

BVH ARCHITECTURE

LaVista City Centre

DESIGN DEVELOPMENT OUTLINE SPECIFICATION

12-22-2016

Lot 15 (South Mixed Use Residential Building)

BIDDING REQUIREMENTS

- Specific Owner requirements: *Reference Owner's Bid Request/Form*
- All fees and permits shall be obtained and paid for by General Contractor.
- CAD files for shop drawing preparation are available in electronic format for a fee and after execution of AIA C106-2013.
- Geotechnical Report - *to be provided by Owner.*

APPLICABLE BUILDING CODES - as adopted and amended by the city of La Vista

- IBC 2015
 - Sound Control - between dwelling units shall exceed minimum IBC requirements for R-2.
- IFC 2012
- IPC 2012
- IMC 2012
- IECC 2009
- NEC 2014
- IFGC 2012
- DOJ ADA 2010
- HUD Fair Housing Act

DIVISION 1 - GENERAL REQUIREMENTS

- Construction Manager (CM)
- AIA Document A201-2007, General Conditions of the Contract for Construction is applicable.
- Contract Form Between Owner and Contractor/Construction Manager: *Reference Owner's Bid Request/Form.*

012100 Allowances

- *Reference Owner's Bid Request/Form*

012200 Unit Prices

- *Reference Owner's Bid Request/Form*

012300 Alternates

- *Reference Owner's Bid Request/Form*
- *Kinetics Noise Control RIM System @ Podium Floor*
- *Ipe Brazilian Walnut Wood Siding*
- *Fundermax Exterior Panel @ Balconies*

013000 Administrative Requirements

- Shop Drawings reviewed via Submittal Exchange.
- Progress Meeting Frequency: *Monthly*

SPECIFICATION

014000 Quality Requirements

- Concrete & Soils Testing: By GC.
- Special Inspections: By Owner.

015000 Temporary Facilities and Controls

- Field Office/Signage/Security, Site Fencing, SWPPP: By GC.
- Sanitation/Refuse: By GC.
- Recycling: Separate Wood, Cardboard, Concrete/Paving, Metals for recycling: By GC.
- Temporary Utilities: By GC.
- Temporary Access Road: By Owner under separate Contract.

016000 Product Requirements

- Products shall be as specified. Alternate Products accepted only prior to bidding.

017000 Execution and Closeout Requirements

017800 Closeout Submittals

- All submittals must be received before final payment is made.
- Project Record Documents delivered to Architect.
- CD from Submittal Exchange containing all construction related documents.
- Warranties and Bonds
- Signed Punch Lists.

DIVISION 2 – EXISTING CONDITIONS

024100 Site Demolition and Site Clearing: By Owner under separate Contract.

DIVISION 3 – CONCRETE

033000 Concrete

- Cast-in-place Reinforced Concrete.
 - Air-entrained at exterior exposed concrete, 5.5%-6.0%.
 - 4,000 psi-28 day compressive strength with max water to cement ratio of .50
 - QC Concrete testing by GC

034100 Structural Precast Concrete

- Precast Structural Concrete members at parking garage and Retail.
- (Refer to Structural)

034500 Architectural Precast Concrete

- Precast Structural Concrete members with Architectural Finish wall panels
- Insulated and Non-Insulated
- Light Sandblast Texture where abutting City parking garage
- Random Board Form Texture (5/8" min. reveal depth) at Public ROW.
- (Refer to Structural)

SPECIFICATION

035400 Gypsum Cement Underlay

- Maxxon Sound Control Underlayment system
 - 1" Gypsum Topping
 - ~~Acoustimat II HP and all accessories~~

DIVISION 4 - MASONRY

040511 Masonry Grout

- ASTM C270 Grout - Type N and/or S (as required).
- Type S for CMU
- Type S for brick and precast below grade and in contact with earth.
- Type N for brick and precast above grade

042000 Unit Masonry

- Brick Veneer: ASTM C 67, Type FBX, Grade SW
 - 40c per Brick Allowance
 - Texture, Color, and Size to be determined
- Through-Wall Flashing: FLEX-FLASH 40-mil thick by Hohmann Barnard
- Pre-formed, seamless inside and outside corners compatible with through-wall flashing.
- Termination Bar-stainless steel.
- Stainless steel drip plate
- Weeps: Polypropylene Cell Vent
- Veneer Anchors: Two piece thermal anchors to permit differential movement.
- Cavity Mortar Control: Mortar Net

DIVISION 5 - METALS

051200 Structural Steel

- (Refer to Structural)

053100 Steel Deck

- (Refer to Structural)

054400 Cold-Formed Steel Framing

- Formed steel stud exterior wall framing and accessories @ retail exterior walls.
- Exterior Glass Mat Faced Gypsum Sheathing: 5/8" Dens-Glass Gold.

055000 Metal Fabrications

- Elevator Pit Ladders
- Lintels
- Miscellaneous Framing and Supports
- Aluminum prefinished handrails and components
- ~~Perforated metal sheet sun shade, powdercoated~~
- ~~Perforated weathered steel sun shade, prefinished/naturally weathering~~

055100 Metal Stairs

SPECIFICATION

- Semi-custom architectural; steel channel stringers, 14 gage metal pan with 1 ½" concrete fill and railings and guardrails. Painted. At Exterior Exit Stair.
- Note: Interior Stairs to be wood stringers and treads.

DIVISION 6 – WOOD, PLASTICS AND COMPOSITES

061000 Rough Carpentry

- Plywood Decking: APA rated. Exposure 1. Reference Structural for sizes.
- Dimension Lumber: NPFA grading rules; S4S, No. 2 or Standard Grade with S-dry or MC19 moisture content.
- Treated lumber at sills and all areas in contact with concrete
- Huber Zip System R-Sheathing System and Accessories @ Exterior Residential Walls: 1-1/2" nom. thick. R-6.6.

061514 Wood Composite Decking

- Tamko EverGrain Envision
- 2x6 hidden fastener method

061700 Wood Floor and Roof Joists

- (Refer to Structural)

062000 Finish Carpentry

- Miscellaneous fabrications and Trim: AWI Premium grade

064100 Architectural Wood Casework

- Casework: Leedo Cabinets
 - Ashton Hardwood
 - BPO1-0089BS Hardware
- Quartz Countertops: Hotel Vanities. W-1 Color. St/Stl 18 ga. undermount double bowl sink.

DIVISION 7 THERMAL AND MOISTURE PROTECTION

072100 Insulation

- Board Insulation: At exterior masonry walls (retail space) and perimeter foundation walls: Extruded cellular polystyrene, ASTM C 578, Type IV at foundations and Type X at walls, 2" thick min.
- Fiberglass Batt Insulation: ASTM C665, R-19 Minimum at walls.
- Acoustic Insulation: full depth sound batts @ apartment unit demising walls and floor/ceiling assembly.

072500 Weather Barriers

- Fluid Applied Air Barrier Membranes
 - Dow Defendaire 200 @ Retail exterior stud & sheathing walls
 - Reference Insulated Sheathing @ Residential exterior walls: air barrier is integral to assembly.
- Vapor Retarder???
 - 10 mil thick polyethylene sheeting and accessories.
 - Review Local Jurisdiction requirements.

074213 Metal Wall Panels

- Metal Sales Manufacturing Corporation
 - Concealed fastener 90 degree ribbed metal wall panel:

SCHEMATIC DESIGN OUTLINE

SPECIFICATION

- MP-1 = T2630 Wall Panel with light gray color
- MP-2 = T2630 Wall Panel with dark gray color
- MP-3 = T16-E Wall Panel with light gray color
- PVDF (Kynar 500) Color Finish

074623 Wood Siding

- Wood soffit and wall siding.
 - Clear Grada A Cedar WRCLA TGO
 - Alternate: Ipe Brazilian Walnut
 - 1x Ship Lap concealed fastener
 - Semitranslucent inorganic stain and sealer

074646 Composite Wall Panels

- Fundermax Exterior - F Quality large format solid color
 - open joint rainscreen assembly at exterior wall
 - Alternate: 5' tall balcony panel

075300 Membrane Roofing

- TPO Membrane: 60 mil. Mech. Fastened
 - Class A rated membrane
 - FM Classification: UL I-90 wind uplift rating
 - 20 year warranty
- Rock Ballast where shown. Architectural large round stone to be determined.
- Insulation: 5 inches of base insulation-polyisocyanurate board.

076200 Flashing and Sheet Metal

- Prefinished Sheet Metal: Meeting ASTM A 653/A 653M- 24 gauge galvanized sheet steel with Kynar color-coated finish at exposed flashings. Color selected from manufacturer's standard colors.
- Galvanized 24 gage steel at concealed locations only.
- All wall cap flashings, counter-flashings, drips, gutters and conductor heads.
- Downspouts: 20 gauge custom fabricated (4"x 6"), open-faced

077600 Pedestal Paver System

- Hanover Prest Concrete Paver System
 - High-Tab Pedestal

078100 Applied Fireproofing

- UL Listed Spray Applied fireproofing at steel structure and floor/roof assembly separating Retail from Residential

078400 Firestopping

- UL Listed firestopping joint and penetration assembly per assembly rating

DIVISION 8 OPENINGS

081113 Steel Doors and Frames

- Exterior Doors: Galvanized/Insulated SDI -100 Grade III, 16 gauge, continuous welded edge seams.
- Exterior Frames: Galvanized/Insulated, fully-welded, 14 gauge.
- Interior Doors: SDI - 100 Grade III 18 gauge, continuous welded edge seams

SPECIFICATION

- Interior Frames: Fully-welded, 16 gauge, 1" frame width.

081416 Wood Doors

- Graham, Marshfield Door Systems, Inc., VT or Eggers flush doors.
- Solid core. Paint.

083323 Overhead Coiling Door

- Overhead Door Co. Rolling Steel Service Door
- Model 625, electric operation,

084013 Fire Rated Glazed Walls and Doors

- TGP FireFrame Designer Series
- 90 Minute UL/NFPA rated

084313 Aluminum Framed Storefronts

- EFCO 403 Clear anodized 1 finish. Thermally broken @ exterior.

084413 Glazed Aluminum Curtain Walls

- EFCO 5600 T Mid-Rise System. Clear anodized 1 finish.

085113 Aluminum Windows

- Gerkin Rhino Series Commercial Aluminum Series. Thermally Broken. Operable Slider and Fixed.

087100 Hardware

- Commercial quality, heavy-duty, US26D finish.
- Manufacturers: Sargent, Corbin-Russwin, Schlage, Hager, Norton, Reese, Pemko.
- Keying: As directed by Owner.

088000 Glazing

- Exterior: 1" thick insulating glass, tempered safety glass where required by Code.
 - PPG SNX 62/27
- Interior: ¼" thick clear float glass, tempered safety glass where required by Code.
- Interior, fire-rated openings: TGP FireGlass

089100 Metal Wall Louver

- Metal wall louver assembly within glazed aluminum curtainwall and storefront assembly.
 - Finish to match Storefront framing.

DIVISION 9 FINISHES

092116 Gypsum Board Assemblies

- 5/8" Type X Gypsum wallboard
- 1/2" Dens Shield with taped joints in areas scheduled to receive ceramic tile.
- Acoustical sealant and insulation at all acoustical walls.
- Fire Rated sealant and insulation at all fire rated walls.
- Gypsum Bd Shaft Walls. 2 Hr.

093000 Tile

- Reference Finish Package

SPECIFICATION

095100 Acoustical Tile Ceiling System

- Certainteed Performa Symphony m 2x2 @ Corridors.
 - 9/16" T grid. Narrow Reveal.

096500 Resilient Flooring (LVT)

- Reference Finish Package

096800 Carpet

- Reference Finish Package

099000 Paints and Coatings

- Interior Paint:
 - Steel: Semi-gloss alkyd enamel finish-two finish coats over rust inhibitive primer.
 - Gypsum drywall: Acrylic enamel finish-1 coat primer and 2 coats finish
 - Eggshell at walls, Flat finish at ceilings and semi-gloss at frames.
 - Interior CMU: 1 coat block sealer, 1 coat primer and two coats finish acrylic enamel.
 - Wood: Semi-gloss acrylic enamel finish-two finish coats over primer.
 - Interior Stain: 1 coat stain, 1 coat sealer, 2 coats satin varnish.
- Exterior paint:
 - Galvanized Steel: Semi-gloss acrylic enamel finish-two coats finish over a galvanized metal primer.
- Type of paint as recommended by manufacturer for intended substrate.

DIVISION 10 SPECIALTIES

104400 Fire Protection Specialties

- Larsen's NFPA 10 extinguishers: Type and size required by Code Officials for intended use.
- Cabinets: Fully recessed. Pre-finished St/Stl..

DIVISION 11 EQUIPMENT

113100 Residential Equipment

- Reference GE Appliance Package by Owner

DIVISION 12 – FURNISHINGS

DIVISION 13 – SPECIAL CONSTRUCTION

134800 Sound and Vibration Control

- Kinetics Noise Control RIM Concrete Floating Floor Assembly
- Precast Concrete and Topping per Structural
- In Addition to Structural Deck: 2" Kinetics RIM L-2-12 isolation pads, 1/2" plywood, 2" Topping Slab
- Estimated sound testing: 73 STC, 70 ICC

DIVISION 14 – CONVEYING EQUIPMENT

SPECIFICATION

142001 Elevator

- Kone EcoSpace Gearless Traction Elevator
 - Landings: 6
 - Capacity: 3500 lbs
 - Speed: 350 fpm
 - Cab Dimensions: 6'-8"W x 6'-2"D x 9'-0"T
 - Door Dimensions: 4'-0" W x 8'-0" T
 - St/Stl finish package
 - Tenant Security Keyed
 - Machine Location: Inside Hoistway with Remote Closet
 - Elevator shall serve as an accessible means of egress with emergency back-up power
 - Elevator shall accommodate a stretcher

DIVISION 21 – FIRE SUPPRESSION

- See Plumbing Specification

DIVISION 22 – PLUMBING

- See Plumbing Specification

DIVISION 23 – HVAC

- See Mechanical Specification

DIVISION 26 – ELECTRICAL

- See Electrical Specification

DIVISION 31 – EARTHWORK

- See Civil Drawings

DIVISION 32 – EXTERIOR IMPROVEMENTS

- See Civil Drawings

DIVISION 33 - UTILITIES

- See Civil Drawings

LA VISTA CODE REVIEW DRAFT

REV: 12/22/2016

	IBC 2015	IBC 2012 IPC 2012 IMC 2012 IECC 2009 IFC 2012 2014 National Electric Code International Fuel Gas Code 2012
LSC	2012 IBC 2015 IBC	FULLY SPRINKLERED PER NFPA 13
CH. 6	CH. 3	USE AND OCCUPANCY CLASSIFICATION M (MERCANTILE) A-2 (RESTAURANT) R-2 (RESIDENTIAL APARTMENTS) S-2 STORAGE (PARKING GARAGE)
		ZONING : MIXED USE (MU-CC) 5.19.04 SETBACKS 1. THE ENTIRE BUILDING FAÇADE MUST ABUT FRONT AND STREET SIDE PROPERTY LINES OR BE LOCATED WITHIN 10 FEET OF SUCH PROPERTY LINES. 2. NO REAR SETBACK SHALL BE REQUIRED, EXCEPT WHERE THE REAR LOT LINE IS CONTIGUOUS TO A RESIDENTIAL ZONE, IN WHICH CASE THE FOLLOWING STANDARDS SHALL APPLY: A. THERE SHALL BE A MINIMUM REAR SETBACK OF TWENTY (25) FEET THE FULL WIDTH OF THE LOT 3. NO INTERIOR SIDE SETBACKS ARE REQUIRED IN THE MU-CC DISTRICT, EXCEPT WHEN MU-CC ZONED PROPERTY ABUTS R-ZONED PROPERTY, IN WHICH CASE THE MINIMUM SIDE SETBACK REQUIRED IN THE MU-CC DISTRICT SHALL BE THE SAME AS REQUIRED FOR A RESIDENTIAL USE ON THE ABUTTING RESIDENTIALLY-ZONED LOT. 5.19.05 BUILDING HEIGHT THE MAXIMUM BUILDING HEIGHT SHALL BE 90 FEET. 5.19.06 OFF-STREET PARKING 1. NO OFF-STREET PARKING IS REQUIRED IN THE MU-CC DISTRICT. 2. IF OFF-STREET PARKING IS UTILIZED, IT SHALL COMPLY WITH SECTIONS 7.08-7.09 OF THIS ORDINANCE. 3. ALL PARKING SPACES SHALL BE PAVED WITH ASPHALT, CONCRETE OR OTHER APPROVED HARD SURFACE. 4. THE USE OF SHARED PARKING IS ENCOURAGED. 5. OFF-STREET PARKING SPACES SHOULD BE LOCATED TO THE REAR OF THE MAIN FAÇADE OF THE PRINCIPAL.
	SEC. 406.4	GARAGES ENCLOSED PARKING GARAGE
	SEC. 420	R-2 OCCUPANCIES R-2 NON-LOAD BEARING WALLS SEPARATING DWELLING UNITS FROM OTHER UNITS AND OCCUPANCIES SHALL BE CONSTRUCTED AS 1 HR FIRE PARTITIONS (708).

R-2 LOAD BEARING WALLS SEPARATING DWELLING UNITS FROM OTHER UNITS AND OCCUPANCIES SHALL BE CONSTRUCTED AS 1 HR. FIRE BARRIERS (601).

R-2 FLOORS SEPARATING DWELLING UNITS FROM OTHER UNITS AND OCCUPANCIES SHALL BE CONSTRUCTED AS 1 HR HORIZONTAL SEPARATIONS (601).

CH. 6

CONSTRUCTION TYPE

- M = TYPE IA
- A-2 = TYPE IA
- S-2 = TYPE IA
- R-2 = TYPE VA

SEC. 503

ALLOWABLE BUILDING AREA

- M = UNLIMITED AREA
- A-2 = UNLIMITED AREA
- S-2 = UNLIMITED AREA
- R-2 = 39,528 SF / FLOOR WITH INCREASES (506)

ACTUAL BUILDING AREA

- 1ST = ~39,000
- 2ND = ~39,000
- 3RD = ~36,000 (4, 5, 6TH SIM.)

SEC. 503

ALLOWABLE BUILDING HEIGHTS

- M = UNLIMITED STORIES & HEIGHT
- A-2 = UNLIMITED STORIES & HEIGHT
- S-2 = UNLIMITED STORIES & HEIGHT
- R-2 = ~~MAXIMUM 60 FT TALL OR FOUR STORIES~~
- R-2 = 4 STORIES & 70 FT TALL

SEC. 504.2

~~SCRATCHED~~
504.3 / 504.4

ACTUAL BUILDING AREA & HEIGHTS

- 2 STORIES S-2 / A-2 / M + 4 STORIES R-2 OVER PODIUM DESIGN
- 63 FT BUILDING HEIGHT (AVERAGE GRADE PLANE TO AVERAGE ROOF HEIGHT)

510

SEC. 510.2

SPECIAL PROVISIONS

A BUILDING IS CONSIDERED SEPARATE AND DISTINCT WHEN:

1. THE BUILDINGS ARE SEPARATED BY A FIRE RESISTANT RATING OF 3 HOURS.
2. ~~THE BUILDING BELOW THE HORIZONTAL ASSEMBLY IS NOT GREATER THAN ONE STORY ABOVE GRADE PLAN.~~
3. THE BUILDING BELOW THE HORIZONTAL ASSEMBLY IS OF TYPE IA CONSTRUCTION.
4. STAIRWAY ENCLOSURES HAVE A 2 HOUR FIRE RESISTANT RATING.
5. THE BUILDING/S ABOVE THE HORIZONTAL ASSEMBLY IS PERMITTED TO BE GROUP A, B, M, R, OR S OCCUPANCIES.
6. THE BUILDING BELOW THE HORIZONTAL ASSEMBLY IS FULL SPRINKLERED
7. THE MAXIMUM BUILDING HEIGHT IN FEET SHALL NOT EXCEED THE LIMITES SET FORTH IN SECTION 503 FOR THE BUILDING HAVING THE SMALLER ALLOWABLE HEIGHT AS MEASURED FROM GRADE PLANE.

SEC. 508
SEC. 508.2
SEC. 508.3

MIXED USE OCCUPANCIES
AGGREGATE ACCESSORY OCCUPANCIES LESS THAN 10% OF THE BUILDING AREA OF THE STORY ARE NOT REQUIRED TO BE SEPARATED (508.2.4).
NONSEPARATED OCCUPANCIES SHALL BE INDIVIDUALLY CLASSIFIED. THE MOST RESTRICTIVE PROVISION SHALL APPLY TO THE TOTAL NONSEPARATED
OCCUPANCY AREA. NO SEPARATION IS REQUIRED (REF: SEC. 420 FOR R-2 SEPARATION).

SEC. 509

INCIDENTAL USES
INCIDENTAL USES SHALL COMPLY WITH SEC. & TABLE 509.

SEC. 601
T. 601

TYPES OF CONSTRUCTION: V-A
1 HR = PRIMARY STRUCT FRAME
1 HR = EXTERIOR BEARING WALLS
1 HR = INTERIOR BEARING WALLS
0 HR = INTERIOR NON-BEARING PARTITION WALLS
1 HR = INTERIOR NON-BEARING PARTITION WALLS SEPARATING DWELLING UNITS
1 HR = FLOOR CONSTRUCTION AND SECONDARY MEMBERS
1 HR = ROOF CONSTRUCTION AND SECONDARY MEMBERS

SEC. 601
T. 601

TYPES OF CONSTRUCTION: I-A
3 HR = PRIMARY STRUCT FRAME
2 HR = PRIMARY STRUCT FRAME SUPPORTING ROOF ONLY
3 HR = EXTERIOR BEARING WALLS
3 HR = INTERIOR BEARING WALLS
0 HR = INTERIOR NON-BEARING PARTITION WALLS
2 HR = FLOOR CONSTRUCTION AND SECONDARY MEMBERS
1.5 HR = ROOF CONSTRUCTION AND SECONDARY MEMBERS
* ROOF FRAMING NOT REQUIRED TO BE RATED WHEN LOCATED 20 FT ABOVE FLOOR BELOW.

SEC. 602
T. 602

FIRE RESISTANT RATING FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE FOR V-A CONSTRUCTION
1 HR = 0 FT - 10 FT
0 HR = 10 FT - 30 FT
* SEE BUILDING TYPE REQUIREMENTS (TABLE 601 / 602) FOR ADDITIONAL RESTRICTIONS

SEC. 602
T. 602

FIRE RESISTANT RATING FOR EXTERIOR WALLS BASED ON FIRE SEPARATION DISTANCE FOR I-A CONSTRUCTION
1 HR = 0 FT - 30 FT
0 HR = > 30 FT
* SEE BUILDING TYPE REQUIREMENTS (TABLE 601 / 602) FOR ADDITIONAL RESTRICTIONS

SEC. 705

EXTERIOR WALLS
PROJECTION LIMITATIONS APPLY

BUILDINGS ON SAME LOT: EXC. 2: PERMITS A PARKING GARAGE OF CONSTRUCTION TYPE I OR II A TO ABUT A GROUP R-2 BUILDING WITH 1 1/2-HOUR PROTECTED OPENINGS (FIRE DOORS) IN THE ABUTTING EXTERIOR WALL OF THE GARAGE AND NO REQUIRED OPENING PROTECTIVE(S) IN THE ABUTTING WALL OF A SPRINKLERED R-2 BUILDING. PREVIOUS EDITIONS OF THE CODE DID NOT PERMIT ANY OPENINGS IN THESE ABUTTING EXTERIOR WALLS THAT AT A "0" FIRE SEPARATION DISTANCE APART AND REQUIRED A FIRE-WALL DESIGN BETWEEN SUCH BUILDINGS TO BE PERMITTED TO HAVE OPENINGS BETWEEN THE ABUTTING BUILDINGS.

OPENINGS

FIRE SEPARATION DISTANCE (feet)	DEGREE OF OPENING PROTECTION	ALLOWABLE AREA ^a
0 to less than 3 ^{b, c, k}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted ^k
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	Not Permitted ^k Not Permitted ^k
3 to less than 5 ^{d, e}	Unprotected, Nonsprinklered (UP, NS)	Not Permitted
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	15% 15%
5 to less than 10 ^{e, f, j}	Unprotected, Nonsprinklered (UP, NS)	10% ^h
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	25% 25%
10 to less than 15 ^{e, f, g, j}	Unprotected, Nonsprinklered (UP, NS)	15% ^h
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	45% 45%
15 to less than 20 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	25%
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	75% 75%
20 to less than 25 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	45%
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	No Limit No Limit
25 to less than 30 ^{f, g, j}	Unprotected, Nonsprinklered (UP, NS)	70%
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	No Limit No Limit
30 or greater	Unprotected, Nonsprinklered (UP, NS)	No Limit
	Unprotected, Sprinklered (UP, S) ^j Protected (P)	No Limit No Limit

For SI: 1 foot = 304.8 mm.

UP, NS = Unprotected openings in buildings not equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

UP, S = Unprotected openings in buildings equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1.

P = Openings protected with an opening protective assembly in accordance with Section 705.8.2.

a. Values indicated are the percentage of the area of the exterior wall, per story.

b. For the requirements for fire walls of buildings with differing heights, see Section 706.6.1.

c. For openings in a fire wall for buildings on the same lot, see Section 706.8.

d. The maximum percentage of unprotected and protected openings shall be 25 percent for Group R-3 occupancies.

e. Unprotected openings shall not be permitted for openings with a fire separation distance of less than 15 feet for Group H-2 and H-3 occupancies.

f. The area of unprotected and protected openings shall not be limited for Group R-3 occupancies, with a fire separation distance of 5 feet or greater.

g. The area of openings in an open parking structure with a fire separation distance of 10 feet or greater shall not be limited.

h. Includes buildings accessory to Group R-3.

i. Not applicable to Group H-1, H-2 and H-3 occupancies.

i. The area of openings in a building containing only a Group U occupancy private garage or carport with a fire separation distance of 5 feet (1523 mm) or

greater shall not be limited.

k. For openings between S-2 parking garage and Group R-2 building, see Section 705.3, Exception 2.

SEC. 705.8.5

VERTICAL SEPARATION OF OPENINGS

EXC. 2: OPENINGS NEED NOT BE SEPARATED OR PROTECTED IN SPRINKLERED BUILDINGS.

SEC. 705.8.6

VERTICAL EXPOSURE

~~FOR BUILDINGS ON THE SAME LOT, 3/4 HR OPENING PROTECTIVES ARE REQUIRED FOR OPENINGS LESS THAN 15 FT VERTICALLY ABOVE THE ROOF OF AN ADJACENT BUILDING OR STRUCTURE. EXC. 1: OPENING PROTECTIVES ARE NOT REQUIRED WHERE THE ROOF ASSEMBLY OF THE ADJACENT BUILDING OR STRUCTURE HAS A FIRE RESISTANCE RATING OF NOT LESS THAN 1 HR.~~

SEC. 707

FIRE BARRIERS

INTERIOR AND EXTERIOR BEARING WALLS, SHAFT ENCLOSURES, EXIT STAIRWAYS, SEPARATED OCCUPANCIES, AND INCIDENTAL USE SEPARATIONS SHALL CONSTRUCTED AS FIRE BARRIERS.

SEC. 708

FIRE PARTITIONS

INTERIOR NON-BEARING WALLS SEPARATING DWELLING UNITS SHALL BE CONSTRUCTED AS FIRE PARTITIONS. THE SUPPORTING CONSTRUCTION SHALL BE PROTECTED THE SAME AS THE WALLS FOR TYPE V-A CONSTRUCTION.

SEC. 708.4

711

HORIZONTAL ASSEMBLIES

FLOOR AND ROOF ASSEMBLIES SHALL BE CONSTRUCTED AS HORIZONTAL RATED ASSEMBLIES.

714

PENETRATIONS

1 & 2 HR CEILING ASSEMBLY MEMBRANES IS PERMITTED TO BE INTERRUPTED BY DOUBLE WOOD TOP PLATE PROVIDED ALL PENETRATIONS THROUGH THE TOP PLATE ARE FIRE SEALED / PROTECTED.

714.4.1.2

30.3.6

SEC. 1018

CORRIDORS

CORRIDORS SHALL BE 30 MIN. FIRE RESISTANT RATED FOR RESIDENTIAL OCCUPANCIES AND 0 HR FOR ASSEMBLY OCCUPANCIES.

PROTECTION FROM HAZARDS

1 HR FIRE BARRIER SEPARATION IS REQUIRED AT SERVICE EQUIPMENT SUBJECT TO EXPLOSION, BOILER / FURNACE ROOMS > 200kbtu, GUEST LAUNDRIE: >100 SF, MAINTENANCE ROOMS, TRASH COLLECTION ROOMS, AND STORAGE ROOMS WITH COMBUSTIBLE SUPPLIES. SEE ALSO INCIDENTAL SEPARATIO REQUIREMENTS (IBC TABLE 509)

1004

OCCUPANT LOAD

STORAGE AND MECHANICAL ROOMS = 300 GSF
ASSEMBLY (CONCENTRATED CHAIRS) = 7 NSF
ASSEMBLY STANDING ROOM = 5 NSF
ASSEMBLY (UNCONCENTRATED TABLES AND CHAIRS) = 15 NSF
BUSINESS AREAS = 100 GSF
RESIDENTIAL = 200 GSF

SEC. 1004

MERCANTILE = 30 GSF

~~MERCANTILE @ GRADE = 30 GSF~~

SCRATCHED

SCRATCHED

~~MERCANTILE ABOVE GRADE = 60 GSF~~

EXERCISE ROOMS = 50 GSF

COMMERCIAL KITCHENS = 200 GSF

PARKING GARAGES = 200 GSF

7.3.3.1 1005

MEANS OF EGRESS

EGRESS COMPONENTS = .2"/OCC

STAIRWAYS = .3"/OCC

ACCESSIBLE MEANS OF EGRESS

WHERE MORE THAN ONE MEANS OF EGRESS IS REQUIRED FROM ANY ACCESSIBLE SPACE, EACH ACCESSIBLE PORTION OF THE SPACE SHALL BE SERVED BY LEAST TWO ACCESSIBLE MEANS OF EGRESS.

STAIRWAYS WITHIN VERTICAL EXIT ENCLOSURES ARE ALLOWED AS ACCESSIBLE MEANS OF EGRESS.

AN AREA OF REFUGE IS NOT REQUIRED (1007.3 EXC. 2 & 6 / 7.2.12.1 EXC (2)) WITHIN A SPRINKLED BUILDING/EXIT ENCLOSURE.

AN ELEVATOR IS REQUIRED TO BE PART OF THE ACCESSIBLE MEANS OF EGRESS IN A 5 STORY BUILDING.

EXIT ACCESS

EGRESS FROM A ROOM SHALL NOT PASS THROUGH ADJOINING ROOMS EXCEPT WHERE ADJOINING ROOMS ARE ACCESSORY TO ONE ANOTHER.

COMMON PATH OF TRAVEL SHALL NOT EXCEED 50' FOR RESIDENTIAL (125' PER IBC).

COMMON PATH OF TRAVEL SHALL NOT EXCEED 100' FOR PARKING GARAGES (100' PER IBC).

COMMON PATH OF TRAVEL SHALL NOT EXCEED 20' FOR ANY NUMBER OF OCCUPANTS AND 75' FOR 50 OR MORE OCCUPANTS FOR ASSEMBLY (75' PER IBC)

EXIT ACCESS TRAVEL DISTANCE SHALL NOT EXCEED 200' FOR RESIDENTIAL (250' PER IBC).

EXIT ACCESS TRAVEL DISTANCE SHALL NOT EXCEED 400' FOR PARKING GARAGES.

EXIT ACCESS TRAVEL DISTANCE SHALL NOT EXCEED 200' FOR ASSEMBLY (250' PER IBC).

DEAD ENDS SHALL NOT EXCEED 50' IN RESIDENTIAL OCCUPANCIES

DEAD ENDS SHALL NOT EXCEED 50' IN PARKING GARAGES (100' PER LSC).

DEAD ENDS SHALL NOT EXCEED 20' FOR ASSEMBLY.

INTERIOR EXIT STAIRWAYS

INTERIOR EXIT STAIRWAYS SHALL BE CONSTRUCTION AS 2 HOUR FIRE BARRIERS FOR 4 OR MORE STORIES.

EXIT ENCLOSURES SHALL LEAD DIRECTLY TO THE EXTERIOR OR THROUGH AN EXIT PASSAGEWAY.

EMERGENCY EGRESS

OCCUPANCY TYPE R-2 DWELLING UNITS DO NOT REQUIRE EMERGENCY EGRESS WHEN SPRINKLERED, TWO EXITS ARE PROVIDED FROM THE DWELLING, AND THE DWELLING OCCUPANCY IS LESS THAN 20. (SEC. 1015.1 EXC. 1).

WINDOW OPENINGS

WINDOWS WITH SILLS LESS THAN 36" AFF SHALL BE PROVIDED WITH CONTROL DEVICES.

ACCESSIBILITY

ACCESSIBLE UNITS, TYPE A UNITS, AND TYPE B UNITS SHALL BE PROVIDED.

ACCESSIBLE UNITS = X%

TYPE A UNITS = X%

CH. 11

1107.6.2

TYPE B UNITS = X%

TYPE A UNIT: A DWELLING UNIT OR SLEEPING UNIT DESIGNED AND CONSTRUCTED FOR ACCESSIBILITY IN ACCORDANCE WITH THIS CODE AND THE PROVISIONS FOR TYPE A UNITS IN ICC A117.1.

TYPE B UNIT: A DWELLING UNIT OR SLEEPING UNIT DESIGNED AND CONSTRUCTED FOR ACCESSIBILITY IN ACCORDANCE WITH THIS CODE AND THE PROVISIONS FOR TYPE B UNITS IN ICC A117.1, CONSISTENT WITH THE DESIGN AND CONSTRUCTION REQUIREMENTS OF THE FEDERAL FAIR HOUSING ACT.

DWELLING UNIT: A SINGLE UNIT PROVIDING COMPLETE, INDEPENDENT LIVING FACILITIES FOR ONE OR MORE PERSONS, INCLUDING PERMANENT PROVISIONS FOR LIVING, SLEEPING, EATING, COOKING AND SANITATION.

ACCESSIBILITY

CH. 12
1207.2
1207.3

WALLS, PARTITIONS, FLOORS ASSEMBLIES SEPARATING DWELLING UNITS SHALL HAVE A STC OF NOT LESS THAN 50 (45 FIELD TESTED).
FLOOR ASSEMBLIES SEPARATING DWELLING UNITS AND PUBLIC / SERVICE AREAS SHALL HAVE AN IIC OF NOT LESS THAN 50 (45 FIELD TESTED).

ELEVATORS

CH. 30
3002.4
3003

AT LEAST ONE ELEVATOR CAR SHALL ACCOMMODATE A 2'x7' AMBULANCE STRETCHER.
EMERGENCY OPERATION FOR ACCESSIBLE ELEVATOR IS REQUIRED.

memorandum

attn: Bryan Solko **from:** John Delaney
Gabe Cordell

company: BVH Omaha **date:** 12-22-2016

project name: La Vista City Center _ South Building (BVH)

mei project: 16290

re: MEP Schematic Design Narrative

cc: File

❖ General Project Overview

- This mechanical/electrical narrative is intended to be a schematic design document that may be used as a basis for determining the project systems and preliminary budget. There will be modifications to these documents that will affect the final design of the project and the project cost.
- The proposed project is a mixed use commercial and residential building with individual apartment units and community spaces.
- Codes:
 - 2015 International Building Code
 - 2015 International Plumbing Code
 - 2015 International Mechanical Code
 - 2015 International Energy Conservation Code
 - 2014 National Electrical Code
 - NFPA 13, (NFPA 13R, where applicable)

❖ Mechanical

- Standards:
 - Design of mechanical systems will conform to the following standards:
 - American Society of Heating, Refrigerating and Air conditioning Engineers (ASHRAE)
 - National Fire Protection Association (NFPA)
 - American National Standards Institute (ANSI)
 - American Society of Mechanical Engineers (ASME)
 - Sheet Metal and Air Conditioning Contractors National Association (SMACNA)
 - Outside Design Conditions
 - Summer: 95°F db, 78° deg. Wb
 - Winter: -10°F db
 - Indoor Design Conditions
 - Summer: 75°F db ± 4°, 55 % RH
 - Winter: 70°F db ± 4°
- Mechanical Design Conditions / Criteria

- HVAC Capacity. Proposed equipment capacities are based on general rules of thumb. Exact equipment sizing may need to adjust as design progresses and detailed calculations are performed. HVAC capacity will be affected by building envelope design, especially window glazing properties and size of windows.
 - HVAC capacity for residential apartment units is based on 600 sq.ft. per ton of cooling.
 - HVAC capacity for common corridors is based on 1,000 sq.ft. per ton of cooling.
 - HVAC capacity for community areas is based on 300 sq. ft. per ton of cooling.
 - HVAC capacity for commercial areas is based on 300 sf. Ft per ton of cooling

- Ventilation
 - Residential apartment units: Ventilation will be provided by the operable window exception in the IBC. Outside air will not be ducted to HVAC units in the apartments.
 - Common areas, corridors and community areas: Outside air for ventilation shall be ducted to HVAC units in accordance with the requirements of the IMC.
 - Commercial areas: Outside air for ventilation shall ducted to energy recovery units.

- No specific humidification or dehumidification systems are required in the building. No humidifiers or dedicated dehumidification systems shall be provided.

- Duct and Duct Insulation
 - Ductwork shall be constructed per SMACNA standards utilizing galvanized duct.
 - Supply and return air serving apartments shall not be insulated per the residential building exception in the IECC.
 - Supply air serving common corridors, community areas and commercial spaces shall be insulated per International Energy Code. Return air serving common corridors and community areas shall be insulated with 1-1/2" duct liner (R-5) for noise reduction.
 - Outdoor air ducts shall be insulated with 2" mineral fiber blanket (R-5).

- HVAC Controls
 - Apartment HVAC equipment: Shall be controlled by standalone wall mounted programmable thermostats.
 - Common corridors and community area HVAC equipment: Shall be controlled by standalone wall mounted programmable thermostats with lockable covers.
 - Commercial areas, Water Source Heat Pumps
 - ◆ Water source heat pumps serving commercial areas will be controlled by wall mounted programmable standalone thermostats.
 - ◆ Boilers, Fluid Cooler and Pumps: shall be controlled by a small temperature control system.

- Domestic hot and cold water main piping shall be constructed of type L copper and insulated as follows:
 - Domestic cold water mains shall be insulated up to the isolation valve in the apartment mechanical closet. Domestic cold and hot water downstream of the isolation valve shall not be insulated.
 - Domestic cold and hot water inside apartments can be PEX tubing as allowed under international plumbing code. PEX manifold will be located inside apartment mechanical closet.

- Waste and Vent Piping will be PVC pipe and fittings as allowed under International Plumbing Code.

- Natural gas piping will be ASTM A53, schedule 40 black iron. 2" piping and smaller will be threaded, 2 1/2" piping and larger will be welded.

- First Floor: Future Retail / Commercial
 - Boiler / Fluid Cooler, One system located in the south building shall have capacity to serve both the south and north buildings.
 - First level commercial / retail areas heating and cooling shall be provided by water source heat pumps.
 - Above grade condenser water supply and return piping shall be schedule 40 steel pipe with Victaulic pipe fittings.
 - Below grade condenser water piping shall be cast-iron.
 - Boilers will be high efficiency condensing type.\
 - Fluid Cooler shall be provide with low sound package
 - Condenser water pumps located in the south building will have Variable Frequency Drives (VFDs)
 - Outside air and make-up air louvers will be located on the back side of the south and north buildings. Louvers will be used for ventilation air, kitchen hood make-up air, and environmental exhaust air.
 - Ventilation air will use energy recovery ventilator units with electric preheat coils.
 - Vertical shafts will be provided for future (Type 1) kitchen hood grease ductwork. Future ductwork will be double wall stainless steel "zero-inch clearance to combustibles"
- Enclosed Parking Garage
 - Mechanical ventilation systems shall be provided, motorized intake louvers and exhaust fans. System shall operate automatically upon detection of carbon monoxide or nitrogen dioxide. Detectors shall be space per manufacturers' recommendations.
- Elevator Machine Room.
 - Cooling shall be provided by light commercial ductless split system with indoor DX and outdoor roof mounted, air cooled condensing unit.
 - Cooling unit size shall be approximately 3-ton
- Public Storage Rooms
 - Code required ventilation will be provided for this area, (0.12 cfm outside air per sf).
 - Heating and cooling shall be provided by light commercial split systems with indoor DX fan coil units with electric heat and air cooled heat pumps located on the roof.
- Community Room and Fitness Rooms
 - Heating and cooling shall be provided by light commercial split systems with indoor DX fan coil units with electric heat and air cooled heat pumps located on the roof.
 - Fan coil units shall be Carrier Model FB4C fan coils or equal. Heat pumps shall be Carrier 14 SEER or equal.
- Typical Residential Apartment Corridors
 - Heating and cooling shall be provided by light commercial split systems with indoor DX fan coil units with electric heat and air cooled heat pumps located on the roof.
 - Fan coil units shall be Carrier Model FB4C fan coils or equal. Heat pumps shall be Carrier 14 SEER or equal.
- Typical Residential Apartment HVAC
 - Heating and cooling shall be provided by residential split systems with indoor DX fan coil units with electric heat and outdoor roof mounted, DX air cooled heat pumps located on the roof.
 - Fan coil units shall be wall mounted Carrier Model FF1E or equal. Outdoor air cooled heat pumps shall be Carrier 14 SEER or equal.
 - Capacity shall be as follows:
 - Studio apartments (<700 sqft) 1-1/2 ton fan coil with 7.5 kW electric heat and 1-1/2 ton heat pump.

- One bedroom apartments (<800 sqft) 1-1/2 ton fan coil with 7.5 kW electric heat and 1-1/2 ton heat pump.
 - One bedroom apartment (>900 sqft) 2 ton fan coil with 7.5 kW electric heat and 2 ton heat pump
 - Two bedroom apartments (<900 sqft) 2 ton fan coil with 7.5 kW electric heat and 2-1/2 ton heat pump.
 - Two bedroom apartments (>1200 sqft) 2-1/2 ton fan coil with 10 kW electric heat and 2-1/2 ton heat pump.
 - Duct mains shall be routed above ceilings between and parallel with floor joists. Runouts shall be routed perpendicular to the joists through joist openings.
- Typical Residential Apartment Exhaust
- Bath exhaust shall be provided by ceiling mounted exhaust fans with a wall switch. Bath exhaust duct shall be routed to a sidewall termination wall cap on the same floor at the exterior wall. Maintain 3'-0" minimum clearance to the operable portion of windows.
 - Dryer exhaust shall be routed to a sidewall termination wall cap on the same floor at the exterior wall. Maintain 3'-0" minimum clearance to the operable portion of windows. Dryer located beyond 35 ft (equivalent length) shall be provide with a dryer exhaust duct power ventilator.
- Plumbing
- Provide 3" domestic water service and single meter to building. Water service shall be installed in water service room per Metropolitan Utilities District requirements. Provide service with high/low flow pressure regulator.
- Domestic Hot Water:
- Apartments:
 - ◆ Provide (1) residential electric, 40-gallon, dual 6.0 kW, non-simultaneous element water heater in each apartment unit. Model A.O. Smith DEL-40 or similar.
 - ◆ Locate apartment water heater in the mechanical closet with the HVAC fan coil unit.
 - Public Restrooms and fixtures
 - ◆ Provide (1) residential electric, 40-gallon, dual 4.0 kW, non-simultaneous element water heater. Model A.O. Smith DEL-40 or similar.
 - Provide sanitary and vent stacks as required to accommodate plumbing fixtures in the building. Building sanitary main shall be sized per International Plumbing Code requirements.
 - Provide double grade cleanouts at exit of sanitary main.
 - Provide floor drains in water service room.
 - Provide 50 GPM, 4" inlet/outlet Polyethylene Oil / Sand separator for enclosed parking garage.
 - Provide 100 GPM, 4" inlet/outlet high efficiency grease interceptor as allowed by code for retail restaurant use.
 - Provide open hub drains in all apartment unit mechanical closets for condensate and water heater relief valve discharge. Condensate riser shall convey condensate down to floor sink at lowest level.
 - Provide 50 gpm elevator sump pump for each elevator shaft. Pump shall be float operated and shall discharge to stand pipe or mop sink. Elevator sump controls shall be per the requirements of the Nebraska state elevator inspector.
 - Provide minimum of (4) wall hydrants, one located on each side of building. Hydrants shall be connected to domestic cold water at the Ground floor with an isolation valve (3/4" cold water line).
 - Provide 2-psi natural gas service for future first floor retail areas. Gas service shall be installed outside by Metropolitan Utilities District. Provide gas piping downstream

of gas service and meters to each retail bay. Gas piping shall be steel piping throughout the building.

- Fire Protection
 - Building commercial and residential rooms shall be protected with NFPA 13 and AHJ approved wet pipe sprinkler and standpipe system.
 - Enclosed/Open garage areas shall be protected with an NFPA 13 dry pipe fire protection system.
 - Provide 6" fire service entrance (existing pressure will need to be confirmed to properly size main. Provide necessary backflow prevention, valves and trim as required by NFPA and the authority having jurisdiction.
 - Sprinkler heads in unfinished areas will be upright pendant. Sprinkler heads in finished areas shall be semi-recessed type or sidewall.
 - Corridor sprinkler heads shall be concealed type.
 - Provide fire department connection on exterior of building (location to be verified with Fire Marshal.
 - Systems Protection Area Limitations, 52,000 sf / fire protection zone valve.
 - Class III fire protection stand pipe shall be located in each stairwell. Stand pipes shall be interconnected in accordance with NFPA 14

❖ Electrical

- Electrical Design Criteria
 - All applicable State and Local codes
 - Meet minimum energy code requirements
- Basic Electrical Materials and Methods
 - EMT or MC will be the primary raceway used within the building for all panel feeders
 - Electrical non-metallic sheathed cable (NM)(Romex) will be the primary wiring method used within the apartment units and commons spaces. 2 or 3 wire + ground.
 - Electrical non-metallic tubing (EMT) shall be the primary raceway used within the building for all commercial spaces and where branch circuiting is exposed to view, i.e. storage rooms, mechanical/electrical rooms and exposed ceiling areas.
 - PVC 40 will be used for underground installations.
 - Rigid galvanized steel (RGS) will be used for exposed exterior work or where conduits are subject to damage.
 - Feeder conductors will be copper with THHN/THWN insulation. Conductors will be color coded. At contractor's option, electrical grade aluminum conductors of equivalent ampacity to copper may be used for feeders 100 amps and larger.
 - Dedicated neutral conductors will be provided for each branch circuit. Shared neutrals are not allowed.
 - Wiring devices within the common building areas will be specification grade, 20-amp minimum.
 - Wiring devices within the apartment units will be residential grade, 15 and 20 amp rated. Tamper resistant devices shall be utilized within the apartments per NEC 406.12.
 - Device coverplates within finished spaces shall be smooth finish thermoplastic.
 - Device coverplates within un-finished spaces shall be galvanized steel.
 - Receptacles shall be provided within apartment units to meet spacing criteria described in NEC 210.52.
 - AFCI protection shall be provided in apartment units per NEC 210.12.
 - GFCI protected receptacles will be provided in kitchens, restrooms, the exterior of the building, and other areas required by Code.
 - Exterior mounted receptacles will be provided on grade at each entrance including apartments, at the roof to service roof mounted equipment, and at apartment units

with balconies. Exterior receptacles will be GFCI protected and provided with weatherproof covers.

- Equipment connections shall be provided to all items described in the mechanical portions of this narrative, elevators and other general loads.
- Fan and pump motors larger than ¾ horsepower and not on VFDs will be controlled by individual motor starters. Each magnetic motor starter will include a fused disconnect, hand-off-auto (H-O-A) switch, auxiliary contacts, a control power transformer, electronic overloads, and a motor running pilot light.
- Disconnect switches for commercial equipment will be heavy-duty type.
- Disconnect switches for residential HVAC equipment will be residential type with pull-out fuse blocks.
- All exterior disconnect switches will be NEMA 3R rated.

➤ **Electric Service Design**

- The facility will be provided with multiple services for connection of house service, retail meter center and residential meter centers in several areas of the building.
- Electrical service equipment will be fully rated for 65K AIC.
- Residential meter centers shall be configured as 208V 3-phase input, 208V 1-phase output
- Service #1 - Residential Main Switchboard #1 "SRMSB1" will feed meter centers for the apartment units, floors 3 and 4. This service will be configured as 120/208 volt, 3-phase, 4-wire and will be sized at 2500 amps. The switchboard will be configured as main lug only with 2-1600A circuit breakers serving Residential Meter Centers "S3RMC" and "S4RMC".
- Service #2 - Residential Main Switchboard #2 "SRMSB2" will feed meter centers for the apartment units, floors 5 and 6. This service will be configured as 120/208 volt, 3-phase, 4-wire and will be sized at 2500 amps. The switchboard will be configured as main lug only with 2-1600A circuit breakers serving Residential Meter Center "S5RMC" and "S6RMC".
- Service #3 - will feed the commercial tenant meter center "SCMC". This service will be configured as 120/208 volt, 3-phase, 4-wire and will be sized at 2000 amps, with a main circuit breaker.
- Service #4 will feed the house main distribution panel "SDPH". This service will be configured as 120/208 volt, 3-phase, 4-wire and will be sized at 800 amps with main circuit breaker.
- Two 1000KVA, 208/120V, 3-phase, 4-wire secondary OPPD padmount transformers will be located on grade within the property line. OPPD shall bring primary service to the transformers from pad mount switch(es). Transformers shall be provided with 3200A sidecars for final secondary connections. Electrical service requirements should be confirmed with OPPD.
- Approximate electrical loads for the services are as follows:

Estimated Maximum Demand – House/Commons Service (120/208 volt)				
Description		Connected	D.F.	EMD
Interior Lighting	1.1 watt/SF (18,200 SF)	20 kW	1.0	20 kW
General Power	2 watt/SF (18,200 SF)	36 kW	0.6	22 kW
HVAC	4 watt/SF (18,200 SF)	72 kW	0.8	58 kW
Elevator	60 kW	60 kW	0.8	48 kW
Pool Equip	60 kW	60 kW	0.8	48 kW
Total		248 kW		196 kW

Estimated Maximum Demand – Retail Service (120/208 volt)				
Description		Connected	D.F.	EMD
Interior Lighting	1.3 watt/SF (25,400 SF)	33 kW	1.0	33 kW
General Power	8 watt/SF (25,400 SF)	203 kW	0.8	162 kW
HVAC	12 watt/SF (25,400 SF)	304 kW	0.8	243 kW
Miscellaneous	20 kW	20 kW	1.0	20 kW
Total		560 kW		458 kW

➤ Electrical Distribution Design

- Residential Meter Center “S3RMC” shall be provided with 1600A main lug terminal box and 40 ringless meter sockets with branch circuit breakers, located in the northwest electrical room on the third level. Provide with the following:
 - 33 – 225A meters with 150A breakers
 - 3 – 125A meters with 125A breakers
- Residential Meter Center “S4RMC” shall be provided with 1600A main lug terminal box and 45 ringless meter sockets with branch circuit breakers, located in the northeast electrical room on the fourth level. Provide with the following:
 - 38 – 225A meters with 150A breakers
 - 3 – 125A meters with 125A breakers
- Residential Meter Center “S5RMC” shall be provided with 1600A main lug terminal box and 45 ringless meter sockets with branch circuit breakers, located in the southeast electrical room on the fifth level. Provide with the following:
 - 38 – 225A meters with 150A breakers
 - 3 – 125A meters with 125A breakers
- Residential Meter Center “S6RMC” shall be provided with 1600A main lug terminal box and 45 ringless meter sockets with branch circuit breakers, located in the southwest electrical room on the sixth level. Provide with the following:
 - 38 – 225A meters with 150A breakers
 - 3 – 125A meters with 125A breakers
- Each apartment unit shall be provided with a 120/208 volt, 1 phase, 3 wire, main lug only, 24 pole loadcenter to serve lighting, power, and HVAC equipment circuits within the unit. Apartments will be served at 150A.
- House electric Main Distribution Panel “SDPH” will be provided with a 800A service rated main breaker, located in the main electrical room on the first level. The house service shall serve commons spaces, elevator, and site lighting. Branch breakers shall be provided in “SDPH” to serve house panelboards and elevator.
- A service entrance surge protective device (SPD) and owner metering package shall be installed in the House Main Distribution Panel “SDPH”. Bussing shall be tin-plated aluminum. Sufficient future circuit breaker mounting space shall be provided. Neutral bussing shall be 100% rated. All lugs shall be mechanical type.
- Two house panelboards shall be provided, one in the first level electrical room and the second in the mechanical equipment room located in parking garage, each shall be 225A 120/208 volt, 3-phase.
- The electrical closets on fourth and sixth floors will contain panelboards to serve lighting, receptacle and miscellaneous equipment loads on each respective floor. House panelboards on the residential floors shall be 200A, 120/208 volt, 3-phase, with feed through lugs to serve house panels on the floor above.
- Retail Meter Center “SCMC” shall be provided with 2000A main circuit breaker and 16 ringless meter sockets with branch circuit breakers, located in the main electrical room on the first level. Provide with the following:
 - 4 – 320A meters with 400A breakers
 - 12 – 225A meters with 200A breaker

- Grounding System Design
 - The electrical power distribution system will be provided with a single-point ground system. The ground bus at the main service equipment will be connected to the water service, gas service, concrete-encased electrode, and building steel.
 - The grounding shall be designed for a resistance of 5 ohms or less.
 - An insulated equipment grounding conductor will be installed with feeders and branch circuits. Metal raceways, boxes, equipment, receptacles, and light fixtures will be bonded to the equipment grounding system.
 - A grounding riser shall be provided from the main building ground bar to the telecommunications demarcation point.

- Emergency Generator
 - The building emergency generator will be diesel and located on grade northeast of the building by the cooling tower.
 - A weatherproof, reach-in enclosure will be provided for the generator
 - The initial estimate of emergency generator size is 100 kW at 208/120 volt, 3-phase, 4-wire.
 - The emergency generator will be sized to support the elevators of both the north and south buildings as an accessible means of egress.
 - Two output breakers shall be provided at the generator to serve the elevator automatic transfer switches, one for each building.
 - Generator accessories shall include coolant heater, battery pad heater, battery charger, and silencer installed within enclosure
 - The elevator automatic transfer switch shall be located in the first floor life safety electrical room.
 - Transfer switch shall be provided with impending elevator transfer feature.

- Interior Lighting Design
 - Elevator Lobbies, Vestibules and other public areas will utilize recessed LED downlights.
 - Corridors will utilize surface mount LED strip lights
 - Stairwells will utilize wall mount LED fixtures.
 - Non-public areas where no ceiling is provided will utilize 4'-0" industrial LED fixtures.
 - Apartment unit lighting shall be residential style surface mounted fixtures. See appendix for light fixture types.
 - Exit lights will be white polycarbonate housing with red lettering, LED lamps and emergency battery backup.
 - Emergency lighting in corridors shall be unit equipment battery packs with LED lamps
 - General illumination in the facility will be as follows:
 - Lobbies 30 footcandles
 - Corridors 10 footcandles
 - Storage/Utility Rooms 20 footcandles
 - Housing units 10 footcandles
 - Illumination in areas not listed above will be designed to IES standards.
 - Lighting control in the apartment units will be accomplished with wall mounted toggle switches.
 - The building will be provided with a relay based lighting control system for operation of common areas and exterior lighting. The lighting control panel will utilize occupancy sensor, photocell, and timeclock control of fixtures in the various spaces.
 - Emergency lighting shall be by unit equipment, batteries integral to fixtures or central lighting inverters, depending on emergency lighting fixture type and location

- Exterior/Facade Lighting Design

- Wall mounted LED fixtures will be installed at all exterior building doors.
 - Wall mounted LED lighting at each apartment entry and usable balcony.
 - Recessed LED downlights will be utilized where canopies or overhangs are present.
 - Pedestrian scale LED lighting and/or bollards will be provided around the perimeter of the building and interior courtyard areas.
- Low Voltage Pathways Design
- Two 4" conduits will be provided underground from the main plywood terminal board to the property line for incoming telecommunications services to the building.
 - Rough-in and pathways for telecommunications and CATV service entrances will be provided by the electrical contractor.
 - One 8'-0" wide x 8'-0" tall plywood terminal board shall be provided in the main electrical room on the first level. The board shall be used for the telephone utility demarcation point and for the CATV utility demarcation point and mounting of CATV equipment.
 - 4'-0" x 4'-0" plywood boards shall be provided in the third thru sixth level stacked electrical rooms.
 - One 2" conduit will be provided from the main demarcation point to each retail tenant for tenant services
 - Rough-ins for security, access control, and CCTV systems shall be installed at all exterior doors, select interior doors, and within the parking garage.
 - All low voltage cabling will be provided by the Owner's preferred cabling installers or prewired by CATV service providers.
- Fire Alarm Design
- The building shall be equipped with an intelligent microprocessor based addressable fire alarm system.
 - The main fire alarm control panel will be located in the main electrical room on the first level.
 - A remote annunciator will be located at the Main Lobby.
 - Addressable manual pull stations will be located at each exit from the building, at stair towers on each floor, and no more than 200 feet from any part of the building.
 - System smoke detectors will be provided in elevator lobbies for elevator recall.
 - 120 volt stand alone detectors with integral sounder base shall be provided within the apartment units in each bedroom and the corridor adjacent to the bedroom(s). All detectors shall be connected together to alarm all detectors within a unit when any one goes into alarm. In designated ADA accessible rooms, the 120 volt detector shall be provided with integral strobe feature.
 - HVAC systems will be provided with duct detectors as required by code. Relays will be provided to shut down each air handling unit in response to an alarm generated by its associated detector.
 - Smoke dampers will be wired to dedicated 120-volt circuits. Circuits will be controlled by the fire alarm panel so dampers close upon smoke detection at the serving air handling unit or in the space served.
 - Audible/visual evacuation signals will be visible in the evacuation path. Signals will be located no more than 15 feet from exit doors and no more than 100 feet on center in corridors. Signals will also be installed commons areas restrooms and common use areas. An additional signal will be located on the exterior of the building.
 - Audible evacuation signals will be combination type horn/strobes. Visual signals will be strobes meeting Americans with Disabilities Act (ADA) requirements. Finish will be white.
 - Exterior PIV and fire sprinkler flow and tamper switches located on each floor shall be monitored by the fire alarm system.
 - Fire alarm wiring shall be routed in conduit where exposed to view and free-air above accessible ceilings.