RENTON HIGHLANDS LIBRARY

100% SCHEMATIC DESIGN PROJECT REPORT

MARCH 2, 2012

THA
ARCHITECTURE
INC

PROJECT DESCRIPTION

10 PROJECT DESCRIPTION
1010 PROJECT SUMMARY

1020 PROJECT PROGRAM
1030 EXISTING CONDITIONS
1040 OWNER'S WORK

20 PROPOSAL, BIDDING, AND CONTRACTING
2010 DELIVERY METHOD
2020 QUALIFICATION REQUIREMENTS
2040 BID REQUIREMENTS
2050 CONTRACTING REQUIREMENTS

30 COST SUMMARY
3010 ELEMENTAL COST ESTIMATE
3020 ASSUMPTIONS AND QUALIFICATIONS
3030 ALLOWANCES
3040 ALTERNATES
3050 UNIT PRICES

A. SUBSTRUCTURE

A10 FOUNDATIONS
A1010 STANDARD FOUNDATIONS
A1020 SPECIAL FOUNDATIONS
A1030 SLAB ON GRADE

A20 BASEMENT CONSTRUCTION
A2010 BASEMENT EXCAVATION
A2020 BASEMENT WALLS

B. SHELL

B10 SUPERSTRUCTURE
B1010 FLOOR CONSTRUCTION
B1020 ROOF CONSTRUCTION

B20 EXTERIOR ENCLOSURE
B2010 EXTERIOR WALLS
B2020 EXTERIOR WINDOWS
B2030 EXTERIOR DOORS

B30 ROOFING
B3010 ROOF COVERINGS
B3020 ROOF OPENINGS

C. INTERIORS

C10 INTERIOR CONSTRUCTION
C1010 PARTITIONS
C1020 INTERIOR DOORS
C1030 FITTINGS

C20 STAIRS
C2010 STAIR CONSTRUCTION
C2020 STAIR FINISHES

C30 INTERIOR
C3010 WALL FINISHES
C3020 FLOOR FINISHES
C3030 CEILING FINISHES

D. SERVICES

D10 CONVEYING
D1010 ELEVATORS AND LIFTS
D1020 ESCALATORS AND MOVING WALKS
D1030 OTHER CONVEYING SYSTEMS

D20 PLUMBING
D2010 PLUMBING FIXTURES
D2020 DOMESTIC WATER DISTRIBUTION
D2030 SANITARY WASTE
D2040 RAIN WATER DRAINAGE
D2050 CODES AND STANDARDS

D30 HEATING, VENTILATING, AND AIR CONDITIONING (HVAC)
D3010 DESIGN CRITERIA
D3020 CODES AND STANDARDS
D3040 HVAC DISTRIBUTION

D40 FIRE PROTECTION
D4010 SPRINKLERS
D4020 CODES AND STANDARDS

D50 ELECTRICAL
D5010 ELECTRICAL SERVICE AND DISTRIBUTION
D5020 FIRE ALARM SYSTEM
D5030 COMMUNICATIONS AND SECURITY
D5040 CODES AND STANDARDS

E. EQUIPMENT AND FURNISHINGS

E10 EQUIPMENT
E1010 COMMERCIAL EQUIPMENT
E1020 INSTITUTIONAL EQUIPMENT
E1030 VEHICULAR EQUIPMENT
E1090 OTHER EQUIPMENT

E20 FURNISHINGS
E2010 FIXED FURNISHINGS
E2020 MOVABLE FURNISHINGS

F. SPECIAL CONSTRUCTION AND DEMOLITION

F10 SPECIAL CONSTRUCTION

F1010 SPECAIL STRUCTURES
F1020 INTEGRATED CONSTRUCTION
F1030 SPECIAL CONSTRUCTION SYSTEMS
F1040 SPECIAL FACILITIES
F1050 SPECIAL CONTROLS AND INSTRUMENTATION

F20 SELECTIVE DEMOLITION
F2010 BUILDING ELEMENTS DEMOLITION
F2020 HAZARDOUS COMPONENTS ABATEMENT

G. BUILDING SITEWORK

G10 SITE PREPARATION
G1010 SITE CLEARING
G1020 SITE DEMOLITION AND RELOCATIONS
G1030 SITE EARTHWORK
G1040 HAZARDOUS WASTE REMEDIATION

G20 SITE IMPROVEMENTS
G2010 ROADWAYS
G2020 PARKING LOTS
G2030 PEDESTRIAN PAVING
G2040 SITE DEVELOPMENT
G2050 LANDSCAPING

G30 SITE CIVIL/MECHANICAL UTILITIES
G3010 WATER SUPPLY
G3020 SANITARY SEWER
G3030 STORM SEWER
G3040 HEATING DISTRIBUTION
G3050 COOLING DISTRIBUTION
G3060 FUEL DISTRIBUTION
G3070 OTHER SITE MECHANICAL UTILITIES

G40 SITE ELECTRICAL UTILITIES
G4010 ELECTRICAL DISTRIBUTION
G4020 SITE LIGHTING
G4030 SITE COMMUNICATIONS AND SECURITY
G4040 OTHER SITE ELECTRICAL UTILITIES

G50 OTHER SITE CONSTRUCTION
G5010 SERVICE TUNNELS
G5020 OTHER SITE SYSTEMS

Z. GENERAL

Z10 GENERAL REQUIREMENTS
Z1010 ADMINISTRATION
Z1020 QUALITY REQUIREMENTS
Z1030 TEMPORARY FACILITIES
Z1040 PROJECT CLOSEOUT
Z1050 PERMITS, INSURANCE, AND BONDS
Z1060 FEE

F20 CONTINGENCIES
Z2010 DESIGN CONTINGENCY
Z2020 ESCALATION CONTINGENCY
Z2030 CONSTRUCTION CONTINGENCY

Z. GENERAL

Z10 GENERAL REQUIREMENTS

10 PROJECT DESCRIPTION

1010 PROJECT SUMMARY
The project consists of the construction of a new 14660 sf Library to be constructed on a concrete deck provided by Colpits Development. This deck is above two levels of parking constructed by Colpits. The second parking level will be sold as a condominium to the City of Renton for parking for the Library. The mechanical and electrical service rooms for the Library are located in the parking garage. A stair and elevator connect the parking garage with the library above. A fire stair and a trash room for the library are located in the first floor of the adjacent rental housing development.

1020 PROJECT PROGRAM
The project program is per the Building Program report prepared by KCLS Dated Dec 2011.

1030 EXISTING CONDITIONS
The site is currently occupied by 2 story multifamily housing units built in the 1940s.

1040 OWNER'S WORK
The owner's work includes the provision of all non fixed items including all tables, platforms, shelving, equipment and furnishings in the library.

20 PROPOSAL, BIDDING, AND CONTRACTING

2010 DELIVERY METHOD

2020 QUALIFICATION REQUIREMENTS
Not applicable

2040 BID REQUIREMENTS
Not applicable

2050 CONTRACTING REQUIREMENTS

30 COST SUMMARY

3010 ELEMENTAL COST ESTIMATE

3020 ASSUMPTIONS AND QUALIFICATIONS
Not applicable

3030 ALLOWANCES

3040 ALTERNATES
#1 : Provide Vegetative roof at 2 low roof areas
#2 : Provide cistern and associated piping per plumbing drawings. The cistern will provide rainwater for toilet flushing.

40 LEED
The project is NOT seeking LEED certification.

A. SUBSTRUCTURE

A10 FOUNDATIONS

A1020 SPECIAL FOUNDATIONS
For the purpose of this project, the foundation consists of the parking structure below that will be designed by others. The parking structure will consist of concrete shear/basement walls around the exterior/perimeter, and concrete columns supporting a post-tensioned slab at the interior.

A1030 SLAB ON GRADE
Interior slab on grade will not occur within this scope of work.

A20 BASEMENT CONSTRUCTION

Basement construction is by others.

B. SHELL

B10 SUPERSTRUCTURE

B1010 FLOOR CONSTRUCTION
The interior floor will consist of a post-tensioned slab supported by perimeter concrete walls and interior concrete columns. The design of the floor system superstructure is by others.

A 3 inch topping slab will be placed over the structural slab. The topping slab will provide the finish surface over much of the area, as well as contain radiant heat tubing. Control/construction joints will occur at 12 inches on center, and the slab will be reinforced with a 6x6 W2.9xW2.9 welded wire fabric.

B1020 ROOF CONSTRUCTION

High Roof: The high roof will consists of long-span wide flange girder or open-web joist girders supporting wide flange joists. The joists will support a 1.5" metal roof deck. The skylights will be framed with HSS 4x4 steel frames, equally spaced, that support 2x6 wood joists at 16 inches on center. The skylight roof deck will consist of 2 layers of ½ inch plywood.

Low Roofs: The low roofs will be framed with wide flange joists or open web steel joists, supported by wide flange girders. The joists will support a 1.5" metal roof deck.

The roof will be supported by steel columns and concrete shear walls. The steel columns will vary in size, and the concrete walls will be 8 inches to 10 inches thick. The steel columns will align with concrete columns in the garage below, or will be supported by the perimeter concrete walls. Due to the concrete column location in the garage, the structural steel columns will be spaced a fair distance apart and accordingly the roof girders will be relatively large. In most situations, the concrete walls will be positioned over the perimeter basement walls. The

concrete wall along Grid 1 will be supported by a concrete transfer girder framed within the floor framing.

B20 EXTERIOR ENCLOSURE

B2010 EXTERIOR WALLS / FLOORS

Exterior wall types:

WD SIDING 1: walls to be composed of:

- one layer painted GBD.on mtl framing
- cast in place conc wall (ref structural)
- waterproof membrane (Blueskin SA, Protecto Wrap, or CCW-705),
- 3" insulation (2 la 1 ½" PolyIsocyanuate (Thermax) with staggered joints
- vertical mtl furring
- Rysysta exterior lap siding. http://www.resysta.com/

WD SIDING 2: walls to be composed of:

- one layer painted GBD.on mtl furring
- cast in place conc wall (ref structural)
- waterproof membrane (Blueskin SA, Protecto Wrap, or CCW-705)
- 3" insulation (2 la 1 ½" PolyIsocyanuate (Thermax) with staggered joints)
- Vertical mtl furring
- Rysysta exterior lap siding. http://www.resysta.com/

CLAY TILE SYS-1 - walls to be composed of:

- one layer painted GBD
- mtl framing
- one layer of gyp sheathing
- waterproof membrane (Blueskin SA, Protecto Wrap, or CCW-705)
- 3" insulation (2 la 1 ½" PolyIsocyanuate (Thermax) with staggered joints)
- Cladding support system by Terracotta manufacturer (with minimal thermal bridges)
- flat, double-skin, terracotta panels.(Basis of Design is NBK Ceramic, Terrart-Mid, 1 ¼" thick hollow core panel)

CLAY TILE SCREEN - Terracotta sunscreen tubes.

- Basis of Design is NBK Ceramic, Terrart-Baguette 2" x 2" square profile.

MTL SIDING 1: walls to be composed of:

- one layer painted GBD
- mtl framing
- one layer of gyp sheathing
- waterproof membrane (Blueskin SA, Protecto Wrap, or CCW-705)
- 3" insulation (2 la 1 ½" PolyIsocyanuate with staggered joints)
- Vertical mtl furring and cladding support system
- Zinc standing seam panels

WALL BETWEEN LIBRARY AND APARTMENT BUILDING

- 2 La GBD,
- mtl framing,
- 1 la gyp sheathing,
- 3" insulation (2 la 1 ½" Polylsocyanuate (Thermax) with staggered joints)
- 3" airspace
- Wall by others

CONC WALL-1: Cast in place concrete, stained to match terracotta

LIBRARY FLOOR / PARKING LOT CEILING

- 3 " concrete topping slab
- Post tensioned concrete structural slab (ref structural)
- 2" insulation (Polylsocyanuate (Thermax))
- 2" Icynene spray on insulation.

B2020 EXTERIOR WINDOWS

MTL WDW SYS-1 : Basis of design is Kawneer 1600 Wall System 1, Aluminum window system.

MTL CANOPY : Zinc Panel on mtl framing.

MTL SUNSCREEN SYS-1 :
Stainless Steel mesh, Western Wire "Double Shot/flat top warp" on metal frame support.

B2030 EXTERIOR DOORS

Main Entry and Vestibule doors: Exterior manual swing Aluminum doors with full lites. Basis of design is Kawneer 500 wide stile.

Exterior Door (North Side): Exterior manual swing Aluminum doors with full lite. Basis of design is Kawneer 500 wide stile.

Exterior Door (Trash Room): overhead coiling door.

Exterior Door (exit stair): Insulated Steel Door with Hollow metal frame.

Overhead garage doors in parking lot (2): Motorized overhead coiling door.

B30 ROOFING

B3010 ROOF COVERINGS:

RFG SYS 1 :

- mtl deck (ref structural)
- thermal barrier
- Hot, fluid applied, rubberized asphalt membrane by American Hydrotech, Henry, Carlisle or Sarnafil

- R50 Insulation (Extruded Polystyrene XPS)
- Rock Ballast

VEG RFG SYS-1 : Vegetative Roofing system. Add Alt @ low roofs only

- mtl deck (ref structural)
- thermal barrier
- Hot, fluid applied, rubberized asphalt membrane by American Hydrotech, Henry, Carlisle or Sarnafil
- R50 Insulation (Extruded Polystyrene XPS)
- Soil and plants

MTL RFG SYS 1 :

- Plywood roof deck (ref structural)
- Hot, fluid applied, rubberized asphalt membrane by American Hydrotech, Henry, Carlisle or Sarnafil
- R50 Insulation (Extruded Polystyrene XPS)
- Standing seam zinc

B3020 ROOF ACCESSORIES

INTERIORS

C10 INTERIOR CONSTRUCTION

C1010 PARTITIONS

General wall type recommendations are given below by room use. Where two different room types are adjacent to each other, use the higher numbered wall type. All walls should be run to deck unless otherwise specified.

Private Office/ work room / staff area walls:

Wall Type 1: STC 50 : 2 layers of 5/8" GWB || 3-5/8” mtl stud, 25 ga || fiberglass insulation || 1 layer of 5/8" GWB
(walls to be constructed to underside of structure)

Bathrooms: between bathrooms and main library
Wall Type 1: STC 50 : 2 layers of 5/8" GWB || 3-5/8” mtl stud, 25 ga || fiberglass insulation || 1 layer of 5/8" GWB
(walls to be constructed to underside of structure)

Wall between office/staff area and main library
Wall Type 2: STC 50 : 2 layers of 5/8" GWB || 6” mtl stud, 20 ga || fiberglass insulation || 1 layer of 5/8" GWB

(walls to be constructed to underside of structure)

Wall between meeting room and library open area:
Wall Type 2, STC-50. 2 layers of 5/8" GWB || 6” mtl stud, 20 ga || fiberglass insulation || 1 layer of 5/8" GWB

Wall between study and quiet

Wall Type 3: STC 55 : 2 layers of 5/8" GWB || 3-5/8” mtl stud, 25 ga || fiberglass insulation || 2 layer of 5/8" GWB

C1020 INTERIOR DOORS

- Typical interior doors: 1-3/4" thick stile and rail, custom grade, with inset flush revealed panels. Hardwood stile and rail with wood veneer panels. Clear finish doors in welded and painted hollow metal frames with relites.

  Doors to Storage and Servery in Meeting room: Solid core with wood veneer.

  Doors between Meeting room and Open Library and Meeting room and Children's: Floor to Ceiling Frameless Partition System will integrate a ½-inich thick tempered sliding frameless glass door..

  Door between Exit Corridor and stair #2 : painted hollow metal with welded and hollow metal frames. 90 min rating

  Door between Stair #2 and Trash (2) : painted hollow metal with welded and hollow metal frames. 90 min rating

  Door between Stair 1 and garage: painted hollow metal with welded and hollow metal frames. 90 min rating

  Garage Mechanical, Elec. Room and elev. Machine Rm doors: painted hollow metal with welded and hollow metal frames.

C20 STAIRS

C2010 STAIR CONSTRUCTION

Stair # 1 : Steel stair with bent plate risers and pan, polished concrete treads (200 grit) and cold rolled horizontal bar guardrail and stainless steel handrail. All steel to be sandblasted and painted.

Stair # 2 : contractor designed with steel stringers and steel guardrails with vertical bar pickets with painted finish. The treads shall be poured concrete in a metal pan, with inset contrasting nosing.

C30 INTERIOR

C3010 WALL FINISHES

- Typical: painted, smooth finish (Level 4) gypsum wallboard. Latex eggshell paint. 4" painted wood base.
- Main high space : WD SCREEN SYS : Wood-backed panel grille over 1" black ductliner. Wood blades to be 1" thick, 2" deep with 6 blades per foot. Basis of design is Rulon or 9 Wood, wood backed panel grille. (Note: custom cross members to be designed in Design Development Phase)
- Ceramic tile thinset on water resistant gypsum board in toilet rooms
- Community Meeting Room: painted, smooth finish (Level 4) gypsum wallboard. Latex eggshell paint. 4" painted wood base.

C3020 FLOOR FINISHES

- Open Library Area and Children : 70% floor area to be carpet tile. 30% to be exposed polished concrete (200 grit).

- Exposed polished Concrete (200 grit).@ Vestibule with In set Walk-off mat at main entry doors
- Ceramic tile at all bathrooms.
- Carpet tile @ Meeting room, Study rooms, Quiet room, Teen and Private office.
- Linoleum @ break room, janitor, and all storage rooms.
- Rubber cork flooring @ Staff area. Basis of design is Capri Cork, color: “raisin”.

C3030 CEILING FINISHES

- Painted gypsum wallboard ceilings in all toilet rooms, storage rooms, janitor room, and other service areas. See plans for locations
- ACT-1 Armstrong Ultima 2’ X 2’ acoustical ceiling tile at staff area. See plans for locations.
- ACT-2 : Armstrong Optima 2’ X 8’ acoustical panels with Gyp. bd surround at Meeting room, Study Rooms and Quiet Room, See plans for locations.
- WD SCREEN CLG SYS: Wood-backed panel grille over 1” black ductliner. Wood blades to be 1” thick, 2” deep with 6 blades per foot. Basis of design is Rulon or 9 Wood, wood backed panel grille. (Note: custom cross members to be designed in Design Development Phase)
- Curved Painted Gypsum wall board at ceiling of (3) Roof monitors. Ref. Plan

D. SERVICES

D10 CONVEYING

D1010 ELEVATORS AND LIFTS: Elevator: Kone, Ecospace 2000 lb two stop elevator.

D20 PLUMBING

D2010 PLUMBING FIXTURES

All fixtures will be selected for low flow water consumption and per KCLS standards. A Plumbing Fixture Schedule will be included in the drawings for specific basis of design information for each fixture type during the Design Development phase.

D2020 DOMESTIC WATER DISTRIBUTION

Water will be supplied to the toilet rooms and other spaces. The domestic water service will be provided with a reduced pressure principle backflow prevention device.
A new domestic water service to the building will be provided and the service size is anticipated to be 2-inches. A fire sprinkler system will be provided to the building which will require a new 4-inch fire service line.
Inside the building and at the water service entrance, domestic hot and cold water piping will be type L copper tube with wrought copper fittings and soldered joints. The solder will be lead-free, 95-5 type solder.
Domestic hot water for the restrooms, custodian sink, and other fixtures will be supplied from an electric water heater located in the mechanical room. Domestic hot water will be circulated using a small circulation pump that will operate only during occupied hours.

D2030 SANITARY WASTE

A new sanitary sewer service to the building will be provided; the location is yet to be determined. The service size will be 6-inches.
These systems will be designed in accordance with the Uniform Plumbing Code for gravity flow. Soil, waste and vent lines will be sized per UPC using good engineering practice.

Sanitary waste and vent piping above and below ground will be service weight hubless cast iron pipe. Couplings for below ground installation shall be cast-iron and above ground shall be heavy duty stainless steel couplings.

D2040 RAINWATER DRAINAGE

A complete roof drainage and overflow system is not expected. An additive alternate for a rain-water harvesting system with associated 2,500 gallon storage tank, pumps and designated piping system is being considered.

D2050 CODES AND STANDARDS

This installation will comply with the following:

- 2009 Uniform Plumbing Code with Washington State Amendments
- City of Renton Codes and Amendments

D30 HEATING, VENTILATING, AND AIR CONDITIONING

D3010 DESIGN CRITERIA

Outdoor Design Conditions:

Summer:	89°F dry bulb (Puget Sound ASHRAE 0.1%)
	69°F wet bulb (Puget Sound ASHRAE 0.1%).
Winter:	20°F dry bulb (Puget Sound ASHRAE 0.2%)

D3020 CODES AND STANDARDS

The following codes and standards are applicable, in addition to any other local code requirements.

- 2009 International Building Code with Washington State Amendments
- 2009 International Mechanical Code with Washington Amendments
- 2009 Uniform Plumbing Code with Washington State Amendments
- 2009 Washington State Energy Code

D3030 INDOOR DESIGN CONDITIONS

Heating Setpoint: 70 deg F
Cooling Setpoint: 78 deg F
Relative Humidity: No specific control.
Air Pressure Relationships:

- Library, Meeting, and Work Areas: Generally ambient to positive compared to outdoors. Design to be +0.05" SP compared to ambient
- Restrooms: Negative to adjacent spaces.

Internal Load Densities for Cooling Load Design

Type of Space	**Lighting Watts/ft^2**	**Receptacle Load Watts/ft^2**	**Occupancy ft^2/person**
Library	1.3	0.5	50
Meeting Room	1.0	0.5	20
Offices	1.0	1.5	140
Work Room	1.0	1.5	140

Noise Criteria - Provide equipment, air distribution systems and air devices not to exceed the following NC (Noise Criteria) or RC (Room Criteria) levels (this

criteria will need to be confirmed with the project acoustical consultant in the design development phase):

Space	**Library**	**Meeting Rooms, Offices, and Work Rooms**	**Back of House**
Maximum NC or RC Level (Hertz)	NC / RC 30 (db)	NC / RC 35 (db)	NC / RC 40 (db)
31.5	-- / 55	-- / 60	-- / 65
63	57 / 50	60 / 55	64 / 60
125	47 / 45	53 / 50	57 / 55
250	41 / 40	46 / 45	51 / 50
500	35 / 35	40 / 40	45 / 45
1000	31 / 30	36 / 35	41 / 40
2000	29 / 25	34 / 30	39 / 35
4000	28 / 20	33 / 25	38 / 30
8000	27 / --	32 / --	37 / --

Building Envelope Assumptions for Cooling and Heating Design

- The building envelope will meet the Washington State Energy Code requirements either through the Prescriptive or Component Performance path. Prescriptive requirements as follows for Climate Zone 1:
  - Glazing: Low-e, insulated windows (0 to 40% glazing area)
    - U-value: 0.40
    - Solar Heat Gain Coefficient: 0.40
  - Exterior Facade:
    - Walls: R-21
    - Roofs: R-38
    - Slab on Grade: R-10

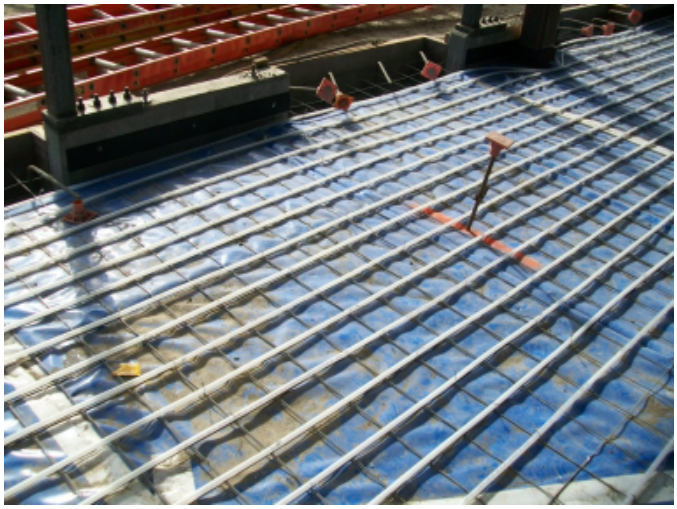
Ventilation Design Basis:

- Minimum Outside Air will be provided in accordance with ASHRAE 62.1 2007.
- Public Toilets: 2 cfm/ft2 (exhaust)

D3040 HVAC DISTRIBUTION

Option 1: Radiant floor slab heating and cooling.

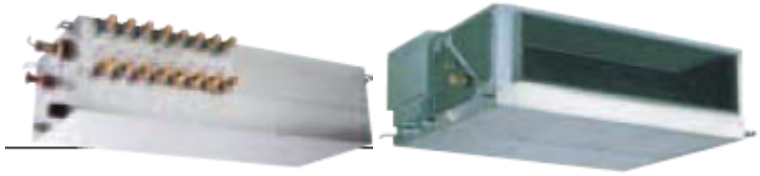
- Heating and cooling will be provided by a radiant floor. The radiant floor will utilize PEX tubing laid in the concrete slab in all areas and will be zoned in approximately six different zones. The main library area will be split into three zones, North, South, and Middle and there will be additional zones controlled by dedicated thermostats for the staff area, Meeting room, Teen area, Study/Quiet area, and Children's Area.



Radiant Floor PEX Tubing

- A Mitsubishi Variable Refrigerant Flow heat pump system will be utilized with refrigerant to water heat exchangers to generator heating and chilled water that will flow through the radiant floor. Four fan coils will be provided to augment the radiant floor and serve as a fast response for when a high occupancy space needs to react to a heating or cooling load faster than the radiant floor can. These fan coils will serve the meeting room, teen area, and Children's area. All the VRF systems will be connected by a BC Controller with refrigerant piping back to the outdoor heat pump units that will be located on the East low roof.

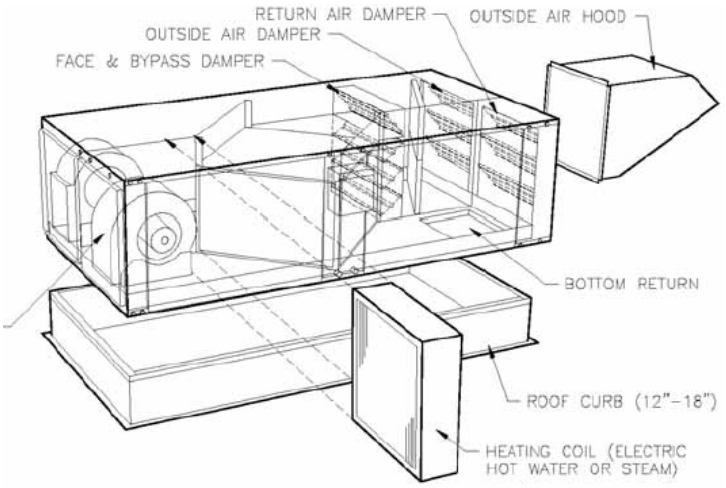
Refrigerant to Water Heat Exchanger and Outdoor Heat Pump Unit.



BC Controller and Indoor Fan Coil Unit.

- Ventilation air will be provided by a dedicated outdoor air system (DOAS) that will be provided with heat recovery. Two units will be used and one will be placed on each of the low roofs of the library. Each DOAS unit will have a fixed plate heat exchanger that will transfer the heat from the exhaust air to the incoming outdoor air which will temper the outdoor air and limit the amount of heating needed by the DOAS heating coil. The exhaust air from

the restrooms, janitors closets, and copy room will be exhausted by the DOAS units. A variable air volume (VAV) box will be provided to serve the Meeting room to modulate the amount of outdoor air needed based on a CO2 sensor located in the meeting room. VFD's will be provided on the supply and exhaust fans for the DOAS unit serving the meeting room to modulate the fans speed based on the modulation of the VAV box. All other spaces in the library will have the outdoor air delivered at a constant volume.



DOAS Unit

Option 2: Full VRF Heating and Cooling

- Radiant floor cooling systems require exposed concrete slabs in order to perform effectively and active slab surfaces can produce about 10 Btu per hour per square foot. High space cooling loads in spaces with large solar heat gains and/or requirements for partial or full carpeting may result in radiant floor cooling being problematic. In this case the radiant floor will be replaced with a traditional VRF system. Ceiling mounted fan coils will serve the same six zones of the library mentioned in Option 1, but extra fan coils will be needed to serve the larger main library space. The ventilation scheme will be the same as Option 1.
- Exhaust:
  - The main library restrooms, staff restroom, break room, copy room, and janitor closets will be served by the exhaust portion of the DOAS units. The restrooms will be exhausted at a rate of 2 CFM/SF to keep the restrooms negative to the adjacent library space.
  - Air ducts will be constructed to the following standards:
    - Supply and exhaust ductwork will be constructed in accordance with 1995 SMACNA construction, 1 inch pressure class, seal Class A.
- Acoustics:
  - As part of the design development, all of the mechanical systems will need to be reviewed by the acoustical consultant to ensure the desired noise and vibration levels throughout the building meet project requirements. Recommendations will be incorporated into the construction documents.
  - Critical items requiring acoustical evaluation include, but are not limited to, the following areas or systems: condensing units on the roof, DOAS units on the roof, and interior fan coils.

Miscellaneous HVAC Items:

- The following items are provided upon construction completion by the contractors:
  - Full maintenance brochures/manuals for all equipment and all controls, including Owner's operating instructions.
  - Full as-built shop drawings, complete temperature control drawings, complete equipment submittals and cut sheets.
  - Commissioning, testing and balancing of the mechanical systems.

D40 FIRE PROTECTION

D4010 SPRINKLERS

The building will be protected by a hydraulically calculated sprinkler system. The sprinkler system will be design build based on a performance specification.
A 4-inch water service to the building will be extended from a nearby water main.
A double check valve assembly will be installed to protect the water system from contamination. The check valve will be located outside of the building in an in-ground vault.
The wet system will have an alarm valve and associated trim. The valve will have addressable alarm and supervisory devices that will be monitored by the building fire alarm system.
A fire department connection will be located outside the building, connected to the system and will have a check valve.
All sprinkler systems shall be hydraulically calculated and the following minimum criteria will be used:

- Light Hazard: Library floor sprinkler system piping will be sized to deliver 0.10 gpm/sq. ft over an area of 1500 sq. ft. at the most hydraulically remote location.
- Ordinary Hazard Group 1: Mechanical spaces; piping will be sized to deliver 0.15 gpm/sq. ft. over 1500 sq. ft. at the most hydraulically remote location.

Sprinkler heads will be quick response standard spray upright or pendant type, chrome finish, with white escutcheon or similar as picked by the Architect.

D4020 CODES AND STANDARDS

NFPA 13, Installation of Sprinkler Systems, 2010 Edition.
NFPA 24, Private Fire Service Mains, 2010 Edition.

D50 ELECTRICAL

D5010 ELECTRICAL SERVICE AND DISTRIBUTION

Load Summary

- Preliminary Connected and Demand Loads are shown in the following table:

RENTON LIBRARY PRELIMINARY BUILDING LOADS

Renton Library Preliminary Connected/Demand Loads Calculations														
			Lighting				Receptacles				Mech Equipment			
Lv	Description	Area (sq. ft)	VA/ SF	kVA	Amps @ 208V	Amps @ 480V	VA/ SF	kVA	Amps @ 208V	Amps @ 480V	kVA	Dem.	Amps @ 208V	Amps @ 480V
1	Electrical/Comm Room	1200	1.0	1.2	3.33	1.44	3.0	3.6	10.00	4.33				
1	Mech Room	1200	1.0	1.2	3.33	1.44	3.0	3.6	10.00	4.33				
	Level 1 Totals	**2400**		2.4	6.67	2.89		7.2	20.00	8.66				
2	Library and Offices	14000	1.4	20.2	56.00	24.26	4.0	56.0	155.56	67.39				
	Level 2 Totals	**14000**		20.2	56.00	24.26		56.0	155.56	67.39				
	BLDG SF TOTAL (est.)	**16400**												
	Additional Loads													
	Largest Motor (Elev.)										30.0	1.25	104.17	45.13
	ACCU-1										11.0	1.00	30.56	13.24
	ACCU-2										11.0	1.00	30.56	13.24
	AHU-1										12.0	1.00	33.33	14.44
	AHU-2										12.0	1.00	33.33	14.44
												1.00	0.00	0.00
												1.00	0.00	0.00
												1.00		0.00
SWBD Grand Totals (Connected)				22.6	62.67	27.15		63.2	175.56	76.05	76.0		127.78	100.48
SWBD Grand Totals (Demand)				28.2	78.33	33.94		36.6	101.67	44.04	76.0		127.78	100.48

RENTON LIBRARY PRELIMINARY BUILDING LOAD TOTALS:

Total kVA	Total Amps @ 208V	Total Amps @ 480V
161.76	449.33	194.66
140.80	391.11	169.43

Puget sound energy service

- The Main Electrical Room for the Renton Library will be fed from the proposed pad-mount PSE Utility Transformer. Location to be coordinated with PSE. The secondary side of the proposed pad-mount transformer to feed the Main Electrical Room is 208Y/120V, 3-phase, 4-wire.

Main Electrical Service

- The Main Electrical Room for the Renton Library will be located in the corner of the Garage Level. It will be provided with a service entrance rated Main Switchboard.
- The building will be served by a PSE Meter and a service-entrance rated Main Switchboard rated 600A, 120/208V. A 600A service busway will extend from the PSE pad-mount utility transformer to the PSE Service Meter, and from the PSE Service Meter to the Main Switchboard. A PSE Service Meter will be provided per PSE requirements. The Main Switchboard will be mounted on a 4” house keeping pad, front accessible, with rear connected, group mounted circuit breakers.
- Acceptable Manufacturers: Cutler Hammer-Westinghouse, General Electric, Siemens or Square D/Groupe Schneider.

Secondary Distribution

- Electrical power will be distributed at 120/208V, 3 phase, 4 wire. Depending upon the electrical requirements, Roof Top mechanical equipment will be provided with a dedicated feeder to each unit from the main switchboard.
  - The main service switchboard will consist of a utility pull section, a utility metering/main circuit breaker section and 208V feeder/branch circuit breaker section.
  - Disconnect switches: Heavy duty, horsepower rated, quick-make, quick-break, dead-front type. Self-contained unit in a NEMA 1 enclosure (NEMA 3R where installed outdoors).
  - Panel-boards: Corrosion resistant galvanized (zinc finished) sheet steel. Fronts shall be cold rolled steel, finish coated with ANSI 61 gray enamel over a rust inhibitor. Bus bars shall be copper or aluminum, full size neutral bus. Provide an equipment ground bus in each panel-board. Overcurrent protection devices shall be molded case circuit breakers for branch panel-boards and fused switches for distribution panels. Door-in-door construction.
  - Grounding: Provide a complete NEC grounding system. Feeders and branch circuits shall be provided with an insulated grounding conductor run with the circuit conductors. This grounding shall be in addition to the ground path provided by the continuously grounded metallic raceway system that encloses the phase neutral conductors.
  - Acceptable Manufacturers: Cutler-Hammer/Westinghouse, General Electric, Siemens, or Square D/Groupe Schneider.

Grounding

- A complete grounding system complying with National Electrical Code will be provided. Grounding system shall consist of the following:
  - Main Grounding System. The main building grounding system will consist of the following:
    - Bonding to structural steel
    - Ground rods for service entrance ground at main electrical room.
    - All the above will be terminated in a ground bus in the main electrical room. In addition, the service entrance neutral conductor will be bonded to the switchboard ground bus, the electrical room ground bus and the ground rod.
  - Circuit grounding. The continuous metallic conduit raceway will serve as the ground path for feeders. Branch circuits shall be provided with an insulated grounding conductor run with the circuit conductors. This grounding conductor shall be in addition to the ground path provided by the continuously grounded metallic raceway system that encloses the phase and neutral conductors.

Equipment Connections

- HVAC equipment
- Plumbing equipment
- Fire protection equipment
- Owner furnished equipment
- 120V power connections
- Convenience and special purpose receptacles
- Elevators
- Service Equipment
- Electric Door lock
- PA system
- Security System
- Vending Machines

- Office Supplies: Laminators, printer, fax, battery charger, copy machine
- Commercial Kitchen Equipment: Dishwasher, refrigerator, freezer, microwave, oven.

Raceways

- All wire and cable shall be installed in conduit.
- Provide empty conduit for A/V, security, and PA system.
- Rigid Steel Conduit: Rigid conduit, heavy wall, hot dipped galvanized inside and out, threaded ends, with threaded type fittings. Use where exposed to physical damage, indoors where exposed to physical abuse and exposed outdoor installations.
- Electrical Metallic Tubing: Continuous, seamless steel tubing, galvanized or sherardized on exterior, coated on interior with smooth hard finish of lacquer, varnish or enamel, with steel, set screw type fittings. Use for general-purpose feeders and branch circuits.
- Flexible Steel Conduit: Single strip, continuous, flexible interlocked double-wrapped steel, hot dip galvanized inside and out forming smooth internal wiring channel, with steel, compression type fittings. Use in dry locations only, connections to lighting fixtures in suspended ceilings, connections to equipment installed above suspended ceilings, transformer connections, bus duct plug in units, and connections to equipment where vibration isolation is required, maximum length of 6 feet.
- Liquid Tight Flexible Steel Conduit: Same as flexible steel conduit except with tough, inert, watertight plastic outer jacket. Fittings shall be cast malleable iron body and gland nut, cadmium plated with one-piece brass grounding bushings threaded to interior of conduit. Use same as flexible steel conduit in damp or wet locations and at motor connections.
- Rigid Nonmetallic Conduit: Schedule 40 polyvinyl chloride with solvent cemented type fittings. Use in underground duct banks, below slab on grade, or embedded in floor slabs.

Wire and Cable

- Provide 600V minimum insulation rating. Electrical grade annealed copper, tinned if rubber insulated THHN/THWN insulation. Stranded ASTM Class B. Minimum size number 12 for branch circuits; number 14 for control wiring. All #12 and #10 AWG conductors shall be solid.
- Aluminum Feeders: To help facilitate cost cutting, aluminum conductors may be used instead of copper conductors for feeders 100A or larger. Provide rated terminations and anti-oxidant compound on all connections.

Wiring Devices

- Switches and receptacles shall be specification grade. All switches shall be silent acting fully rated 20 amperes. Multiple pole, 3 way, 4 way, and special purpose type switches shall be provided as required. Special purpose receptacles shall be provided as required by the equipment characteristics. Device coverplates shall be stainless steel.
- Branch circuits shall utilize steel EMT or MC cable where concealed above ceilings or within partitions, with flexible steel conduit at final equipment connections. Non-metallic rigid conduit (PVC) embedded in floor slabs will be provided where the structure allows. Mechanical equipment final connections shall be liquid tight flexible steel conduit.
- General-purpose duplex receptacles will be provided for cleaning and maintenance purposes at a maximum spacing of 75 feet, in restrooms (GFI type) and within 25 feet of mechanical equipment.
- Data and power wiring shall be installed and terminated to furniture's internal wiring bus.

- Provide dedicated branch circuit (hot & neutral; HR ground may be shared) for up to (4) “clean power” duplex receptacles serving work station /office computer loads. Provide dedicated branch circuit (hot & neutral; HR ground may be shared) for up to (8) “dirty power” general purpose duplex receptacles.
- Poke-thru power / telecom devices or recessed power / telecom floor boxes will be used to provide electrical and telecommunication service to open office workstations or conference / meeting room tables.
- Public Spaces: Maximum of five per 20A, 120V circuit, located at 25-foot radius.
- Corridors: Maximum of five per 20A, 120V circuit, located every 50 feet along corridor walls.
- Administration Areas: Maximum of five per 20A, 120V circuit, located at desks and work areas for electronic equipment, convenience and lamps.
- Mechanical Areas: Maximum of five per 20A, 120V circuit, located within 25 feet of all mechanical equipment in mechanical rooms and on roofs.
- Exterior of Building: Maximum of five per 20A, 120V circuit residual current circuit protected, located around building for landscape trimming, generally in vicinity of exit doors.

Emergency System

- Emergency battery back-up shall be provided to serve: Exit Signs equipped with self diagnostic testing circuitry, EGRESS Lighting Fixtures, and Fire Detection and Alarm System for no less than 90 minutes. Exit signs and Egress lighting shall be provided with battery backup ballasts incorporating self diagnostic testing circuitry (for improved performance and reliability) for minimum runtime duration of 90-minutes.
- Provide remote test switches for all battery powered emergency lighting fixtures and ballast.

D5020 FIRE ALARM SYSTEM

The fire alarm system will be an addressable, fully supervised and include both manually and automatically actuated alarms consisting of:

- Manual pull stations will be located at main exit doors and intermediate, such that no location along exit pathway will be greater than 200 feet maximum spacing between manual pull stations.
- Annunciation will consist of speaker (voice alert)/strobes at reading room, corridors and all other large open spaces. Strobes will be provided at all restrooms, smaller offices and to supplement horn/strobes.
- Connections to fire sprinkler system water flow and tamper switches.
- Smoke detectors will be provided for elevator recall at elevator lobbies, above Fire Alarm Control Panel, and for control of magnetic door holders/smoke doors/smoke dampers.
- Area smoke detectors in each mechanical, electrical, and telephone rooms
- Duct type smoke detectors at the inlet of all return air duct stub outs, at main return air plenums, at the discharge of each supply air duct (> 2000cfm) and where required to operate a fire/smoke dampers.

The fire alarm LED annunciator shall provide indication of the floor of an alarm and the type of alarm, i.e., manual, sprinkler flow, or smoke. This will be located at the main entrance lobby vestibule.
The fire alarm system shall be connected to an approved central monitoring service.
Acceptable Manufacturers: Siemens, Cerberus/Pyrotronics, Edwards, Notifier and Simplex

D5030 COMMUNICATION AND SECURITY

The building will be provided one 10'x12' MDF (Main Distribution frame) room. This space will be the main telecommunications point of demarcation in which to bring in Qwest and Comcast Services. This room will also house the Owners Telecommunications equipment (PBX) and Network equipment as well as all horizontal station cabling termination fields.
Since all telecommunications voice and data station cabling will originate from a single MDF, no owner backbone cabling will be required.
Each telecommunications combined voice and data outlet shall be provided with a 4 square box, single gang mug ring and a 1" conduit stubbed out to an accessible ceiling space.
Each telecommunications wall mount phone location shall be provided with a 4 square box, single gang mug ring and a 3/4" conduit stubbed out to an accessible ceiling space.
Horizontal station cabling shall be routed back to the MDF using the most economical method- namely j-hooks at 4'-0" O.C.
Cabling infrastructure will be based on Category 5E cabling.
Tele/Data drops will be coordinated with King County IT Staff.
Wireless Access Points (WAP) shall be provided with a 4 square box, single gang mug ring and a 1" conduit routed to an accessible ceiling space.
WAP locations will be coordinated with King County IT Staff
Each speaker shall be provided with a 4 square box, single gang mug ring and a 1" conduit routed to an accessible ceiling space.
Speaker locations will be coordinated with King County IT Staff.

D5040 CODES AND STANDARDS

The following codes and standards shall be used:

- National Electrical Code (NEC).
- International Fire Code (IFC).
- Washington State Fire Marshal Requirements.
- Energy Efficiency Standards for Non Residential Buildings - Washington State Energy Code with the City of Renton Amendments.
- American National Standards Institute (ANSI).
- Institute of Electrical and Electronics Engineers (IEEE).
- Illuminating Engineering Society of North America (IES).
- National Fire Protection Association (NFPA).
- National Electrical Manufactures Association (NEMA).
- Underwriters Laboratories (UL).

E. EQUIPMENT AND FURNISHINGS

E10 EQUIPMENT

E1010 COMMERCIAL EQUIPMENT

At Servery : Provide commercial grade under counter refrigerator
At Break Room: Provide commercial grade dishwasher and full height refrigerator.

E1090 OTHER EQUIPMENT

E20 FURNISHINGS

E2010 FIXED FURNISHINGS

Upper and lower casework in Servery, Workroom and Staff lounge to be wheat board core with FSC certified veneer or bamboo with SlateScape countertops.

Provide manual Mechoshade rolling blinds at all exterior windows.

G. BUILDING SITEWORK

G20 SITE IMPROVEMENTS

G2010 ROADWAYS

No public roadway improvements.

G2020 PARKING LOTS

G2030 PEDESTRIAN PAVING

Plaza Paving: All plaza paving to consist of sand set pavers tight set over 1" sand bedding layer over minimum 8" depth compacted crushed rock.

G2040 SITE DEVELOPMENT

Concrete Retaining Walls: Walls to be minimum 6" thick cast in place reinforced concrete construction with footings, drainage backfill, and 1" pvc weep holes 24" o.c Concrete to have natural smooth formed finish with exposed ties 24" o.c.

Site Furnishings: Bollards, trash receptacles and bike racks to be stainless steel construction by Landscape Forms. All site furnishings shall be permanently attached to concrete foundations below sand set pavers.

G2050 LANDSCAPING

Storm Water Planted Areas: Storm water planted areas to have new imported topsoil mix (2/3 course sandy loam / 1/3 organic amendment) installed to 24" compacted depth.