EXHIBIT NO. 21

GEOTECHNICAL ENGINEERING EVALUATION

YWCA SITE
819 WEST BROADWAY
SPOKANE, WASHINGTON

DECEMBER 5, 2005

ALLWEST
Materials Testing • Geotechnical Engineering

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December 5, 2005
205-140G

Mr. Michael Craven
SRM Development, LLC
104 South Division
Spokane, WA 99202

RE: Geotechnical Engineering Evaluation
YWCA Site
819 West Broadway
Spokane, WA

Dear Mr. Craven,

ALLWEST Testing & Engineering has completed the authorized geotechnical engineering evaluation for the proposed residential/commercial project at the above-referenced site in Spokane, Washington. The attached report presents the results of the field evaluation, laboratory testing, and our recommendations to assist the design and construction of the proposed project.

We appreciate the opportunity to work with you on this project. If you have any questions, or need additional information, please do not hesitate to call us at (509) 534-4411.

Sincerely,

ALLWEST Testing & Engineering, LLC

Paul T. Nelson, P.E.
Senior Geotechnical Engineer

CW for Chris Beck

Chris C. Beck, P.E.
Principal Engineer

Attachment: Geotechnical Engineering Evaluation Report

1010 N. Lake Road • Spokane, Washington 99212 • (509) 534-4411 • Fax (509) 534-9326

GEOTECHNICAL ENGINEERING EVALUATION

YWCA SITE
819 WEST BROADWAY
SPOKANE, WASHINGTON

PREPARED FOR:
MR. MICHAEL CRAVEN
SRM DEVELOPMENT, LLC
104 SOUTH DIVISION
SPOKANE, WASHINGTON 99202

PREPARED BY:
ALLWEST TESTING & ENGINEERING, LLC
1010 NORTH LAKE ROAD
SPOKANE, WASHINGTON 99212
(509) 534-4411

DECEMBER 5, 2005

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Proposed Residential/Commercial Development
819 West Broadway, Spokane, Washington

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Geotechnical Engineering Evaluation
Proposed Residential/Commercial Development
819 West Broadway
Spokane, Washington

ALLWEST Testing & Engineering has completed the authorized geotechnical engineering evaluation for the proposed residential/commercial development to be located at 819 West Broadway in Spokane, Washington. The general location of the project site is shown on the Site Location Map in Appendix A.

PROJECT DESCRIPTION

The project consists of constructing three new multi-story residential/commercial buildings at the site. The proposed construction will consist of 4 to 12-story or taller buildings of masonry and steel construction. The proposed construction will include one or two levels of below-grade parking below the buildings and/or existing ground surface.

PURPOSE

The purpose of the evaluation was to assess the subsurface soil, bedrock, and groundwater conditions within the proposed construction areas to assist in designing foundations, slabs, and pavements and preparation of plans and specifications for construction. This report details the results of the field evaluation, laboratory testing, and presents our recommendations to assist the design and construction of the proposed structures.

SCOPE OF WORK

Our services were requested by Mr. Mike Craven of SRM Development, LLC. (SRM) on October 12, 2005. We submitted a proposal to Mr. Craven on October 12, 2005. Mr. Craven authorized us to proceed in accordance with the proposal on October 12, 2005. Our scope of services was developed based on discussions with SRM and anticipated subsurface soil and bedrock conditions from visual observations at the site.

To complete the geotechnical engineering evaluation we accomplished the following scope of work:

1. Reviewed USDA Natural Resources Conservation Service and U.S. Geologic Survey mapping information for the project sites and surrounding areas.

2. Completed a site reconnaissance by walking the project areas and observing exposed soil conditions, vegetation, surface drainage and erosion features.

3. Performed a field investigation by drilling 6 test borings with bedrock coring within the proposed construction areas. Visually classified and described the soil and bedrock conditions encountered in the borings at the time of drilling and logged the subsurface profile.

4. Performed laboratory tests to assess pertinent soil engineering parameters.

5. Reviewed the results of the field evaluation and laboratory testing with respect to the proposed construction.

6. Performed engineering analyses and prepared recommendations to assist project planning, design and construction.

7. Prepared this final report including logs of the borings, results of our field and laboratory tests, our analyses and our recommendations for design and construction.

Our initial scope of drilling included bedrock coring in three borings. However, because soil and bedrock conditions were significantly different than anticipated, coring was necessary in all the borings to advance the holes and to obtain sufficient data for the formulation of engineering recommendations. The scope was subsequently modified after discussion with SRM.

AVAILABLE INFORMATION

SRM provided a feasibility study for the project. This study included plans showing the location of the proposed building, parking and drive areas, and landscape areas. It also included elevation views of the proposed structures showing the below-grade parking structures. Existing and proposed ground surface elevation contours were not shown on the plan.

EVALUATION PROCEDURES

The borings were performed at or near locations we selected and proposed. The boring locations were staked by our geotechnical engineer at the time of drilling. The boring locations are shown on the Boring Location Map in Appendix A. Ground surface elevations at the borings were referenced to the top of a monument box at the intersection of Mallon Avenue and Post Street. This monument is currently being used for the condominium construction project immediately northeast of the site. We understand that the elevation of this reference is at 1889.45 on NAVD 88 datum.

The test borings were performed between October 1 and 27, 2005 using a drill operated by an independent firm working under subcontract to ALLWEST. The borings were performed using standard penetration test procedures in accordance with ASTM D 1586 procedures. With this method, a hollow-stem auger is advanced to the desired test depth. A 140-pound hammer falling 30 inches was used to drive a standard, 2-inch O.D. split-barrel sampler a total of 18 inches below the tip of the hollow-stem auger. The blows required to advance the sampler are recorded for each 6-inch increment. The blows for the last foot of penetration are called the N-value and are an indication of the soil strength characteristics. The N-values are shown on the Log of Boring sheets in Appendix B.

Penetration test samples were taken at 5-foot vertical intervals to the refusal depths of the borings. At that depth, coring was performed in accordance with the American Society for Testing and Materials (ASTM) Method of Test D 2113 procedures. With this method, the bore hole is advanced using NQ wireline equipment. The core holes were generally advanced until 15 feet of continuous rock was obtained which is an indication of intact bedrock.

A geotechnical engineer from our firm continuously observed the borings, logged the surface and subsurface conditions, and obtained representative soil and rock samples. All samples were stored in watertight containers and later transported to our laboratory for further visual examination and testing. After we logged each boring, the bore hole was abandoned in accordance with applicable state guidelines.

SITE CONDITIONS

The subject property is located at 819 West Broadway in Spokane, Washington. Specifically, the site is located in the southwest quarter of Section 18, T25N, R43E, W.M. The location of the site is shown on the Site Location Map in Appendix A of this report. The subject property is bounded on the north by West Broadway Avenue, on the west by Lincoln Street, to the south by commercial property, and on the east and southeast by the Spokane River.

Borings

The site is currently occupied by the YWCA building on the north side. Paved parking areas occupy the south portion of the site. The site generally slopes down from north to south.

GENERAL SOIL CONDITIONS

The USDA Natural Resources Conservation Service (NRCS) has mapped the soils on and around the site in the Soil Survey of Spokane County as Hesseltine silt loam and Hesseltine very rocky complex (HoB and HvC). The Hesseltine soils are described as very deep, well-drained soils on nearly level to gently sloping outwash plains on the channeled scablands. They formed in glacial outwash material mixed with loess and volcanic ash in the upper part. The permeability of these soils is moderate, run-off is slow and the water erosion hazard is slight. The native soils encountered in the borings during the Geotechnical Engineering Evaluation were generally consistent with the soil mapping.

GENERAL GEOLOGIC CONDITIONS

The geologic conditions on the property were mapped as alluvial flood deposits on the Geologic Map of Washington – Northeast Quadrant, Washington Division of Geology and Earth Resources, Geologic Map GM-39, 1991. These deposits consist of sands and gravels deposited during the flooding stages of glacial Lake Missoula and are covered with a thin veneer of wind-deposited loess. The thickness of individual deposits is approximately 30 feet or less. These deposits are then underlain by basalt of the Grand Rhonde Formation in the vicinity of the subject site.

GENERAL HYDROGEOLOGIC CONDITIONS

The hydrogeologic conditions in the Spokane area consist of a sole-source aquifer known as the Spokane Valley – Rathdrum Prairie Aquifer. The aquifer is composed of glacial outwash soils, making it extremely permeable, high in groundwater velocity and susceptible to contamination. Groundwater flow at the site is generally to the south towards the Spokane River.

SUBSURFACE CONDITIONS

Soil

All of the borings encountered existing fill at the surface. The fill consisted of poorly-graded sands and gravels, silty sands, and silts. The fill extended to depths ranging from 10 to 73 feet. The fill was mixed with a considerable amount of debris including glass, metal, wood, concrete, asphalt, bricks, and ash. In addition, large diameter boulders (3 to 7-foot) were encountered at variable depths within the fill.

Below the fill, Borings B-1 and B-6 encountered water-deposited poorly-graded gravels (alluvium) overlying [redacted] basalt bedrock (the rock cores extended 4 to 6 feet into the rock at these locations). The remaining borings encountered basalt bedrock immediately below the fill.

Detailed descriptions of the soil and geologic conditions are presented on the Log of Boring/Rock Core sheets in Appendix B of this report. The Unified Soil Classification System is also included in Appendix B for reference. It is important to note that the subsurface conditions between the borings may vary. Such variations could cause changes in the scope of work for the construction and the associated timing and costs.

Bedrock

10' to 77'

The cores encountered basalt bedrock at each location at depths ranging from [redacted] feet. The basalt was slightly vesicular and the majority of the fractures were horizontal. The basalt was typically un-weathered and intact. Core recovery ranged from 95 to 100 percent for each run. The fracture frequency ranged from highly fractured to 0 fractures per foot. Rock Quality Designation (RQD) ranged from 0 to 100 and averaged 77. The Rock Mass Rating (RMR after Bieniawski, 1979) for the intact basalt is estimated to be 77 (good quality rock). Attached is a plan showing the approximate bedrock elevation contours.

Penetration Resistances

Penetration resistances (N-values) recorded in the fill ranged from 7 blows per foot (BPF) to 50 blows for 2 inches of penetration indicating a wide variation in consistency. Higher N-values were likely due to pounding the sampler on cobbles or boulders mixed in the fill. The average N-value was 26 BPF.

Groundwater

Because drilling fluid was used to advance the core barrel during coring and due to time constraints, groundwater levels could not be accurately measured in the bore holes. However, based on the geology of the site and surrounding area, it is our opinion that groundwater currently exists near the level of the adjacent Spokane River (approximate elevation of 1805±).

LABORATORY TESTING

Laboratory tests were performed on bedrock samples obtained from the cores. The tests consisted of unconfined compression tests on three samples. These tests were used to assist in the evaluation and formulation of engineering recommendations. The tests were performed in accordance with ASTM Method of Test D 2938 "Unconfined Compressive Strength of Intact Rock Core Specimens". The results of the tests are shown on the attached Log of Boring/Rock Core sheets.

CONCLUSIONS AND RECOMMENDATIONS

The following recommendations are presented to assist with the planning and design of the proposed project. The recommendations are based on our understanding of the proposed construction. If the scope of the construction changes, or if conditions are encountered during construction that are different than those described in this report, we should be notified so we can review our recommendations and provide revisions if necessary.

DESIGN RECOMMENDATIONS

Design Data

The project consists of constructing three new multi-story residential/commercial buildings at the site. The proposed construction will consist of 4 to 12-story or taller buildings of masonry and steel construction. The proposed construction will include one or two levels of below-grade parking under the buildings and/or existing ground surface.

At this time, specific design criteria are not available. For our purposes, we have assumed that wall loads will be on the order of 2 to 12 kips per lineal foot and column loads will be on the order of 1200 to 1500 kips. We have further assumed that traffic loads in the parking and drive areas will consist primarily of light automobiles having axle loads of 4 tons or less.

Discussion

Based on the data obtained from the borings, rock cores, and laboratory tests, it is our opinion that the existing fill encountered in the borings is not suitable for support of foundation loads or slabs. Because of the variable depth and consistency of the fill, excessive long-term settlement is likely if foundations or slabs are placed on these soils. We recommend that the foundations be supported directly on or within the intact basalt bedrock.

Where the bedrock is shallow, it is our opinion that the structures can be supported on conventional spread footings bearing on the intact basalt bedrock. Where the depth of fill is deeper, we recommend that the structures be supported on drilled piers bearing on the intact basalt. The slabs can be placed on compacted structural fill overlying basalt bedrock or as structural slabs supported on drilled piers. Because of the presence of large boulders in the fill, it is our opinion that driven piles would not be a feasible foundation alternative. The presence of the obstructions and the sloping bedrock surface would require pre-drilling to install the piles. Secondly, pre-drilled hole diameters for piles would not allow for inspection of the bearing strata.

Site Preparation

Site grading will include building demolition and excavation for the below-grade parking. We recommend that all existing structures, including foundations and slabs, be removed from the proposed building areas. Where the existing fill is left in place below proposed slabs, we recommend that the slabs be designed as structural slabs. Where bedrock is present at proposed slab elevation, we recommend over-excavating the bedrock to a minimum depth of 6 inches and replacing with compacted crushed gravel base.

Soil retention will be necessary during excavation to obtain proposed grades. Because of the site soil conditions, it is our opinion that retention methods may consist of soldier pile and timber lagging, soil-nailed walls, or cantilevered walls. Considerations for selecting wall types should include length of tiebacks, temporary versus permanent walls, depth of excavation, and property (off-site) constraints. For soldier piles, depth of each pile could be significant depending on tieback capacities and strength of the fill. Also, it is likely that boulders will be encountered during installation. This would require pre-drilling prior to installation. We can assist in the evaluation and design of retention systems, if desired.

Foundation Design

Spread Footing Foundations

To reduce the potential for excessive differential settlement, we recommend that spread footings bear on intact basalt bedrock. For spread footings bearing on intact basalt bedrock, foundations can be placed at shallower depths as frost will not affect the footings.

Based on the boring data, we anticipate that spread footing subgrades will consist primarily of intact basalt bedrock. We recommend that subgrades be evaluated for support of the proposed construction. Unsuitable materials should be subexcavated and foundations lowered to bear on more suitable bedrock.

Foundation subgrades on intact basalt bedrock should be relatively flat and free of loose rock and debris. We recommend that the bedrock be evaluated by drilling a minimum 2½-inch diameter hole to a minimum depth of 8 feet or 1.5 times the diameter of the footing, whichever is deeper. The probe hole should then be inspected by a qualified geotechnical engineer to check for the presence of voids, soft zones, or other conditions that may affect the performance of the foundation. Probe holes should be drilled for each isolated footing and at regular intervals for continuous footings.

Based on the data obtained from the borings, rock cores, and laboratory tests, it is our opinion that the intact basalt bedrock is suitable for support of conventional spread footings designed to exert a net allowable bearing pressure of up to 50 tons per square foot (tsf). This recommended bearing capacity includes a safety factor of at least 3.0 against failure. The maximum net allowable bearing pressure values may be increased up to 30 percent to account for transient loads such as wind and seismic. Spread footings should meet the minimum width and thickness requirements of local building codes.

If the previous recommendations are implemented, it is our opinion that total settlement will be less than 1 inch. It is also our opinion that differential settlement will be less than ½ inch across a distance of 40 feet.

We recommend that all backfill placed on the exterior sides of the foundation walls be compacted to a minimum of 90 percent of the modified Proctor maximum dry density (ASTM D-1557). Beneath slabs, steps, and pavements, backfill should be compacted to a minimum of 95 percent of the modified Proctor maximum dry density. Backfill should be brought up uniformly on both sides of the foundation walls to minimize displacement of the foundation walls.

Drilled Pier Foundations

In areas where the depths of existing fill are too deep for constructing spread footings, we recommend that drilled piers be used for support of the structural loads. With drilled piers, it will be possible to drill through obstructions, the piers can be socketed into the bedrock (including the sloping bedrock surface), and inspection of the bearing surface will be possible above the groundwater elevation.

If piers extend below the groundwater level, the piers can be designed and constructed to carry the entire design axial load through side friction in the rock socket. This determination can be made by a qualified geotechnical engineer at the time of construction with no stoppage of production from the contractor.

We recommend that the piers be socketed into the intact basalt bedrock a minimum of 3 feet. The working load capacity of the piers will depend on the depth of the rock socket, the diameter of the pier, and the compressive strength of the concrete used. For high-strength concrete (in excess of 10,000 psi), the working load capacity of the piers would depend on the compressive strength of the rock.

For a 3-foot rock socket, we calculated the working load capacities for 36, 48, and 54-inch diameter piers using concrete compressive strengths ranging from 3,000 to 8,000 psi. The following table summarizes the working load capacities we calculated.

Pier Diameter (inches)	Compressive Strength of Concrete (psi)	Working Load Capacity (tons)
36	3000	200
	4000	210
	5000	220
	6000	235
	8000	250
48	3000	300
	4000	315
	5000	330
	6000	350
	8000	370
54	3000	380
	4000	405
	5000	420
	6000	435
	8000	450

These recommended working load capacities account for negative skin friction from the existing fill. These recommended working load capacities also include a safety factor of at least 3.0 against failure. We anticipate pier lengths ranging from 15 to 70 feet.

We recommend placing casing during installation of the piers to limit the potential for collapse in loose zones of the fill and to allow for inspection of the bearing strata at the pier bottom. Because of the presence of obstructions and potential pier lengths, telescoping techniques may be necessary to advance the casing during drilling.

Foundation subgrades on intact basalt bedrock should be relatively flat and free of loose rock and debris. We recommend that the bedrock be evaluated by drilling a minimum 2½-inch diameter hole to a minimum depth of 8 feet or 1.5 times the diameter of the pier, whichever is deeper. The probe hole should then be inspected by a qualified geotechnical engineer to check for the presence of voids, soft zones, or other conditions that may affect the performance of the pier. Probe holes should be drilled and inspected for each pier.

Uplift

Resistance to uplift for the drilled piers will be developed through side friction along the sides of the piers, primarily in the rock socket, and by the weight of the pier. Once design uplift loads are known, we can evaluate the uplift capacities for the drilled piers. For spread footings, we recommend installing pre-stressed rock anchors to resist uplift loads. Again, once design uplift loads are known, we can evaluate anchor lengths and capacities.

Concrete Slab-on-Grade Floors

After the building pad preparation has been completed, we anticipate slab subgrades will consist of existing fill or bedrock. We recommend over-excavating bedrock to provide a minimum 6-inch cushion of structural fill having less than 5 percent by weight passing a 200 sieve. This will reduce the potential for point loads to develop below the slabs. The aggregate base will minimize moisture transmission to the floor slab from the subgrade soils by creating a capillary break. Structural backfill in mechanical trenches should be compacted to a minimum of 95 percent of the modified Proctor maximum dry density (ASTM D 1557).

For a structural fill subgrade, we recommend using a subgrade modulus of 200 pounds per cubic inch per inch of deflection (pci) to design the slab. The aggregate cushion should be compacted to a minimum of 95 percent of the modified Proctor maximum dry density (ASTM D-1557).

For interior slabs, if floor coverings or coatings less permeable than the concrete slab will be used, we recommend placing a moisture vapor barrier beneath the slabs to prevent moisture migration through the slab. The barrier is commonly placed directly under the slab or beneath a thin cushion of clean coarse sand. Placement directly below the slab may contribute to "curling." To avoid this, many contractors prefer to place the vapor barrier under the sand cushion. However, placing the vapor barrier below the sand cushion risks trapping water between the vapor barrier and slab.

For slabs constructed over the existing fill soils, we recommend that they be designed as structural slabs supported by drilled piers using grade beams or tied into pier-supported columns.

Exterior Slabs

The silty sands at the site are considered to be moderately to highly frost-susceptible. If these soils become saturated and freeze, 1 to 2 inches of heave may occur. This heave may become a nuisance for slabs or steps in front of doors or at other critical grade areas adjacent to the building. One way to reduce this heave is to remove the frost-susceptible soils down to bottom-of-footing grade and replace them with non-frost-susceptible sand or sandy gravel. Sand or sandy gravel having less than 5 percent of the particles by weight passing a 200 sieve is considered to be non-frost-susceptible. An alternative would be to support the steps or slabs on frost depth footings. A void space of at least 4 inches should be provided between the bottoms of the steps/slabs and frost-susceptible soils to allow the soils to heave without affecting the steps/slabs.

Lateral Earth Pressures

The below-grade walls will retain low to significant amounts of soil. To prevent hydrostatic pressures from developing against the walls, we recommend using a free-draining granular material as backfill.

The equivalent fluid pressure used to design the walls will depend on the soil type used as backfill and whether the walls are designed to be flexible (allowed to move) or rigid (not allowed to move). We recommend using the following values for design.

Wall Type	Soil Type	Active Earth Pressure Coefficient (K_a)	At-Rest Earth Pressure Coefficient (K_o)	Equivalent Fluid Pressure (pcf)
Flexible	Sand/Sandy Gravel Fill	0.33		40
Rigid	Sand/Sandy Gravel Fill		0.45	55

For the sand and gravel fill soils, we assumed a unit weight of 120 pcf and an angle of internal friction of 33 degrees.

For passive pressures, we recommend using the following values for design.

Soil Type	Passive Earth Pressure Coefficient, K_p	Equivalent Fluid Pressure (pcf)
Sand or Sandy Gravel	3.40	400

Friction Coefficients

For mass concrete placed over the soils or bedrock, we recommend the following coefficients of friction against sliding:

Sands and Gravels: 0.45
Basalt Bedrock: 0.70

For concrete placed on a vapor barrier over sand soils, we recommend using a coefficient of friction against sliding of 0.40.

Utilities

Support soils for utilities will consist primarily of existing fill soils, or structural fill. It is our opinion that the native site soils will provide adequate support for utilities. If fill is encountered at proposed invert elevations, we recommend that it be evaluated for suitability for support of the utilities. Unsuitable soils should be removed and replaced with structural fill. Regarding trench wall support, the site soils are considered Type C soils according to Occupational Safety and Health Administration (OSHA) guidelines.

Backfill placed over the utilities should consist of a debris-free mineral soil. Soils from the trench excavation can be used as backfill above the pipe unless the trench will be used as a conduit for water. Backfill should be placed and compacted to a minimum of 95 percent of the modified Proctor maximum dry density. Compaction to 85 percent would be suitable in landscape areas.

Stormwater, Site Grading and Drainage

We recommend that the site be graded such that storm run-off water is directed away from the building and pavement areas to a storm water drainage system. We recommend that landscape areas be sloped a minimum of 6 inches within 10 feet of the building and that slabs be sloped a minimum of 2 inches. In addition, we recommend gutters and downspouts with long splash blocks or extensions.

Seismic Design Parameters

We recommend using an S_S coefficient of 0.33g for the project site per Figure 1615(1) in the 2000 edition of the International Building Code. An S_1 coefficient of 0.15g should be used for the project site per Figure 1615(2). The seismic coefficients are based on a soil site class D per Table 1615.1.1 of the International Building Code.

CONSTRUCTION RECOMMENDATIONS

Excavation Characteristics

The on-site fill soils can be excavated with standard soil excavation equipment. However, the site soils are very sensitive to disturbance, especially when wet. It may be necessary to use low ground pressure (tracked) equipment accomplish grading activities when wet soil conditions are encountered.

We recommend excavations greater than four feet deep be sloped no steeper than 1.5:1 (horizontal to vertical). Alternatively, deeper excavations may be shored or braced in accordance with OSHA specifications and local codes. The soils encountered are Type C soils according to OSHA guidelines.

Observations

We recommend that a geotechnical engineer observe all subgrades prior to placing fill or forms for footings to evaluate if the bearing soil or bedrock is suitable for support of the proposed structures and to evaluate whether the soil and/or bedrock conditions are consistent with the borings.

Structural Fill

Structural fill is defined as soil that is placed or moved on a site that will support any structural element including buildings, retaining walls, pavement or sidewalks. Structural fill includes the footprint area and 10 feet beyond the structural element. Non-structural fill is soil placed 10 feet beyond the structural element. Prior to placing structural fill, topsoil, organic material, and existing fill should be removed. The ground surface should be relatively level.

Structural fill should be placed in 6 to 8-inch-thick loose lifts at near optimum moisture content and compacted to at least 95 percent of the maximum dry density as determined by ASTM D-1557 (Modified Proctor). Non-structural fill should be placed in twelve-inch-thick, loose lifts and compacted to at least 85 percent of the maximum dry density as determined by ASTM D-1557 (Modified Proctor).

We recommend the structural fill consist of inorganic mineral soils (USCS classification GP, GW, GM, GC, SP, SW, SM, SC, ML, CL, or CL-ML). Structural fill should be free of organic matter, frozen soil and deleterious debris. Material with 15 percent or greater fines will need to be moisture conditioned to near optimum moisture content for compaction to be achieved. In wet weather or spring conditions, using fine grained soils for structural fill may delay construction and increase costs.

The on-site silts, silty to poorly-graded sand, and gravel soils can be used as structural fill provided particles larger than six inches and all debris are removed. The site soils which will be re-used as backfill or fill may be wet of the optimum moisture content. These soils may require drying to achieve adequate compaction.

Testing

We recommend in-place density tests be performed on all fill placed to verify that adequate compaction has been achieved. We recommend at least one test for every 2,500 square feet in the building areas for each foot of fill placed. We recommend at least one test for every 100 cubic yards of fill placed in the parking and drive areas with at least one test for every 2 feet of fill placed. At least one density test should be taken for every 100 feet of trench at vertical intervals not exceeding 2 feet.

Cold Weather Construction

If site grading and construction are anticipated during cold weather, we recommend that good winter construction practices be observed. All snow and ice should be removed from excavated and fill areas prior to additional earthwork or construction. No fill, footings, or slabs should be placed on soils which have frozen or contain frozen material. Frozen soils should not be used as backfill or fill.

Additional Services Recommended

We recommend that ALLWEST Testing & Engineering be retained to review the final plans and specifications for the project prior to construction. Also, we should be retained to provide construction monitoring to verify the soil/bedrock and geologic conditions and that the report recommendations are incorporated into the actual construction. Compaction testing should be performed by an experienced engineering technician at the time of construction to verify the recommended levels of compaction are achieved. Bearing strata evaluations should be performed by a qualified geotechnical engineer or senior level engineering technician. If we are not retained to provide the recommended plan review and construction monitoring services, we cannot be responsible for soil engineering related construction errors or omissions.

EVALUATION LIMITATIONS

The analyses and recommendations submitted in this report are based on the data obtained from the borings performed at the locations indicated on the Boring Location Map in Appendix A. It should be recognized that the explorations performed for this evaluation reveal subsurface conditions only at discreet locations across the project site and that actual conditions in other areas could vary. Furthermore, the nature and extent of any such variations would not become evident until additional explorations are performed or until construction activities have begun. If significant variations are observed at that time, we may need to modify our conclusions and recommendations contained in this report to reflect the actual site conditions.

This report has been prepared to assist the design and construction of the proposed residential/commercial development located at 819 West Broadway Avenue in Spokane, Washington. This report is for the exclusive use of the addressee and the copied parties for use in design of the proposed project and preparation of construction documents. In the absence of our written approval, we make no representations and assume no responsibility to other parties regarding this report. The data, analyses, and recommendations may not be appropriate for other structures or purposes. We recommend that parties contemplating other structures or purposes contact us.

Our services consist of professional opinions and conclusions made in accordance with generally accepted geotechnical engineering principles and practices. This acknowledgement is in lieu of all warranties either expressed or implied.

PROFESSIONAL ACKNOWLEGEMENT

This report was prepared by me or under my direct supervision and I am a duly registered engineer under the laws of the State of Washington.

Paul T. Nelson, P.E.
Senior Geotechnical Engineer

PAUL T. NELSON
STATE OF WASHINGTON
37228
REGISTERED
PROFESSIONAL ENGINEER
12-5-05
EXPIRES: 11-24-07

APPENDIX A
SITE LOCATION MAP,
BORING LOCATION MAP,
BEDROCK ELEVATION CONTOUR MAP

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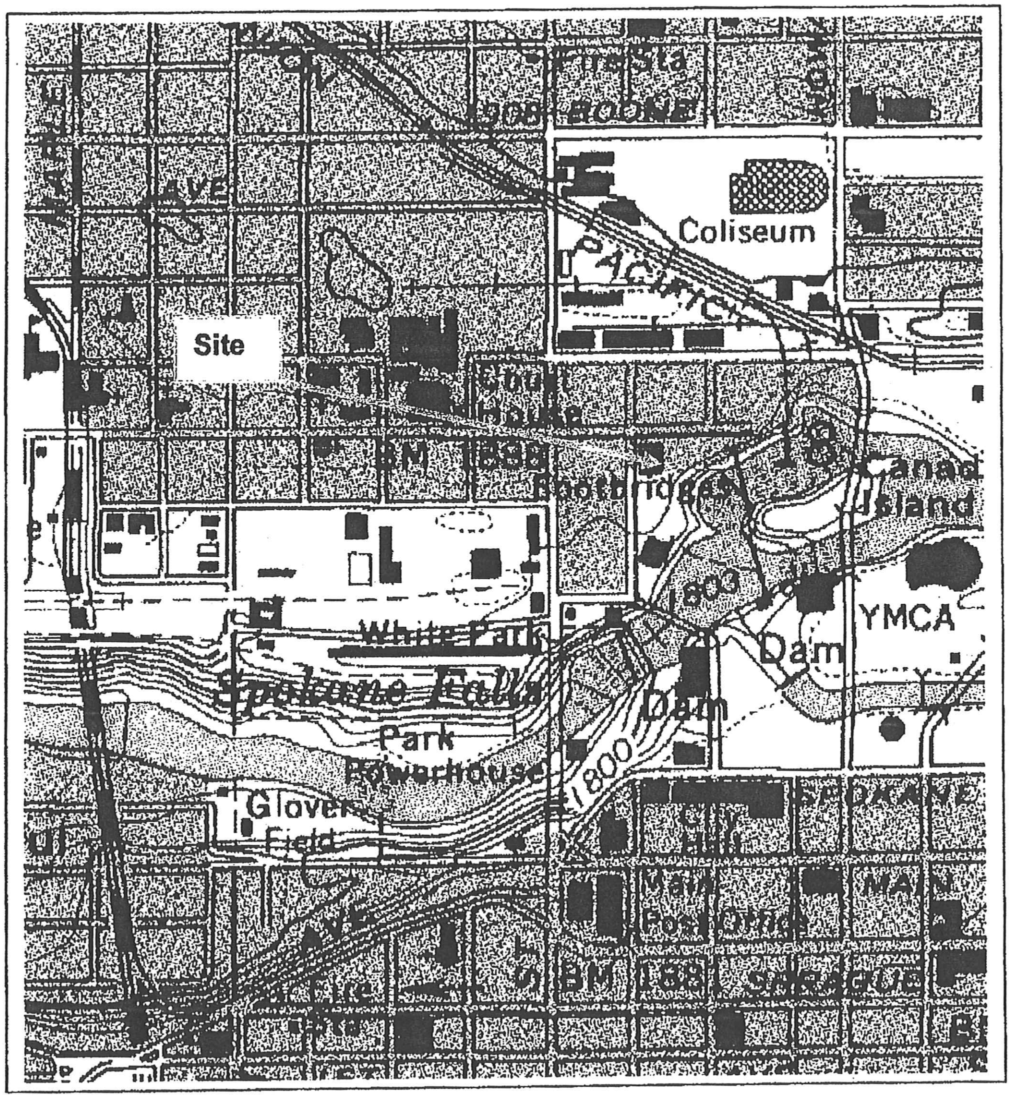
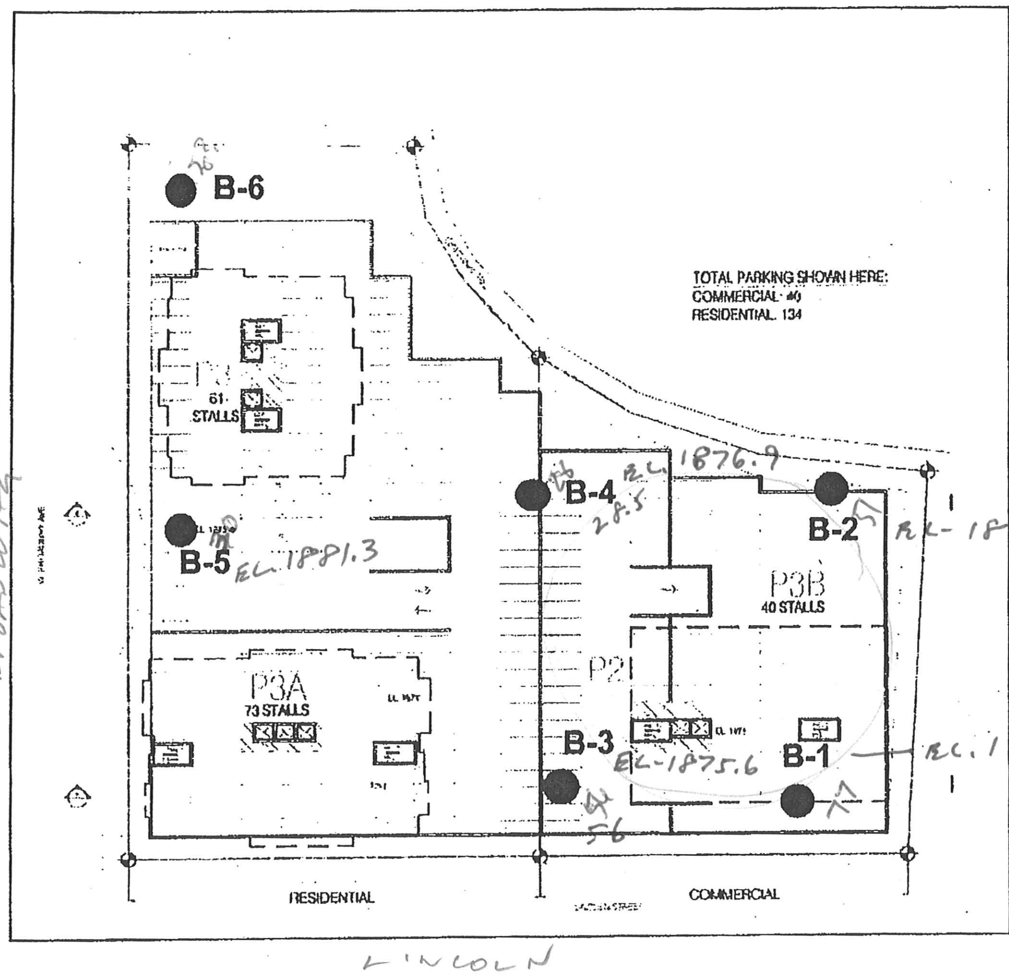
Figure 1



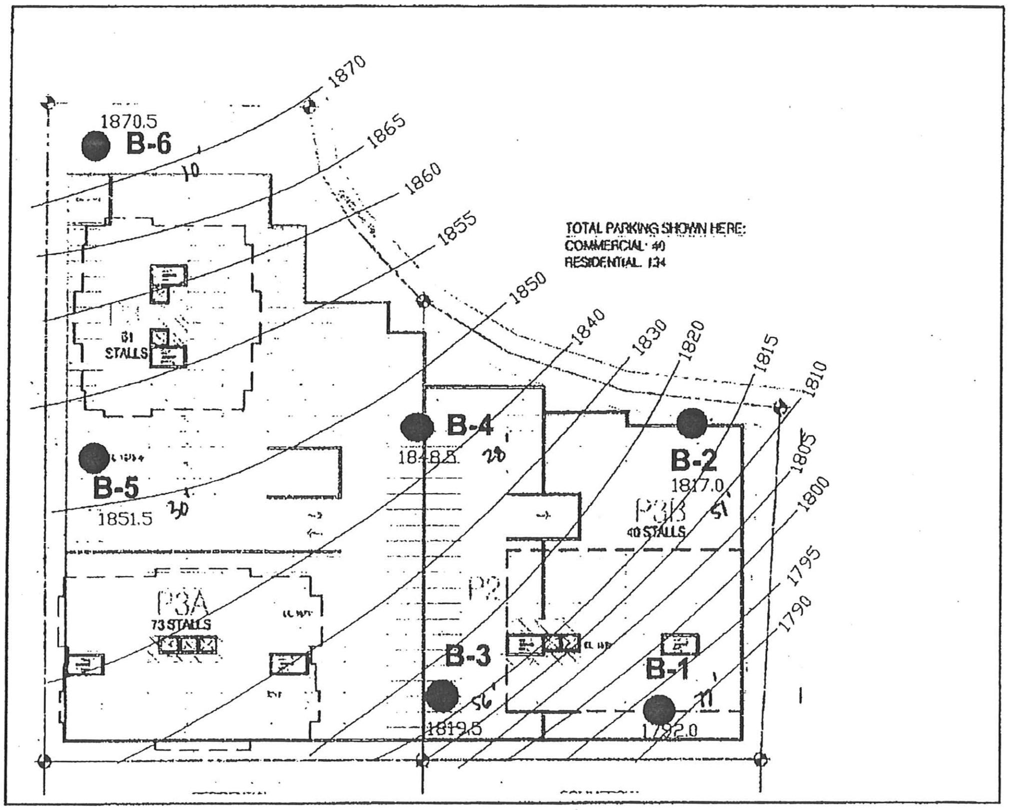
	Site Location Map	
Designed By: PTN	Proposed Residential/Commercial Project	Project 205-140G
ALLWEST Materials Testing • Geotechnical Engineering	819 West Broadway, Spokane, WA	December 1, 2005

Figure 2



	Boring Location Map	
Designed By: PTN	Proposed Residential/Commercial Project	Project 205-140G
ALLWEST Materials Testing • Geotechnical Engineering	819 West Broadway, Spokane, WA	December 1, 2005

Figure 3



	Bedrock Elevation Contours	
Designed By: PTN	Proposed Residential/Commercial Project	Project 205-140G
ALLWEST Materials Testing • Geotechnical Engineering	819 West Broadway, Spokane, WA	December 1, 2005

APPENDIX B
LOG OF BORING/ROCK CORING SHEETS, UNIFIED SOIL CLASSIFICATION SYSTEM

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LOG OF BORING/ROCK CORE

ALLWEST
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PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-1 LOCATION: See Attached Sketch DATE: 10/18/05 SCALE: 1" = 5'

Elev. 1869.2	Depth 0.0	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1869.0	0.2		ASPHALT PAVEMENT						
1863.2	6.0	FILL	FILL, Poorly-Graded Sand with Gravel, medium to coarse grained, mixed with minor amounts of glass, metal, cable, etc., with cobbles below 3 feet, brown, moist.	11					
1852.2	17.0	FILL	FILL, Poorly-Graded Gravel with Silt and Sand, fine to coarse grained, mixed with asphalt dark brown-black, moist.	* 18					*50 for 6 inches.
1842.2	27.0	FILL	FILL, Silty Gravel with Sand, fine to coarse grained, with cobbles and boulders, mixed with Silt, gray, moist.						
1839.2	30.0	FILL	FILL, Poorly-Graded Gravel with Sand, fine grained, with concrete and asphalt, brown to black, moist.						
1836.2	33.0	FILL	FILL, Silt, ash, mixed with glass and red-brown to buff Lean Clay, a trace of Gravel, wet.						
1831.2	38.0	FILL	FILL, Poorly-Graded Gravel with Sand, coarse grained, with cobbles, brown to gray, moist.						
			FILL, Poorly-Graded Gravel						

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE (CONT)

ALLWEST
Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-1 LOCATION: See Attached Sketch DATE: 10/18/05 SCALE: 1" = 5'

Elev. 1830.1	Depth 39.1	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1820.2	49.0	FILL	with Sand, fine to coarse grained, with large Basalt boulders at 43 to 49 feet, red-brown to brown and gray, moist.						
1796.2	73.0	FILL	FILL, Poorly-Graded Gravel with Sand, fine to coarse grained, with large Basalt boulders at 67 to 73 feet, mixed with asphalt and concrete and wood, brown to gray.						
1792.2	77.0	GP	POORLY-GRADED GRAVEL WITH SAND, fine to coarse grained, gray, moist. (Alluvium)						
			BASALT, fine grained, with		1	4.0	100	32	

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE (CONT)

ALLWEST Materials Testing - Geotechnical Engineering

PROJECT: **Project No. 205-140G**
Geotechnical Evaluation
YWCA Site
819 West Broadway
Spokane, Washington

BORING/CORING: B-1

LOCATION:
See Attached Sketch

DATE: **10/18/05**

SCALE: **1" = 5'**

Elev. 1791.1	Depth 78.1	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
		Rx	minor calcite-filled vugs, highly fractured, gray. (Possible Grand Rhonde Basalt)		2	2	100	100	
1786.2	83.0								
			End of boring. Boring then grouted to the surface.						

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE

ALLWEST
Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-2 LOCATION: See Attached Sketch DATE: 10/27/05 SCALE: 1" = 5'

Elev. 1868.1	Depth 0.0	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1868.0	0.1		ASPHALT PAVEMENT.						
		FILL	FILL, Silty Sand with Gravel, fine to coarse grained, with large boulders, mixed with asphalt, concrete, brick, glass, ash, etc., brown to dark brown, moist.	15					
				*					*50 for 5 inches. (Set)
1838.1	30.0		FILL, Silty Sand with Gravel, fine to medium grained, mixed with ash, brick, metal, etc., brown to black, moist.	12					

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE (CONT)

ALLWEST
Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-2 LOCATION: See Attached Sketch DATE: 10/27/05 SCALE: 1" = 5'

Elev. 1829.0	Depth 39.1	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
		FILL		7					
1817.1	51.0			*					*50 for 2 inches. (Set)
		Rx	BASALT, fine grained, with minor calcite-filled vugs, with horizontal to sub-horizontal fractures, with vertical fractures from 56.5 to 58.5 feet, gray.** (Grand Rhonde Basalt)		1	5	100	75	** @ 53 feet: Qu= 21,066 psi
					2	5	95	62	
					3	5	100	100	
1802.1	66.0								
			End of Boring. Boring then grouted to the surface.						

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE

ALLWEST Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-3 LOCATION: See Attached Sketch DATE: 10/25/05 SCALE: 1" = 5'

Elev. 1875.6	Depth 0.0	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1875.3	0.3		ASPHALT PAVEMENT.						
		FILL	FILL, Poorly-Graded Sand with Silt, fine to medium grained, a trace of Gravel, mixed with brick, cobbles and boulders, dark brown to gray-brown, moist.	7					
				11					
				8					
				8					
				*					*50 for 5 inches. (Set)

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE (CONT)

ALLWEST Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-3 LOCATION: See Attached Sketch DATE: 10/25/05 SCALE: 1" = 5'

Elev. 1836.5	Depth 39.1	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1835.6	40.0	FILL	FILL, Silty Sand with Gravel, fine to medium grained, with cobbles and boulders, mixed with brick, glass, ceramics, etc., dark brown to dark gray.	** 18					**50 for 5 inches. (Set)
1819.6	56.0	Rx	BASALT, fine grained, with minor calcite-filled vugs, with horizontal to sub-horizontal fractures, gray.*** (Grand Rhonde Basalt)		1	5	100	80	@ 58 feet: Qu= 11,029 psi
					2	5	100	77	
					3	5	100	100	
1804.6	71.0		End of boring. Boring then grouted to the surface.						

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE

ALLWEST
Materials Testing • Geotechnical Engineering

PROJECT:	Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-4 LOCATION: See Attached Sketch DATE: 10/24/05	SCALE: 1" = 5'

Elev. 1876.9	Depth 0.0	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1876.6	0.3		ASPHALT PAVEMENT.						
		fill	FILL, Silty Sand with Gravel, medium to coarse grained, mixed with Silty Gravel, a trace of cobbles and boulders, dark brown, moist.	39					
1868.9	8.0	FILL	FILL, Poorly-Graded Gravel, fine to coarse grained, with seams of Silty Sand with Gravel, mixed with cobbles and boulders, gray, moist.	14 11					
1848.4	28.5	Rx	BASALT, fine grained, with minor calcite-filled vugs, with horizontal to sub-horizontal fractures, gray. (Grand Rhonde Basalt)		1	5	100	82	
					2	5	100	100	

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE (CONT)

ALLWEST Materials Testing • Geotechnical Engineering

PROJECT: Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-4 LOCATION: See Attached Sketch DATE: 10/24/05 SCALE: 1" = 5'

Elev. 1837.8	Depth 39.1	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
					3	5	100	100	
1833.4	43.5								
			End of boring. Boring then grouted to the surface.						

(See Report and Standard Plates for elevation and descriptive terminology.)

LOG OF BORING/ROCK CORE

ALLWEST
Materials Testing • Geotechnical Engineering

PROJECT:	Project No. 205-140G Geotechnical Evaluation YWCA Site 819 West Broadway Spokane, Washington	BORING/CORING: B-5 LOCATION: See Attached Sketch DATE: 10/19/05 SCALE: 1" = 5'

Elev. 1881.3	Depth 0.0	ASTM D2487 Symbol	Description of Materials	N	Run No.	Core Length	Recovery (%)	RQD %	Tests or Notes
1881.1	0.2		ASPHALT PAVEMENT.						
		FILL	FILL, Poorly-Graded Gravel with Sand, medium to coarse grained, with cobbles and large boulders, mixed with wood waste, gray, moist.	32					
1851.3	30.0	Rx	BASALT, fine grained, with minor calcite-filled vugs, with horizontal to sub-horizontal fractures, gray.* (Grand Rhonde Basalt)		1	5	90	73	* @ 32 feet: Qu= 29,090 psi
					2	5	100	93	

(See Report and Standard Plates for elevation and descriptive terminology.)