

Survey Project Manager

James Harper, a BRH Senior Associate, will (a) keep the client informed and updated during each survey assignment, (b) supervise our survey crews and CAD technicians, and (c) oversee quality reviews. The result will be accurate and reliable survey services, delivered to you on time.

James' experience dates back to 1997.

At the start, anticipate frequent interface with client in scoping each task. Once each survey is underway, expect coordination with client, while providing day-to-day oversight for each element of the survey, and James maintaining responsibility for the accuracy and overall quality of the mapping deliverables.

James' experience dates back to 1997.

Relevant Projects Include

City Streets and Utilities

City of University Place Lakewood Drive Overlay Project

This street improvement survey, within the University Place East sub-basin, extended approximately 1,245 feet from 64th Street West to Hanna Pierce Road. James provided a topographic survey, showing above and below grade utilities as detected and located. The scope included street cross-sections with spot heights, curbs, gutters, sidewalks and significant vegetation. All field work was conducted with full PPE. The deliverable was a surface model prepared as an AutoCAD 2018 file.

City of Edgewood On-Call

(1) James performed a topographic survey on Meridian Avenue East (SR-161) from 18th Street to 24th Street East. The scope included utility detection and location. The purpose of the survey was to provide the city with as-built records to administrate future development applications. (2) A second Task Order was to conduct a Boundary Deed Investigation. (3) A third assignment called for the location of wetland habitat at and around Lake Chalet. A biologist delineated waterfront vs uplands vegetation along the shoreline, and along an adjacent creek. BRH then documented the vegetation flag locations.

City of Renton Water Main Replacement – synopsis version

James served the City of Renton Public Works Public Utilities Division with their 2015-2016 watermain replacement program. Our scope of work was to provide boundary and topographic surveys, including utility detection and location. This was a multi-year, multi-phase project with work performed in the Renton Hill, Monterey Terrace, Presidents, Park, and Talbot Hill neighborhoods.

Spot elevations captured key terrain features to an accuracy of 0.01-foot. Topography captured and noted a variety of surfaces, and we showed tree locations and vegetation outlines. Utilities included rims grates and vaults, noting location and elevation, pipe types and sizes, rim and invert elevations.

Safety and public interface – Our field crews employed traffic safety procedures for community convenience and safe passage for vehicles.

The project called for surveying the full right-of-way, and the

Professional Registration:

State of Washington (PLS) 2008

Professional Affiliation:

- ♦ Land Surveyor's Association of Washington

mapping extended to show limited topography of each residence footprints. *James worked closely with the city when surveying on private property, and coordinated with the City to make sure our field crews respectfully interfaced with home owners.*

City of Renton – full versions below Water Main Replacement – Renton Hill Streets for Water Main Project – Renton Hill

James served the City of Renton Public Works Public Utilities Division with their 2015-2016 watermain replacement program. His scope of work was to provide boundary and topographic surveys, including utility detection and location. Phase I included work along South 7th Street, South 9th Street, Renton Avenue South (north), High Avenue South, and Jones Avenue South.

Phase II included work along South 4th Street, South 7th Street (east), South 10th Street, Cedar Avenue South, Renton Avenue South, and Grant Avenue South.

The project called for surveying the full right-of-way, and the mapping extended to show limited topography of the residence footprints. BRH worked closely with the City when surveying on private property, and he coordinated with the City to make sure our field crews respectfully interfaced with home owners.

Streets for Water Main Project – Monterey Terrace

Our work in the city Rights-of-Way supported utility upgrades along Index Avenue NE, Camas Avenue NE, NE 8th Street, SE 5th Place, and all the laterals in the Monterey Terrace plat. His scope was to locate and map the underground water main route, and also depict streets extending to, and beyond property lines on either side of the Rights-of-Way.

Scope components included boundary and topographic surveys, including utility detection and location. We used City of Renton vertical datum (NAVD 88) and set three benchmarks to establish control. Horizontal datum was NAD 84/91. James surveyed pavements, sidewalks, and private residence features such as stairs, walls, fences, rockeries, driveways, and structure footprints, and noted property addresses on the mapping. Encroachments into the city right-of-way were identified on the mapping deliverables.

Spot elevations captured key terrain features, to an accuracy of 0.01-foot. Topography differentiated between various surfaces, and James showed tree locations and vegetation drip outlines. Utilities included rims grates and vaults. Water valve rim elevations and nut elevations were shown. Below grade utilities included location and elevation, pipe types and sizes, rim and invert elevations. Our field crews employed traffic safety procedures to limit community impact and ensure safe passage for vehicles.

Water Main Replacement – President Park

James provided water main replacement surveys in the Renton

Highlands. The utilities are located along Monroe Avenue NE, and several lateral streets. His surveys included topographic and utility mapping within the right-of-way along the route.

City of Seattle – Street Surveys Sewer Lines in City Rights-of-Way

James wrote sewer easement and relinquishment descriptions over a four-block area in the vicinity of NE 40th and 11th Avenue, north of Boat Street. The purpose of this UW funded survey was to give SPU access rights for utility maintenance.

Mercer Street West Corridor

James was involved in this major arterial improvement. His task was to provide surveys depicting limited access right-of-way margins to support the corridor reconfiguration. These surveys were conducted along both north and south sides of the corridor, between Fairview and Boren, as the new alignment widens over existing property lines.

South Lake Union

As part of the Fred Hutchinson development, James surveyed multiple city streets and utilities surrounding this 8-block, 28-acre campus. These were **Fairview Avenue North, Fairview Avenue East, Eastlake Avenue East, Aloha Street, Ward Street, Valley Street and Yale Avenue North.**

Additional City Streets

(1) James performed a site topographic survey for a housing campus in Seattle for that included the full right-of-way width of **Roosevelt Way NE** from the full **NE 47th Street** intersection south for 420-feet, as well as portions of **9th Avenue NE**. All mapping was coordinated with SDOT.

(2) As part of a survey for Virginia Mason Medical Center, James provided a SDOT compliant right-of-way topographic and utility survey, for the full width of **9th Avenue between Spring and Seneca.**

NE Pacific Street

As part of services for the UW Medical Center, James provided a full right-of-way survey of NE Pacific Street. This ROW survey provided information of elevations, center lane, channelization and utilities. In addition, he captured details of street poles, overhead power lines and bus wires and guys, traffic signs and signal loops.

City of Lynnwood – Street Surveys

James provided an ALTA survey and ALTA update for a site bound by **Highway 99** and 176th Street SW in Lynnwood. The survey captured right-of-way as-built street and utility data up to the roadway centerlines.

James also surveyed portions of **36th Avenue West**, and **188th Street SW** as part of the Alderwood Mall Expansion project. These surveys mapped roadway topography and the drawings indicated utilities – storm, sewer, water, gas and cable – in the right-of-way. These included a historic 12-inch wood water main. In addition, we surveyed portions of **33rd Avenue West, 184th Street SW, 28th Avenue West, and 26th Avenue West.**

City of Enumclaw – Street Surveys

The rebuilding of the Enumclaw Regional Hospital required a multi-block, multi-parcel boundary and topographic survey for the new hospital. Streets mapped included Cinkovich Avenue,

Battersbye Avenue, Jensen Street, Adams Avenue and Kibler Avenue.

City of Auburn – Street Surveys

BRH mapped the 155-acre Supermall, and also provided extensive street topography around the site. Altogether, 3 miles of City of Auburn roads were base mapped, including **SR-167** ramps. Ramp access options were evaluated by the design team, and our survey scope supported their investigations.

City of Issaquah – Street Surveys

In support of development projects, our team base mapped multiple full-width rights-of-way, in compliance with City of Issaquah specifications.

- 17th Avenue NW from the I-90 ramps to NW Maple Street
- NW Gilman Boulevard from 19th Ave NW to 12th Ave NW
- 18th Avenue NW and portions of NW Poplar Way
- 19th Avenue NW from Poplar Way to NW Maple
- NW Mall Street and NW Maple up to 12th Avenue NW
- 12th Avenue NW from Gilman to Maple Street

Our approach included aerial photogrammetric surveys conducted by a BRH subconsultant, with portions of the mapping enhanced by our in-house subsurface utility detection and location survey crews.

Puget Sound Energy - Redmond

Substation Site

This former substation on 152nd Avenue NE was undergoing a developer feasibility study. James provided an ALTA/NSPS survey and topographic survey.

City and County - Facilities

City of Seattle and King County

Ship Canal Water Quality Project

Seattle Public Utilities and King County are coordinating to build an underground storage tunnel to reduce the amount of polluted water that spills into the Lake Washington Ship Canal from Ballard, Fremont, Wallingford, and north Queen Anne. The 2.7-mile long, 18-foot diameter tunnel will keep more than 75 million gallons of polluted stormwater and sewage out of the Ship Canal, Salmon Bay, and Lake Union on average each year.

A portion of this public work will be adjacent to Salmon Bay, and James surveyed 3 parcels that extend from Shilshole Avenue NW down to the waterfront. These properties were acquired by the City and County to be used for the Pump Station at the tunnel's West Portal and for two Outfalls. James' survey incorporated an earlier (1977) survey on the property, also conducted by BRH. The survey scope included topographic mapping, utilities, a lot line adjustment and a lot boundary adjustment.

City of Tukwila

Fire Station 51

This replacement station is being built as part of the City's Public Safety Plan. It is the Tukwila Fire Department HQ housing Fire Administration and Emergency Management offices. The station responds to incidents throughout the City of

Tukwila, and is staffed with suppression personnel, reserve fire engines, technical rescue equipment, and a reserve fire boat. James provided the environmental consultants with a wetland marker survey.

City of Bellevue

Fire Station 5

This station, on NE 24th Street in Clyde Hill operates Engine 105. The Station serves NW Bellevue, Clyde Hill, Medina, Hunt's Point, and Yarrow Point. – James provided a topographic and utility survey, and was involved in easement investigations and the preparation of exhibits.

City of Seattle

Municipal Tower

When the City of Seattle purchased the Key Tower the 2,900 square foot entry area underwent a complex remodel. James provided intensive topographic detail to enable the architect to accurately develop floor elevations relative to the existing street cross-sections. In addition, the slope of the sidewalk, governed by the street topography, had to be precisely depicted to enable the architect to meet ADA requirements.

Justice Center Monitoring

BRH's services included extensive monitoring—for example, the s-shaped tunnel that jogs between the jail and the Justice Center, was monitored daily.

James also monitored water and steam lines that intersected the site, as well as all adjacent buildings. These were observed on a schedule that was driven by construction activity. A tight monitoring grid was employed, reflecting the need for great accuracy. For example, the old electrical conduit running under Fifth Avenue was very brittle and it was vital not to disturb it. The monitoring measured earth movement and ensured that construction activity did not impact the surroundings.

City of Renton

Hazen Reservoir

BRH was asked to provide an as-built of the reservoir on 142nd and Sunset Highway. The scope included the main 4.2 MG welded storage tank and supports, as well as the control valve vault, and flow meter vault. We also showed the 16" and 12" water mains, as well as the overflow funnel lip and the location of the pond overflow. Finally, James base mapped the 9.34 acre site and the reservoir access road, staked the boundary corners, and created a records of survey drawing.

Trees greater than 6-inches were located and identified.

The scope also called for a 1-mile bench circuit to an existing tower. This provided the consultants with precise elevation differences.

City of Puyallup

City Hall and Parking Garage

The city hall is a 50,000 sq. ft., five-story building on South Meridian Street. James was called in to assist the project team identify and resolve complex layout difficulties during Phase I of the construction. As a result of our work, we were engaged to provide Phase II survey services. James provided building control for both the city hall and the garage, as well as street improvement layouts and utility staking on Meridian.

City of Bothell

City Hall

James provided an ALTA survey for the \$46M city hall on 101st Avenue Northeast. The 53,000 sq. ft. building contains three levels of underground parking.

Public Works Operations Center

This assignment called for an ALTA survey of the City Maintenance Yards on SE 214th Street. James also provided grid layout surveys to support construction activities.

Additional Facility Surveys

City of Seattle

- Gas Works Park
- Monorail Station

City of Bellingham

- City Park

City of Renton

- Black River Riparian Forest
- Maplewood Golf Course Driving Range

King County

- Parking Garage – Seattle

Transportation and Rail

Sound Transit

Pedestrian Overpass at UW

Sound Transit's Light Rail Station next to Husky Stadium provides commuters with easy access to the University of Washington campus, the UW Medical Center and the Burke-Gilman Trail. The 3-dimensionally curved bridge spans over Montlake Boulevard NE. The design called for the handrail to be attached to embedded steel plates. BRH provided a high accuracy three-dimensional survey of the curved surfaces to enable the contractors to pre-fabricate the handrail system. A perfect fit was essential in order to facilitate a seamless installation process along this complex curved structure.

King Street Station

Renovation

As part of our service to the BNSF's development group, we surveyed the entire King Street Station property including railroad as-builts, and adjacent parking and roads. James conducted a track survey as part of the station's renovation program.

City of Seattle

Existing Monorail

In order to facilitate the monorail passing through the MoPOP (Experience Music Project) structure, BRH was asked to map the monorail trains in motion, using on-the-fly GPS. Precise surveys of the existing monorail support structure were required for accurate mapping. Based on this information, a 3D drawing of the train envelope (extreme outside edges) was created for the architect, Frank Gehry. Our mapping services located the monorail support structure along the entire route.

Monorail Station at Seattle Center

The 2016 assignment called for a topographic survey of the adjacent pedestrian courtyard and walkway supporting planned improvements.

Recreation Projects

Seahawks Headquarters

Practice Fields at VMAC in Renton

After constructing the practice fields, it was noticed that the fill soils were settling over half of the fields. James was asked to contour the slope of the practice fields, and determine if settling was continuing. James created a grid network over the fields, and then monitored for settlement for a period of 21 months.

Seattle Mariners

Safeco Field Environs

BRH provided topographic and utility mapping, plus an ALTA survey, along the stadium's Service Road, to support facility improvements. The survey extended for two blocks from South Massachusetts to Royal Brougham Way, and included the staking of property corners to prepare a boundary survey that was filed in the public record.

To accomplish the scope, our crew had to access the adjacent railroad right-of-way, and BRH complied with BNSF safety requirements.

Kraken Community Iceplex

This is an \$80M three-rink Hockey Center at Northgate Mall. The 172,000 sq. ft. facility is the HQ of the Seattle Kraken NHL team, and offers hockey-oriented community events. James provided a topographic survey and an ALTA survey.

Alaska Airlines Arena

Hec Ed Pavilion

This was a topographic survey, showing all surface improvements including buildings, walls, utilities, power poles and sidewalks. Spot elevations of topography and structures such as stairs and ramps and floors. We captured the interiors of the tunnels affecting the site, using local access hatches. A landscaping survey included tree and shrub elevations at root crowns, lawn plinths, and irrigation features such as mains, meters, backflow preventers, and sprinkler heads.

Seattle Aquarium

Piers 59 through 63

BRH provided horizontal control, topographic base mapping and a legal description for aquarium designer Terry Ferrell & Associates of London, England. The site extends from Pier 59 through Pier 63 to the existing Seattle Aquarium. Our scope included surveys James conducted along Alaskan Way.

Pacific NW Ballet

Francis Russell Center in Bellevue

The PNB site on 132nd Avenue NE in Bellevue's Spring District was rebuilt to feature 7 dance studios. James' scope called for a site topographic survey, associated with parking improvements

Phelps Center in Seattle

The Phelps Center is a 52,300-square-foot, \$7.5 million remodeled, state-of-the-art dance facility.

James provided a topographic survey to assist with site

improvements at the Center.

Space Needle

Upgrades

When built in 1962, the 605-foot structure was the tallest west of the Mississippi River. We were involved with surveys during the first improvement cycles in 1991, and when the lower-level restaurant was constructed in 1998. At this time James provided a horizontal layout of the Space Needle base, and performed an as-built of each of the legs. This survey showed locations and elevations of those legs at 10-foot intervals, up to the 170-foot level.

In 2017, we updated the ALTA prior to a \$100M Space Needle Century Project renovation that wrapped up in 2019.

These renovations won an AIA National Architecture Honor Award.

UW and Seattle Parks and Recreation Environmental Education Center

The UW Botanic Gardens, Seattle Parks, and the Arboretum Foundation are planning a new **Environmental Education Center** at 2300 Arboretum Drive East. This facility will double youth and adult education programming and serve 20,000 children and adults from diverse communities. James was asked by the UW to prepare a topographic survey.

Chihuly Garden and Glass Studio

Exhibition Site

James provided an easement exhibit and documentation for this site at the Seattle Space Needle. An additional assignment was to provide mapping to support construction of the Chihuly studio and gallery on Harrison Street in Seattle.

Art Garden Segment

James provided a lot boundary adjustment of a historic plat lot line, to create a lot that contains the Chihuly Art Garden.

Seattle Center

Telecommunications Easement

We were asked to survey an easement through the Seattle Center, from Thomas Street to Harrison Street for a fiberoptic conduit. James provided a legal description and also showed the relationship between the easement and tax parcel lots. This project required coordination with the Seattle Center, the Seattle Law Department, and the project sponsor.

City of Shoreline

Kruckeberg Botanic Garden

This is a 4-acre park that contains over 2,000 plant species. James provided topographic and right-of-way surveys and filed a Record of Survey. In addition, he provided legal descriptions and exhibits, and located soil borings for the design team.

University of Washington

Husky Stadium

James was involved in multiple surveys to support the stadium renovation. Our topographic survey covered the entire 58-acre property, including all adjacent structures and parking areas. The survey extended from Lake Washington in the east, to Montlake Avenue NE in the west, and from the Ship Canal in the south to the ball fields to the north.

UW - Recreational Sports Programs

Intramural Athletics (IMA)

BRH surveyed the baseball and soccer fields adjacent to the football stadium. The scope included topographic mapping, a survey to support a wetland study, and ditch mitigation survey services.

IMA New Outdoor Volleyball Courts

The UW Athletic Department built two new sand volleyball courts on the north lawn, adjacent to the tennis courts. James provided a-site topographic survey.

IMA Locker Rooms

This assignment involved a phased approach to change the existing men's locker room to gender-inclusive use, and revise the existing women's locker room into gender-specific men's and women's changing rooms. James provided a topographic survey for these improvements.

MoPOP

Located at the Seattle Center, James was involved in the provision of complete surveys supporting this landmark facility.

King County Library System

Carnation Library

This is a 5,000 square foot, library built as part of a KCLS revitalization program. James provided an ALTA survey for this \$2.98M facility.

Housing and Residential Projects

Interim Community Development Association

Eastern Hotel – 2022

Interim CDA is a nonprofit affordable housing and community development organization based in Seattle's Chinatown / International District (CID). James provided an ALTA Survey, and a condominium survey for this building on Maynard Avenue South.

Community Roots Housing

2320 East Union Street

James provided a topographic survey and an ALTA survey update for this site near 24th Avenue in Capitol Hill.

Community Roots Housing

The Haines

This development at 1415 East Olive Street required James to provide an ALTA survey.

Community Roots Housing

New Housing

This Seattle Mennonite Church site is being converted to housing. James provided a topographic survey.

Plymouth Housing Group

710 Cherry Street

This project at 7th and Cherry needed topographic mapping, an ALTA survey and update, and a sidewalk easement description and exhibit.

Plymouth Housing Group

2013 Third Avenue

James provided a legal description and exhibit, and topographic mapping of an improved alley adjacent to the site. He also produced a SDOT right-of-way update for submittal to the city.

Catholic Housing Services

Monica's Village

This development on 23rd Avenue South and South Main required BRH to prepare topographic mapping and a legal description. Most recently, James provided a condominium survey, and a final ALTA survey for this development.

Catholic Housing Services

Ives and Harrison Family Housing - Centralia

This is a 74-unit low income housing facility, contained in 32 building units. James provided a legal description for the owner.

Urban Shelters

12th Avenue and East Pike Street

James provided a boundary and topographic survey, plus a boundary line adjustment, a lot boundary adjustment, and detail on wall encroachments. In addition, we were asked to provide an ALTA survey update for this shelter project.

University of Washington

Cedar Apartments Student Housing

This 6-story, 344-unit building on NE 41st Street features two- and four-bedroom apartments and studios, each with a furnished kitchen. James' survey for this full block facility included a boundary survey, topographic mapping with utility detection and location. Also included were right-of-way SDOT base maps.

University of Washington

Elm Hall Student Housing

This 533-student, 6 story residence hall on NW Campus Parkway contains triples, doubles and studios. James provided a boundary survey, topographic mapping and utility detection and location.

American Baptist Homes of the West

Harborview Manor - Tacoma

This 14-story high-rise in downtown Tacoma is a senior living facility with 163 units. The building was completely renovated, including family and community rooms, the fitness area, kitchen and dining rooms. James' role was to perform a boundary survey in support of the renovation team.

Seattle Housing Authority

NewHolly

BRH has provided multiple boundary, topographic and ALTA surveys for this garden community development. James supported the project with boundary, topographic, utility mapping, legal descriptions and easements.

Seattle Housing Authority

High Point

BRH completed a comprehensive boundary and topographic survey of this 120-acre, 1,600-unit redevelopment. We platted the entire site and provided surveying and mapping services through all phases. James's role included topographic surveys.

The scope also called for a short plat and full 120-acre plat.

Seattle Housing Authority 107 27th Avenue

This two-story multi-family development in the Leschi neighborhood required an ALTA survey.

American Campus Communities University Center

James performed site topographic mapping that included full ROW surveys of adjacent roadways.

Tarragon Black Lake Village - Olympia

This 18-acre complex offers 1-, 2-, and 3-bedroom market rate apartments. The site contains a club house, spa and other amenities. James supported the property transfer with an ALTA survey.

Mixed Use Projects

333 Dexter

This \$375M mixed use development in South Lake Union contains approximately 667,000 square feet of office and retail space in a two-building complex. James provided a SDOT compliant topographic survey that encompassed portions of Dexter Avenue North and Aurora Avenue North.

Chroma SLU – Seattle

This luxury 7-story facility with Space Needle views, features resident lounges, two community rooms, roof decks, a fitness room, dog parks and bike storage. James provided boundary and topographic surveys.

Harbor Steps

Residential Mixed Use

This complex comprises four downtown Seattle mid-rise buildings and a public park staircase between First and Western Avenues. The market-rate housing and retail project required substantial monitoring for settlement of streets and buildings, as well as construction control for building grids, off-site utilities and street improvements.

555 108th Avenue NE - Bellevue

At 600 feet tall, this Vulcan high-rise project **will be the tallest building in Bellevue**. The 42-story building will include office and retail, and a 1,400-stall parking garage. James provided an ALTA and a Binding Site Plan.

Bellevue Plaza

This half-block development located at 117 106th Ave NE and Main Street will be a three-building office/retail mixed-use project. The north and south towers will be 17 stories, and the middle tower 15 stories, together resulting in over 1M sf of office and 35,000 sf of retail. James provided an ALTA survey.

- ◆ 1100 Eastlake Building – Seattle
- ◆ 1100 Republican – Seattle
- ◆ 1405 Dexter – Seattle
- ◆ Avalon Towers – Bellevue

- ◆ Cristalla – Seattle
- ◆ Hotel 1000 – Seattle

Healthcare and Laboratory Projects

UW Medical Center Lobby Remodel

To support the Main Entry predesign James provided a topographic and utility base map, including a full right-of-way survey of the adjacent **NE Pacific Street**. Site topography included 1-foot contours, trees and drip lines, landscaping. James also depicted building footprints, entryways and overhangs, canopies and retaining walls, and all detectable utilities.

UW Medicine Hall Health Primary Care Center

This 57,000 square foot medical facility, on Stevens Way, provides a wide variety of clinical services including, primary care, family health, sports medicine, and physical therapy. The clinic also contains a pharmacy, and provides radiology and lab medicine services. The \$9.7M renovation project required a full topographic survey around the site, including utilities and landscaping, as well as finished floor elevations of the existing building. In addition, James was asked to deliver a fully dimensioned profile of the tunnel system that runs under the site.

Harborview Hospital – Utility Survey

We conducted a topographic and boundary survey, mapping complex underground utilities and tunnel systems. This survey covers around 65% of the entire campus. James has been involved in several utility projects, access, easements and legal descriptions on this campus.

Harborview Hall

JJM resume

The King County Facilities Management Division is working on a plan to preserve the 80-year-old Harborview Hall on 9th Avenue and Alder Street. An "adaptive reuse" project would result in a mixed-use facility. James provided a topographic survey.

Behavioral Health Teaching Facility at NW Hospital

This 150-bed, six-story 184,000-square-foot facility will support a full continuum of behavioral health clinical services. The facility is due to be completed at the end of 2022. James provided topography, legal descriptions, storm water and access mapping, arborist coordination, and construction staking.

SLU Biotechnology and Medical Research Facilities

James was involved in surveying all UW Medicine facilities on South Lake Union. For example, the seven-story building on Republican Street contains 183,000 sq. ft of research and office space. Departments occupying the facility include, immunology, rheumatology, kidney research, infectious disease treatment and prevention research and vision sciences. James provided a boundary and topographic survey, ALTA surveys, right-of-way acquisition exhibits, a lot boundary adjustment, street topography and utilities to meet SDOT specifications, grid control and monitoring.

UW Health Sciences

Vista V Building

This was a topographic mapping assignment on NE Pacific Street and 15th Avenue NE. The site, east of the William H. Foege Bioengineering building, will contain a \$85M Animal Research and Care Facility.

UW Health Sciences

Health Sciences Education Building

The new building on 15th Avenue NE and NE Pacific, will provide classroom, active teaching and learning spaces. The 110,000 sq. ft. building was budgeted at \$90M and opened in 2022. James provided a topographic survey, 10-scale basemaps, and arborist coordination.

UW Health Sciences

Hans Rosling Center for Population Health

This \$230M facility on 15th Avenue NE houses the Department of Global Health, the Institute for Health Metrics and Evaluation (IHME), and portions of the School of Public Health. Construction was completed in 2020. James provided a boundary survey and intensive topographic and utility surveys. He base mapped surrounding streets, and all above ground and detectable below grade features and utilities. We were also requested to provide easement exhibits and capture dimensions of the interior loading dock, including the location of the chilled waterline main.

The project was awarded Project of the Year by the Design Build Institute of America in 2021.

Haring Center

The Haring Center for Inclusive Education provides early childhood education to children with and without disabilities, facilitates inclusive learning research, and trains education professionals. **Phase 1** topography was on Brooklyn Avenue NE and Pacific Street, and topography for **Phase 2** was at the South Campus Center on Portage Bay.

Seattle Cancer Care Alliance Proton Therapy Center

This is a 54,000 square foot facility built on the Northwest Hospital campus on North 115th Street. The hospital demolished five old support buildings, and this required complex site research to determine rights that were in existence and how the parcels and easements integrated with the new plan. James also provided an ALTA survey as well as topographic and utility surveys, plus a complex boundary adjustment.

Seagen (Seattle Genetics) – Bothell Research Facility

Seattle Genetics is the largest biotech company in the northwest with its Global HQ in Canyon Park. James provided a boundary, topographic and utility survey for Buildings 5, 6, 10 and 10 to support site improvements between building facilities. A topographic update supported additional design work that was requested.

Allen Institute for Cell Science Biomedical Research Building

This site at Westlake Avenue North on South Lake Union was partly occupied by the 1920s Pacific Lincoln Mercury McKay car

dealership showrooms. Vulcan, the developer, dismantled the historic buildings, cataloging and storing the terra cotta facades and the ornate interior under the guidance of Seattle's Landmarks Preservation Board. Those components were reassembled and rebuilt as a component of the six-story biomedical research building, and now form a landmark feature of the new structure. High density scanning by others documented the facades, and BRH was asked to use the point cloud to prepare a dimensioned façade profile, assisting the design team with reassembly and reconstruction. James also provided a wide variety of traditional surveys on the site including topographic, utility, ALTA, boundary, and construction layout.

Children's Hospital – Federal Way Regional Clinic

The South Sound Clinic on Enchanted Way South at I-5 offers pediatric specialists in more than 20 practice areas. The clinic also offers urgent care, and lab and diagnostic services. James provided topographic surveying, and utility mapping including potholing.

Valley Medical Center Campus Surveying

James provided boundary and topographic mapping of approximately 80% of the entire Valley Medical Center campus. This work included boundaries and topography, surface improvements, above and below ground utilities, significant vegetation, parking, roads and building footprints. We were subsequently asked to provide several updates to the contract requesting additional surveys.

Emergency Services Tower and Trauma Center

James was asked to provide full site construction surveys for this new hospital facility. The building contains a Level II Trauma Center the size of a football field.

South Parking Lot on Davis Avenue

James provided boundary and topographic mapping of this site. The work included boundaries and topography, all surface improvements, and above and below ground utilities. This work ties in to the overall campus mapping projects that are ongoing.

Virginia Mason Medical Center Benaroya Research Institute

James provided a variety of services including a boundary and topographic survey, a utility survey, an ALTA survey, finished floor levels, legal descriptions and exhibits, and an easement survey.

Buck Pavilion

BRH has provided multiple services on this site. Our most recent assignment was a SDOT compliant street right-of-way topographic and utility survey. The full width of 9th Avenue between Spring and Seneca was surveyed by James to assist the civil engineering design team.

City of Enumclaw – Street Surveys St. Elizabeth Hospital – Enumclaw

When the Enumclaw Regional Hospital was rebuilt into a 90,000 sq. ft. medical facility serving the communities of Enumclaw, Buckley, Black Diamond and Bonney Lake, James performed a

multi-block, multi-parcel boundary and topographic survey for the new hospital. After the initial survey, we were contracted for a second phase of topographic surveys, as well as a lot line elimination survey and exhibits to support a successful permit application. Streets mapped included Cinkovich Avenue, Battersbye Avenue, Jensen Street, Adams Avenue and Kibler Avenue.

Fred Hutchinson Cancer Research Center Campus Mapping

James was involved in providing multi-phased surveys on this 28-acre campus. These included comprehensive campus base maps, boundary and topographic surveys showing utility locations and descriptions, and a condominium survey. Multiple ALTA surveys were required as the site was developed, as well as building control layout and site monitoring during construction. In addition, our surveys supported the team designing the underground parking garage.

Swedish Hospital Medical Center Multiple Sites

BRH has surveyed several hospital renovation and upgrade projects for Swedish. For example, James was involved in surveys for the SE Wing. This was a \$90 million, 186,000 square foot addition. Other examples include: The NW Garage project, a MUP Extension, Blocks 90 and 91, interim and new garages, and an underground utility survey. BRH has surveyed approximately 70% of the entire Seattle campus, and has also provided several boundary and topographic surveys for the Ballard campus and the Orthopedic Center. Surveys include multiple ALTA and ALTA updates. James also surveyed the Swedish Ballard facility.

Seattle Mental Health Institute Facility on East Olive Street

Founded in 1966, Sound is one of King County's most comprehensive providers of quality mental health and addiction treatment. In September 2019 Sound acquired Community Psychiatric Clinic. The combined nonprofit has 17 locations, 700 employees, and serves more than 26,000 people in the region with mental health, addiction treatment, supportive housing and vocational training. James provided an ALTA and topographic surveys.

Higher Education Projects

University of Washington Clean Energy Institute – CAMCET Building

The \$159M Center for Advance Materials and Clean Energy Technologies will deliver a 340,000 sq. ft. space to develop solutions across multiple fields. Project completion is slated for 2024. James provided a topographic and utility survey.

University Club

The Club was located on Stevens Way. It is now closed. During a 2019 renovation, providing ADA access and facility enhancements, James provided a topographic survey to support planning and construction.

Life Sciences Building (LSB)

The Arts and Sciences Building accommodates laboratory and

office space for the Department of Biology. The site contains a 25,000 square foot greenhouse. James provided a full site topographic base map to assist the design team. The site is located adjacent to the Burke-Gilman Trail, and we incorporated portions of our trail survey into the base map for the LSB site.

Kincaid Hall

This building, housing the Departments of Psychology and Biology received a \$43M renovation of building systems and a modernization to expand service capability. James provided a topographic survey.

Burke-Gilman Trail

The university is renovating a 1.7-mile trail loop that runs through the campus. This \$19M project will enhance the on-campus experience. This popular segment of the Burke-Gilman trail is used by over 500 cyclists and pedestrians per hour. James was involved in boundary and topographic mapping along the trail, which depicted elevations, vegetation, utilities, and surface features, and potholing for utility location. He also located and mapped wetland limits.

Intellectual House

Located adjacent to Lewis Hall on Stevens Way, this new facility provides multi-service learning for Native American students. James provided topography with above and below ground features and utilities. In addition, an as-built of a tunnel structure was mapped and delivered.

William H. Gates Hall

This 196,000 square foot building is the \$80M Law School located on the campus, south of the Burke Museum. James provided a topographic survey, an above and below grade utility survey, and building and construction control.

West Campus Parking Garage

This 5-story addition, near the South Campus, provides 310 covered parking stalls. We conducted topographic and boundary surveys and also as-builts of the underground utility **tunnels**.

Cedar Apartments - Student Residence

This 6-story building on NE 41st Street features two and four bedroom apartments and studios, each with a furnished kitchen. BRH's survey for this 344-unit, full block facility included a boundary survey, topographic mapping with utility detection and location. Also included were right-of-way base maps.

Elm Hall - Student Residence

This 533-student, 6 story residence hall on NW Campus Parkway contains triples, doubles and studios. Facilities include music practice rooms, meeting spaces, a fitness center and dining spaces. We provided a boundary survey, topographic mapping and utility detection and location.

Poplar Hall - Student Residence

This 7-story building on NE 41st Street houses 271 students in studios, double and triple units. This building contains lounges and meeting spaces as well as a learning resource center. BRH provided a boundary survey, topographic mapping and utility detection and location.

Alder Hall and Alder Commons - Student Residence

Alder Hall is a 589-student residence, spread over 6 floors containing studio, double and triple units. The building features group study areas, music spaces, a fresh food market, and a branch of Hall Health. Alder Commons has four meeting rooms and a 222-seat auditorium. BRH provided a boundary survey and topographic mapping with utility detection and location.

Terry, Maple and Lander Halls - Student Residences

Terry Hall is an 8-story building on NE Campus Parkway. It houses 308 students in a variety of bedroom configurations. Lander Hall is an adjacent 6-story building with a 650-student capacity, with the new Maple Hall in-between. This complex contains student study areas and lounges on each floor, as well as a full restaurant. The University design team required a full block topographic survey. James showed all surface improvements, including buildings, pavement, sidewalks, power poles, signs, walls and utilities, such as hydrants. Street surveys show the roadway centerlines, cross-sections and all right-of-way features and utilities. A tunnel runs beneath the site, and we captured the location and as-built interior dimensions. A follow-up assignment was to provide exhibit documents.

Terry and Maple Hall Deed Exhibits – 2020

Based on an EPA requirement to locate buried contaminated soil, James used UW supplied documentation and a legal description to define the area in question, and then tie it to the property boundary.

Police Station

The 29,200 square foot, two-story facility on 15th Avenue NE, replaced an outdated and inefficient station. It houses offices, dispatch, meeting and training rooms, holding rooms, bike and K9 areas, and storage spaces. BRH provided topographic surveys that depicted all surface improvements for this \$19.5M building, including buildings, walls, utilities, power poles and sidewalks. In addition, we provided information on a data utilidor and tunnel in the vicinity.

Samuel E. Kelly Ethnic Cultural Center

The Kelly ECC is a 26,000 square foot facility with study and meeting spaces, a computer lab, conference and multipurpose rooms, a dance studio, a social justice library, a wellness room, and a Leadership without Borders center. The project required a 1-foot contour topographic base map showing all surface improvements and indicating vertical and horizontal locations of features such as grates, pipe sizes, rims and invert levels. Surveys in the right-of-way on Brooklyn Avenue NE were conducted and we prepared street cross-sections, and located street center lines, lane striping, curbs and gutters.

Clark Hall Renovation

This facility was completely renovated with renewal of all building systems. Phase 1 of our services provided a site and surrounding area topographic survey. Phase 2 entailed detailed mapping of Steven's Way, to the North and East of Clark Hall, after it was repaved. James assisted the design team with base map detail, and also with utility line upgrade surveys.

Clark Road Culvert Replacement

To facilitate road improvements adjacent to the E4 Parking Lot,

the intersection of Clark Road and Douglas Road was reconfigured. We provided topographic and utility surveys.

Shipping and Receiving Facility

The W40 parking lot, and the adjacent intersection of NE Northlake Way and 8th Avenue NE were surveyed. In addition, we provided an ALTA survey for the Shipping and Receiving Facility site.

Molecular Engineering Building (MoES)

The \$62.5M Molecular Engineering Interdisciplinary Academic Building required a topographic and utility survey of the entire site. In addition, James provided an as-built survey of the tunnel system running 30-50 feet under the 90,000 sq. ft. building. Horizontal and vertical dimensions were crucial due to the need to design a building foundation system independent of the tunnel network.

NanoEngineering and Sciences Building (NanoES)

BRH also provided a topographic and utility survey base map supporting the \$88M addition to the MoES building off Steven's Way. The labs in the 6-level, 78,000 sq. ft. building will be isolated from light rail induced vibrations.

Campus-Wide Survey Control Network

This assignment resulted in control network data throughout the upper campus, the south campus and the sports facilities on Lake Washington. Our survey data was tied to aerial imagery, and was used to prepare a campus-wide GIS utility database.

Utility Investigation Survey

BRH's task was to provide field verification of the existing sanitary system, coordinate with SPU, and create or relinquish easements as required at 11th Avenue and NE Pacific Street.

Campus Utilities Project

Additional services were requested at both 15th Avenue and University Way at Pacific Street – we were asked to create a custom topo map following potholing and utility detection was performed. A duct bank investigation was included, and easement exhibits provided. Scanning services for surface features was also requested.

Columbia Lift Station - South Campus

This \$500K project near the K-Wing on NE Columbia Road will provide real time data (telemetry) for all campus lift stations – minimizing trips required by Facilities Staff to check on lift station function. James provided the university with control data.

Henry Art Gallery

BRH performed a topographic survey of the Gallery, locating the building and the stair and walkways. In a second field assignment, James surveyed the pedestrian bridge over 15th Avenue, linking the Gallery to Schmitz Hall.

Foster School – Paccar and Dempsey Halls

The \$95M Paccar Hall is a 123,000 sq. ft. facility, featuring a 250-seat auditorium, classrooms, breakout rooms, offices, a student commons area and support space. The adjacent \$49M Dempsey Hall is a 5-story building, that includes a career

center for undergraduates and MBAs, as well as classrooms, offices, and student team rooms.

James provided a topographic base map for both Halls that included all surface features such as retaining walls, adjacent campus roadways and paths. We also located floor elevations of adjacent buildings. Underground utilities including vaults were part of the task, as was locating waterlines, fiber-optic and secondary power lines. In addition, we provided a 3D "as-built" survey of the tunnel system running under the buildings.

Foster School – Founders Hall

This Cross Laminated Timber building will replace the 1960 Mackenzie Hall with a \$70M facility. The new 86,500 sq. ft. classroom and collaboration structure will be 2.5 times larger than Mackenzie, and will support undergraduates and also create space for new specialty master programs. James provided a topographic survey of the site.

Burke Museum

The new, \$75M, 110,000 square foot Burke Museum contains state-of-the art exhibition space, on-site programs, public amenities, and outreach services. BRH provided a topographic base map of the entire site. To assist the design team, our scope included full width, SDOT compliant, base mapping of 15th Avenue NE and NE 45th Street, as well as Memorial Way NE, the entry to the north campus.

Anderson Hall

Currently housing the School of Environmental and Forest Sciences, the 1925 building is planned to undergo a \$25M renovation to meet code. James provided a complete site survey, including surrounding areas and portions of Bloedel Hall. We showed topography, spot elevations, and detectable above and underground utilities. Included were poles, walls, paved surfaces, trees, and areas of vegetation, as well as irrigation components.

HUB Renovation and Expansion

This 1948 facility has undergone a full \$83M renovation to provide a more spacious, comfortable and functional building. The 260,000 sq ft modernized interior contains administrative and meeting space, as well as food and student services and multi-purpose areas. James provided a full topographic survey around the existing HUB, and the expansion site. Not only was a complete base map provided for the design team, but we also included finished floor levels at each elevation, and fully located and dimensioned the tunnel beneath the site.

Sewer Lines

James wrote sewer easement and relinquishment descriptions over a four-block area in the vicinity of NE 40th and 11th Avenue, north of Boat Street. The purpose of this activity was to give SDOT access rights for utility maintenance.

Denny Hall

Constructed in 1895, this is the oldest building on the campus. The building contains Anthropology, German, Near East, and Classics Departments. The interior classrooms and building systems were renovated, plus the exterior envelope and ADA brought up to code. BRH provided topographic mapping to support the various design teams.

Husky Stadium Expansion Planning

Our surveys supported preliminary conceptual planning for an expansion of the stadium at both east and west ends. Traffic mitigation is a key component and our surveys included work along Montlake Boulevard.

Husky Stadium

Multiple surveys were required to support the renovation of the stadium. Our topographic survey covered the entire 58-acre property, including all adjacent structures and parking areas. The survey extended from Lake Washington to Montlake Boulevard NE, and from the Ship Canal to the adjacent ball fields. We also prepared a detailed as-built of the stadium structure, and were later involved in construction layout surveys.

Husky Stadium Landscape Survey

This landscaping survey included slopes, as well as concrete and rock wall toes and top elevations, tree and shrub elevations at root crowns, lawn plinths, and irrigation features such as mains, meters, backflow preventers, and sprinkler heads. We provided spot elevations to an accuracy of 0.01-foot for hard surfaces, and 0.1-foot for landscaped areas, as part of our 20-scale topographic survey.

Husky Stadium Waterfront Survey

Husky Harbor provides moorage to accommodate boaters visiting the campus, and fans coming to Husky games. As a waterfront facility, BRH was asked to assist the ICA with a Washington State DNR Lease update, including filing of a Record of Survey, location of buoys, and preparation of a legal description.

ICA Softball Performance Center and Fields

This pre-engineered building, located between the football and softball stadiums, will sustain the training needs of the women's softball program. James provided topographic mapping, plus utility detection and manhole investigations of the adjacent softball field.

Basketball Training and Operations Facility

The Pavilion Pool Building will be demolished and replaced by a \$60M addition to the Hec Edmundson Pavilion. The 60,000-sf building will have state-of-the art practice courts, locker rooms, recruiting lounges and film rooms. The facility includes a 14,000-sf health center that will offer weight training and conditioning, nutrition, mental health, athletic training and medical services, and will cater to more than 500 athletes. James is providing a topographic survey. The facility is planned for a 2023 completion.

Graves Hall Annex

This is the Intercollegiate Athletics (ICA) administrative building adjacent to the Nordstrom Tennis Center. James provided topographic and boundary surveys.

Grounds Improvements at Parrington Hall

BRH provided the topographic survey to support the landscape architect's conceptual landscaping and irrigation plan. The lawn is 6.8 acres in size and is bordered by the Gates Law School, Parrington Hall, and Cunningham Hall to the south. Our survey links to a Master Plan and a future \$200K improvement project.

Computer Engineering and Sciences Building CSE2

This 130,000 sq. ft. facility on Stevens Way expanded the capabilities of the Paul Allen Computer Science building, and doubled the number of computer engineering degrees awarded. The building cost \$110M, and opened in 2019. BRH provided full topographic mapping services, including utility detection and location. James also provided an as-built of a spur tunnel under the site, and utilidor as-builts.

President's Residence

BRH has provided multiple survey assignments on this property over several years. Our most recent project was to develop a legal description for an easement.

Childcare Center Expansion

This \$3M project converted a transportation administrative building into a childcare center for 150 children. James provided a site topographic survey including utility detection and location.

North Campus Improvements - Student Residences

This 5-year program called for McCarty and Haggett Residence Halls to be demolished and rebuilt, and McMahon Hall completely renovated. The program also called for a renovation of the popular Denny Field intramural sports area, with extensive re-landscaping throughout the area. James mapped surface features and underground utilities, including an as-built of the extensive tunnel system beneath the site.

Renton Technical College

Central Sound Aerospace Training Center

The City of Renton and Renton Technical College, planned this \$12.5M teaching facility that was to be built on the west side of Renton Airport. As part of the planning process, James provided utility location and site topographic mapping that included the Rainier Avenue South right-of-way.

Western Washington University Marine Center

The Shannon Point campus is situated on a 87-acre site on the Guemes Channel in Anacortes. James provided topographic surveys and benchmarks, mapping the trails and the lakefront, wetlands and utilities, as well as beachfront surveys including ordinary high tide marks, and construction staking.

K-12 Projects

Everett School District

Madison Elementary School – Everett

A new 84,000 SF, two-story, 600-student replacement elementary school is planned on a on a nine-acre site. The plan includes demolition of an existing school building and site amenities. The school will be fully occupied during construction. BRH was asked to stake a line along the property boundary to facilitate the construction of a boundary fence.

Woodside Elementary School – Bothell – 2018

The District modernized three classrooms and the gymnasium-cafeteria building. In addition, new construction resulted in a two-story administration and library building. Design commenced in 2018, and the addition was

completed in 2020. James prepared a site topographic and utility survey.

Puyallup School District

Hunt Elementary School Additions – South Hill – 2016

The Hunt Elementary project added 12 new classrooms to the school. Construction was completed in 2019. James provided topographic and utility surveying of the entire school site to assist the design team with a base map of the school property. In addition, our mapping scope supported moving 10 portable classrooms from Hunt to other schools within the district.

Bellevue School District

Clyde Hill Elementary – 2017

In 2006, James provided as-builts showing existing conditions, an ALTA survey, a boundary survey, and topographic mapping, including site utility location, for a 15,000 square foot, \$8.4 million addition. In 2017 James provided a topographic survey and lot line consolidation to support the 2018-19 school rebuild.

Bellevue High School

This school received a complete renovation and modernization. A new Performing Arts Center was built and the gymnasium and many classroom and support areas were replaced. James provided a complete boundary and topographic survey of the school grounds during the renovation and modernization. Our mapping included detailed utility data over the entire school property and surrounding streets adjacent to residential areas.

Athletic facilities surveyed included a running track, football field, tennis courts, two baseball fields and a soccer pitch.

Highline School District

Tyee High School – SeaTac – 2020

The new Tyee High School in SeaTac is currently in design. This grade 9-12 school will serve over 1,000 students who will attend an interim school during construction. The new school is slated to open in 2025. James' task was to perform a site topographic survey.

Pacific Middle School – Des Moines – 2020

The new 132,800 sq. ft. Pacific Middle School is also currently in design. Its three-story classroom wing and single level communal space will serve 950 students. James' task was to perform a site topographic survey.

Raisbeck Aviation High School – Seattle

This themed grade 9-12 school, adjacent to the Museum of Flight, focuses on aviation and aerospace. James conducted a full site boundary and topographic survey, and a street widening base map on East Marginal Way, plus a Binding Site Plan.

Marvista Elementary School – Normandy Park

This was an assignment to locate the boundary along the northern edge of the property. The scope included right-of-way base mapping, plus a tree line location

McMicken Heights Elementary School – SeaTac

James was on site to provide a full topographic survey for this K-6 school rebuild project. The school is a 2-story, 66,500 square foot facility, serving 570 students.

Bow Lake Elementary School – SeaTac

James was the project surveyor for our work on this \$16.5M elementary school. It is a 2-story, 720-student facility, that replaced two older and smaller schools

North Hill Elementary School – Des Moines

James provided an easement description for this school.

Des Moines Elementary School – 2019

Highline Public Schools asked BRH to survey 17-acre Zenith Park prior to its conversion to the new Des Moines Elementary School, that opened in 2019. This is 750-student K-5 facility. James provided a topographic survey and lot line adjustment.

Puget Sound Skill Center – Burien

PSSC draws students from Highline, Federal Way, Tahoma, and Tukwila school districts. It offers college preparation and career education in 18 fields using state-of-the-art equipment and instruction. PSSC has a diverse array of programs, from criminal justice to engineering design to environmental and marine science to business management. James provided utility location and topographic mapping, plus boundary surveys for a planned future development.

District Office Land Acquisition – 2021

Hiline Lanes, after 28 years of bowling fun, was sold to the school district. The site is adjacent to the District Office and will be used for storage and enhanced parking for visitors to the District office. James provided an ALTA survey.

Northshore School District

Inglemoor High School – Kenmore – 2020

A 750-seat concert hall and music building, with instructional spaces, was built at the north end of the campus. Besides the 36,300 sq. ft. addition, improvements included internal circulation of the campus and parking areas.

James provided a survey of the downstream storm sewer system for the school.

Transportation Center – Bothell

This 16-acre site, off the Bothell-Everett Highway was developed into the district's new transportation hub. James provided a full boundary and topographic base map for the design team.

Mukilteo School District

Discovery Elementary School – Everett – 2021

This school will receive a \$30M classroom and two-story common space addition. BRH provided a 2020 topographic survey of the school and the surrounding site, including parking, and Meridian Avenue mapping to the East. The scope encompassed portions of **Voyager Middle School** to the west, including the frontage along 4th Avenue West. In 2021 we provided an additional survey supporting a dedication on 120th Street SW.

Explorer Middle School – Everett

James provided a topographic survey to support master planning for an entire school replacement with construction of Phase 1 starting in Summer 2024.

Lake Washington School District

Redmond Elementary School

James provided a topographic survey for a future elementary school on underdeveloped land adjacent to the current Redmond Elementary Campus.

Redmond Junior High School – 2022

James provided a topographic survey for portable placement, plus mapping for a future addition.

Thoreau Elementary School – Kirkland – 2020

This 473 student K-5 school on Finn Hill hosts a Quest program. James provided a topographic survey to assist the District in locating portable classrooms.

Inglewood Middle School – Sammamish – 2020

James provided a topographic survey for this 1,265 student, Grades 6-8 school in Sammamish. The survey assisted the district to locate portable classrooms.

Robert Frost Elementary School – Kirkland – 2020

This was a demolish and rebuild K-5 project. James provided a topographic survey for this 441 student, 59,620 sq. ft. school in the Kingsgate neighborhood. The school received two additional classrooms in 2020.

Rosa Parks Elementary School – Redmond – 2020

James provided a topographic survey for this 650-student, K-5 school on the Redmond Ridge. The survey helped the district to locate portable classrooms.

Rose Hill Middle - Redmond – 2021

The existing school was demolished and replaced in 2013 by a 141,000-sf facility with a \$40M budget. In 2021, James was asked to provide a topographic survey to help the district with overcapacity action planning.

Rose Hill Elementary - Kirkland – 2020

This 351-student school will receive eight new classrooms as well as a new gym and cafeteria. James provided full site topographic mapping and a utility survey.

Kirkland Middle School – 2020

James provided a topographic survey for this 588-student, 6-8 grade school. The survey assisted the district in locating portable classrooms.

Kirkland Middle School - 2022

The school will acquire an eight-classroom addition to enlarge capacity to 744 students. James provided partial site topographic mapping for this project.

Mark Twain Elementary - Kirkland – 2019

The district will provide four permanent classroom additions, and also new gymnasium and cafeteria facilities for this 580 student school. James provided a full site topographic and utility layout map.

Benjamin Franklin Elementary - Kirkland – 2019

Eight permanent classroom additions will be built along with new core facilities – a gym and food service – to serve the over 600

students at this school. James provided full site topographic mapping, plus utility detection and location.

Rachel Carson Elementary - Sammamish – 2019

This 500-student school received four new classrooms, plus a new gymnasium and cafeteria. To support the design team, James provided a full site topographic and utility layout map.

Margaret Meade Elementary - Sammamish – 2019

This new school, serving over 600 students, opened in 2019. James performed an easement survey which was delivered together with appropriate easement documentation.

Novelty Hill Choice School

This future grade 6-12 school on Novelty Hill Road required topographic and boundary surveys, with utilities located. James also surveyed the adjacent public rights-of-way. The site includes a 48-acre forested area which we surveyed, capturing wetland delineations and buffer zones.

Alexander Bell Elementary School – Kirkland

BRH provided survey services for this 65,305 sq. ft. replacement school. The K-5 school is sited adjacent to a wetland forest. Our scope included a boundary survey, topography showing existing site utilities and surface features. Trees and buffer zones were noted. Street improvement base mapping was conducted and benchmarks were set. James led the on-site mapping team.

Juanita High School – 2018

This was a 3-phase demolish and rebuild, ready for the 2020 school year. The three-story school contains classrooms, collaboration space, labs, studios and special ed. facilities. Initially, BRH was asked to perform a partial site topographic survey including all detectable utilities. In addition, James provided an ALTA survey for the entire campus, including the football field, track, 2 baseball fields and six tennis courts. Our team also coordinated arborist services for the site. The scope was extended to include on- and off-site gravity sewer lines, trees and wetlands, and a legal description.

Juanita Elementary School - Kirkland – 2021

James provided a topographic survey supporting the conversion of a grassed area into parking for this K-5 school.

Alcott Elementary School – 2015

James provided topographic surveys to support the installation of green SAGE classrooms for this school. The scope also included associated utility surveys. A follow-up assignment called for a legal description and exhibit.

Evergreen Middle School – 2016

We provided (a) topographic surveying (b) a survey and as-built of the water main, meters, hydrants and related utilities. This scope, in support of the installation of green SAGE classrooms, depicted the complete water loop geometry on the school site. James also provided a water easement and exhibit sketches, in coordination with the Union Hill Water District.

Peter Kirk Elementary School – Kirkland – 2019

To support property utilization planning for a new 550-student school, James provided a full site 11-acre topographic survey. This included utilities, site improvements, play areas, and street

frontage. An ALTA and topographic survey on an adjacent property was also provided. The school opened in 2019.

Explorer Community School at Dickinson Elementary

Explorer is a Choice School focusing on grades 1-6, with a focus on enrichment activities. James had previously surveyed the Dickinson site and this additional 2018 assignment provided a topographic survey focused on the Explorer School.

Redmond Preschool Special Ed – 2018

The Old Redmond Schoolhouse, built in 1922, is located on the grounds of the Redmond Elementary School. In 1997 the City transformed the building into a Community Center. In 2018, it transitioned back to the District to be renovated into preschool special education classrooms. James provided a legal description, along with easement research and exhibits.

Cadman Park 188 Site – 2021

The District purchased a 25-acre property on 188th Avenue NE in Redmond to support continued growth. The \$40M site is a parcel called Park 188, formerly owned by Cadman, and is located one mile east of SR 520. James, supporting the transaction, performed an ALTA survey of the entire site.

Sammamish Parcel

The School District acquired a 15.5-acre property to evaluate for a potential new school adjacent to Eastside Catholic. BRH was tasked with a topographic survey, showing spot elevations and terrain contours, plus all detectable underground utilities. The scope includes street base mapping and street channelization markings for the two surrounding rights-of-way. The site includes an approximate 8-acre forested segment, within which BRH will note all native and landscape trees with a caliper greater than 6-inches. Coordination with an arborist, wetland biologist and geotechnical engineer is part of the scope

Kent School District

River Ridge Elementary School – SeaTac – 2022

This is a new \$58.2M elementary on Military Road South, built on the site of the Kent Mountain View Academy. BRH provided an ALTA survey, topographic mapping, a sanitary sewer easement, two storm water easements, a lot line consolidation, a pedestrian path mapping, a waterline as-built and a water line easement relinquishment, plus a right of entry easement. An additional topographic survey was provided in 2022. The school is slated to open in 2022.

Kentridge High School – Kent – 2020

This grade 9-12 school will receive a variety of capital levy technology and building system improvements. James provided a topographic survey to support the Performing Arts Center Gymnasium Lobby Modernization project.

Kent Mountain View Academy on the old Panther Lake School Site - Kent – 2018

Panther Lake Elementary School on the Kent East Hill was rebuilt with a \$16M program to accommodate the new Kent Mountain View Academy. The Academy serves grades 3-12 and offers Choice, Link and Transition Programs. Construction commenced in 2019, and the facility opened in August 2021. James provided a topographic and utility survey.

Riverview School District

New Elementary School – Duvall – 2019

To accommodate expansion of the student population the district planned a new elementary school. To support the anticipated new school, James provided an easement study.

Tolt Middle School – Carnation – 2018

This 6-8 grade school in the City of Carnation serves 787 students. James provided a topographic survey to accommodate planned improvements.

Stillwater Elementary – Carnation – 2019

Stillwater is a 510 student K-5 facility in this growing District. James provided a boundary resolution tied to a waterline easement for a proposed portable, a legal description, and a topographic survey.

Land Parcels for Future Development – Duvall

BRH was asked to prepare three separate ALTA Land Title surveys covering a total of 52 acres.

Lakewood School District

Lakewood High School in Arlington – 2015

The High School was improved, with the existing buildings modernized and new additions constructed. James provided a full site topographic survey, showing all surface features, as well as above and below grade utilities. In addition to the school site survey, he also mapped the surrounding streets to assist the civil design team.

Snohomish School District

Valley View Middle School

The school was demolished and rebuilt to meet student, faculty and community needs. Our survey covered 36 acres – including a school building, track, 2 baseball fields, a tennis court, basketball court and a 59-stall parking area. Wooded areas surround the new \$52M school. We provided topographic mapping and an ALTA survey for the entire site.

Renton School District

Albert Talley Senior High School

When opened, Talley High School was a Secondary Learning Center for grades 7-12. It was converted to serve grade 9-12 students. Supporting this change, our team provided a boundary survey, full topographic and utility mapping, and multiple mapping assignments to support the construction of the enhanced facility. The scope also included detention pond topography and a right-of-way dedication.

Most recently, James provided two legal descriptions – one for a power and telecommunications easement, and the other Right-of-Way mapping for a future road widening project.

Sierra Heights Elementary School – 2021

This school on Union Avenue NE will undergo several improvements including street access, sports fields and school grounds and parking facilities. James provided a topographic survey.

Seattle Public Schools

Daniel Bagley Elementary School

BRH delivered full scope surveying supporting the retrofitting and modernization of this school. James provided boundary,

topographic and utility surveys of the entire site, extending out to include full-width SDOT compliant street base mapping of North 80th Street and Stone Way North.

Robert Eagle Staff Middle and Licton Springs K-8

James provided a comprehensive boundary and topographic survey showing all site improvements and utilities, finished floor levels, and surrounding streets. He also captured the finished floor levels of the existing structures. Work included easement surveys to support the construction of new sidewalks, plus a storm water line easement survey.

This scope was conducted prior to the demolition of the former Wilson Pacific Middle school. We were also called in to perform associated road and utility topography. Both new schools opened in 2017.

Olympic Hills Elementary School

This 1954 school in Lake City was demolished in 2015 and rebuilt on the same site. James was asked to perform a boundary survey, and a full site topographic survey including all detectable utilities, plus an ALTA Land title survey.

Arbor Heights School

This demolish and rebuild project in West Seattle, resulted in a 660 student, E-STEM school, sited on 5.6 acres. The 90,000 sq. foot, \$42M, school, doubles the capacity of the replaced facility. James provided boundary control and a topographic survey basemap for the team designing this school, plus a street easement survey.

Eastside Preparatory School Science and Athletic Center

James provided a topographic survey supporting an addition to this independent grade 5-12 school in Kirkland.

Northwest School Facility Improvements

This day and boarding school serves over 500 students in grades 6-12 college prep classes. James provided an ALTA and a topographic survey.

Federal Projects

US Army Corps of Engineers

Six Spillway Gates Replaced at Chittenden Locks

The Corps of Engineers replaced the 6 spillway Tainter gates, which maintain the water level between Lake Washington and Lake Union. The old gates were placed in 1916. The new gates are stronger and will require less maintenance.

US Justice Department

US Federal Courthouse – Seattle

This is a 23-story building with 2 floors of parking below grade. BRH conducted field surveys using the metric system, and AutoCAD maps were provided showing millimeter units. Survey services included a topographic survey, a boundary survey, underground utility mapping, grid and shoring control, and a street survey of Seventh Avenue.

US Justice Department Nakamura Courthouse

The Nakamura Courthouse, is an 11-story building that serves as the Ninth U.S. Court of Appeals. To support its renovation, James provided a full city block boundary and topographic survey including Spring and Madison Streets, and 5th and 6th Avenue, including underground utility detection and location. We also provided an as-built survey of the site to support the design team.

Aviation Projects

Renton Airport On-Call

James has performed on-call surveys for the airport. His assignments have included topographic surveying of the new blast wall at the South end of the property, and also an airport base map update. On this latter assignment he modified and enhanced the CAD layering system, and then incorporated the blast wall area survey, as well as a previously surveyed parcel to the west.

City of Arlington Municipal Airport Survey Assignments

This airport comprises 1,189 acres dedicated to general aviation operations. It contains two runways that support over 200,000 aircraft operations annually. James provided platting services, and also an ALTA/ACSM survey.

Museum of Flight Multiple Phases

James supported our multiple phase topographic and utility surveys as the museum was established and expanded.

Alaska Airlines

McGee Building – SeaTac

McGee Air Services is a wholly owned subsidiary of Alaska Airlines. McGee's 900-person team provides ramp handling and fleet services for daily flight departures and arrivals at Sea-Tac. McGee also operates ground handling at Portland, Phoenix and San Jose. James provided topographic surveying and a Title Study for this 79,600 sq. ft. facility sited on 5.6 acres

Waterfront Projects

Washington State DNR Aquatic Land Leases

Property that extends into State Lands is required, by law, to obtain a State lease. In order to do this a survey must be provided and recorded. BRH has provided multiple State Lease surveys.

The James Harper project below is an example:

James conducted an upland survey from the waterline, for **Kenmore Air**, based on Lake Union. The land is owned by Lake Union Trust. Per Ordinance 92887, DNR reviewed the survey and recorded it. Using this survey, portions of this property was leased by the State of Washington to Lake Union Trust.

James also provided a Legal Description for the leased portion of the easement using State Plane Coordinates as a reference.

Kenmore Air Harbor – Lake Union DNR Lease Exhibit

James provided a Washington State DNR Lease Exhibit with a legal description for this waterfront property serving as a float plane base. The exhibit showed shoreline improvements and structures. The scope included a legal description of the Aquatic Lands lease parcel, and monument recovery. At the completion of the work we filed a Record of Survey.

Hood Canal Oyster Bed Restoration Confidential Client in Mason County

James conducted a waterfront survey, conducted up to extreme low tide level, to support the permit application for a beach restoration project. Our field crews took extreme caution not to disturb tide zone habitat in this ecologically sensitive area.

Washington State DOE Skykomish River and Right-of-Way Remediation

James provided survey services in support of a major remediation project for the Town of Skykomish. Our scope of work included hydrographic surveys of the river, determining the channel profile, as well as topographic and boundary surveys of terrain adjacent to the railroad. These surveys assisted the team with planning to remove and replace contaminated soil. We also performed right-of-way surveys and easements, located wetlands and established control for wells; monitoring ground conditions both within the railroad right-of-way and in the town.

Pacific Northwest Aquarium Expansion

The expanded aquarium is a world class 200,000 square foot facility. BRH was selected by the City of Seattle and the Seattle Aquarium Society to provide an existing condition site survey. The scope of work comprised topographic and boundary surveys from the historic harbor line to 50 feet beyond the property to the east. This took the limits of the survey under the former Alaskan Way Viaduct. The survey extended from the north side of Pier 59 to the north side of Pier 63. On the waterfront, our survey indicated tide elevations, the location of the seawall, and fixed features such as outfalls and utilities under the piers. Over the rest of the site we located boundary lines and easements, mapped topographic and planimetric features, located and identified utilities, and provided legal descriptions. We also set vertical and horizontal construction control.

King County Metro Water Taxi

James provided a topographic map of the West Seattle terminal for the Water Taxi. Our scope included a hydrographic survey in the tidelands zone and uplands features.

Harley Marine Survey on Harbor Island

This property, located on the West side of the Duwamish Waterway, required a topographic survey showing land improvements and utilities, and an ALTA survey. James also located the Mean High Water level, and showed bulkheads and wharves.

Kvichak Marine

Kvichak designs and builds commercial aluminum vessels for private and government clients. BRH provided a boundary survey for their property off Leary Way in Seattle.

Salmon Bay Waterfront

James has surveyed several commercial waterfront properties along the Shilshole Avenue waterfront. Scopes included docks, bulkheads, slips and waterfront equipment and boat storage.

Typical scopes call for topographic, boundary and utility surveys, legal descriptions and easement and DNR lease exhibits. In addition, surveys and easements for pedestrian, vehicular and public shoreline access have are often included.

Donato's Marina Towing & Salvage

Donatos has provided marine services on Lake Union for almost 50 years. To accommodate changes in their service profile, James was asked to provide waterfront ALTA and topographic surveys on their North Northlake Way property.

University of Washington Oceanography Department - Dock Redesign

A topographic and utility survey that met U.S. Army Corps of Engineer's requirements for a waterfront permit.

Portage Bay Waterfront

BRH provided a Washington State DNR Lease Survey with a legal description for this waterfront property. The exhibit showed shoreline improvements and structures, and was conducted to assist the university expand its shoreline footprint. The scope included a legal description of the Aquatic Lands lease parcel, and monument recovery.

At the completion of the work the survey was filed with King County and the Department of Natural Resources.

Environmental Support - Wetlands

Black River Corporate Park – Renton

This \$71 million, multi-phased project contains 1.3 million square feet of commercial space and parking for 7,800 cars. The **150-acre site** incorporates extensive amenities including a 35-acre nature preserve with waterways, islands, forested areas, jogging trails and exercise stations.

James was involved on site providing field surveys supporting the development of this extensive property adjacent to Oakesdale Avenue SW, Naches and Powell Streets.

Stream Enhancement

This support survey was conducted along the North Creek in Bothell.

Commercial and Corporate

Amazon.com Headquarters

We used 3D laser technology to capture interior elements of the basement and parking garage. We also scanned the east, north and south façades, including doors, windows and archways of the historic C. B. Van Vorst Building that was incorporated into the campus. This was cost effectively accomplished by establishing our scanner on the roof of an adjacent building on Boren Avenue. Our work was used for detail matching and the archival record. In addition, we captured dimensions on floors 1, 2 and 3 by using conventional laser technology, combined with standard data collection techniques.

University Village

Expansion Support On-Call

BRH has been involved in this landmark retail campus since 1993 when we provided an ALTA survey. James took over the lead role in 2011 and has shepherded the site though all of its recent expansion into a destination retail location. He has provided the full gamut of survey services from topographic mapping to air space condominium documentation, to construction survey services. A recent example was the entrance improvements where he provided topographic mapping, covering over 2,400 feet of public right-of-way supporting the redesign of the intersections at the entrances to University Village.

Northgate Mall Tunnel

This is a 0.5-mile long tunnel beneath Northgate Mall that allows truck deliveries directly to the shopping center. James provided a topographic survey, an ALTA and exhibits.

Hilton Garden Inn – Issaquah

James surveyed the site for the Hilton Garden Inn, providing a topographic and utility survey, lot line adjustment, an ALTA survey, and sanitary sewer and waterline easement legal descriptions and exhibits. The street portion of the job included surveys along NW Gilman Boulevard and 18th Avenue NW.

Auburn Super Mall

Situated on a 155 acre site, the mall serves between 14 and 16 million shoppers each year. BRH's scope included, topographic surveys, boundary surveys, utility locations and descriptions, data collection, easements, surveys on ecologically sensitive areas and locations of offsite wetland boundaries, lot line adjustments, legal descriptions, short plats, ALTA surveys, construction surveys, earth volume calculations, preload settlement monitoring, as-built surveys and space measurement certifications for over 140 stores.

Additional Mall Projects

- Aurora Village – Shoreline
- Home Depot – Several
- Starbucks HQ – Administrative Facility in Seattle
- Walgreens – Several

Canyon Park – Bothell

This **320-acre business park**, situated along the I-405 Technology Corridor, contains a mix of office, retail and light industrial facilities. These buildings contain over 2,500,000 square feet of floor space. Over 3,500 people work in this noteworthy development.

James and the survey team mapped the entire site, including critical areas and the 6-acre detention pond draining the entire site. The scope included multi-year, multi-phase topographic, ALTA, as-built and construction survey services.

Canyon Park South

A binding site plan update was prepared for this Business Park extension, off 228th Street SE in Bothell.

Supermall – Auburn

Situated on a 155-acre site, the mall serves between 14 and 16 million shoppers each year. This landmark is located at the interchange of SR 167 and SR 18 contains 1.2 million square

feet of space. Twenty-seven football fields could fit in the Supermall.

James provided extensive topographic mapping, including surveys on ecologically sensitive areas and locations of offsite wetland boundaries. Deliverables included wetland and buffer zones location mapping, plus setbacks and legal descriptions. Three miles of public streets were surveyed, plus highway ramp surveys, along with detailed investigations on ramp access options.

Goodwill – Puyallup New Center

This center is located on 4th Street NW. James provided an easement description and construction staking.

Van Doren’s Landing Business Park

James provided multiple boundary, topographic, utility, as-built and construction surveying for the development of this 80 acre, 20 parcel, light manufacturing/industrial office park. BRH services continued for a decade within this City of Kent business park.

Development Site – Sequim

For this 80-acre private development, James used GPS-RTK methodology to gather topographic data quickly and efficiently.

Watermark Credit Union 820 Stewart Street Building

This structure on Stewart was owned by Watermark before their merger with Sound Credit Union in Tacoma. James provided an ALTA and topographic survey of the site.

Safeway - Renton

BRH has worked on literally hundreds of assignments for the Safeway Corporation. The Renton store is an example that James surveyed. The scope included a boundary line adjustment for the development of a new store and fueling facility in downtown Renton. Legal descriptions for new lots, covenants and easements were also provided.

Metro 112 – Bellevue

This Simpson Housing project is a twin tower, full-block residential development, immediately south of Bellevue City Hall on NE 4th Street. BRH surveyed the site and also provided comprehensive site civil engineering. James performed boundary and topographic surveys to assist the design team.

Union Station Office Complex – Seattle

The historic Union Station, built in 1911, was totally refurbished and linked to a modern mixed use, office complex. The headquarters for **Sound Transit** is located in this facility.

Six buildings occupy the 9.26 acre, four parcel site. These comprise 3 high-rise office buildings, built above a parking structure, 2 low-rise office buildings, built above a Metro bus staging area, and one low-rise retail structure. All office buildings contain street level retail. Site amenities including a pedestrian plaza with planters, benches and water features.

BRH’s scope included a five city block base map, a boundary and topographic survey, utility locations, and modified easement descriptions between Metro and Burlington Northern. We had to locate the substructure of 4th Avenue, Jackson Street, and Airport Way overpasses, showing accurate locations of existing columns, walls, bridge decks and subsurface features. In addition, James provided a building control layout for construction, site monitoring surveys during construction, and an existing condition survey after construction. Last, but not least, he provided an ALTA/ASCM Title survey for multiple buildings and garage structures associated with this campus facility.

333 Dexter Office Building in Seattle

This is a two-structure, 12 story development, occupying a full city block, off Aurora Avenue North. James’ task was to prepare a site base map, and also SDOT compliant street mapping. The scope included as-built of a utility vault, in coordination with Seattle City Light.

Additional Projects:

- **Chandler’s Cove** on Lake Union in Seattle
- **Terminal 105** for the Port of Seattle

Industrial

Chateau St. Michele Winery Campus in Woodinville

James provided a topographic and ALTA survey covering 71 of the 105-acre site, depicting utility locations and all surface improvements. The scope included a full ROW survey of NE 145th Street, including utilities and easements, as well as portions of the BNR railroad. City of Woodinville datum was used and City of Woodinville survey specifications were met.

Northwest Harvest Warehouse in Yakima

This facility on Fruitvale Boulevard required an ALTA survey. It is a former Yakima Drive in site. Northwest harvest in Yakima supports over 65 central Washington programs and 17 area schools.

Korry Electronics Paine Field HQ

This aerospace manufacturing plant houses 600 employees designing and constructing cockpit controls.

Phase 1 included 14 acres of topographic mapping, lease description and exhibits with easement descriptions, construction layout (lease line and channelization), and ALTA survey and a record of survey.

Phase 2 added 19 acres of open land surveying including wetland boundaries.

ADA and Parking Projects - UW

E12, E17 and E19 Parking Lots

Multiple surveys were required to support the renovation of Husky Stadium. Our topographic survey covered the entire 58-acre property, including all adjacent structures and parking areas. The survey extended from Lake Washington to

Montlake Boulevard NE, and from the Ship Canal to the adjacent ball fields.

ADA Slope Accuracy: We provided spot elevations to an accuracy of 0.01-foot for hard surfaces, and 1-foot contours, as part of our 20-scale topographic survey. Our survey assisted design engineers' parking design and ADA compliance. We also prepared a detailed as-built of the stadium structure, and were later involved in construction layout surveys.

ADA Compliant Intersection Survey

BRH was tasked with mapping the intersection at NE Cowlitz Road and NE Cowlitz Place (12th Avenue NE), to support planned right-of-way improvements.

ADA Slope Accuracy: The base map assisted the engineering team by providing elevation data that will support ADA design compliance for sidewalk cuts and ramps.

ADA Compliant Entryway at UW Medical Center

To support the Main Entry ADA predesign, BRH provided a topographic and utility base map, including all entryway areas, parking drop offs, the Triangle garage access areas including the ADA ramp in the tunnel, the Surgery Pavilion ramps and ADA access. Site topography included spot elevations to an accuracy of 0.01-foot for multi-level hard surfaces, and 1-foot contours. We also depicted building footprints, entryways and overhangs, canopies and retaining walls.

Lander Hall with W8 Parking Garage

Lander Hall is a 6-story building on NE Campus Parkway with a 650 student capacity. James provided a full block topographic survey showing all surface improvements, including buildings, pavement, sidewalks, walls and utilities, such as hydrants. Street surveys show the full roadway with cross-sections and all right-of-way features and utilities. The W8 garage serves this facility.

C12 Parking Lot

The planned **Computer Engineering and Sciences Building** on Stevens Way will expand the capabilities of the current Paul Allen Computer Science building. BRH provided full topographic mapping services, including utility detection and location. James also mapped the adjacent C12 lot, and provided an as-built of a spur tunnel under the site.

W14 Parking Lot

BRH surveyed the site for the new **New Police Station** on 15th Avenue NE. The survey included portions of the W14 parking lot. Our topographic surveys depicted all surface improvements including buildings, walls, utilities, power poles and sidewalks.

N1 Parking Lot

The new, \$75M, 110,000 square foot **Burke Museum** will contain state-of-the art exhibition space, on-site programs, public amenities, and outreach services. BRH provided a topographic base map of the entire site, including the former N1 parking lot. To assist the design team, our scope included full width, SDOT compliant, base mapping of 15th Avenue NE and NE 45th Street, as well as Memorial Way NE, the entry to the north campus.

N2 and N3 Parking Lots

BRH assisted the design teams for the new **Paccar Hall** and adjacent **Dempsey Hall**. James provided a topographic base map for both phases that included all surface features such as retaining walls, adjacent campus roadways and paths. We also located floor elevations of adjacent buildings. Underground utilities including vaults were part of the task, as was locating waterlines, fiber-optic and secondary power lines. In addition, we provided a 3D "as-built" survey of the tunnel system running under the buildings. The **N2 and N3 parking lots** are adjacent to the new facilities and N2 also serves Denny Hall.

Denny Hall, constructed in 1895, is the oldest building on the campus, and has been totally renovated. The upgrades include **ADA** brought up to current code. James provided topographic mapping to support the various design teams.

W27 Parking Garage

This parking facility, adjacent to the Portage Bay Garage, offers self-serve parking, disability stalls, motorcycle stalls and EV charging. We conducted topographic and boundary surveys and also as-builts of underground utility tunnels.

S8 Parking Lot

A topographic and utility survey supporting the **Oceanography Department Dock Redesign** met U.S. Army Corps of Engineer's requirements for a waterfront permit. Portions of the adjacent S8 lot was included in the survey scope.

N16 Parking Lot

Intellectual House, located adjacent to Lewis Hall on Stevens Way, provides multi-services for Native American students. James provided topography with above and below ground features and utilities, including the adjacent N16 parking lot.

E97 and E98 Parking Lots

Graves Annex is the Intercollegiate Athletics (ICA) administrative building adjacent to the Nordstrom Tennis Center. James provided topographic and boundary surveys, including the adjacent parking lots west of the building and the IMA.

N7, N8, N9, N10, N11, N13, N14, N15 Parking Lots

The 5-year **North Campus Improvement** program calls for extensive changes in the McCarty, Haggett and McMahon Residence Hall area. The program also calls for a renovation of the popular Denny Field intramural sports area, with extensive re-landscaping throughout the area. James mapped surface features and underground utilities, including an as-built of the extensive tunnel system beneath the site, and the associated adjacent parking lots.

E1 and E18 Parking Lots

The **baseball and soccer fields and track** relocation, north of Husky Stadium, required extensive surveys to support rehabilitation and improvements. BRH provided engineering scale topographic surveys with contours and spot heights, and identified utilities and all surface improvements. Potholes were also located to support site investigations and we located wetland flags. These surveys included portions of E1 and E18.

NE Pacific Street - Seattle

BRH was tasked with providing field verification of the existing

utility network, coordinating with SPU, and creating or relinquishing easements as required along NE Pacific Street, between 15th Avenue NE and University Way. A duct bank investigation was included, and easement exhibits provided. The sidewalks were reconfigured for ADA compliance.

Historic Buildings

UW Anderson Hall – 1925

Currently housing the School of Environmental and Forest Sciences, the 1925 building is planned to undergo a \$25M renovation to meet code. James provided a complete site survey, including surrounding areas and portions of **Bloedel Hall**. We showed topography, spot elevations, and detectable above and underground utilities. Included were poles, walls, paved surfaces, trees, and areas of vegetation, as well as irrigation components

UW Denny Hall – 1895

Constructed in 1895, this is the oldest building on the campus. The building contains Anthropology, German, Near East, and Classics Departments. The interior classrooms and building systems were renovated, plus the exterior envelope and ADA brought up to code. James provided an as built of the building floor elevations and the tunnel structure, a topographic survey of the site, and utility investigations.

UW Clark Hall – 1896

Clark, the fourth-oldest building on the UW campus, was built in 1896. This facility was completely renovated with renewal of all building systems. Phase 1 of our services provided a site and surrounding area topographic survey. Phase 2 entailed detailed mapping of Steven's Way, to the North and East of Clark Hall, after it was repaved. James assisted the design team with base map detail, and also with utility line upgrade surveys.

Cristalla – 1916

This 22-story mixed use, residential and retail building features a preserved, 90-year old, Italian Renaissance style terra cotta stone façade on the north and east faces of the building. The original structure known as "Crystal Pool," an aquatic center, was built in 1916. James scanned the historic facade for the archival record, and also the shotcrete walls for the construction team.

Grand Central Block – 1897 to 1909

This 116,300 sf mixed use redevelopment is comprised of 3 buildings between Washington and Main in Pioneer Square. **The Grand Central Building - 1897** was a 108-room hotel—the Grand Central Hotel.

The City Loan Building - 1903 was built as the Gottstein Building, becoming The City Loan a pawnbroker in 1938.

The Buttnick Building - 1909 was built during the Gold Rush and by the 1930s Harry Buttnick began manufacturing a water repellent. James provided the development team with a topographic and utility survey of these properties.

King Street Station – 1906

Opened in 1906, the station was restored in 2013. BRH surveyed the entire King Street Station property including railroad as-builts, adjacent parking and roads. James also conducted a track survey for the station's renovation program.

McGilvra Elementary School – 1913

This historic 1913 K-5 school in Madison Park was expanded. BRH provided a topographic survey for Seattle Schools.

Nakamura Courthouse - 1940

The 1940-built Nakamura Courthouse, is an 11-story building that serves as the Ninth U.S. Court of Appeals. To support its renovation, James provided a full city block boundary and topographic survey including Spring and Madison Streets, and 5th and 6th Avenue, including underground utility detection and location. We also provided an as-built survey of the site to support the design team.

Pier 59 – 1905

This pier was constructed in 1905 – originally known as the Pike Street Pier. It has changed hands and names many times, and today it the site of the Seattle Aquarium. When the aquarium was refurbished we provided topographic surveying and hydrographic surveying, plus a legal description.

Pike Place Market – 1907

In the last decade, the Market has experienced a \$73 million, multi-phase renovation – and BRH was engaged as the master surveyor. Our work commenced with a full topographic survey of the entire market area from Virginia Street and Union Street, to 1st Avenue and SR 99. The work included all public rights-of-way as well as the market buildings. We provided extensive underground utility location, including researching public and private utility records and identifying detectable active and abandoned utilities throughout the project area. BRH also provided existing conditions detail of the interior of the market. This enabled the design team, and the contractor, to locate structural elements throughout the market.

Pioneer Square Pergola – 1909

The Pioneer Square Pergola, erected in 1909, was restored after being damaged in 2003. James provided topographic and construction surveys, as well as 3D laser surveys of some of the adjacent underground areas.

Seattle Times Building – 1931

Built in 1931, the structure is a notable Art Deco landmark. BRH provided an as-built, and ALTA survey, a topographic survey and construction layouts.

Smith Tower – 1915

When completed in 1915, the 38-story tower was the tallest building on the West Coast for nearly half a century. The building owner was considering a partial conversion of a portion of this historic office tower into condominiums. BRH provided a 3D laser scan of the 8th and 23rd floors to support a feasibility assessment. We captured dimensions, structural detail and visible utilities through partial wall chases.

Space Needle – 1962

When built in 1962, the 605-foot structure was the tallest west of the Mississippi River.

We were involved with as-built surveys during the first remodel, when the lower level restaurant was constructed, and also during the recent 2017-2018 improvements. We have provided topographic surveys, ALTA surveys, legal descriptions, a

boundary survey and construction layout services.

Allen Institute for Cell Science – 1920's

This site at Westlake Avenue North on South Lake Union was partly occupied by the 1920s Pacific Lincoln Mercury McKay car dealership showrooms. Vulcan, the developer, dismantled the historic buildings, cataloging and storing the terra cotta facades and the ornate interior under the guidance of Seattle's Landmarks Preservation Board. Those components were reassembled and rebuilt as a component of the six-story biomedical research building, and now form a landmark feature of the new structure. High density scanning by others documented the facades, and BRH was asked to use the point cloud to prepare a dimensioned façade profile, assisting the design team with reassembly and reconstruction. James also provided a wide variety of traditional surveys on the site including topographic, utility, ALTA, boundary, and construction layout.

Union Station – 1911

The historic Union Station, built in 1911, was totally refurbished and linked to a modern office and retail complex. Six buildings occupy the 9.26 acre, four parcel site. These comprise 3 high-rise office buildings, built above a parking structure, 2 low-rise office buildings, built above a Metro bus staging area, and one low-rise retail structure. BRH provided a five city block boundary and topographic survey, utility locations, modified easement descriptions between Metro and Burlington Northern, substructure locate of 4th Avenue, Jackson Street, and Airport Way overpasses, a building control layout, site monitoring surveys, as-built surveys, and an ALTA survey for buildings and garage structures.

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