



**Civil Consulting
Group, P.C.**
ENGINEERING
DESIGN & ANALYSIS

Civil Consulting Group, P.C. is a professional corporation whose purpose is to provide thoughtful and well conceived civil engineering services to municipal and select private clients. Our expertise encompasses the following areas:

- Institutional, industrial, commercial & residential site development
- Industrial park planning and design
- Pump station design
- Water system treatment, modeling and design
- Sanitary sewer system treatment, modeling, and design
- Infiltration & inflow analysis and abatement
- Municipal well development
- Storage tank design
- Stormwater runoff modeling and design
- Stormwater management design and analysis
- Best Management Practices design
- Erosion & sediment control design
- Construction Administration

The projects listed below represent some of our staff's previous professional experience. I am confident that you will find the level of service offered by Civil Consulting Group to exceed that of the companies with which you are accustomed to working.

Please contact us to discuss ways in which Civil Consulting Group can assist with your engineering needs.

Hunter A. Young, P.E.
President



ON-CALL CONTRACTS

Municipal Contracts

Botetourt County On-Call Contract; Botetourt, VA

In 2007, CCG was awarded an on-call contract with the County of Botetourt.

Roanoke County On-Call Contract, Roanoke, VA

CCG was awarded an on-call contract for civil engineering and design services by Roanoke County. Work for this contract is forthcoming.

Military Contracts

Virginia Department of Military Affairs On-Call Contract; Southwest VA

CCG was selected to provide civil engineering support services for projects at Virginia's Armories and other related facilities. Presently working on Manassas Armory to eliminate a well and connect the building and fire system to public water supply.



SITE DEVELOPMENT

Industrial Parks

Vinton Business Center Master Plan, Rezoning & Infrastructure Design; Roanoke County, VA

Staff member served as Project Manager and Lead Engineer for 100 acre industrial park. Work included master planning, rezoning, and designing half a mile of new roadway and improvements to existing roads. Also prepared rough grading plans for parcels within business park and designed regional stormwater management facility. Other elements included water system, sanitary sewer system, erosion & sediment control, storm drainage appurtenances, underground communications ductbank, and construction administration. Also assisted with wetlands mitigation plans, trail network, and proffer preparation. Successfully aided owner with marketing by preparing conceptual plans for prospective businesses.

New Hope Road Industrial Park; Staunton, VA

Staff member served as Lead Engineer for 60 acre industrial park. Duties included planimetric layout, roadway design, grading, water, sewer, stormwater conveyance, and two stormwater management ponds.

Dearing Ford Business & Manufacturing Center; Campbell County, VA

Staff member served as Lead Engineer for roadway into new industrial park. Duties included planimetric layout, grading, stormwater conveyance, water, and sewer appurtenances.

Institutional Site Design

Southern Virginia University Athletic Practice Facility; Buena Vista, VA

CCG provided complete site development plan for a 15-acre athletic facility with 5 practice fields. Design included planimetric layout, access road, field orientation, all grading, parking lot design, erosion & sediment control, water system model (WaterCAD) and waterline extension to serve site's irrigation and domestic needs. Stormwater detention design was also provided to accommodate the artificial turf on the largest football/soccer field.

Greenfield Athletic Facility Concession Area; Botetourt County, VA

CCG provided planimetric layout and grading for new 100-space parking lot with stormwater management and water quality improvement to serve four existing soccer fields. Design included extending water, sewer, irrigation lines to serve proposed concession and restroom facility.

Botetourt-Craig Regional Jail; Fincastle, VA

Staff member served as Project Manager and Lead Engineer – Site development plan for 4.1 acre / 185 bed Regional Jail. Design included parking lot layout, grading, handicap access, water, sewer conveyance, stormwater conveyance, erosion & sediment control, underground stormwater management facility, and construction administration. Site was extremely compact and required extra attention to detail, as well as provisions for future expansion.

Special Purpose Housing; Blacksburg, VA

Staff member served as Lead Engineer for project to construct four new buildings on 12 acres to house eight fraternities and sororities on the campus of Virginia Polytechnic Institute and State University. Duties included access road design, site grading, storm drain, stormwater management, water quality improvement, sanitary sewer system, water system, parking/amenity layouts, and construction administration.

Municipal Solid Waste Transfer Station; Martinsville, VA

Staff member served as Lead Engineer for 50,000 SF multi-level solid waste transfer station. Project design included a pre-engineered building with tipping floor and loading areas underneath for two transfer trailers. Responsible for all civil design including scale house, office, access roads with curb and gutter, 2,000' water connection to City system, sewage holding tank, storm drain design, and erosion / sediment control plan.

Welcome Center; Martinsville, VA

Staff member served as Lead Engineer for 1.5 acre welcome center. Work included planimetric layout, grading, stormwater conveyance, sanitary sewer, water system design, and erosion / sediment control.

Virginia State Police Area Offices; Chatham and Clifton Forge, VA

Staff member served as Project Manager and Lead Engineer for planimetric layout, grading, and utilities including septic tank / drain field, stormwater management, and erosion sediment control for two separate one acre State Police Area Offices.

Industrial / Commercial / Residential Site Design

Master Plan and Preliminary Grading Plan - Old Rocky Mount Road; Roanoke, VA

CCG was responsible for the complete master planning and rough grading plan for 5 acre office building site. Project included planimetric layout, building needs analysis, rough grading, stormwater management planning, and erosion & sediment control.

Marina at Sunset Cay Stormwater Management; Moneta, VA

CCG is presently providing comprehensive stormwater management design and a water quality plan for a 47-acre mixed-use development along Smith Mountain Lake. Performed in association with ACS Design.

TASC at Westfields Phases I&II; Fairfax County, VA

Staff member served as Lead Engineer for the site development of a 22 acre office complex. Responsibilities included planimetric layout, site grading, utilities, stormwater management pond, erosion and sediment control plans and dam breach analysis/flood routing.

Woodlands at Athens; Athens, GA

Staff member served as Lead Engineer for 33 acre residential site development near the University of Georgia. Duties included complete design of 5,400 feet of roadway and grading of entire site which contained over 120 lots. Other design elements included storm drainage network, sanitary sewer system, water system, and recreational facilities.

Cardinal Insulated Glass; Roanoke County, VA

Staff member served as Lead Engineer for site planning, planimetric layout, stormwater conveyance, sanitary sewer, and water system for 25-acre industrial site with a 600,000 square foot manufacturing facility. Low Impact Development design concepts were used where appropriate. Responsibilities also included construction administration.

Martin Bros. Contractors; Roanoke, VA

Staff member served as Project Manager and Lead Engineer for 3 acre parcel developed for office and light industrial use. Duties included planimetric layout, grading, utilities, and stormwater management waiver. Site was arranged to allow future building expansion.

Asthma and Allergy Center; Roanoke, VA

Staff member served as Lead Engineer for 1-acre site development including planning, grading, parking layout, stormwater conveyance, sanitary sewer, water, and underground stormwater detention. The underground stormwater detention facility was unique in Roanoke because it did not have a gravity outfall. The stormwater was pumped from the facility at a rate equal to the predeveloped flow rate. Follow-up visits have shown the underground stormwater management facility to be functioning perfectly.

Premium Distributors; Fairfax County, VA

Staff member served as Lead Engineer for design of 8 acre beverage distribution center. Responsibilities included planimetric layout, site grading, utilities, and erosion & sediment control plan.

First Union National Banks; Falls Church, Vienna, Manassas, Fairfax City, Arlington, Alexandria & Annandale, VA

Staff member served as Lead Engineer for upgrading existing banks and site development for new branches. Work included several complete site plans and rezoning applications necessitated by adding drive-through banking windows. Most sites were small and it was critical to maximize their utility.



STORMWATER and BEST MANAGEMENT PRACTICES

Regional Stormwater Detention/Water Quality Improvement Ponds

Regional Pond S-7; Fairfax County, VA

Staff member served as Lead Engineer for hydrologic analysis and design of regional stormwater management pond for 650-acre drainage shed. This facility was designed immediately upstream of an existing roadway containing two 60 inch raw water transmission mains. Two existing 72 inch culverts were present within the roadway embankment and two more were added. An emergency spillway was not possible for this facility, therefore the four 72 inch culverts were supplemented by a complex outlet structure that provided stormwater quantity and quality improvements while being able to pass the probably maximum flood. Two public meetings were held with adjacent residents to educate them about the project's importance and recreational trails were designed adjacent to the facility.

Regional Pond 2-A; Chantilly, VA

Staff member served as Lead Engineer for hydrologic analysis and design of a regional stormwater management pond for several parcels within a 110-acre industrial drainage shed. The facility was designed for water quality improvement as well as stormwater detention. A dam breach analysis was part of the design.

Regional Stormwater Management Pond, Vinton Business Center; Roanoke County, VA

Staff member served as Lead Engineer for hydrologic analysis and stormwater management pond design for a 100-acre industrial park. The pond was designed to over-detain stormwater runoff due to an inadequate offsite culvert that could not be replaced. Uncommon design elements included a sediment forebay, and grading to protect wetlands.

Underground Stormwater Detention/Water Quality Improvement

On-site Stormwater Management and Best Management Practices for Palmyra Holdings, LLC; Buena Vista, VA

CCG was responsible for the complete design of an underground stormwater detention system and water quality improvement structures to serve a new townhome development. The original plan proposed an unworkable facility and Civil Consulting Group completely altered the approach to bring the project into regulatory compliance.

Shops at Smith Mountain Lake - Under Construction; Moneta, VA

CCG prepared grading plan and stormwater management / water quality improvement design for a 3-acre retail center near Smith Mountain Lake. Performed in association with ACS Design.

Asthma and Allergy Center; Roanoke, VA

Staff member served as Lead Engineer for 1-acre site development including planning, grading, parking layout, stormwater conveyance, sanitary sewer, water, and underground stormwater detention. The underground stormwater detention facility was unique in Roanoke because it did not have a gravity outfall. The stormwater is pumped from the facility at a rate equal to the predeveloped flow rate. Ongoing monitoring of this facility shows it to be functioning flawlessly.

Safeway Supermarket; Fairfax, VA

Staff member served as Lead Engineer for designing underground stormwater management and water quality improvement structure (D.C. sand filter) to allow expansion of an existing Safeway supermarket.

Burke Volunteer Fire Department; Fairfax County, VA

Staff member served as Lead Engineer for redeveloping and expanding existing volunteer fire department. Major tasks included underground stormwater detention facility with biological best management practices ("rain garden").

Watershed and Flood Plain Analysis

Churchville Avenue Storm Drain Improvements; Staunton, VA

Staff member served as Lead Engineer for hydrologic study of 640-acre urban area comprised of 30+ subsheds, all of which were modeled using TR-55 and TR-20 methods. The data was used to design several thousand feet of large scale storm drain piping and box culverts along a busy urban collector roadway.

Cattail Branch Floodplain Analysis; Leesburg, VA

Staff member served as Lead Engineer responsible for HEC-2 analysis of existing major urban floodplain. Analyzed existing condition and three alternatives for crossing including box culverts, bridge, and concrete arch type culverts. Performed cost analysis and recommended arch type culverts as most economical given the required maximum water surface elevation.



WATER

Please Note: much of the work listed here was financed through USDA Rural Development. We are familiar with their contract requirements and have a good rapport with their staff.

Studies / Modeling

Porter's Haven Water System Review; Vinton, VA

CCG assisted the Town with plan review of water systems designed to serve a retirement community. Offered Town comments that were later addressed by the developer to ensure that the water system was adequate and that it would not adversely affect the Town's system.

Water System Computer Model; Buena Vista, VA

Staff member served as Lead Engineer for computer model of City's existing water distribution water system. The model was created and used to determine areas of low pressure under fire flow conditions. Based upon the model, several thousand feet of new lines were designed and constructed to better connect the northern and southern portions of the City's system. This increased fire flow capacity and helped balance the levels in two of the City's primary water storage tanks located on opposite ends of town.

Water System Study; Buena Vista, VA

Staff member served as Lead Engineer for detailed study of City's existing facilities, including four wells, three booster pump stations, and six storage tanks. The study provided capacity and storage analyses using equivalent residential connections per VDH regulations and noted deficiencies. Results of the study called for a new 600 gpm well with chlorine contact tank and high service pump station, upgrades to an existing 700 gpm well including a chlorine contact tank and high service pump station, and general repairs to all facilities including tank painting. A leak detection study and meter replacement project were also recommended. All improvements were ranked by importance and cost estimates were prepared. All recommended projects were completed at a cost of approximately \$4,000,000. The work was funded by loans from Rural Development.

Source Development / Conveyance

Dinky Trail Waterline; Buena Vista, VA

CCG completed the design of 3,000 linear feet of 8" diameter waterline to expand a pressure zone to serve new institutional development. Other elements included pressure reducing valve, hydraulic system analysis and coordination with the contractor, the owner, and the Health Department.

Muse Well; Roanoke, VA

Staff member served as Lead Engineer for design of new 500 gpm municipal well. The well's original purpose was to serve as a primary source for the City. For this reason, a chlorination facility with contact tank and a high service pump station were designed. Ultimately, the City elected to use Muse Well as a backup source and the contact tank and high service pump station were not constructed.

Park Avenue Well and Pump Station; Buena Vista, VA

Staff member served as Lead Engineer for design of 600 gallon per minute municipal well, chlorination facility, and high service pump station designed to increase the City's source capacity. This facility is located adjacent to a college and it was necessary for the new structure to blend with the surrounding area. An above ground chlorine contact tank was not permissible. The new pump station was designed to appear similar to other nearby buildings and the chlorine contact tank was placed underground, around the perimeter of the building so that the top of the tank formed a porch floor all the way around the structure's exterior. This "porch" was covered with a 10 foot roof overhang to create a residential appearance. The well pump, chlorination equipment, and high service pump station were located inside the structure.

High School Well and Booster Pump Station, Buena Vista, VA

Staff member served as Lead Engineer for design of new 100,000 gallon storage tank and booster pump station. This tank was designed to store fireflow and domestic water for a new high school. A secondary function was to provide additional water pressure for an existing subdivision whose water system was improperly designed.

Wesley Road Waterline; Botetourt County, VA

Staff member served as Project Manager and Lead Engineer for design, permitting, and construction administration of 1,300 LF of 8" waterline to extend service along Wesley Road and to Cedar Ridge Subdivision. Project also included a pressure reducing station.

Cross Town Connector Lines; Buena Vista, VA

Staff member served as Lead engineer for design of approximately 3,500 lf of 8" and 12" waterline to improve cross town transmission.



WASTEWATER

Studies, Modeling, and Infiltration/Inflow Analysis

Old Orchard Marketplace Review; Botetourt County, VA

CCG provided sewer system review and enhancement cost study for 5,000 lf of 8" sanitary sewer. Study was precipitated by proposed development. Options included replacement and re-lining. Project was preformed as part of an on-call contract with the County.

Stadium Model, Emmet Street Model, and Valley Road Model; Charlottesville, VA

Staff member served as Project Manager and Lead Engineer– Prepared SewerCAD computer models with Infiltration/Inflow and capacity analyses for three separate sewer collectors: 17,000 LF with over 100 manholes, 7,000 LF with over 50 manholes, and 10,650 LF of sewer line with over 50 manholes. Pipes ranged from 8" to 36" in diameter. Utilized SewerCAD software to model pipe flows using system data gathered by City, including flow data. Developed statistical relationship between rainfall depths and peak flows measured in system. Correlated rainfall depths to return periods and peak flows to determine how often overflows would occur. Developed matrix showing when each section of sewer is taxed beyond its capacity. Also created future scenarios using general growth plus new facilities planned by the University of Virginia. Developed a phased plan with recommended line size increases and prepared an implementation schedule with cost estimates. The Models' findings were compared to observed problems in field and matched very closely. The recommendations from the Stadium model are presently being implemented with phase I replacement having finished construction.

Sewer Planning Study; Rockingham County, VA

Staff member served as Lead Engineer for analyzing several adjacent sewersheds in a rapidly developing part of the County. The total area exceeded 2,800 acres. The County's comprehensive plan was utilized to determine development densities and this information was used to predict future flows. Several existing pump stations were constructed by developers. These had become maintenance problems for the County. Part of the study included developing a three-phase plan for eliminating several pump stations by building new gravity sewers that could serve existing areas as well as future developed areas. Phase I of this study has already been designed and constructed. The study also analyzed different methods that the County could use to secure reimbursement of sewer construction costs from developers.

Lindenwood Subdivision; Vinton, VA

Staff member served as Project Manager and Lead Engineer for Infiltration/Inflow analysis of fifty year old subdivision. Most of the lines were clay pipe and manholes were brick. Flow measuring devices were inserted and data was analyzed to determine relationship between rainfall and flow. Results were used in conjunction with smoke testing and video reconnaissance to prepare rehabilitation plans. Study led to replacement and lining of 10,000 lf of the system.

Treatment

Fincastle Wastewater Treatment Plant; Fincastle, VA

Staff member served as Project Manager and Lead Engineer- New package type wastewater treatment plant for Fincastle, Virginia. New plant prompted by new regional jail. Existing lagoon type plant rated at 75,000 gpd. New plant rated at 125,000 gpd to accommodate additional prison wastewater and development around town. Plant designed using DEQ Draft Regulations (8/31/04) with biological nutrient removal due to strict nitrogen and phosphorous limits within Chesapeake Bay Watershed.

Wastewater Treatment Plant Preliminary Engineering Report; Monterey, VA

Staff member served as Project Manager for the development of a Preliminary Engineering Report and Environmental Report for a new wastewater treatment plant (120,000 gpd). Reports submitted to the Department of Environmental Quality and U.S.D.A. Rural Development. Preliminary Engineering Report was used to secure \$1.5 million in grants and \$500,000 in low interest loans.

Conveyance

North River Sewer Bypass Line; Harrisonburg, VA

CCG was responsible for the design of a 36" diameter, 30 million gallon per day temporary sewer bypass line in conjunction with the the construction of the new North River Wastewater Treatment Facility in Harrisonburg.

East Marion Sewer Extension; Marion, NC

Staff member served as Lead engineer with responsibility of designing 46,000 LF of gravity sewer based upon field reconnaissance and surveys. Existing septic fields had failed in the economically depressed area. Sanitary sewer was needed for public health reasons.