STRUCTURAL
BASIS OF DESIGN NARRATIVE

Codes and Design Standards

All new construction will be designed to comply with the current 2003 International Building Code requirements with Seattle DPD Amendments.

Design Criteria

Design Loads:

Roof	25 PSF snow load with snow drift as applicable
Lab Areas	125 PSF (2000 microinches/sec)
Office Areas	100 PSF
Equipment	30 PSF
Partitions	20 PSF
Corridor and Stairs	100 PSF
Penthouse Floor	75 PSF (or actual equipment weights)

Seismic Design:
- 2003 IBC
- S_S = 1.45, S_1 = 0.49
- I_E = 1.5, Site Class C

Wind Design:
- 2003 IBC
- 85 MPH
- Exposure B
- I_W = 1.25

Building Construction

Foundations

A draft geotechnical report for the UW RBL Building has not been completed but, based on the geotechnical recommendations submitted for the nearby Bioengineering and Genomic Sciences project, the foundations for the UW RBL Building will consist of conventional spread footings at the columns and continuous footings at concrete walls. Since no geotechnical report has been prepared, yet, the allowable soils bearing pressure is unknown but it is estimated at about 8000 psf. A 6" thick slab on grade will be reinforced with conventional rebar at 18" on center each way. Underslab and perimeter footing drains will also be used throughout.

Shoring

Tentative grade elevations indicate that there will be shoring required on the north and east sides of the building. The shoring is assumed to consist of conventional steel soldier piles and

tiebacks. The shoring will be positioned 6 to 8 feet from the outside face of the basement walls to allow 2-sided formwork of the basement walls. This will allow for conventional waterproofing of the basement walls prior to structural backfill. The tiebacks for the shoring will be destressed upon backfilling of the building, but neither the lagging nor the steel soldier piles are anticipated being removed.

Typical Floor Framing

Since the elevated floors are to meet floor vibration criteria of 2000 micro inches per second, the floor framing system to be used for the building consists of cast-in-place concrete beams and joists. The typical grid spacing in the north-south direction will be 22'-0" with the end bays being 20'-0". The grids in the east-west direction will be spaced at 30'-0", 8'-0", 30'-0", 8'-0", and 30'-0". For the purposes of this proposal, these grids will be denoted as Grids A, B, C, D, E and F. The two 8'-0" bays (between Grids B & C and D & E) will be where the north-south corridors will be located. The columns will be 18"x 18" square concrete columns. The concrete floor framing will consist of a 5" slab over 8" wide by 16"deep joists at 6'-2" (steel pans are 5'-6" wide) on center for a total depth of 21". The girders on each column line at 22'-6" on center are 32" wide by 31" deep. These girders may be vertically sleeved for current and future lab bench plumbing. At the First Floor where there is no basement, the floor will consist of 6" thick concrete slab on grade. The floor framing can be depressed as necessary to accommodate cold rooms, trench drains, cage wash equipment, etc. The framing for the roof level will match that used for the elevated floors.

Interstitial Framing

The floor-to-floor height at each floor level is sufficient to accommodate an interstitial walkway area. This framing will consist of metal deck or checkerplate over structural steel spanning between the concrete columns.

Lateral Force Resisting System

The lateral force resisting system will be designed to resist the 2003 IBC seismic and wind forces, appropriately increased for building importance considerations. The proposed lateral force resisting system will consist of punched concrete shear walls around the perimeter. The perimeter walls will be reinforced to carry gravity loads from the floor girders without having exposed pilasters. The thickness of the walls will be determined by lateral forces stemming from seismic and wind analyses as well as by blast and progressive collapse criteria.

Miscellaneous Elements

The concrete walls at the Aerobiology Lab will be 8" thick reinforced concrete walls. The ceiling framing will consist of a 6" concrete slab with 12" deep upturned concrete beams. By upturning the concrete beams, a flat soffit can be achieved for the ceiling. As an alternative, the ceiling may also be constructed from steel plate suspended from steel wide flange beams spanning between the concrete walls. Rooftop equipment will be screened with HSS framing and metal siding. The design of the roof framing will also accommodate any housekeeping pads required for the rooftop mechanical equipment.