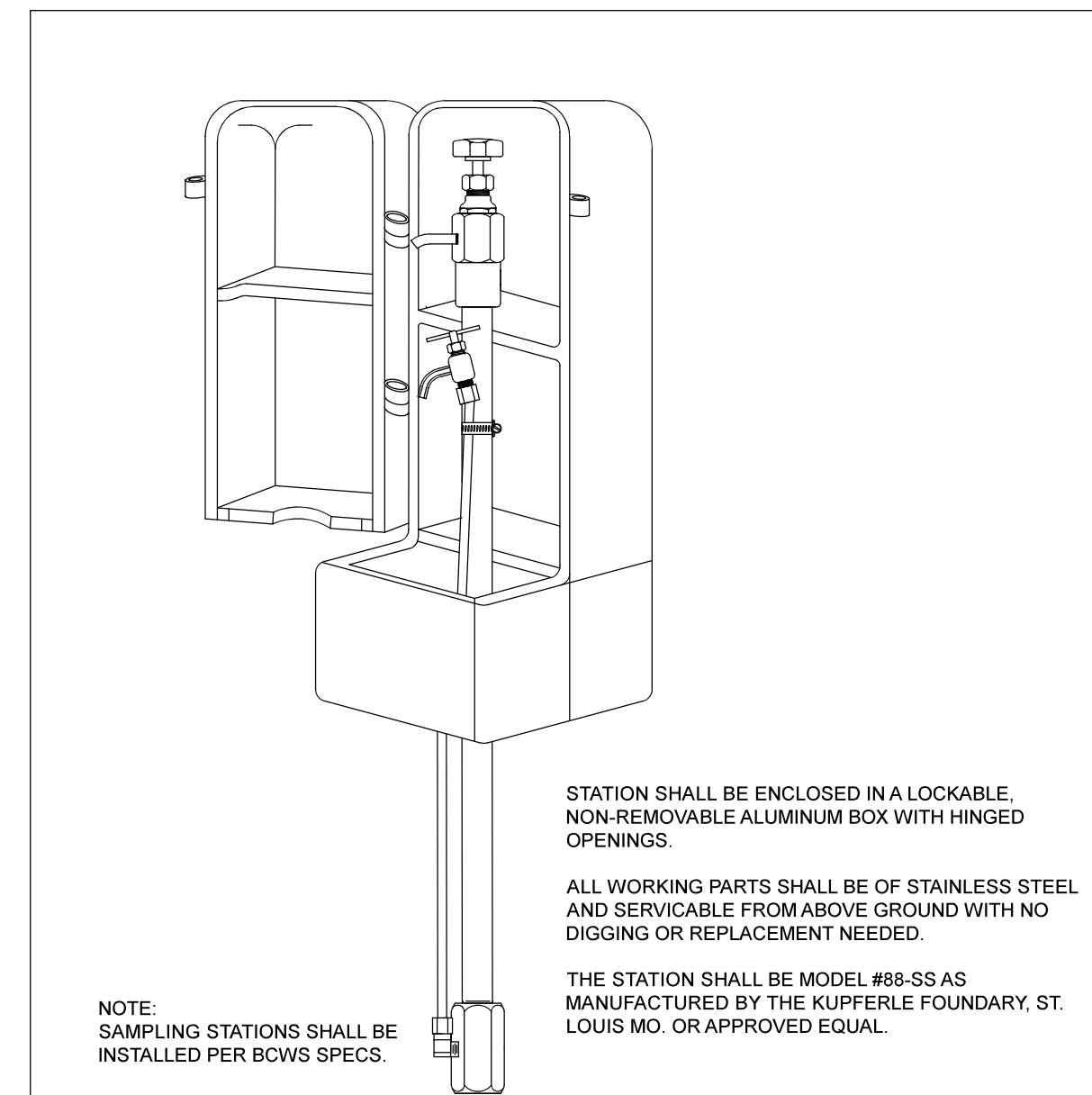
- NOTE:
- 1) PIPE LESS THAN OR EQUAL TO 12"Ø MUST USE 3/4" CDRP, STDP, ANGLE BALL VALVE AND SERVICE PIPE.
 - 2) PIPE GREATER THAN 12"Ø TO USE 1" CDRP, STDP, ANGLE BALL VALVE AND SERVICE PIPE.

AIR RELEASE VALVE

5290

SANITARY SEWER NOTES

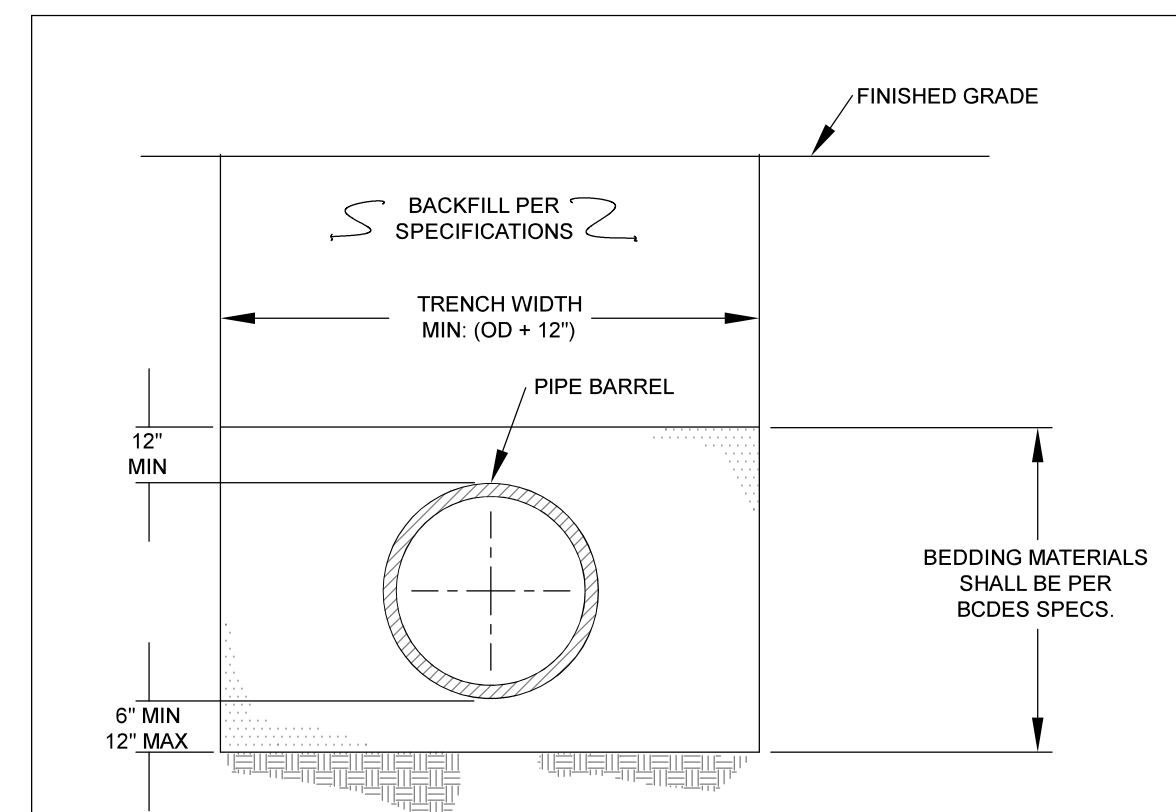
1. IF METER PITS CANNOT BE INITIALLY INSTALLED AT THE LOCATION SHOWN ON THE TYPICAL SECTION, A CURB STOP CAN BE SETUP AT THIS LOCATION.
2. WATER MAIN MATERIALS, VALVES, FIRE HYDRANTS, FITTINGS AND APPURTENANCES AND INSTALLATION TO BE AS PER BUTLER COUNTY SPECIFICATIONS, USING CLASS 53 DUCTILE IRON AS PER AWWA C-151 WITH FOUR (4) FOOT MINIMUM COVER.
3. BUTLER COUNTY WATER AND SEWER DEPARTMENT DOES NOT ACCEPT ANY RESPONSIBILITY FOR THE RELOCATION, REPAIR, OR REPLACEMENT OF ANY UTILITY INSTALLED WITHIN FIVE (5) FEET OF THE CENTER LINE OF ANY SANITARY SEWERMAIN OR WATER MAIN.
4. ALL WATER MAIN VALVES TO HAVE A MINIMUM DEPTH OF TWO AND ONE HALF (2.5) FEET FROM PROPOSED GRADE TO THE TOP OF THE VALVE OPERATING NUT.



NOTE: SAMPLING STATIONS SHALL BE INSTALLED PER BCWS SPECS.

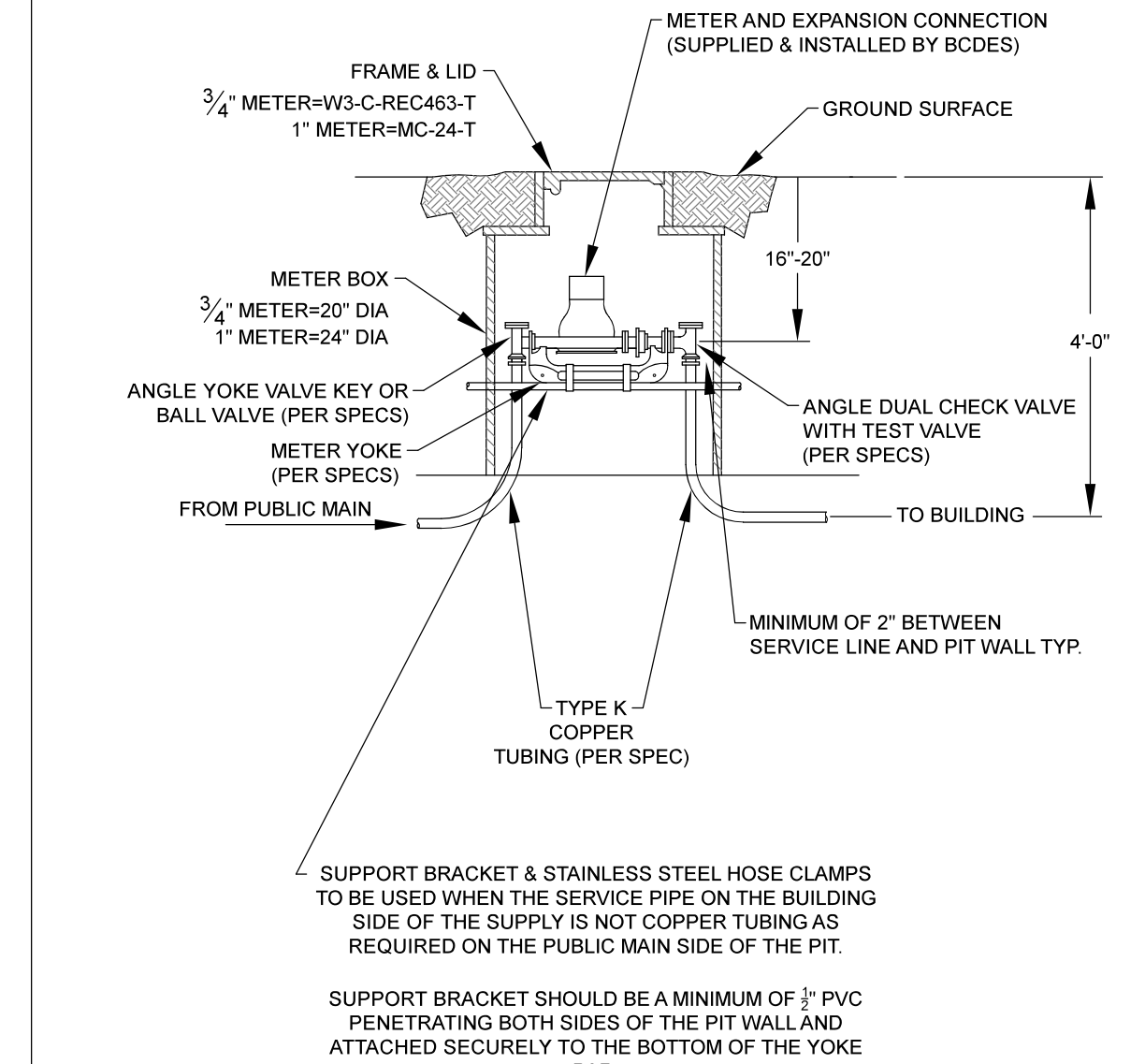
PERMANENT LAB SAMPLING STATION

5270



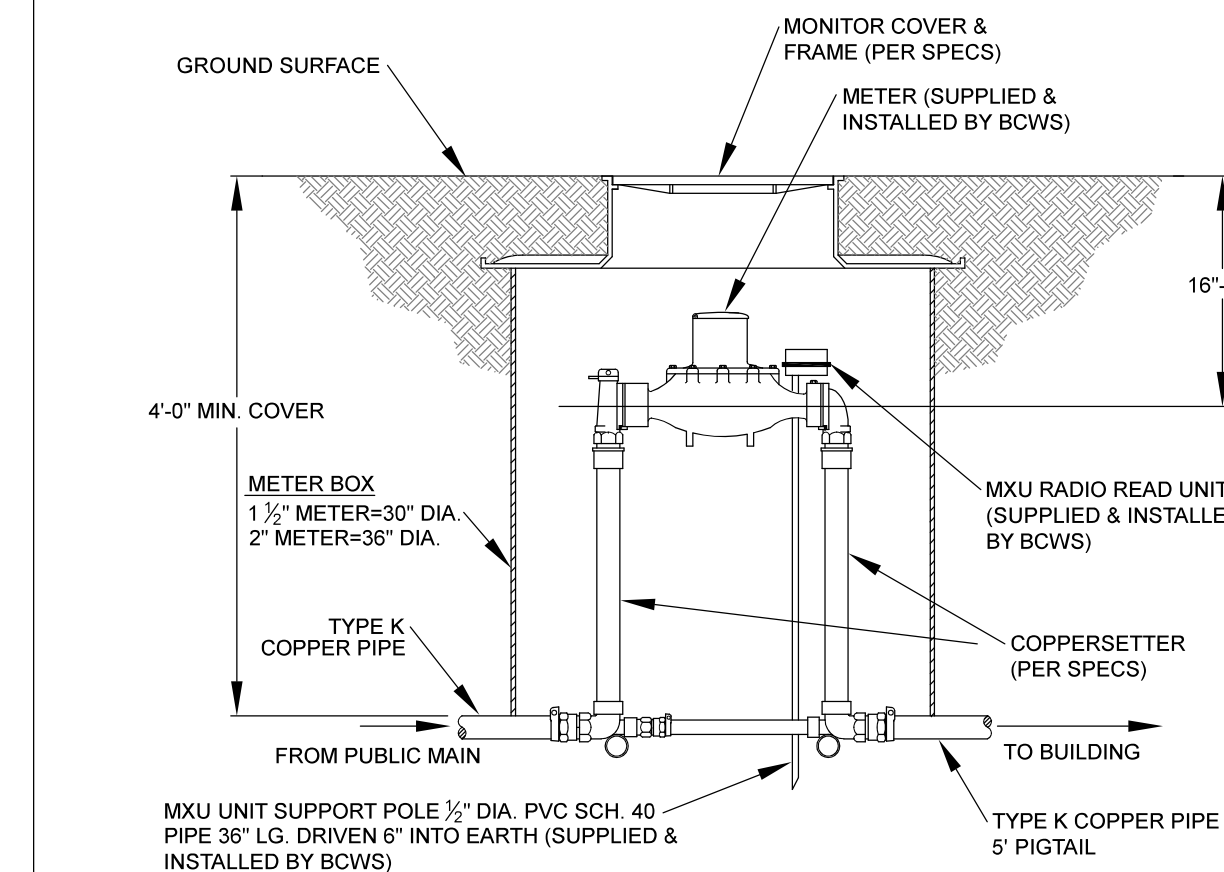
TYPICAL TRENCH DETAIL WATER MAIN INSTALLATION

5280



STANDARD INSTALLATION FOR 3/4" & 1" WATER METER SETTINGS

5150

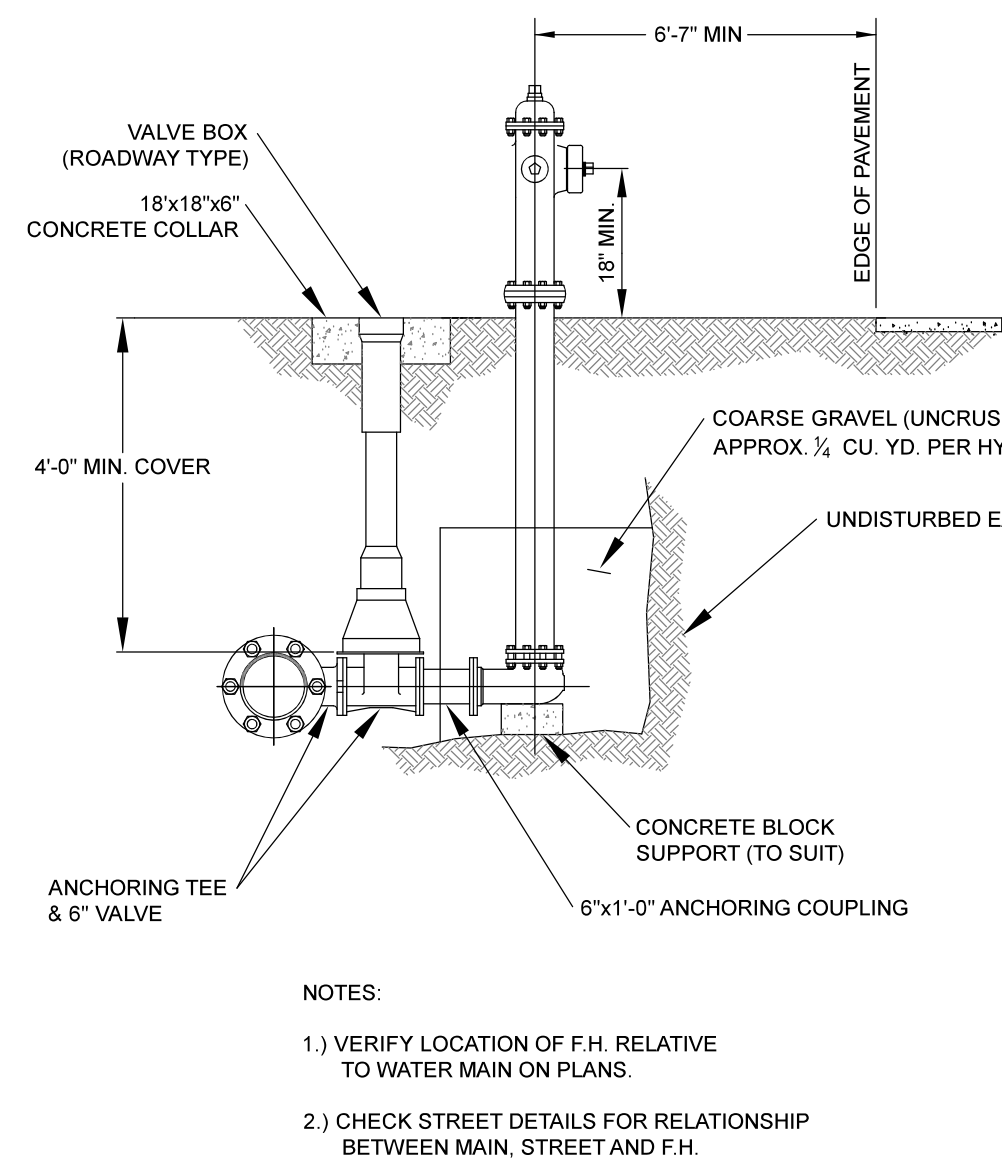


METER TYPE	LAYING LENGTH
1 1/2" C2 OMNI	13"
1 1/2" T2 OMNI	13"
2" C2 OMNI	17"
2" C2 OMNI FACTORY ORDERED	15 1/4"
2" T2 OMNI	17"

- NOTE:
- 1) FOR METERS 3" AND LARGER, REFER TO THE STD. INSTALLATION FOR 3" AND LARGER WATER METERS.
 - 2) ALL DOMESTIC WATER METERS SHALL BE SENSUS OMNI C2 TYPES FOR SIZES OF 1 1/2" AND LARGER. NON-DOMESTIC (IE. DUCT, IRRIGATION), MAY BE EITHER SENSUS OMNI T2 OR C2 TYPES FOR SIZES OF 1 1/2" AND LARGER.
 - 3) BUTLER COUNTY ORDERS 2" C2 OMNI METERS WITH A 17" LAYING LENGTH TO ACCOMMODATE THE STANDARD COPPERSETTER. IF THE FACTORY ORDERED SIZE IS UTILIZED AN ADAPTER FLANGE PLATE WILL BE REQUIRED.

STANDARD INSTALLATION FOR 1-1/2" & 2" WATER METER SETTINGS

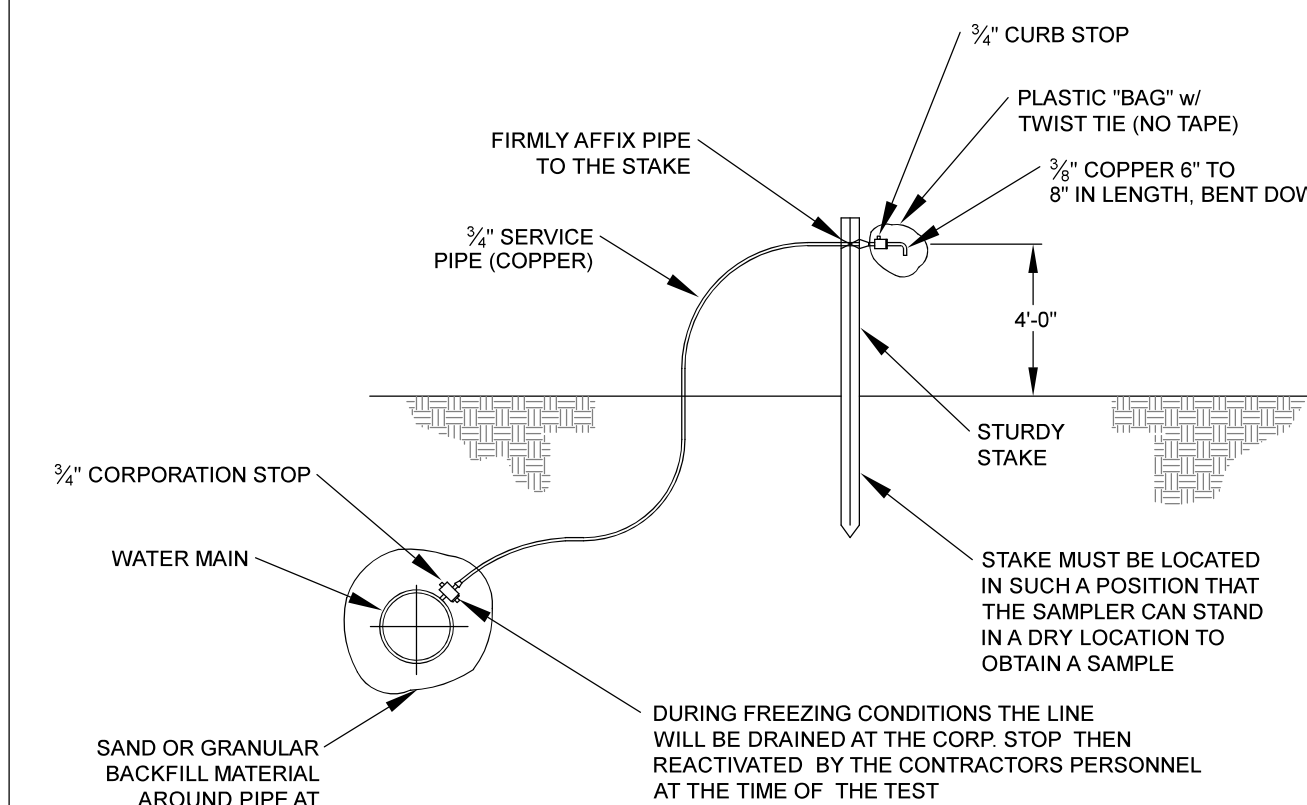
5170



- NOTES:
- 1) VERIFY LOCATION OF F.H. RELATIVE TO WATER MAIN ON PLANS.
 - 2) CHECK STREET DETAILS FOR RELATIONSHIP BETWEEN MAIN, STREET AND F.H.

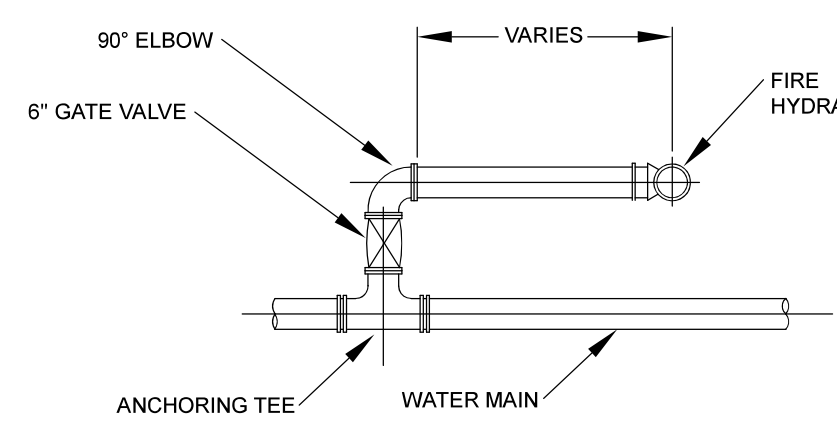
TYPICAL FIRE HYDRANT INSTALLATION

5110



PURITY TEST STATION

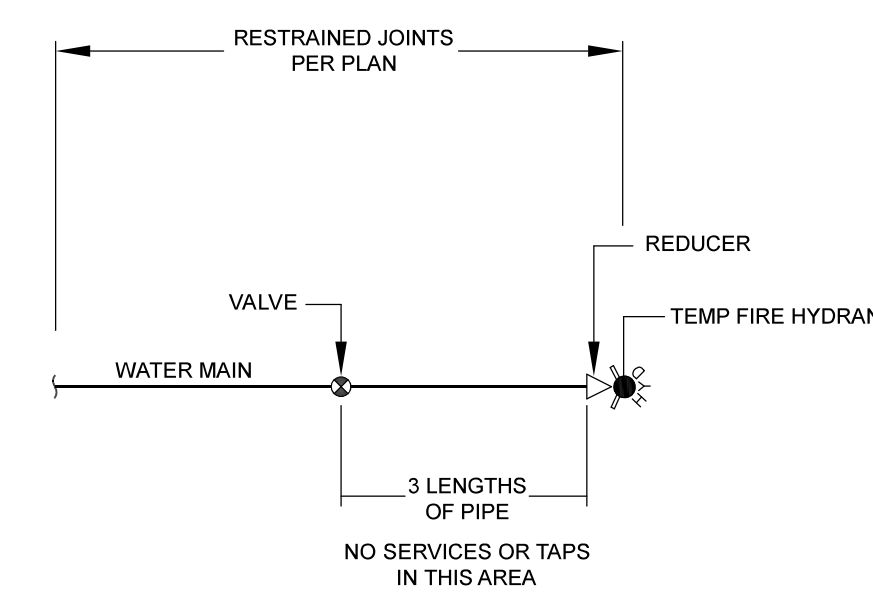
5260



- NOTES APPLY TO BOTH DETAILS:
- 1) FITTINGS TO BE MECHANICAL JOINT HYDRANT ANCHOR FITTINGS.
 - 2) SEE TYPICAL FIRE HYDRANT INSTALLATION DETAIL FOR ADDITIONAL DETAILS.

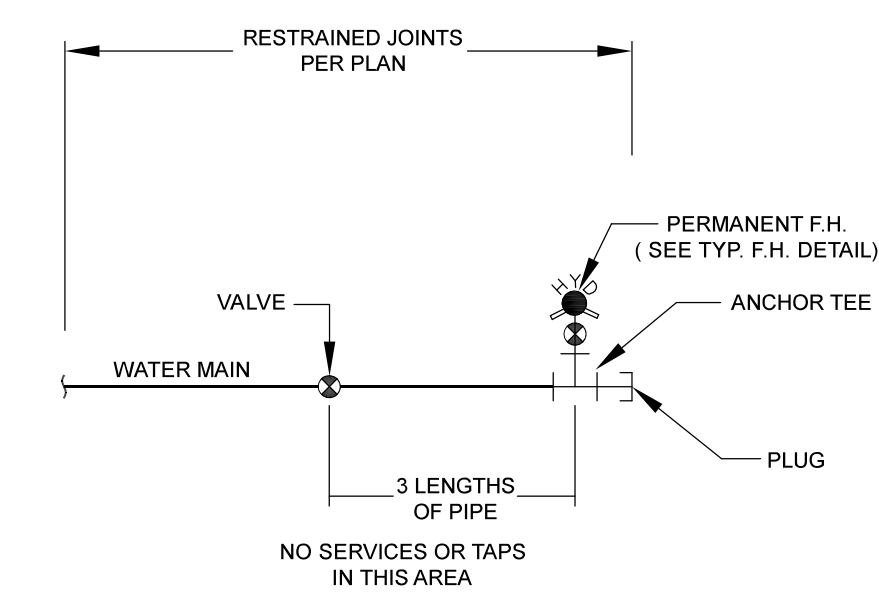
SETTING FOR HYDRANT ADJACENT TO MAIN

5120



DEAD END DETAIL WITH TEMPORARY FIRE HYDRANT

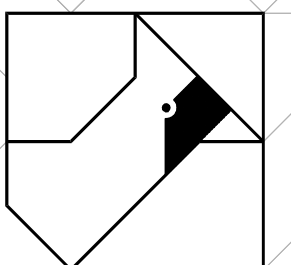
5140



DEAD END DETAIL W/ PERMANENT F.H.

5130

REVISIONS DATE	#	ITEM
03-24-20	1	REVISED PER BCWS



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WESTFALL PRESERVE PHASES 1-5
IMPROVEMENT PLANS

GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT:

SCALE:

TRC

CHECKED BY:

JGK

PROJECT MANAGER:

JGK

PROJECT NO. 19-096

SCALE AS NOTED

DATE 11-01-19

WATERLINE SPECIFICATIONS & DETAILS

SHEET

C-DT-1.4

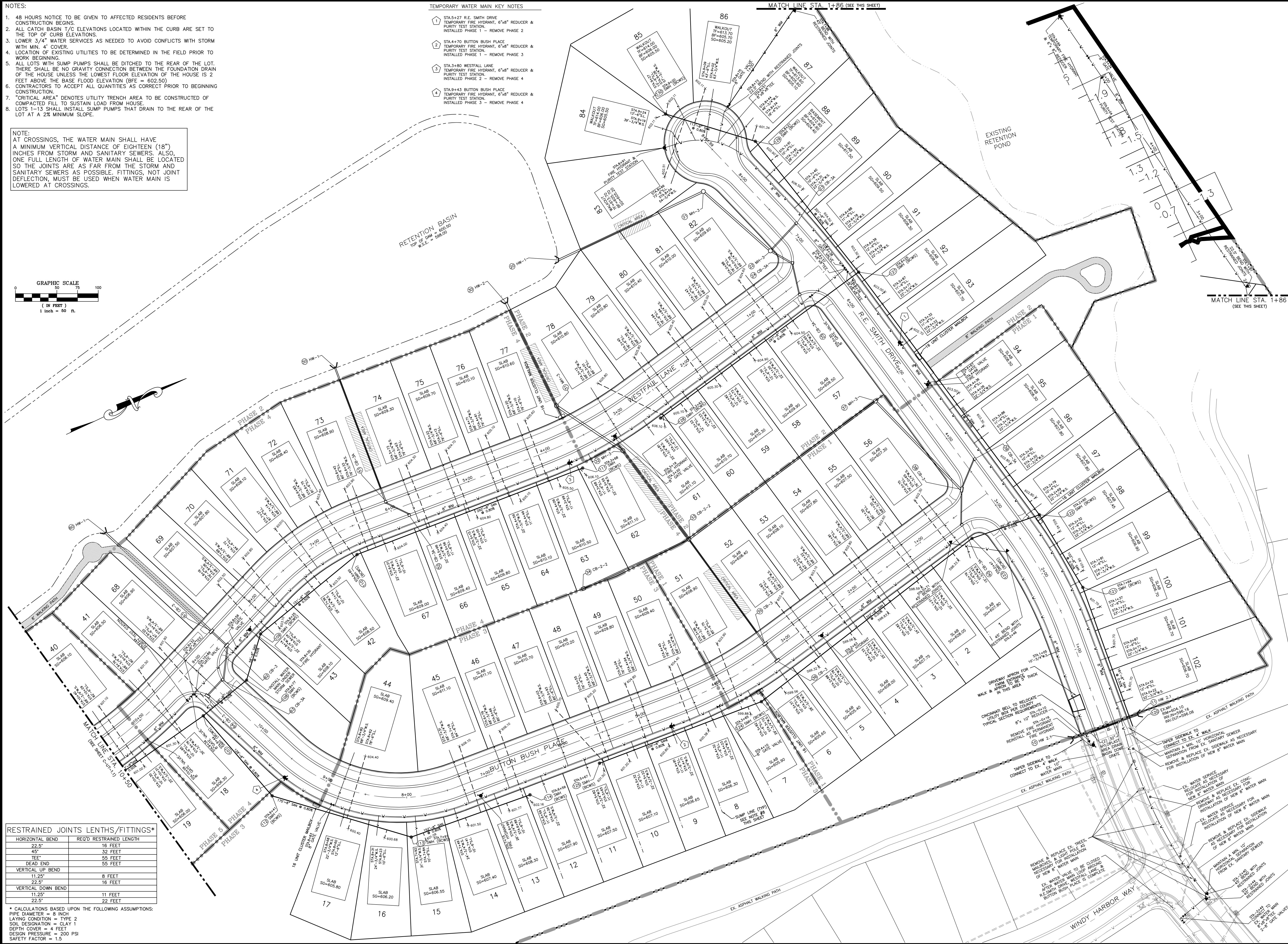
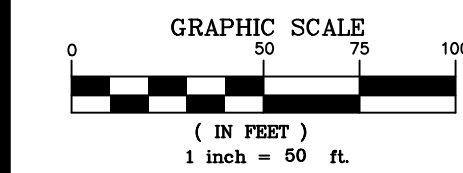
NOTES:

- 48 HOURS NOTICE TO BE GIVEN TO AFFECTED RESIDENTS BEFORE CONSTRUCTION BEGINS.
- ALL CATCH BASIN T/C ELEVATIONS LOCATED WITHIN THE CURB ARE SET TO THE TOP OF CURB ELEVATIONS.
- LOWER 3/4" WATER SERVICES AS NEEDED TO AVOID CONFLICTS WITH STORM WITH MIN. 4" COVER.
- LOCATION OF EXISTING UTILITIES TO BE DETERMINED IN THE FIELD PRIOR TO WORK BEGINNING.
- ALL LOTS WITH SUMP PUMPS SHALL BE DITCHED TO THE REAR OF THE LOT. THERE SHALL BE NO GRAVITY CONNECTION BETWEEN THE FOUNDATION DRAIN OF THE HOUSE UNLESS THE LOWEST FLOOR ELEVATION OF THE HOUSE IS 2 FEET ABOVE THE BASE FLOOD ELEVATION (BFE = 602.50)
- CONTRACTORS TO ACCEPT ALL QUANTITIES AS CORRECT PRIOR TO BEGINNING CONSTRUCTION.
- "CRITICAL AREA" DENOTES UTILITY TRENCH AREA TO BE CONSTRUCTED OF COMPACTED FILL TO SUSTAIN LOAD FROM HOUSE.
- LOTS 1-13 SHALL INSTALL SUMP PUMPS THAT DRAIN TO THE REAR OF THE LOT AT A 2% MINIMUM SLOPE.

NOTE:
AT CROSSINGS, THE WATER MAIN SHALL HAVE A MINIMUM VERTICAL DISTANCE OF EIGHTEEN (18") INCHES FROM STORM AND SANITARY SEWERS. ALSO, ONE FULL LENGTH OF WATER MAIN SHALL BE LOCATED SO THE JOINTS ARE AS FAR FROM THE STORM AND SANITARY SEWERS AS POSSIBLE. FITTINGS, NOT JOINT DEFLECTION, MUST BE USED WHEN WATER MAIN IS LOWERED AT CROSSINGS.

TEMPORARY WATER MAIN KEY NOTES

- STA.5+27 R.E. SMITH DRIVE
TEMPORARY FIRE HYDRANT, 6"x8" REDUCER & PURITY TEST STATION.
INSTALLED PHASE 1 - REMOVE PHASE 2
- STA.4+70 BUTON BUSH PLACE
TEMPORARY FIRE HYDRANT, 6"x8" REDUCER & PURITY TEST STATION.
INSTALLED PHASE 1 - REMOVE PHASE 3
- STA.3+80 WESTFALL LANE
TEMPORARY FIRE HYDRANT, 6"x8" REDUCER & PURITY TEST STATION.
INSTALLED PHASE 2 - REMOVE PHASE 4
- STA.9+43 BUTON BUSH PLACE
TEMPORARY FIRE HYDRANT, 6"x8" REDUCER & PURITY TEST STATION.
INSTALLED PHASE 2 - REMOVE PHASE 4



RESTRAINED JOINTS LENGTHS/FITTINGS*

HORIZONTAL BEND	REQ'D RESTRAINED LENGTH
22.5°	18 FEET
45°	32 FEET
TEE	55 FEET
DEAD END	55 FEET
VERTICAL UP BEND	
11.25°	8 FEET
22.5°	16 FEET
VERTICAL DOWN BEND	
11.25°	11 FEET
22.5°	22 FEET

* CALCULATIONS BASED UPON THE FOLLOWING ASSUMPTIONS:
PIPE DIAMETER = 8 INCH
LAYING CONDITION = TYPE 2
SOIL DESIGNATION = CLAY 1
DEPTH COVER = 4 FEET
DESIGN PRESSURE = 200 PSI
SAFETY FACTOR = 1.5

REVISIONS

DATE	#	ITEM
03-24-20	1	REVISED PER BCWS
04-13-20	2	REVISED GRADING PER CLIENT
04-14-20	3	REVISED PER BCEO
04-16-20	4	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT

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**WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS**

GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT: WESTFALL PRESERVE PHASES 1 - 5
CLIENT: GRAND COMMUNITIES, LLC

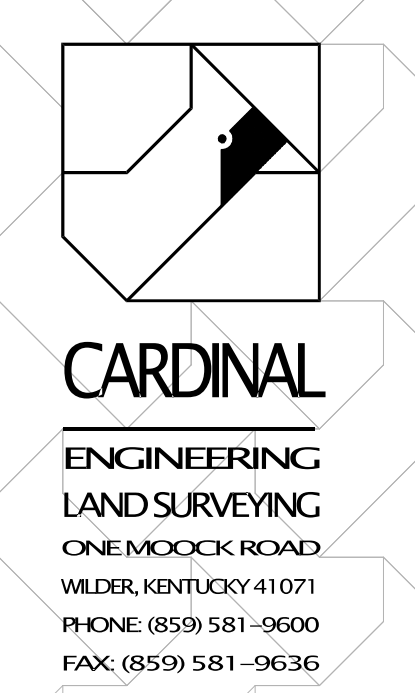
DRAWN BY: TRC
CHECKED BY: JGK
PROJECT MANAGER: JGK

PROJECT NO. 19-096
SCALE 1" = 50'
DATE 11-01-19

UTILITY PLAN
SHEET C-UT-1.0

TEMPORARY WATER MAIN KEY NOTES
 5 STA 10+69 WESTFALL LANE
 TEMPORARY FIRE HYDRANT, 6" x 8" REDUCER &
 PURITY TEST STATION.
 INSTALLED PHASE 4 - REMOVE PHASE 5

REVISIONS DATE	#	ITEM
03-24-20	1	REVISED PER BCWS
04-13-20	2	REVISED GRADING PER CLIENT
04-14-20	3	REVISED PER BCWO
04-29-20	6	REVISED PER CLIENT



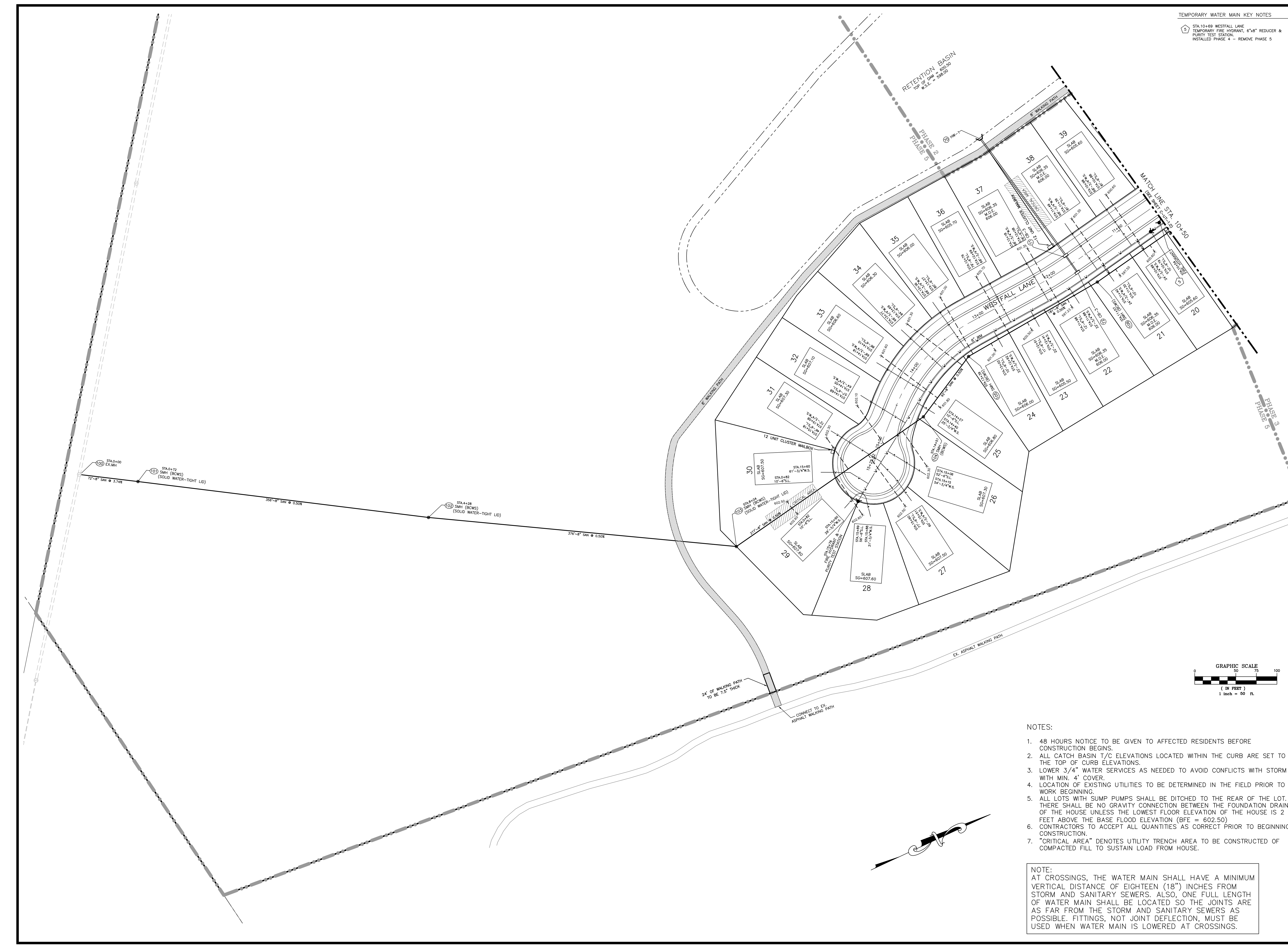
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PROJECT: WESTFALL PRESERVE PHASES 1 - 5
 IMPROVEMENT PLANS

CLIENT: GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018

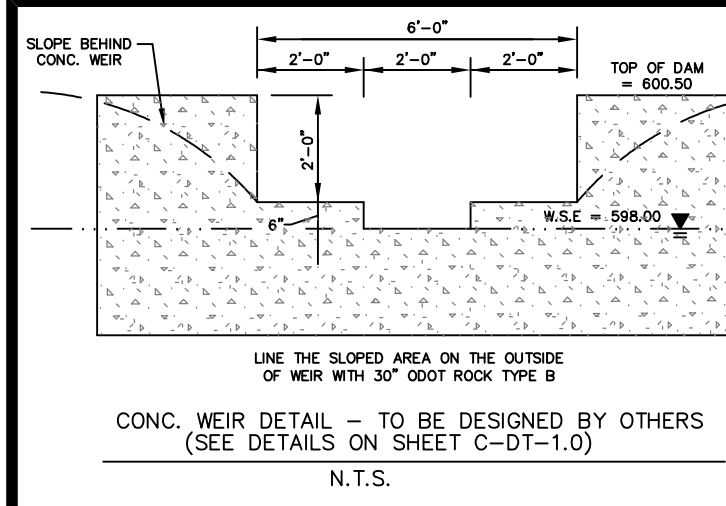
PROJECT MANAGER:	JCK
CHECKED BY:	JGK
DRAWN BY:	TRC
SCALE:	1" = 50'

PROJECT NO. 19-096
 SCALE 1" = 50'
 DATE 11-01-19
 UTILITY PLAN
 SHEET C-UT-1.1



- NOTES:
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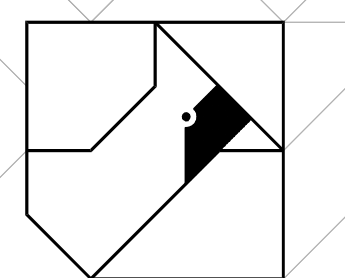
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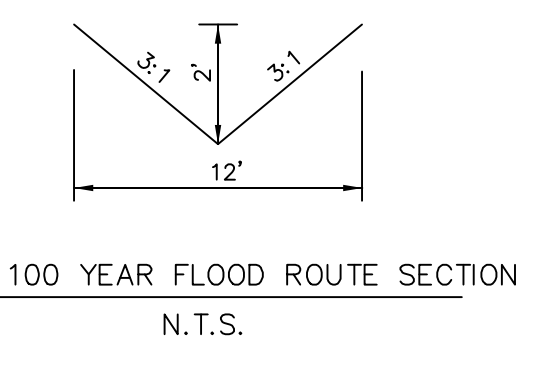
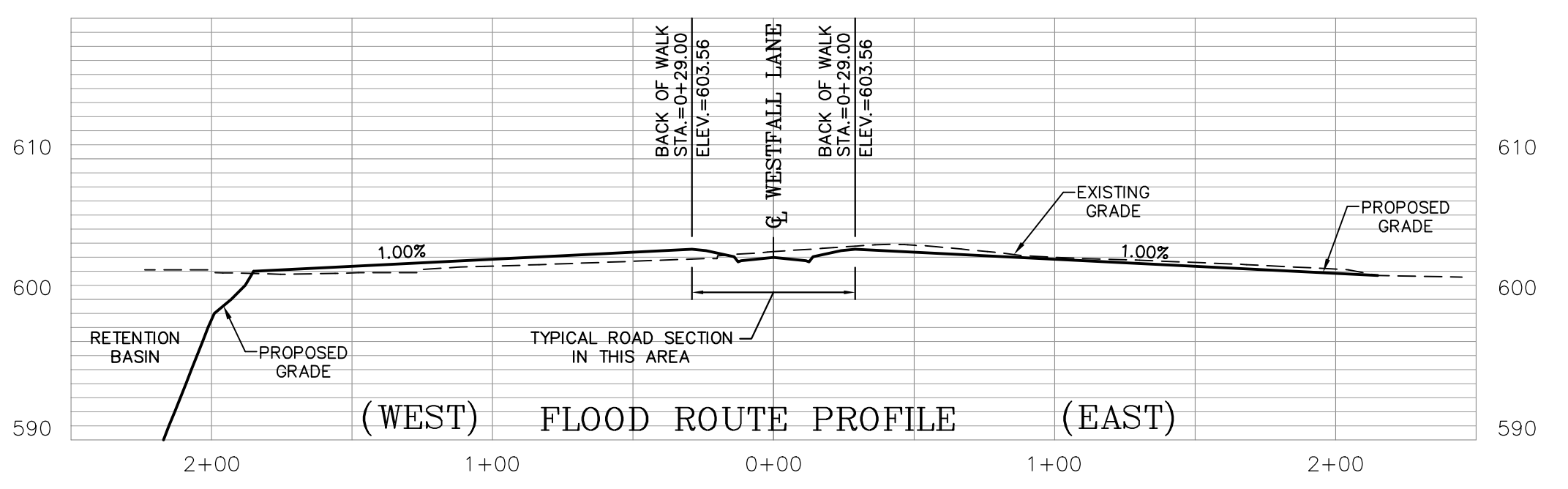
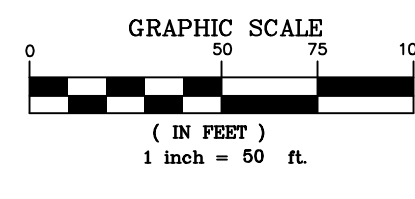
**WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS**

GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

PROJECT:	SEAL
DRAWN BY:	TRC
CHECKED BY:	JGK
PROJECT MANAGER:	JGK

PROJECT NO. 19-096
SCALE 1" = 50'
DATE 11-01-19

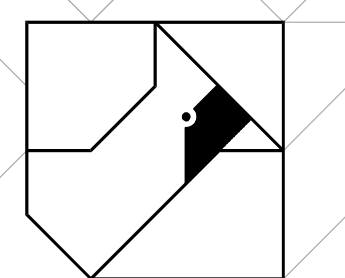
GRADING PLAN
SHEET
C-GR-1.0



FLOODPLAIN MITIGATION INFORMATION	
REQUIREMENT:	1:1 VOLUME COMPENSATION OF 100-YR FLOODPLAIN FOR PRE-DEVELOPED AND POST DEVELOPED CONDITION.
BASE FLOODPLAIN ELEVATION:	602.50
VOLUME BELOW BASE FLOODPLAIN ELEVATION:	
PRE-DEVELOPMENT:	280,992 CY
POST-DEVELOPMENT:	289,177 CY
POST-DEVELOPMENT VOLUME EXCEEDS PRE-DEVELOPMENT VOLUME; CRITERIA MET	

NOTES:
 1. STRUCTURES 80 & 81 AND 18" PIPE CULVERT UNDER DAM TO BE CONSTRUCTED WHEN SOUTHERN RETENTION BASIN IS COMPLETED IN PHASE 5. STRUCTURES AND PIPE NOT TO BE INSTALLED IN PRIOR PHASES IN ORDER TO ENSURE PROPER DETENTION DESIGN.

REVISIONS DATE	#	ITEM
04-13-20	2	REVISED GRADING PER CLIENT
04-14-20	3	REVISED PER BCEO
04-28-20	5	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT



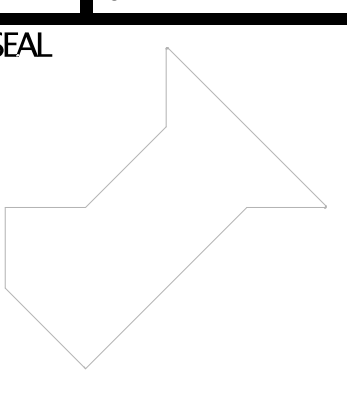
CARDINAL
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WESTFALL PRESERVE PHASES 1-5
 IMPROVEMENT PLANS

GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018

PROJECT: WESTFALL PRESERVE PHASES 1-5 IMPROVEMENT PLANS
 DRAWN BY: TRC
 CHECKED BY: JGK
 PROJECT MANAGER: JGK



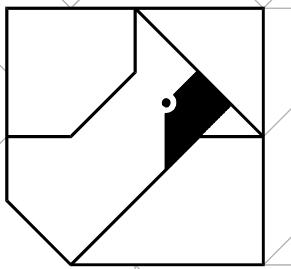
PROJECT NO. 19-096
 SCALE 1" = 50'
 DATE 11-01-19

GRADING PLAN
 SHEET C-GR-1.1

FLOODPLAIN MITIGATION INFORMATION
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REVISIONS DATE #	ITEM
------------------	------

04-28-20	5	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT



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WESTFALL PRESERVE PHASES 1-5
 IMPROVEMENT PLANS

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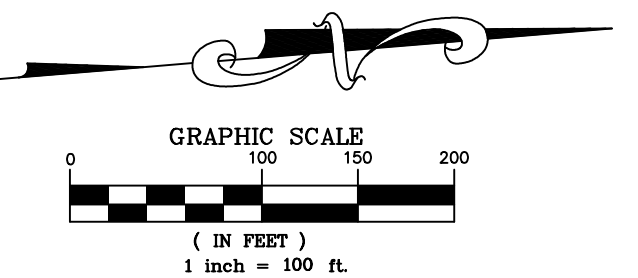
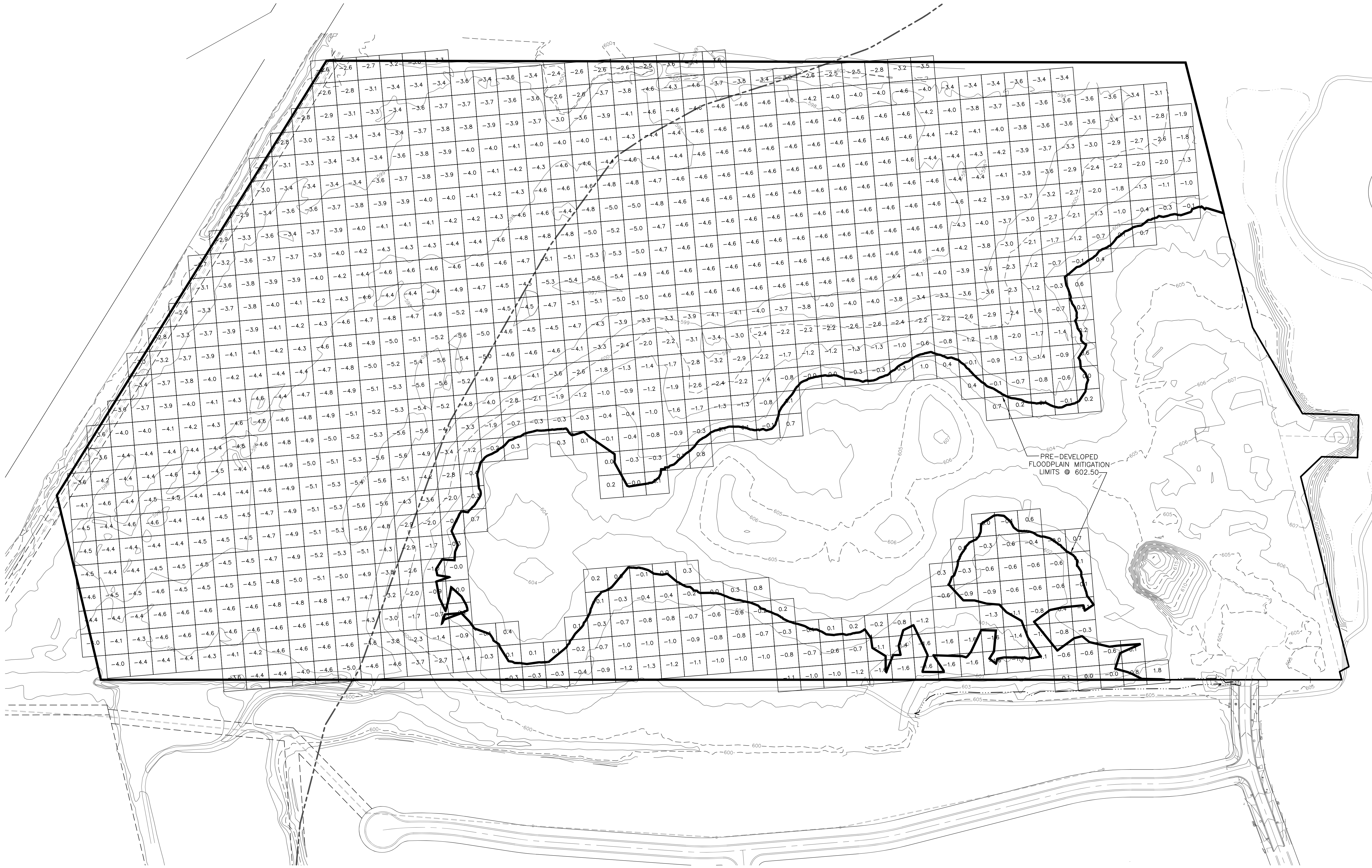
PROJECT:
 CLIENT:

DRAWN BY: TRC	SEAL
CHECKED BY: JGK	
PROJECT MANAGER: JGK	

PROJECT NO. 19-096
 SCALE 1" = 100'
 DATE 11-01-19

GRADING PLAN
 FLOODPLAIN MITIGATION PRE
 SHEET

C-GR-1.2

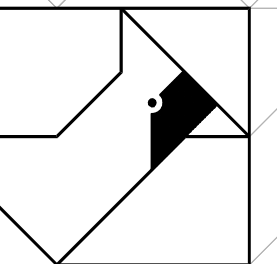


FLOODPLAIN MITIGATION INFORMATION

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REVISIONS DATE #	ITEM
04-28-20 5	REVISED PER BCEO
05/07/20 6	REVISED PER CLIENT



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 ERLANGER, KENTUCKY 41018

PROJECT:

DRAWN BY: TRC

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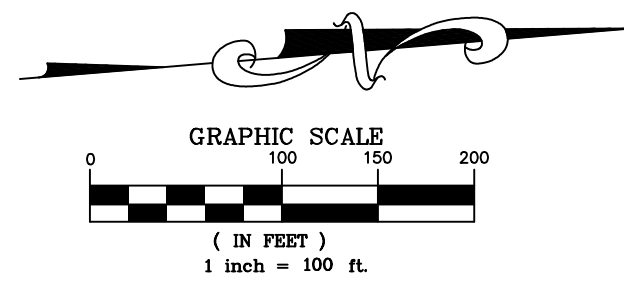
PROJECT MANAGER: JGK

SEAL

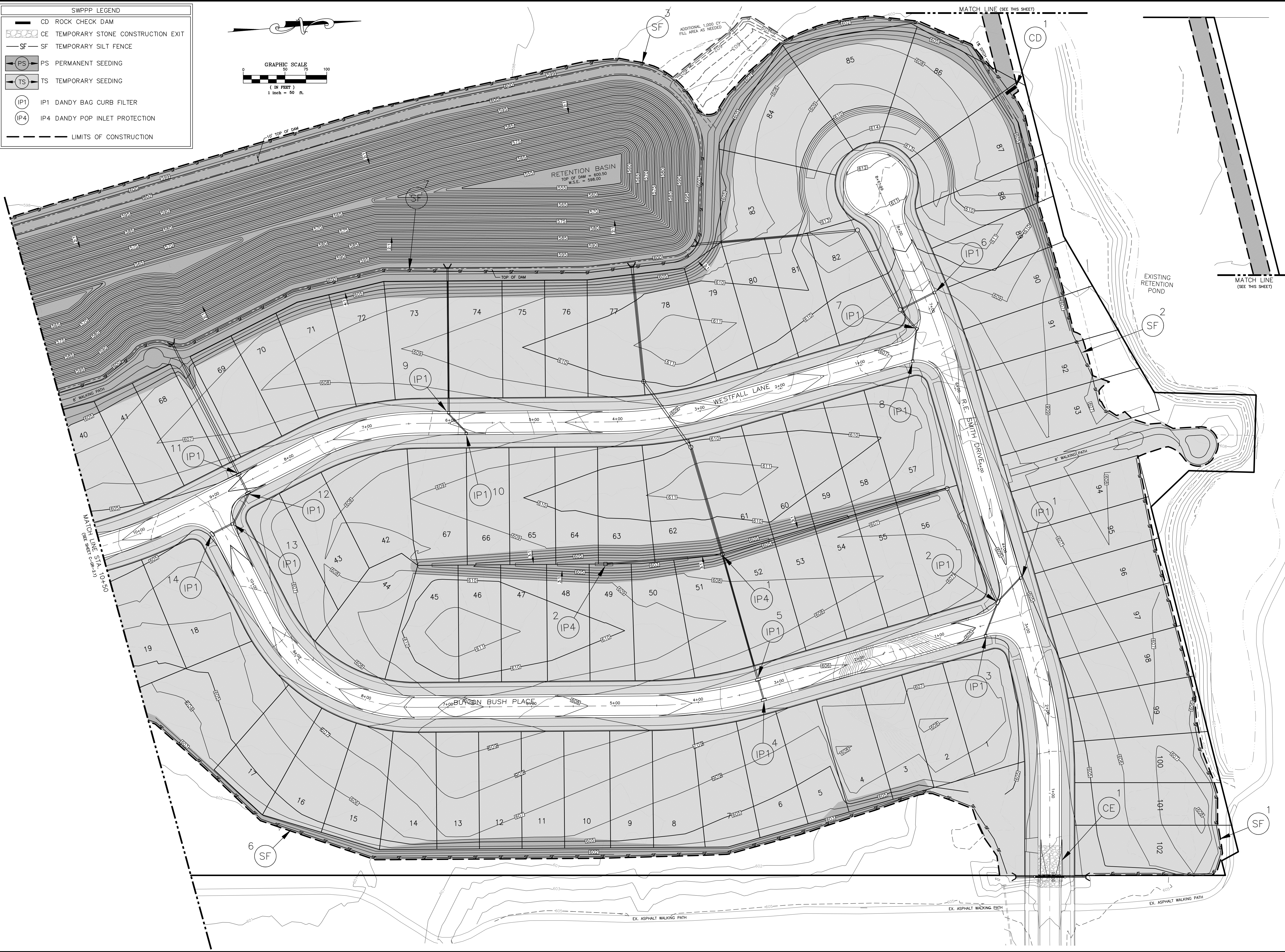
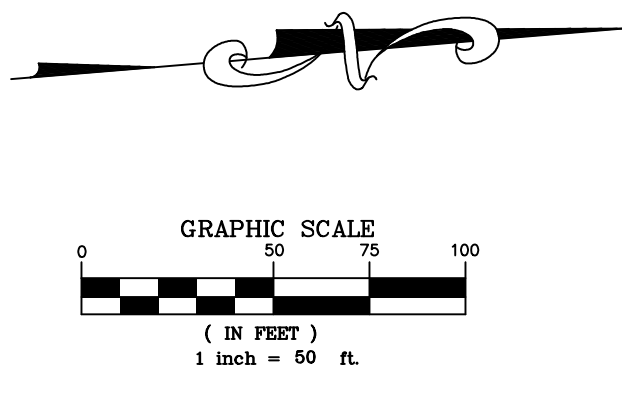
PROJECT NO. 19-096
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GRADING PLAN
 FLOODPLAIN MITIGATION POST
 SHEET

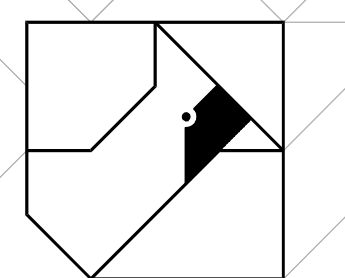
C-GR-1.3



SWPPP LEGEND	
	CD ROCK CHECK DAM
	CE TEMPORARY STONE CONSTRUCTION EXIT
	SF TEMPORARY SILT FENCE
	PS PERMANENT SEEDING
	TS TEMPORARY SEEDING
	IP1 DANDY BAG CURB FILTER
	IP4 DANDY POP INLET PROTECTION
	--- LIMITS OF CONSTRUCTION



REVISIONS DATE	#	ITEM
04-13-20	2	REVISED GRADING PER CLIENT
04-14-20	3	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT



CARDINAL
 ENGINEERING
 LAND SURVEYING
 ONE MOOCK ROAD
 WILDER, KENTUCKY 41071
 PHONE: (859) 581-9600
 FAX: (859) 581-9636

WEBSITE: <http://www.cardinalengineering.net>

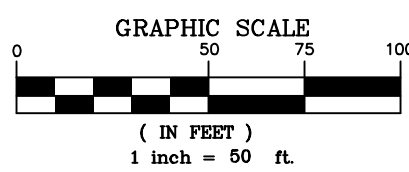
PROJECT: WESTFALL PRESERVE PHASES 1 - 5
IMPROVEMENT PLANS

CLIENT: GRAND COMMUNITIES, LLC
 3940 OLYMPIC BOULEVARD, SUITE 400
 ERLANGER, KENTUCKY 41018

DRAWN BY: TRC	SEAL:
CHECKED BY: JGK	
PROJECT MANAGER: JGK	

PROJECT NO. 19-096
SCALE 1" = 50'
DATE 11-01-19

SWPPP PLAN
SHEET C-GR-2.0



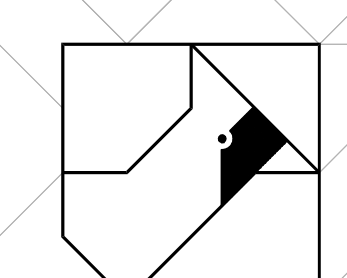
OEPA SWP3 REQUIREMENTS_OHC000005

- A. PROJECT DESCRIPTION - THE PROJECT INCLUDES LOW DENSITY RESIDENTIAL DEVELOPMENT. THIS SUBDIVISION WILL ULTIMATELY CONSIST OF 102 SINGLE-FAMILY HOMES AND OPEN SPACE, WITH STREETS AND A STORM WATER CONTROL FEATURE.
- B. SITE AREA - PROPERTY AREA = 74.33 ACRES; AREA TO BE DISTURBED 34.0 ACRES
- C. IMPERVIOUS AREA - PREDEVELOPED = 0 SF PROPOSED IMPERVIOUS AREA = 11,519 ACRES; 34% OF DISTURBED AREA
- D. STORMWATER CALCULATIONS - REFER TO THE PROJECT DRAINAGE REPORT FOR FURTHER DETAIL TITLED "AMENDED DRAINAGE REPORT WESTFALL PRESERVE SUBDIVISION" DATED 03/31/2020.
- E. EXISTING SOIL DATA - SOILS INFORMATION FROM NRCS INDICATES THAT THE SITE IS MOSTLY COMPRISED OF XENIA SILT LOAM, SOUTHERN OHIO TILL PLAIN (XEB), PATTON SILTY CLAY LOAM (PA), HENSHAW SILT LOAM (HOA), FINGCASTLE SILT LOAM, SOUTHERN OHIO TILL PLAIN (FOA), AND ELDEAN LOAM (EB2), WHICH ACCORDING TO THE OHIO USDA NATURAL RESOURCES CONSERVATION SERVICE CLASSIFIES THESE AS HSG C, WHICH WAS USED FOR PRE-DEVELOPMENT CURVE NUMBERS. HSG D WAS USED FOR POST DEVELOPMENT CURVE NUMBERS.
- F. EXISTING LAND USE - UNDEVELOPED FARM LAND
- G. NO EXISTING STREAMS, WETLANDS OR CHANNELS ARE PRESENT ON SITE.
- H. IMPLEMENTATION SCHEDULE - THE FOLLOWING OPERATIONS WILL BE PERFORMED AS PART OF THIS APPLICATION: 1) INSTALLATION OF EROSION CONTROL MEASURES; 2) CLEARING AND GRUBBING; 3) GRADING; 4) INSTALLATION OF RETENTION BASIN; 5) INSTALLATION OF INFRASTRUCTURE (I.E. STORM SEWERS, SANITARY SEWERS, WATER MAINS, UNDERGROUND ELECTRIC, UNDERGROUND TELEPHONE); 6) CONSTRUCTION OF PUBLIC STREETS;
- I. RECEIVING WATER - TRIBUTARY TO MILL CREEK.
- J. SEE PLANS FOR PARCEL LINES.
- K. NO STORMWATER DISCHARGES ASSOCIATED WITH DEDICATED CONCRETE PLANTS ARE PRESENT OR PROPOSED.
- L. SEE C-TS-1.0 FOR DEVELOPER CONTACT INFORMATION.
- M. SWPPP CONTRACTOR TO BE RESPONSIBLE FOR ON-SITE RECORD OF LOGS DOCUMENTATION GRADING AND STABILIZATION ACTIVITIES.

- N. REFER TO C-GR SHEETS HEREIN FOR:
 - I. LIMITS OF DISTURBANCE
 - II. SOIL TYPES LISTED ABOVE
 - III. EXISTING AND PROPOSED CONTOURS
 - IV. NO RIPARIAN SETBACKS ARE PRESENT OR PROPOSED.
 - V. NO CONSERVATION EASEMENTS ARE PRESENT OR PROPOSED.
 - VI. NO EXISTING STREAMS, WETLANDS OR SURFACE WATERS ARE EXISTING OR REQUIRE LOCATION.
 - VII. PROPOSED BUILDINGS, ROADS AND HARDSCAPE
 - VIII. EROSION CONTROL AND SEDIMENT CONTROL PRACTICES
 - IX. SEDIMENT TRAPS AND RETENTION/DETENTION BASIN. SEE REPORT FOR FURTHER DETAIL.
 - X. PERMANENT STORMWATER MANAGEMENT PRACTICES AND STORMWATER QUALITY. SEE REPORT FOR FURTHER DETAIL.
 - XI. CONTRACTOR TO DETERMINE AREAS DESIGNATED FOR STORAGE OF WASTES AND DUMPSTER AREAS AS REQUIRED AND ADJUSTED LOCATIONS PER PHASE OF DEVELOPMENT.
 - XII. CONSTRUCTION ENTRANCE
 - XIII. SEE C-GR-1.0 FOR FLOODPLAIN DETAIL. NO STREAM RESTORATION OR CROSSING IS PRESENT OR PROPOSED.

SWPPP LEGEND	
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	SF TEMPORARY SILT FENCE
	PS PERMANENT SEEDING
	TS TEMPORARY SEEDING
	IP1 IP1 DANDY BAG CURB FILTER
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	LIMITS OF CONSTRUCTION

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**WESTFALL PRESERVE PHASES 1-5
IMPROVEMENT PLANS**

PROJECT:

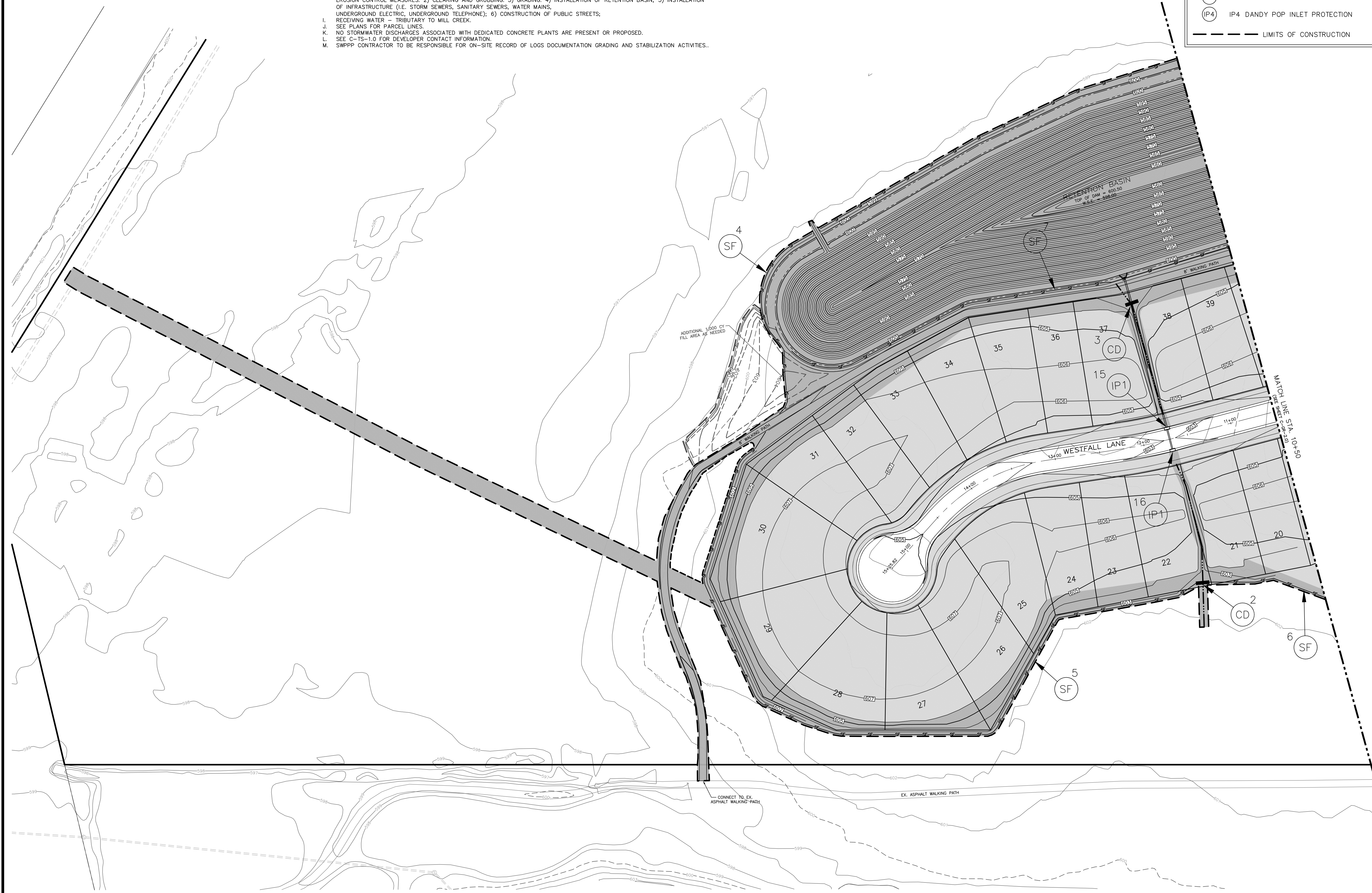
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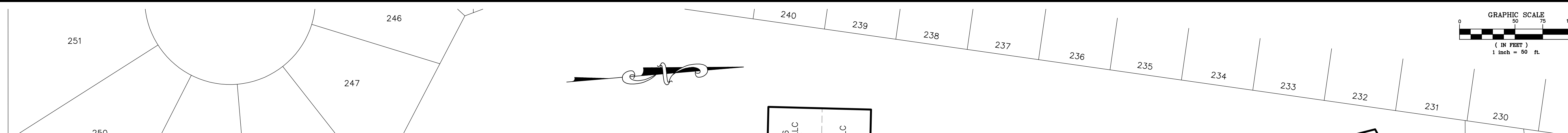
**GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018**

DRAWN BY:	TRC	SEAL
CHECKED BY:	JGK	
PROJECT MANAGER:	JGK	

PROJECT NO. 19-096
SCALE 1" = 50'
DATE 11-01-19

SWPPP PLAN
SHEET
C-GR-2.1





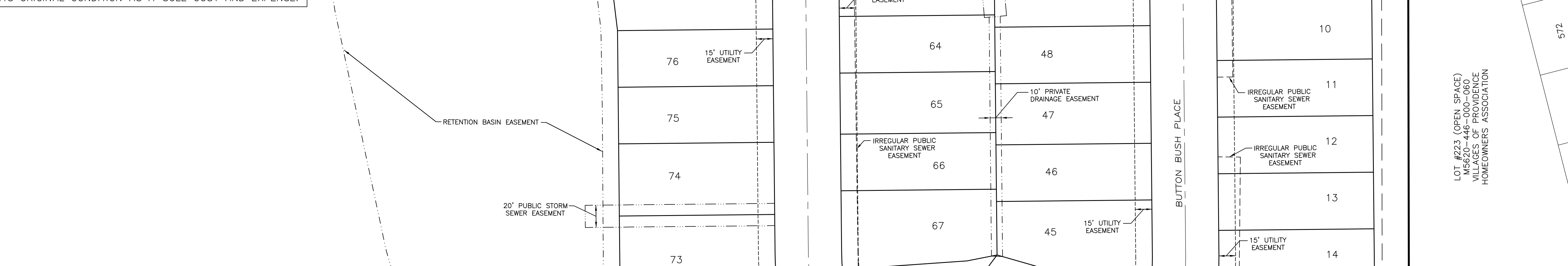
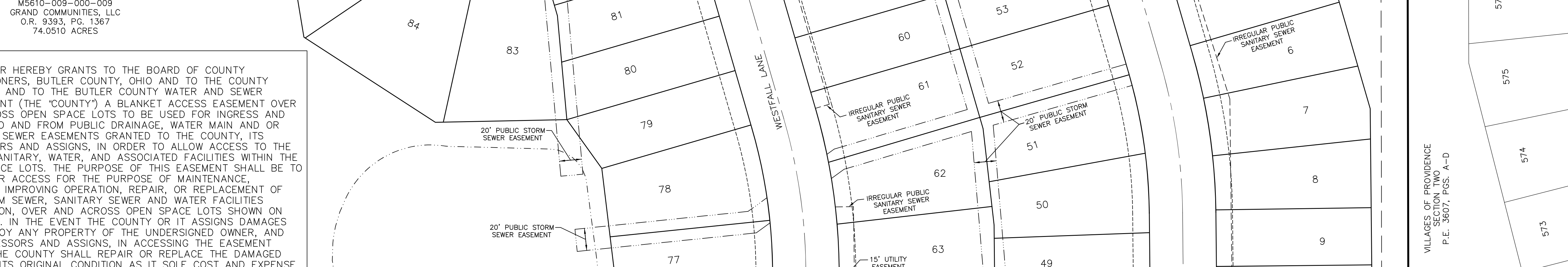
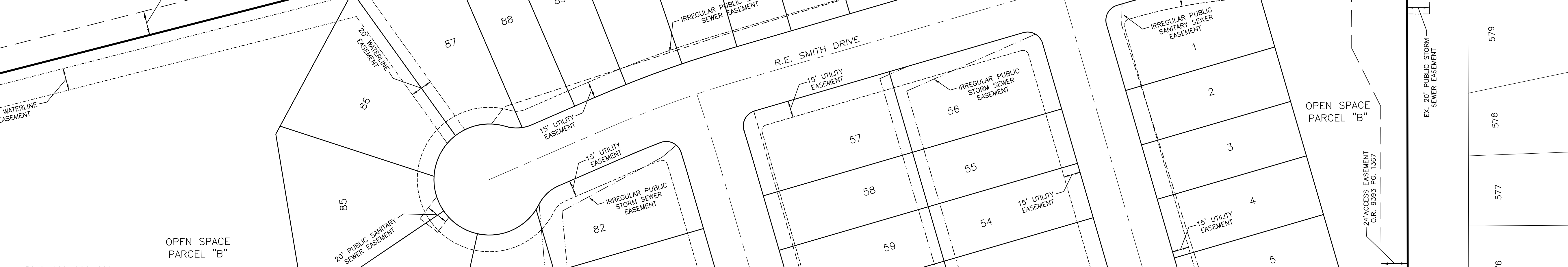
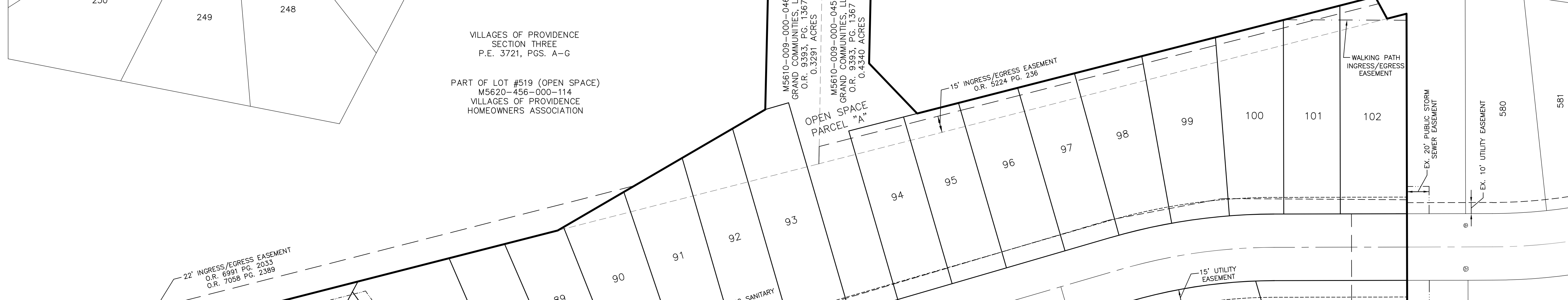
REVISIONS DATE	#	ITEM
04-14-20	3	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT

VILLAGES OF PROVIDENCE
SECTION THREE
P.E. 3721, PGS. A-G

PART OF LOT #519 (OPEN SPACE)
M5620-456-000-114
VILLAGES OF PROVIDENCE
HOMEOWNERS ASSOCIATION

M5610-009-000-046
GRAND COMMUNITIES, LLC
O.R. 9393, PG. 1367
0.5291 ACRES

M5610-009-000-045
GRAND COMMUNITIES, LLC
O.R. 9393, PG. 1367
0.4340 ACRES



NOTE:
THE OWNER HEREBY GRANTS TO THE BOARD OF COUNTY COMMISSIONERS, BUTLER COUNTY, OHIO AND TO THE COUNTY ENGINEER, AND TO THE BUTLER COUNTY WATER AND SEWER DEPARTMENT (THE "COUNTY") A BLANKET ACCESS EASEMENT OVER AND ACROSS OPEN SPACE LOTS TO BE USED FOR INGRESS AND EGRESS TO AND FROM PUBLIC DRAINAGE, WATER MAIN AND OR SANITARY SEWER EASEMENTS GRANTED TO THE COUNTY, ITS SUCCESSORS AND ASSIGNS, IN ORDER TO ALLOW ACCESS TO THE STORM, SANITARY, WATER, AND ASSOCIATED FACILITIES WITHIN THE OPEN SPACE LOTS. THE PURPOSE OF THIS EASEMENT SHALL BE TO ALLOW FOR ACCESS FOR THE PURPOSE OF MAINTENANCE, CLEARING, IMPROVING OPERATION, REPAIR, OR REPLACEMENT OF THE STORM SEWER, SANITARY SEWER AND WATER FACILITIES LOCATED ON, OVER AND ACROSS OPEN SPACE LOTS SHOWN ON THIS PLAT. IN THE EVENT THE COUNTY OR IT ASSIGNS DAMAGES OR DESTROY ANY PROPERTY OF THE UNDERSIGNED OWNER, AND ITS SUCCESSORS AND ASSIGNS, IN ACCESSING THE EASEMENT AREAS, THE COUNTY SHALL REPAIR OR REPLACE THE DAMAGED AREA TO ITS ORIGINAL CONDITION AS IT SOLE COST AND EXPENSE.

M5610-009-000-009
GRAND COMMUNITIES, LLC
O.R. 9393, PG. 1367
74.0510 ACRES

OPEN SPACE PARCEL "B"

A0300-007-000-013
LOT 89

NORBERT A. DAVIS
O.R. 8175, PG. 309

FAIRFIELD TOWNSHIP
SECTION 17, TOWN 2, RANGE 2

SECTION 11, TOWN 2, RANGE 2
WEST CHESTER TOWNSHIP

LOT #223 (OPEN SPACE)
M5620-446-000-060
VILLAGES OF PROVIDENCE
HOMEOWNERS ASSOCIATION

CARDINAL
ENGINEERING
LAND SURVEYING
ONE MOOCK ROAD
WILDER, KENTUCKY 41071
PHONE: (859) 581-9600
FAX: (859) 581-9636

WEBSITE: <http://www.cardinalengineering.net>

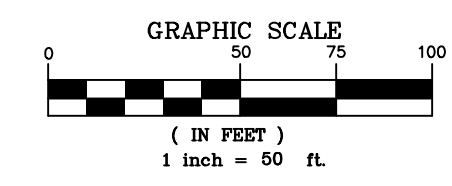
PROJECT: WESTFALL PRESERVE PHASES 1-5 IMPROVEMENT PLANS

CLIENT: GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

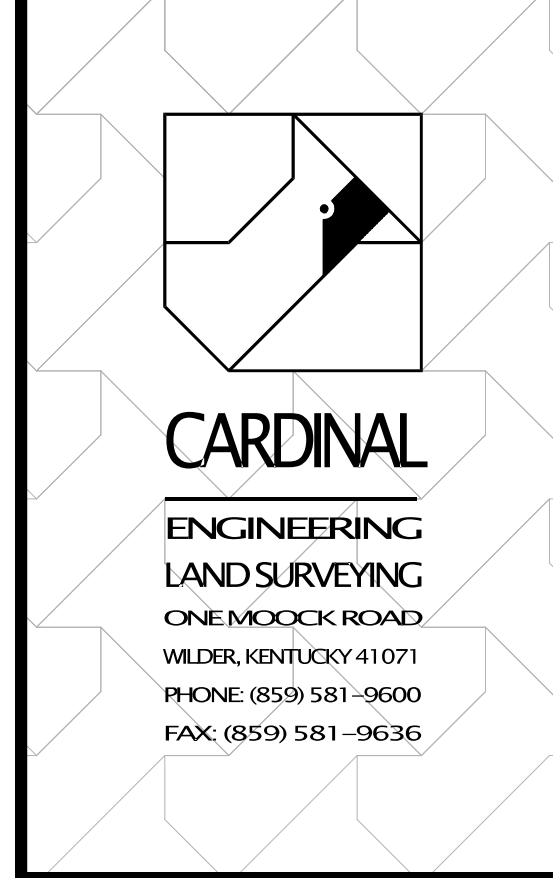
DRAWN BY: TRC
CHECKED BY: JJK
PROJECT MANAGER: JJK

PROJECT NO. 19-096
SCALE 1" = 50'
DATE 11-01-19

LAYOUT PLAN
SHEET C-LO-1.0



REVISIONS DATE	#	ITEM
04-14-20	3	REVISED PER BCEO
05/07/20	6	REVISED PER CLIENT



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ERLANGER, KENTUCKY 41018

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CHECKED BY:	JGK
PROJECT MANAGER:	JGK
PROJECT NO.	19-096
SCALE	1" = 50'
DATE	11-01-19
LAYOUT PLAN	
SHEET C-LO-1.1	

A0300-007-000-011
 PART OF LOT #90
 ERIN & MICHAEL GARBER
 O.R. 8809, PG. 929
 SECTION 11, TOWN 2, RANGE 2
 WEST CHESTER TOWNSHIP
 SECTION 17, TOWN 2, RANGE 2
 FAIRFIELD TOWNSHIP

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M5610-009-000-009
 GRAND COMMUNITIES, LLC
 O.R. 9393, PG. 1367
 74.0510 ACRES

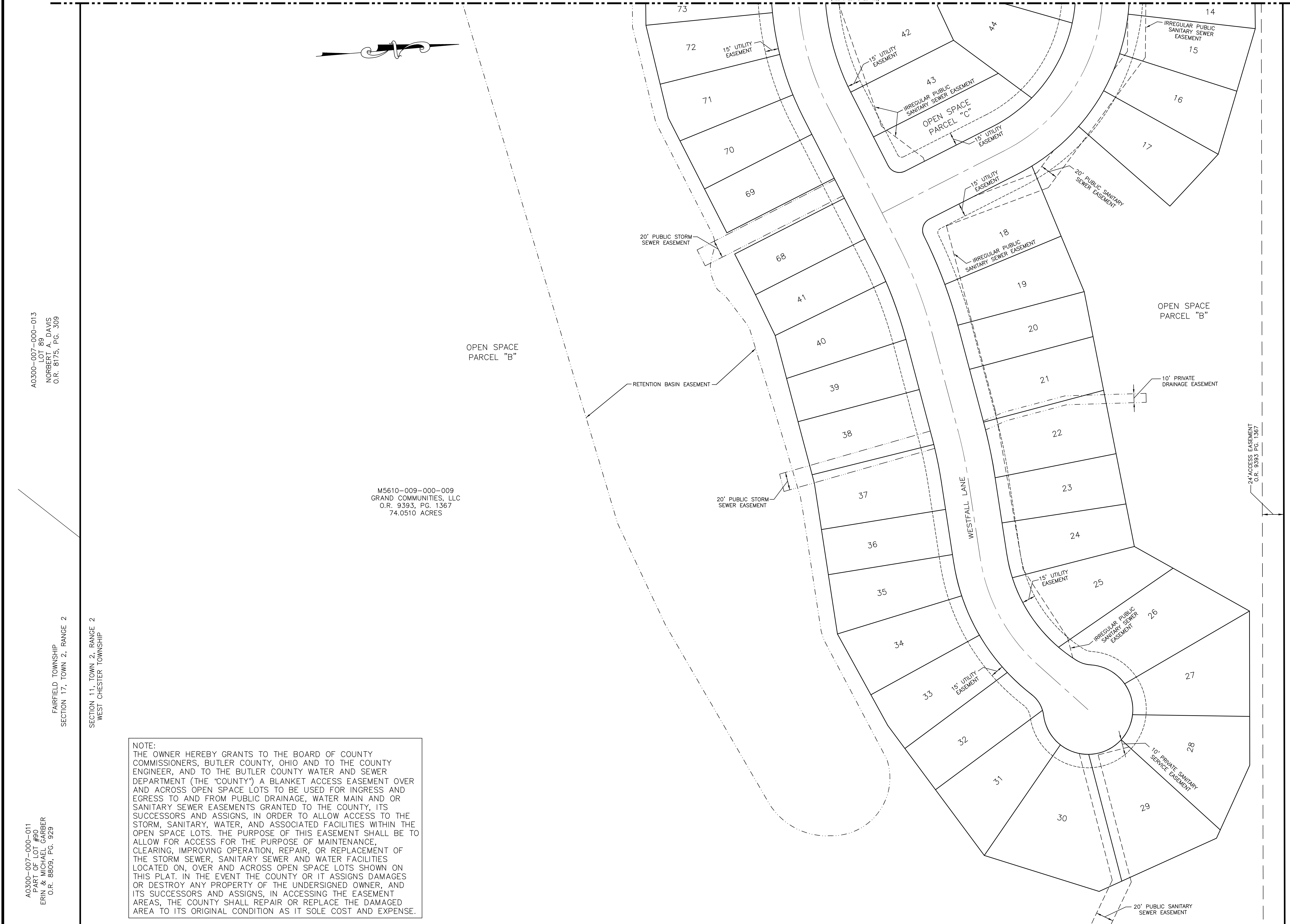
LOT #223 (OPEN SPACE)
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 VILLAGES OF PROVIDENCE HOMEOWNERS ASSOCIATION

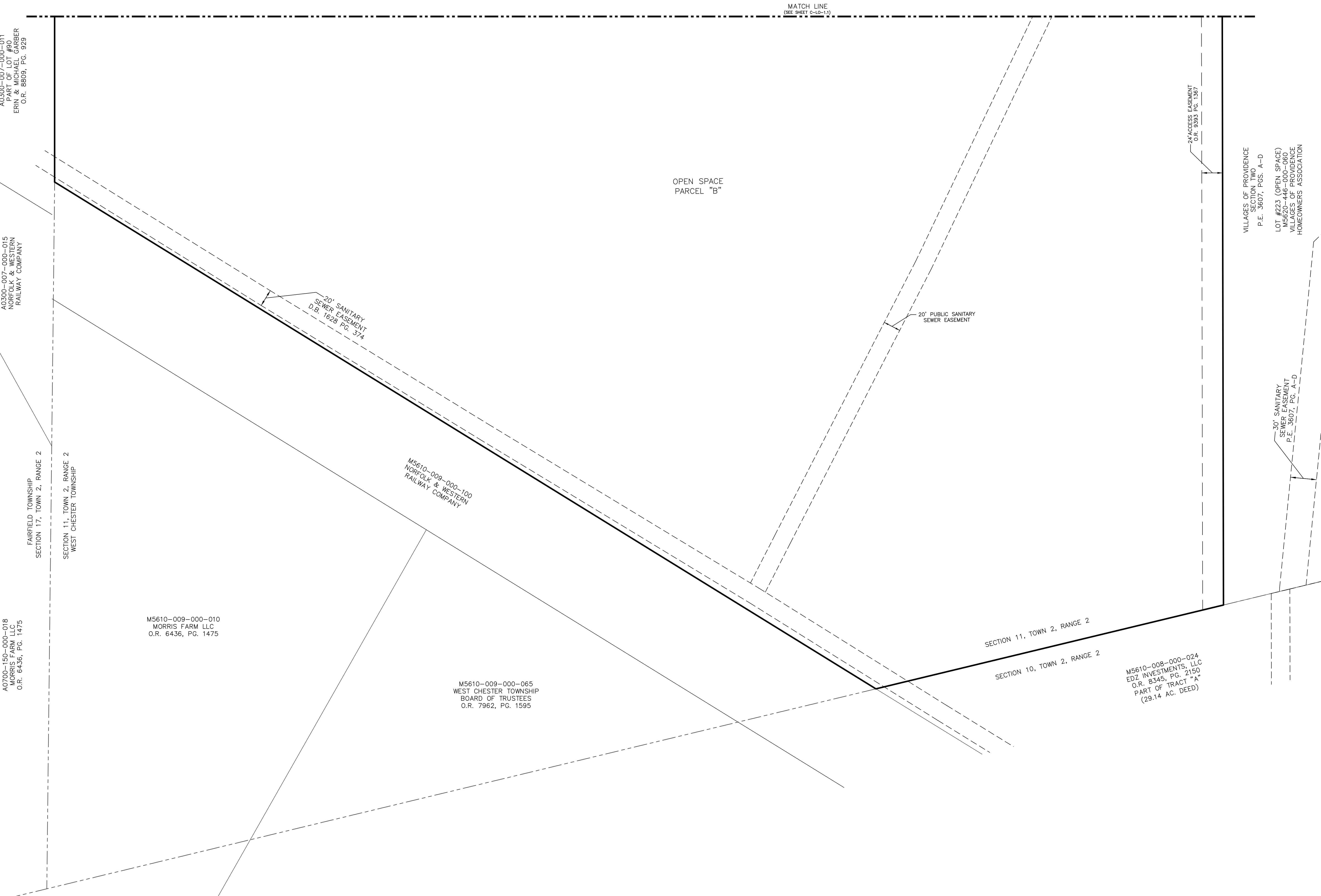
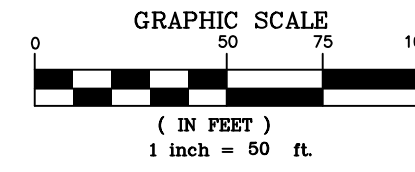
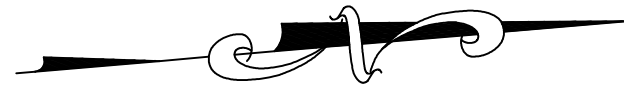
VILLAGES OF PROVIDENCE
 SECTION TWO A-D
 P.E. 3607, P.C.S. A-D

OPEN SPACE
 PARCEL "B"

WESTFALL LANE

OPEN SPACE
 PARCEL "B"





REVISIONS	DATE	#	ITEM

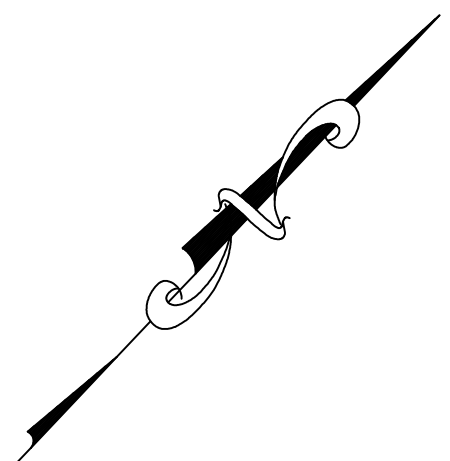
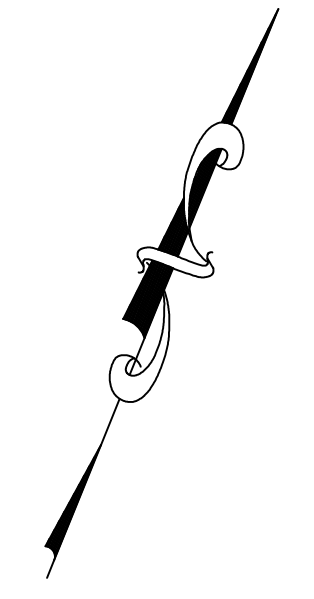
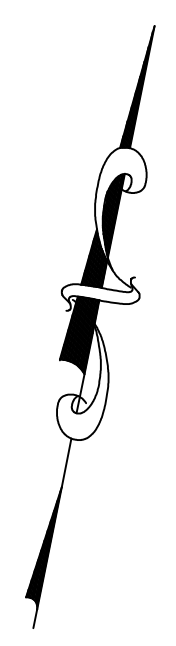
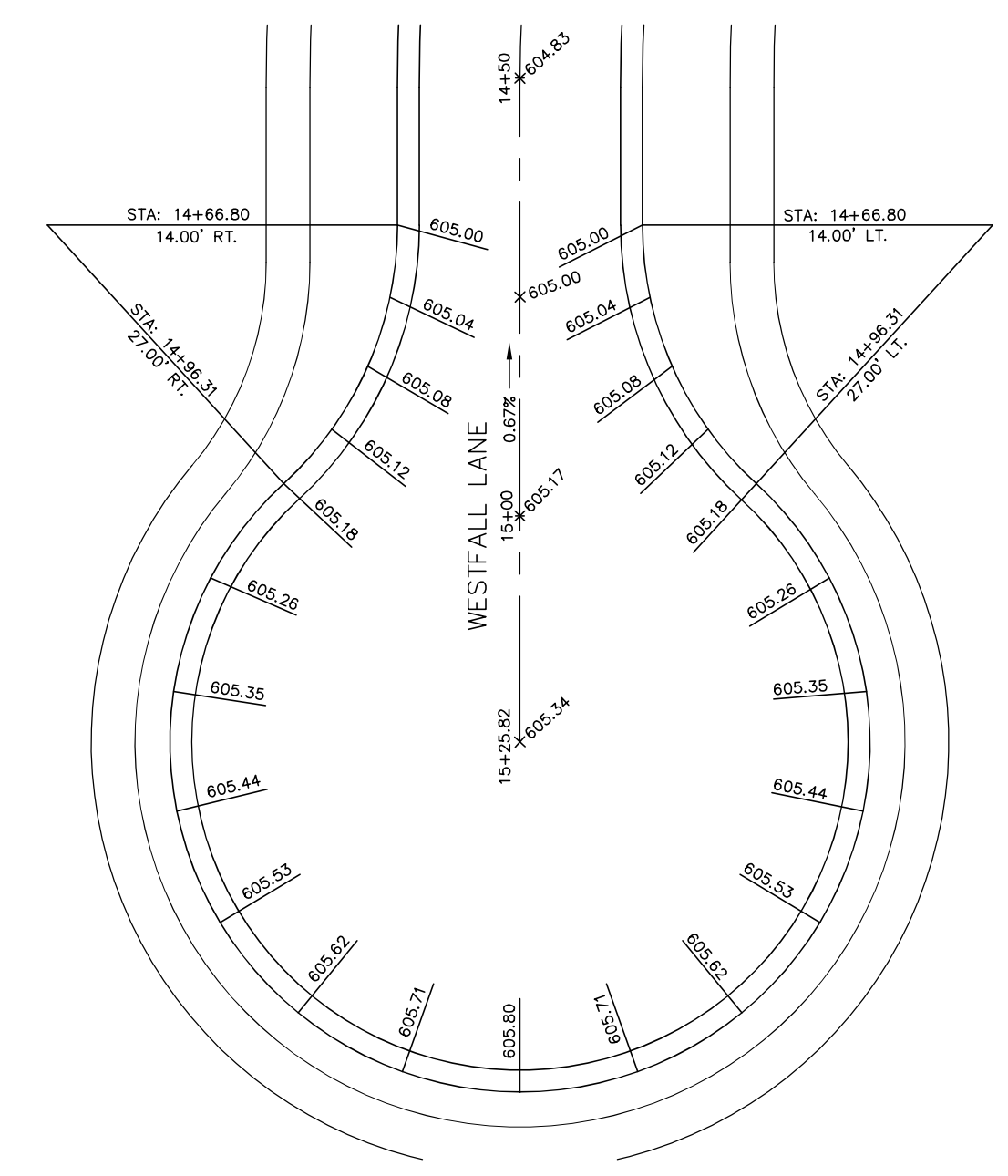
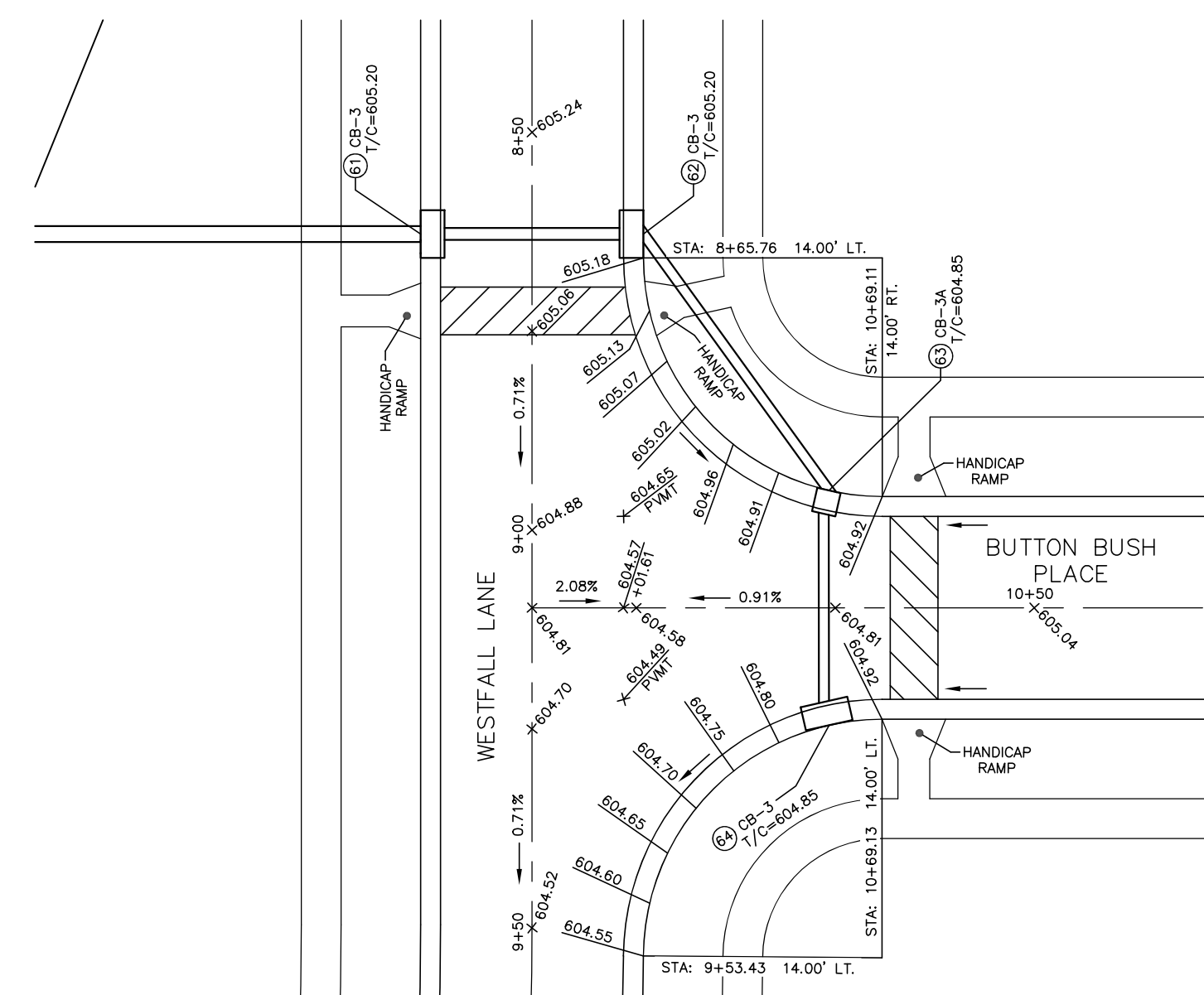
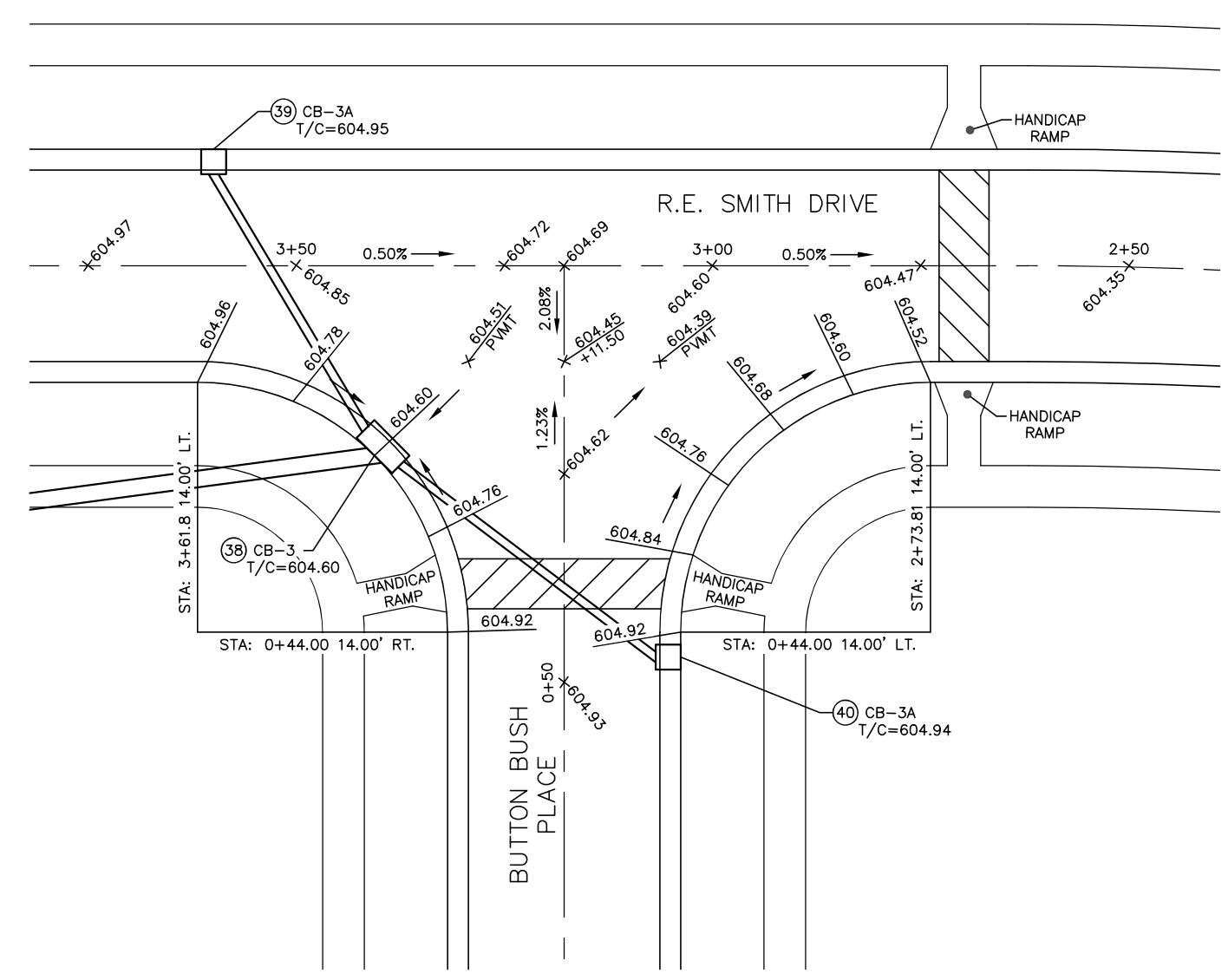
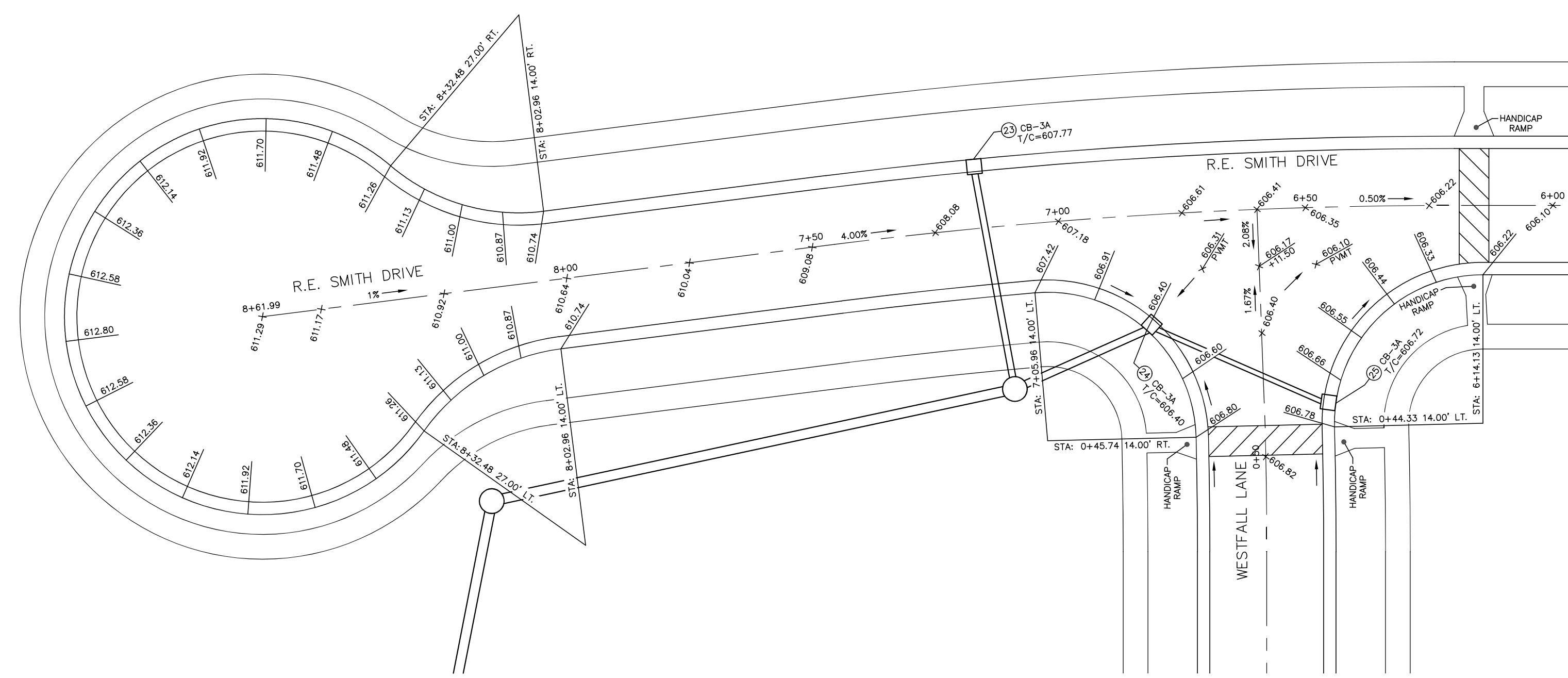
CARDINAL
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PROJECT: WESTFALL PRESERVE PHASES 1-5 IMPROVEMENT PLANS

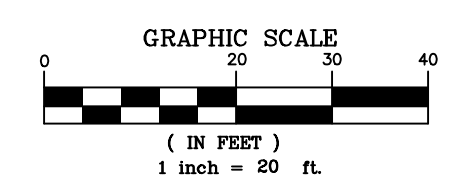
CLIENT: GRAND COMMUNITIES, LLC
3940 OLYMPIC BOULEVARD, SUITE 400
ERLANGER, KENTUCKY 41018

DRAWN BY:	TRC	
CHECKED BY:	JGK	
PROJECT MANAGER:	JGK	
PROJECT NO. 19-096		
SCALE 1" = 50'		
DATE 11-01-19		
LAYOUT PLAN		
SHEET C-LO-1.2		

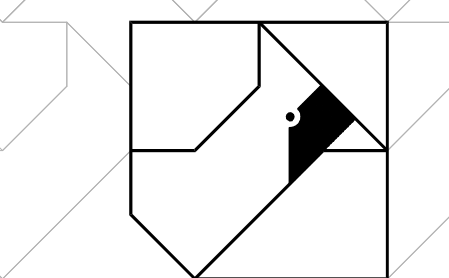


INTERSECTION DETAILS
SCALE: 1" = 20'

ALL ELEVATIONS ON CURB ARE TOP OF CURB (T/C) UNLESS OTHERWISE NOTED.
TOP OF CURB ELEVATIONS (T/C) DO NOT ACCOUNT FOR DEPRESSED CURB NEAR HANDICAP RAMPS.



REVISIONS	DATE	#	ITEM
	04-14-20	3	REVISED PER BCEO



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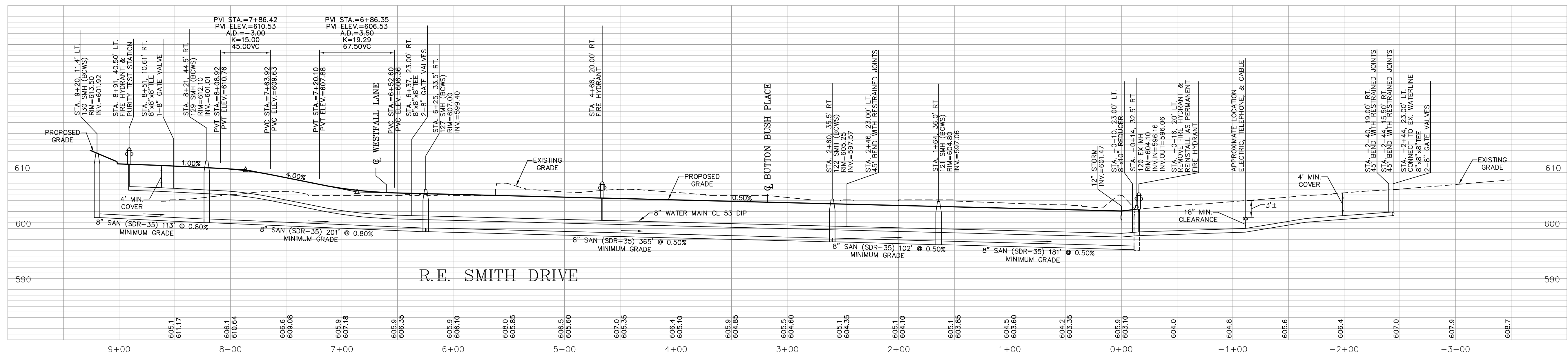
PROJECT:
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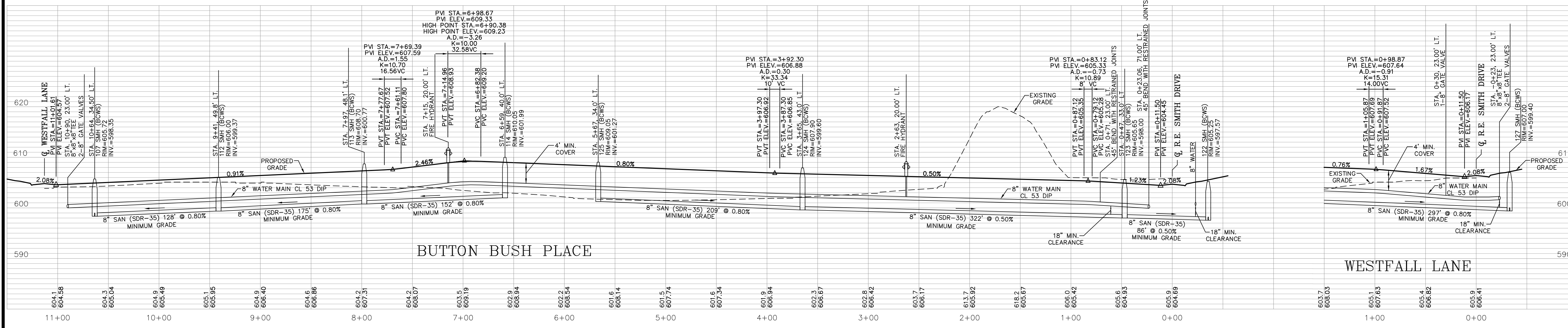
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PROJECT MANAGER: JGK

PROJECT NO. 19-096
SCALE 1" = 20'
DATE 11-01-19

INTERSECTION DETAILS
SHEET
C-RD-1.0

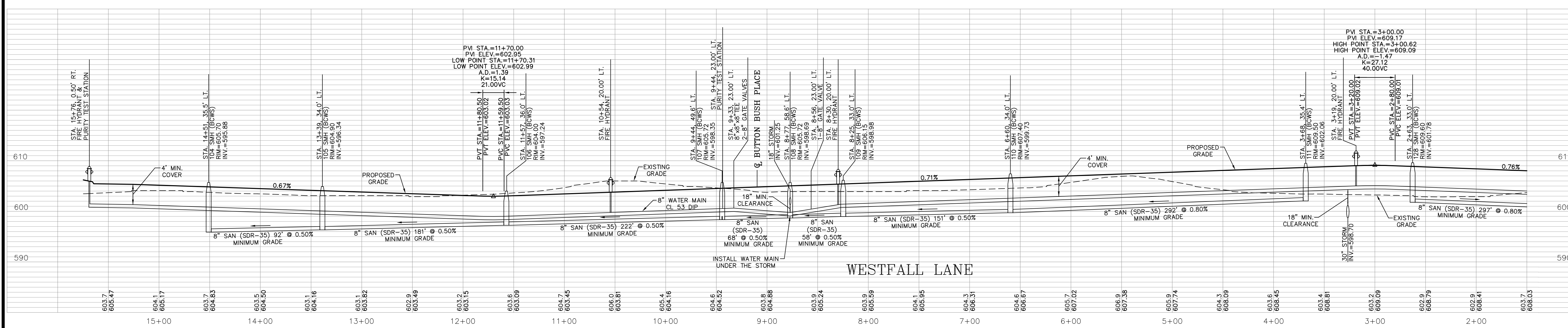


R.E. SMITH DRIVE



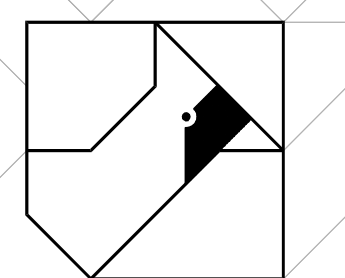
BUTTON BUSH PLACE

WESTFALL LANE



WESTFALL LANE

REVISIONS	DATE	#	ITEM
03-24-20	1		REVISED PER BCWS



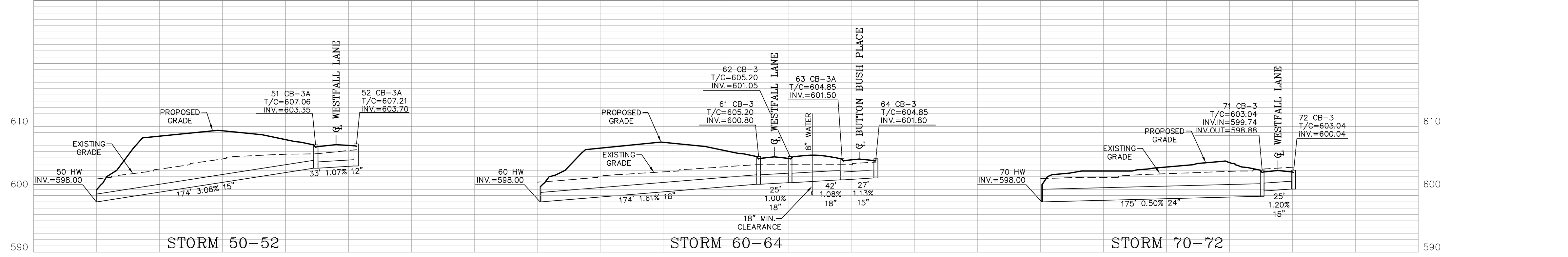
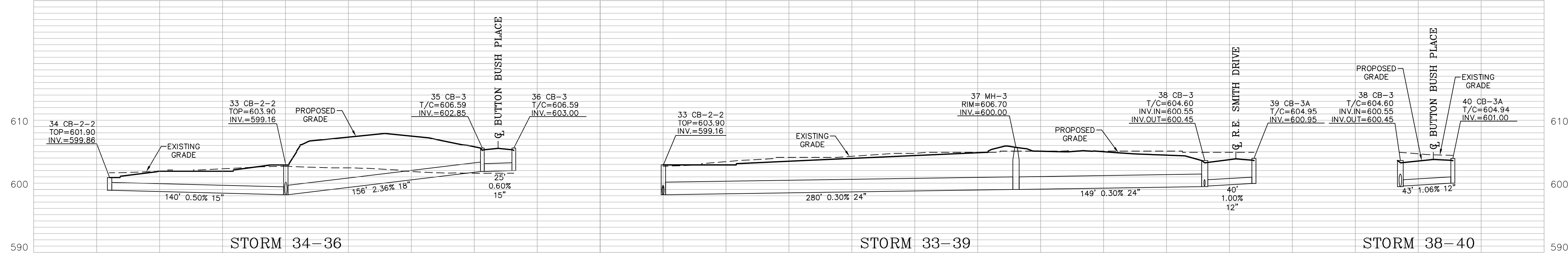
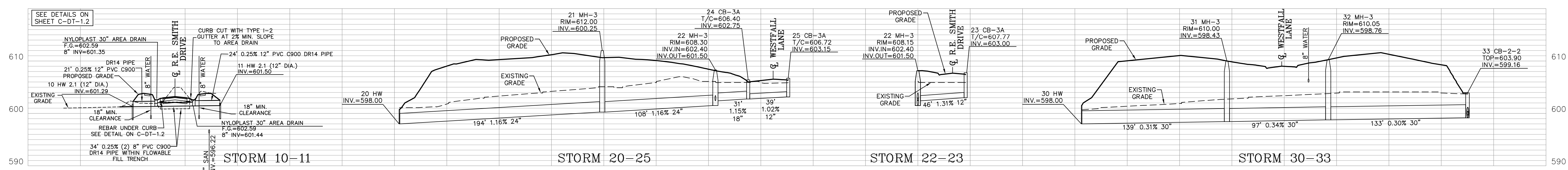
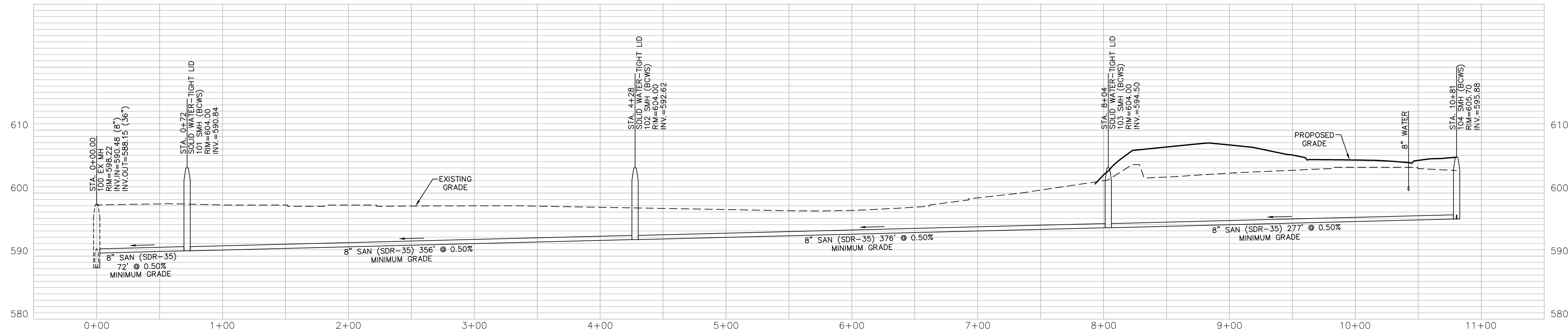
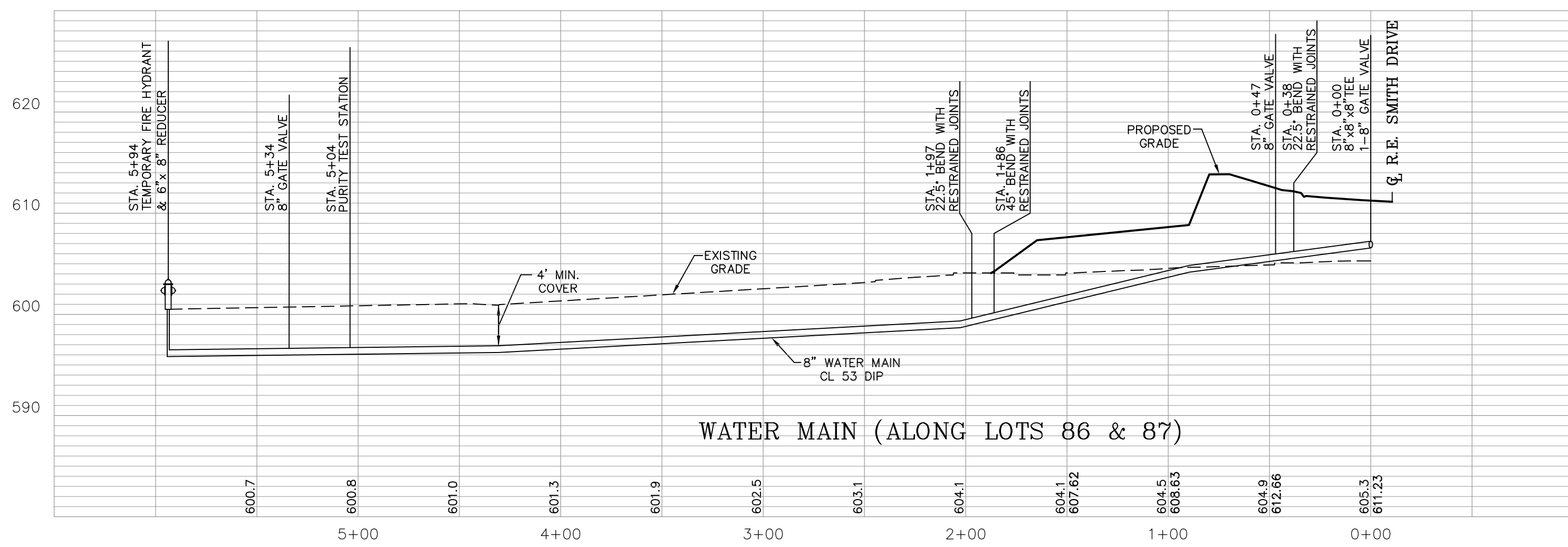
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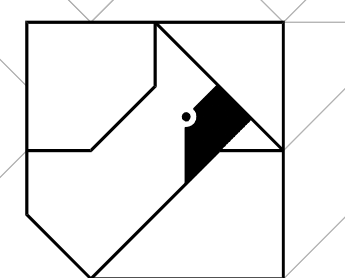
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PROJECT:	SEAL
DRAWN BY:	TRC
CHECKED BY:	JGK
PROJECT MANAGER:	JGK

PROJECT NO. 19-096
SCALE 1"=10' Vert. 1"=50' Horz.
DATE 11-01-19
STREET, WATER, & SANITARY
SEWER PROFILES
SHEET
C-RD-2.0



REVISIONS DATE	#	ITEM
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DATE 11-01-19
STORM & SANITARY SEWER PROFILES
SHEET
C-RD-2.1