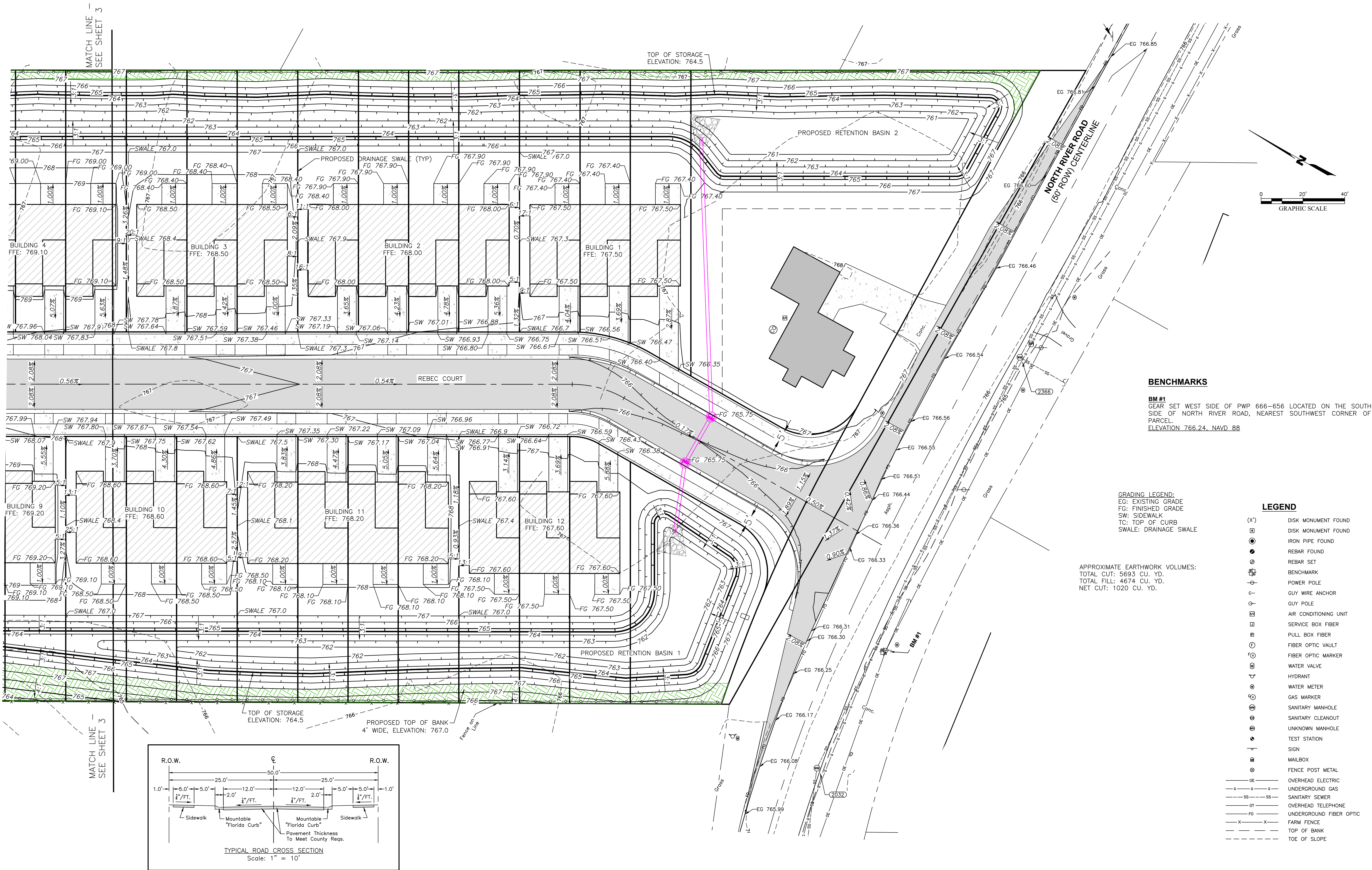


BRISTOL COMMONS DPUD, 208 N RIVER ROAD, BRISTOL, INDIANA 46514
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PRINTED: Tuesday, October 21, 2025, 3:10:29 PM

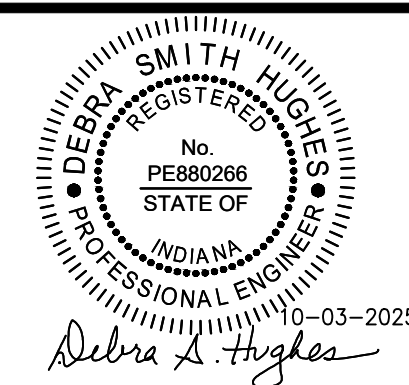


NO.	REVISIONS	DATE
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2810 Dexter Drive
Elkhart, IN 46514
Phone: 574-266-1010
Email: info@sam.biz

DRAWING FILE: 96630-3D-DESIGN.DWG
CERTIFICATION DATE: 10/21/2025
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: NONE
ENGINEER: Debra S. Hughes, P.E.
TECHNICIAN: MMR

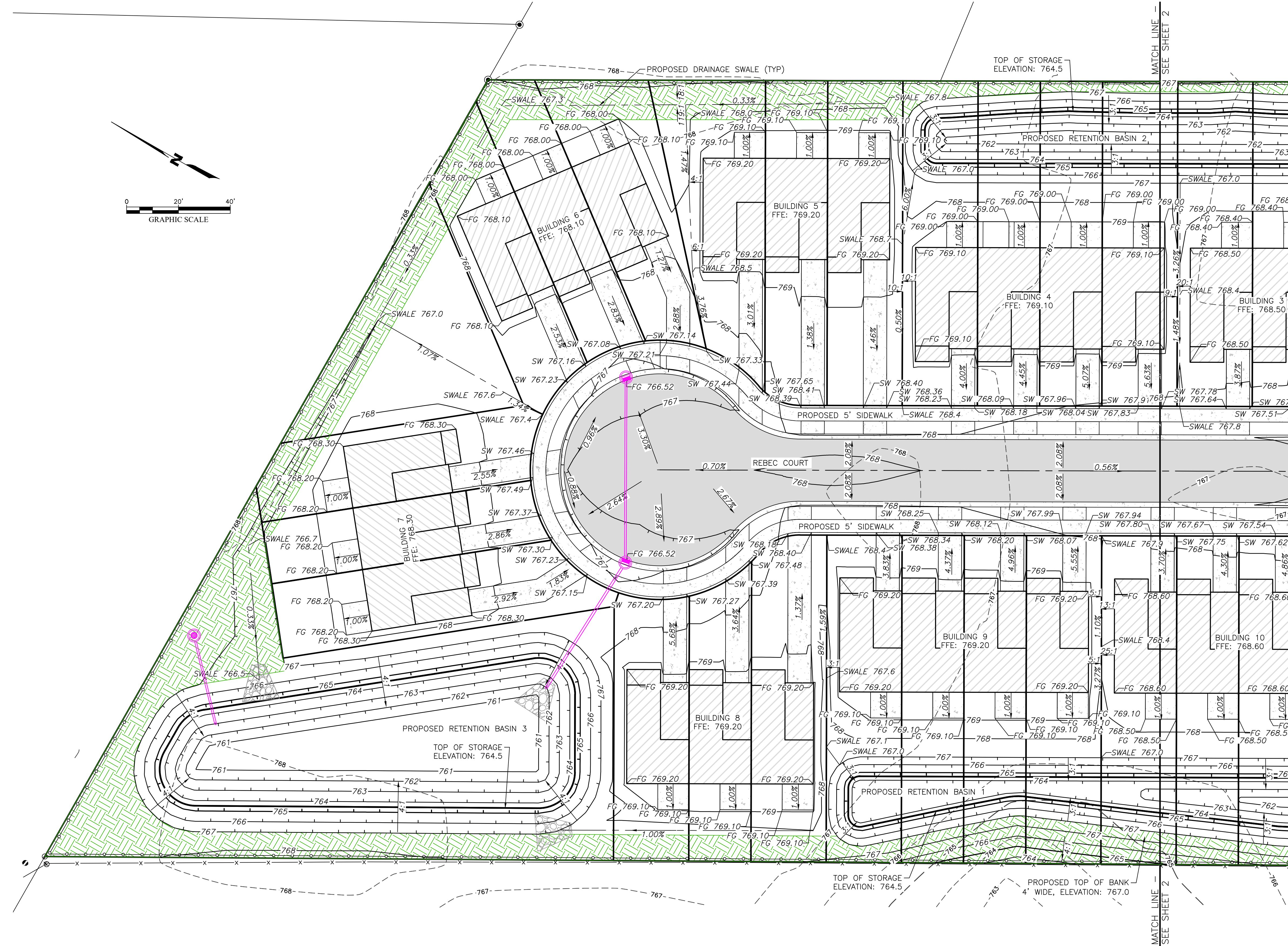
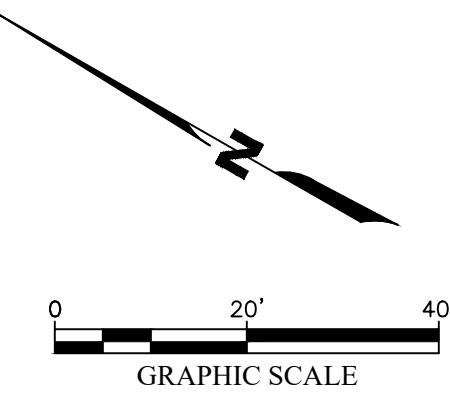
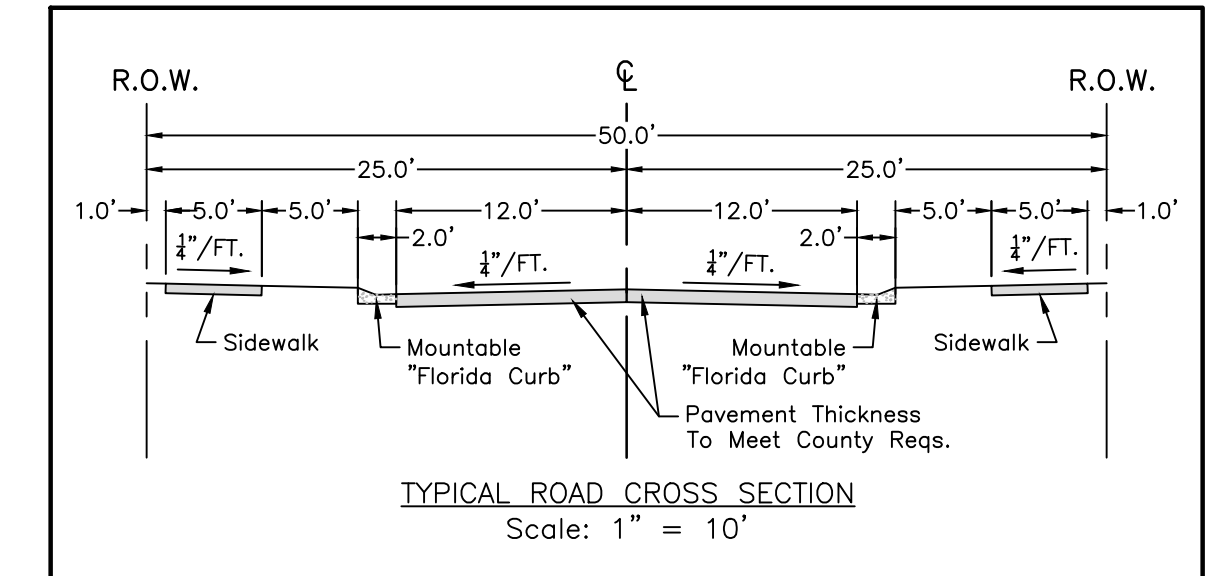


PROPOSED GRADING PLAN-SOUTH
BRISTOL COMMONS DPUD, 208 N RIVER ROAD, BRISTOL
PT. SE 1/4, SEC. 22, T38N, R6E,
WASHINGTON TWP., ELKHART CO., INDIANA
JOB NUMBER: 1025096630

SHEET 2
OF 5

GRADING LEGEND:
EG: EXISTING GRADE
FG: FINISHED GRADE
SW: SIDEWALK
TC: TOP OF CURB
SWALE: DRAINAGE SWALE

EARTHWORK VOLUMES:
TOTAL CUT: 5693 CU. YD.
TOTAL FILL: 4674 CU. YD.
NET CUT: 1020 CU. YD.



LEGEND

- (X) DISK MONUMENT FOUND
- DISK MONUMENT FOUND
- IRON PIPE FOUND
- REBAR FOUND
- REBAR SET
- BENCHMARK
- POWER POLE
- GUY WIRE ANCHOR
- GUY POLE
- AIR CONDITIONING UNIT
- SERVICE BOX FIBER
- PULL BOX FIBER
- FIBER OPTIC VAULT
- FIBER OPTIC MARKER
- WATER VALVE
- HYDRANT
- WATER METER
- GAS MARKER
- SANITARY MANHOLE
- SANITARY CLEANOUT
- UNKNOWN MANHOLE
- TEST STATION
- SIGN
- MAILBOX
- FENCE POST METAL
- OVERHEAD ELECTRIC
- UNDERGROUND GAS
- SANITARY SEWER
- OVERHEAD TELEPHONE
- UNDERGROUND FIBER OPTIC
- FARM FENCE
- TOP OF BANK
- TOE OF SLOPE

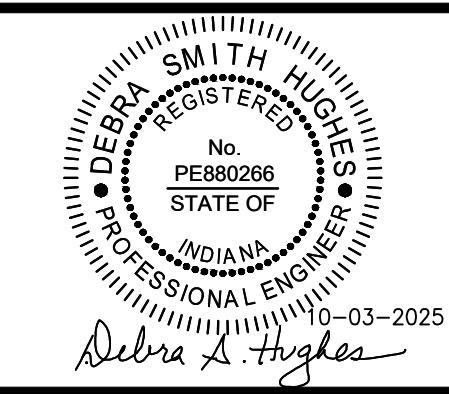
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DESIGNED: LAMARCA ELIA PROJECTS: 1025096630-3D-DESIGN.DWG

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DRAWING FILE: 96630-3D-DESIGN.DWG
CERTIFICATION DATE: 10/21/2025
HORIZONTAL SCALE: 1"=20'
VERTICAL SCALE: NONE
ENGINEER: Debra S. Hughes, P.E.
TECHNICIAN: MMR



PROPOSED GRADING PLAN-NORTH
BRISTOL COMMONS DPUD, 208 N RIVER ROAD, BRISTOL
PT. SE 1/4, SEC. 22, T38N, R6E,
WASHINGTON TWP., ELKHART CO., INDIANA
JOB NUMBER: 1025096630

Determination of Coefficient "C" for Existing Watershed										
Watershed	Roof (sf)	Pavement (sf)	Gravel (sf)	Pervious (sf)	Total Area (sf)	Impervious x 0.95	Gravel x 0.95	Pervious x 0.15	Weighted total area (sf)	Average C
Existing Site	6,278	3,510	1,147	207,959	218,894	9,299	1,090	31,194	41,582	0.19

Determination of Coefficient "C" for Proposed Watersheds											
Watershed	Roof (sf)	Pavement (sf)	Retention (sf)	Pervious (sf)	Total Area (sf)	Impervious x 0.95	Retention x 1.00	Pervious x 0.15	Weighted total area (sf)	Average C	Area (Ac.)
A	28,561	30,257	9,723	83,860	152,401	55,877	9,723	12,579	78,179	0.51	3.50
B	11,479	13,167	3,476	38,370	66,492	23,414	3,476	5,756	32,645	0.49	1.53
Total	40,040	43,424	13,199	122,231	218,893	79,291	13,199	18,335	110,824		5.03

Table 4.5 Computation Sheet for Storm Water Storage Calculations - Proposed Watershed A						
Storm Duration	100 Year Rainfall	Inflow Rate Q	Outflow Rate	Storage Rate	Required Storage in Acre Feet (AF)	Required Storage in Cubic Feet (CF)
(Tc) hours	(i) inches/hour	Q@Tc=CiA	O	S=Q-O	Tc*S=AF	AF * 43,560=CF
0.50	3.96	7.11	0.00	7.11	0.296	12,900
1.00	1.98	3.55	0.00	3.55	0.296	12,900
2.00	1.55	2.78	0.00	2.78	0.464	20,196
3.00	1.14	2.05	0.00	2.05	0.512	22,281
4.00	0.92	1.65	0.00	1.65	0.550	23,975
5.00	0.77	1.38	0.00	1.38	0.576	25,082
6.00	0.67	1.20	0.00	1.20	0.601	26,190
9.00	0.48	0.86	0.00	0.86	0.646	28,144
15.00	0.32	0.57	0.00	0.57	0.718	31,272
20.00	0.25	0.45	0.00	0.45	0.748	32,575
24.00	0.22	0.39	0.00	0.39	0.790	34,399
	Developed CA	1.79			Total volume required	34,399
					Total volume provided	36,974
					% storage	107%

BRISTOL COMMONS D.P.U.D. R-3
SE 1/4, SEC. 22, T38N, R6E
WASHINGTON TWP., ELKHART CO., INDIANA

WATER MAIN MATERIALS AND TESTING

2. PRESSURE TEST - THE CONTRACTOR SHALL CONDUCT A HYDROSTATIC TEST ON THE WATER MAIN IN ACCORDANCE WITH TOWN REQUIREMENTS. THE TEST SHALL BE FOR A MINIMUM OF TWO HOURS AT A PRESSURE OF 150 PSI. LEAKAGE SHALL NOT EXCEED THE NUMBER OF GALLONS PER HOUR AS DETERMINED BY THE FOLLOWING FORMULA:

L= ALLOW.
N= NUMB
D= NOMIN
P= AVERA

3. SANITIZING - THE CONTRACTOR SHALL THOROUGHLY FLUSH AND SANITIZE ALL PARTS OF THE NEW WATER MAIN PIPING SYSTEM PRIOR TO ITS BEING PLACED IN SERVICE IN ACCORDANCE WITH THE TOWN REQUIREMENTS. THE PROCEDURE FOR STERILIZATION SHALL BE AS FOLLOWS:
- (A) FLUSH THE NEW PIPE LINES UNTIL WATER RUNS CLEAR. FLUSH ALL VALVES WITH POTABLE WATER FROM EXISTING PUBLIC SUPPLY.
- (B) THE CHLORINATING AGENT SHOULD BE APPLIED AT THE BEGINNING OF THE NEW PIPE EXTENSIONS, OR ANY VALVE SECTION THEREOF, THROUGH A CORPORATION COCK INSERTED IN THE TOP OF THE NEW MAIN LAID MAIN. THE CHLORINATING AGENT TO BE USED MAY BE LIQUID CHLORINE APPLIED FROM CYLINDERS THROUGH A PORTABLE CHLORINATOR OR HYPOCHLORITE OF LIME (CALCIUM HYPOCHLORITE) APPLIED THROUGH A RUBBER HOSE BY GRAVITY OR A SOLUTION PUMP HYPOCHLORINATOR. WATER FROM THE EXISTING DISTRIBUTION SYSTEM SHALL BE CONTROLLED SO AS TO FLOW SLOWLY INTO THE NEW MAIN DURING CHLORINE APPLICATION. ENOUGH CHLORINE SHALL BE USED TO GIVE A RESIDUAL OF 50 PPM FOR A CONTACT PERIOD OF 24 HOURS. VALVES SHALL BE REGULATED TO PREVENT BACKFLOW OF THE HEAVY CHLORINE WATER INTO THE EXISTING SYSTEM.
- (C) AFTER THE CHLORINATED WATER HAS REMAINED IN THE PIPE FOR AT LEAST 24 HOURS, THOROUGHLY FLUSH THE LINE UNTIL ALL OF THE HEAVILY CHLORINATED WATER HAS BEEN REMOVED. FOR RETENTION PERIODS SHORTER THAN 24 HOURS, INCREASE CHLORINE CONCENTRATION ACCORDINGLY.
- (D) AT LEAST 2 SUCCESSIVE SAMPLES OF THE REPLACEMENT WATER TAKEN AT 24 HOUR INTERVALS FROM THE END-MOST OUTLET OF THE TREATED PIPE LINE SHALL BE TESTED BACTERIOLOGICALLY BY THE TOWN LABORATORY AND CERTIFIED SATISFACTORY PRIOR TO PLACING THE NEW MAINS IN SERVICE FOR PUBLIC USE. SHOULD THE SAMPLES TESTED BE UNSAFE FOR HUMAN CONSUMPTION AND USE, THE CONTRACTOR SHALL CONTINUE TO RECHLORINATE AND FLUSH THE WATER LINE UNTIL 2 SUCCESSIVE SAMPLES OF REPLACEMENT WATER TAKEN AT LEAST 24 HOURS APART TEST SATISFACTORY. RECHLORINATION SHALL BE ACCOMPLISHED BY THE SAME PROCEDURE INDICATED IN (B) ABOVE.

SANITARY SEWER PIPE CONSTRUCTION NOTES AND SPECIFICATIONS:

1. 8 IN. DIAM. GRAVITY SANITARY SEWER MATERIAL IN RIGHT-OF-WAY TO BE SDR 26 PVC MEETING ASTM D3034 REQUIREMENTS OR APPROVED EQUAL.
2. PIPE TO BE INSTALLED IN ACCORDANCE WITH ASTM D3211.
3. PIPE JOINTS TO BE IN ACCORDANCE WITH ASTM D3212.
4. CONCRETE MANHOLES TO BE IN ACCORDANCE WITH ASTM C478 WITH FLEXIBLE RUBBER BOOT CONNECTORS CONFORMING TO ASTM C323 FOR PIPES.
5. CONSTRUCTION CONTRACTOR TO NOTIFY TOWN 48 HOURS PRIOR TO ALL SANITARY SEWER CONSTRUCTION WORK IN NORTH RIVER ROAD R.O.W. TOWN INSPECTION AND APPROVAL IS REQUIRED FOR ALL SANITARY SEWER CONSTRUCTION WORK.
6. REQUIRED TESTING: ALL TESTING TO BE PERFORMED IN ACCORDANCE WITH APPLICABLE STANDARDS. ALL TESTING SHALL BE WITNESSED BY TOWN'S REPRESENTATIVE. TOWN'S REPRESENTATIVE SHALL BE GIVEN 24 HOURS ADVANCE NOTICE PRIOR TO TESTING ACTIVITY.
- 6.1. GRAVITY SANITARY SEWERS
 - 6.1.1. INFILTRATION-EXFILTRATION TESTING BY LOW-PRESSURE AIR TEST IN ACCORDANCE WITH ASTM F1417.
 - 6.1.2. NEGATIVE AIR PRESSURE TEST REQUIRED ON ALL MANHOLES:
 - 6.1.3. PIPE DEFLECTION TEST TO HAVE LESS THAN 5% MAXIMUM DEFLECTION 30 DAYS AFTER INSTALLATION.

WATER SERVICE PIPE CONSTRUCTION NOTES AND SPECIFICATIONS:

1. WATER SERVICE MATERIAL TO BE 1 IN. HDPE TUBING GTS DR9 OR APPROVED EQUAL.
2. CONSTRUCTION CONTRACTOR TO NOTIFY TOWN 48 HOURS PRIOR TO ALL WATER MAIN PIPE CONSTRUCTION WORK IN NORTH RIVER ROAD RIGHT OF WAY.
3. TOWN INSPECTION AND APPROVAL IS REQUIRED FOR WATER MAIN TAP AND ALL WATER SERVICE PIPE WORK.
4. TRACER WIRE TO BE PLACED ON PLASTIC WATER SERVICE DURING INSTALLATION. TRACER WIRE TO BE #10 WIRE, ELECTRICALLY CONTINUOUS, COPPER-CLADDED, AND HIGH STRENGTH.
5. WATER SERVICE PIPES TO BE MINIMUM OF 10' HORIZONTAL SEPARATION TO 18 IN. VERTICAL SEPARATION FROM SANITARY SEWER SERVICE PIPES, SANITARY SEWER MAINS, SANITARY SEWER FORCE MAIN PIPES, OR STORM SEWER PIPES.

SANITARY SEWER SERVICE PIPE CONSTRUCTION NOTES AND SPECIFICATIONS:

1. GRAVITY SANITARY SEWER 4-INCH DIAMETER MATERIAL TO BE PVC SDR 35 MEETING ASTM D3034 REQUIREMENTS OR APPROVED EQUAL.
2. PIPE TO BE INSTALLED IN ACCORDANCE WITH ASTM D2321.
3. PIPE JOINTS TO BE IN ACCORDANCE WITH ASTM D3212.
4. CONSTRUCTION CONTRACTOR TO OBTAIN TOWN INSPECTION AND APPROVAL ALL SANITARY SEWER CONSTRUCTION WORK.

SANITARY SEWER STRUCTURE DATA

SANITARY MANHOLE 2366
RIM 765.41
INV 10" PIPE W 755.81
INV 10" PIPE E 755.46
TOP 3" PVC S 760.91
SHELF 756.61
4' DIA CONCRETE STRUCTURE

SANITARY MANHOLE 2032
RIM 765.27
INV 8" PIPE W 756.42
INV 10" PIPE E 756.22
SHELF 757.37
4' DIA CONCRETE STRUCTURE

SANITARY MANHOLE 2132
RIM 766.40
INV 10" PIPE W 754.10
INV 10" PIPE SE 754.15
INV 8" PIPE NW 756.3
4' DIA CONCRETE STRUCTURE

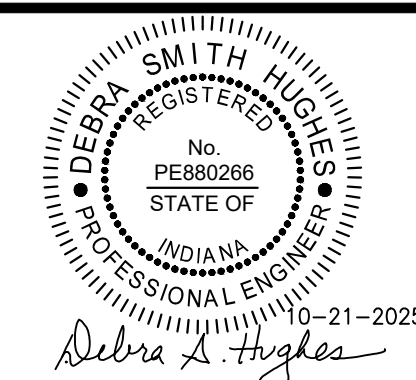


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DRAWING FILE: 96630-UTILITY.DWG
CERTIFICATION DATE: 10/21/2025
HORIZONTAL SCALE: 1" = 40'
VERTICAL SCALE: NONE
ENGINEER: Debra S. Hughes, P.E.
TECHNICIAN: VW



PROPOSED UTILITY PLAN

BRISTOL COMMONS DPUD, 208 N RIVER ROAD, BRISTOL
PT. SE 1/4, SEC. 22, T38N, R6E,
WASHINGTON TWP., ELKHART CO., INDIANA

JOB NUMBER: 1025096630

SHEET 5
OF 5