Horizons

Pure necessity

PCL’s pipeline to water treatment excellence

ALSO INSIDE
Building Green
Proactive Construction Management
Working for One of the Best
When it comes to water and wastewater treatment plant construction, PCL’s experience, expertise, industry-leading design phase services, and ability to self-perform a majority of the work are second to none. And... we’ll even build the major waterlines required if you need that, too.

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Water & Wastewater infrastructure:

We build to suit with experienced builders and an extensive portfolio of past successes

The PCL family has been in the water and wastewater plant construction business for a very long time. One of our first plants was the Edmonton Water Treatment Plant completed in 1947. After working on several projects in the ensuing decades, we built the San Pasqual Aquatic Treatment Facility and San Diego’s Grove Avenue Pump Station in California in the mid-1990s. We’ve constructed water treatment plants, dams, wastewater plants, water pipelines — you name it — across North America. Today, we have some of the most experienced plant and pipeline builders in North America working on projects in Arizona, Alberta, and Manitoba ... and we’re looking for more!

Projects come to life early through intricate 3-D modeling design services

Clients, engineers, and consultants keep telling us how much they appreciate our unique ability to bring their drawings to life through our intricate 3-D modeling processes. Our industry-leading modeling helps clients fully understand and work through constructability issues by putting the project into full view. Once PCL’s recommendations are brought to the table, the client can see the full scope of what success will look like in both drawings and models.

Accurate budgets and schedule control through self-performing

PCL’s ability to self-perform work on the majority of our water, wastewater, and water pipeline projects allows us to maximize control of the budget and the schedule, and solve issues proactively.

Albuquerque Water Treatment Plant
Albuquerque, New Mexico

Facts:
- water capacity of 92.5 million gallons per day
- presedimentation storage capacity of 100 million gallons
- finished water storage of 22 million gallons

Owner: Albuquerque Bernalillo County Water Utility Authority
Contract Value: $159,822,000
Primary Consultant: CH2M Hill
Construction Schedule: June 2005 to June 2008

COVER PHOTO: Albuquerque Water Treatment Plant
Glenmore & Bearspaw Water Treatment Plants
Upgrades Program
Calgary, Alberta
Facts:
• two water treatment plant upgrades: one at 550 million liters per day and one at 400 million liters per day
• 28,000 cubic meters of structural concrete
• 86,000 square meters of formwork
• includes pretreatment and residuals treatment facilities, filter rehabilitation, air scour systems, sodium hypochlorite facility, carbon dioxide systems, activated carbon, and UV disinfection

Lake Pleasant Waterline and Water Transmission Main
Phoenix, Arizona
Facts:
• 44,230 linear feet of 78” water transmission main
• 40,640 linear feet of 8” force main
• 5,570 linear feet of 16” waterline
• 44,230 linear feet of dual 4-1/2” fiber optic ducts

“PCL has continuously demonstrated an ability to add value to our project. Their modeling design services were especially helpful in bringing our vision to reality — in a way that made sense to the overall constructability of the plant.” — Paul Kinshella, PE, City of Phoenix Water Services Department, 91st Ave WWTP-UP05 Project A

91st Avenue Wastewater UP01 Completion Project
Phoenix, Arizona
Facts:
• 40 million gallons per day treatment capacity expansion
• 12,200 cubic yards of structural concrete in major tanks and structures
• 190,000 square feet of formwork
• 14,360 linear feet of buried yard piping

Owner: City of Calgary
Contract Value: $235,000,000
Primary Consultant: Associated Engineering Alberta Ltd.
Construction Schedule: February 2004 to February 2012

Owner: City of Phoenix
Contract Value: $49,431,847
Primary Consultant: Stanley Consultants, Inc.
Construction Schedule: January 2004 to April 2007
As renewal of North America’s roads and bridges, hospitals, courthouses, educational institutions, and other infrastructure takes center stage, customers applaud our performance in design, construction, and permitting as part of public-private partnerships.

PCL excels in taking on infrastructure

Moving quickly

Perhaps most importantly, PCL companies have acted quickly in proposing design and construction solutions and eventually accepting this risk from our customers. “The pressure on our customers to move forward with large infrastructure projects is enormous,” says Paul Douglas, president and chief operating officer of PCL’s Canadian Buildings division. “We have eased this pressure by proposing solutions in partnership with others in a very short period of time — typically with limited information.”

Cost and schedule certainty

Paramount in these public infrastructure projects is the confidence our customers have put in PCL companies to complete the design, construction, and permitting on time and on budget. These are hallmark requirements in the contracting business, but they are

Anthony Henday Southeast
Leg Ring Road
Edmonton, Alberta

This road and bridges project was the largest contract granted by Alberta Infrastructure and Transportation (INFTRA) at the time of award and the first by INFTRA to use the public-private partnership model. The project connects to the southwest leg of the Anthony Henday Ring Road, offering motorists and truckers the opportunity to bypass Edmonton when accessing major thoroughfares eastward and westward out of Edmonton. The southeast leg ring road includes twenty bridge structures and seven miles of roadway that required nine million cubic yards of excavation, 1.7 million tons of granular material, 350,000 short tons of asphalt, and 44,000 cubic yards of concrete to build.

The PCL Construction Management Inc. (Edmonton) team responded to the request for proposal in eight months in 2004, and completed this massive roads and bridges project ahead of schedule.

Furthermore, the PCL team helped create an open, team environment with the P3 partners in that all participants were informed of the progress of the project at every step. In a climate of infrastructure renewal scrutiny, cost, and schedule certainty were a must. This open communication system between all parties built confidence between the participants that the project would be built on time and on budget to the highest standards of quality.

“The PCL team’s commitment to creating a true partnership amongst all of the participants was the key success factor in this project being delivered on time and on budget.” — Neill McQuay, Executive Director, Major Capital Projects, Transportation and Civil Engineering Division, Alberta Infrastructure and Transportation
design and construction risk

simply not that easy to commit to quickly when you are looking at multimillion dollar projects and stiff penalties.

PCL companies rely on decades of design and construction experience and expertise to create confidence in the customer that their projects will be built on time and on budget.

We are currently bidding on or building several public-private partnership (or alternative financing) projects across North America. Our two most recently completed P3s in Western Canada prove that PCL is the contractor of choice to get your public infrastructure project off the drawing board, on to the construction site, and to the public on time and on budget.

"The new Gordon and Leslie Diamond Health Care Centre is a great example of a state-of-the-art facility providing better patient care, and I would like to commend the partners for their dedication and support." — The Honourable George Abbott, Minister of Health, Province of British Columbia

Gordon and Leslie Diamond Health Care Centre at Vancouver General Hospital
Vancouver, British Columbia

This eleven-story, 365,000-square-foot, outpatient care facility in downtown Vancouver is home to a wide range of medical services for over 600,000 patients annually.

The PCL Constructors Westcoast Inc. team responded to the request for proposal in four months in 2003, and completed a twenty-three-month construction schedule on time and on budget. The schedule included construction, fitting out, and the moving in of medical departments to ensure the facility was open to the public in August 2006.

The design and construction process included coordinating the requirements of more than forty vastly diverse health care departments. We listened to and translated those requirements into functional, yet aesthetically pleasing areas, while providing the maximum space possible. Through design innovations such as the sharing of exam rooms and reception areas, the majority of the department needs were met.
Sustainability and the environment have always been important to the PCL family, and more and more we are helping achieve our customers’ goals to go green. PCL companies across North America are quickly becoming renowned for their expertise in building projects to Leadership in Energy and Environmental Design (LEED®) standards.

**Manitoba Hydro Downtown Office Building** This new 690,000-square-foot office tower in downtown Winnipeg will be a cost-effective, state-of-the-art structure that embodies and demonstrates Manitoba Hydro’s commitment to sustainable development. It is being built to LEED® Gold standards.

**PCL Centennial Learning Centre** This training and development hub for the PCL family of companies was built to mark our 100th anniversary in 2006. The 2,700-square-meter building connects our North American Headquarters and the Edmonton-based industrial and commercial construction operations. It is the first private sector building in Alberta to achieve LEED® Gold status.

**Alliance for Technology, Learning & Society Center** This 66,000-square-foot building on the main campus of the University of Colorado at Boulder, Colorado has been described as a jewel box built on a postage stamp as the site was extremely restricted and congested. The owners are in the process of applying for LEED® Certified status.
Alfred A. Arraj Federal Courthouse
This 190,000-square-foot building in downtown Denver is the first United States federal courthouse to be constructed using green building technology. It is comprised of a ten-story tower and an adjacent two-story attached pavilion. It was built to LEED® Certified standards.

Seattle Terminal Radar Approach Control Center
This White House Closing the Circle Award winner involved the extensive development of an environmentally sensitive site surrounded on all four sides by wetlands. Centered on the site is a 50,000-square-foot main building housing state-of-the-art radar facilities. This project is the first of its kind for the Federal Aviation Administration in that it was designed and built to LEED® Gold standards.

Juno Building — Chiefs and Petty Officers’ and Officers’ Facility
This unique design-build project, located on the Department of National Defence’s Stadacona Base outside of Halifax, includes a twelve-story accommodations tower above a three-level podium. The podium includes a large galley and a collection of dining halls, ballrooms, lounges, and meeting rooms. The 190,000-square-foot Juno Building is a Canadian Design-Build Institute Award-winning project and LEED® Silver building.
Self-performing with an efficient concrete formwork system provides **flexibility and control** of the schedule

Not only did the PCL Orlando team choose to use an efficient concrete formwork system at the 55 West on the Esplanade condominium tower in Orlando, they also chose to self-perform the cast-in-place concrete structure. These proved to be brilliant decisions, as increased flexibility has been added to the critical path that remains on schedule.

Why was PERI selected as the most efficient concrete formwork system?

- It **fit**! The system provided a better fit than other systems within the column layout of the tower.
- It’s **safe**!
  a) Workers do not need to be on the formwork while stripping it and hooking up to the tower crane;
  b) The handrail system remains in place and does not need to be reconstructed on every floor; and
  c) The system supports special trailing platforms, allowing iron workers to set the elevator separator beams off the trailing platforms with no fall hazards.
- The system has been used by other PCL teams! The PCL Orlando team accessed the historical productivity data and experience of other PCL teams across North America who recommended this particular system.

Why self-perform?

- By researching previous production rates on other projects, we’re able to establish realistic schedules and then manage the labor accordingly.
- We control the schedule by employing/managing our own crews and providing access to subcontractors sooner.
- We solve potential issues proactively by anticipating and providing solutions to problems by altering sequencing of work when advantageous to do so.

The results:

By being in complete control of the schedule and using an efficient formwork system, we are able to adjust our schedule to fit with the customer’s timeline and needs. Furthermore, our customer does not need to worry about numerous potential delay claims as a result of coordination issues within the structure. **Now that’s providing efficient and timely solutions!**
PCL Bakersfield manufactures and ships high-efficiency steam generators for heavy oil recovery.

OTSGs for any location
The PCL 25 MMBtu model can be trailer-mounted, making it portable by standard trucking. We often package this generator with other trailer-mounted plants (water, fuel, and electrical generation). With raw water and fuel, this stand-alone unit can produce steam in any remote location. Add electricity, and the pumping process is enabled.

Experience and innovation in OTSGs
PCL’s intimate knowledge of the Bakersfield oil fields over two decades of refurbishing OTSGs was instrumental in developing the new affordable and portable, high-efficiency OTSGs we are fabricating.

The PCL product line includes three heat-release models of 25, 62.5, or 85 million British Thermal Units (MMBtu). Fuel options include natural gas, diesel, crude oil, waste gas, butane, and propane.

High-efficiency and conservation
Our Econovection™ heat-recovery section available with our natural gas-fueled models offers fuel savings of up to 10% over conventional OTSG designs. Numerous existing OTSGs have been retrofitted with the Econovection™, as the return on investment is generally less than one year. Our OTSGs also can be equipped with ultra-low nitrogen-oxide (NOx) burners for the best available pollution control technology.

Shipping
PCL Industrial Services, Inc. has shipped this equipment across the United States and internationally to such countries as Kuwait, Kazakhstan, and Madagascar.

PCL Industrial Services, Inc. holds the ASME R, S, and U stamps and is a full-service manufacturer to the oil industry. In addition to the OTSGs, we offer ASME pressure vessels, three-phase separators, production manifolds, automatic well-testing equipment, and skid-mounted packaged systems to fit our customers’ needs.

Heavy oil recovery 101
Steam-enhanced recovery and steam-assisted gravity drainage lower the viscosity of the tar-like heavy oil by injecting high-temperature, high-pressure steam into the formation. This allows for the oil to be pumped and then transported for refining. PCL Bakersfield’s OTSGs can be used for both methods.
As an employee-owned company, we know that our people are our best asset. Each employee’s enthusiasm for and dedication to PCL is why we are one of the top five companies to work for in Canada*, and why we are in our second year as one of Fortune’s 100 Best Companies to Work For. But don’t take our word for it; here are some of the faces of construction leadership at PCL, all of whom work hard every day to ensure PCL will always be a construction leader.

THE FACE OF CONSTRUCTION LEADERSHIP

Marc Chiasson, construction manager with PCL Calgary, began working for PCL in 1989. “Mostly every day is a different challenge,” he says. “The variety of work is forever changing. It makes for an exciting day.” After sixteen years, Marc still gets excited about coming to work and finds that his days fly by. “It feels as if the day’s over before it’s even started!”

Meghan Andrew, project manager with PCL Atlantic Canada, has been with PCL since 2004. “I wanted to work for an established company where I knew I could grow and develop my skills,” she says. “Working in a newer district, I am able to take on challenges that wouldn’t be possible in another company. Share ownership and the pension plan, as well, will do wonders for me and all young employees in the future.”

Stephan Loubser, estimator with PCL Hawaii, has been with PCL since 2000. “It’s such a great place to work because everybody works together toward a common goal,” he says. “The first thing that comes to mind is that it feels like a big old family. As for employee ownership, I bought in the first year I was offered shares, and I’ve never regretted it.”

Wil Painter, regional manager of preconstruction with PCL Los Angeles, has been with PCL since 1993. “I love the construction business, and I love challenging projects,” he says. “PCL allows me to pursue both of those things, and it’s a company that operates within the highest ethical parameters. This is a hard business, but if you’re tough enough to get into it, PCL is the right company to do it with. There is no second choice.”

* According to Report on Business’ annual 50 Best Employers in Canada list. We have been on the list for eight consecutive years.
PCL’s rich history, built on one hundred years of construction excellence, always has us paying attention to the key factors in our success. One of those success factors is the long-term relationships we have built with our customers, our people, and our partners.

This factor includes the creative cooperation we work to model with our customers. It’s about paying attention to the basics; it’s about a person’s word being their bond; it’s about following through on a contract with an implied covenant of good faith.

To put our time and money where our mouth is, we invite customers to proactively and formally participate in partnering sessions. While contracts establish the legal arrangements between us and our customers, it is the PCL partnering process that establishes the actual day-to-day working relationships. Through a mutually developed, formal strategy of commitment and communication, a process is established on how decisions are made and problems resolved. Customers who have participated in partnering with us now tell us they wouldn’t have it any other way.

### How partnering works

Soon after the contract is awarded, and before any dirt is moved, key project personnel from PCL, business partners, and the customer group gather for a working session (or series of working sessions) to develop mutual goals and objectives. The process includes activities to clearly denote the deliverables required from each partner for a successful construction program and to help decide how problems are to be solved.

The partnering sessions are run by PCL’s in-house facilitators, who can jointly work with the customer’s facilitators should this be desired. Certainly an outside facilitator can be brought in as well.

By the end of the session, participants should agree on a partnering charter, a dispute-resolution process, and a continuous evaluation process.

Partnering sessions have been implemented with great results in saving our customers time and money while improving safety, quality, and productivity. Furthermore, our customers want to work with us again — as partners.

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**Los Angeles Unified School District (LAUSD) High School #9 project**

Shortly after PCL Construction Services, Inc. (Los Angeles) was awarded this spectacular performing arts education project in the heart of downtown LA, the PCL team and representatives from the LAUSD participated in partnering and are very happy that they did. So much so, in fact, that the team has organized and hosted follow-up partnering sessions to keep the positive momentum going.

“The partnering process is absolutely one of the cornerstones to the success we are realizing on this project. All of us started on the same page, formed a true partnership, and the results are coming to life as we speak.” Moty Eisenberg, Owner Authorized Representative, LAUSD

“The process was amazing in that the PCL team came up with a vision for the project that all partners truly believe in: we are building art to create art.” Todd Whitehouse, PCL superintendent
PCL FAMILY OF COMPANIES

Our operations are carried out by a number of independent companies which operate in different construction markets or geographic areas.

Buildings

Our full-service buildings operations support the work of project sites across North America. This network of construction professionals rises to the challenges associated with our diverse buildings portfolio, bringing added value to every commercial, institutional, educational, and residential project. While we’re better known for our larger projects, such as airports, sports facilities, and office towers, we also excel at smaller unique projects, such as renovations, restorations, and repairs.

Industrial

Our industrial companies, which are located strategically throughout North America, respond to the unique construction needs of our clients in the petrochemical, oil and gas, refining and oil sands, mining, and power and cogeneration industries. In addition to offering Construction Management services, we offer a full range of general contracting services, specializing in mechanical, civil, and electrical construction, as well as piping and plant shutdowns/turnarounds.

Civil

By nature, civil work is geographically diverse and extremely demanding. This has made us versatile civil builders — equally at home building on land or over water, in busy cities or in remote areas. Our civil teams possess the ingenuity and the experience needed to undertake any civil structure imaginable — from bridges, overpasses, tunnels, and interchanges to water-treatment facilities, pipelines, and light-rail transportation projects.