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STORMWATER AND DROWNING PROJECTS

Modesto, CA Stormwater Detention Basin Design Guide Review. Reviewed the stormwater permit, draft master plan, standard specifications, Guidance Manual, and dual use document to evaluate why there is so much diversity in the types of stormwater detention basins that are built. Made recommendations on how the designs of the basins can be managed to produce facilities that are more effective and easier to operate and maintain.

City of El Segundo, CA. Project manager on the feasibility study and design of a storm water pump station modification project. The feasibility study analyzed the alternatives of two separate pump stations versus a single pump station connected by 1,300 feet of 60 inch sewer. The single pump station alternative was selected. Because the sewer is at depths of up to 35 feet, much of it will be constructed by jacking and boring. The design included: six submersible pumps with a design capacity of 105 CFS (68 MGD) and 1,400 total installed horsepower; a building to house the electrical equipment above the maximum possible flooding level; the 60 inch sewer; various catchbasins, street improvements, and small storm sewers; a jib boom for removing the pumps; and miscellaneous site improvements including landscaping.

Del Monte Lake Dredging, Monterey, CA. Provided technical expertise on a project involving the restoration of a lake by dredging.

City of San Juan Capistrano, CA. Prepared a Water Quality Plan for the City of San Juan Capistrano to control non-point sources of pollution. This plan is a part of stormwater work mandated by the Clean Water Act.

Roberts Landing Stormwater Pump Station, Alameda County, CA. Reviewed the design of a new stormwater pump station for Alameda County. Noted that the wet well was too shallow to support the full design capacity of the station.

City of Burlingame, CA. Evaluated improvements needed to the Marsten Road Stormwater Pump Station to enable it to discharge the design storm reliably. The analysis of the stormwater system was complicated by overflows from other basins and by the limited capacities of some parts of the stormwater collection system. There was a tradeoff between providing more pumping capacity versus improving the collection system. Made a further design development to more accurately determine the cost and technical feasibility of pumping all the way to San Francisco Bay in parallel to the gravity creek channel. Recommended that a second pump station, with a capacity of 105 CFS (68 MGD), be built on the same site as the existing pump station.

City of Burlingame, CA. In a second phase of the stormwater study, evaluated several alternatives for transfer of part of the flow from one basin to another. Prepared an extensive computer spreadsheet for comparing the different alternatives. The comparison was complicated because improvements made in one basin affected the improvements needed in the other and because both gravity and pumped flows were involved.

Richmond, CA. Assisted in the design of a storm drainage system for part of the Richmond Parkway. The design was complicated by the extremely flat terrain, parts of which was subject to flooding during extreme tides. In addition, the design had to maximize the utilization of existing drainage facilities.

City of Alameda, CA. Conducted a feasibility study of installing a mechanically cleaned bar screen on a stormwater pump station. Received the assignment on Friday. Delivered the report to the City engineering staff on Monday afternoon for use in a meeting with the City Manager on Tuesday morning. Designed the bar screen and provided technical support during construction.

City of Lancaster, CA. Prepared a preliminary design of a stormwater pumping system to minimize the time during which water would stand in a stormwater detention basin. The detention basin was used as a parking area for the nearby fair grounds.

City of Burlingame, CA. Design of the California-Grove Stormwater Pump Station. The facilities included: a 28 CFS (18 MGD) pump station using submersible pumps; a standby generator; a storage building; drain inlets and piping; and site improvements. The construction cost of the facilities was \$1.3 million.

City of National City, CA. Project Manager, Pump Stations Improvement Project. Was the lead designer on this project involving the replacement of pumping equipment and installation of a new radio alarm system in four pump stations. Design of the radio telemetry system was complicated by the fact that the electric trolley from San Diego to Tijuana, Mexico ran between the pump stations and the police department to which the alarms were being sent. Two of the stations were for storm water, two for sanitary sewage. The project also included about 1300 feet of sewer, including two jack and bores.

Death from Septic Tank Dry Well, Ventura County. Unbeknownst to the present homeowners, the septic tank system of their home was equipped with a dry well, rather than a conventional leach field. The dry well was about 3-feet in diameter and 25-feet deep. This type of disposal facility had been permitted until approximately 1970 by the local building officials. The top of the dry well was covered with a concrete cap, which apparently deteriorated over time. When the six year old child of a neighbor walked on the concrete cap, it collapsed. The child fell into the dry well and drowned.

Septic Tank Drowning. Evaluated whether various parties had acted within the Standard of Care in a case where a seven year old boy fell into a septic tank in a mobile home park in Arizona and drowned.

City of Benicia, CA. Conducted a study of a total of twenty-nine (29) sewage, stormwater, and potable water pump stations to: (a) assess their reliability; (b) develop a list of capital improvements to extend the life and effectiveness of the pump stations; and (c) prepare operating and maintenance checklists and review the maintenance management system. The reliability analysis includes consideration of transfer switches and quick-connect receptacles to allow mobile generators to be used during a power outage, and of bypass piping that will allow mobile pumps to use the existing force mains. All spills and overflows from the sewer system for a six year period were tabulated and analyzed. A surprising finding of the spill analysis was that there apparently had not been a single spill from the sewerage system due to a power failure. The identified capital improvements were divided into short-term and long-term categories, were assigned priorities, and were packaged in a multi-year capital improvement program. Questionnaires were sent to a large number of agencies soliciting information about the costs and personnel requirements for operating and maintaining pump stations to use as a "benchmark" against which to compare the City's staffing level and budgets.

City of San Leandro, CA. In an earlier assignment, estimated the costs of a five-year capital improvement program for the City's 16 sewage and stormwater pump stations for use as input in the budgeting process.

California Landing Stormwater Pump Station Flooding. Served as technical expert on a law suit involving the failure of a stormwater pump station in a subdivision in the lower East Bay. The station flooded out when excessive flows reached the site through a gap in the levees along the adjoining stream. Concluded that the design of the pump station met the Standard of Care and that the unforeseen, excessive flows were the cause of the problem.

San Carlos, CA Airport. Provided technical advice on stormwater improvements to accommodate further development of the site. The airport authority questioned how additional stormwater piping without any additional pumping capacity could increase the capacity of the overall stormwater system. Determined that the bottleneck in the system was the piping, not the pumps, and that the proposed improvements would in fact result in an increase in overall capacity.

Alameda Naval Station, CA. Provided peer review for design of stormwater facilities for the former naval air station, which had been turned over to the City of Alameda and was being more intensively developed. Noted the high probability of siltation in a proposed submerged outfall line.

City of Oakley, CA Cypress Road Stormwater Pump Station Review. Provided peer review of a stormwater pump station and plan to serve a new subdivision. Noted that the proposed pump station structure did not provide adequate access to the pumps. Advised on the use of engine driven pumps during the initial season of operation as an interim measure.

Coffee-Claratina Stormwater Pump Station, City of Modesto, CA. Assisted the City staff in designing the completion of a stormwater pump station to empty the dual-use detention basin that had been constructed as a feature of the park. Calculated the required pumping rates to meet various requirements and confirmed the pump selection. Prepared skeleton designs of the valve vault and piping systems for installation by City staff. The work was performed by City staff, augmented by contractors, on an expedited basis in just 12 weeks to allow the park to open on schedule.

Grant Line Road Groundwater Pump Station Relocation, City of Tracy, CA. Designing the relocation of a groundwater pump station, which is necessitated by the widening of Grant Line Road. The pump station was installed to remove groundwater from tile drain systems installed to serve the area when it was in agricultural use.

San Bruno, CA Walnut Stormwater Pump Station Evaluation. Evaluated this stormwater pump station to make recommendations on needed improvements. The primary problem was that the manually cleaned inlet screen would plug with debris and would prevent water from reaching the wet well. Recommended an improved screen design.

Dana Hills, CA Stormwater Pump Station. Evaluated improvements needed to a stormwater pump station. Recommended that the electrical improvements needed could be implemented by an electrician without engineering assistance. Recommended inspection of the check valves and possible replacement.

Pittsburg, CA Montezuma Stormwater Pump Station. Made a preliminary analysis of pump replacement at an ancient stormwater pump station. Reviewed the hydraulic analyses of approximately one mile of channels and culverts that fed the pump station site. Noted to the client that the various criteria for the project were conflicting. Recommended that the project not be undertaken until further scoping could take place. This recommendation was accepted.

Modesto, CA Grecian Basin Stormwater Review. Reviewed the performance and requirements of a stormwater retention basin.

Expert Witness, Failed Stormdrain Piping, Kings County, CA. Served as an expert witness in a case in which plastic storm drain piping serving a new subdivision collapsed. Issues included the type of piping selected in the design, whether the correct type of pipe had been supplied, whether the piping had been correctly backfilled, whether the submerged outlet of the storm drain system contributed to sedimentation, and the construction management procedures used.

South San Francisco, CA. Participated in a Value Engineering review of improvements to the storm drainage system in a commercial part of the city. The project included additional drain inlets, additional storm drain piping, and a new stormwater pump station.

Private Residence, Pleasanton, CA. Provided technical advice in a situation where surface flow from an uphill property was discharging on to the property of a lower residence. Advised on laboratory testing that would determine the source of the flow and on further observations that should be made.

City of Oakley, CA Stonecreek Stormwater Pump Station. Reviewed the plans for a stormwater system serving a new subdivision. Noted that the intake structure in the retention basin would be difficult to access and might be blinded by plastic or cardboard during a storm event.

Damage To Foundations Of A Private Residence Due To Leaking Stormdrain, Beverly Hills, CA. Provided technical advice on how a leaking stormdrain could be repaired using trenchless techniques. Estimated costs of repair.

Apartment Complex Versus City of San Francisco, CA. Served as expert witness for an apartment complex in San Francisco that had been repeatedly flooded with sewage during rainstorms. Determined that the flooding was due to surcharging of the City combined sewers, several of which were admitted to have less than half of the required capacity for the design storm event.

Evansville, Indiana Stormwater Overflows. Was an expert witness in a complicated case involving overflow of stormwater. The City was under a consent decree from the USEPA to provide greater capacity for stormwater.

Failed Stormwater Facility, Private Residence, Oakland, CA. Investigated a situation where stormwater from an uphill property was flowing under a retaining wall on to the downhill property, carrying soil from behind the retaining wall. Discovered that a large cavity had developed behind the retaining wall and that there was a danger of collapse of parts of the uphill property. Determined that the problem was leakage from the storm drain facility on the uphill property. Recommended repair techniques and assisted in hiring and advising a contractor.

Moist Crawl Spaces. Consulted on approximately 15 cases where there was excessive moisture in crawl spaces. Many of these cases were in the lower East Bay (Hayward and San Leandro, CA) where the ground surface is only a few feet above sea level and is very flat, providing little fall for drainage systems. In many of these cases, the excessive moisture caused hardwood flooring to buckle. Designed improvements to the drain systems in many of these cases.

Building Renovation, Oakland Airport, CA. Provided technical advice to an architectural firm on replacement of the flooring system at a building at the Oakland Airport. The ground in the vicinity of the building is only a few feet above sea level and excessive moisture vapor in the crawl space had caused the wooden joists and floor to rot. Noted that the relevant building code allowed ventilation openings to be reduced by 90 percent if the ground was covered with plastic. Recommended covering the soil of the crawl space with plastic sheeting and the use of pressure treated wood for the joists and floor.

Tile Drain Pump Station, Tracy, CA. Designed a pump station to dewater a tile drain system in the city of Tracy, CA. The tile drain system had been constructed approximately 40 years before when the area was largely agricultural to lower the water table in the fields. The pump station was located where a major street was to be widened and thus a new pump station had to be constructed out of the roadway.

Groundwater Drainage Consultation, Parking Garage, University Of California At Berkeley. Provided technical advice on how to deal with a groundwater problem in a subterranean parking garage at the University of California at Berkeley. Alternatives considered include systems inside and systems outside of the garage.