Donald J. Jacobs, Jr., PE

Principal

Don has 16 years of diversified experience in water resources engineering. He has experience on numerous projects throughout Colorado and the western United States, and has worked with a variety of private clients as well as federal, state, and municipal government agencies. His work experience has included complex planning studies that have proceeded through design and into construction. His specific areas of expertise include hydrologic and hydraulic modeling, design of open channels, storm sewer design, floodplain modeling, drop structure design, bridge hydraulics, storm water master planning, and highway related drainage and erosion control practices. His broad range of experience also includes construction management for storm drainage projects. Don prides himself on providing high value, innovative solutions for his clients on the most challenging projects.

Project Experience

Stormwater Management and Planning

FasTracks East Corridor Commuter Rail, Denver, CO, Regional Transportation District (RTD). Lead drainage consultant for a $1.2 billion commuter rail facility running from downtown Denver to Denver International Airport. Worked with RTD to develop drainage strategies and cost savings along the 21-mile corridor, with drainage infrastructure costs ranging as high as $120 million. Don coordinated conceptual and preliminary drainage design alternatives with rail, streets, and structural design for the project.

Denver Storm Drainage Master Plan, Denver, CO, City and County of Denver. Lead hydrologic modeling engineer for approximately 157 square miles of urban watershed. Prepared master planning documents to be utilized by the City's development review staff, planners, and maintenance personnel, as well as developers, politicians, and citizens. The project proposes over $1.0 billion in capital improvements. Don worked with staff to integrate hydrologic analysis and construction cost modeling into the City's existing GIS database and overall mapping. He coordinated design alternatives and technical analysis with the city's planning, maintenance, design, and parks departments. He continues to work in a supporting role with City staff for flooding investigations, public involvement, design, and construction observation.

Hampden Heights Area Flood Investigation and Improvement Plan, Denver, CO, City and County of Denver. Don investigated flooding problems for a residential neighborhood in southeast Denver and prepared master plan level alternatives for long term flooding solutions. He directed emergency channel construction immediately after a flooding event that provided short term protection to local properties. Don worked closely with City planners, designers, politicians, and local residents on this highly visible project that received significant news coverage. An additional $10 million in improvements have been constructed.

Cherry Creek Neighborhood Drainage Study, Denver, CO, City and County of Denver. Don developed a detailed, two dimensional hydraulic floodplain model using FLO-2D software for a 5-square block urbanized area in central Denver. Prepared and submitted a FEMA pre-disaster mitigation grant on behalf of the City, and performed a flood hazard risk analysis identifying potential mitigation alternatives.

4th Avenue Drainage Study, Denver, CO, City and County of Denver. As a follow-up project to the Cherry Creek Neighborhood Study, Don developed a two dimensional hydraulic floodplain model for a complex 0.6 square mile urbanized

area. Alternatives to alleviate flooding were analyzed using FLO-2D software, allowing for the optimization of future capital improvement projects.

Denver Union Station - Downtown Drainage Study, Denver, CO, Regional Transportation District (RTD). In support of redevelopment of the Denver Union Station transit hub, Don developed a two dimensional hydraulic model of the Lower Downtown portion of Denver, Colorado. Various design alternatives were developed to protect this $500 million facility from future flooding.

Park Hill (North of Smith Road) Drainage Outfall Systems Plan, Denver, CO, Urban Drainage and Flood Control District (UDFCD). Prepared extensive hydrologic, hydraulic, alternative analysis, and preliminary design for the six square mile Lower Park Hill drainage basin. The analysis included multiple split-flow determinations using 2-dimensional flow analysis; and the outfall area involved complex flooding conditions covering several jurisdictions and property owners.

Broadway & Rural Drainage Master Plan FLO-2D Pilot Study, Tempe, AZ, Flood Control District of Maricopa County (FCDMC). Don provided input on this pilot study to model rainfall, runoff, and anticipated flooding patterns over a six square mile watershed. The pilot study was performed on a small portion of the watershed prior to the larger overall study. It was used to determine technical FLO-2D modeling techniques, parameters, and overall strategy for future urban flood modeling within the FCDMC.

Boxelder Creek Regional Stormwater Master Plan, Fort Collins, CO, City of Fort Collins and Larimer County. Acted in a technical support role in the formation of a special stormwater utility district involving the City of Fort Collins, Larimer County, and several local developers**.** Investigated potential regional stormwater detention pond locations.

Sellars Gulch Master Plan, Castle Rock, CO, Town of Castle Rock. Don was the lead hydrology engineer for this 15 square mile watershed, preparing baseline hydrologic analysis for master planning purposes.

38th and Holly Detention Pond, Denver, CO, City and County of Denver. Project manager for the design of a 49 acre-foot detention pond and 2000 linear foot, 120-inch diameter outfall pipe with a project cost of $4.5 million. Prepared and won a $3.0 million FEMA pre-disaster mitigation grant for the City of Denver to partially fund the project. Don was responsible for planning, funding, and design of this project.

North Metro/Gold Line/US 36 Outfall Systems Plan, Denver, CO, City and County of Denver. Analyzed potential drainage outfall locations associated with 12-miles of future light rail expansion within the City of Denver. Don produced conceptual layout and construction cost estimates for over $85 million in drainage system improvements.

Arapahoe County Comprehensive Plan, Arapahoe County, CO. Performed county wide research on various water supply and water distribution systems. Participated on a team of planners and engineers to establish a development plan interrelating land use, transportation, and water supply.

Hydrology & Hydraulics for Transportation

Northwest Parkway, Broomfield, CO, Northwest Parkway Authority. Lead drainage design engineer on this nine-mile, $187 million design-build construction project. Don managed drainage design efforts and coordinated with roadway, bridge, and utility disciplines. He worked closely with local jurisdictions, the Parkway Authority, and the contractor to address various design requirements, cost savings, and constructability issues. Also, responsible for meeting aggressive design-build project scheduling and deadlines. Designed major drainage facilities including box culverts, storm sewers, channel improvements, CLOMR's, stormwater detention, stormwater retention, and irrigation structures.

US 40, Winter Park, CO, Colorado Department of Transportation. Designed highway drainage facilities for a three-mile widening and improvement project. Devised challenging "mountain" drainage facilities addressing issues such as high velocities, excess sediment, and snowmelt.

Harrison Pass Road, Elko County, NV, Federal Highway Administration. Designed roadway drainage facilities for a seven-mile roadway relocation over the Ruby Mountains. Provided "fish friendly" culvert design to accommodate migrating Lahontan cutthroat trout.

US 24, Divide to Edlowe Road, Woodland Park, CO, Colorado Department of Transportation. Designed highway drainage facilities for a four-mile widening and improvement project including 20 small culverts, three large box culverts, 4,000 linear foot storm sewer system, and one bridge.

Fairfield to Dupuyer - Corridor Study, Teton County, MT, Montana Department of Transportation. Identified overall drainage characteristics and design needs within a 40 mile corridor. Assessed factors affecting hydraulic conditions such as existing structure conditions, channel conditions, erosion and sedimentation, and floodplain information.

Somerville Road Restoration, Somerville, NJ, Bernards Township. Developed a preliminary roadway design including cross sections, profiles, alignments, and cut/fill calculations, designed (preliminary) an 8,000 linear foot drainage system including inlets and culverts. Produced a HEC-2 bridge hydraulics analysis for D.E.P. permitting.

New York State Rt. 110 Drainage Study, Huntington, NY, New York State Department of Transportation. Prepared a hydrologic/hydraulic study for a 5.2-square-mile urban watershed. Engineered preliminary designs for solutions to alleviate flooding.

I-80/Howard Boulevard Deficiency Study, Mt. Arlington, NJ, New Jersey Department of Transportation. Designed preliminary layouts for a clover leaf interchange.

Beartooth Highway, Shoshone National Forest, WY, Federal Highway Administration. Determined drainage and roadway maintenance needs for 18-miles of mountain highway.

Broadway/Evans Drainage Outfall Systems Plan, Denver, CO, City and County of Denver. Master planned multiple drainage solutions to accommodate future roadway reconstruction.

Private Development Drainage

Prairie Gateway, Kroenke Soccer Stadium, LLC, and Romani Group, Inc., Commerce City, CO. Performed drainage and site planning, design, and coordination on a 700 acre development site consisting of a 25,000 seat events center, associated parking, retail, civic center, recreational facilities, conservation area, and transportation improvements.

Stapleton Filing 18, Denver, CO, Forest City Enterprises, Inc. Designed the drainage system for a 111 acre residential development and master planned an additional 231 acres of development for future systems. $5.5 million total construction cost of designed infrastructure.

Lowry Air Force Base Redevelopment, Denver, CO, Lowry Redevelopment Authority. Primary design engineer for a 9000 linear foot, $1 million storm sewer system for the 180 acre "Northwest Neighborhood" residential development. Detailed designs included storm sewers, inlets, junctions, open channels, scour protection, drop structures, baffle structures, and detention basins.

South Fork Lodge, Swan Valley, ID, Mark F. Rockefeller. Surveyed field elevations and bank stabilization improvements.

Argonaut Liquors, Denver, CO, V3 Companies of Colorado. Don functioned as a stormwater technical consultant for this site redevelopment project.

Seasons at Cherry Creek, Denver, CO, ReadPeak Properties. Prepared a drainage study supporting residential urban redevelopment.

The Shops at Thornton Valley, Thornton, CO, Shea Properties. Lead storm water design engineer for an 18 acre retail development site.

Lafayette Crossing, RMR Realty Partners, Lafayette, CO. Don worked with developers, architects, and city engineers to determine development feasibility. He investigated utilities, drainage issues, floodplain analysis, transportation access, wetlands, land use planning, and cost estimation for this 45 acre green site.

Upper Running Gulch Improvements, Black Hawk, CO, Western Diversified Builders. Designed an 800 linear foot drainage system for supercritical flow. Determined pipe alignments, hydraulic jump calculations, inlet design, manhole design, baffled outlet design, shock wave calculations, jet trajectory, and cost estimates.

Quinn Ranch Drainage Study, Douglas County, CO, James Quinn. Produced a HEC-1 hydrology analysis for drainage issues related to future residential and roadway development. Designed the rehabilitation and enlargement of two detention basins for stormwater mitigation for future development and livestock watering. Prepared final report for litigation purposes and related cost estimates.

Floodplain Management

FIS Update of Rock Creek, Coal Creek, and Bullhead Gulch, Boulder County, CO, FEMA. Produced HEC-2 hydraulic models for three different waterways with multiple bridges, culverts, split flow analysis, and floodway analysis. Delineated 100-year and 500-year floodplains and prepared final mapping and profiles.

Mesa County Floodplain Studies, Mesa County, CO, FEMA. Prepared floodplain studies for four previously unmapped drainageways.

Passaic River Flood Delineations, Newark, NJ, U.S. Army Corps of Engineers. Delineated floodplain elevations covering 170 square miles. Supervised 2-3 engineers and technicians in preparing final delineation mapping.

Passaic River Central Basin and Hurricane Levees, Newark, NJ, U.S. Army Corps of Engineers. Developed final alignments for 20 miles of levee/floodwalls for fluvial flood and tidal surge protection at a total cost of $190 million.

South Boulder Creek Floodplain Analysis, Boulder, CO, Urban Drainage and Flood Control District. Developed HEC-2 hydraulic models with split flow calculations for floodplain analysis. Delineated floodplain profiles.

Hydraulic Analysis and Design

Omni Channel Erosion Correction, Castle Rock, CO, Town of Castle Rock. Designed an 18-foot-high, grouted sloping boulder drop structure with channel improvements as an emergency repair to severe erosion threatening neighboring businesses. Don also prepared a hydrologic study for an 18 square mile, quickly developing watershed. Don met the client's needs in this 'Fast Track' design and contractor bid process.

Lena Gulch at Mountainside, Golden, CO, Urban Drainage and Flood Control District. Worked with local government agencies and property owners to develop conceptual design alternatives for channel improvements to alleviate residential flooding.

1st Street at US 287, Loveland, CO, Colorado Department of Transportation. Provided hydraulic support and alternative analysis for an irrigation ditch relocation associated with roadway improvements. Interacted with the DOT, City, and ditch company to achieve an agreeable solution.

Dalrymple Pond Dam Feasibility Study, Center Grove, NJ, Morris County. Generated base mapping utilizing Eagle Point's RoadCalc software and survey information.

Bridge Scour & Hydraulic Analysis

West Fork Stillwater River Bridge Replacement, Nye, MT, Montana Department of Transportation. Created a HEC-RAS backwater analysis for multiple bridge replacements, coordinated roadway alignments with bridge hydraulics and floodplain impacts. Utilized regression analysis and rain gage data for basin hydrology and designed culverts and irrigation crossings.

Oregon Bridge Replacements, Portland, OR, Oregon Department of Transportation. Acted as the bridge hydraulics engineer on five bridge replacement projects in Coos and Douglas Counties. Responsible for hydraulic related project scoping, budgeting, technical analysis, and report submittals.

Cherry Creek Bridge Rehabilitation, Glendale, CO, City of Glendale. Performed a HEC-2 bridge hydraulic analysis for bridge replacement.

Fishing Bridge Pipe Crossing, Yellowstone National Park, WY, National Park Service. Set alignments and valve/meter locations for a 10 inch water distribution system.

Construction Management

Louisville Lower Drainageway "D", Louisville, CO, City of Louisville. Acted as the construction inspector for a rock-lined channel project observing the installation of boulders, riprap, a reinforced concrete structure, and a flow measurement device.

The Sanctuary at West Meadows, Jefferson County, CO, Skyland Meadows Development. Don provided construction inspection services for the installation of storm drains, drop structures, and channel/wetland features.

Construction Inspector/Engineering Intern, Harrisburg, PA, Pennsylvania Department of Transportation. Inspected the construction of roadway and drainage systems. Explained projects to adjacent property home owners, tested material samples, and inspected roadway pavement conditions to determine the allocation of state funds for roadway maintenance.

Professional Development

Education

The Pennsylvania State University, University Park, PA.
Bachelor of Science in Civil Engineering, May 1994.

Registrations

Registered Professional Engineer, Colorado #33840

Affiliations

Colorado Association of Stormwater and Floodplain Managers
Association of State Floodplain Managers
American Council of Engineering Companies
Design-Build Institute of America

Computer Proficiency

Hydrology: CUHP, HEC-HMS, TR-55, HEC-1, XP-SWMM, CU Frequency Analysis
Hydraulics: HEC-RAS, HEC-2, EPA-SWMM, XP-SWMM, UD-SWMM, UD-Sewer UD-Inlet, FlowMaster,CulvertMaster, HY-8, FishXing, StormCAD, FLO-2D
CAD/GIS: AutoCAD, Microstation, Geopak, Eagle Point, ArcGIS