

EXISTING STORM DRAINS	
E1	SDDI (PREVIOUS RECORDS) TOP = UNKNOWN (COVERED) INV. = 982.52 INV. = 982.65
E2	ST MH (PREVIOUS RECORDS) TOP = UNKNOWN (COVERED) INV. IN = 983.80 INV. OUT = 983.80
E3	SDDI TOP = 989.57 INV. = 985.79
E4	SDDI TOP = 990.66 INV. = 986.48
E5	SDDI TOP = 991.09 INV. = 987.09

PROPOSED STORM DRAINS	
1	EW-1 TOP=991.00 INV. OUT 24" RCP=988.00
2	6" DI-7 W/TYPE 1 GRATE TOP=1002.50 INV. IN 8" ORIFICE=999.75 INV. IN 6" ORIFICE=1000.50 INV. OUT 24" RCP=998.75
3	4" DI-7 W/TYPE 1 GRATE TOP=1004.10 INV. OUT 24" RCP=1000.50
4	4" DI-7 W/TYPE 1 GRATE TOP=1002.50 INV. IN 6" ORIFICE=999.50 INV. OUT 24" RCP=996.00

SANITARY SEWER NOTES

ALL SANITARY SEWER PIPING (SEWER) IS TO BE PRIVATELY OWNED, CONNECTED TO EXISTING PUBLIC SEWER THROUGH THE EXISTING 4" LATERAL AS SHOWN. ALL NEW BUILDING SEWER WILL BE CONNECTED TO THIS LATERAL.

SEWER MATERIALS :

SEWER PIPING: PVC, ASTM D3034-77, SDR 35 WITH BELL AND SPIGOT; JOINTS UTILIZING ELASTOMERIC SEALS; PVC FITTINGS TO BE COMPATIBLE WITH ASTM D3034.

CLEANOUTS: ASSEMBLED OF PVC FITTINGS AND PIPE WITH CAST IRON CLEANOUT BOX AT THE GROUND SURFACE AS SHOWN.

SEWER INSTALLATION :

- SEWER PIPE SHALL BE LAID IN STRAIGHT LINES, AT UNIFORM GRADE BETWEEN CHANGES IN HORIZONTAL ALIGNMENT OR ON-LINE CLEANOUTS. CLEANOUTS SHALL BE PLACED NO FURTHER APART THAN 100'.
- PIPE SIZES SHALL BE AS SHOWN.
- MINIMUM SLOPE ON 4" PVC SEWER SHALL BE 2.0% UNLESS OTHERWISE NOTED.
- PIPE SHALL BE BEDDED ACCORDING TO WWA BEDDING DETAIL.
- BACKFILL SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 IN COMPACTED THICKNESS, COMPACTED WITH SMALL MOBILE COMPACTOR ("WACKER"). BACKFILL MATERIAL SHALL NOT BE MUDDY IN CONSISTENCY AND TRENCHES TO BE BACKFILLED SHALL NOT CONTAIN WATER.
- EXISTING SEWER MANHOLES SHALL BE RAISED TO POSITION WITH THEIR RIMS AT PROPOSED PAVEMENT ELEVATIONS UTILIZING PRECAST CONCRETE RISER UNITS AND GROUT FILL FOR FINAL ADJUSTMENT.
- ALL CONSTRUCTION, INSTALLATION, AND TESTING OF WATER AND SANITARY SEWER SHALL COMPLY WITH THE CURRENT EDITION OF THE WESTERN VA WATER AUTHORITY STANDARDS.
- CONTRACTOR SHALL SCHEDULE A PRECONSTRUCTION MEETING ON-SITE TO BE ATTENDED BY NO LESS THAN THE FOLLOWING: WWA REPRESENTATIVES, CONTRACTOR'S REPRESENTATIVE (INCLUDING SITE SUPERINTENDENT OF UTILITY INSTALLATION), DESIGN ENGINEER, ANY MATERIAL SUPPLIERS OR SUBCONTRACTORS THAT THE CONTRACTOR FEELS NECESSARY TO ATTEND.
- CONSTRUCTION AND START-UP OF ALL WORK SHALL NOT INTERFERE WITH THE OPERATION OF WATER AND SEWERAGE FACILITIES. THE CONTRACTOR SHALL COORDINATE AND SCHEDULE ALL WORK WITH THE OWNER AND LOCAL UTILITY DEPARTMENT AS REQUIRED.
- MINIMUM COVER ON ALL PIPE SHALL BE 3 FEET, UNLESS OTHERWISE SPECIFICALLY INDICATED ON THESE DRAWINGS. ALL PVC PIPE SHALL BE INSTALLED WITH COATED TRACER WIRE TO FACILITATE FUTURE LOCATION OF PIPE AFTER CONSTRUCTION IS COMPLETED.
- WHERE IT IS NECESSARY TO DEFLECT PIPE EITHER HORIZONTALLY OR VERTICALLY, PIPE JOINT DEFLECTION OR BARREL BEND RADIUS SHALL NOT EXCEED 75% OF THE MANUFACTURER'S RECOMMENDED DEFLECTION ANGLE OR BEND RADIUS.
- NO PLANTINGS SHALL BE ALLOWED WITHIN THE SANITARY SEWER EASEMENT. NO PLANTINGS SHALL BE ALLOWED WITHIN 10' OF SANITARY SEWER SERVICE CLEANOUTS.
- ALL SEWER FACILITIES ARE TO BE INSTALLED IN ACCORDANCE WITH WESTERN VA WATER AUTHORITY DESIGN & CONSTRUCTION STANDARDS.

WATER DISTRIBUTION NOTES

ALL WATER DISTRIBUTION PIPING SHOWN ON THIS SHEET IS TO BE PRIVATELY OWNED, AND CONNECTED TO THE EXISTING WATER SUPPLY. CONTRACTOR SHALL COORDINATE WITH OWNER TO DETERMINE WHETHER A MORE SUITABLE POINT OF EXTENSION EXISTS.

WATER PIPING MATERIALS, APPURTENANCES, AND INSTALLATION SHALL COMPLY WITH WWA STANDARDS.

WATER PIPING INSTALLATION:

WATER PIPING SHALL BE INSTALLED WITH A MINIMUM DEPTH OF 36". THRUST BLOCKS SHALL BE PROVIDED AT ALL CHANGES IN HORIZONTAL ALIGNMENT AS SHOWN. PIPE SHALL BE BEDDED ON A LAYER OF SAND, NATURAL OR MANUFACTURED, OF SUFFICIENT THICKNESS TO ENSURE UNIFORM BEDDING OF THE PIPE. BACKFILL SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 IN COMPACTED THICKNESS, COMPACTED WITH SMALL MOBILE COMPACTOR ("WACKER"). BACKFILL MATERIAL SHALL NOT BE MUDDY IN CONSISTENCY AND TRENCHES TO BE BACKFILLED SHALL NOT CONTAIN WATER.

WATER PIPE MAY BE DEFLECTED FROM A STRAIGHT LINE IN ACCORDANCE WITH TABLE 4 OF AWWA C600.

ALL VALVES SHALL BE PROVIDED WITH A VALVE BOX INSTALLED WITH ITS HEAD AT THE GROUND ELEVATION SHOWN ON THE GRADING PLAN.

ALL WATER FACILITIES ARE TO BE INSTALLED ACCORDING TO THE WESTERN VA WATER AUTHORITY DESIGN AND CONSTRUCTION STANDARDS.

STORM DRAIN NOTES

STORM DRAIN SHOWN IS TO BE PRIVATELY OWNED, CONNECTED TO EXISTING PUBLIC STORM DRAIN AS SHOWN. STORM DRAIN LENGTHS ARE BASED ON CL STRUCTURE TO CL STRUCTURE DISTANCE.

STORM DRAIN MATERIALS:

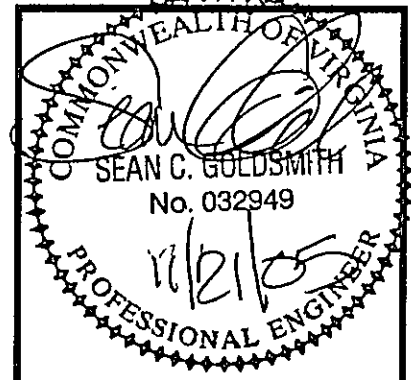
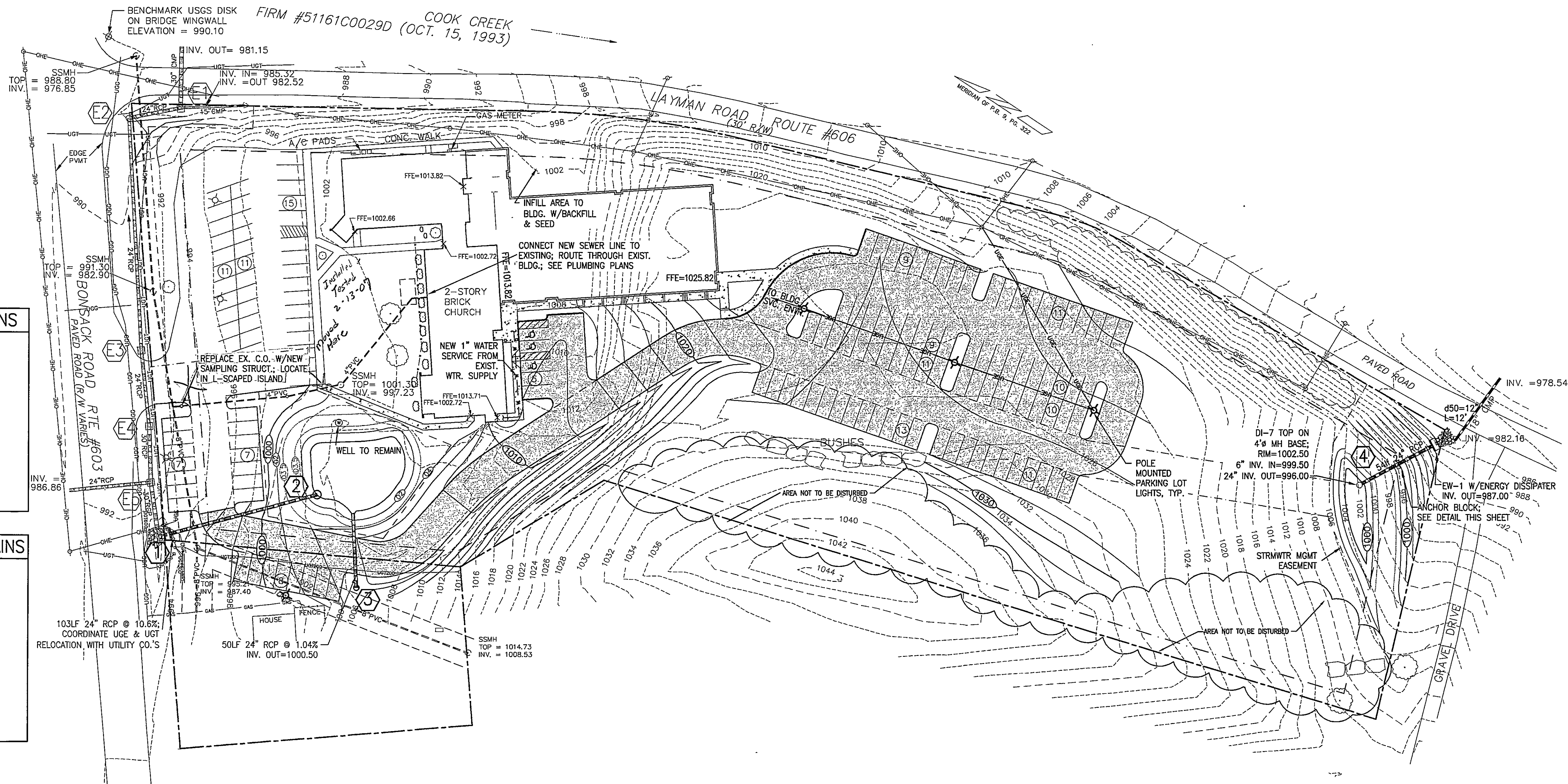
STORM DRAIN PIPING: PIPING SHALL BE B-WALL GASKETED REINFORCED CONCRETE PIPE; GASKETS SHALL BE I.A.W. ASTM C443; PIPE SHALL BE I.A.W. AASHTO M170
INLETS: PRECAST CONCRETE ASSEMBLIES, VDOT STANDARD MH, DI-7
MANHOLE RIM AND COVERS: CAST IRON, ROANOKE COUNTY STANDARD, OR EQUAL.

STORM DRAIN INSTALLATION:

STORM PIPE SHALL BE LAID IN STRAIGHT LINES, AT UNIFORM GRADE BETWEEN STRUCTURES. PIPE SIZES SHALL BE AS SHOWN. PIPE SHALL BE BEDDED AS SHOWN. BACKFILL SHALL BE PLACED IN LIFTS NOT EXCEEDING 12 IN COMPACTED THICKNESS, COMPACTED WITH SMALL MOBILE COMPACTOR ("WACKER"). BACKFILL MATERIAL SHALL NOT BE MUDDY IN CONSISTENCY AND TRENCHES TO BE BACKFILLED SHALL NOT CONTAIN WATER. INLETS SHALL BEAR ON UNDISTURBED CUT SURFACES OF EXCAVATIONS IN ORIGINAL SOIL OR COMPACTED FILL, BEDDED ON A LEVELING BED OF CRUSHED STONE OR SAND.

EXTERIOR LIGHTING

ALL EXTERIOR LIGHTING FIXTURES SHALL BE DESIGNED, LOCATED AND ARRANGED SO AS NOT TO DIRECT GLARE ON ADJOINING STREETS OR RESIDENTIAL PROPERTIES. THE INTENSITY AT ADJOINING STREETS OR RESIDENTIAL PROPERTIES SHALL NOT EXCEED 0.5 FOOT CANDLES.

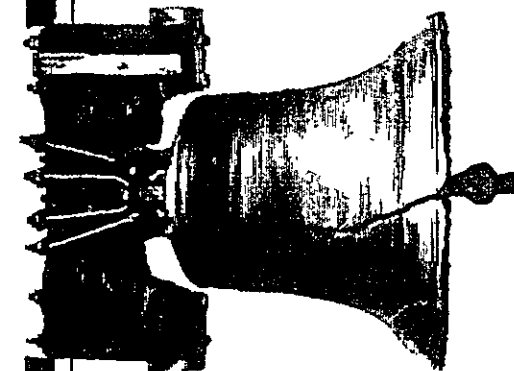


Revisions By	Date
SCG-Rke Co Cmnts	3/8/05
SCG-Rke Co Cmnts/VE	8/2/05
SCG-Rke Co Cmnts/VDOT	10/26/05
SCG-Access Easement	11/21/05

PROVIDENCE ENGINEERING

CONSULTING ENGINEERS

819 Naff Road Boones Mill, Virginia 24065
(540) 334-4294 Fax: (540) 334-4293
Email: providence@metwood.com



UTILITIES PLAN

ADDITIONS & ALTERATIONS
BONSACK UNITED METHODIST CHURCH
ROANOKE COUNTY, VIRGINIA

Scale: 1"=40'
Date: 1/26/05
Design By: SCG
CAD By: SCG
Checked By:
Comm. No.: 04154

Sheet No.

C4